

SIERRA YOYO DESAN ROAD

(ROAD AND BRIDGE MAINTENANCE SERVICES)

SERVICES STANDARDS MANUAL: (2003)

SEPTEMBER 29, 2003 VERSION

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LIST OF REVISIONS

Revisions made to the Sierra Yoyo Desan Road, Road and Bridge Maintenance Services Standards Manual: (2003) made after September 29, 2003, are as follows:

Chapter & Section	Revision Date & Clause	Services Standard	Description of Revision

THE SERVICES STANDARDS MANUAL - INTRODUCTION

GENERAL

The Sierra Yoyo Desan (SYD) Road, Road and Bridge Maintenance Services Standards Manual: (2003), September 29, 2003, specifies the Performance Standards for Sierra YoYo Desan Road and Bridge Maintenance Services. Any discrepancies, errors or omissions must be brought to the attention of the Ministry of Energy and Mines immediately for rectification. If there is any disagreement between these Standards and the Agreement, the Agreement will prevail.

The SYD Road Services Standards Manual is generally formatted as described below.

A. MAINTENANCE SERVICES

Maintenance Services

Consist generally of the Maintenance and Repair of the Road and Bridge infrastructure:

1. to a condition that is safe for the traveling public and other Road Users; and
2. that is of an unpredictable and/ or non-quantifiable and/ or non-measurable nature as implied by the response times, frequencies and other conditions specified; and / or
3. of such a predictable and/ or cyclical nature that the quantity of Work is implied by the frequency specified; and
4. includes all Work specified in each Standard that is not specifically described and quantified as Road and Bridge Services or Emergency Maintenance Services.

Emergency Maintenance Services

Emergency Maintenance Services are those Maintenance Services which are not preventable through the application of the Maintenance Services Standards ; which are caused by a force or event; and which consist generally of emergency repairs of damage to the Road and Bridge infrastructure as follows:

1. Damage to the Road and Bridge infrastructure caused by floods, washouts, spillage, accidents, and vandalism, as well as damage related exclusively to Bridges and other structures caused by the impact from debris, non-preventable water damage, high winds, fire and excessive heat, earthquakes, excessive loading or vibration, and the excessive settlement or movement of foundations as outlined in Standards 7-100, 7-200 and 7-300.
2. All damage to Government Property which are the responsibility of the Concessionaire will be repaired as Emergency Maintenance Services regardless of whether or not the costs to repair those damages are recoverable by the Ministry of Energy and Mines from third parties or whether the Ministry of Energy and Mines reimburses the Concessionaire for any costs recovered.
4. The Concessionaire is responsible for all work as outlined in the Emergency Maintenance Services Standards except as limited in Standards 7-100, 7-200 and 7-300.
5. The Concessionaire will notify the Ministry of Energy and Mines of all Emergency Maintenance Services required beyond the limits identified, and the Concessionaire will determine the work required and how the work will be undertaken, subject to the review and approval of the Ministry of Energy and Mines Representative.

Notwithstanding the above, the Concessionaire will be responsible for all damage that results from the actions of its employees and sub-Concessionaires.

The Performance Standard for each Road and Bridge Maintenance Service is set out in the following manner:

- Section A The objective or intent of each Maintenance Standard, or activity, and the level of service required are summarized in the leading or header portion of section A of each Standard. The subsections under section A are as follows:
 - 1. a brief description of the requirements for Maintenance Services is included in Section A.1.
- Section B Materials, performance standards, methods to be used and any miscellaneous requirements or specifications are described in section B of each Standard. Typically, the Concessionaire is responsible for specifying materials and methods. Special requirements will be included in some of the Standards.
- Section C The conditions which necessitate Maintenance Services, including the response times and frequencies, are set out in section C1, of each applicable Standard.

B. MATERIALS

In many of the Road and Bridge Maintenance Services Standards, a list of those materials which may be required to perform the particular Services are set out in section B. These materials lists are included in the Road and Bridge Maintenance Services Standards Manual as a general guide to the kinds of materials which the Concessionaire may be required to supply and use to perform the Road and Bridge Maintenance Services and, in many cases, to establish minimum quality standards for those materials. These material lists are not intended to be exhaustive of the materials which may be required to perform the Services and the Concessionaire must supply and use whatever materials are required to perform the Road and Bridge Maintenance Services, whether or not those materials are listed. All such unlisted materials will be of the best quality available to the Concessionaire or as specified and certified in writing by the Concessionaire's Advisors.

C. INTERPRETATION

Words in the Road and Bridge Maintenance Services Standards will bear the definition assigned to them in Clause I of this Introduction to the SYD Services Standards Manual.

Whenever more than one Road and Bridge Maintenance Standard or more than one part of a Road and Bridge Maintenance Standard applies to a particular Road location, condition, circumstance or activity, the Concessionaire will comply with each and every applicable Road and Bridge Maintenance Standard or part of a Road and Bridge Maintenance Standard.

D. WARRANTS

The Concessionaire warrants to the Ministry of Energy and Mines that, upon completion of the Agreement or earlier termination of the Agreement, the Road will have been Maintained in accordance with the Standards in the SYD Services Standards Manual.

E. REPORTING REQUIREMENTS

The Concessionaire will be required through the provision of Road and Bridge Maintenance Services to periodically, and as defined in these Standards, provide the Ministry of Energy and Mines with documents, plans, schedules and design drawings for various activities. This reporting is required to satisfy the Ministry of Energy and Mines that the Concessionaire has recognized and is responding to its obligations, in conformance with the Standards. The provision of such material and information is not to be construed as acceptance by the Ministry of Energy and Mines of the Concessionaire's proposed actions.

F. ROAD & BRIDGE UPGRADE AND MAINTENANCE SERVICES COMPLETION

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

G. ROAD FEATURES INVENTORY

If the Concessionaire identifies any discrepancies between the Road Features Inventory for the SYD Road and the road features actually present on the SYD Road, the Concessionaire will notify the Ministry of Energy and Mines immediately of any such discrepancies.

H. MANUALS

All manuals referred to in these Standards are, or will be, available from the Ministry of Energy and Mines Representative.

H. DEFINITIONS

In these Maintenance Standards, 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.
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I. DEFINITIONS

In these Maintenance Standards, 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.
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Agreement	the Concession Agreement and ground sublease entered into by the Concessionaire and the Ministry of Energy and Mines for the design, construction and maintenance of the SYD Road.
Backfill	earth or other material used to replace material removed during construction, such as culvert trenches, and behind Bridge abutments and Retaining Walls.
Backslope	the slope at the opposite side of a Road ditch from the Shoulder, and extending up to the natural ground surface.
Bearing	Superstructure support elements between the Bridge Seats and the Bridge Superstructure.
Beaver Grate	the drainage appliance the purpose of which is to discourage beaver from blocking culverts and drainage entrances.
Berm	a horizontal ledge in an earth or rock bank or cutting to ensure the stability of a steep slope and to act as a catchment area for any fallen earth, rock or other Debris.
Bin Wall	a series of connected bins, generally filled with earth or gravel to serve as a Retaining Wall or Abutment.
Bridge	a structure providing a means of transit for vehicles above the land and/or water surface of a valley, river, or stream. In general, the essential parts of a Bridge are: (1) the Substructure consisting of its Abutments and Piers supporting the Superstructure, (2) the Superstructure consisting of girders supporting the Road loads and transferring them to the Substructure, (3) the Deck consisting of a concrete or timber running surface that transfers the Road loads to the Superstructure.
Concessionaire's	the agents, advisors, consultants, engineers, as listed in Schedule Advisors 1.1(y) or as otherwise Approved by the Grantor. In particular, for Work involving a Bridge, a Civil Engineer registered with the Association of Professional Engineers and Geologists of the Province of British Columbia, specializing in bridge structural design and construction.
CSA	Canadian Standards Association.
Crib	a construction of wooden, metal, or reinforced concrete units so assembled to form an open cellular-like structure for supporting a superimposed load or for resisting horizontal or overturning forces against it.

Crown	this is the vertical rise in elevation from the outside edge to the centerline on straight sections of Road, used to ensure run-off drainage.
Debris	litter, rubbish, vegetation, fallen rocks, dead animals, spilled materials, brush, branches, material from beaver dams or other tree components or other items, which are not part of the Road by intention.
Debris Catchment	any area dug out, excavated or naturally occurring that is designed or acts to trap or collect Debris.
Debris Dam	congested Debris obstructing the free movement of water in a stream.
Fines	very small particles of material (under 200 micrometres in size), typically the size of fine silt or clay particles. Fines act as a binder or glue when intermixed with sand or gravel.
Drain	an aperture through a wall, curb, or deck to provide egress for water that would otherwise accumulate on a Bridge.
Grading	the machine blading of gravel Road surfaces to remove Raveling and Rutting and establish proper cross-section.
Maintenance	means the Work described in Appendix D and in the Services Standards Manual that is required to keep the Road in a condition that allows vehicular traffic to safely and efficiently travel over the full length of the Road, without being impeded by deteriorated Road surfaces or accidents or Debris.
Ministry of Energy and Mines Representative	means the duly authorized representative of the BC Ministry of Energy and Mines, to be named later.
Off-Take	the extension of ditches away from the line of the Road and toward the Right-Of-Way boundary or low ground for the purpose of de-watering a Road Base or eliminating excessive Roadside water flow and erosion.
PEP	means the Provincial Emergency Program.
Ponding	large puddles of water trapped on the Road surface.
Pot-Hole	in a gravel Road, a hole in which water puddles.
Professional Engineer	means a Professional Engineer and member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia

Re-Shaping	the machine blading of gravel surfaces from ditch line to ditch line, to re-establish the proper shape of the Road including Shoulder edges and crown. This process also brings aggregate and fines back onto the Road surface from Shoulders and ditches and involves a deeper cut than Grading.
Retaining Wall	a vertical structure designed to resist the horizontal earth pressures of a fill or other material.
Right-Of-Way	the legally defined property on which the Road is situated.
Rip-rap	protective cover of large stone or rock of various sizes placed compactly or irregularly to protect stream banks, sides of Fills around Abutments or Piers, the Traveled Lanes and other Road features from scour, Debris and erosion.
Road	means the road known as the Sierra Yoyo Desan Road which originates about 15 km from Highway #97 on Clarke Road, east of Fort Nelson, British Columbia, and extends to the north and east past Kotcho Lake, with an approximate length of 173 kilometers and shown on NTS map sheets 94J (9&16), 94I (11, 12 & 13) and 94P (2, 3 & 7). Also includes the Bypass road constructed as part of the Concession, from the end of Airport Drive in Fort Nelson.
Road Base	the portion of the Road structure subsurface on which the traveling surface or wearing surface is placed.
Road Features Inventory	an inventory of Road features and designations which is produced by the British Columbia Ministry of Transportation, as may be amended from time to time.
Road Surface	means the running surface of the Road from edge of Shoulder to edge of Shoulder.
Road User	means any person(s) traveling on the Road for the purposes of being engaged in work associated or connected with any industry that is paying a fee for the use of the Road. Also includes members of the general public.
Road User Information Signs	means the signs that are required to be erected and maintained by the Concessionaire for the purpose of providing Road Users with communication contact information .
Rutting or Rutted	deformation of the surface of the Road in the vehicle wheelpath due to repetitive passes of vehicle tires.
Shoulder	the space between the edge of the Traveled Lane and the breakpoint at the top of the ditch slope.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL:
ROAD SURFACE GRAVELLING MAINTENANCE 1-100

A. GENERAL

The Concessionaire will perform Road Surface Graveling Maintenance, as required, to provide a smooth, stable, safe and maintainable running surface. The SYD Road running surface shall consist of suitable gravel material, consistent with adjacent Road Surfacing material. This will be performed within the following activity and in accordance with this Standard.

1. Maintenance Services

The Concessionaire will complete repairs to dirt and gravelled portions of the Road that have been damaged or have deteriorated to a state that the deficiencies constitute or have the potential to create unsafe conditions for the Road Users, in conformance with the following Standards. The Concessionaire will perform Road Surface Graveling Maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use the materials that are certified by the Concessionaire's Advisors to be fit for the purpose intended.

2. Performance Standards

The Concessionaire will Maintain the SYD Road surface to provide for a smooth, well-compacted, stable and free-draining surface with a Crown of 4% ($\pm 1\%$) on tangents or superelevated as required in curves.

2.1. Maintenance Services

The Concessionaire will repair the SYD Road surface deficiencies such as Pot-Holes, loss of traction, and soft or Rutted sections, as required, to ensure the safe and unimpeded passage of traffic.

3. Miscellaneous

- a) Grading associated with this Standard must be carried out in accordance with the Service Standard for Road Structure Surface Grading 1-200.

C. SCHEDULING

1. Maintenance Services

The following table represents the maximum response time within which the Concessionaire must complete the described maintenance by repairing the gravel surface deficiency indicated, commencing from the time first detected by or reported to the Concessionaire:

Gravel Surface Deficiency	Response Time
Pot-Holes	2 d
Loss of traction	2 d
Soft, muddy or Rutted sections	2 d
Surface softening when wetted	30d
Insufficient surfacing aggregate	30d

Legend

d - days

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
ROAD SURFACE GRADING 1-200

A. GENERAL

The Concessionaire will perform Road Surface Grading of the SYD Road surface, as required, to provide a smooth, stable, free-draining and safe running surface.

1. Maintenance Services

The Concessionaire will perform grading of the SYD Road surfaces that have been damaged or have deteriorated to a state that the deficiencies constitute or have the potential to create an unsafe condition to the Road Users, in conformance with the following Standards. The Concessionaire must perform grading of the SYD Road surfaces to maintain the specified top width traveled surface. Grading must be performed to maintain appropriate superelevation or have a Crown of $4 \pm 1\%$. The Concessionaire must perform Road Surface Grading in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standards

The Concessionaire will perform Grading and Re-Shaping of the SYD Road surfaces, as required, to make those surfaces:

- smooth,
- free-draining,
- well-compacted,
- stable and safe and
- superelevated or to have a Crown of $4 \pm 1\%$.

The Concessionaire will Grade the SYD Road surfaces to restore the Travelled Lanes and Shoulders to a smooth, stable and safe condition and to repair deficiencies in accordance with the response times set out in section C.1. of this Standard.

2. Miscellaneous

- a) Any rocks exceeding 80 millimetres in diameter will be moved off the surface if loosened or deposited by the grader.
- b) Windrows will be placed so as to minimize interference with traffic where there are two graders working in tandem.

- c) A Windrow will not be left outside the Travelled Lanes overnight except for short periods of time at the outer Shoulder edge.
- d) Under no circumstances will a Windrow be left on the Travelled Lanes of the Road overnight.
- e) The Concessionaire will ensure that sufficient moisture exists to aid compaction, prevent excessive dust and ensure the Fines and binder material are not lost or blown away when performing Grading and Re-shaping of the SYD Road.

C. SCHEDULING

1. Maintenance Services

The following table establishes the maximum response time commencing from the time first detected by or reported to the Concessionaire within which the Concessionaire will complete the described maintenance by repairing the gravel surface deficiencies indicated:

Gravel Surface Deficiencies	Response Time
Pot-Hole (average more than 1 per 25 metres of road), Rutting, Ponding and Wash-Boarding (exceeding 75 mm depth)	2 d
Loss of aggregates (needs reclaimed or additional material)	4 d
Ravelling and loose material (needs Fines)	5 d

Legend
d – days

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL:
DITCH AND WATERCOURSE MAINTENANCE 2-100_

A. GENERAL

The Concessionaire will perform Ditch and Watercourse Maintenance Services as required to provide safe, efficient and unobstructed free drainage of the SYD Road, including natural roadside runoff and drainage water passing under or alongside the Road. This will be performed within the following activity and in accordance with this Standard.

1. Maintenance Service

The Concessionaire will repair ditches and watercourses in conformance with these Standards. The Concessionaire will maintain existing ditches and watercourses to facilitate the safe and efficient movement of water and to ensure that the functional capacity of the drainage appliances is maintained to accommodate peak flows. The Concessionaire will perform drainage appliance maintenance in accordance with the response times and conditions specified in this Standard where such repairs are of an urgently required or site specific nature and include:

- a) clearing and removal of Debris, Debris Dams, sloughs, snow and ice;
- b) repairs to embankments and Backslopes caused by erosion; and
- c) restoring drainage capacity of frozen drainage structures.

The Concessionaire will perform ditch and watercourse maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use materials in accordance with the Standard Specifications for Highway Construction, unless otherwise specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

- 2.1. The Concessionaire will perform Ditch and Watercourse Maintenance Services such that:
 - a) the ditches have a U-shaped or flat bottom;

- b) the Backslopes of the ditches are stable with slopes not greater than 1.5 to 1 unless otherwise specified and certified in writing by the Concessionaire's Advisors;
- c) the gradient of the ditch is the minimum attainable to prevent free-standing water;
- d) the bottom of the ditch is below the subbase to accommodate the free drainage of the road base; and
- e) the cross section of the ditch is sufficient to store snow and ice to meet the needs of Winter Maintenance Services (Standards 5-100, 5-200, 5-300 and 5-400).

2.2. The Concessionaire will perform Maintenance Services for ditches and watercourses accommodating the movement of water to or from the Road including:

- a) removing obstructions that are preventing the free flow of water;
- b) restoring the capacity and/or profile of the ditch to prevent ice and snow, from reaching the roadway surface;
- c) opening frozen drainage appliances and structures, including roadway and access culverts, by thawing or breaking loose any obstruction to restore drainage;
- d) removing any obstructions to water flow, such as beaver dams or Debris dams, which threaten the integrity of the Road. These obstructions may be a considerable distance upstream from the Road, adjacent to the Road or immediately downstream such that water ponds cannot escape from the Road;
- e) removing, in a controlled manner, all obstructions which threaten the integrity of the Road, including beaver dams and Debris dams, subject to obtaining the prior approval, if appropriate, of the Province's Water Management authority;
- f) clearing watercourses, which usually only carry water during spring run-off or heavy rains, of Debris which could restrict flow;
- g) repairing the ditches and Backslopes of any area affected by the watercourse where any watercourse has caused erosion;
- h) restoring elevations and dimensions to a consistent, free-draining gradient or making improvements by lowering elevations and increasing the cross-sectional capacity;
- i) maintaining the cross-section to a flat or "U"-shaped bottom;

- j) ensuring the Backslopes of the ditch are stable with slopes not greater than 1.5 to 1 unless otherwise directed, in writing, by the Concessionair's Advisors;
- k) maintaining the ditch elevation below the bottom elevation of the subbase to ensure free drainage of the Road Base unless otherwise directed in writing by the Concessionair's Advisors;
- l) widening and deepening ditches where required at culvert entrance locations or other drainage appliance or structure locations to provide a collection area to prevent the culvert or other drainage appliance or structure from becoming obstructed by Debris; and
- m) thoroughly cleaning Off-Takes and drainage easements to ensure efficient de-watering of the Road.

3. Miscellaneous

- a) When cleaning or reshaping a ditch, Backslopes and Shoulder slopes will not be unreasonably undermined or disturbed.
- b) The Concessionaire will repair any Shoulder damaged during the course of ditch and watercourse maintenance.
- c) The Concessionaire will not reduce the Shoulder width or undermine the Shoulder when providing ditch and watercourse maintenance.
- d) The Concessionaire may install off-set stakes or markers on the right-of-way to identify drainage structures which are subject to freezing in the winter and which may, as a result, be difficult to locate.
- e) If culverts are required to ensure free, unobstructed drainage or to correct ditch profile, then culverts will be installed in accordance with the Standard for Drainage Appliance Maintenance, 2-200.
- f) The Concessionaire will not schedule ditch and watercourse maintenance when Shoulders are soft (because of saturated conditions) or during spring thaw. When ditch and watercourse work is performed in those periods, Shoulder repair will be performed afterwards.
- g) Inspections of watercourses will be performed in accordance with the requirements of the Service Standard for Bridge Inspection 8-300.
- h) The Concessionaire will re-set culverts, including entrance culverts as required, when correcting the ditch profile to ensure free, unobstructed drainage.

C. SCHEDULING

1. Maintenance Services

The following table establishes the maximum allowable response times from initial detection by or notification to the Concessionaire within which the Concessionaire will complete repairs to ditches and watercourses in accordance with this Standard:

- a) during periods of high volume water flows such as during spring thaw or after heavy rainfall the Concessionaire will respond immediately upon detection or notification to:
 - i) remove obstructions such as Debris, snow and ice in ditches and watercourses;
 - ii) open, by thawing or breaking loose, frozen drainage structures including access culverts; and
 - iii) repair sloughing Backslopes.
- b) during times other than those listed in C.1.a) above and also including all other Maintenance Services as described in sections B.2.1. and B.2.2. of this Standard:

Service	Response Time
During high water flow per C.1.a)i), ii), and iii) above	Immediately upon detection or notification
Debris or beaver dam removal	48 hours
Times other than as per C.1.a) above	20 days

SIERRA YOYO DESAN ROAD

SERVICES STANDARDS MANUAL:

DRAINAGE APPLIANCE MAINTENANCE 2-200

A. GENERAL

The Concessionaire will perform Drainage Appliance Maintenance Services as required to ensure that the Road structure is safe and efficiently drained. The Concessionaire will perform drainage appliance Maintenance Services on existing drainage appliances to facilitate the efficient movement of water and to ensure that the functional capacity of drainage appliances is maintained to accommodate peak flows. The Concessionaire will prevent any erosion of side slopes, surfaces or adjacent properties. This will be performed within the following activity and in accordance with this Standard.

1. Maintenance Service

The Concessionaire will maintain existing drainage appliances to facilitate the safe and efficient movement of water and ensure that the functional capacity of the drainage appliances are maintained to accommodate peak flows, in conformance with the following Standard. The Concessionaire will perform drainage appliance maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use all materials for drainage appliance maintenance including the following in accordance with the Standard Specifications for Highway Construction, ASTM or CSA. Any variation or alteration of approved materials shall only be as specified and certified in writing by the Concessionaire's Advisors:

- a) culvert pipe, if damaged or worn, will be replaced with materials of equal or better quality;
- b) granular products will be required to complete repairs, restore road surfaces, enclose collection devices and aid the channelization of run-off. Clean granular aggregates will be used for Backfill;

- c) damaged or worn steel "H" piles and steel of other configurations will be replaced with materials of equal or better quality to match existing materials;
- d) culvert marker materials will be of a type and material that is capable of identifying the location of culvert ends in all weather conditions;
- e) appurtenances attached to Road features, such as guardrail or retaining structures, used to control splash shall be of size, slope, shape and material to match the original unless otherwise specified and certified in writing by the Concessionaire's Advisors;
- f) Backfill aggregates will be used in the placement of culverts and replacement of Road Bases;
- g) clean, coarse, hard, durable, angular rock as required to protect banks and culvert inlets and outlets; and
- h) culvert entrance protection apparatus, such as but not limited to, beaver grates, trash racks and related hardware.

2. Performance Standards

2.1. Maintenance Service

The Concessionaire will perform Maintenance Services for drainage appliance maintenance as required including:

- a) removal of beaver dams, debris, and sedimentation from culverts and Debris Catchment areas, as required, to ensure the unobstructed passage of water and to prepare the drainage system's capacity for peak flows;
- b) all Road drainage appliances including, without limitation, culverts, grates, trash racks and related hardware will be maintained to permit unobstructed passage of water from the Road surface and across or along the right-of-way. Any worn, bent, broken, missing or damaged appliances will be repaired or replaced;
- c) repair of damaged appliances such as culvert inlets or outlets which are folded, bent, or unraveled by straightening or replacing damaged sections;
- d) Scour and erosion of foundation material at the inlet or outlet will be filled with clean, coarse, hard, durable, angular rock, or other materials, or as otherwise specified and certified in writing by a Professional Engineer, to protect the integrity of the structure, and Rip-Rap

placement, in accordance with the Standard for Ditch and Watercourse 2-100, will be added where necessary to prevent future erosion;

- e) replacement of drainage appliances which are structurally unsound due to deterioration or collapse where such have lost capacity or are compromising the stability of the Road;
- f) resetting drainage appliances to accommodate changes in elevation of ditches and watercourses to eliminate ponding and to ensure unobstructed drainage; and
- g) install off-set stakes or markers on the right-of-way to identify drainage structures which are subject to freezing in the winter and which may, as a result, be difficult to locate.

3. Miscellaneous

- a) Water will be confined to drainage works. Any water permeating the Road Base is unacceptable.
- b) The need for drainage appliance maintenance may be identified by:
 - Ponding at the inlet of culverts;
 - folded, bent or unraveled inlets or outlets of culverts;
 - sloughed or eroded Shoulders;
 - a build-up of silts, sands or other Debris in culverts; and
 - collapsing or worn culverts.
- c) Procedures used to install, replace, and repair drainage appliances, including Backfilling, will be in accordance with the Standard Specifications For Highway Construction.

C. SCHEDULING

1. Maintenance Services

- a) The following table establishes the maximum allowable response times, commencing from the initial detection by or notification to the Concessionaire, during periods of high volume water flow such as during spring thaw or heavy rainfall, within which the Concessionaire will have commenced removing any obstruction of drainage appliances and commenced repair or replacement of the drainage appliance:

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All obstructions	Immediately upon detection or notification
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- b) The following table establishes the maximum allowable response time, commencing from the initial detection by or notification to the Concessionaire, for periods other than listed in a) above within which the Concessionaire will have completed works including cleaning, repairing or replacing drainage appliances:

Beaver dams	48 hours
Other	20 days

Note: Notwithstanding the response times in section C.1.b) above, the Concessionaire will remove any obstruction or repair or replace a damaged drainage appliance restricting water flow capacity by 50 percent or more, within seven days of detection by or notification to the Concessionaire.

SIERRA YOYO DESAN ROAD
SERVICE STANDARDS MANUAL
ROADSIDE BRUSHING MAINTENANCE 3-100

A. GENERAL

The Concessionaire will perform Roadside brushing on Rights-Of-Way to eliminate vegetation restricting Sight Distances at curves, intersections with side roads and entrances, signs, or other locations restricting drainage. This will be performed within the following activity and in accordance with this Standard.

1. Maintenance Services

The Concessionaire will perform Roadside Brushing to remove any trees or limbs which constitute or have the potential to create a danger for the Road Users, in conformance with the following Standard. The Concessionaire will remove trees and brush which cause Sight Distance obstructions on curves, at intersections with road ways and entrances, and which obscure the visibility of Signs. The Concessionaire will perform Roadside Brushing in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standards

The Concessionaire will remove trees and brush from the Roadside in accordance with the following requirements:

1.1. Maintenance Services

The Concessionaire will undertake a Maintenance Brushing program to maintain the minimum Sight Distances and clearances established by the Concessionaire's Advisors.

2. Miscellaneous

- a) The Concessionaire will remove trees or tree limbs which could fall on the Road or pose a threat to adjacent lands.
- b) Brush will be removed from beneath Bridges and other structures within 5 metres on any side.
- c) Chemical applications will not be used.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will remove unstable trees or limbs within 7 days of detection by or notification to the Concessionaire. The Concessionaire will eliminate trees and brush which cause Sight Distance obstructions on curves, at intersections with roadways and entrances, and ensure the visibility of signs and delineators within 4 days of detection by or notification to the Concessionaire.

SIERRA YOYO DESAN ROAD
SERVICE STANDARDS MANUAL
ROADSIDE LITTER COLLECTION 3-200

A. GENERAL

The Concessionaire will perform Roadside litter collection to ensure that the Road and Right-Of-Way are maintained to an attractive appearance, free of litter and Debris in accordance with this Standard.

1. Maintenance Services

The Concessionaire will perform Roadside Litter Collection to ensure that the Road and Right-Of-Way are maintained to an attractive appearance, free of litter, Debris, abandoned vehicles and equipment, in conformance with the following Standard. The Concessionaire will perform Roadside litter collection in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standards

The Concessionaire will ensure that there will be no litter or Debris visible from the Travelled Lanes following a completed collection of litter along the Road in accordance with the response times and frequencies indicated in this Standard.

- a) All litter on the Right-Of-Way that is visible from the Travelled Lanes will be removed.
- b) Bagged litter may be left on the Shoulder edge for pick-up, provided that pick-up is done within 48 hours.
- c) Any large items of litter not obstructing traffic or affecting the safety of the Road Users that require the assistance of mechanical lifting equipment will be removed within 7 days.
- d) Vehicles and equipment abandoned on the Right-Of-Way will be removed by the Concessionaire within 7 days from the time first detected by or reported to the Concessionaire.

2. Miscellaneous

- a) Other maintenance requirements will be noted while patrolling for litter, or while collecting litter by walking Rights-Of-Way, including condition of ditches and culverts.
- b) Litter collection will be undertaken by the Concessionaire at pull-out areas, at and under Bridges and other structures, in accordance with the scheduling requirements as described in this Standard.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will keep the Road and Right-of-way clean and free of litter and Debris by patrolling, stopping as necessary to pick up litter and Debris, or by picking up litter while walking the Roadside. The Concessionaire will perform Roadside Litter pickup once yearly.

SIERRA YOYO DESAN ROAD
SERVICE STANDARDS MANUAL
DEBRIS REMOVAL 3-300

A. GENERAL

The Concessionaire will perform Debris removal as required on the Road to maintain the Travelled Lanes and Shoulders in a safe condition, free of all fallen trees and tree limbs, dead animals or Debris.

1. Maintenance Services

The Concessionaire will remove and dispose of dead animals and Debris from the Road in order to protect the Road Users from situations that constitute or have the potential to create unsafe conditions in conformance with the following Standards. The Concessionaire will perform Debris removal in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standards

The Concessionaire will maintain the Road surface and Shoulders in a safe and obstruction-free condition, and keep the Right-Of-Way clear of Debris and dead animals.

2. Miscellaneous

The Concessionaire will dispose of all materials collected from the Road surface and Shoulders in accordance with all Environmental Regulations. Materials removed from the Road will not be deposited in the adjacent ditch. Any dead animals will be disposed of in a manner acceptable to all regulatory agencies. Dead animals may be removed to an acceptable disposal site or, in remote areas only, burial at the location with a minimum of one metre of earth cover may be acceptable. Disposal in Ministry or any other gravel pits will not be permitted.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will remove Debris and fallen trees or limbs on the Road surface and Shoulders and/or Right of Way within the following maximum allowable response times from initial detection by, or notification to, the Concessionaire:

Obstruction	Response Time
Debris or spilled material over 10 litres on the Travelled Lanes	Immediately upon initial detection by or notification to the Concessionaire
Abandoned Vehicles, Equipment and appliances on the Road Surface Shoulders and ditches.	Immediately upon initial detection by or notification to the Concessionaire
Debris or spilled material equal to or less than 10 litres on the Travelled Lanes	48 h
Dead animals on the Travelled Lanes and Shoulders	Immediately upon initial detection by or notification to the Concessionaire
Dead animals on the Right-Of-Way	72h
Debris or spilled material more than 10 litres on the Shoulder	7d
Debris or spilled material equal to or less than 10 litres on the Shoulder	14d
Fallen trees and tree limbs on the Travelled Lanes and Shoulders	Immediately upon initial detection by or notification to the Concessionaire

Legend

h - hours

d - days

Notwithstanding the above, if, at any time, the Concessionaire notices rock or Debris on the Travelled Lanes and Shoulders the Concessionaire will immediately remove the rock or Debris.

If the rock or Debris is too large for immediate removal, the area will be marked with warning Signs and devices in accordance with the Standard for Road Traffic Control 6-200.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
BRIDGE BEARING MAINTENANCE 4-100

A. GENERAL

The Concessionaire will upgrade and maintain Bridge Bearings as required on Bridges to clean, lubricate, re-align, repair and replace Bridge Bearings and their components. This will be performed within the following group of activities and in accordance with this Standard.

1. Bridge Bearing Maintenance Services

The Concessionaire will clean, lubricate, re-align and repair Bridge Bearings in conformance with the following Standards. The Concessionaire will perform Bridge Bearing maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

- a) The Concessionaire will supply and use materials in accordance with the Standard Specifications for Highway Construction and of the same type and quality or of better type and quality as existing. Any exceptions or variations must be certified in writing by the Concessionaire's Advisors including:
- grease and silicone lubricants;
 - Anchor Bolts and Pins; and
 - concrete/Grout.
- b) All concrete materials will be in accordance with the materials in the Standard for Concrete Structure Maintenance, 4-700.

2. Performance Standards

The Concessionaire will perform all work in accordance with the Standard Specifications for Highway Construction as follows:

2.1. Bridge Bearing Maintenance Services

The following will be maintained by cleaning, lubricating, re-aligning, re-Grouting, repairing and replacing:

- a) all Bearings, including without limitation, Rocker Bearings, Roller Bearings, Roller Nest Bearings and other Bearings, that are rusty, mis-aligned, or are covered with dirt or Debris;

- b) all damaged pads including, without limitation, teflon, lead and other pads, that are damaged, crushed, cracked, split, bulging or torn;
- c) Anchor Bolts and Pins that are damaged or missing; and
- d) concrete pads and Bearing areas that are cracked or spalled.

3. Miscellaneous

In addition to annual inspections as set out in section C.2 of the Bridge Inspection Standard 8-300, all Bearings will be examined carefully by the Concessionaire after excessive loading, earthquakes, floods or vehicle impact on the Bridge. Any resulting movement or damage to Bearings will be reported by the Concessionaire to the Ministry of Energy and Mines Representative for information. The Concessionaire’s Advisors will assess the damage and provide written recommendations to the Concessionaire. Maintenance will be scheduled by the Concessionaire in accordance with section C.1. of this Standard.

C. SCHEDULING

1. Maintenance Services

- a) If a Bridge Bearing is determined to be unsafe for the Road Users by the Concessionaire’s Advisors, then maintenance repairs will be initiated as directed by the Concessionaire’s Advisors, by the Concessionaire within 2 hours of notification.
- b) The Concessionaire will maintain the following Bearing components as necessary within six months, or as directed by the Ministry of Energy and Mines, from the time first detected by or reported to the Concessionaire:

Component	Maintenance
Bearing	Lubricate, align and repair
Anchor bolt	Repair or replace
Concrete pad and Bearing area	Re-Grout

The Concessionaire will perform Bearing lubrication in accordance with the manufacturer's recommendation if specified more frequently than annually.

- c) The Concessionaire will clean Bridge Bearings of accumulations of dirt, Debris or deleterious material at least annually and always within 14 days commencing from the time first detected by or reported to the Concessionaire.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
BRIDGE PILING MAINTENANCE 4-200

A. GENERAL

The Concessionaire will perform Bridge Piling Maintenance, including Trash Racks, as required at Bridges, to ensure structural strength, Scour and impact resistance. This will be performed within the following activity and in accordance with this Standard.

1. Maintenance Services

The Concessionaire will maintain and repair Bridge piling and associated components that have deteriorated to a condition that constitutes or has the potential to create an unsafe condition for the traveling public and other Road Users in conformance with this Standard.

B. SPECIFICATIONS

1. Materials

All materials supplied and used by the Concessionaire will be in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors:

- a) Timber Piling and all other timber material, including Sheathing and Bracing will be the same size and species as in the existing Bridge, and will be pressure treated. Timber treated Piles will have a minimum 7 inch tip.
- b) Steel Piling will be repaired with materials in accordance with the original design. Welded repairs will be in accordance with the Standard Specifications for Highway Construction.
- c) Steel cable, Flashing and Armour will be the same size and material as in the existing Bridge.

2. Performance Standards

All work performed will be in accordance with the Standard Specifications for Highway Construction. Bridge Piling maintenance will be performed by the Concessionaire to ensure carrying capacity is not diminished during the Term by maintaining, repairing and replacing components as follows:

2.1. Maintenance Services

Piling, Diaphragms, Bracing and Sheathing that have become damaged as a result of rot, fungus, vermin, fire, abrasion, weathering, age, collision by ice or Debris or other causes will be repaired by replacing or splicing the damaged members with the same type and quality or of better type and quality as the original members as follows:

- a) Replacement Piles will be driven to the required depth or resistance as for the particular site and as directed by the Concessionaire's Advisors. The method of installation or replacement of Piles will be as specified and certified in writing by the Concessionaire's Advisors.
- b) Splicing Piles will only be used if the base of the Pile is sound.
- c) Cables and fasteners that are loose, worn, broken or missing will be tightened or replaced.
- d) Flashing and Armour that is loose, damaged or missing will be tightened, repaired or replaced, including the installation of protective Flashing where previously none was in place.
- e) Sheathing that is missing will be replaced, including the installation of protective sheathing where previously none was in place.
- f) Trash Racks that are damaged will be repaired or replaced, and accumulated Debris will be removed from the Trash Racks as soon as access permits and will be disposed of in accordance with applicable Environmental regulations.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will perform Bridge Piling maintenance as follows:

- a) The Concessionaire will immediately respond to any deficiency of Bridge Piling, components and hardware which affects the structure such that the safety of the traveling public and other Road Users are at risk. The Concessionaire will immediately notify the Ministry of Energy and Mines Representative for information purposes. The Concessionaire's Advisors will assess the deficiency and risk of structural failure.
- b) If the Concessionaire's Advisors determine that there is a risk of structural failure under loading, then the Concessionaire will do one of the following in accordance with written recommendations from the Concessionaire's Advisors:
 - i) restrict allowable loading of the Bridge;
 - ii) close the Bridge to all vehicular traffic; or
 - iii) close the Bridge to all use.

- c) The Concessionaire will be responsible for all maintenance repairs and replacement of members except in cases of Emergency Maintenance as defined in Standards 7-100, 7-200 and 7-300, and where responsible, will commence maintenance repairs or replacement of members within 48 hours.
- d) Maintenance and repair of Piling and maintenance, repair and replacement of Piling components including, without limitation, Diaphragms, Bracing, flashing or sheathing and associated hardware, except in cases of Emergency Maintenance as defined in Standards 7-100, 7-200 and 7-300, will be completed within 6 months of the time first detected by or notified to the Concessionaire.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
RETAINING STRUCTURE MAINTENANCE 4-300

A. GENERAL

The Concessionaire will perform Maintenance on retaining structures as required at Berms, Bin Walls, Abutments and other retaining structures to ensure stable retention of all Backfill material. This will be performed within the following group of activities and in accordance with this Standard.

1. Retaining Structure Maintenance Services

The Concessionaire will maintain and repair retaining structures and replace hardware and other components that have deteriorated to a condition that constitutes or has the potential to create an unsafe condition for Road Users in conformance with the following Standard. The Concessionaire will perform Retaining Structures Maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

All materials supplied and used by the Concessionaire will be in accordance with the requirements of the Standard Specifications for Highway Construction and will include, without limitation, the following:

- a) concrete materials will be in accordance with the Service Standard for Concrete Structure Maintenance 4-700;
- b) steel or metal material will be of the same size, type and quality or of better size, type and quality as on the existing retaining structure;
- c) timber material will be Douglas Fir, Number 2, of minimum size (150 mm x 200 mm) or as sized on the existing structure. All timber material will be incised and preservative treated;
- d) Backfill material will be of equal or better quality than adjacent material;
- e) drain rock and clean, coarse, hard, durable, rock, environmentally acceptable and free-draining material;
- f) perforated drain pipe will be of equal or better quality than original; and

g) sand bags with a 4:1 ratio sand/cement mixture.

Any exceptions or variations to any of the above recommended Materials must be specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

The Concessionaire will perform all Retaining Structure Maintenance Services in accordance with the Standard Specifications for Highway Construction and as follows:

2.1. Retaining Structure Maintenance Services

- a) All maintenance will be carried out with minimal disruption of traffic flow and will restore the wall to a safe and stable condition
- b) All retaining walls will be maintained in a stable condition. Any portion showing signs of deterioration, deflection or settlement will be repaired, reinforced or replaced.
- c) Any wall showing signs of tilting, settling or other movement will be monitored to determine whether the process is ongoing. The frequency and duration of the monitoring will be in accordance with section C.1. of this Standard.
- d) Walls showing continued movements will be repaired as specified and certified in writing by the Concessionaire's Advisors.
- e) Berms and other retaining structures will be cleaned of accumulations of Debris as required to ensure the particular Berm or retaining structure functions as designed. Debris will be disposed of in accordance with provincial environmental regulations.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will prioritize maintenance on Ballast Walls, Wing Walls, Crib walls, Retaining Walls and Berms on a structure-to-structure basis, and response time will vary with the nature and severity (most severe to be done first) of the deficiencies, subject to the following:

- a) The Concessionaire will commence maintenance and repair within 24 hours from the time first detected by or reported to the Concessionaire where the safety of the Road User or stability of a structure is threatened, including wall movement or fill settlement.
- b) The Concessionaire will perform maintenance and repair required as a result of gradual changes in the condition and stability of Berms and other retaining structures within six months commencing from the time first detected by or reported to the Concessionaire.

- c) The Concessionaire will perform monitoring of ongoing movement of a Retaining Wall or other retaining structure as directed by the Concessionaire's Advisors.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
BRIDGE DECK MAINTENANCE 4-400

A. GENERAL

The Concessionaire will perform Bridge Deck Maintenance as required on bridges to ensure a smooth, stable and safe condition for the Road User. The Concessionaire will maintain a uniform and durable support for vehicular traffic in accordance with this Standard.

1. Maintenance Services

The Concessionaire will repair Bridge Decks that have deteriorated to a condition that constitutes or has the potential to create an unsafe condition for the Road Users in conformance with the following Standard. The Concessionaire will repair Bridge Decks in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

All materials will be in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

All Bridge Deck systems including, without limitation, Bridge Decking, curbs, posts, rail systems, will be restored to a safe, durable, even and free-draining condition which is soundly and securely fastened or bonded to the Deck support structure.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will complete Bridge Deck Maintenance services commencing from the time first detected by or reported to the Concessionaire within the following maximum response times by repairing Bridge Wearing Surfaces, concrete Decks and systems:

Deck Deficiency	Response Time
Pot holes in Concrete Decks	24 hours
Loose, broken or rotten Timber Deck planks	24 hours
Worn in excess of 25% by cross-section	90 days

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
BRIDGE STRUCTURE CLEANING 4-500

A. GENERAL

The Concessionaire will perform Bridge structure cleaning as required on Bridges removing all dirt, Debris and deleterious materials that constitute or has the potential to create an unsafe condition to the Road Users or affects the integrity of the structure. The Concessionaire will perform Bridge structure cleaning in accordance with this Standard.

1. Maintenance Services

The Concessionaire will perform Bridge structure cleaning on Bridges that is cyclical and of an urgently required nature in accordance with the response times, frequencies and conditions in conformance with the following response times and conditions in this Standard.

B. SPECIFICATIONS

1. Materials

All materials supplied and used by the Concessionaire will be in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

All work performed will be in accordance with the Standard Specifications for Highway Construction.

The Concessionaire will clean the Bridge structures of all deposits of dirt, Debris, deleterious materials, or other chemicals.

3. Miscellaneous

- a) Cleaning activities that may impact any environmentally sensitive area or watercourse will meet all requirements of the appropriate environmental agencies with respect to all works and disposal of the material from the site. The Concessionaire will contact the appropriate environmental agencies to determine requirements prior to proceeding and will perform Bridge structure cleaning according to the requirements specified by those agencies.
- b) Cleaning will proceed from the top of the Bridge to the bottom.

C. SCHEDULING

1. Maintenance Services

- a) The Concessionaire will thoroughly clean Bridge structures in the spring of each year in order to remove dirt, Debris and other deleterious materials, or other chemicals. All Bridge structure cleaning will be completed within the earliest allowable environmental window, as specified by the appropriate environmental agencies, or by July 30th of each year, whichever comes first.
- b) The following table represents the maximum response times commencing from the time first detected by or reported to the Concessionaire within which the Concessionaire will clean Bridge Deck surfaces:

	Maximum Response Time
Bridge Structures	3 months

No Bridge cleaning will take place when temperatures are 0 degrees Celsius or less or when such temperatures are anticipated overnight or before drying of all wetted surfaces.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
CONCRETE STRUCTURE MAINTENANCE 4-600

A. GENERAL

The Concessionaire will perform concrete structure maintenance and repair as required on Bridges and concrete walls to restore the integrity and durability of all concrete structure components within the following group of activities and in accordance with this Standard.

1. Maintenance Services

The Concessionaire will maintain and repair all concrete structures and associated components that have deteriorated to a condition that constitutes or has the potential to create an unsafe condition for the Road Users in conformance with the following Standard. The Concessionaire will perform concrete structure maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

All materials supplied and used by the Concessionaire will be in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

All work will be performed in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will perform Maintenance Services to maintain and repair concrete structures as follows:

- a) Any structural deterioration to concrete structures that is detected by or reported to the Concessionaire will be immediately assessed by the Concessionaire's Advisors so that they may assess the situation and recommend a course of action. Any defect potentially affecting the structural integrity of the bridge will be immediately reported to the Ministry of Energy and Mines Representative.

- b) If the Concessionaire's Advisors determine that there is a risk of structural failure under loading, then the Concessionaire will respond immediately by doing one of the following:
- i) restrict allowable loading on the Bridge;
 - ii) close the Bridge to all vehicular traffic; or
 - iii) close the Bridge to all use.

The Concessionaire will advise the Ministry of Energy and Mines Representative of the condition and status of the Bridge. The Concessionaire will commence repairs within 48 hours of notification to or detection by the Concessionaire, except in cases of Emergency Maintenance as defined in Standards 7-100, 7-200 and 7-300.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
STEEL STRUCTURE MAINTENANCE 4-700

A. GENERAL

The Concessionaire will perform maintenance on Steel Structures as required to restore integrity, durability and maintain the load carrying capacity of the Bridges in accordance with this Standard.

1. Maintenance Services

The Concessionaire will maintain and repair steel structures and maintain, repair and replace associated components that have deteriorated to a condition that constitutes or has the potential to create an unsafe condition for Road Users in conformance with the following Standard. The Concessionaire will maintain and repair steel structures in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

All materials supplied and used by the Concessionaire will be in accordance with the Standard Specifications for Highway Construction or as otherwise specified and certified in writing by the Concessionaire's Advisors. Steel structure components will be either of the same type and quality or of a better type and quality as the original condition of existing materials.

2. Performance Standards

All work performed will be in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will complete maintenance, repairs and replacement within the associated response times as follows:

- a) The Concessionaire will immediately inform the Ministry of Energy and Mines Representative of any deterioration to steel structures that constitutes or has the potential to create an unsafe condition for the Road Users. The Concessionaire's Advisors will assess the situation and recommend a course of action. If the

Concessionaire's Advisors determine that there is a risk of structural failure under loading, then the immediate response by the Concessionaire will be one of the following:

- i) restrict allowable loading on the Bridge;
- ii) close the Bridge to all vehicular traffic; or
- iii) close the Bridge to all use.

The Concessionaire will advise the Ministry of Energy and Mines Representative of the condition and status of the Bridge. The Concessionaire will commence repairs within 48 hours of receiving the recommended written course of action from the Concessionaire's Advisors, except in cases of Emergency Maintenance as defined in Standards 7-100, 7-200 and 7-300.

- b) Lost, missing, deteriorated or corroded rivets and bolts will be replaced within 30 days commencing from the time first detected by or reported to the Concessionaire.
- c) All other steel structure maintenance will be completed by the Concessionaire within four months commencing from the time first detected by or reported to the Concessionaire, except in cases of Emergency Maintenance as defined in Standards 7-100, 7-200 and 7-300.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
BRIDGE RAILING MAINTENANCE 4-800

A. GENERAL

The Concessionaire will perform maintenance on Bridge railings as required on structures to ensure a safe barrier between vehicles and hazards in accordance with this Standard.

1. Maintenance Services

The Concessionaire will maintain, repair and replace Bridge railing and associated components that have deteriorated to a condition that constitutes or has the potential to create an unsafe condition for the Road Users in conformance with the following Standard. The Concessionaire will maintain Bridge railings in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use the materials in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

All work performed will be in accordance with the Standard Specifications for Highway Construction. Any exceptions or variations must be specified and certified in writing by the Concessionaire's Advisors.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will perform Maintenance Services on Bridge and other structure railings as follows:

- a) The Concessionaire will immediately respond to any deficiency of any Bridge railing which constitutes or has the potential to create an unsafe condition for the Road Users.

- b) Temporary railing installation will be completed within 24 hours of commencement of action as set out in section C.1.a); of this Standard.
- c) The Concessionaire will complete final maintenance repairs in accordance with section B. of this Standard within 60 days from the commencement of work.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
ROAD SNOW REMOVAL 5-100

A. GENERAL

The Concessionaire will perform Road Snow Removal as required on the Road to clear snow and remove ice build-up from Travelled Lanes and Shoulders in a timely manner and ensure the road is kept smooth, open, and in a condition that is safe to the Road Users.

1. Maintenance Services

The Concessionaire will plan and execute an effective snow and ice removal program such that Road surfaces are cleared of snow and ice in a timely and systematic manner in conformance with the following Standard. The Concessionaire will perform Road snow removal in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standards

- a) The Concessionaire will ensure that snow accumulations remain below the maximum allowable accumulations, to the full width of the Travelled Lanes, within the response time set out in section C.1. of this Maintenance Standard.
- b) The Concessionaire will remove all loose snow and ice and will leave exposed surfaces compact and smooth.

2. Miscellaneous

- a) The Concessionaire will plough at speeds such that snow is thrown well off the Travelled Lanes, except in areas where the Concessionaire will adjust plough speeds to minimize inconvenience and prevent damage to persons and to property.
- b) The Concessionaire will take reasonable care to minimize the depositing of ploughed snow and ice at side road accesses and other entrances and around intersections that have been previously ploughed.
- c) The Concessionaire will keep snowbanks to the outside Shoulder edge as set out in section C.1.c) to ensure that any water created by thawing conditions can readily drain from the Road surfaces.
- d) The Concessionaire will take reasonable care to minimize damage to the Road or private property including, but not limited to, Signs, Bridge abutments and railings,

etc. The Concessionaire will be responsible for repairing any damage to the Road or private property caused by ploughing operations.

C. SCHEDULING

1. Maintenance Services

- a) The Concessionaire will complete surface plowing on Travelled Lanes on Roads within 72 hours of the last measurable snowfall.
- b) Subject to section C.1.a) above, the following table establishes the maximum allowable total accumulations on each Road Traveled Lane and maximum snow depths at which point the Concessionaire will have started ploughing:

Snow Depth When the Concessionaire will have Started Ploughing	Maximum Allowable Accumulation One Lane Each Direction
15.0 cm	30.0 cm

To apply this Standard, the Concessionaire will establish and follow a plan which includes sufficient and appropriate resources.

Due to terrain and climatic variations, snow accumulation will vary at any one time along the Road and, therefore, in order to achieve this specification, the Concessionaire will ensure the accumulations in all areas do not exceed the maximum allowable.

Any other work the Concessionaire may undertake independently, such as access road plowing, must not compromise or otherwise interfere with achievement of this Standard in any way.

- c) Shoulder clearing

The following table establishes the maximum period of time from the end of measurable snowfall within which the Concessionaire will have pushed snow and ice back beyond the Shoulder edge:

End of Storm
7 days

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL:
COMPACT SNOW ROAD MAINTENANCE 5-200

A. GENERAL

The Concessionaire will perform Compact Snow Road Maintenance (compact snow surface grading) as required on the SYD Road, to maintain the Road surface in a smooth, safe condition in accordance with this Standard.

1. Maintenance Services

The Concessionaire will grade the surface of the compact snow road when conditions constitute or have the potential to create unsafe conditions for the Road Users, in conformance with the following Standard. The Concessionaire will perform compact snow road maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standard

- a) The Concessionaire will grade compact snow road surfaces to a safe and smooth condition with the compact thickness not exceeding 50 mm ensuring no damage to the underlying surface.
- b) The Concessionaire will roughen compact snow road surfaces as required to provide traction.
- c) The Concessionaire will perform Road snow removal on compact snow roads in accordance with the Standard for Road Snow Removal 5-100.

C. SCHEDULING

1. Maintenance Services

The following table establishes maximum response times commencing from the initial detection by or notification to the Concessionaire within which the Concessionaire will have addressed the deficiency noted by grading the surface of the compact snow road:

	Response Time
Thickness of the compact surface greater than 50 mm	5 days
Pot hole (average more than 1 per 25 metres of road exceeding 40 mm depth)	2 days
Rutting in excess of 30 mm	2 days
Smooth polished compact surface not able to provide traction	Immediately upon initial detection by or notification to the Concessionaire

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL:
ROADSIDE SNOW AND ICE CONTROL 5-300

A. GENERAL

The Concessionaire will perform Roadside snow and ice control as required on the road to prevent snow from drifting onto the road. The Concessionaire will remove snow and ice encroaching or otherwise accumulating on the Traveled Lanes or shoulder tops.

1. Maintenance Services

The Concessionaire will plan and execute an effective snow and ice control program, in conformance with the following Standard. The Concessionaire will provide storage requirements for continued winter maintenance. The Concessionaire will establish preventative measures to protect the road from drifting snow. The Concessionaire will remove any Sight Distance obstructions that constitute or have the potential to create an unsafe condition for the Road in a timely and systematic manner and in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standard

- a) The Concessionaire will provide Maintenance Services for Roadside Snow and Ice Control to:
 - i) prevent drifting snow by constructing Snow Berms as required. Where heavy snowfall accumulations exceed one metre in depth, the Concessionaire will plow snow from behind the snow fences to form trenches to catch blowing snow;
 - ii) protect the Road Users from snow accumulations and ice deposits such as on Bridges, that have historically affected the Travelled Lanes, or identified locations where such snow accumulations or ice deposits constitute or have the potential to create a danger to the safety of the Road Users by methods such as:
 - I. removing snow and ice material by hand or machine scaling;
 - II. cleaning ditches frequently;
 - III. placing warning Signs or providing traffic control as necessary; and
 - IV. increasing patrols at critical times, such as during thaw cycles, that could loosen material.

- iii) restore Sight Distances by clearing snow and ice immediately following snow plowing operations on the Road where snow and ice have been piled high enough to restrict Sight Distance at curves, intersections, or around Signs.
- b) The Concessionaire will be responsible for obtaining permission for Snow Berm erection from private landowners when necessary.
- c) Source areas of ice and snow may be outside of the Road Right-Of-Way.

C. SCHEDULING

1. Maintenance Services

- a) The following table establishes maximum response times, commencing from the time adjacent Road snow plowing operations have finished, within which the Concessionaire will have completed clearing snow and ice on the Roads.

	Response Time
Intersections	72 hours
Sight Distance obstructions	2 days

- b) The Concessionaire will have completed construction or maintenance of Snow Berms as follows:
 - i) once sufficient snow has fallen for establishing Snow Berms; and
 - ii) prior to snowfall depths exceeding 1 metre for the construction of trenches behind snow fences.
- c) The Concessionaire will remove all snow and ice accumulating on Bridges which constitute or has the potential to create a danger to the Road Users or threatens the integrity of the Road within 48 hours from the time first detected by or reported to the Concessionaire.
- d) Where a Sight Distance obstruction is at an intersection of Roads.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
WINTER ABRASIVE APPLICATION 5-400

A. GENERAL

The Concessionaire will perform Winter Abrasive application in extreme icy conditions as required on the Road to restore surface conditions which constitute or have the potential to create an unsafe condition for the Road Users.

1. Maintenance Services

The Concessionaire will perform Winter Abrasive application to restore surface traction and prevent Slippery surface conditions from occurring on Road surfaces in conformance with the following Standard. The Concessionaire will perform Winter Abrasive application in accordance with the response times and conditions specified in this Standard whenever weather conditions dictate and other methods fail to ensure safe road conditions.

B. SPECIFICATIONS

1. Materials

All materials will be supplied and used by the Concessionaire as follows or unless otherwise specified or approved in writing by the Ministry of Energy and Mines.

The maximum allowable particle size for Winter Abrasive materials, and the mean Gradation limits for these materials when tested is:

Screen	Percentage Passing
19.0 mm	100
16.0 mm	N/A
12.5 mm	N/A
9.5 mm	80-100
4.75 mm	50-95
2.36 mm	30-80
0.60 mm	10-50
0.30 mm	0-25
0.075 mm	0-6

These figures represent the percent of material which passes that particular screen size.

2. Performance Standard

- a) The Concessionaire will provide Winter Abrasive, whenever other Road Surface Maintenance methods fail to keep all Travelled Lanes free of Slippery conditions in accordance with the response time set out in section C.1 of this Standard, notwithstanding that the Concessionaire will ensure patrol vehicles take action to restore surface traction by immediately applying Winter Abrasive when extreme Slippery conditions are encountered.
- b) The Concessionaire will provide Winter Abrasive in a continuous application through curves, on hills and at accident sites or at any other location on the Road which could present a hazard to the Road Users.
- c) The following table establishes the application rates the Concessionaire will use when applying Winter Abrasive on extremely Slippery, unsafe and icy sections on the road.

Description	Application Rate
Initial application on hills and on curves	1000 kilograms per two-lane kilometre (heavy)

3. Methods

The Concessionaire will use automated equipment with electronic spreader and hydraulic controls to spread Winter Abrasives at controlled application rates unless otherwise specified and certified in writing by the Concessionaire’s Advisors.

- a) The Concessionaire will apply Winter Abrasives in a band of three or four metres in width, keeping the vehicle in a position to apply Winter Abrasive to both lanes of a two-lane road.
- b) The Concessionaire will shut off spinners when meeting approaching traffic.
- c) The Concessionaire will maintain speeds low enough, while spreading Winter Abrasives, that Winter Abrasives will not be distributed beyond the Travelled Lanes.

4. Miscellaneous

- a) Additional winter patrols for inspection of Road surface conditions will be required to ensure Travelled Lanes are not Slippery. The patrol vehicles will respond to extreme Slippery road surfaces by immediately applying Winter Abrasives.
- b) The Concessionaire will ensure that sufficient stockpiles of Winter Abrasive materials are maintained at all times prior to and throughout the winter season for Winter Abrasive.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will start performing Winter Abrasive application in extreme icy conditions within 6 hours of the time first detected by or notified to the Concessionaire.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
SIGNS AND DELINEATION MAINTENANCE 6-100

A. GENERAL

The Concessionaire will perform Sign and delineation Maintenance as required on the Road to assist Road Users in the safe and orderly movement of traffic and to ensure that Signs are installed at the appropriate locations and are clean and legible in accordance with this Standard.

1. Maintenance Services

The Concessionaire will install Road User Information Signs in twelve locations identifying the Concessionaire's 24 hour phone number and radio frequency for Road User communication and complaints about the Road in accordance with the Manual for Standard Traffic Signs. The Concessionaire will replace missing Signs. The Concessionaire will maintain, repair, relocate and replace Signs including Sign Systems that have been damaged or have deteriorated to a state that the desired message or instruction is no longer conveyed effectively. All work shall be in accordance with the following Standard. The Concessionaire will perform Sign and delineation maintenance in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use all necessary materials in accordance with the Manual for Standard Traffic Signs and as follows:

- a) Signs and other Sign Systems will be consistent and the same or better than existing materials in accordance with the Manual for Standard Traffic Signs; and
- b) Delineator reflectors and reflective sheeting will be in accordance with the Manual for Standard Traffic Signs.

2. Performance Standards

2.1 Maintenance Services

- a) The CONCESSIONAIRE will arrange for the manufacture and installation of the Road User Information Signs at twelve locations that provide the greatest opportunity for exposure to road travellers, six locations are to be inbound and six outbound.

- b) Missing signs will be identified and installed in accordance with the requirements of the Manual for Standard Traffic Signs. The Concessionaire's Road User Information Signs shall be installed within 30 days of the Effective Date.
- c) The Concessionaire will keep all Signs, Sign posts, delineators and other Sign Systems clean, legible, adequately reflectorized, erect and correctly located consistent with existing signs, in accordance with the Manual for Standard Traffic Signs.
- d) Where the Ministry of Energy and Mines directs the Concessionaire to install Signs exceeding 3.2 square metres of Sign face area at a new location, the Ministry of Energy and Mines will provide the Sign. This is exclusive of the requirement in B.1.a).
- e) The Concessionaire will install, maintain, repair, relocate and replace Signs and other Sign Systems, in accordance with the Manual for Standard Traffic Signs.
- f) Signs showing the following Sign Deterioration will be refurbished or replaced:
 - i) Each sign face will be kept visible and legible under both day and night conditions.
 - ii) A sign is considered to have lost its reflectivity for night time display when the amount of limited retro-reflectivity or blotchy reflectiveness exceeds 25% of the sign face area or when the sign text, colour or legend is not effectively presented to the road user.

3. Miscellaneous

- a) The Concessionaire will not mount Signs on poles or structures without the prior approval of the Ministry of Energy and Mines Representative and the owner of poles or structures.
- b) The Concessionaire will remove and install Sign Systems at Road locations that are required to be removed and reinstalled due to seasonal requirements, or changing needs or conditions at those Road locations.
- c) The Concessionaire will remove any illegal or unauthorized Signs and other Sign Systems on the Road. These Signs will be stored for up to 90 days and will be returned to the original owner at their request.
- d) The Concessionaire will relocate Signs as directed by the Ministry of Energy and Mines Representative.

C. SCHEDULING

1. Maintenance Services

- a) The Concessionaire will locate the Road User Information Signs at twelve locations on the road within 30 days of the Effective Date.
- b) The Concessionaire will maintain, repair, relocate and replace Signs, delineators and other Sign Systems within the maximum response times indicated in the following table, commencing from the time first detected by or reported to the Concessionaire:

Type of Sign Marking (in Accordance With the Sign Manuals)	Replacement Response Time From First Detection or Notification of Concessionaire
Regulatory and warning	48 h
Delineators	14d
Direction (guide)	14 d
Information	14 d
All other Signs	30d

- c) Notwithstanding the response times set out in section C. 1.b) of this Standard for permanent maintenance, repair or replacement of regulatory and warning Signs, the Concessionaire will make temporary repairs to any regulatory and warning Sign that is determined to be a Damaged Sign or is missing, or will undertake traffic control procedures in accordance with the Standard for Road Traffic Control, 6-200, immediately from the time first detected by or reported to the Concessionaire. A Damaged Sign is defined as follows:
 - i) the sign is not flat (planar) and properly oriented to the intended audience;
 - ii) either 20 cm sq. or 5% (whichever is greater) of the sign face area is damaged, dented, vandalized or otherwise not as new; or
 - iii) the intended message to the intended audience is unclear or confusing.
- d) The Concessionaire will wash Signs and delineators which are subject to frequent mud and grime spray components in accordance with the response times set out in C. 1.b).
- e) The Concessionaire will clean Signs and delineators that become obscured or muddy, remove vegetation or other material that obscures the Sign or delineator, and carry out adjustments to the Sign System such as strengthening, adjusting or replacing components in accordance with the response times set out in C. 1.b) of this Standard.
- f) The Concessionaire will inspect all Signs, posts, delineators and other Sign Systems at least twice a year and will Refurbish, repair, or replace those which are bent, have any surface deficiencies or are determined to be Damaged Signs as described in Section C.1.c). of this Standard. Signs and delineators which are destroyed or

missing will be replaced. All repairs, replacements, and Refurbishment will be carried out in accordance with the applicable response time set out in section C.1.b) of this Standard. In addition, the Concessionaire will make an annual Night Sign Inspection in the spring of the year. The Concessionaire will replace any Sign or delineator showing Sign Deterioration as described in Section B.2.2.1f) of this Standard in accordance with the applicable response time set out in section C.1.b) of this Standard. Results of the Night Sign Inspections will be made available upon request to the Ministry of Energy and Mines.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
ROAD TRAFFIC CONTROL 6-200

A. GENERAL

The Concessionaire will perform traffic control as required on the Road and Bridges to maintain safe conditions for the Road Users and road workers. The Concessionaire will minimize interruptions to traffic, and warn users of location and nature of delays in accordance with this Standard.

1. Maintenance Services

The Concessionaire will carry out all traffic control required in response to a specified condition or event on the Road, required in conjunction with other maintenance activities, or required for traffic management through operation of lane control systems in order to protect the Road Users from situations that constitute or have the potential to create unsafe conditions in conformance with the following Standard. The Concessionaire will perform traffic control in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use traffic control devices and materials such as Signs, cones, barricades, radios, yellow warning lights and paddles in accordance with the Traffic Control Manual for Work on Roadways and other Sign Manuals.

2. Performance Standard

The Concessionaire will perform traffic control as required to maintain the Roads and control traffic in a safe condition for the Road Users and working personnel. The Traffic Control Manual for Work on Roadways will be the primary reference source for information on the placement and use of traffic control devices and for traffic control procedures to maintain the optimum movement of traffic. The Traffic Control Manual for Work on Roadways will, however, be used in conjunction with the other Sign Manuals.

2.1. Traffic Control Necessary for Road Hazards

2.1.1. Natural Hazards

The Concessionaire will perform pre-emptive closures upon detection by or notification to the Concessionaire of a potential hazard. Examples of these are floods/washouts.

The Concessionaire will perform traffic control for hazards that affect the safety of the Road Users which cannot be immediately repaired in accordance with the Traffic Control Manual for Work on Roadways. Signs will be used to warn approaching traffic of the nature of the hazard and the hazard will be delineated using traffic control devices until the hazard is eliminated, as defined in the Traffic Control Manual for Work on Roadways.

2.1.2. Incomplete Work

The Concessionaire will perform traffic control for hazards created by incomplete maintenance due to the operations of the Concessionaire in accordance with the Traffic Control Manual for Work on Roadways. Signs will be used to warn approaching traffic of the nature of the hazard and the hazard will be delineated using traffic control devices. The Concessionaire will delineate hazards left overnight with appropriate yellow warning lights, as defined in the Traffic Control Manual for Work on Roadways. Examples of these hazards are uneven Road Surfaces, loose material on the Road Surface, insufficiently cured or hardened concrete on Bridge Decks, and Shoulder repairs.

2.2. Traffic Control for Working Personnel and Equipment

The Concessionaire will perform traffic control in accordance with the Traffic Control Manual for Work on Roadways and as follows:

- a) whenever lane closures reduce a two-way road to a single lane, a traffic control person will be used to control traffic whenever the Sight Distance is reduced below 300 m in both directions; and
- b) continuously slow moving operations such as graders will have advance warning signs.

2.3. Road Closures

The Concessionaire will perform traffic control for complete closures of Roads in accordance with the Traffic Control Manual for Work on Roadways. The Concessionaire will post Road user advisory notices before initiating a closure that is expected to exceed 1 hour in duration.

3. Methods

The placement and conduct of traffic control persons in a work area will be in accordance with the Traffic Control Manual for Work on Roadways.

4. Miscellaneous

Where traffic flow is restricted due to the operations of the Concessionaire such that the delay in normal travel through the work area exceeds 30 minutes, the Concessionaire will adjust the operations or terminate work until traffic clears.

C. SCHEDULING

1. Maintenance Services

- a) For Road obstructions caused by washouts or other hazards endangering the safety of the Road Users the Concessionaire will initiate traffic control commencing immediately from the time first detected by or reported to the Concessionaire.
- b) For all other Traffic Control the Concessionaire will follow the requirements of this Standard.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
FLOOD CONTROL AND WASHOUT RESPONSE 7-100

A. GENERAL

The Concessionaire will respond to floods and washouts on the Road as required to safeguard the Road Users and prevent damage to the Road and Bridges. The Concessionaire will restore the flow of traffic in a safe and orderly manner, repair - within the limits outlined in the following Standard - damage caused by floods and washouts, and restore the Road to its original condition and in accordance with this Standard.

1. Maintenance Services

The Concessionaire will respond to, prevent, and repair - within the limits outlined in the following Standard - damage caused by floods and washouts that constitute or have the potential to create unsafe conditions on Roads for the Road Users and adjacent properties, in conformance with the following Standard. The Concessionaire will respond to floods and washouts in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use all materials, including but not limited to the following:

- a) sandbags;
- b) plastic sheeting;
- c) culvert pipe of various sizes;
- d) sand, gravel; and
- e) clean, coarse, hard, durable, rock.

2. Performance Standards

The Concessionaire will be prepared for and will respond to all floods and washouts by:

- a) notifying the Ministry of Energy and Mines Representative;
- b) providing traffic control in accordance with the Standard for Road Traffic Control 6-200;
- c) making prior preparations for and taking all actions required to control the flow of water on or adjacent to the Road;

- d) protecting the Road from erosion due to heavy rains, and high runoff periods;
- e) undertaking minor flood and washout repairs that can be accomplished through grading and with gravelling quantities of less than 20 m³ per incident;
- f) in the event of a flood or washout affecting the Travelled Lanes, the Concessionaire will immediately establish at least one through lane for emergency traffic flow, either by repairing erosion or constructing a detour route around the affected section of Road of up to a maximum additional travel length of 0.5 kilometres; and
- g) Beyond that described in Section B.2.e) and f) above, the method of repair to complete the restoration of the Road will be determined by the Concessionaire to the approval of the Ministry of Energy and Mines Representative.

3. Methods

The Concessionaire will respond to flooding or heavy runoff that is unique to the area's geography, hydrology and Road design, through one or more of the following activities during, and after flooding:

- a) placing sandbags;
- b) protection of Road embankment fills with plastic sheeting;
- c) placing gravel and/or clean, coarse, hard, durable, rock;
- d) dyking;
- e) digging temporary relief channels;
- f) closing sections of a Road as authorized by the Ministry of Energy and Mines;
- g) removing Debris from inlets of culverts;
- h) patrolling all affected Roads;
- i) constructing overflow channels and opening up fills;
- j) repairing washouts as quickly as practical to restore the flow of traffic as outlined in Section B.2.e) above;
- k) installing, if approved by the Ministry of Energy and Mines Representative, culverts;
- l) constructing sufficient repairs to allow emergency vehicles passage; and
- m) any other actions necessary to safeguard the Road Users, adjacent properties, the Roads and Bridges, including the provision of traffic control.

4. Miscellaneous

- a) The Concessionaire will immediately inform the Road Users where floods or washouts result in Road closures, through the placement of information Signs at key locations and accesses to the Road.
- b) The Concessionaire will inform the Ministry of Energy and Mines whenever floods or washouts that result in Road closures are expected to last in excess of 6 hours.
- c) The Concessionaire will perform maintenance and repair in accordance with the appropriate Standard for the activity or activities involved, where repairs are limited as outlined in Section B.2.e) above.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will perform flood control and washout response in accordance with the response times and conditions specified in this Standard as follows:

- a) The Concessionaire will respond immediately to any potential for or damages caused by flooding or washout conditions by inspecting the location or Emergency Site and implementing immediate traffic control measures in accordance with the Standard for Road Traffic Control 6-200.
- b) The Concessionaire will perform flood control and washout response maintenance and repairs as outlined in the above Standard, including the establishment of detours as necessary, within the following maximum times commencing from the time first detected by or notified to the Concessionaire:

Washout Category	Response Time
Washouts completely closing the Road	4 hours
Washouts not completely closing the Road	48 hours

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
ROAD ACCIDENT RESPONSE 7-200

A. GENERAL

The Concessionaire will respond to Road accidents as required by providing traffic control and restoring traffic movement. The Concessionaire will contain Road spillage and repair damage – within the limits specified in this Standard - to Roads from accidents and vandalism. The Concessionaire will record accident and vandalism information, remove vehicles, cargo or Debris as necessary in accordance with this Standard.

1. Maintenance Services

The Concessionaire will respond to and repair, to a limit of \$1000 per incident, the damage caused by all accidents on the Road that constitute or have the potential to create unsafe conditions for the Road Users in conformance with the following Standard. The Concessionaire will maintain effective and timely communication links with the Road Users, regulatory agencies, police authorities and the Ministry of Energy and Mines Representative. The Concessionaire will respond to Road accidents in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

The Concessionaire will supply and use all materials required to contain and clean up – to a limit of \$1000 per incident - spills on the Road.

2. Performance Standards

The Concessionaire will be prepared for and respond to accidents on the Road by:

- a) providing traffic control when necessary for safety reasons and when requested by police and regulatory agencies in accordance with the Standard for Road Traffic Control 6-200;
- b) immediately communicating incidents involving longer duration (anticipated to exceed 4 hours) Road closures to the Road Users;
- c) containing any spills on Roads in conjunction and co-operation with regulatory agencies, and police authorities;
- d) removing vehicles from the Right-Of-Way as necessary (where this service is not provided by others);

- e) providing traffic control and cargo and Debris removal as necessary to assist investigation by authorities; and
- f) disposing of Debris as directed by the regulatory agencies and police authorities or in accordance with the Standard for Debris Removal, 3-300, to a limit of \$1000 per incident.
- g) The Concessionaire will repair any damage to Roads caused by accidents or vandalism in accordance with the Standard for the applicable damaged part of the Road, to a limit of \$1000 per incident, and will:
 - i) keep records of all associated costs such as vehicle, cargo, and Debris removal from the Right-Of-Way;
 - ii) keep records of traffic control to assist investigation by regulatory agencies, police authorities and the Ministry of Energy and Mines Representative; and
 - iii) complete a "Damage to Property Report" in the form established by the Ministry of Energy and Mines Representative, as may be amended from time to time, and forward that form to the Ministry of Energy and Mines Representative.
- h) for traffic accidents, photographs and diary notes of Road conditions and location(s) will be forwarded if requested, to the Ministry of Energy and Mines Representative by the Concessionaire if the Concessionaire attended the site.
- i) Beyond that described in Section B.2.f) and g) above, the method of disposal or repair will be determined by the Concessionaire to the approval of the Ministry of Energy and Mines Representative.

3. Miscellaneous

In the event of a spill on or adjacent to the Road involving Dangerous Goods as defined in Schedule 2 of the *Transportation of Dangerous Goods Act* and Regulations, the Concessionaire will ensure the safety of the Road Users and its employees. The procedure is as follows:

- a) The Concessionaire will cause its employees to park up-wind a minimum of 1000 metres from the spill and shut off the vehicle engine.
- b) The Concessionaire will alert the Ministry of Energy and Mines Representative, police, and Provincial Emergency Program personnel.
- c) Until the hazard and/or material is identified, and appropriate actions determined in accordance with the hazard, the Concessionaire will close and keep the Road closed, within a minimum of 1000 metres from the spill. The Concessionaire will call for local assistance (e.g. Provincial Emergency Program, fire department, police, ambulance service) as the situation requires to identify the material and respond to the emergency. The Concessionaire's field personnel and field supervisors will be

trained in accordance with existing regulations for Dangerous Goods material identification and risk assessment. The Concessionaire will respond as appropriate.

- d) If an explosion is possible, the Concessionaire will evacuate the area within not less than 1000 metres, or more if warranted by risk of explosion, in all directions of the site.
- e) The Concessionaire will establish and record information as follows:
 - i) type of terrain (include ditch, creek, river, lake, etc.);
 - ii) wind direction;
 - iii) name of shipper and point of origin;
 - iv) name of carrier, type of vehicle and identification markings (license number, tractor and trailer(s) unit numbers, placard number);
 - v) name of consignee and destination; and
 - vi) shipping document numbers, if any.
- f) Attendance by others does not relieve the Concessionaire from its obligations under this Standard.
- g) Where attendance by the Concessionaire is required under this Standard, the Concessionaire will remain on site until normal traffic flow is restored in all directions.

Transport Canada's Response and Operations Division operates CANUTEC to provide a 24 hour Dangerous Goods reference, data bank and expert assistance service (Phone: (613) 996-6666 collect).

C. SCHEDULING

1. Maintenance Services

The Concessionaire will perform Road accident response in accordance with this Standard.

- a) The Concessionaire will immediately respond as set out in section B.2. of this Standard commencing from the time first detected by or notified to the Concessionaire that an accident has occurred on the Road.
- b) Photographs and diary notes of Road accidents will be forwarded by the Concessionaire to the Ministry of Energy and Mines Representative within 72 hours of the Road accident if requested by the Ministry of Energy and Mines Representative.
- c) Fatal Road accidents will be reported by the Concessionaire to the police and the Ministry of Energy and Mines Representative immediately upon detection by, or notification to, the Concessionaire.
- d) Repairs to damaged Road facilities, to a limit of \$1000 per incident and in accordance with the appropriate Standard(s) for the damaged part of the Road,

will be commenced immediately by the Concessionaire if such damage restricts traffic movement in any way. Any other repairs will be completed by the Concessionaire in accordance with the appropriate Standard(s).

- e) The Concessionaire will complete a "Damage to Property Report", in a form established by the Ministry of Energy and Mines Representative, if damage has occurred to the Road or its facilities and will forward photographs of the damage to the Ministry of Energy and Mines Representative within 7 days of the accident or act of vandalism.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
STRUCTURAL DAMAGE RESPONSE 7-300

A. GENERAL

The Concessionaire will perform structural damage response, within the limits outlined in the Standard below, as required on Bridges, Piers and Abutment protective structures to remedy any structural damage resulting from:

- a) impact from vehicles or their loads;
- b) flooding, and Debris impact or water damage affecting the structure;
- c) high winds;
- d) vandalism;
- e) fire and excessive heat; and
- f) other events such as earthquakes, excessive loading or vibration and excessive settlement or movement of Foundations.

This will be done to ensure that any condition at the structure which constitutes or has the potential to create an unsafe condition for the Road Users and the stability of the structure will be responded to, maintained and repaired in accordance with this Standard.

1. Maintenance Services

The Concessionaire will perform structural damage response, to a limit of \$1000 per incident, for all Bridges and other structures and their components in conformance with the following Standard. The Concessionaire will perform structural damage response in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

All materials and equipment supplied and used by the Concessionaire will be in accordance with the Standard Specifications for Highway Construction or as otherwise specified and certified in writing by the Concessionaire's Advisors and will be in accordance with the Workers' Compensation Board requirements and as follows:

- a) all concrete repair materials will be in accordance with the Standard for Concrete Structure Maintenance 4-700.
- b) all steel bracing material will be of the highest grade available and must be capable of resisting the induced loads. All replacement materials will be of the same type and quality or of better type and quality as the original structure member or as specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

All work performed by the Concessionaire will be in accordance with the Standard Specifications for Highway Construction or as otherwise specified and certified in writing by the Concessionaire's Advisors and will be in accordance with the Workers' Compensation Board requirements and as follows:

- a) Where the safety of Road Users is affected, the Concessionaire will immediately initiate traffic control in accordance with the Standard for Road Traffic Control 6-200 and will also immediately notify the Ministry of Energy and Mines Representative. The Concessionaire's Advisors will assess the situation and provide written recommendations to the Concessionaire.
- b) Direction from the Concessionaire's Advisors may require, without limitation, that the Concessionaire take one of the following actions:
 - i) restrict the allowable Bridge loading;
 - ii) close the Bridge to vehicular traffic; or
 - iii) close the Bridge to all use indefinitely
- c) The Concessionaire will immediately advise the Ministry of Energy and Mines Representative of the nature, extent of damages and present status of the structure.
- d) Maintenance repairs will be performed by the Concessionaire as follows, within a \$1000 limit per incident:
 - i) If the Bridge is sufficiently safe to work on as specified and certified in writing by the Concessionaire's Advisors, the Concessionaire will reinforce all Fracture Critical members with temporary bracing or cables.
 - ii) Any Bridge with damaged Fracture Critical members will remain closed to traffic until the Concessionaire has completed repairs in accordance with the written recommendations of the Concessionaire's Advisors and the applicable Bridge Maintenance Standards.
- e) A "Damage to Property Report", in the form established by the Ministry of Energy and Mines Representative as may be amended from time to time, will be completed by the Concessionaire, if there is structural damage. Photographs of the damage and the "Damage to Property Report" will be forwarded to the Ministry of Energy and Mines Representative as soon as repair costs are known by the Concessionaire.
- f) Beyond that described in Section B.2.d) above, the method of repair will be determined by the Concessionaire to the approval of the Ministry of Energy and Mines Representative.

C. SCHEDULING

1. Maintenance Services

- a) Mobilization by the Concessionaire for bracing and support of the structure will begin immediately after damage is first detected by or reported to the Concessionaire. All measures necessary to ensure the safety of the Road Users and stability of the structure will be implemented in accordance with the standards set out in section B.2 of this Standard and as directed in writing by the Concessionaire's Advisors.
- b) Temporary barrier or railing placement, within a \$1000 limit per incident and where required to ensure the safety of the Road Users, will be commenced by the Concessionaire immediately after the damage is first detected by or reported to the Concessionaire, and completed within 24 hours of that notification, in accordance with the Standard for Bridge Railing Maintenance 4-800.
- c) The Concessionaire will have the damage assessed by qualified personnel and arrange for inspection and written recommendations to be made by the Concessionaire's Advisors. The Ministry of Energy and Mines Representative will be notified immediately of any damage.
- d) All required maintenance repairs will be performed by the Concessionaire in accordance with the applicable Standard for the part of the structure or type of material damaged or affected by the damage, within a \$1000 limit per incident.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
ROAD INSPECTION 8-100

A. GENERAL

The Concessionaire will perform Road inspection services to identify needed maintenance and establish priorities for maintenance Work assignments. The Concessionaire will ensure the effective provision of the Services in accordance with this Standard.

1. Maintenance Services

The Concessionaire will inspect the Road in conformance with the following Standard. The Concessionaire will perform Road inspection in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standards

Without limiting the provisions of any of the Standards, the Concessionaire will inspect for the following Road conditions:

- a) Road surfaces regarding grading requirements and effectiveness of programs;
- b) Signs for any damage, absence, loss of retro-reflectivity (requires night-time inspection) and location;
- c) ditches for blockages or lack of capacity to carry anticipated flow volumes, particularly in the fall for expected winter and spring run-off and again during the spring thaw period;
- d) culverts and other drainage appliances for any restriction of flow at the inlet, damage to the appliance itself and outlet erosion;
- e) height and encroachment of brush and trees for the development of the brushing schedule;
- f) Travelled Lanes for required Debris removal; and
- g) beaver dams that may affect the road.

2. Miscellaneous

- a) Inspection of conditions in order to schedule and perform works is implicit in each Standard.
- b) The Concessionaire will report to the Ministry of Energy and Mines Representative any conditions which affect the Road in performing its designed function but which are not specifically identified by this Agreement or the Standards commencing immediately upon detection by or notification to the Concessionaire.
- c) The Concessionaire will inspect any condition reported by members of the Road User, regulatory agencies, police authorities and the Ministry of Energy and Mines Representative.
- d) The Concessionaire will, within 7 days from the end of each month, provide the Ministry of Energy and Mines Representative with a report of inspections completed during the previous month, noting all conditions not in accordance with the Standards and the corrective works planned by the Concessionaire.

C. SCHEDULING

1. Maintenance Services

- a) The Concessionaire will inspect the SYD Road at least once per month such that the Concessionaire is able to effectively plan and execute the Maintenance Services in accordance with the response times, frequencies and other conditions specified as noted in each Standard.
- b) Notwithstanding the frequencies set out herein or within the applicable Standards, any condition which constitutes or has the potential to create an unsafe or hazardous condition to the Road Users will be dealt with by the Concessionaire commencing immediately upon detection by or notification to the Concessionaire.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
ROAD PATROL 8-200

A. GENERAL

The Concessionaire will perform Road Patrol Services as required to identify and attend to any condition on the Road that constitutes or has the potential to create an unsafe or hazardous condition to the Road Users. The Concessionaire will identify and monitor changes to the Road that will require or potentially require adjustment to the Concessionaire's maintenance plans or schedules to ensure the effective provision of the Maintenance Services in accordance with the Standards.

1. Maintenance Services

The Concessionaire will provide all Patrol Services as required on the Road in conformance with the following Standard. The Concessionaire will perform Road Patrol Services Inspection in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Performance Standards

Without limiting the provisions of any of the Standards, the Concessionaire will inspect the following Road conditions while performing Road patrol services:

- a) Road surfaces for grading requirements and effectiveness of programs;
- b) Signs for damage, absence, loss of retro-reflectivity (requires night-time inspection) and location;
- c) ditches for blockages or lack of capacity to carry anticipated flow volumes, particularly in the fall for expected winter and spring run-off and again during the spring thaw period;
- d) culverts and other drainage appliances for restriction of flow at the inlet, damage to the appliance itself, and outlet erosion;
- e) roadsides for height and encroachment of brush that reduces Sight Distance or trees and tree links that pose a hazard to the Road Users;
- f) Travelled Lanes for required Debris removal;

- g) winter Road surface conditions for the need to provide traction by plowing and ice blading;
- h) Road and Bridges for damage, deficiencies of Wearing Surface, or other deficient conditions readily observed during patrols;
- i) accidents where the Road condition was considered a contributing factor and for all fatalities or serious injury accidents;
- j) water on road.

2. Miscellaneous

- a) Inspection of conditions in order to schedule and perform works is implicit in each Standard.
- b) The Concessionaire will perform certain operational actions, such as the removal of Debris from the Travelled Lanes during Road Patrol. The Concessionaire will take appropriate actions and ensure that no unsafe or hazardous situation will be left unattended.
- c) The Concessionaire will report to the Ministry of Energy and Mines Representative any conditions which affect the Road in performing its designed function but which are not specifically identified by this Agreement or these Service Standards commencing immediately upon detection by or notification to the Concessionaire.
- d) The Concessionaire will, within 7 days from the end of each month, provide the Ministry of Energy and Mines Representative with a report of inspections completed during the previous month, noting all conditions not in accordance with this Standard and the corrective works planned by the Concessionaire.

C. SCHEDULING

1. Maintenance Services

The Concessionaire will complete patrols of the Road within the maximum periods of time listed in the following table:

- a) Winter season October 16 through April 14

When freezing temperatures and/or snowfall are present or are anticipated	24 hours

b) Summer season April 15 through October 15

During periods of high water flow	48 hours

c) At all times when conditions C.1.a) and C.1.b) are not applicable, the Concessionaire shall inspect regularly, but no less than every 7 days.

d) The Concessionaire will immediately advise the Ministry of Energy and Mines Representative of situations warranting Road condition notification to the Road Users.

SIERRA YOYO DESAN ROAD
SERVICES STANDARDS MANUAL
BRIDGE INSPECTION 8-300

A. GENERAL

The Concessionaire will perform Bridge inspections as required on Bridges and other structures to establish priorities for needed maintenance work and to ensure that full Bridge and structure Maintenance Services are being provided effectively in accordance with this Standard.

1. Maintenance Services

The Concessionaire will conduct inspections of all Bridges and other structures and their components in conformance with this Standard. The Concessionaire will perform Bridge inspections in accordance with the response times and conditions specified in this Standard.

B. SPECIFICATIONS

1. Materials

All materials and equipment supplied and used by the Concessionaire will be in accordance with the Standard Specifications for Highway Construction or as otherwise specified and certified in writing by the Concessionaire's Advisors.

2. Performance Standards

The Concessionaire will inspect all work performed on Bridges to ensure that it is undertaken in accordance with the Standard Specifications for Highway Construction or as otherwise specified and certified in writing by the Concessionaire's Advisors.

Without limiting the provisions of any of these Standards, the following is a list of major Bridge or other structure items which will be inspected by the Concessionaire:

- a) stream channels for bank or bed Scour, blockages, and Debris torrent or flood potential including any condition outside the Right-Of-Way which poses a threat to a Bridge or other structure or the Road;
- b) Foundations for any movement, settlement, piping or Scour;
- c) Cribs and Ballast Walls for crushing, rot or movement;
- d) Caps or Bearing areas on timber structures for any crushing of members;
- e) Bearings for freedom of movement and condition and need for lubrication;

- f) timber Truss Chords for any cracking, crushing or rot or loss of camber;
- g) Stringers, Floor Beams and Girders for cracking, excessive deflection or movement and crushing at the bearing areas;
- h) Cross-Ties for crushing, cracking or rot;
- i) Wearing Surfaces for loose planks, Delaminations, holes, excessive wear or slipperiness or exposed nail and bolt heads;
- j) fences, rails or barriers and posts for any damage;
- k) Deck surfaces, Bearing areas and Bridge Seats for accumulated Debris or moisture traps;
- l) Road approaches for dips and roughness or bumps at the Abutments;
- m) excessive Camber or sag, or excessive Live Load vibration; and
- n) cracking of concrete surfaces, particularly over Piers and Abutments.

Notwithstanding the inspection items listed above, which is not all-inclusive, all parts and components of all Bridges and other structures, and all adjacent conditions are to be thoroughly inspected, including stream and bank conditions.

2. Miscellaneous

- a) Inspection of conditions in order to schedule and perform maintenance works is implicit in each Standard. Items listed herein do not include all issues which must be addressed while inspecting structures.
- b) Any hazardous Bridge conditions which are not covered by the Maintenance Agreement or these Standards will be reported to the Ministry of Energy and Mines Representative immediately.
- c) For Bridges with sub-standard load-carrying capacity, special attention will be given during inspections in order that existing capacities are maintained or improved through scheduling of applicable Standards. A list of load restricted Bridges is within the Road Features Inventory.
- d) Deficiencies and movement of structures and their components will be monitored by the Concessionaire as directed in writing by the Concessionaire's Advisors.

Note: The Ministry of Transportation and Highways training program Bridge Inspection Manuals are available as reference material for Bridge inspections, otherwise the Concessionaire is referred to "Bridge Inspector's Training Manual, 1990" by the U.S. Department of Transportation, Federal Highway Administration, which is available from:

Superintendent of Documents

C. SCHEDULING

1. Maintenance Services

- a) The Concessionaire will undertake the initial Inspections of the Bridges and Structures upon the Effective Date and will be completed within 3 months. The schedule for the Inspection of Structures will be forwarded to the Ministry of Energy and Mines Representative sufficiently in advance of the work to permit the Ministry of Energy and Mines Representative to attend the inspections if so desired.
- b) The following table represents the maximum periods of time within which Bridges and other structures will be inspected by the Concessionaire:

All Bridges	Annually
All other structures	Annually