

SCHEDULES "16" and "17"

GLOSSARY OF TERMS FOR MAINTENANCE SPECIFICATIONS AND LOCAL AREA SPECIFICATIONS

In these Maintenance Specifications and Local Area Specifications, unless the context otherwise requires, the following terms will have the following meanings ascribed to them:

Abutment	a wall supporting the end of a Bridge or Span and retaining the approach Fill.
Acrow	a proprietary name for a modular steel Panel Bridge similar to a Bailey Bridge.
Agreement or Maintenance Agreement	the Agreement between the Contractor and the Province to which this Schedule is attached.
Alligatored	an area of pavement identified by a checkerboard of cracks giving an alligator hide appearance that may or may not be accompanied by surface distortion.
Anchor Bolt	a Foundation bolt (including hardware), drift spike, or any other device used for holding any mechanism or structure down. It may or may not be threaded.
Ancillary Facilities	Any facilities that forms part of the highway system, including trails, driveways, fences, shoulder, parking facilities, etc. whether privately or publicly owned but entitled to be used by the public by legislation.
Anti-Icing	activity involving the direct application of liquid or solid materials to bare or plowed pavement carried out in advance of a Weather Event to prevent the bonding of snow or ice to the roadway surface.
Armour	metal covering used at joints or around Piles, including rigidly affixed anchorages, to protect the underlying material.
Backfill	earth or other material used to replace material removed during construction, such as in culvert trenches, and behind Bridge Abutments and Retaining Walls. Also refers to material placed in Binwalls and between an old structure and a new lining.
Backslope	the slope at the opposite side of a Highway ditch from the Shoulder, and extending up to the natural ground level.
Bailey	a modular Bridge made of interchangeable latticed steel Panels coupled with pins. Used primarily as an emergency or temporary Bridge.
Bearing	Superstructure support elements between the Bridge Seats and the Bridge Superstructure. Composed of steel, rubber, etc. separated into two general categories as follows: a) fixed allows only rotational movements. b) expansion allows longitudinal as well as rotational movements. Note: Refer to drawings for specific Bridges.
Bent	a line of columns built as a structural unit, transverse to the Bridge and supporting the load of the Superstructure.
Bleeding	an area where the asphalt mix is too rich, leading to the asphalt oozing to the surface in puddles and leaving a slick and slippery area.
Box Beam	concrete box Stringers which are precast for quick assembly at a Bridge site. When placed side by side these form the Deck as well and are often temporarily used as-is for a traffic Wearing Surface.
Boxed Heartwood	refers to timber cuts that enclose (box) the heart of the tree within the edges of the timber and as defined by the National Lumber Grades Authority.
Braces	a diagonal, or sometimes horizontal, structural member used to stiffen a structure.

Bridge	a structure providing a means of transit for pedestrians and/or vehicles above the land and/or water surface of a valley, arroyo, gorge, river, stream, lake, canal, tidal inlet, gut or strait, above a Highway, railway or other obstruction, whether natural or artificial. The essential parts of a Bridge are: (1) the Substructure consisting of its Abutments and Pier or Piers supporting the Superstructure, (2) the Superstructure slab, girder, Truss, arch or other span or spans supporting the Highway loads and transferring them the Substructure, and (3) the Highway and its incidental parts functioning to receive and transmit traffic loads.
Bridge Abutment Fills	see Backfill.
Bridge Deck(s)	together, the structural components related to corrosion protection and wearing surface elements of a Bridge, including but not limited to: steel plates, steel grid, membranes and asphalt and polymer wearing surfaces.
Bridge Deck System(s)	is comprised of the components that support the roadway portion of the bridge and other components that make up the deck such as concrete slab, steel, wood, overlays and membranes.
Bridge Joints	includes expansion joints, sealed joints, Finger Joints, Sliding Plate Joints and all other Deck joints.
Bridge Joint Armour	steel plating conforming to the deck slab designed to support and/or protect Bridge Joints.
Brow Log	a log placed above the Deck surface used as a Wheelguard. May act as an additional load-carrying Stringer if tied to the structure via Needle Beams.
CGSB	Canadian General Standards Board. CGSB specifications may be obtained from the Canadian General Standards Board, Ottawa, Ontario, K1A 1G6.
Camber	slight arch built into the longitudinal profile of a beam to accommodate deflections due to Dead Loads and Live Loads.
Cap	a horizontal member on an Abutment or Pier to distribute the loads of the Bridge. The Stringers or Bearings rest on the Cap.
Cementitious	having the properties of cement; essentially composed of cement.
Chord	the upper and lower longitudinal members of a Truss.
Class and Classification	has the same meaning as defined in Article 1 of the Maintenance Agreement
Commencement Date	the first day of the Term, as described in the Maintenance Agreement.
Compact	a smooth winter driving surface of packed snow and ice that is free of potholes, rutting, washboard and Winter Accumulation.
Contract Year	has the same meaning as defined in Article 1 of the Maintenance Agreement.
Counter Brace	a Truss diagonal member inclined in the opposite direction to the Main Brace. Smaller than the Main Brace.
Crack Filling	an activity intended to reduce the amount of water infiltrating into the pavement and to reinforce the adjacent pavement involving the placement of a crack filler, generally a cold-pour bituminous emulsion, into the crack without affecting the crack geometry.
Crack Sealing	an activity intended to prevent water from penetrating the pavement structure involving thorough crack preparation (routing) and followed by the placement of high-quality materials in a specific configuration.
Crook	a deviation edgewise from a straight line drawn from end to end of a piece of lumber, whereas "twist" is a deviation flatwise including a curl, and "bow" is a deviation flatwise only.
Crown	the vertical rise in elevation from the outside edge to the centerline on straight sections of Highway, used to ensure run-off drainage.
Danger Tree	any tree assessed as hazardous using a recognized assessment methodology such as that recognized by the Wildlife Tree Committee of British Columbia or the International Society of Arboriculture.
Debris	litter, rubbish, vegetation, fallen rocks, dead animals, spilled materials, brush, branches or other tree components and other items, which are not part of the Highway by intention.
Debris Torrent Structure	any structure which by design and/or function acts to control the flow of, or contain, Debris or Debris Flows, including but not limited to Debris impound basins, avalanche berms, avalanche deflector mounds, basins associated with snowsheds.

Deck	the portion of a Bridge that supports the Highway, from the top of the major structural members to the Wearing Surface, and designed to distribute loads evenly across the Bridge.
Decking	timber planking used as a Wearing Surface on the Deck of a timber Bridge.
De-Icing	activity involving the direct application of liquid or solid materials to Compact to facilitate removal of Compact from the roadway during or after a Weather Event.
Density	has the same meaning as defined in the Pavement Surface Condition Rating Manual.
Dirt and Gravel Highway	unpaved Highway, including the following components: the top surface of the Highway and the area between the outside edge of the top surface and the bottom of the ditch, known as the side slopes. Furthermore, the Dirt and Gravel Highway edge is the breakpoint between the extreme outside edge of the top surface and the side slopes.
Distortions	has the same meaning as defined in the Pavement Surface Condition Rating Manual.
Drainage Appliance	together, all components facilitating the movement of water off of or under a Highway including manholes, catch basins, inlets and outlets, drain pipes, french drains, flumes, box culverts and culverts less than 3 meters in size.
Ekki Wood	(<i>lophira procera</i>) a tropical hardwood species used for timber Decking on Bridges.
End Post	the last diagonal member at the end of a Truss, or the vertical member at the end of a Bailey or Acrow Bridge.
Engineer	an engineer licensed to practice in the Province of British Columbia pursuant to the <i>Engineers and Geoscientists Act</i> , R.S.B.C. 1996, c. 116;
Fill Slopes	earth and/or rock slopes usually created from cut and fill road construction methods or fill used to elevate a road from the original ground surface to aid drainage.
Finger Joints	an expansion Joint in which the opening is spanned by meshing steel fingers or teeth.
Flashing	sheet metal used as waterproofing or Armour for timber or log members.
Floor Beams	transverse members which support the Stringers and transmit the load to the main Girders or load carrying members. Steel Pier Caps on reinforced concrete Pier columns are a special type of Floor Beam.
Flume	an open channel or conduit of metal, concrete, or wood used to direct water away from a drain.
Flyover	a structure carrying one-way traffic over a Highway.
Footing	the portion of the Substructure resting on the ground.
Foundation	a) the supporting soil material upon which the structural portion of the Bridge is placed. b) portions of the Bridge (usually below ground) which distribute the pressure to the soil or artificial supports. Similar to Footing.
Freeway	multi-lane Highway with fully controlled access.
Galvanized	steel or iron item which has a coating of zinc applied for rust protection.
Gradation	the distribution of size of material particles from coarse to very fine, determined by quantities retained on screens of decreasing mesh size or spacing.
Grading	the machine blading of dirt or gravel Highway surfaces to remove Raveling and Rutting and establish proper cross-section.
Grout	a fluid mixture of cement, sand, and water that can be poured or pumped easily.
Gusset	a plate serving to connect the elements of a member or the members of a structure and to hold them in the correct alignment and/or position at a joint.
Hard Surfaced Highways	all Highways which do not have a dirt or gravel surface.
Heart-Side	the face of a timber that was closest to the centre of the tree. Growth rings are concave on the heart-side.

Heartwood	timber members that contain the center annual rings of the original tree, or the soft central core.
Highways	has the meaning ascribed to it in the Maintenance Agreement.
Highway User	any person or persons, regardless of form of transportation, that use any lands or facilities within the jurisdiction of the Ministry of Transportation and Infrastructure.
Laminated	transverse members of a laminated Bridge Deck having the same function as cross-ties. Usually preservative treated two-inch nominal sized lumber tightly placed perpendicular to the traffic direction and vertically on edge over the Stringers, then nailed to the Stringers and each other. May also be parallel to the traffic (longitudinally laminated).
Lateral Rod	a horizontal, transverse tension rod.
Longitudinal Cracking	means Longitudinal Wheel Path Cracking and Longitudinal Joint Cracking as defined in the Pavement Surface Condition Rating Manual.
Lower Mainland	the area to the south of a straight line from Horseshoe Bay east to Hope and then proceeding due south to the Canada-USA border and then proceeding west along the Canada-USA border to the Strait of Georgia.
Major Event	includes a flood, landslide, land subsidence, ice jam, wind event, dam failure, earthquake, tsunami or volcanic eruption.
Major Event Site	area affected by a Major Event, separated by 1 km of clear distance from another area affected by a Major Event for a 24 hour period; a site that had been restored to a state where the Province determines no further work was required by the Contractor, will generate a "new site" when further damage/disturbance occurs.
Main Brace	a primary diagonal member in a Truss.
Maintenance Agreement	see Agreement.
Maintenance Services	the same meaning as described in Article 1 of the Maintenance Agreement.
Maintenance Specification(s)	the Maintenance Specification(s) of the Province for the particular maintenance activity described in this Maintenance Specifications.
Median	the portion of a divided Highway separating the traveled ways for traffic in opposing directions.
Ministry	means the Ministry of Transportation and Infrastructure.
Multiplate	a steel culvert, three metres or more in diameter, fully or partially factory assembled or field assembled by bolting together a number of corrugated steel plates. When less than three metres in diameter it will be considered to be a culvert.
Needle Beam	a transverse log, timber, or steel beam placed under the Stringers and fastened to them to make them act as a unit. Used to join the Stringers and trussing system.
Number 1	lumber grading in accordance with the National Lumber Grades Authorities Standard Grading Rules for Canadian Lumber.
Number 2	lumber grading in accordance with the National Lumber Grades Authorities Standard Grading Rules for Canadian Lumber.
Off-take	the extension of ditches away from the line of the Highway and toward the Right-of-way boundary or low ground for the purpose of de-watering a Highway road base or eliminating excessive Roadside water flow and erosion.
Overhead	a Bridge carrying a Highway over a railway, or a railway and another facility.
Overlay Patch	a Permanent patch that consists of a layer of new asphalt over an existing asphaltic pavement, or a new layer of asphalt or concrete on a Bridge deck.
Overpass	a grade separated structure where the Highway passes over another feature including a Highway of less traffic volume
Panel	the main load carrying member in a Bailey or Acrow Bridge structure. Panels are pinned together end to end and connected side by side where necessary to form continuous Girder Trusses from bank to bank. A traffic surface Deck is mounted between the bottom Chords of the Panels.

Parapet	a wall-like member of reinforced concrete integrally connected to the sidewalk portion of a Bridge to serve as a protective barrier for vehicular or pedestrian traffic.
Permanent patch	a patch that lasts as long as the adjacent surface.
Pier	an intermediate vertical support (Substructure) used to join and support the two Spans.
Pile	a structural column driven deep into the ground (at least two metres) to provide support for structures built on soft ground. Piles are used for Abutments and Piers and for protective dolphins and retaining walls.
Piling	a structure or group of Piles.
Pin	a cylindrical bar used as a means of connecting, holding in position, and transmitting the stresses of the members forming a Truss or framed Joint.
Ponding	large puddles of water pooling on the Highway surface.
Portal	the clear unobstructed space of a through Bridge forming the entrance to the Bridge. The entire Portal member of the top Chord bracing which fixes the uppermost limit of the vertical clearance.
Pot-hole	on a paved or Sealed Highway, an area where a piece of pavement has broken free and been removed, leaving a hole, usually the depth of the asphalt pavement layer and on a gravel Highway, a hole in which water puddles.
Province	means Her Majesty the Queen in right of the Province of British Columbia as represented by the Minister Responsible for the Transportation Act and her agents, servants, representatives, contractors and employees.
Quantified Maintenance Services	one of the Maintenance Services, as defined in Article 1 of the Maintenance Agreement and in the Introduction to these Maintenance Specifications.
Railway Authority	a company which, under the <u>Railway Act</u> , has control of and is responsible for the rail portion of a Railway Crossing.
Railway Crossing	Highway surface common to both the Railway Authority and the Province bounded by a length equal to the length from end of tie to end of tie and a width equal to the Highway width from Shoulder point to Shoulder point plus one-half metre each side.
Railway Crossing Approach	the Highway prism including ditches on the Railway Authority's property from the Railway Crossing outward to the edge of the Railway Authority's Right-of-way.
Rakers	these members, in Bailey and Acrow Bridges structures, are the stabilizers that connect between Transoms and the top hole in a Panel vertical section.
Ravelling	on a paved Highway, an area where the asphalt mix is too lean, leading to the aggregate popping out of the mix or breaking away under wear and on a gravel Highway, where the coarse aggregate is loose and there are not enough Fines to allow compaction to a tight surface.
Re-decking	the replacement of a Bridge wearing surface. On timber structures this includes: planking, wheelguards and shims, rail posts, post braces and railing, and may include cross ties. Minor Re-decking involves no replacement of cross-ties; Major Re-decking involves the replacement of cross-ties.
Refurbish	for the purposes of the Maintenance Specification 5-440 Sign System Maintenance only, it means the removal of the Sign from the field to a Sign shop, stripped of the old Sign face by a chemical or grinding process, and an addition of a new face to the Sign blank. Sign overlaying done at the Sign shop is also considered as being Refurbished.
Reinforcing Steel	steel bars embedded in concrete structures during forming and manufacture. These bars add tension strength to concrete and resist contraction or expansion due to temperature change.
Re-shaping	the machine blading of Dirt and Gravel Highways from ditch line to ditch line, to re-establish the proper shape of the Highway including Shoulder edges and Crown. This process also brings aggregate and Fines back onto the surface from Shoulders and ditches and involves a deeper cut than Grading.
Retaining Structure	a vertical structure designed to resist the horizontal earth pressures of a Fill or other material and/or a structure designed to prevent material from spilling onto the Highway.
Return Period	maximum repeated interval of time at which Winter Accumulation must be removed at any point on the Highway.

Right-of-way	the legally defined property on which the Highway is situated.
Rip-rap	protective cover of large stone, rock or concrete of various sizes placed compactly or irregularly to prevent and protect stream banks, sides of fills around Abutments or Piers, the Travelled Lanes and other Highway features from Scour, Debris and erosion.
Road Base	the portion of Highway subsurface on which the traveling surface or wearing surface is placed.
Roadside	that part of the public Highway between the edge of Shoulder and the Highway Right-of-way boundary, including the sidewalk. It does not include the Shoulder.
Routine	one of the Maintenance Services, as defined in Article 1 of the Maintenance Agreement and in the Introduction to these Maintenance Specifications.
Rutting	deformation of the surface of the road in the vehicle wheelpath due to repetitive passes of vehicle tires.
S4S	a timber surfacing designation meaning Surfaced Four Sides.
Safety Device	devices that improve the safety of the travelling public and include but are not limited to anti-glare screens, impact attenuators, and median and roadside delineation devices.
Sapwood	outer layers of growth of a tree between the bark and the Heartwood which contains the sap.
Scour	the local lowering of the streambed by the erosive action of water. <ul style="list-style-type: none"> a) general scour occurs in a waterway opening as a result of obstruction of the flow. b) local scour occurs at a Pier or Abutment as a result of local obstruction of the flow. c) natural scour is the scour of a streambed resulting from natural phenomena, such as channel meandering.
Sealed	a gravel Highway surface on which emulsified oil and aggregate has been alternatively spread, including compaction for particle set, building up an asphaltic pavement layer. or/ a paved Highway surface on which asphaltic products have been used to seal cracks, extend life expectancy of the paved Highway and create a skid resistant surface.
Services	has the same meaning as defined in Article 1 of the Highway Maintenance Agreement.
Severity	has the same meaning as defined in the Pavement Surface Condition Rating Manual.
Shim	to support, level, or adjust the fit by using thin, often tapered pieces of material.
Shoulder	the area between the edge of the outside traffic lane and the ditch, including the following components: Shoulder top, Shoulder edge, and Shoulder side slope. Furthermore, the Shoulder edge is the breakpoint between the Shoulder top and the Shoulder side slope.
Shoving	a longitudinal displacement of a localized area of a pavement surface, generally caused by braking or accelerating vehicles and usually located on hills and at intersections.

Sight Distance

driver visibility of the Highway, Signs and intersections at minimum distance to safely drive the Highway at these locations.

a) for the purposes of removing all movable obstructions (i.e. brush, tall grass, abandoned vehicles, etc.) from the Highway Right-of-way, the following minimum Sight Distances will be met:

i) for vehicles traveling on any traveled portion of a Highway:

Summer Highway Classification	Minimum Highway Sight Distance
1, 2, 3	330 m
4 & 5	200 m
6 & 7	75 m

ii) for vehicles stopped at an intersection a distance of 2 metres behind the applicable legal stopping location for the highway at that point and intersection, visibility in both directions to the traveled portion of the Highway will be:

Summer Highway Classification	Minimum Highway Sight Distance
1, 2, 3	300 m
4 & 5	200 m
6 & 7	100 m

iii) or vehicles on the traveled portion of the Highway the minimum Sight Distance to Highway signs will be:

Summer Highway Classification	Minimum Highway Sight Distance
1	500 m
2 & 3	300 m
4 & 5	150 m
6 & 7	75 m

b) Sight Distance for traffic control requirements will be defined as the length of unobstructed Highway visible to the driver and the following values (as a function of the posted speed limit) will be the minimum distances acceptable to the Province. Sight Distance less than set out below will require additional control as defined in the Traffic Management Manual for Work on Roadways (TMM):

50-70 kilometres per hour	100 metres
80-90 kilometres per hour	170 metres
100-110 kilometres per hour	250 metres
120 kilometres per hour	300 metres

Sign(s)

a lettered board, message or other display which includes all regulatory, warning, guide or informational, advisory, construction and maintenance, route markers and all special or other messages/displays under the Provincial jurisdiction as defined by the Province but excluding electronically controlled messages/displays; a sign includes the Sign Face Overlay.

Sign Bridge(s)

an overhead sign support structure, typically of truss construction, with the horizontal member either supported at both ends or cantilevered over the Traveled Lanes. Type L, M, or H Galvanized post davits are not considered to be sign bridges.

Sign Face Overlay

the layer of the Sign which contains the message, and which is applied to the aluminum, wood or steel sign.

Sign System

includes all regulatory, warning, guide or informational, advisory, construction and maintenance, route marker Signs, Sign Bridges, avalanche gates, delineators, hazard markers, Signs, Sign Face Overlay, posts, hardware (i.e. nuts, bolts, washers, rivets, etc.) and all special Signs, under other Provincial jurisdictions, as defined by the Province but excluding electronically controlled signage.

Sill

horizontal structural member set directly on the ground surface, or embedded only to a firm surface level. Usually a temporary base for a temporary support (see False Bent) or bracing.

Sliding Plate Joints	an expansion Joint in which the opening is covered by a steel plate attached to only one side of the joint.
Slippery	any road condition which causes an increase in normal dry surface stopping distances as a result of a buildup of frost, ice, slush or snow.
Slough	collapse or slide of soil or rock into a hole or depression.
Slope Of Grain	the deviation of the line of fibres in a timber member from a straight line parallel to the sides of the piece.
Slump	a measure of the workability and flowability of concrete. Slump varies with water, air, and admixture content and the temperature of the concrete.
Snow Avalanche Technician	a snow avalanche technician designated by the Province as such.
Sod	a mat of grass roots and fibres containing earth and granular aggregate.
Spall	circular or oval depression in concrete resulting from separation of a portion of the surface, at a fracture. Usually part of the rim is perpendicular to the surface.
Specialty Fences	all fences other than those installed on Highways listed in Schedule 1 or Schedule 2 of the <i>Motor Vehicle Regulation</i> , B.C. Reg. 26/58 for which the Province is responsible, e.g., fences in Rest Areas, at bridge ends, etc.
Split	a through longitudinal separation of the wood cells at the end of a piece of lumber.
Stringer	longitudinal beams supporting the Bridge Deck, and in large Bridges or Trusses, framed into or upon the Floor Beams.
Structure	has the same meaning as defined in Article 1 of the Maintenance Agreement.
Substructure	Abutments, Piers, their Foundations and protective works which form the Substructure supporting the Superstructure above.
Summer Highway Classification	has the same meaning as defined in Article 1 of the Maintenance Agreement.
Superelevation	this is the vertical rise in elevation from the outside edge of a Highway surface, to the inside edge on a curving section of Highway.
Superstructure	the entire structure of a Bridge resting on the Piers and Abutments, consisting of Stringers, Decking, Trusses, sidewalks, Wearing Surface and railing.
Sway Brace	(i) a piece bolted or otherwise secured in an inclined position upon the side of a Pile or frame Bent between the Cap and Sills to add rigidity to the assemblage. (ii) a component of Bailey or Acrow Bridges, used to square each bay of the Bridge and prevent sway movements of the Bridge.
Temporary Patch	a temporary correction of pavement deficiencies to address safety issues.
Traffic Delay:	total stop time and travel time through the site.
Traffic Management:	one of the Maintenance Services, as described in Specification 5-470
Transom Clamps	these are vise-type clamps with a swinging bolt at one end, used on Bailey and Acrow Bridge structures to hold the Transom securely to the bottom Chord of Panels.
Transoms	the Deck supporting cross member in a Bailey or Acrow Bridge structure, spanning between the bottom Chords of the Panels in these Bridges.
Transverse Cracking	has the same meaning as defined in the Pavement Surface Condition Rating Manual.
Trash Rack	a pervious barrier constructed to catch Debris and prevent blockage of a Bridge or the inlet of a culvert or Multiplate.

Travelled Lane	<p>the surface of a Highway:</p> <ul style="list-style-type: none"> a) between the painted shoulder line on one side and the painted Shoulder line on the other side, or b) in the absence of Shoulder lines - from asphalt edge to asphalt edge, or c) in the absence of hard surfacing refer to the definition of Dirt and Gravel Highway. <p>The travelable portions of Rest Areas, pullout areas, parking areas, Weigh Scale Areas, and any other vehicle-accessible portions within the Right-of-way are included.</p>
Truss	a jointed Bridge structure having an open built web construction so arranged that the frame is divided into a series of triangular figures with its component straight members primarily stressed axially only.
Truss Rod	a vertical Tension Rod.
Underpass	a Bridge carrying a Highway beneath another feature including a Highway of less traffic volume.
Urban	within a Municipality as the term is defined in the <i>Local Government Act</i> , or within a distance of 3 kilometres of a municipal boundary, or extending out to the limit of residential or commercial development, whichever comes first.
Wane	bark or lack of wood from any cause, except eased edges, on the edge or corner of a piece of lumber.
Wash-boarding	transverse ridges, ripples or small bumps on a gravel/dirt Highway surface (right angles to travel), usually on hills or steeper sections, leading to very rough, vibrating or chattering ride.
Wearing Surface	the surface portion of a Bridge Deck directly in contact with the wheels of vehicles.
Weather Event	any meteorological condition that permits the development of Slippery surface conditions which requires the application of Winter Abrasive, anti-icing or De-icing Chemicals and/or snow removal procedures to maintain or re-establish safe winter driving conditions.
Winter Abrasive	the sand or fine gravel applied to Highway surfaces during winter snow and ice conditions to provide traction for vehicles. May or may not contain De-Icing Chemicals.
Winter Accumulation	loose snow, slush, loose or broken compact snow and ice on the highway surface.
Winter Chemicals	material used to remove or assist the removal of ice and compacted snow from the pavement surface by chemical means.
Winter Highway Classification	has the same meaning as described in Article 1 of the Maintenance Agreement.

SCHEDULE "16"

MAINTENANCE SPECIFICATIONS

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MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specifications

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B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification

INTRODUCTION

Background

Maintenance is key to keeping the Province's Highway network safe, reliable and in good repair for Highway Users. Regular maintenance of the network also adds years of life before rehabilitation or reconstruction needs to be considered.

Throughout the Province the Highway network is maintained under service contracts with privately owned maintenance contractors with the Province retaining responsibility to set performance specifications and monitor service delivery.

Purpose of the Maintenance Specifications

The purpose of Maintenance Specifications is twofold:

- a) to establish the performance and service delivery requirements of Highway Maintenance Agreements reflecting the levels of safety and reliability that the Ministry requires; and
- b) to establish the auditable requirements of Contractor performance by the Province.

User Information

The Maintenance Specifications are described in this document under the following Chapters:

- Chapter 1: Surface Maintenance
- Chapter 2: Drainage Maintenance
- Chapter 3: Winter Maintenance
- Chapter 4: Roadside Maintenance
- Chapter 5: Traffic Maintenance
- Chapter 6: Bridge and Structure Maintenance
- Chapter 7: Incident and Major Event Response
- Chapter 8: Highway Condition Assessment and Communication

A. MAINTENANCE SERVICES

Maintenance Services are generally comprised of two types of activities:

Routine Maintenance Services

Consists generally of the maintenance and repair of the Infrastructure:

1. to a condition that is safe for Highway Users;
2. that is of an unpredictable and/ or non-quantifiable and/ or non-measurable nature, e.g., winter maintenance; and
3. of such a predictable and/ or cyclical nature that the quantity of work is determined by the frequency specified, e.g., bridge washing and cleaning.

Routine Maintenance Services Cap

The basis of the Routine Maintenance Services Cap is the Contractor's calculation (that is then confirmed by the Ministry) of the Cost Plus Rates for a specific Routine Maintenance Service in one Contract Year.

1. If, pursuant to Routine Maintenance Services with a Routine Maintenance Services Cap, the Contractor estimates that the cost to maintain the Infrastructure exceeds the Routine Maintenance Services Cap or if the Contractor encounters a previously unknown condition that causes the maintenance costs to exceed the Routine Maintenance Services Cap, then the Contractor must notify the Province and provide a written estimate of the work required to complete the work in accordance with section 5 of Schedule 18 ("Additional Maintenance Services");
2. If the Contractor was already engaged in that work at the time that the Contractor knew or should have known that the Routine Maintenance Services Cap was to be exceeded, work activities will continue until the Contractor reaches the limit of the Routine Maintenance Services Cap unless otherwise directed in writing by the Province to cease that work and make the site safe for Highway Users.
3. The Province will, if it approves the estimate pursuant to paragraph 1, direct the Contractor, in writing, to proceed with that work, with the basis of payment to the Contractor for that work in excess of the Routine Maintenance Services Cap being determined pursuant to section 5 of Schedule 18 ("Additional Maintenance Services").
4. If the Province:
 - (a) does not approve the estimate or revised estimate of the work,
 - (b) determines that the work should not proceed, or
 - (c) determines that it will do the work itself or utilize the services of another contractor,then the Province will direct the Contractor not to commence that work or cease performing that maintenance, as the case may be, and make the site safe for Highway Users.

Quantified Maintenance Services

Consists generally of the maintenance, repair and/or replacement of the Infrastructure or its components:

1. to a condition that is safe for Highway Users;
2. that is of a reasonably predictable or seasonal in nature;
3. that is of a minor restorative nature affecting the life cycle of the Highway and Bridge infrastructure; or
4. that is quantifiable and measurable; and
5. that is to be planned within the Contract Year to the limit of the identified quantities.

B. STANDARD FORMAT

A standard format has been adopted for Maintenance Specifications;

Section 1: Objective	Describes the expected results of the Contractor maintaining the Highway according to the Maintenance Specification.
Section 2: Scope	Summarizes the work to be performed by the Contractor as being either Routine, Quantified or both and if Materials, Procedures and/or Warranty requirements are applicable. Also identifies if a Routine Maintenance Services Cap applies.
Section 3: Performance Specifications	Describes the detailed requirements of the work to be performed by the Contractor including the maximum time within which the Contractor must perform the work expressed in either minutes, hours, days, weeks or months.
Section 4: Materials, Procedures and Warranty	Sets out the requirements for the Contractor to use materials and procedures, if applicable, and the provision of warranties if required.
Notes	Notes are used as supplementary information and to reference other documents.

C. INTERPRETATION

Words in these Maintenance Specifications will bear the meaning assigned to them in the Glossary of Terms of these Maintenance Specifications and in Article 1 of the Highway Maintenance Agreement. In the event of a conflict between the meaning of a word assigned by the Glossary of Terms of these Maintenance Specifications and the meaning assigned by Article 1 of the Highway Maintenance Agreement, the latter meaning will prevail.

Whenever more than one Maintenance Specification or more than one part of a Maintenance Specification applies to a particular Highway location, condition, circumstance or activity, the Contractor will comply with each and every applicable Maintenance Specification or part of a Maintenance Specification.

D. WARRANTY

The Contractor warrants to the Province that all work provided by or on behalf of the Contractor will comply with its obligations pursuant to the Maintenance Agreement, will conform and comply with the Specifications and will be performed in a professional and workmanlike manner, free from any defects or deficiencies in materials and workmanship (the "Standard").

This warranty will be in effect for a one year period from completion of the Maintenance Services (the "Warranty Period"). The warranty will survive the expiration or termination of the Maintenance Agreement.

The Contractor will be available at all times and at its expense to assist the Province with its questions, problems and concerns about the Maintenance Services.

If, during the Warranty Period, any part of the Maintenance Services is discovered or asserted by either party not to conform to the Standard, the parties will:

- (a) determine the extent of the defects or deficiencies and the corresponding extent of the correction or remediation through the Contractor's investigation and testing;
- (b) the Province may obtain additional investigation and testing at its expense and in the event the Province's investigation and testing indicates the defects or deficiencies require greater remediation or correction than what was proposed by the Contractor, the Province's costs for the investigation and testing will be reimbursed by the Contractor;
- (c) only when the parties are in agreement concerning the appropriate remediation and correction, the Contractor will, at its own expense, repair and correct the work (notwithstanding that the work may have been accepted by the Province) and provide the Province with all relevant information with respect to such repaired or corrected work.

The remediation or correction of the work will be performed within a month from the date of detection of the defect or deficiency, or as otherwise noted in the individual Specification or as otherwise agreed by the parties in writing.

For greater certainty, where the Maintenance Services under warranty is Quantified Maintenance Services, the Contractor is not entitled to claim the work performed under this warranty as an additional quantity of work performed by the Contractor for any purpose in Schedule 5 ("Quantified Maintenance Services").

Any Additional Maintenance Services performed that has a warranty item will have the conditions of this paragraph applied to that item.

All disputes arising out of or in connection with the warranty will be governed by Section 19.4 of the Maintenance Agreement.

E. MAINTENANCE SERVICES COMPLETION

Wherever the time within which work must be performed by the Contractor under these Maintenance Specifications exceeds the time remaining in the Term, the Contractor will, notwithstanding any other provision of these Maintenance Specifications, perform the work prior to the end of the Term.

F. REFERENCED MANUALS

Several manuals are referenced throughout these Maintenance Specifications and are required by the Contractor to perform the Maintenance Services. It is the Contractor's obligation to obtain and use these manuals, and any updated materials related to these manuals, according to their intended application and maintain them current throughout the term of the Maintenance Agreement.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-100

HIGHWAY PAVEMENT PATCHING AND CRACK SEALING

1. OBJECTIVE

To ensure Hard Surfaced Highway surfaces are smooth, stable, sealed, and to prevent moisture from penetrating the surface.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not applicable to this Specification:

- a) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) construct Temporary Patches to correct pavement deficiencies such as, but not limited to Pot-holes, Bleeding and/or Distortions; and
- b) ensure finished patches are consistent with the line, grade, and crossfall of the adjacent pavement.

3.1.1 Performance Time Frames

The Contractor must:

- a) from the time the deficiency was detected by or reported to the Contractor, complete repairs to each deficiency listed below, based on the Severity rating in the Pavement Surface Condition Rating Manual:

Pavement Deficiency	Severity	Summer Highway Classification				
		1 & 2	3	4	5	6 & 7
Pot-hole on Travelled Lane or inner Shoulder of curved Highway sections	high	24 h	2 d	3 d	7 d	14 d
Pot-hole on outside Shoulder of curved Highway sections and tangents	high	3 d	7 d	10 d	21 d	45 d
Pot-hole on right edge of divided Highway in the direction of travel	high	24 h	2 d	3 d	7 d	14 d
Pot-hole on left edge of divided Highway in the direction of travel	high	3 d	7 d	10 d	21 d	45 d
Bleeding on Travelled Lane, or inside Shoulder of curved Highway sections	high	24 h	2 d	3 d	7 d	14 d
Distortions presenting a safety hazard	high	24 h	2 d	3 d	7 d	14 d

Legend: h – hours, d – days

3.2 Quantified Maintenance Services

The Contractor must:

- a) ensure the root cause of the failure is determined and reasonable attempts are made to deal with the failure before commencing repairs;
- b) construct Permanent patches on Hard Surfaced Highways and bicycle and/or pedestrian paths;
- c) ensure finished patches are smooth, stable, sealed and consistent with the line, grade and crossfall of the adjacent hard surface;
- d) ensure the edges of the patch that tie in elevation to existing hard surfaces are feathered to an angle of no less than 30 degrees from a line perpendicular to the centreline;
- e) ensure Shoulders are built up and compacted to match the hard surface elevation and are consistent with the line, grade, and crossfall of the adjacent Shoulders;
- f) ensure Overlay Patches are constructed to a depth of 50 mm;
- g) ensure replacement patches are constructed to a depth equal to that of the distressed surface but never less than 60 mm;
- h) perform Crack Sealing on cracks that are less than 25 mm in width;
- i) perform Crack Filling on cracks that are greater than 25 mm in width; and
- j) remove the residual blinding sand after performing Crack Sealing.

3.2.1 Performance Time Frames

The Contractor must:

- a) from the time the deficiency was detected by or reported to the Contractor and weather conditions are conducive to performing the work, complete repairs to each deficiency listed below, based on the Severity and Density rating in the Pavement Surface Condition Rating Manual:

Pavement Deficiency	Severity	Density	Summer Highway Classification				
			1 & 2	3	4	5	6
Shoving	high	frequent	21 d	21 d	21 d	21 d	1 m
Distortion	high	frequent	21 d	21 d	1 m	3 m	6 m
Alligatored areas without Distortion	moderate	frequent	21 d	1 m	3 m	6 m	1 y
Alligatored areas with Distortion, broken or missing materials	high	frequent	21 d	21 d	1 m	3 m	6 m
Pot-holes	moderate to high	throughout	21 d	21 d	1 m	3 m	6 m
Bleeding	moderate	frequent	21 d	21 d	1 m	3 m	6 m
Ravelling	high	extensive	21 d	1 m	3 m	6 m	1 y
Rutting	moderate	extensive	21 d	21 d	1 m	3 m	6 m
All longitudinal cracking	moderate	frequent	1 y	1 y	1 y	1 y	1 y
Pavement edge cracking	moderate	frequent	1 y	1 y	1 y	1 y	1 y
Transverse Cracking	moderate	any	1 y	1 y	1 y	1 y	1 y

Legend: d – days, m – months, y - years

Note: For the purposes of calculating Density in the above table, the length of the section to be rated will be 20 meters and will start at the beginning of the deficiency and continue in the direction of the traffic flow.

- b) remove residual blinding sand within 1 day of completing the Crack Sealing; and
- c) complete patching on bicycle and/ or pedestrian in accordance with the timeframes for the adjacent or nearest Highway.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must, when constructing Permanent patches meet the requirements in section 502 of the Standard Specifications for Highway Construction for:

- a) density, aggregate gradation, asphalt content and segregation; and
- b) for smoothness when patches are greater than 1 lane km in length;

unless otherwise approved in writing by the Province.

The Contractor must, when performing Crack Sealing and Crack Filling, use materials and procedures in accordance with the Standard Specifications for Highway Construction and the most recent version of the Recognized Products List, or as approved in writing by the Province.

4.2 Warranty

Permanent patches are warranted in accordance with the Introduction, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-110

HIGHWAY SURFACE AGGREGATE SEALCOATING

1. OBJECTIVE

To extend the life of the Highway.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements
- c) Warranty requirements

2.2 Not applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) ensure the surface is smooth, stable, compacted, crowned and Superelevated; and/or free of loose aggregates and/or Debris;
- b) ensure the sealed surface is uniformly textured, impervious to moisture, skid-resistant and has good riding quality; and
- c) remove residual aggregate used in sealcoating operations.

3.1.1 Performance Time Frames

- a) perform sealcoating within 2 days of having prepared the surface, or as weather conditions dictate; and
- b) remove residual aggregate used in sealcoating operations immediately once the asphalt emulsion has cured, and again within 7 days of completion.

4. MATERIALS PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must:

- a) meet the requirements in section 508 of the Standard Specifications for Highway Construction; and
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practice and approved in writing by the Province.

4.2 Warranty

Highway surface treatments are warrantied in accordance with the Introduction, paragraph D.

B.C. MINISTRY OF TRANSPORTATION& INFRASTRUCTURE

Maintenance Specification Chapter 1-130

HIGHWAY AND SHOULDER GRADING AND RE-SHAPING

1. OBJECTIVE

To maintain Dirt and Gravel Highways and Shoulders in a safe, smooth, stable condition and to promote efficient drainage.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services

2.2 Not applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) perform Re-shaping on Dirt and Gravel Highways and ensure:
 - i) the surface is smooth, stable and compacted;
 - ii) the surface has a Superelevation and a Crown with a vertical rise of 4 centimeters for every 1 meter of Highway or as approved by the Province; and
 - iii) lost materials are retrieved from the Shoulder side slopes.
- b) perform surface Grading on Dirt and Gravel Highways and ensure the surface is smooth and stable;
- c) perform surface Grading on Shoulders and ensure the surface is smooth, stable and compacted;
- d) perform Grading in areas where there is a Median, Roadside barrier or curbing between the pavement and the gravel Shoulder top, unless otherwise directed by the Province;
- e) remove vegetation from the Shoulder tops, except at locations where vegetation is not harmful, or where it is effective and necessary to prevent erosion and to stabilize the Shoulders; and
- f) dispose of waste vegetation and related materials in accordance with provincial legislation and regulations and in accordance with the terms and conditions of Local Area Specification #9 (Control of Invasive Plants) and the Gravel License in Schedule 10; and at locations approved by the Province.

Note: The Contractor must not undertake Grading where owners of property adjacent to Highways maintain a lawn up to the edge of the pavement provided the lawn does not impede the drainage of the Highway surface.

3.1.1 Performance Time Frames

The Contractor must:

- a) from the time the deficiency was detected by or reported to the Contractor, complete the repair of the following deficiencies:

Gravel Highway Surface Deficiencies	Summer Highway Classification			
	3 & 4	5	6	7
i) Pot-hole (average more than 1 per 25 metres of road), Rutting, Ponding and Wash-boarding (exceeding 30 mm depth)	2 d	3 d	6 d	15 d
ii) loss of aggregates (needs reclaimed material)	4 d	5 d	15 d	30 d
iii) 1) lack of uniform Shoulder edge 2) loose material (exceeding 50 mm depth)	5 d	15 d	1 m	2 m

Legend: d – days, m – months

- b) from the time the deficiency was detected by or reported to the Contractor, complete the repair of the following deficiencies:

Shoulder Surface Deficiency	Summer Highway Classification				
	1&2	3	4	5	6&7
i) pavement edge drop-off 5 cm or more in depth on the inside edge of curving Highways	24 h	24 h	3 d	7 d	14 d
ii) pavement edge drop-off 5 cm or more in depth other than a) above	3 d	3 d	6 d	14 d	14 d
iii) settled and eroded sections more than 5 cm in depth presenting a potential safety hazard	3 d	3 d	6 d	14 d	14 d
iv) loose or soft Shoulders presenting a potential safety hazard	3 d	3 d	6 d	14 d	14 d
v) loss of line, grade, and crossfall presenting a potential safety hazard	3 d	3 d	6 d	14 d	14 d
vi) removal of vegetation presenting a potential safety hazard	3 d	3 d	6 d	14 d	14 d
vii) loss of line, grade and crossfall not presenting a potential safety hazard but requiring gravelling	3 m	3 m	9 m	1 y	1 y
viii) removal of turf, sod and other vegetation	6 m	6 m	6 m	1 y	1 y
ix) prevent vegetation growth	1 y	1 y	---	---	---

Legend: h – hours, d – days, m – months, y – years

4. MATERIALS PROCEDURES AND WARRANTY

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-140

DUST CONTROL AND BASE STABILIZATION

1. OBJECTIVE

To maintain Dirt and Gravel Highway surfaces in a stable condition with minimal dust to facilitate the safe and efficient movement of traffic and to minimize the impact on adjacent properties and watercourses.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements
- c) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) carry out base stabilization on a smooth, stable, compacted, crowned and Superelevated surface;
- b) treat the entire surface, except for one metre on each side;
- c) maintain Dirt and Gravel Highway surfaces in a stable condition with minimal dust by applying a dust palliative product for widths, distances and at locations established in the following table:

		Summer Highway Classification		
i) Width		3 & 4	5	6
	minimum application width (total)	4.5 metres	3.5 metres	3.5 metres
ii) Location for Control		3 & 4	5	6
(A)	residences, commercial businesses, community halls, hospitals and churches	a strip not less than 100 metres long, 50 metres each side of a point perpendicular to a building within 100 metres of the Travelled Lane	a strip not less than 100 metres long, 50 metres each side of a point perpendicular to a building within 75 metres of the Travelled Lane	a strip not less than 100 metres long, 50 metres each side of a point perpendicular to a building within 50 metres of the Travelled Lane
(B)	school zone Sign, playground Sign, stop Sign, Railway Crossing Sign and Bridge approaches Sign	strip 60 metres along the Highway(s) in all directions of the Sign	strip 60 metres along the Highway(s) in all directions of the Sign	strip 60 metres along the Highway(s) in all directions of the Sign
(C)	school zones, school bus pullouts, playgrounds, Rest Areas, lay-bys, stops of interest and cemeteries	strip through identified area and extending 40 metres either side	strip through identified area and extending 40 metres either side	strip through identified area and extending 40 metres either side
(D)	Bridge approaches and cattleguards	strip extending 30 metres in every direction of the Bridge approach	strip extending 30 metres in every direction of the Bridge approach	strip extending 30 metres in every direction of the Bridge approach
(E)	orchards (more than 10 trees) and vineyards within 50 metres of the Highway	strip extending 20 metres either side of the adjacent Highway frontage	strip extending 20 metres either side of the adjacent Highway frontage	strip extending 20 metres either side of the adjacent Highway frontage
(F)	Highways with 40 or more commercial and industrial-type vehicles per day with 3 or more axles	entire Travelled Lanes	curves and alongside lakes and rivers	curves and alongside lakes and rivers
(G)	other dust sites designated by the Province	continuous application for entire length of dust site	continuous application for entire length of dust site	continuous application for entire length of dust site

- Notes:
- 1) Each of the locations identified in the above table is considered a dust site.
 - 2) Use continuous application if 8 or more dust sites per kilometre.
 - 3) Where there is doubt as to locations requiring dust control, the Province will make the final determination.
 - 4) Dust control must be applied at locations on Class 7 Highways as directed by the Province.

3.1.1 Performance Time Frames

The Contractor must start dust control applications within 5 days from the time the dust problem was detected by or reported to the Contractor.

4. MATERIALS PROCEDURES AND WARRANTY

4.1 Materials and Procedures:

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

4.2 Warranty

All base stabilization is warranted in accordance with the Introduction, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-150

HIGHWAY SURFACE AND SHOULDER GRAVELLING

1. OBJECTIVE

To provide a uniform, smooth, gravel surface to facilitate the safe and efficient movement of Highway Users and to strengthen Dirt and Gravel Highways and Shoulders.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) ensure surface is smooth, stable, compacted, crowned and Superelevated before applying gravel;
- b) apply gravel to Dirt and Gravel Highways to correct deficiencies such as Pot-holes, softening, loss of traction; and ensure surfaces remain smooth, stable and compacted; and the crown and Superelevation of the Highway have been restored;
- c) apply gravel to Shoulders to correct deficiencies such as softening, loss of line, grade and crossfall, or to widen or reconstruct Shoulders; and ensure surfaces remain smooth, free-draining, stable and consistent in width, line, grade and crossfall;

Note: The Contractor must provide the Province with information necessary to support the volume of aggregate hauled.

3.1.1 Performance Time Frames

The Contractor must:

- a) from the time the deficiency was detected by or reported to the Contractor, start addressing Dirt and Gravel Highway deficiencies as follows:

Highway Surface Deficiency	Summer Highway Classification				
	3	4	5	6	7
deficiencies causing a safety hazard	2 d	2 d	3 d	6 d	15 d

- b) apply gravel to correct all Dirt and Gravel Highway deficiencies within 2 days of having prepared the surface, or as weather conditions dictate;
- c) from the time the deficiency was detected by or reported to the Contractor, apply gravel to correct the following Shoulder deficiencies:

Shoulder Surface Deficiency	Summer Highway Classification				
	1 & 2	3	4	5	6 & 7
i) loose or soft Shoulders	14 d	30 d	45 d	3 m	6 m
ii) loss of line, grade, and crossfall	3 m	6 m	9 m	1 y	1 y

Legend: h- hours, d – days, m – months, y - years

4. MATERIALS PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use:

- a) materials and procedures in accordance with the Standard Specification for Highway Construction; or
- b) materials and procedures as approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

ROAD BASE MAINTENANCE

1. OBJECTIVE

To provide a smooth, stable, compacted, crowned, Super-elevated and free draining Road Base for Highways.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements
- c) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) identify and correct the source of the failure;
- b) remove unsuitable materials, provide for free drainage and complete Backfill with suitable materials; and
- c) ensure the Road Base is smooth, stable, compacted, crowned, Super-elevated and free draining.

3.1.1 Performance Time Frames

Not applicable to this Specification.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must:

- a) use materials and procedures in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) use materials and procedures as approved in writing by the Province.

4.2 Warranty

Road Base repairs are warrantied in accordance with the Introduction, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-180

SURFACE CLEANING

1. OBJECTIVE

To provide safe, clean surface conditions and to facilitate drainage.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Materials and procedures requirements
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) clean Hard Surfaced Highways by sweeping accumulations of dirt, Debris and/or Winter Abrasive from the:
 - i) Travelled Lanes;
 - ii) pavement markings;
 - iii) Shoulders;
 - iv) bicycle paths and pedestrian walkways;
 - v) intersections;
 - vi) on and along curbs and traffic islands, and
 - vii) along Roadside and Median barriers.

3.1.1 Performance Time Frames

The Contractor must:

- a) complete the cleaning of Travelled Lanes, pavement markings, Shoulders, bicycle paths and pedestrian walkways and intersections each year in advance of the repainting of pavement markings; the Province will provide to the Contractor a general painting schedule in the spring of each year and a detailed schedule at least one week in advance of the planned painting activities for specific Highways;
- b) notwithstanding 3.1.1 a), complete cleaning of Travelled Lanes, pavement markings, Shoulders, bicycle paths and pedestrian walkways and intersections on Hard Surfaced Highways by May 15th of each year, unless otherwise agreed to in writing by the Province;
- c) complete the cleaning on and along curbs and traffic islands and along Roadside and Median barriers by June 21st of each year;
- d) notwithstanding 3.1.1 a) b) and c) above, within 7 days from the time the accumulation was detected by or reported to the Contractor, clean Hard Surfaced Highways where dirt and/or Debris have accumulated and:
 - i) obscure line visibility; or
 - ii) create a visibility problem for Highway Users; or
 - iii) create an air quality problem that conflicts with local by-laws;

- e) notwithstanding 3.1.1 a) b) c) and d) the above, immediately clean Hard Surfaced Highways where:
 - i) Debris or Winter Abrasive has accumulated adjacent to curbing or barriers which impairs the free flow of drainage paths; or
 - ii) Debris or Winter Abrasive poses a hazard to Highway Users.

3.2 Quantified Maintenance Services

The Contractor must perform surface cleaning over and above the frequencies stated in 3.1.1, when requested by the Province.

3.2.1 Performance Time Frames

Not applicable to this Specification.

4. MATERIALS PROCEDURES AND WARRANTY

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-190

DEBRIS REMOVAL

1. OBJECTIVE

To make sure Highways are cleared of Debris.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) remove Debris from the Highway;
- b) if the Debris is too large for immediate removal, secure the area;
- c) clean and remove Debris from Bridge surfaces where free drainage of the surface is impaired or cause moisture retention
- d) dispose of Debris in a manner acceptable to local regulatory agencies and at locations approved by the Province.

3.1.1 Performance Time Frames

The Contractor must:

- a) from the time the Debris was detected by or reported to the Contractor, start removing Debris in accordance with the following:

Obstruction	Summer Highway Classification				
	1&2	3	4	5	6&7
a) Debris over 1000 cc on the Travelled Lanes and sidewalks	60 min	60 min	3 h	5 h	24 h
b) Debris equal to or less than 1000 cc on the Travelled Lanes and sidewalks	60 min	3 h	5 h	24 h	2 d
c) dead animals on the Travelled Lanes, Shoulders and sidewalks	60 min	3 h	5 h	24 h	2 d
d) dead animals on the Right-of-way, excluding Travelled Lanes, Shoulders and sidewalks	3 h	5 h	24 h	2 d	3 d
e) Debris more than 1000 cc on the Shoulders	5 h	24 h	2 d	3 d	7 d
f) Debris equal to or less than 1000 cc on the Shoulders	24 h	2 d	3 d	7 d	14 d

Legend: min – minutes, h – hours, d – days

- b) clean and remove Debris from Bridge surfaces where free drainage of the surface is impaired or cause moisture retention within 14 days from the time the deficiency was detected by or reported to the Contractor.

4. **MATERIALS, PROCEDURES AND WARRANTY**

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-200

CATTLEGUARD MAINTENANCE

1. OBJECTIVE

To provide a safe operating environment for Highway Users; and to maximize the functional life of cattleguards.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) repair, clean and restore to a fully functional condition cattleguards and gates that have been damaged or have deteriorated to a state that is unsafe or has the potential to become unsafe for Highway Users;
- b) remove dirt, Debris and vegetation from cattleguards to a minimum depth of 45 cm measured from the top of the cattleguards;

3.1.1 Performance Time Frames

The Contractor must, from the time the deficiency was detected by or reported to the Contractor, repair of the following deficiencies as follows:

Maintenance Requirement	Summer Highway Classification				
	1 & 2	3	4	5	6 & 7
i) broken, bent or damaged cattleguards	24 h	2 d	3 d	5 d	10 d
ii) mismatched grades on cattleguard crossings	24 h	2 d	3 d	5 d	10 d
iii) cleaning of cattlegurds	15 d	15 d	30 d	30 d	30 d

Legend: h – hours, d – days, m – months

3.2 Quantified Maintenance Services

The Contractor must replace and/or install new cattleguards.

3.2.1 Performance Time Frames

The Contractor must, from the time requested by the Province, replace and/or install new cattleguards as follows:

Maintenance Requirement	Summer Highway Classification				
	1 & 2	3	4	5	6 & 7
i) replace and/or install new cattleguards	15 d	15 d	30 d	30 d	30 d

Legend: h – hours, d – days, m – months

4. MATERIALS PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-220

CURB, ISLAND, BARRIER AND SAFETY DEVICE MAINTENANCE

1. OBJECTIVE

To maintain curbs, islands, barriers and Safety Devices so that they are clean, highly visible, free of Debris obstructing drainage and properly connected and positioned.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) maintain and repair all curbs, traffic islands, Roadside and Median barriers and Safety Devices;
- b) remove drainage obstructions;
- c) re-align barriers as required to ensure safety of the Highway Users; and
- d) maintain painted surfaces on curbs, traffic islands, Roadside and Median barriers and Safety Devices;

3.1.1 Performance Time Frames

The Contractor must:

- a) start repair of concrete barriers with damage of less than 900 square centimetres of surface area within 3 days from the time the deficiency was detected by or reported to the Contractor;
- b) undertake maintenance of areas chipped or scarred by snowplows, other equipment or vandalism within 90 days from the time the deficiency was detected by or reported to the Contractor;
- c) repair or replace all wood and steel components if posts are rotted, broken, settled or damaged and/or if steel guardrail is bent, rusted or damaged, within 6 months from the time the deficiency was detected by or reported to the Contractor;
- d) restore a smooth, stable condition to broken or Pot-holed traffic island surfaces within 15 days from the time the deficiency was detected by or reported to the Contractor;
- e) clean all drainage holes once annually to ensure the free passage of water;
- f) notwithstanding 3.1.1 b) above:
 - i) when a blockage is causing Ponding in the Travelled Lanes, clean affected drainage holes of Debris within 12 hours from the time the deficiency was detected by or reported to the Contractor;
 - ii) when a blockage is causing a situation that is unsafe or has the potential to become unsafe to the Highway User, clean affected drainage holes of Debris immediately;

- g) complete the realignment of curbs, islands and barriers as required to restore the designed alignment within 3 days from the time the deficiency was detected by or reported to the Contractor;
- h) treat or paint all wood components every 2 years;
- i) notwithstanding 3.1.1 h), treat or paint wood components where wood is exposed or paint is cracked within 9 months from the time the deficiency was detected by or reported to the Contractor; and
- j) repaint all previously painted non-wood components once each year or, with prior written approval of the Province, initiate a planned program to eradicate paint on these components as they deteriorate.

3.2 Quantified Maintenance Services

The Contractor must:

- a) construct new asphalt and/or concrete curb as directed by the Province;
- b) install new barriers at locations as directed by the Province;
- c) replace all curbs, traffic islands, Roadside and Median barriers, spillways, and Safety Devices that fail to function as originally designed; and
- d) replace concrete barriers with damage in excess of 900 square centimetres or where there is structural damage including cracking and/or breakage.

3.2.1 Performance Time Frames

The Contractor must:

- a) repair or replace cracked or broken curbs within 15 days from the time the deficiency was detected by or reported to the Contractor, or from the time directed by the Province;
- b) replace damaged, destroyed and missing impact attenuators, supports or fasteners within a 3 days from the time the deficiency was detected by or reported to the Contractor;
- c) replace damaged, destroyed and missing Safety Devices other than impact attenuators within 7 days from the time the deficiency was detected by or reported to the Contractor;

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

Notes:

- (1) The Contractor must use materials of the same type and quality as the existing installation.
- (2) Epoxy repair products must be approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 1-230

RAILWAY CROSSING MAINTENANCE

1. OBJECTIVE

To keep vehicular crossings of railway tracks in a smooth, safe condition for Highway Users.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Warranty requirements

The Contractor is responsible for the maintenance of the Railway Crossings and Approaches. The Contractor is not responsible for signal maintenance.

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) advise the Railway Authority immediately, from the time any deficiency was detected by or reported to the Contractor and respond immediately to safeguard Highway Users and railway traffic;
- b) repair/re-set Railway Crossings when:
 - i) the difference in elevation between the rail and the adjacent Highway surface is 25 mm or greater and requires re-setting the surface to matching grade; or
 - ii) when a crossing component is loose or presents a condition that is unsafe for either Highway Users or rail traffic.
 - iii) water or Debris accumulates at the Railway Crossing;
- c) maintain Railway Crossing Approaches in accordance with the following:
 - i) when maintenance work is required within three (3) meters of a rail, obtain a permit from the Railway Authority and make a copy of the permit available at the work site and at the local Ministry district office upon commencement of the work; and
 - ii) when maintenance work is required within ten (10) meters of a rail, inform the Railway Authority, arrange for a mutually agreeable work schedule, and ascertain the level of protection the Railway Authority considers necessary;
- d) where applicable, ensure the wear limits on public sidewalks, paths or trails designated for use by persons using assistive devices are in accordance with the following:
 - i) maximum distance of the top of the rail above crossing surface is 13 mm;
 - ii) maximum distance of the top of the rail below crossing surface is 7 mm.

3.1.1 Performance Time Frames

The following table establishes the time, from the time the deficiency was detected by or reported to the Contractor, within which the Contractor must complete the repair of the following deficiencies:

Railway Crossing Deficiency	Summer Highway Classification				
	1&2	3	4	5	6&7
a) repair of broken, loose or damaged Railway Crossings	24 h	2 d	3 d	5 d	10 d
b) repair of mismatched grades on Railway Crossing	24 h	2 d	3 d	5 d	10 d
c) removal of water and/or Debris accumulation	24 h	2 d	3 d	5 d	10 d

Legend: h – hours, d – days

Note: The Contractor must seek approval of the Railway Authority so that repairs are completed within the time frames listed above. If the Railway Authority does not permit this scheduling, the Contractor must reschedule the repairs in accordance with the Railway Authority's requirements.

3.1.2 Routine Maintenance Services Cap

If the Contractor estimates that, at any particular site, the cost to maintain and/or repair a Railway Crossing, or if the Railway Authority's invoice for maintenance and/or repair of a Railway Crossing exceeds \$100,000 (the Routine Maintenance Services Cap), the Contractor must notify the Province. The provisions of Article A of the Introduction will apply.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials and procedures in accordance with Transport Canada's Grade Crossings Standards.

The Contractor must provide all materials of at least equal quality to the materials that exist at the Railway Crossing and of a quality acceptable to the Railway Authority.

4.2 Warranty

Not applicable to this Specification.

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B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 2-250

DITCH MAINTENANCE

1. OBJECTIVE

To provide safe, unobstructed drainage for all Highways.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Materials and procedures requirements
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must remove Debris from ditches where earth moving equipment is not required.

3.1.1 Performance Time Frames

The Contractor must, from the time the deficiency was detected by or reported to the Contractor, complete the removal of Debris as follows:

Time Period	Summer Highway Classification				
	1&2	3	4	5	6&7
during high water flow	60 min	90 min	2 h	3 h	4 h
at other times	2 m	3 m	4 m	6 m	6 m

Legend: min – minutes, h – hours, d – days, m – months

3.2 Quantified Maintenance Services

The Contractor must:

- a) remove Debris from ditches;
- b) construct new or reconstruct ditches;
- c) remove obstructions preventing the free flow of water, including obstructions which may be a considerable distance upstream from the Highway, adjacent to the Highway or immediately downstream;
- d) restore the capacity and/or correct the cross section and grade of the ditch;
- e) repair damage to embankments and stabilize Backslopes as required;
- f) restore ditch elevations to the sub-base elevations for free drainage of the Highway;
- g) widen and deepen ditches at culvert entrance locations, other Drainage Appliance or structure locations, to provide a collection area and prevent the culvert or other Drainage Appliance or structure from becoming obstructed;
- h) clean Off-takes and drainage easements for efficient drainage of the Right-of-way;
- i) make sure that Shoulder width is not reduced;
- j) make sure the Shoulder or Backslope are not undermined; and
- k) dispose of waste material from ditching operations in accordance with provincial legislation and regulations and in accordance with the terms and conditions of Local Area Specification #9 (Control of Invasive Plants) and the Gravel License in Schedule 10; and at locations approved by the Province..

- Notes:
- 1) The Contractor is not required to establish new ditches in solid rock under this Maintenance Specification.
 - 2) The Contractor will not get credit from the Quantified Plan under this Maintenance Specification for removing snow and ice from ditches.

3.2.1 Performance Time Frames

The Contractor must, from the time the deficiency was detected by or reported to the Contractor, complete Ditch Maintenance as follows:

Time Period	Summer Highway Classification				
	1&2	3	4	5	6&7
during high water flow	60 min	90 min	2 h	3 h	4 h
at other times	2 m	3 m	4 m	6 m	6 m

Legend: min – minutes, h – hours, m – months

4. MATERIALS, PROCEDURES AND WARRANTY

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 2-260

DRAINAGE APPLIANCE MAINTENANCE

1. OBJECTIVE

To ensure that Highway surfaces are safe and efficiently drained; water is efficiently channelled, contained and/or carried to ditches and watercourses; to prevent any erosion of Highways; and to make sure that drainage appliances will accommodate peak runoff.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) remove Debris, Winter Abrasive, sedimentation and any other obstructions affecting flow from Drainage Appliances;
- b) maintain all Drainage Appliances, Trash Racks and related hardware in working condition;
- c) repair any worn, bent, broken, folded, disconnected, unravelled or damaged Drainage Appliances.

3.1.1 Performance Time Frames

The Contractor must:

- a) from the time the deficiency was detected by or reported to the Contractor, start the removal of obstructions and repair to Drainage Appliances as follows:

	Summer Highway Classification				
	1&2	3	4	5	6&7
during high water flow	2 h	4 h	8 h	16 h	32 h
at other times	3 m	4 m	6 m	6 m	6 m

Legend: h – hours, m - months

- b) notwithstanding 3.1.1 a), remove any obstruction or repair a damaged Drainage Appliance having a reduction in water flow capacity of 50 percent or more, or where there is a history of drainage problems, within seven days from the time the deficiency was detected by or reported to the Contractor.

3.2 Quantified Maintenance Services

The Contractor must:

- a) replace any missing Drainage Appliances and/or any worn, bent, broken, or damaged Drainage Appliances including related parts, if repair is not practicable;
- b) re-set or replace Drainage Appliances when correcting the Ditch profile;
- c) install culvert inserts when appropriate;
- d) replace Trash Racks if repair is not practicable;
- e) install new Drainage Appliances at new locations; and
- f) place Rip-rap to fill Scour and erosion of foundation material and to prevent future erosion at the inlet and/or outlet of the Drainage Appliance as approved in writing by the Province.

3.2.1 Performance Time Frames

The Contractor must:

- a) from the time the deficiency was detected by or reported to the Contractor, start to replace Drainage Appliances as follows:

	Summer Highway Classification				
	1&2	3	4	5	6&7
during high water flow	2 h	4 h	8 h	16 h	32 h
at other times	3 m	4 m	6 m	6 m	6 m

Legend: h – hours, m - months

- b) notwithstanding the 3.2.1 a), the Contractor must replace a damaged Drainage Appliance having a reduction in water flow capacity of 50 percent or more, or where there is a history of drainage problems, within seven days from the time the deficiency was detected by or reported to the Contractor.

4. MATERIALS PROCEDURES AND WARRANTY

4.1 Materials and Procedures

Unless directed by the Province, the Contractor must use:

- a) materials and procedures: in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) materials and procedures as approved in writing by the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practice and approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 2-270

SHORE, BANK AND WATERCOURSE MAINTENANCE

1. OBJECTIVE

To prevent damage to Highways and Structures.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) remove all obstructions including obstructions which may be a considerable distance upstream from the Highway, adjacent to the Highway or immediately downstream that threaten to potentially damage Highways or Structures; and
- b) remove leaning trees threatening drainage.

3.1.1 Performance Time Frames

The Contractor must:

- a) remove obstructions immediately; and
- b) remove leaning trees immediately.

3.2 Quantified Maintenance Services

The Contractor must:

- a) prepare areas to receive Rip-rap;
- b) place Rip-rap of (class) 50 kg or greater and sufficient to withstand a water flow where there has been or there is potential for scour and erosion of natural or man-made shores and banks; and
- c) provide for adequate catchment areas for future material containment.

3.2.1 Performance Time Frames

The Contractor must:

- a) prepare areas to receive Rip-rap and place Rip-rap required for locations identified in Section 3.2 a) within 2 hours from the time the deficiency was detected by or reported to the Contractor, and after determining that it is safe to proceed with the work; and
- b) complete maintenance repairs to shores, banks and watercourses within 5 days of the elimination of the obstruction.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

4.2 Warranty

Shore, Bank and Watercourse Maintenance Services are warrantied in accordance with the Introduction, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 3-300

HIGHWAY ANTI-ICING AND SNOW REMOVAL

1. OBJECTIVE

To anticipate and remove Winter Accumulation from Highways for the safety of Highway Users and to facilitate the efficient movement of traffic.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services

2.2 Not applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty Requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) proactively and continuously monitor Highway surface temperatures and conditions by use of the Contractor's own patrols and observations, utilizing RWIS Information (as described in Schedule 15 of the Maintenance Agreement) and by reviewing and monitoring weather forecasts;
- b) acquire and utilize Road Temperature and Condition (RTC) forecasts to determine if a Weather Event is likely to develop that would create Slippery surface conditions;
- c) utilize other available methodologies and technologies such as but not limited to thermal mapping, in conjunction with RTC forecasts, to better identify locations and areas that may develop Slippery surface conditions as a result of a Weather Event;
- d) increase the frequency of the activities in subsections 3.1(a), (b) and (c) as the information gathered by or otherwise available to the Contractor indicates that a Weather Event is forecasted;
- e) anticipate local Highway conditions from the information gathered by or otherwise available to the Contractor pursuant to subsections 3.1(a), (b) and (c) and mobilize and deploy resources according to the forecast of impending Weather Event conditions in order to minimize the development of Slippery surface conditions in accordance with the performance time frame requirements in this Specification;
- f) remove and continuously undertake the removal of Winter Accumulation on Highways and at the full width of the Travelled Lane in accordance with the Winter Accumulation trigger in Section 3.2(b) and the performance time frames with sufficient resources at initial deployment to accomplish same as follows:
 - i. remove Winter Accumulation from super-elevated curves and other locations where the Shoulder edge is higher than the Travelled Lane so that snowmelt does not drain onto or across the Travelled Lane.;
 - ii. plow Overpasses and interchanges without throwing snow onto underlying Highways or railways;
 - iii. remove Winter Accumulation from Rest Areas, pull-outs and parking areas at one Class lower than the adjacent Highway, to an initial minimum of 2.5 metre pass width;
 - iv. remove Winter Accumulation from brake check areas, chain up/off areas and inspection stations (to an initial minimum of 5.5 metre pass width for inspection stations) at the same Class as the adjacent Highway, and;
 - v. remove Winter Accumulation from other areas designated by the Province in writing by Notice to the Contractor at the same Class as the adjacent Highway.

3.2 Performance Time Frames

The Contractor must:

- a) in advance of a forecasted or anticipated Weather Event, mobilize and deploy resources to apply Winter Abrasives and/or Anti-Slicing materials to minimize the development of Slippery surface conditions and prevent snow or ice bonding to the road surface;
- b) ready sufficient resources in advance of a forecasted Weather Event, and commence removal of Winter Accumulation once the Winter Accumulation trigger is reached which is defined as follows:
 - i. a 4mm water equivalent precipitation mixed snow-rain measured at the nearest RWIS station (as described in Schedule 15 of the Maintenance Agreement); or
 - ii. 3cm of Winter Accumulation on the Highway surface.
- c) continuously remove Winter Accumulation at the full width of the Travelled Lanes from the time of the Winter Accumulation trigger in Section 3.2(b), ensuring that Winter Accumulations remain below the Maximum Allowable Accumulations shown in Table 300A below:

Table 300A. Maximum Allowable Winter Accumulation	Highway Classification				
	A	B	C	D	E
One Travelled Lane Each Direction	4.0cm	6.0cm	10.0cm	15.0cm	25.0cm
Second Travelled Lane	8.0cm	10.0cm	n/a	n/a	n/a
All Other Lanes	12.0cm	16.0cm	20.0cm	n/a	n/a

- d) notwithstanding subsection 3.2 (c), plowing of slush and removal of broken Compact snow from the Travelled Lanes must be completed within the timeframes shown in Table 300B below:

Table 300B. Maximum Timeframe to Remove slush and broken Compact	Highway Classification				
	A	B	C Paved	C Unpaved & D	E
All Travelled Lanes	90 min	2 h	6 h	n/a	n/a

- e) after the Weather Event, complete removal of Winter Accumulation as per the requirements in Table 300C below:

Table 300C. Road Surface Condition and Timeframes after the Weather Event ends	Highway Classification					
	A	B	C Paved*	C Unpaved	D	E
i) Road surface condition	Warmer than -9°C: bare pavement Colder than -9°C: bare or Compact	Warmer than -9°C: bare pavement Colder than -9°C: bare or Compact	Warmer than -9°C: bare pavement Colder than -9°C: bare or Compact	Compact	Compact	Compact
ii) Time to achieve conditions stated in Table 300C (i)	24 h	36 h	48 h	48 h	72 h	7 d

* Excludes sealcoated gravel roads

- f) after the Weather Event, remove Winter Accumulation from paved Shoulders, including pushing snow and ice beyond the paved Shoulder edge or, where guardrail prevents the complete removal of the snow to the shoulder edge, dealing with any resulting condition that is unsafe or has the potential to be unsafe and remove Winter Accumulation from the balance of all remaining Winter Accumulation at Rest Areas, pullouts parking areas and inspection stations after the initial removal per Sections 3.1(f)(iii) and 3.1(f)(iv), no later than the times specified in Table 300D:

Table 300D. Maximum Timeframe to remove Winter Accumulation for Paved Shoulders	Highway Classification				
	A	B	C	D	E
i) Paved Shoulders	4 days	6 days	10 days	24 days	n/a

- g) when detected by or reported to the Contractor, manage the condition of Compact and complete repairs within the following timeframes specified in Table 300E:

Table 300E. Performance Timeframes to Manage Compact:	Highway Classification				
	A	B	C	D	E
i) Maintain thickness of the Compact surface no greater than 40 mm	48 h	48 h	48 h	48 h	n/a
ii) Pot-hole in Compact (averaging more than 1 per 25metres of road) exceeding 30 mm depth	24 h	24 h	48 h	7 d	n/a
iii) Rutting in Compact in excess of 25 mm	72 h	72 h	4 d	7 d	n/a
iv) Removal of Compact when temperature is -9°C and warming	24h	36h	48h	n/a	n/a

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must, when materials are required to meet the requirements of this specification:

- use De-Icing products and chemicals from the most recent version of the Recognized Products List; or
- use Anti-Icing, De-Icing or pre-wetting materials recognized on the Pacific Northwest Snowfighters (PNS) Qualified Products List; or
- as approved in writing by the Province;
- use materials in accordance with the maximum allowable particle size for Winter Abrasive and the mean Gradation limits when tested according to ASTM Designations C136 and C117, and as shown in Tables 300F and 300G below:

Table 300F Winter Abrasives Gradation	Winter Abrasives Type	
	Type A	Type B
(i) maximum particle size	9.5 mm	12.5 mm
(ii) metric screen size		
12.5 mm (1.2 inch)		100
9.5 mm (3/8 inch)	100	80-100
6.35 mm (1/4 inch)		
4.75 mm, #4 Sieve	50-95	50-95
2.36 mm, #8 Sieve	30-80	30-80
2 mm, #10 Sieve		
0-0.600 mm	10-50	10-50
0-0.420 mm, #40 Sieve		
0-0.300 mm	0-25	0-25
0-0.150 mm, #100 Sieve		
0-0.075 mm	0-6	0-6

Note: The figures shown in the above table represent the percent of material which passes through that particular screen size.

Table 300G Winter Abrasive Application per Highway Winter Classification	Winter Abrasives Type
Class A and B	Type A
Class C, D and E	Type A or B

4.2 Warranty

Not applicable to this specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 3-310

SNOW AND ICE BONDING PREVENTION AND CONTROL

1. OBJECTIVE

To facilitate the safe and efficient movement of traffic on Highways in winter conditions through the anticipation of Slippery Highway conditions and the use of chemical snow and ice control applications and Winter Abrasives applications, and to make sure that the Contractor utilizes and deploys those resources that are required to comply with this Specification, in a manner which anticipates and responds in advance of a Weather Event as defined in the Maintenance Specifications.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Materials and procedures requirements

2.2 Not applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Warranty Requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) proactively and continuously monitor Highway surface temperatures and conditions by use of the Contractor's own patrols and observations, utilizing RWIS Information (as described in Schedule 15 of the Maintenance Agreement) and by reviewing and monitoring weather forecasts;
- b) acquire and utilize Road Temperature and Condition (RTC) forecasts to determine if a Weather Event is likely to develop that would create Slippery surface conditions;
- c) utilize other available methodologies and technologies such as but not limited to thermal mapping, in conjunction with RTC forecasts, to better identify locations and areas that may develop Slippery surface conditions as a result of a Weather Event;
- d) increase the frequency of the activities in subsections 3.1(a), (b) and (c) as the information gathered by or otherwise available to the Contractor indicates that a Weather Event could occur;
- e) mobilize and deploy resources in advance of a forecasted Weather Event to pre-treat the Highway surface with Winter Chemicals or Winter Abrasive as appropriate for the location in order to minimize the development of Slippery surface conditions and to facilitate the removal of Winter Accumulation;
- f) utilize RWIS data and RTC forecasts or other alternative technologies when Anti-Icing to apply appropriate and sufficient chemical concentrations on the road surface to prevent re-freeze;
- g) utilize RWIS data and RTC forecasts or other alternative technologies to determine and apply an appropriate application of Winter Chemicals and/or Winter Abrasives to be used to minimize the development of Slippery surface conditions;
- h) utilize RWIS data and RTC forecasts or other alternative technologies when De-Icing to determine and apply appropriate application of Winter Chemicals to achieve the road surface condition stipulated in Table 300C.
- i) deploy resources to restore surface traction by applying Winter Chemicals and/or Winter Abrasive when a non-forecasted event occurs and Slippery conditions are detected by or reported to the Contractor;

3.2 Performance Time Frames

The Contractor must:

- a) in advance of a forecasted Weather Event mobilize and deploy resources to pre-treat the Highway surface with Winter Chemicals or Winter Abrasive as appropriate for the location in order to minimize the development of Slippery surface conditions and to facilitate the removal of Winter Accumulation;
- b) in advance of a Weather Event utilize RWIS data and RTC forecasts or other alternative technologies when Anti-Icing to determine and apply appropriate and sufficient chemical concentrations on the road surface to prevent re-freeze;
- c) during a Weather Event, utilize RWIS data and RTC forecasts or other alternative technologies to determine and apply appropriate application of winter chemicals and/or Winter Abrasives to be used to minimize the development of Slippery surface conditions;
- d) after a Weather Event, utilize RWIS data and RTC forecasts or other alternative technologies when De-Icing to determine and apply appropriate application of Winter Chemicals to achieve the road surface condition stipulated in Table 300C;
- e) immediately restore surface traction when Slippery conditions are encountered during patrol;
- f) restore traction within the response times, from the time the deficiency was detected by, or reported to the Contractor, as specified in Table 310A:

Table 310A. Response Time Frames for Restoring Traction	Highway Classification				
	A	B	C	D	E
i) At the following locations once the Weather Event commences: <ul style="list-style-type: none"> • hills greater than 5% • curves with posted or advisory speeds under 60 km per hour • curves on a hill • school zones • intersection • black ice prone locations • accident prone locations • bridge decks • shady areas • other areas as designated by the Minister 	60 min	90 min	2 h	4 h	n/a
ii) At all Other Locations	2 h	3 h	4 h	6 h	n/a

- g) during a freezing rain Weather Event, restore traction within the response times, from the time the deficiency was detected by, or reported to the Contractor, as specified in Table 310B:

Table 310B. Response Times for Restoring Traction	Highway Classification				
	A	B	C	D	E
i) Freezing Rain, all locations	2 h	3 h	5 h	6 h	n/a

- h) when polished Compact road conditions are encountered such that the Travelled Lanes are not able to effectively retain Winter Abrasive, modify the surface using ice blading or some other method so that the surface will retain Winter Abrasive and then apply Winter Abrasive within the response times specified in Table 310C:

Table 310C. Response Times for Restoring Traction on polished Compact:	Highway Classification				
	A	B	C	D	E
i) at all locations	24 h	24 h	48 h	5 d	n/a

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must, when materials are required to meet the requirements of this specification:

- a) use De-Icing products and chemicals from the most recent version of the Recognized Products List; or
- b) use Anti-Icing, De-Icing or pre-wetting materials recognized on the Pacific Northwest Snowfighters (PNS) Qualified Products List; or
- c) as approved in writing by the Province;
- d) use materials in accordance with the maximum allowable particle size for Winter Abrasive and the mean Gradation limits when tested according to ASTM Designations C136 and C117, and as shown in Tables 310D and 310E below:

Table 310D Winter Abrasives Gradation		Winter Abrasives Type	
		Type A	Type B
(i)	maximum particle size	9.5 mm	12.5 mm
(ii)	metric screen size		
	12.5 mm (1.2 inch)		100
	9.5 mm (3/8 inch)	100	80-100
	6.35 mm (1/4 inch)		
	4.75 mm, #4 Sieve	50-95	50-95
	2.36 mm, #8 Sieve	30-80	30-80
	2 mm, #10 Sieve		
	0-0.600 mm	10-50	10-50
	0-0.420 mm, #40 Sieve		
	0-0.300 mm	0-25	0-25
	0-0.150 mm, #100 Sieve		
	0-0.075 mm	0-6	0-6

Note: The figures shown in the above table represent the percent of material which passes through that particular screen size.

Table 310E Winter Abrasive Application per Highway Winter Classification	Winter Abrasives Type
Class A and B	Type A
Class C, D and E	Type A or B

4.2 Warranty

Not applicable to this specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 3-320

ROADSIDE SNOW AND ICE CONTROL

1. OBJECTIVE

Maintain the Roadside free of accumulated snow and ice that is unsafe for Highway Users and properties; or threatens the integrity of the Highway.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Materials and procedures requirements

2.2 Not applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Warranty Requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) Maintain ditches and Drainage Appliances to prevent the flooding of the roadway or Ancillary Facilities caused by snow and ice within ditches and Drainage Appliances;
- b) clear snow and ice accumulations from:
 - i) intersections;
 - ii) in front of roadside barriers;
 - iii) around median barriers;
 - iv) around traffic islands; and
 - v) around sign systems.
- c) clear snow and ice and restore traction on pedestrian facilities;
- d) remove sight distance obstructions due to snow and ice accumulations;
- e) remove snow and ice from overhead features, including rock faces, tunnel walls, pedestrian overpasses, bridges and Signs;
- f) remove snow and ice encroaching, overhanging or otherwise accumulating above the Travelled Lanes and Shoulder tops;
- g) remove snow and ice from Structures and dispose of in an appropriate location;
- h) remove snow and ice from pedestrian or wheel chair facilities at intersections, sidewalks, stairways and walkways on Highways, Pedestrian Overpasses and pedestrian tunnels;
- i) remove snow and ice from overhead structures, such as Bridges and pedestrian overpasses in a manner that will not endanger vehicles, pedestrians, property, railways or other facilities below and where snow removal is restricted;
- j) remove snow and ice "wedge" deposits in excess of 30 cm out from the curb or barrier towards the Travelled Lane;
- k) remove snow and ice from information kiosks and other tourist information facilities, as directed by the Province;
- l) provide ongoing snow storage requirements for continuing winter maintenance operations;
- m) restore overhead clearances to utility lines reduced by Highway snow removal operations;
- n) clear bridge sidewalks;
- o) remove snow and ice to facilitate unimpeded drainage flow, and;
- p) remove snow and ice from cattle guard structures.

3.2 Performance Time Frames

The Contractor must:

- a) prevent flooding of the Highway and Ancillary Facilities caused by snow and ice within ditches and Drainage Appliances by the early removal of the snow and ice once winter melt is forecast or by the continual reduction of snow during the winter season;
- b) restore vertical clearances to overhead utilities reduced by snow removal operations as required;
- c) commencing from the time the deficiency was detected by or reported to the Contractor, respond within the response times in Table 320A to undertake the stated roadside-clearing maintenance activities:

Table 320A. Response Times for Roadside Clearing	Highway Classification				
	A	B	C	D	E
i) remove snow and ice from overhead features	8 h	8 h	8 h	8 h	n/a
ii) remove snow and ice from cattle guards	8 h	8 h	8 h	8 h	n/a

- d) after the Weather Event, ends and the road surface conditions as per Table 300C are met, complete the clearing of Winter Accumulation on Highways and Roadsides, and restore traction on pedestrian facilities within the response times in Table 320B:

Table 320B. Performance Time Frames for Roadside Clearing	Highway Classification				
	A	B	C	D	E
i) Bridge sidewalks and railings,	24 h	24 h	24h	72 h	n/a
ii) Pedestrian Overpasses or Underpasses	24 h	24 h	24 h	72 h	n/a
iii) sidewalks, walkways, and sidewalk approaches to structures, and wheel chair crossings, facilities	24h	24 h	24 h	72 h	n/a
iv) Sight Distance Obstructions	36 h	36 h	36 h	72 h	n/a
v) information kiosks, and other tourist information facilities	48 h	48 h	48 h	3 d	n/a
vi) Intersections, Medians, Railway Crossings and Railway Crossing Approaches	48 h	72 h	8 d	12 d	20 d
vii) Roadside Barrier and railings Median Barriers railings	48 h	72 h	8 d	12 d	20 d

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must, when materials are required to meet the requirements of this specification:

- a) use De-Icing products and chemicals from the most recent version of the Recognized Products List; or
- b) use Anti-Icing, De-Icing or pre-wetting materials recognized on the Pacific Northwest Snowfighters (PNS) Qualified Products List; or
- c) as approved in writing by the Province;

- d) use materials in accordance with the maximum allowable particle size for Winter Abrasive and the mean Gradation limits when tested according to ASTM Designations C136 and C117, and as shown in Tables 320C and 320D below:

Table 320C Winter Abrasives Gradation		Winter Abrasives Type	
		Type A	Type B
(i)	maximum particle size	9.5 mm	12.5 mm
(ii)	metric screen size		
	12.5 mm (1.2 inch)		100
	9.5 mm (3/8 inch)	100	80-100
	6.35 mm (1/4 inch)		
	4.75 mm, #4 Sieve	50-95	50-95
	2.36 mm, #8 Sieve	30-80	30-80
	2 mm, #10 Sieve		
	0-0.600 mm	10-50	10-50
	0-0.420 mm, #40 Sieve		
	0-0.300 mm	0-25	0-25
	0-0.150 mm, #100 Sieve		
	0-0.075 mm	0-6	0-6

Note: The figures shown in the above table represent the percent of material which passes through that particular screen size.

Table 320D Winter Abrasive Application per Highway Winter Classification	Winter Abrasives Type
Class A and B	Type A
Class C, D and E	Type A or B

4.2 Warranty

Not applicable to this specification.

B.C. MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE

Maintenance Specification Chapter 3-790

SNOW AVALANCHE RESPONSE

1. OBJECTIVE

To safeguard Highway Users against avalanches and to minimize Highway closures.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Materials and procedure requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) respond to snow avalanches in accordance with the Snow Avalanche Safety Measures for Highways Manual;
- b) consider the following while planning and carrying out the work:
 - i) the safety of Highway Users who travel through or within designated avalanche hazard areas; and
 - ii) the minimization of avalanche related Highway closures;
- c) ensure that operational personnel working within a designated avalanche area have complete and current training in and awareness of snow avalanche response procedures including the following:
 - i) One Day Avalanche Safety Training;
 - ii) Search and Rescue Procedures;
 - iii) Explosive Spill Plan;
 - iv) Avalanche Personnel Check-in Procedures;
 - v) Mock Rescue Practice; and
 - vi) Familiarity of Avalanche Terrain within Service Area;
- d) maintain and replace lost or stolen avalanche safety equipment supplied by the Ministry, unless otherwise specified in writing by the Province and as defined in the following:
 - i) Snow Avalanche Safety Measures for Highways Manual;
 - ii) Sign Manuals;
- f) comply with Highway maintenance restrictions as per the Five Level Avalanche forecasts and specific operational procedures, as provided by the local avalanche technicians;

- g) notify local Ministry avalanche personnel of any significant avalanche occurrences either above or on the Highway and report any changes in weather conditions associated with rising avalanche hazard conditions;
- h) ensure vehicle access to snow avalanche facilities, including but not limited to Gun Platforms, Rescue Caches and Explosive Magazines;
- i) ensure access to and relocate avalanche gates as required;
- j) remove avalanche Debris and snow from the Highway including Debris from any adjacent avalanche catchment areas and static avalanche defence structures; and
- k) initiate as required and participate in snow avalanche search and rescue efforts to recover vehicles and/or Highways Users buried in a snow avalanche;

3.1.1 Performance Time Frames

The Contractor must:

- a) respond to snow avalanche conditions as follows:

Condition	Performance Time Frame
(i) initiate Avalanche Search and Rescue Plan (as necessary), and prepare for and participate in search and rescue effort	immediately
(ii) provide access to avalanche gates and vehicle access to snow avalanche facilities	30 minutes, from the time notified by Ministry Snow Avalanche Technician
(iii) start clearing snow avalanche deposits from the Highway	immediately, on approval from the Ministry Snow Avalanche Technician
(iv) start with intent to completely remove clearing adjacent catchment areas and snow avalanche safety structures	within 24 hours, from time approval is obtained from the Ministry Snow Avalanche Technician

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedure

The Contractor must supply materials and equipment necessary to support avalanche safety measures.

4.2 Warranty

Not applicable to this Specification.

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B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 4-350

MOWING AND VEGETATION CONTROL

1. OBJECTIVE

To improve visibility for Highway Users and facilitate effective drainage.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Warranty requirements

3. PERFORMANCE SPECIFICATION

3.1 Quantified Maintenance Services

The Contractor must:

- a) perform mowing along Class 1-5 Highways to a width of 1.8 metres;
- b) perform area mowing at Rest Areas and other locations as determined by the Province;
- c) mow to the lowest possible height given the terrain; and
- d) remove vegetation from traffic islands.

3.1.1 Performance Time Frames

The Contractor must:

- a) perform mowing when the grass reaches 25 cm;
- b) perform area mowing when grass reaches 15 cm; and
- c) remove vegetation from traffic islands when it reaches 10 cm.

4.0 MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 4-360

BRUSH, TREE AND DANGER TREE REMOVAL

1. OBJECTIVE

To improve visibility, ensure the safety of Highway Users, facilitate effective drainage and access to Structures.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) partially or completely remove brush and/or trees along Highways and over Travelled Lanes that
 - i) cause Sight Distance obstructions;
 - ii) create shaded areas on the Highway surface causing winter icing problems; and
 - iii) impede drainage.
- b) remove overhanging limbs above Highways;
- c) assess trees that are leaning and/or appear to be unsafe or have the potential to become unsafe to Highway Users and/or adjacent lands to determine if they are Danger Trees;
- d) remove Danger Trees identified in 3.1 c);
- e) partially or completely remove brush and/or trees around Structures to facilitate inspection and maintenance;
- f) dispose of loose brush and/or tree cuttings that represent a hazard or obstruct drainage;

3.1.1 Performance Time Frames

The Contractor must:

- a) remove brush and/or trees above the Travelled Lane as specified below:

Summer Highway Classification	Distance from Shoulder edge	Maximum height
Medians and interchanges	0 to 15 metres	2 metres
Class 1 - 6 Highways	0 to 2 metres	.5 metres
Class 1 - 3 Highways	2-7 metres	3 metres
Class 4 - 6 Highways	2 to 5 metres	4 metres
Class 7 Highways	0-2 metres	4 metres

Note: This table is not applicable when ground elevation is more than 3 metres above or below the Travelled Lanes.

- b) remove brush and/or trees as described in 3.1 a) i) and iii) immediately, from the time the issue was detected by or reported to the Contractor and remove brush and/or trees as described in 3.1 a) ii) annually;
- c) remove overhanging limbs that are at an elevation of between 0 and 8 meters above the Highways:
 - i) within 3 meters of the Shoulder edge on Class 1 to 3 Highways; and
 - ii) within 2 meters of the Shoulder edge on Class 4 to 7 Highways;
- d) assess trees to determine if they are Danger Trees immediately from the time the issue was detected by or reported to the Contractor;
- e) remove Danger Trees identified in 3.1 c) within 7 days from the time of the assessment;
- f) remove brush and/or trees within a 5 meter perimeter of Structures to facilitate inspections and maintenance annually; and
- g) dispose of brush cuttings within 5 days of cutting.

4. **MATERIALS, PROCEDURES AND WARRANTY**

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 4-370

LITTER COLLECTION AND GRAFFITI REMOVAL

1. OBJECTIVE

To keep Highways clean and tidy.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Materials and Procedures Requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) Collect and dispose of litter from Highways;
- b) empty litter receptacles at roadside facilities and dispose of the litter;
- c) remove graffiti from natural features and Infrastructure or, if the graffiti cannot be removed, paint over the graffiti; and
- d) report abandoned vehicles or equipment to the appropriate authorities and arrange for disposal of the vehicles if required, all in accordance with the Province's Abandoned Vehicle Process.

3.1.1 Performance Time Frames

The Contractor must:

- a) collect and dispose of litter within the following timeframes:

Summer Highway Classification	Minimum Frequency
Highways with traffic volumes over 50,000 vehicles per day	every 7 d
Highway 1 and other Lower Mainland multi-lane Highways, 4-lane Highways on Vancouver Island and other Urban Freeways	every 14 d
other Urban Highways	every 21 d
other Class 1 Highways	every 30 d
other Class 2 Highways and designated routes to garbage disposal sites	every 60 d
other Class 3 Highways	every 90 d
all Class 4-7 Highways	every 6 m

Legend: d – days, m – months

- b) empty litter receptacles at roadside facilities and dispose of the litter every three days or when they become full, whichever occurs first;

- c) remove or cover graffiti on natural features and Infrastructure within the following timeframes:

Summer Highway Classification				
1&2	3	4	5	6&7
3 d	6 d	9 d	15 d	30 d

Legend: d – days

- e) report abandoned vehicles or equipment and arrange for disposal of the vehicles, if required, in accordance with the time frames outlined in the Province's Abandoned Vehicle Process.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use paint in accordance with the most recent version of the Recognized Products List and apply it in accordance with the manufacturer's specifications. The paint must be of an appropriate colour to cover graffiti and minimize the effect of the repair.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 4-380

REST AREA MAINTENANCE

1. OBJECTIVE

To provide clean and sanitary Rest Areas for Highway Users.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) repair any failure of heating, water supply or sewer system;
- b) repair any structural components such as broken doors, broken or missing roof vents or roof leaks;
- c) install and remove interior winter vent covers; and
- d) keep the facilities clean and tidy.

3.1.1 Performance Time Frames

The Contractor must:

- c) repair any failure of heating, water supply or sewer system at a Rest Area within two hours from the time the deficiency was detected by or reported to the Contractor;
- d) repair any structural components such as broken doors, broken or missing roof vents or roof leaks within 2 hours from the time the deficiency was detected by or reported to the Contractor; and, immediately respond to any major repairs, as determined by the Contractor and approved in writing by the Province, completing those agreed to major repairs within 14 days of receiving approval;
- e) install interior winter vent covers before October 15 of each year and remove the covers before April 1 of each year;

- f) keep the facilities clean and tidy, as follows:

Maintenance		
	April 1 to Oct. 14 of each year (inclusive)	Oct. 15 to March 31 each year (inclusive)
clean and maintain fixtures and the interior and exterior of structures	daily or more often if required	daily
remove litter, empty garbage receptacles, and dispose	daily or more often if required	daily
make sure all required supplies are in place	as required	as required
remove marks and graffiti	daily or more often if required	daily
empty, recharge and maintain toilets	as required	as required
clear and clean walkways year-round and, during winter, restore traction	daily or more often if required	daily
repair and/or replace fixtures and the interior and exterior components of structures	as required	as required
monitor sewage level of disposal systems and ensure proper functioning	monthly	monthly
seal/varnish picnic tables	yearly	yearly

3.1.2 Routine Maintenance Services Cap

If the Contractor estimates that, at any particular time, the cost to repair or replace fixtures/structural components (e.g., heating system, water system, sewer system, roof, fixture or appliance) exceeds the \$15,000 (the Routine Maintenance Services Cap), the Contractor must notify the Province. The provisions of Article A ("Maintenance Services") Routine Maintenance Service Cap of the Introduction will apply.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specification for Highway Construction; or
- b) from the most recent version Recognized Products List; or
- c) as approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION& INFRASTRUCTURE

Maintenance Specification Chapter 4-400

FENCE MAINTENANCE

1. OBJECTIVE

Restore the functionality of fences.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Service
- b) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) repair fences along those Highways listed as Schedule 1 and Schedule 2 Highways in the *Motor Vehicle Act* Regulations, B.C. Reg. 26/58 ("Schedule 1 and Schedule 2 Highways") to restore the functionality of any section of fence that has been damaged as a result of the following:
 - i) motor vehicle accidents;
 - ii) acts of vandalism;
 - iii) fallen trees from the Right-of-way;
 - iv) slides, fire, flood; and
 - v) other natural occurrences; and
- b) repair and/or construct new Specialty Fences.

3.1.1 Performance Time Frames

The Contractor must:

- a) start temporary repairs within 1 hour, from the time the deficiency was detected by or reported to the Contractor, to fences along Schedule 1 and Schedule 2 Highways;
- b) start temporary repairs to Specialty Fences, when the repair is of a safety-related nature, within 1 hour from the time the deficiency was detected by or reported to the Contractor; and
- c) complete permanent repairs to fences within 7 days from the time the deficiency was detected by or reported to the Contractor.

4. MATERIALS PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

Note: The Contractor must repair fences with the existing type of material.

4.2 Warranty

Not applicable to this Specification.

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B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 5-440

SIGN SYSTEM MAINTENANCE

1. OBJECTIVE

To regulate and facilitate the safe and orderly movement of traffic.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Warranty requirements

In addition to regular "static" signs, the Contractor is responsible for the cleaning of any electronically controlled signs (lighted chevrons, lighted curve warning signs, variable speed zone signs Wildlife Detection Systems etc.) to maintain sign visibility. The Contractor is NOT responsible for maintenance of the electrical components, sign replacement or sign relocation. The Contractor will notify the Province immediately when an electronically controlled sign is detected by or reported to the Contractor as being damaged or not functioning properly.

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) keep all Sign Systems clean, repaired, legible, adequately reflective, erect and correctly located in accordance with the Province's Sign manuals and Appendix "A" to this Maintenance Specification, or as otherwise specified by the Province;
- b) repaint all untreated wood posts; treated posts do not require painting;
- c) relocate Sign Systems that are required to be removed and re-installed due to seasonal requirements;
- d) remove, store and be responsible for any illegal or unauthorized Signs or Sign Systems from the Highways.

3.1.1 Performance Time Frames

The Contractor must:

- a) from the time the deficiency was detected by or reported to the Contractor, address the deficiencies in 3.1 a) as follows:

Type of Sign	Summer Highway Classification		
	1&2	3&4	5,6&7
(i) regulatory and warning	24 h	24 h	24 h
(ii) school and pedestrian	24 h	2 d	3 d
(iii) delineators	24 h	2 d	3 d
(iv) parking and stopping	24 h	2 d	3 d
(v) direction (guide)	2 d	3 d	7 d
(vi) parking and stopping	24 h	2 d	3 d
(vii) direction (guide)	2 d	3 d	7 d
(viii) information	2 d	3 d	7 d
(ix) service and attraction	2 d	3 d	7 d
(x) all other Signs	7 d	7 d	7 d

Legend: d – days, h – hours

- c) notwithstanding 3.1.1 a), make temporary repairs immediately, from the time the deficiency was detected by or reported to the Contractor; to any regulatory or warning Sign that is determined to be a Damaged Sign as described in Appendix A of this Maintenance Specification;
- d) notwithstanding 3.1.1 a), immediately, from the time the deficiency was detected by or reported to the Contractor, initiate installation of temporary signage and ensure the site is safe, when a stop or yield Sign is missing;
- e) re-paint untreated Sign and delineator wood posts when the surface is discoloured or damaged and re-paint all wood posts a minimum of once every three years;
- f) relocate Sign Systems required to be removed and reinstalled due to seasonal requirements or changing needs or conditions within 7 days from receiving direction from the Province; and
- g) remove illegal or unauthorized Signs or Sign Systems from the Highways immediately, from the time they are detected by or reported to the Contractor; and store the signs until claimed by the owner or as directed by the Province.

3.2 Quantified Maintenance Services

The Contractor must:

- a) replace all reflectors;
- b) replace or install new Sign Face Overlays, Signs and Sign Systems;
- c) relocate Signs and Sign Systems as required by the Province because of policy changes.

Note: The Contractor must not mount Signs on poles or structures without the prior approval of the Province.

3.2.1 Performance Time Frames

The Contractor must:

- a) replace surface and barrier reflectors that are missing or no longer effective within 10 days from the time the deficiency was detected by or reported to the Contractor;
- b) replace or install new regulatory, warning or school and pedestrian Sign Face Overlays, Signs and/or Sign Systems within 24 hours from receiving direction from the Province;
- c) install new or replacement guide or information Sign Face Overlays, Signs and/or Sign Systems within 24 hours of delivery; and
- d) install all other Sign Face Overlays, Signs and/or Sign Systems and delineators within 7 days as requested the Province.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must ensure that:

- a) Sign Face Overlays, Signs and Sign Systems must be as specified in the Specifications for Standard Highway Sign Materials, Fabrication and Supply; and in the Sign Pattern Manual;
- b) metal posts and battens are made of perforated, Galvanized steel square tubing or of other material as approved in writing by the Province;
- c) all wooden posts and battens are pressure-treated wood S4S, with dimensions, colour and shape as specified in the Standard Specifications for Highway Construction;
- d) metal or concrete posts for delineators are as specified in the Sign Manuals and that plastic or fiberglass delineator posts are in accordance with the Standard Specifications for Highway Construction;
- e) oil-base, solid colour stain or oil-base exterior paint, compatible primer paint and standard paint colours are as specified in the Sign Manuals, with all materials meeting the CGSB specifications as to quality, coverage and colour in accordance with the Standard Specifications for Highway Construction;
- f) all hardware is of non-corrosive material to avoid discolouration of Sign and delineator faces;
- g) delineator and reflective sheeting are in accordance with the Sign Manuals;
- h) concrete and other materials used for production and fabrication of Sign bases are in accordance with the Sign Manuals, Standard Specifications for Highway Construction or as otherwise approved in writing by the Province;
- i) barrier reflectors are as specified in the Standard Specifications for Highway Construction; and
- j) installation of posts and bases are undertaken in accordance with the Standard Specifications for Highway Construction and Sign manuals listed in Section I of the Introduction to these Maintenance Specifications including T- Circulars and amendments issued by the Province from time to time.

4.2 Warranty

Not applicable to this Specification.

BC MINISTRY OF TRANSPORTATION

Maintenance Specification

SIGN SYSTEM MAINTENANCE

APPENDIX "A"

Policy for Highway Signs

Poorly maintained Signs and other Sign Systems reduce Highway safety and spoil the appearance of an otherwise well maintained Highway. To be respected by Highway Users and to be useful and effective, Sign Systems must be correctly used and correctly placed.

Effective Signing requires:

- a) selection of the correct Sign System for a particular situation;
- b) correct location of the Sign System; and
- c) ongoing maintenance to ensure that the Sign and its post(s) are in good condition.

In order to meet the requirements of this policy, the Contractor must engage in practices that ensure that all Signs and other Sign Systems are correctly placed, clearly display the necessary messages to ensure the safe and orderly movement of traffic, and meet other safety, aesthetic and economic benefits. This requires that the Contractor carry out its obligations in accordance with this Maintenance Specification in a manner that minimizes the overall deterioration of Signs and other Sign Systems.

The following descriptions of "Sign Deterioration" and "damaged Sign" must be referred to in this Maintenance Specification:

"Sign Deterioration"

Each Sign face will be kept visible and legible under both day and night time conditions. It should be noted that all Signs will gradually deteriorate to a point where the Signs must be Refurbished or replaced. The retro-reflective sheeting of Signs deteriorates from the effects of sunlight, weather, airborne particles, and air pollution. Dirt from road spray, snow and ice removal from the roadway, and air pollution may collect on the Sign sheeting, and, if unchecked, will severely affect the night time visibility of the Sign.

A Sign face is considered to have lost its retro-reflectivity for night time display when the area of limited retro-reflectivity or blotchy reflectiveness exceeds 25% of the Sign face area. A Sign face is also considered to have lost its retro-reflectivity when the reduced retro-reflectivity, as determined by the Province, overrides the ability of the Sign text, colour, or legend to be effectively presented to the travelling public or other intended audience.

"Damaged Sign"

A Sign is considered to be a damaged Sign where:

- a) the Sign is not flat (planar) and properly oriented to the travelling public or other intended audience;
- b) either 10 square cm or 1% (whichever is greater) of the Sign face area is damaged, dented, vandalized or otherwise not as new; or
- c) in the opinion of the Province, the intended message to the travelling public or other intended audience is unclear or confusing.

Managing Sign and Other Sign Systems Maintenance

The Province does not currently have a comprehensive or consolidated "Sign Maintenance Manual". It is therefore expected that the Contractor will develop an integrated process to accomplish an effective Sign maintenance program.

Contractors will base their program on the contents of the following publication or other sources as approved by the Province:

Maintenance Management of Street and Highway Signs
NCHRP Synthesis 157

ISSN 0547-5570
ISBN 0-309-04910-5

available from:

Transportation Research Board
National Research Council
2101 Constitution Avenue, N.W.
Washington, DC 20418

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 5-450

TEMPORARY LINE MARKING AND ERADICATION

1. OBJECTIVE

To facilitate the safe and orderly movement of traffic.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Service
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) place temporary line marking tape on all existing and new pavement surfaces required as a consequence of the Contractor's provision of the Maintenance Services; and ensure temporary line markings are:
 - i. well-defined, clear and distinct;
 - ii. effective until the permanent markings are applied;
- b) remove or completely eradicate line markings which are superfluous or obsolete or as directed by the Province; and ensure the surface is not damaged as a result of any grinding or other eradication technique used; and
- c) remove and dispose paint or other pavement marking materials.

Note: The Contractor is not responsible for placing temporary line markings to replace lines that have disappeared due to wear.

3.1.1 Performance Time Frames

The Contractor must:

- a) within 3 hours of completing Maintenance Services, place temporary line markings and/or eradicate superfluous line markings; and
- b) on a daily basis, remove and dispose paint and other pavement marking materials.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials in accordance with the most recent version of the Recognized Products List and apply them in accordance with the Traffic Management Manual for Work on Roadways, Draft 2015.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 5-470

TRAFFIC MANAGEMENT

1. OBJECTIVE

To keep Highway Users safe and to minimize Traffic Delays.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap

2.2 Not applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) provide traffic control in accordance with the Traffic Control Manual for Work on Roadways (1999) (TCM) and the Traffic Management Guidelines for Work on Roadways (Sept 2001) (TMG) from the Commencement Date until November 30, 2019 as the primary reference for the placement and use of traffic control devices and for traffic control procedures;
- b) commencing December 1, 2019 until the Expiry Date, provide traffic control in accordance with the Traffic Management Manual for Work on Roadways (TMM), currently in draft form as version Interim 2015, as the primary reference for the placement and use of traffic control devices and for traffic control procedures;
- c) manage traffic queues and vehicle parking/storage;
- d) maintain clear zones (e.g., avalanche areas, rockfall/slide areas, debris torrent areas, blind corners, horizontal and vertical curves, etc.);
- e) advise Highway Users in traffic queues at key decision making points;
- f) proactively manage Highways by taking into consideration planned or unplanned impacts to traffic as a result of the Contractor's own actions, or actions taken by others (the Province, other contractors, utilities, municipalities, etc.);
- g) perform Traffic Management beyond the Service Area boundaries, if required;
- h) make sure Traffic Delays are kept to less than 20 minutes for all planned activities;
- i) calculate and document anticipated Traffic Delays;
- j) perform Traffic Management upon detection or notification of a condition that is ineffective or has the potential to be ineffective; this includes acting as stewards of the Province with respect to Highway safety, making sure other parties are operating effectively on the Highway and are minimizing Traffic Delays;
- k) advise tow truck operators when it is appropriate to remove vehicles from the Highway;
- l) remain at the site until traffic flow is restored and the site(s) are safe for Highway Users;
- m) obtain the prior written approval of the Province to use automated flagging assistance devices or temporary signals and if approved by the Province, the Contractor must monitor traffic flows and adjust the timing of the devices to ensure optimum traffic flow and safety.

- n) notwithstanding the TMM, perform the following in connection with traffic control for working personnel and equipment:
 - i. TMM Section 2.5 – Establishing Work on Roadways and TMM Section 3 - Traffic Management Plans shall be replaced with these requirements:
 - 1. Using the principles in Section 3 to develop site or work specific traffic plans for routine work.
 - a. Using a basic form, such as the Category 1 Traffic Management Plan form, for recording traffic control activities, including site specific layouts or sketches of the work.
 - ii. Advance warning signage requirements in the TMM shall be replaced with these requirements:
 - 1. Bridges, tunnels or other structures which require the use of stand-by emergency towing or assistance vehicles, will be exempt from using advance warning signage during peak hours.
- o) perform lane closures as required in the Lane Closure Local Area Specification, if applicable.

3.1.1 Performance Time Frames

The Contractor must perform Traffic Management:

- a) as required, when performing the Services; and
- b) immediately from the time the Highway Incident or Major Event was detected by or reported to the Contractor.

3.1.2 Routine Maintenance Services Cap

When Traffic Management is required for Specification 7-780 (Highway Incident Response) the Contractor will be limited to providing, as Routine Maintenance Services, all equipment and devices required as per the appropriate layout in the TCM or TMM as applicable, 4 portable changeable message signs and a maximum of 4 traffic control persons (TCP) and 1 traffic control supervisor at each Site, regardless of the amount of time required.

If the Contractor estimates the personnel required to perform Traffic Management relating to Specification 7-780 (Highway Incident Response) will exceed 4 TCPs and 1 traffic control supervisor at each Site, the provisions of Article A ("Maintenance Services") Routine Maintenance Service Cap in the Introduction will apply. If requested by the Province, the Contractor must provide the additional personnel under Additional Maintenance Services.

If the Province requires pilot vehicle services, food, beverages, washroom facilities and additional portable changeable message signs (over and above the 4 required under Routine Maintenance Services), the provisions of Article A ("Maintenance Services") Routine Maintenance Service Cap in the Introduction will apply.

For greater certainty, there is no Routine Maintenance Services Cap on Traffic Management when the Contractor is performing any of the other Maintenance Services except for Specification 7-785 (Major Event Response).

4. MATERIALS, PROCEDURES AND WARRANTY

Not applicable to this Specification.

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B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-500

BRIDGE DECK MAINTENANCE

1. OBJECTIVE

To provide safe, uniform, smooth, stable, and durable surfaces on Bridge Decks and to maximize the functional life of the structure.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must complete temporary repairs to all Bridge Deck Systems to a safe, durable, even and free-draining condition and ensure the deck is securely fastened or bonded to the support structure.

3.1.1 Performance Time Frames

The Contractor must, from the time the deficiency was detected by or reported to the Contractor, complete temporary repairs as follows:

Deck Deficiency	Summer Highway Classification			
	1&2	3&4	5,6 &7	8
Pot-holes in concrete and asphalt Decks - Travelled Lane - remainder of Deck	4 h 2 d	6 h 3 d	24 h 5 d	16 d 30 d
loose, broken or rotted timber Deck planks - Travelled Lane - remainder of Deck	4 h 2 d	6 h 3 d	24 h 5 d	16 d 30 d
loose sections, broken welds on steel Decks - Travelled Lane - remainder of Deck	4 h 2 d	6 h 3 d	24 h 5 d	16 d 30 d
welding, repair, and tightening of steel Deck systems	7 d	15 d	2 m	6 m

Legend: h – hours, d – days, m – months

3.2 Quantified Maintenance Services

The Contractor must:

- a) complete permanent repairs to the Bridge Deck systems; and

- b) restore the Bridge Deck Systems to the following requirements:
 - i) smooth and safe Wearing Surface;
 - ii) repaired area is not to be restricted to visibly deteriorated area;
 - iii) concrete Deck repairs, using concrete materials, are to be sound, durable and well bonded to the prepared surface;
 - iv) concrete patch finish is to be tined or broomed;
 - v) concrete Bridge Deck cracks are to be cleaned and sealed;
 - vi) patch or crack repair is to match existing Deck profile;
 - vii) timber Deck repair is to be structurally sound, tight-fitting and securely fastened; and
 - viii) timber planks replaced when wear or deterioration exceeds 25% of cross-section.

3.2.1 Performance Time Frames

The Contractor must:

- a) complete the permanent repair of the deficiencies within 6 months from the time the deficiency was detected by or reported to the Contractor; and
- b) apply linseed oil/mineral spirits in accordance with the following frequencies:
 - i) first re-application – one-year-old concrete surface treatment;
 - ii) second re-application – two-year-old concrete surface treatment;
 - iii) third re-application – four-year-old concrete surface treatment; and
 - iv) fourth re-application – six-year-old concrete surface treatment;

Note: If no procedures are specified for concrete surface treatment, the approach and standard of workmanship must be in accordance with normally accepted good practice and approved by the Province.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

- a) The Contractor must use materials:
 - i) in accordance with the Standard Specifications for Highway Construction; or
 - ii) from the most recent version of the Recognized Products List; or
 - iii) as approved in writing by the Province.
- b) The Contractor must use timber Deck materials in accordance with the following:
 - i) cross-ties must be number 1 or better grade, S2S Douglas Fir, cross-ties must be a minimum of 150 mm X 150 mm (6 inch by 6 inch) by the full width the Bridge Deck. Size tolerance is plus or minus 3 mm and maximum Wane allowed must be 10 mm on any surface and cross-ties must be preservative-treated;
 - ii) laminated Decking material must be preservative-treated;
 - iii) re-Decking planks must be of number 1 grade and Wane free, SIS2E, Heart-Side surfaced, 100 mm X 250 mm (4 inch by 10 inch) Douglas Fir, in minimum 4.9 metre (16 foot) lengths laid Heart-Side down;
 - iv) all fasteners must be hot-dip Galvanized;
 - v) Ekki Wood, where specified for use by the Province, is normally ordered by actual dimensions and must be in accordance with the following requirements:
 - 1) minimum modulus of rupture in static bending must be 150 MPa;
 - 2) minimum crushing strength will be 70 MPa;
 - 3) timbers must be free of Heartwood, Sapwood, and Wane except members larger than 350 mm by 350 mm which may contain Boxed Heartwood;
 - 4) sound, tight and well-spaced knots not larger than 50 mm are permitted at a maximum of one knot per linear metre of board length;
 - 5) maximum Crook must be 25 mm. Surface checks and Splits must have a maximum length of 150 mm. Slope of Grain will be 1:10 maximum;
 - 6) size tolerance must be plus or minus 3 mm; and
 - 7) Galvanized lag bolts must be used on Ekki Wood Decking.

4.2 Warranty

Bridge Deck maintenance is warrantied in accordance with the Introduction to the Maintenance Specifications, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-510

BRIDGE WASHING AND CLEANING

1. OBJECTIVE

To preserve Bridges.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) wash and/or clean all Bridges to remove dirt, surface contaminants, chemicals and Winter Abrasive;
- b) clean all horizontal and vertical surfaces of Bridges and their components; clean Truss members to a minimum height of 3 metres above the Deck surface; and
- c) ensure that cleaning of Underpasses, Overpasses, Flyovers and Overheads is performed without damage to property or cause injury to Highway Users.

Notes: 1. The Contractor must not perform Bridge and structure cleaning when temperatures are 0 degrees Celsius or less, or when such temperatures are anticipated within 24 hours.

2. Contractor applications for drawing water permits for the purpose of bridge washing are available free of charge from provincial environmental agencies when applied for on behalf of the Ministry.

3.1.1 Performance Time Frames

The Contractor must:

- a) clean all Bridges in the spring of each year when reasonable assessment indicates no further Winter Abrasive or chemicals will be applied and within the earliest allowable environmental window, as specified by the appropriate environmental agencies, or by June 30th of each year, whichever comes first; and
- b) notwithstanding 3.1.1 a), where there is dirt, Debris and/or deleterious materials on the Bridge causing a condition that is unsafe or has the potential to be unsafe, immediately wash/clean the Bridge when it is detected by or reported to the Contractor.

4. MATERIALS, PROCEDURES AND WARRANTY

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-520

BRIDGE DRAIN AND FLUME MAINTENANCE

1. OBJECTIVE

To provide effective drainage for Bridge Decks, Substructures and Foundations.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) perform Bridge Drain and Flume maintenance;
- b) remove trapped or Ponding water to prevent damage to Bridge Decks, Bearings and Substructures;
- c) clear catchment areas that have become clogged;
- d) maintain Flumes to carry water from drain pipes down Fill Slopes and away from Bridge Abutment Fills and Wing Walls;
- e) ensure that steel grills are securely anchored; and
- f) clear, repair or replace all grills, Drain pipes, Flumes and funnels that are clogged, rusted, damaged, separated or missing.

3.1.1 Performance Time Frames

The Contractor must:

- a) complete cleaning and unplugging of any clogged steel grill or Drain pipe that causes Ponding on Bridge Decks within one hour from the time the deficiency was detected by or reported to the Contractor;
- b) complete unplugging of any grills, Drain pipes or Flumes that are plugged, but do not cause Ponding on Bridge Decks, within 14 days from the time the deficiency was detected by or reported to the Contractor;
- c) inspect Drains and Flumes monthly, or more frequently if required, to identify drainage problems in areas that historically have frequently plugged drains; and
- d) complete repair or replacement of damaged or missing grills, Drain pipes or Flumes within 14 days from the time the deficiency was detected by or reported to the Contractor, or commence immediate repairs or replacements when the deficiency is detected by or reported to the Contractor if they are unsafe or have the potential to become unsafe.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

Unless directed by the Province, the Contractor must use materials and procedures:

- a) in accordance with the Standard Specification for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted-best practices and approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-530

BRIDGE JOINT MAINTENANCE

1. OBJECTIVE

To provide a safe, smooth and stable surface condition for Highway Users and to maximize the functional life of the Bridge.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) maintain, re-seal and repair components of Bridge Joints and Bridge Joint Armours considered unsafe or have the potential to become unsafe;
- b) repair or re-seal Bridge Joints that are not aligned, cracked, worn, shrivelled, leaking, separated from joint walls or abraded;
- c) repair joint Anchor Bolts that are damaged, rusted or loose;
- d) repair Armour that is bent, gouged, loose or separated from the concrete Deck; and
- e) repair steel Finger Joints and Sliding Plate Joints that are loose, cracked, have broken welds or have missing components.

3.1.1 Performance Time Frames

The Contractor must:

- a) commence maintenance and repairs immediately to Bridge Joints, Bridge Joint Armours and joint Anchor Bolts that are considered unsafe or have the potential to become unsafe, from the time the deficiency was detected by or reported to the Contractor and complete that maintenance and repair forthwith; and
- b) complete all maintenance and repairs to Bridge Joints, Bridge Joint Armours and joint Anchor Bolts which have the potential to reduce the functional life of the structure as follows:

Maintenance and Repair	Highway Classification				
	1 & 2	3	4	5	6 & 7
a) repair damaged Bridge Joint components	2 m	90 d	6 m	6 m	6 m
b) repair concrete and Armour	4 m	6 m	6 m	6 m	6 m

Legend: d – days, m – months

3.2 Quantified Maintenance Services

The Contractor must replace Bridge Joints, seals and Bridge Joint Armour.

- Notes:
1. The Contractor will not be required to perform complete replacement of Finger Joints under this Maintenance Specification.
 2.
 - a) The area of strip Bridge Joint seals will be determined by using the maximum rated gap according to the manufacturer's specifications, and multiplying that width by the length of seal installed; and
 - b) The area of compression Bridge Joint seals will be determined by using the nominal width of uncompressed seal and multiplying that width by the length of seal installed; and
 - c) The area of poured-in-place Bridge Joint seals will be determined by using the nominal width of Bridge Joint gap as measured at the time of placement and multiplying that width by the length of Bridge Joint filled.

3.2.1 Performance Time Frames

The Contractor must, from the time the deficiency was detected by or reported to the Contractor, complete the replacement of Bridge Joint seals and Armour as follows:

Replacement	Summer Highway Classification	
Bridge Joint seal & Armour	1 & 2	3,4,5,6,7
	4 m	6 m

Legend: m - months

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and procedures

Unless directed by the Province, the Contractor must use materials and procedures:

- a) in accordance with the Standard Specification for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practices and approved in writing by the Province.

4.2 Warranty

Bridge Joint replacements are warrantied in accordance with the Introduction to the Maintenance Specifications, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-540

BRIDGE BEARING MAINTENANCE

1. OBJECTIVE

To ensure that Superstructure loads are properly transmitted and distributed to the Substructure and that the Superstructure is free to undergo necessary movements without developing damaging stresses that may limit the functional life of the Bridge.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification

- a) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) clean, lubricate, re-align, re-Grout and repair Bridge Bearings;
- b) maintain and clean all Bridge Bearings and associated components that are rusty, not aligned, or are covered with Winter Abrasive, dirt or Debris;
- c) repair all pads that are damaged, crushed, cracked, split, bulging or torn;
- d) repair Anchor Bolts and Pins that are damaged;
- e) replace missing Anchor Bolts and Pins; and
- f) repair concrete pads and Bearing areas that are cracked or Spalled.

3.1.1 Performance Time Frames

The Contractor must:

- a) start repairs immediately on Bridge Bearings that are considered unsafe or have the potential to become unsafe, as determined by the Province;
- b) complete re-aligning and repairing Bearings, repairing or replacing Anchor Bolts and re-Grouting concrete pads and Bearing areas within 6 months from the time the deficiency was detected by or reported to the Contractor; and
- c) lubricate Bearings once annually or in accordance with the manufacturer's recommendation.

3.2 Quantified Maintenance Services

The Contractor must:

- a) replace deteriorated Bearings and associated components; and
- b) use an installation and jacking procedure prepared by a Professional Engineer retained by the Contractor, and approved in writing by the Province.

3.2.1 Performance Time Frames

Not applicable to this Maintenance Specification

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

The repair and replacement of Bearings must be in accordance with the manufacturer's specifications, the original design specifications or as designed by the Province.

4.2 Warranty

Bridge Bearing replacements are warrantied in accordance with the Introduction to the Maintenance Specifications paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-560

BAILEY AND ACROW BRIDGE MAINTENANCE

1. OBJECTIVE

To maintain the structural integrity and a sufficient load-carrying capacity for the intended use of Bailey and Acrow Bridges.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) maintain, repair or replace all damaged or deteriorated Bailey and Acrow components;
- b) check and tighten Sway Braces, Transom Clamps, and Pins; and
- c) perform welding repairs only with the prior written approval of the Province.

3.1.1 Performance Time Frames

The Contractor must:

- a) notify the Province immediately of any incidents of damage and report any indications of potential risk of structural failure; the Province may conduct an assessment;
- b) take immediate action if the Province directs the Contractor to:
 - i) restrict allowable loading of the Bridge;
 - ii) close the Bridge to all vehicular traffic; or
 - iii) close the Bridge to all use;
- c) from the time the deficiency was detected by or reported to the Contractor, repair or replace any deficient components within 48 hours;
- d) notwithstanding 3.1.1 c), where any component is damaged or deteriorated, but still allows the Bridge to remain structurally sound without a reduction in the load-carrying capacity and to remain safe for Highway Users, as determined by the Province, the components must be repaired or replaced by the Contractor within two months from the time the deficiency was detected by or reported to the Contractor;
- e) from the time the deficiency was detected by or reported to the Contractor, repair, replace and/or tighten Sway Braces, Transom Clamps, End Posts, Panel Pins or bolts within one day;
- f) from the time the deficiency was detected by or reported to the Contractor, replace or tighten any damaged, missing or loose bolts or Pins within two hours; and
- g) tighten Sway Braces, Transom Clamps, and bolts annually.

3.1.2 Routine Maintenance Services Cap

If the Contractor estimates that, at any particular time, the cost to repair or replace a Bailey or Acrow Bridge or components exceeds the \$50,000 (the Routine Maintenance Services Cap), the Contractor must notify the Province. The provisions of Article A ("Maintenance Services") Routine Maintenance Services Cap of the Introduction will apply.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must:

- a) provide Panels of the same steel section and steel grade as the Panels on the existing Bailey or Acrow Bridge. If an existing Bailey/Acrow Bridge contains Panels of differing steel section and/or steel grade, then replacement Panels must be at least equal to the strength of the damaged Panel as indicated on the attached list of "Bailey/Acrow Panel Types";
- b) ensure Bailey BB1 "I" section Panels and American BB1 channel section Panels are not used as a replacement component in any assembled structure;
- c) tighten Sway Braces, Transom Clamps, and Pins in accordance with the manufacturer's specifications.
- d) unless directed by the Province, use materials and procedures:
 - i) in accordance with the Standard Specifications for Highway Construction; or
 - ii) from the most recent version of the Recognized Products List; or
 - iii) as approved in writing from the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practices and approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

BAILEY/ACROW PANEL TYPES

- (i) - Bailey (BB1) with "I" – section verticals and diagonals.
 - Production pre-war to approximately 1979 by two manufacturers.
 - Earliest panels have smaller 6" x 6" mid-panel Gusset plates vs. more common 9" x9" plates. Post 1970 panels have reinforcements at sway brace slots to improve fatigue resistance. Some panels TSBB1 circa 1970 had built-in Transom Clamps.
 - Strength: - steel grade 50C yield 51.5 ksi
 - allowable single-storey shear 33.6 kips

- (ii) - Bailey (BB1) Wartime AMERICAN Panels
 - These panels have channel-section verticals and diagonals. Steel members may have "U.S. Steel" rolling stamps or "Carnegie U.S.A."
 - The chord channels are 4" x 1 3/4", which are different than all other Bailey Panels which have 4" x 2" chord channels.
 - Strength data is unavailable. They are assumed to be as strong as the "I" section panels.

- (iii) - Bailey MJBB1Super Panel
 - circa 1966
 - chords 4" x 2" channel
 - diagonals/verticals 3" x 1 1/2" channel
 - strength: - steel grade 50C yield 51.5 ksi
 - allowable single-storey shear 45 kips
 - Note: The "super" does not designate high strength steel; it merely designates that it is not a "I" section panel.

- (iv) - Bailey MJBB1001 Superlife Panels
 - circa 1970
 - same as MJBB1 but with improved fatigue details.
 - strength: - steel grade 50C yield 51.5 ksi
 - allowable single-storey shear 45 kips

- (v) - Bailey TSBB475 - Shear panels
 - 1970 to 1976
 - Bailey TSBB1 - Low strength
 - circa 1979
 - Tubular verticals and diagonals; otherwise same as BB1
 - Strength: - steel grade 50C yield 51.5 ksi
 - allowable single-storey shear 54 kips

- (vi) - Bailey TSBB1 High strength
 - after 1980 or 1982
 - identical to low-strength model - only way to distinguish is if panels/chords were marked or if a paper trail exists
 - Strength: - steel grade 55C yield 65 ksi
 - allowable single-storey shear 54 kips

- (vii) - Compact Bailey
 - These panels come in standard and high shear strength models. Transoms are located adjacent to verticals. No Rakers are used. Chord reinforcing comes in light and heavy sizes and need not be placed on all Truss lines.
 - Strength: - steel grade 55C yield 65 ksi
 - allowable single-storey shear 50 kips standard

- (viii) - Acrow Series 100 or 300
 - These panels are unique. Transoms are located 2 per bay inside the diamonds. Rakers are used. Panel height is traditional 5 feet.
 - Strength: - steel grade 55C yield 65 ksi
 - allowable single-storey shear 56 kips

- (ix) - Acrow Series 700
 - similar to series 100 except panel height is 7.5 feet
 - Chord reinforcing comes in light and heavy sizes and need not be placed on all Truss lines.

- (x) - Universal Bridging
 - Similar to Compact Bailey except panel height is 8 feet.

Legend: BB – Bailey Bridge, TS – "Thomas Storey Ltd.", MJ – "Mabey & Johnson Ltd."

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-570

MINOR PAINTING OF BRIDGE STRUCTURES

1. OBJECTIVE

To prevent corrosion and rot in components of Structures and to maintain a neat and tidy appearance.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements
- c) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) maintain previously coated surfaces or apply new coated surfaces by undertaking minor painting of Structures and associated components;
- b) prepare and coat all surfaces of Structures and steel rail systems where the coating system is deteriorated, broken or damaged and/or the steel is corroding and rust is apparent; and
- c) prepare and coat surfaces of timber rail systems, where the coating system is deteriorated, broken or damaged.

Note: treated wood components do not require painting.

3.1.1 Performance Time Frames

Not applicable to this Maintenance Specification.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

Unless directed by the Province, the Contractor must use materials and procedures:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) in accordance with the same type and quality on the existing structure; or
- e) as approved in writing by the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practice and approved in writing by the Province.

4.2 Warranty

Minor painting of Structures is warrantied in accordance with the Introduction to the Maintenance Specifications, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-600

CONCRETE STRUCTURE MAINTENANCE

1. OBJECTIVE

To maximize the functional life of concrete Structures.

2. SCOPE

2.1 Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Materials and procedures requirements
- c) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Quantified Maintenance Services

The Contractor must:

- a) perform all concrete repairs on concrete Structures in a manner that ensures a sound, durable, and well-bonded patch to the prepared surface;
- b) remove all deteriorated concrete at the repair site;
- c) finish concrete surfaces to match the adjacent finished concrete surface profiles;
- d) not allow tolerances or deviations of concrete to exceed the following limits, and only if they do not prevent the required fit of structural members:
 - i) patches on other surfaces (excluding decks) ± 5 mm
 - ii) cross-sectional dimensions ± 25 mm
 - iii) cover to Reinforcing Steel minimum 50 mm
 - iv) separation from other reinforcing minimum 25 mm
- e) seal non-structural cracks;
- f) repair structural cracks by pressure injection of an epoxy material; and
- g) remove excess epoxy to match existing surface profile.

3.1.1 Performance Time Frames

The Contractor must:

- a) notify the Province immediately, from the time the deterioration or damage to the concrete Structure was detected by or reported to the Contractor;
- b) take immediate action if the Province directs the Contractor to:
 - i) restrict allowable loading on the structure;
 - ii) close the structure to all vehicular traffic;
 - iii) close the structure to all use;
 - iv) start repairs immediately as instructed by the Bridge Structural Engineer; and
- c) complete repairs within three months, or within a time frame that is appropriate to the nature and urgency of the repair as determined by the Province;
- d) complete all other concrete repairs within 6 months, from the time the deficiency was detected by or reported to the Contractor;
- e) perform epoxy injection within 6 months, from the time the deficiency was detected by or reported to the Contractor.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

Unless directed by the Province, the Contractor must use materials and procedures:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) in accordance with the same type and quality on the existing Structure; or
- e) as approved in writing by the Province.

If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practice and approved in writing by the Province.

The Contractor must:

- f) meet the following concrete mixes and patching material specifications:

	minimum compressive strength at 28 days	maximum nominal size aggregate mm	maximum water/cement ratio by weight	air content %	slump maximum mm
Parapet	35 MPa	20	0.42	6 (+/-1)	50
Abutments, Piers and Footings	30 MPa	28	0.45	5 (+/-1)	75

- g) achieve minimum 28 day compressive strength of 35 MPa for Cementitious, non- shrink, non-metallic Grout which may be polymer-modified; and
- h) . perform pressure injection of epoxy material in accordance with the manufacturer's specifications.

4.2 Warranty

Concrete structure repairs are warrantied in accordance with the Introduction to the Maintenance Specifications paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-605

STEEL AND ALUMINUM STRUCTURE MAINTENANCE

1. OBJECTIVE

To maximize the functional life of steel and aluminum Structures.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Quantified Maintenance Services

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) repair and/or replace lost, missing, deteriorated, or corroded rivets, bolts and associated components, including but not limited to, catwalks, ladders, working platforms and fall arrest systems; and
- b) replace deteriorated steel or aluminum members.

3.1.1 Performance Time Frames

The Contractor must:

- a) notify the Province immediately, from the time the deterioration or damage to the steel and aluminum structure was detected by or reported to the Contractor;
- b) take immediate action when the Province directs the Contractor to:
 - i) restrict allowable loading on the structure;
 - ii) close the structure to all vehicular traffic;
 - iii) close the structure to all use;
 - iv) start repairs immediately as instructed by the Bridge Structural Engineer;
- c) complete repairs within three months, or within a time frame that is appropriate to the nature and urgency of the repair as determined by the Province; and
- d) complete all other maintenance within four months, from the time the deficiency was detected by or reported to the Contractor.

3.1.2 Routine Maintenance Services Cap

If the Contractor estimates that, at any particular time, the cost to repair and/or replace steel and aluminum structures/components, exceeds \$50,000 (the Routine Maintenance Services Cap), the provisions of Article A ("Maintenance Services"), in the Introduction will apply.

4.0 MATERIAL, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) in accordance with the same type and quality on the existing structure; or
- d) as approved in writing by the Province.

4.2 Warranty

Steel and aluminum structure maintenance is warranted in accordance with the Introduction to the Maintenance Specifications, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-640

BRIDGE PILING MAINTENANCE

1. OBJECTIVE

To ensure the structural strength, prevent Scour and to maintain the impact resistance of Bridge Pilings.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) maintain and repair damaged Bridge Pilings, and associated components;
- b) splice Piles only if the base of the Pile is sound;
- c) tighten loose cables and fasteners;
- d) replace broken or missing cables and fasteners;
- e) repair or replace damaged or missing Flashing and Armour; and install Flashing and Armour where previously none was in place; and
- f) remove accumulated Debris as soon as access permits and dispose of Debris in a manner acceptable to regulatory agencies.

3.1.1 Performance Time Frames

The Contractor must:

- a) notify the Province immediately from the time a deficiency is detected by or reported to the Contractor that may affect the structure and/or safety of the Highway Users; the Province will assess the deficiency and risk of structural failure;
- b) take immediate action if requested by the Province to:
 - i) restrict allowable loading on the Bridge;
 - ii) close the Bridge to all vehicular traffic; or
 - iii) close the Bridge to all use;
- c) commence repairs within 2 days for work that the Province determines there is risk of structural failure under loading, except where the damage will require complete re-construction as determined by the Province, unless mutually agreed by the Contractor and the Province; and
- d) complete maintenance and repair to Pilings and associated components within 6 months from the time the deficiency was detected by or reported to the Contractor.

3.2 Quantified Maintenance Services

The Contractor must replace Piling and associated components where maintenance and repair will not restore the original design function as determined by the Province.

Note: The Contractor is not responsible for replacing concrete Bridge Piles under this Maintenance Specification.

3.2.1 Performance Time Frames

The Contractor must:

- a) commence emergency replacement of Bridge Piles and associated components within 2 days, from the time directed to do so by the Province, where the safety of Highway Users and structural integrity is compromised, except where the damage requires complete re-construction of the Pile Bent or Bridge structure, as determined by the Province; and
- b) complete non-emergency replacement of Piles and associated components within 6 months, from the time the deficiency was detected by or reported to the Contractor;

4. MATERIALS PROCEDURES AND WARRANTY

4.1 Materials and Procedures

Unless directed by the Province, the Contractor must use materials and procedures:

- a) in accordance with the Standard Specification for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

The Contractor must use Pile types and installation procedures, prepared by an Engineer retained by the Contractor, and approved in writing by the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practice and approved in writing by the Province.

4.2 Warranty

Pile replacements are warranted in accordance with the Introduction to the Maintenance Specifications, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-660

RETAINING STRUCTURE MAINTENANCE

1. OBJECTIVE

To ensure the continued safe and stable condition of all Retaining Structures and associated components.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Quantified Maintenance Services
- c) Materials requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) repair or reinforce any portion of a Retaining Structure showing signs of deterioration, deflection or settlement;
- b) repair Retaining Structures showing signs of continued movements, as approved in writing by the Province; and
- c) clean out accumulations of Debris behind Retaining Structures when the Debris prevents the Retaining Structure from functioning as designed, and dispose of Debris in a manner acceptable to regulatory agencies.

3.1.1 Performance Time Frames

The Contractor must:

- a) commence maintenance repairs within 24 hours from receiving written approval by the Province to proceed;
- b) maintain and repair Retaining Structure deficiencies, from the time the deficiency was detected by or reported to the Contractor, as follows:

	1 & 2	3	4	5, 6 & 7
Maximum Response Time	1 m	2 m	4 m	6 m

Legend: m – months

- c) clean out accumulations of Debris behind Retaining Structures requiring cleaning annually, or as required to ensure the Retaining Structure functions as designed.

3.2 Quantified Maintenance Services

The Contractor must replace components of Retaining Structures where maintenance and repair will not restore their original function;

3.2.1 Performance Time Frames

The Contractor must complete the replacement of Retaining Structure components within six months, from the time the deficiency was detected by or reported to the Contractor.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

- a) The Contractor must use materials and procedures:
 - i) in accordance with the Standard Specifications for Highway Construction; or
 - ii) from the most recent version of the Recognized Products List; or
 - iii) in accordance with the manufacturer's specifications; or
 - iv) as approved or directed in writing by the Province; and
- b) the Contractor will supply and use timber material that is incised and preservative-treated Douglas Fir, Number 2, minimum size (150 mm x 200 mm), or the same size as existing.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with normally accepted best practice and approved in writing by the Province.

4.2 Warranty

Retaining Structure maintenance is warranted in accordance with the Introduction to the Maintenance Specifications, paragraph D.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-680

MULTIPLATE STRUCTURE MAINTENANCE

1. OBJECTIVE

To maximize the functional life of Multiplate Structures.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements

2.2 Not applicable to this Specification:

- a) Quantified Maintenance Services
- b) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) tighten or replace loose, damaged or missing bolts;
- b) protect the Multiplate Structure from Scour and erosion to the inlet, outlet and foundation; and
- c) protect the floor area

3.1.1 Performance Time Frames

The Contractor must:

- a) tighten or replace loose, damaged or missing bolts within 10 days, from the time the deficiency was detected by or reported to the Contractor, or as soon as conditions allow; and
- b) protect the Multiplate structure from Scour and erosion to the inlet, outlet and foundation, within 6 months from the time the deficiency was detected by or reported to the Contractor.

3.1.2 Routine Maintenance Services Cap

If the Contractor estimates that, at any particular time, the cost to repair a Multiplate Structure exceeds the \$50,000 (the Routine Maintenance Services Cap), the Contractor must notify the Province. The provisions of Article A ("Maintenance Services") Routine Maintenance Services Cap, in the Introduction will apply.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

Unless directed by the Bridge Structural Engineer, the Contractor must use materials and procedures:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province.

Note: If no procedures are specified, the approach and standard of workmanship must be in accordance with the normally accepted best practice and approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 6-690

BRIDGE RAILING MAINTENANCE

1. OBJECTIVE

To maintain a structurally sound and safe barrier between pedestrians, vehicles and hazards and to maximize the functional life of the Bridge railing.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements
- d) Warranty requirements

2.2 Not Applicable to this Specification:

- a) Quantified Maintenance Services

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) install a temporary barrier or railing where required, to ensure the safety of Highway Users; and
- b) complete permanent repair and/or replacement of Bridge railings.

3.1.1 Performance Time Frames

The Contractor must:

- a) immediately notify the Province of any deficiency of any Bridge railing which is unsafe or has the potential to become unsafe for Highway Users; and
- b) complete installation of temporary railing, as required, within 24 hours, from the time the deficiency was detected by or reported to the Contractor; and
- c) complete maintenance, repairs and/or replacement within 2 months from the time the deficiency was detected by or reported to the Contractor;

3.1.2 Routine Maintenance Services Cap

If the Contractor estimates that, at any particular time, the cost to repair or replace a Bridge railing exceeds the \$50,000 (the Routine Maintenance Services Cap), the Contractor must notify the Province. The provisions of Article A ("Maintenance Services") Routine Maintenance Services Cap of the Introduction will apply.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials:

- a) in accordance with the Standard Specification for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved in writing by the Province; and

Timber must be Number 1 Douglas Fir species, with all fasteners hot-dip Galvanized. The size must be the same as existing unless otherwise approved by the Province.

4.2 Warranty

Bridge railing maintenance is warranted in accordance with the Introduction to the Maintenance Specifications, paragraph D.

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B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification 7-780

HIGHWAY INCIDENT RESPONSE

1. OBJECTIVE

To protect Highway Users from conditions resulting from traffic incidents and/or dangerous goods incidents ("incidents") considered unsafe or potentially unsafe; and to restore the Highway to safe operating conditions.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Material and procedures requirements

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) respond to traffic incidents on Highways by:
 - i) containing environmentally sensitive products (e.g., minor gas or oil spills) on Highways in conjunction with and cooperation with regulatory agencies, police authorities and the Province;
 - ii) removing vehicles from the Travelled Lanes and Shoulders, as necessary (where this service is not provided by others);
 - iii) removing Debris from the Travelled Lanes and Shoulders;
 - iv) removing cargo and debris from the Travelled Lanes and Shoulders or displacing it until it can be removed safely (where this service is not provided by others);
- b) respond to dangerous goods incidents by:
 - i) following the Canutec Emergency Response Guidebook (ERG);
 - ii) contacting the appropriate regulatory agencies, police authorities and the Province and working with all parties to identify the material and to respond to the incident as appropriate and in accordance with all applicable laws and regulations.

Note: Removing cargo and debris that is not removed by others (after it has been displaced from the Travelled Lanes and Shoulders) is not considered Routine Maintenance Services. If the Contractor discovers that others are not removing cargo and debris, the Contractor must immediately notify the Province and must provide an initial estimate, in writing, of the cost of removing the cargo and debris. If requested by the Province, the Contractor must perform the services under Additional Maintenance Services.

3.1.1 Performance Time Frames

The Contractor must respond immediately, from the time the incident was detected by or reported to the Contractor, to all incidents.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use materials and procedures:

- a) in accordance with the Standard Specifications for Highway Construction; or
- b) from the most recent version of the Recognized Products List; or
- c) as approved by the Province.

4.2 Warranty

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION& INFRASTRUCTURE

Maintenance Specification Chapter 7-785

MAJOR EVENT RESPONSE

1. OBJECTIVE

To safeguard Highway Users; to restore traffic flow; to prevent further damage to the Infrastructure; and to repair damage caused by Major Events.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services
- b) Routine Maintenance Services Cap
- c) Materials and procedures requirements

2.2 Not Applicable to this Specification:

- a) Quantified Maintenance Services
- b) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) monitor areas and/or Infrastructure suspected of being or are known to be unstable and/or at risk, or as directed by the Province;
- b) assess the situation;
- c) notify the Province, in accordance with the Provincial Incident Response and Travel Advisory Messaging Protocol;
- d) mobilize the required equipment and resources to the site;
- e) take all actions required to re-establish at least one lane of traffic initially; and then to re-establish all lanes of traffic;
- f) restore the Infrastructure to a condition acceptable to the Province;
- g) submit Major Event Notification Reports and Major Events Tracking Reports.

Note: The Province will make an assessment of the damage and may prescribe the required repair.

3.1.1 Performance Time Frames

Before, during, and after a Major Event, the Contractor must respond immediately by monitoring areas and/or Infrastructure suspected of being or are known to be unstable and/or at risk and/or as directed by the Province.

When a Major Event occurs, the Contractor must respond immediately by:

- a) assessing the situation;
- b) mobilizing the required equipment and resources to the site;
- c) take all actions required to re-establish at least one lane of traffic immediately; and re-establish all lanes of traffic as soon as possible; and
- d) restoring the Infrastructure as soon as possible.

In certain situations, the Contractor may be required to work 24/7. The Contractor must make every effort to re-establish traffic flow and/or to restore the Infrastructure as soon as possible.

The Contractor must also:

- e) submit a Major Event Notification Report the Province within 24 hours of the start of the Major Event;
- f) submit Major Events Tracking Reports monthly or as requested by the Province no later than the 10th Working Day of each month, for the prior month.

If multiple Major Events occur priority will be determined in consultation with the Province in consideration of stakeholder needs.

3.1.2 Routine Maintenance Services Cap

In each Contract Year, the Contractor's Routine Maintenance Services Cap is \$15,000 for up to 4 Major Event Sites and \$5,000 for every subsequent Major Event Site. In other words, in each Contract Year, the Province will pay the Contractor's documented costs in excess of the first \$15,000 per Major Event Site for up to 4 Major Event Sites and the Ministry will pay the Contractor's documented costs in excess of the first \$5,000 per Major Event Site, thereafter.

In addition, in each Contract year, the Contractor's total financial risk for all Major Events will not exceed 2% of the Annual Price. The following occurrences will be credited towards the 2% cap:

- a) all occurrences greater than \$10,000 before the 4 occurrences of \$15,000;
- b) the 4 occurrences of \$15,000
- c) all occurrences up to \$5,000 after the 4 occurrences of \$15,000.

If the Contractor estimates that the cost to restore the Infrastructure exceeds the Routine Maintenance Services Cap, the Contractor must immediately notify the Province and the provisions of Article A ("Maintenance Services") Routine Maintenance Services Cap of the Introduction will apply.

The cost of clean-up and Traffic Management will be included in the cost to restore the Infrastructure.

4. MATERIALS, PROCEDURES AND WARRANTY

4.1 Materials and Procedures

The Contractor must use:

- a) materials and procedures in accordance with the Standard Specifications for Highway Construction; or
- b) use materials and procedures as approved in writing by the Province.

4.2 Warranty

Not applicable to this Specification.

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B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 8-830

HIGHWAY INSPECTION

1. OBJECTIVE

To develop a comprehensive knowledge of Highway conditions to support a work identification and planning program.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) inspect annually all Highways and document results to support a work identification program and setting of annual work priorities;
- b) conduct additional inspections in response to any condition reported by the public, regulatory agencies, police authorities and the Province, that is considered unsafe or has the potential to become unsafe; and
- c) report to the Province any hazardous or observable condition beyond the Right-of-way that is not covered by the Maintenance Agreement or this Maintenance Specification.

3.1.1 Performance Time Frames

The Contractor must:

- a) inspect annually all Highways and components within the Service Area covered by the Maintenance Agreement and/or the Maintenance Specifications and document findings in a work identification planning and priorities program;
- b) inspect immediately any condition reported by the public, regulatory agencies, police authorities and the Province that is considered unsafe or has the potential to become unsafe; and
- c) immediately report to the Province any hazardous or observable condition beyond the Right-of way that is not covered by the Maintenance Agreement or the Maintenance Specifications.

4. MATERIALS, PROCEDURES AND WARRANTY

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 8-840

HIGHWAY PATROL

1. OBJECTIVE

To monitor the condition of the Infrastructure and to identify and attend to existing or changing conditions that are unsafe, or have the potential to be unsafe.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) patrol all Highways;
- b) establish additional patrols during periods of heavy rainfall, high water flow or rapid melting to ensure watercourses are contained and shore and banks are not being Scoured or eroded;
- c) make sure patrol vehicles are prepared to deal with conditions as they are detected, by carrying and being capable of applying Winter Abrasive or Winter Chemicals and being capable of removing Debris on the Highway.
- d) The Contractor may patrol using vehicles not equipped with Winter Abrasive or Winter Chemicals if Highway surface conditions are bare and are expected to remain so. Under no circumstances, will the contractor use vehicles not equipped to apply Winter Chemicals or Winter Abrasive when a Weather Event is occurring, anticipated or forecasted, or when freeze-thaw situations are present, anticipated or forecasted.
- e) conduct patrols during periods of potential snow avalanche activity
- f) establish additional patrols when Debris over 1000 cc (the size of a one litre milk carton) within a 1km section of the Travelled Lanes, Shoulders, and sidewalks is detected or reported to the Contractor;
- g) take appropriate action during patrols to protect Highway Users from potentially unsafe situations; and
- h) report to the Province upon detection or notification, any conditions which effect the Highway in performing its designed function but which are not specifically identified in these Maintenance Specifications.

3.1.1 Performance Time Frames

The Contractor must:

- a) complete patrols of Highways as follows:

i) Summer Highway Classification

	1 & 2	3	4	5	6 & 7
1. at all times	24 h	2 d	7 d	14 d	21 d
2. during periods of heavy rainfall, high water flow or rapid melting*	2 h	4 h	8 h	16 h	32 h

Legend: h – hours, d – days

*give appropriate attention to areas known to be impacted first by high water flow

ii) Winter Highway Classification

	A	B	C	D	E
1. at all times	24 h	2 d	7 d	14 d	21 d
2. prior to a forecasted Weather Event*	4 h	8 h	16 h	24 h	36 h
3. during a Weather Event	90 min	3 h	8 h	12 h	n/a

Legend: h – hours, d – days

*give appropriate attention to areas known to be impacted first by Weather Events

- b) during periods of potential snow avalanche activity, conduct patrols in accordance with Operational Procedures as established in the Ministry's Snow Avalanche Safety Measures for Highways Manual and/or as directed by the Ministry Snow Avalanche Technician;
- c) establish additional patrols when Debris over 1000 cc (the size of a one litre milk carton) within a 1km section of the Travelled Lanes, Shoulders, and sidewalks is detected or reported to the Contractor more than once in a 24 hour period and discontinue the additional patrols when the frequency of Debris over 1000 cc within a 1km section of the Travelled Lanes, Shoulders, and sidewalks is less than 2 in a 24 hour period;
- d) take immediate and appropriate action during patrols to protect Highway Users from potentially unsafe situations; and
- e) report to the Province immediately, upon detection or notification, any conditions which effect the Highway in performing its designed function but which are not specifically identified in these Maintenance Specifications.

4. MATERIALS, PROCEDURES AND WARRANTY

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 8-850

STRUCTURE INSPECTION

1. OBJECTIVE

To develop a comprehensive knowledge of the condition of Structures to support a work identification and planning program.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) inspect all Structures and associated components and document the results to support a work identification program and the setting of annual work priorities;
- b) conduct additional inspections of Structures which have been effected by, but not limited to: impact from vehicles or their loads, vessels or their loads, flooding, Debris, water, high winds, vandalism, fire and/or excessive heat, earthquakes, excessive loading vibration and excessive settlement or movement of Structure Foundations;
- c) ensure backup power units, compressors, and other related equipment are operational;
- d) report to the Province any observable hazardous or deficient conditions that are not covered by the Maintenance Agreement or these Maintenance Specifications;
- e) monitor deficiencies and movement of Structures including their components and notify the Province of any potentially hazardous or unsafe condition; and
- f) give special attention during inspections to Bridges with sub-standard load carrying capacity to ensure that existing capacities are maintained or improved and ensure load restrictions are signed on all Bridges with load restrictions.

3.1.1 Performance Time Frames

The Contractor must:

- a) inspect Bridges, other Structures and associated components as follows:

Structure Type	Summer Highway Classification			
	1 & 2	3	4 & 5	6 & 7
(i) Bailey and Acrow Bridges	14 d	21 d	2 m	3 m
(ii) timber Truss Bridges	21 d	1 m	1 m	1 m
(iii) log Stringer Bridges	n/a	3 m	6 m	1 y
(iv) other timber Bridges	2 m	3 m	6 m	1 y
(v) concrete and steel Bridges and other Structures	4 m	6 m	1 y	1 y
(vi) Retaining Structures	4m	6m	1y	1y
(vii) Multiplate structures	6 m	1 y	1 y	1 y
(viii) Sign Bridges	1 y	1 y	1 y	1 y

Legend: d – days, m – months, y - years

- b) notwithstanding 3.1.1 a), immediately inspect, from the time the deficiency was detected by or reported to the Contractor, a Bridge or Structure with a safety or structural deficiency; and continue inspections at a frequency determined by the Province;
- c) initiate, upon Commencement Date, an inspection of all Bridges, Structures and associated components to be completed within 3 months and attended by representatives of the Province and the Contractor, on a schedule acceptable to the Province; and
- d) operate backup power units, compressors, and other related equipment for a minimum of one hour each month, on a schedule acceptable to the Province.

4. MATERIALS, PROCEDURES AND WARRANTY

Not applicable to this Specification.

B.C. MINISTRY OF TRANSPORTATION & INFRASTRUCTURE

Maintenance Specification Chapter 8-870

PUBLIC & STAKEHOLDER COMMUNICATIONS

1. OBJECTIVE

To communicate effectively and in a timely manner with the general public and stakeholders.

2. SCOPE

2.1 Applicable to this Specification:

- a) Routine Maintenance Services

2.2 Not Applicable to this Specification:

- a) Routine Maintenance Services Cap
- b) Quantified Maintenance Services
- c) Materials and procedures requirements
- d) Warranty requirements

3. PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) report Highway condition information in Drive BC in accordance with the Drive BC Web Input Utility User Manual; and ensure condition information remains current;
- b) communicate any conditions leading to Highway closures, lane closures, Traffic Delays and/or adverse weather that could lead to unsafe Highway conditions, in accordance with the Provincial Incident Response and Travel Advisory Messaging Protocol;
- c) update and maintain current messages on the low frequency broadcast stations;
- d) receive and respond to complaints, comments and requests for service from the general public and stakeholders across various communications platforms (including email, phone and social media) and/or in person; and document the result of those communications;
- e) proactively communicate with the general public and stakeholders across various communications platforms regarding planned Services, traffic disruptions, upcoming Weather Events; different strategies may be required for rural versus urban areas;
- f) solicit input regarding the delivery of Maintenance Services and consult with the general public and stakeholders when Services are or may be disruptive/contentious; this includes communicating in advance, during and after the Maintenance Services are delivered;
- g) engage in educational campaigns (e.g., winter preparedness, Shift Into Winter, Cone Zone, etc.) independently and/or in conjunction with the Province;
- h) provide a toll-free telephone service to respond to:
 - i) complaints, comments or concerns;
 - ii) reports of potential or existing Highway hazards; and
 - iii) reports of and requests for provincial Highway conditions;
- i) provide contact lists to all emergency responders and the Province; and ensure those remain current; and
- j) recommend changes to the Province regarding messages displayed on the electronically controlled dynamic message Signs in accordance with the Provincial Incident Response and Travel Advisory Messaging Protocol.

3.1.1 Performance Time Frames

The Contractor must:

- a) update Drive B.C.:
 - i) at 5:00 a.m., 7:00 a.m. and 4:00 p.m. daily from October 1 to April 30;
 - ii) at 7:00 a.m. and 4:00 p.m. daily from May 1 to September 30;
 - iii) immediately when weather conditions affecting visibility deteriorate or improve; and
 - iv) immediately when driving conditions deteriorate or improve;
- b) immediately report to the Province any conditions leading to Highway closures, lane closures, traffic delays and/or adverse weather;
- c) update and maintain current messages on the low frequency broadcast stations as required;
- d) acknowledge complaints/questions from the general public or stakeholders, as required;
- e) proactively communicate with the general public and stakeholders, as required; this includes communicating in advance, during and after the Service, traffic disruption or Weather Event;
- f) solicit input and work with stakeholders, as required;
- g) engage in educational campaigns each season, as required;
- h) provide a toll-free telephone service attended by sufficient personnel 24 hours per day, 7 days a week;
- i) provide contact lists to all emergency responders and the Province no later than the Commencement Date and provide updates immediately when changes occur; and
- j) recommend changes to the dynamic message Signs, as required;

4. MATERIALS, PROCEDURES AND WARRANTY

Not applicable to this Specification