Highway Maintenance Contract

2019-2024

District of Sooke

Highway Maintenance Contract

2019 – 2024

AGREEMENT

Index

THIS AGREEMENT dated for reference the_____day of_____, 2019

BETWEEN:

DISTRICT OF SOOKE,

2205 Otter Point Road
Sooke, BC V9Z 1J2

(the "District")

OF THE FIRST PART

AND:

(the "Contractor")

OF THE SECOND PART

WHEREAS:

A. The District has agreed to appoint and retain the Contractor to provide certain highways maintenance services; and

B. The Contractor has agreed to provide such services for the District.

NOW THEREFORE in consideration of the covenants, agreements, representations, warranties and payments hereinafter contained, the parties hereto covenant and agree as follows:

ARTICLE I - Definitions

1.01 In this Agreement, unless the context otherwise requires:

(a) "Act" means the *Local Government Act*;

(b) "Additional Maintenance Services" means the provision of all labour, materials and equipment for the purpose of maintaining highways at the request of the District beyond the level of services required for Maintenance Services;

(c) "Calls for Service Reports" means the reports and/or work orders that are generated by District staff and issued to the Contractor with regards to Maintenance Services, or other issues affecting the Service Area;

(d) "Contract Price" means the sum of **_____ dollars and _____ cents ($_____)** payable by the District to the Contractor in respect of the Maintenance Services;

(e) "Contractor" means **_____.**

(f) "Controlled Persons" means the Contractor's subcontractors, servants, employees, agents, management, shareholders, directors and suppliers;

(g) "Cost of Living Factor" means the percentage cost of living increase (or decrease) using the Victoria Consumer Price Index (CPI) from Statistics Canada;

(h) "District of Sooke" or "District" means the Corporation of the District of Sooke and any person authorized to act for or on their behalf with respect to any matter under this Agreement;

(i) "District's Representative" shall mean the Municipal Engineer or designate;

(j) "Emergency" means any of the events or conditions described in Schedule 9-Maintenance Services for "Flood Control and Washout Response" "Earth and Rock Slide Response" and "Highway Incident Response" that may entitle the Contractor to receive payment for excess work performed by the Contractor;

(k) "Emergency Services" means the provision of all labour, materials and equipment for the purpose of maintaining the Highways in the event of an Emergency beyond the level of service required for Maintenance Services;

(l) "Engineer" shall mean the Municipal Engineer or designate;

(m) "Equipment" means the Contractor's maintenance equipment described in Schedule 5;

(n) "Event of Default" means any event described in Section 15.01;

(o) "Fee Schedule" means the schedule of fees for the provision of Services attached as Schedule 1;

(p) "Force Majeure" means acts of God, wars (declared or undeclared), revolution, riot, insurrection, strikes or lockouts, provided that any such event is a major disabling event or circumstance in relation to the normal operations of the party concerned as a whole which is beyond the reasonable control of the party directly affected and results in a material delay, interruption or failure by such party in carrying out its duties, covenants or obligations under this Agreement, provided always that lack of money, financing or credit to resolve such contingencies will not be deemed an event of force majeure;

(q) "Highways" means all highways under the administration of the District of Sooke including all ancillary properties, rights of way and easements existing as of the date of this Agreement as determined by reference to the records of the District of Sooke as described in Schedule '8' and includes any highways added or deleted or changed in classification in accordance with Article V;

(r) "Maintenance Services" means the provision of all labour, materials and equipment for the purpose of providing the services described in Schedule 9 as may be amended from time to time in accordance with Article VII;

(s) "MMCD" refers to MMCD Platinum Edition (2009) including all Supplementary Updates as released by the Master Municipal Construction Documents Association.

(t) "Road Lane Classification Adjustment Factor" means the factor that will be used to determine the relative cost impact of providing Routine Maintenance Services to amended Highway(s) as a result of notice or notices delivered under Section 5.02. The factor that will be used for Highways classified: Major - **3.6**, Collector - **2.4**, Local A - **1.6**, and Local B&C - **1.0**.

(u) "Services" means the services provided by the Contractor to the District described in Article VI all of which are to be performed in accordance with the provisions of this Agreement;

(v) "Service Area" means the geographic area within the boundaries of the District of Sooke;

(w) "Sign" means any highway sign required to be erected by the Contractor as part of the Maintenance Services;

(x) "Statutory Holiday" means New Year's Day, Family Day, Good Friday, Easter Monday, Victoria Day, Canada Day, British Columbia Day, Labour Day, Thanksgiving Day, Remembrance Day, Christmas Day and Boxing Day.

(y) "Subcontractors" means arm's length subcontractors of the Contractor satisfactory to the District in its sole discretion engaged in providing labour, equipment and materials in performing the Maintenance Services but does not include dependent contractors as defined in the Labour Relations Code;

(z) "Term" means the term of this Agreement described in Section 3.02.

ARTICLE II - Representations and Warranties

2.01 The Contractor represents and warrants to the District that:

(a) it has the power and capacity to enter into this Agreement and to observe, perform and comply with the terms of the Agreement;

(b) all necessary proceedings have been taken and done to authorize the execution and delivery of this Agreement by the Contractor;

(c) this Agreement has been legally and properly executed by the Contractor and is legally binding upon and enforceable against the Contractor in accordance with its terms;

(d) this Agreement has been duly authorized by all necessary corporate action of the Contractor and it is valid, subsisting and legally binding upon and enforceable against the Contractor in accordance with its terms;

(e) all information, statements, documents and reports furnished or submitted by the Contractor to the District in connection with this Agreement are true and correct;

(f) the Contractor has filed all tax, corporate information and other returns required to be filed by the laws of British Columbia and has complied with all workers compensation legislation and other similar legislation to which it may be subject and has paid all taxes, fees and assessments calculated to be due by the Contractor under those laws as of the date of this agreement;

(g) the Contractor is not in breach of any statute, bylaw, or regulation applicable to the Contractor or its operations;

(h) the Contractor holds all permits, licenses, consents and authorities issued by any federal, provincial, regional or municipal government or an agency of any of them, that are necessary in connection with the operations of the Contractor; and

(i) it has sufficient trained staff, facilities, materials, appropriate equipment and approved subcontractual agreements in place and available to enable it to fully perform the Services.

2.02 All representations, warranties, covenants and agreements made in this Agreement and all certificates and other documents delivered by or on behalf of the Contractor are material and will conclusively be deemed to have been relied upon by the District, notwithstanding any prior or subsequent investigation by the District.

2.03 The provisions of Sections 2.01 and 2.02 will continue in full force and effect notwithstanding the fulfilment by the Contractor of any or all of its obligations under this Agreement or the payment by the District to the Contractor of any or all of the monies that the District becomes liable to pay to the Contractor pursuant to this Agreement.

2.04 All statements contained in any certificate or other document delivered by or on behalf of the Contractor to the District under this Agreement or in connection with any of the transactions contemplated herein will be deemed to be representations and warranties by the Contractor under this Agreement.

ARTICLE III - Appointment and Term

3.01 The District retains the Contractor to provide the Services in accordance with the terms of this Agreement.

3.02 The Contractor will provide the Services during the term of this Agreement which term will, notwithstanding the date of execution and delivery of this Agreement, be conclusively deemed to commence on _____**, 2019** and will end on _____**, 2024** unless earlier terminated pursuant to Article XV.

ARTICLE IV - Legal Relationship

4.01 The Contractor is an independent contractor and not the servant, employee, partner or agent of the District.

4.02 The Contractor will not, in any manner whatsoever, commit or purport to commit the District to the payment of any money to any person.

4.03 The District may, from time to time, give such instructions to the Contractor as it considers necessary in connection with provision of the Services, which instructions the Contractor will comply with, but the Contractor will not be subject to the control of the District with respect to the manner in which such instructions are carried out.

ARTICLE V - Service Area

5.01 The Contractor will provide the Maintenance Services to the District on all Highways within the Service Area in accordance with the terms of this Agreement.

5.02 The District may, in its sole discretion, on 30 days written notice, notify the Contractor of additions or deletions to, or changes in the classification of, Highways within the Service Area and the Contractor will perform the Maintenance Services to such amended Highways

ARTICLE VI - Services

6.01 The Contractor will provide Maintenance Services to the District in accordance with the terms of this Agreement.

6.02 In addition to the services under Section 6.01, the Contractor will provide Emergency Services to the District at the request of the District.

6.03 The District may, in its sole discretion, direct the Contractor to provide Additional Maintenance Services to the District and the Contractor will provide such services.

6.04 Decisions of the District under Sections 6.02 and 6.03 will be final and binding on the parties.

ARTICLE VII - Modification to Maintenance Services

7.01 In order to promote and enhance public safety and efficiency, the Contractor will:

(a) in consultation with the District, review and re-evaluate the Maintenance Services and in conducting that review will take into account changing technology in the highway maintenance industry, changing economic and environmental conditions and changing public requirements;

(b) advise the District if the Contractor considers that any part of the Maintenance Services should be altered in a material way, and submit the proposed alteration to the District for its consideration; and

(c) reasonably co-operate with the District in tests to accommodate new maintenance technology.

7.02 The District may, in its sole discretion, either as a result of reviews or proposals under Section 7.01 or on its own initiative, change the Maintenance Services by delivery of written notice thereof to the Contractor specifying the change and the Contractor will forthwith perform the Maintenance Services, as amended.

7.03 The Contractor will be entitled to an adjustment in payment for changes in the street Sign inventory as detailed in the Fee Schedule and Chapter VI of Schedule 9 Maintenance Services.

7.04 Upon commencement of the Contract, the Contractor and the District will accept the Schedule 8- Road Features Inventory as correct and this inventory shall not be revised except as a result of additions or deletions to the Road Features Inventory.

ARTICLE VIII - Materials

8.01 The District will have final approval of the specifications of any materials to be supplied by the Contractor that are not specified in the Maintenance Services.

The Contractor will supply the Winter Abrasive and De-Icing Chemical required to meet the Maintenance Service obligations. The Contractor shall be required to manage and protect stockpiles.

ARTICLE IX - Insurance and Indemnity

9.01 The Contractor will obtain and maintain in force during the Term

(a) comprehensive general liability insurance providing coverage of not less than five million dollars ($5,000,000.00) inclusive per occurrence for bodily injury, death and property damage and including loss of use thereof, which may arise directly or indirectly out of the acts or omissions of the Contractor and the Controlled Persons or any of them under this Agreement, such insurance to include the District as an additional insured;

(b) automobile liability insurance in an amount not less than five million dollars ($5,000,000.00) and automobile physical damage insurance including collision and comprehensive coverage, covering all automobiles owned, rented or leased by the Contractor, that are required by law to be licensed; and

(c) equipment insurance covering all equipment owned, rented or leased (with policy limits and conditions that may be applicable to any rental or lease agreements) by the Contractor utilized in performance of the Services by the contractor, and the Controlled Persons or any of them against "all risks" of loss or damage;

all in form and content and with an insurer or insurers acceptable to the District.

9.02 Evidence that the insurance required under Section 9.01 has been obtained will be submitted by the Contractor to the District on execution of this Agreement by the parties and the Contractor will, on or before the ensuing anniversary dates of the contract execution, submit evidence satisfactory to the District, that the policy of insurance remains in effect.

9.03 The Contractor will ensure that the insurance described in Section 9.01 may not be cancelled or materially changed in any way whatsoever without the insurer or insurers giving not less than 30 days prior written notice to the District.

9.04 The Contractor will indemnify and save harmless the District from and against all claims, liabilities, demands, losses, damages, costs and expenses, fines, penalties, assessments and levies made against or incurred, suffered or sustained by the District at any time or times (whether before or after the expiration or sooner termination of this Agreement) where the same or any of them are based upon or arise out of or from anything done or omitted to be done by the Contractor and the Controlled Persons or any of them pursuant to this Agreement including any claim against the District for failure to supervise or inspect the work which is performed by the Contractor pursuant to this Agreement which indemnity will survive the expiration of sooner termination of this Agreement.

9.05 The Contractor will be responsible for compliance with all conditions and regulations under the *Workers Compensation Act* and for all assessments and levies which may be made thereunder.

9.06 The Contractor will, at its expense, co-operate with the District and its counsel in the investigation, settlement and judicial determination of any claims made against the District or Contractor and any claims relating to Damage to District Property relating directly or indirectly to this Agreement and will cause the Controlled Persons to be similarly bound.

ARTICLE X - Security

10.01 The Contractor will provide an irrevocable letter of credit in the amount of twenty (20) percent of Year One of the Contract Price, drawn in favour of the District from a Canadian financial institution satisfactory to the District. The Letter of Credit shall serve as a Performance Bond and shall be valid for the duration of the Contract.

ARTICLE XI - Contractor's Covenants

11.01 The Contractor will:

(a) observe, abide by and comply with all laws, bylaws, orders, directions, rules and regulations of any competent government authority or branch or agency thereof directly or indirectly applicable to the Contractor or this Agreement;

(b) punctually pay as they become due all accounts, expenses, wages, salaries, taxes, rates, fees, contributions and assessments required to be paid by it on any of its undertaking;

(c) observe, perform and comply with each covenant and agreement on its part contained in this Agreement;

(d) co-operate with the District and any other contractors providing services to the District in the Service Area and in areas adjacent to the Service Area;

(e) promptly respond to highways maintenance complaints from members of the public, regulatory agencies and the District at all times;

(f) Be prepared to meet with District staff at Sooke Municipal Hall on 3-month intervals in order to discuss past, present, and upcoming Maintenance Services and/or other items related to this Agreement;

(g) perform the Services in a good workmanlike manner to the satisfaction of the District;

(h) maintain the Equipment in a safe and roadworthy state of repair at all times within the Service Area;

(i) provide and maintain at all times sufficient staff, facilities, materials, appropriate equipment and approved subcontractual agreements in place and available to it to fully perform the Services;

(j) take ownership of all street materials and dispose of appropriately.

ARTICLE XII – Contract Price and Fees

12.01 In consideration of the Contractor providing:

(a) the Maintenance Services, the District will pay to the Contractor the Contract Price in the manner set out in Part I of the Fee Schedule; and

(b) the Emergency Services, the District will pay to the Contractor fees in the amounts and in the manner set out in Part II of the Fee Schedule; and

(c) the Additional Maintenance Services, the District will pay to the Contractor fees in the amounts and in the manner set out in Part II of the Fee Schedule.

12.02 The sums described in Section 12.01 constitute the maximum amounts payable to the Contractor for its performance of the Services herein and the Contractor will not be entitled to any additional compensation for its performance whether or not the work actually undertaken by the Contractor is described in this Agreement and without limiting the generality of the foregoing, the Contractor will not be entitled to any compensation beyond the Contract Price unless:

(a) the Contract Price is adjusted in accordance with Article VII of this Agreement; or

(b) the Contractor performs Emergency Services or Additional Maintenance Services at the request of the District in accordance with this Agreement.

ARTICLE XIII - Assignment and Subcontracting

13.01 The Contractor will not without the prior written consent of the District assign, either directly or indirectly, this Agreement or any right of the Contractor under this Agreement.

13.02 The Contractor will not subcontract any obligation of the Contractor under this Agreement to any person without the prior written consent of the District.

13.03 The appointment of Subcontractors by the Contractor will not relieve the Contractor of its responsibility hereunder or for the quality of work, materials and services provided by it.

13.04 The Contractor will at all times be held fully responsible to the District for the acts and omissions of its Subcontractors and persons employed by them and no subcontract entered into by the Contractor will impose any obligation or liability upon the District to any such Subcontractor or any of its employees.

13.05 The Contractor will cause every Subcontractor to be bound by the terms of this Agreement so far as they apply to the work to be performed by each Subcontractor.

13.06 Nothing in this Agreement will create any contractual relationship between the District and a Subcontractor of the Contractor.

ARTICLE XIV – Records and Reports

14.01 The Contractor will:

(a) provide to the District complete and accurate written reports with respect to Services provided, when and where (site location, road name and number); in response to complaints and/or requests from the public, and "Calls for Service Reports" from the District;

(b) supply the information referred to in subsection (a) to the District a maximum of five days after the completing the Services;

(c) submit no later than noon of the last working day of the current week a schedule for the subsequent week, on a form approved by the District, for the following Maintenance Services:

- Roadside Mowing;
- Roadside Brushing;
- Roadside Litter Collection;
- Ditch and Watercourse Maintenance;
- Catch Basin Cleaning;
- Pavement Surface Cleaning; and
- Street Sweeping

The report will identify the locations where work is planned on the Highways to meet the requirement of Standards and Specifications (Schedule 9);

(d) Submit annually a report detailing the locations, and/or quantities as applicable for each of the following Maintenance Services:

- Crack Sealing
- Gravel Surface Grading

(e) submit no later than March 31 of each year, for the succeeding summer pavement marking program, plan requirements, priorities and timetable for long-line, crosswalk, and stop bar pavement markings.

(f) submit no later than October 15 of each year for the succeeding winter season a plan of routes, priorities and timetable for the following Maintenance Services:

- Highway Snow Removal, and
- Winter Abrasive and De-Icing Chemical Application.

(g) submit no later than September 30 of each year the inspection results of the yearly inspection, as required under Schedule 9, Chapter VIII, Inspection, article 1.C.3 (b), to assist the District with establishing priorities for the succeeding year's capital works.

(h) provide an itemized summary of all adjustments under Article V 5.02 with the monthly invoice.

(i) submit a summary of the amount of gas consumption of vehicles used to execute the road maintenance contract, to the District by January 31st of the year following the annual reporting period. Wherever feasible, the District encourages emission reductions for the road maintenance vehicles. Any energy consumption data and emission reduction measures must be communicated in writing to the District's authorized representative.

The District is a signatory to the Province's Climate Action Charter and as such is required to report on annual corporate emissions to the Province. The emissions and energy consumption of contractors engaged to deliver traditional services such as highway maintenance must be included in the District's corporate profile

ARTICLE XV - Default and Remedies

15.01 Any of the following events will constitute an Event of Default whether any such event be voluntary, involuntary or result from the operation of law or any judgment or order of any court or administrative or government body:

(a) the contractor fails to observe, perform or comply with any provision of this Agreement;

(b) any representation or warranty made by the Contractor in this Agreement is materially untrue or incorrect;

(c) any information, statement, document, certificate or report furnished or submitted by or on behalf of the Contractor to the District under or as a result of this Agreement is materially untrue or incorrect;

(d) there is any bona fide action or proceeding, pending or threatened against the Contractor, which would, in the reasonable opinion of the District, if successful, have a material adverse effect upon the ability of the Contractor to fulfil its obligations under this Agreement;

(e) an order is made, a resolution is passed, or a petition is filed, for the liquidation or winding up of the Contractor;

(f) a change occurs with respect to any one or more, including all, of the properties, assets, condition (financial or otherwise), business or operations of the Contractor which, in the reasonable opinion of the District , materially adversely affects the ability of the Contractor to fulfil any of its obligations under this Agreement; or

(g) if without the prior written consent of the District, the direct or indirect beneficial ownership and effective control of the Contractor changes from that described in Schedule 2.

15.02 On the happening of an Event of Default, or at any time thereafter, the District may deliver written notice to the Contractor specifying the Event of Default and the District may, at its option, elect to do any one or more of the following:

(a) pursue any remedy available to it at law or in equity;

(b) holdback from each payment due to the Contractor under subsection 12.01 (a) up to 10% of each such payment until the Event of Default is resolved to the satisfaction of the District;

(c) take all actions in its own name or in the name of the Contractor that may reasonably be required to cure the Event of Default in which case all payments, costs and expenses incurred therefore will be payable by the Contractor to the District on demand and set-off against any sums owing by the District to the Contractor present or future including any holdback maintained pursuant to subsection 15.02 (b);

(d) require that the Event of Default be remedied within a time period specified by the District;

(e) waive the Event of Default; or

(f) terminate this agreement, subject to the expiration of any time period specified by a notice delivered pursuant to subsection 15.02 (d).

15.03 The rights, powers and remedies conferred on the District under this Agreement are not intended to be exclusive and each shall be cumulative and in addition to and not in substitution for every other right, power and remedy existing or available to the District under this Agreement, any other agreement, at law or in equity and the exercise by the District of any right, power or remedy will not preclude the simultaneous or later exercise by the District of any other right, power or remedy.

15.04 No failure or delay on the part of either party to complain of an act or failure of the other party or to declare such other party in default, irrespective of how long such act or failure to act shall continue, will constitute a waiver by such party of its rights hereunder.

ARTICLE XVI - Works Yard

16.01 The District will make available to the Contractor a portion of the District's Works Yard at 2060 Kaltasin Road at no cost to the Contractor for the duration of this contract. The maximum available area of approximately 0.8 acres, complete with existing salt shed, is outlined in Appendix C of Schedule 9.

16.02 The Contractor may fence his allocated portion of the Yard.

16.03 On completion of this contract the Contractor shall return the portion of the Works Yard as identified in Article XVI section 16.01 to the District in at least as good a condition as existed at the start of this contract.

ARTICLE XVII - Miscellaneous

17.01 The Contractor will not, during the Term, perform a service for or provide advice to any person, firm or corporation or other legal entity where the performance of the service or the provision of the advice may or does, in the reasonable opinion of the District , give rise to a conflict of interest between the obligations of the Contractor to the District under this Agreement and the obligations of the Contractor to such other person, firm or corporation or other legal entity.

17.02 Either party may, from time to time, advise the other by notice in writing of any change of address of the party giving such notice and from and after the giving of such notice the address therein specified will, for purposes of this Agreement, be deemed to be the address of the party giving such notice.

17.03 Each Schedule attached to this Agreement is an integral part of this Agreement as if set out at length in the body of this Agreement.

17.04 This Agreement constitutes the entire agreement between the parties and no understandings, representations or agreements, oral or otherwise, exist between the parties with respect to the subject matter of this Agreement except as expressly set out in this Agreement.

17.05 All provisions of this Agreement in favour of the District and all rights and remedies of the District, either at law or in equity, will survive the expiration or sooner termination of this Agreement.

17.06 This Agreement will inure to the benefit of and be binding upon the District and its assigns and the Contractor and its successors and permitted assigns.

17.07 All dollar amounts expressed in this Agreement refer to lawful currency of Canada.

17.08 No waiver by either party of a breach or default by the other party in the observance, performance or compliance of any of its obligations under this Agreement will be effective unless it is in writing and no such waiver will be deemed or construed to be a waiver of any other breach or default and failure or delay on the part of either party to complain of an act or failure of the other party or to declare such other party in default, irrespective of how long such failure or delay continues, will not constitute a waiver by such party of any of its rights against the other party.

17.09 If an event of Force Majeure occurs or is likely to occur,

(a) the party directly affected will notify the other party forthwith, and will use its best efforts to remove, curtail or contain the cause of the delay, interruption or failure and to resume with the least possible delay compliance with its duties, covenants and obligations under this Agreement; and

(b) if the party directly affected by the event of the Force Majeure is the Contractor, then the fees payable to the Contractor pursuant to subsection 12.01 (a) will be reduced by an amount reasonably required by the District to hire another contractor to perform the Services under this Agreement.

17.10 Time will be of the essence of this Agreement.

17.11 This Agreement will be governed by and construed and interpreted in accordance with the laws of the Province of British Columbia.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the day and year first above written

The Corporate Seal of)
)
DISTRICT OF SOOKE)
)
is hereto affixed in the)
presence of)
)
)
)
) (c/s)
)
_____)
Mayor)
)
)
)
_____)
Chief Administrative Officer)

The Common Seal of)
)
)
)
was hereunto affixed in the presence of:)
)
)
) (c/s)
)
_____)
(Signature))
)
)
_____)
(Title))

SCHEDULE 1 – Fee Schedule

PART I MAINTENANCE SERVICES - CONTRACT PRICE

1. The Contract Price for Maintenance Services will be paid by the District to the Contractor by the way of the following payments: one twelfth (1/12) of the annual contract price per month for those months of the Term, (and a proportioned amount of the monthly rate for part months) upon delivery of a statement of account.

   The contract price for each 12-month period is as follows, EXCLUDING APPLICABLE TAXES:
   Year 1 = $

   Year 2 = $

   Year 3 = $

   Year 4 = $

   Year 5 = $

PART II EMERGENCY AND ADDITIONAL MAINTENANCE SERVICES - FEES

2. The Contractor will be entitled to payment of an additional **$_ /sign** for every new street sign installed on existing roads. This figure will be adjusted annually by the Cost of Living Factor.

3. The contractor will be entitled to a payment of an additional **$_/L** for extra crack sealing material used on existing roads. This figure will be adjusted annually by the Cost of Living Factor.

4. Fees for Emergency Services and Additional Maintenance Services will be based on the rates set out in Schedule 6 and will be payable to the Contractor during the period when the Contractor is engaged in providing the Emergency Services or Additional Maintenance Services, or both.

5. The Contractor will submit to the District monthly, in arrears, on or after the 1st day of each month, a written statement of account in a form satisfactory to the District:

   (a) showing the calculation of all fees claimed for Emergency and Additional Maintenance Services, including materials, for the month preceding the month in which the statement is submitted; and

   (b) listing, in reasonable detail with dates, any and all expenses claimed with receipts, where applicable, attached.

   (c) itemizing all adjustments to the Contract Price.

6. The Contractor will provide a copy of Schedule 6 by March 31st of each year showing the current year rates adjusted by the Cost of Living Factor for routine Emergency and Additional Maintenance Services.

SCHEDULE 2 – Corporate Detail

SCHEDULE 3 – Management Plan

SCHEDULE 4 – Operations Plan

SCHEDULE 5 – List of Equipment

Number of Units	*Description*

SCHEDULE 6 – Contractor's Equipment and Labour Fees

The following hourly rates will apply for any Emergency and Additional Maintenance services performed during the term of the Contract:

These rates will be adjusted by the Cost of Living Factor on an annual basis.

SCHEDULE 7 – Pavement Network Assessment

All roads within the District were the subject of a Pavement Condition Assessment investigation and report by OPUS Consultants Ltd., dated September 2017. The report detailed a condition index rating out of 100 for all paved roads in Sooke, based on test results for roughness, cracking, rutting, raveling, and patching. A table of the basic results is shown below:

	Condition States (PCI Range)						
	Very Good	Good	Fair	Poor	Very Poor	Serious	Failed
Roadway Class	100-85	84-70	69-55	54-40	39-25	24-10	9 -0
Collector Roads	27%	23%	29%	10%	8%	1%	4%
Local Roads	47%	11%	18%	8%	7%	5%	5%

The full report is contained in Appendix A of Schedule 9.

In 2018, the District began a 5-Year Road Improvement Program to rehabilitate roads in the Very Poor to Failed range, with the goal of having, and maintaining all roads above a PCI of 40 by the end of the program. By the end of summer 2019, the District will have contributed approximately $1.4 million towards this effort of network-wide road rehabilitation, with an additional $2.1 million anticipated to be budgeted in the following 3 years.

SCHEDULE 8 – Highway Features Inventory

A map of the Highway Features Inventory is attached as Appendix B of Schedule 9.

	Centreline Length (km)
BC MINISTRY OF TRANSPORTATION (Not in Contract)	
Existing	**23.43**
MAJOR	**23.43**
Sooke Rd **(Not in Contract)**	12.97
West Coast Rd **(Not in Contract)**	10.46
DISTRICT OF SOOKE	
Existing	**91.35**
ACCESS	**0.27**
Boatramp Access	0.27
COLLECTOR	**25.08**
Charters Rd	0.58
Church Rd	1.32
Derbend Rd Connector	0.05
Gillespie Rd	2.79
Grant Rd W	2.03
Helgesen Rd	0.67
Maple Ave S	1.18
Otter Point Rd	3.46
Phillips Rd	2.31
Rhodonite Dr	0.82
Riverstone Dr	0.75
Sooke River Rd	5.38
Sunriver Way	1.25
Throup Rd	0.48
Wadams Way	0.49
Whiffin Spit Rd	1.53
LOCAL A	**13.70**
Anna Marie Rd	0.40
Arranwood Dr	0.46
Arranwood Dr Intersection	0.06
Ayre Rd	0.15
Beaton Rd	0.44
Caldwell Rd	0.64
Connie Rd	1.54
East Sooke Rd	0.31
Edward Milne Rd	0.60
Eustace Rd	0.41

Francis Rd	0.88
French Rd N	0.82
Goodridge Rd	0.36
Kaltasin Rd	0.93
Logan Lane	0.16
Ludlow Rd	0.63
Murray Rd	0.38
Pyrite Dr	0.80
Quartz Dr	0.16
Sheilds Rd	0.13
Silver Spray Dr	1.63
Townsend Rd	0.92
Woodlands Rd	0.91
LOCAL B	**17.16**
Ayum Rd	0.67
Belvista Pl	0.30
Blanchard Rd	0.53
Blythwood Rd	0.88
Burr Dr	0.35
Deerlepe Rd	0.79
Dover St	0.33
Drennan St	0.17
Dufour Rd	0.49
Eakin Dr	0.57
Ella Rd	0.69
Erinan Blvd	0.44
Firwood Pl	0.54
Foreman Heights Dr	0.37
Glinz Lake Rd	0.74
Golledge Ave	0.48
Harbourview Rd	0.72
Helgesen Rd	0.23
Henlyn Dr	1.17
Horne Rd	0.43
Idlemore Rd	0.59
Lanark Rd	0.47
Larkspur Rd	0.30
Manzer Rd	0.54
Maple Ave N	0.57
McMillan Rd	0.51
Mountain Heights Dr	0.72
Mugford's Landing	0.34
Parkland Rd	0.46
Petemar Rd	0.16
Winfield Dr	0.57

Wright Rd	1.05
LOCAL C	**35.14**
Acreman Pl	0.19
Alder Park Terr	0.17
Allman Pl	0.19
Amethyst Way	0.33
Anthony Place	0.21
Arleigh Pl	0.12
Atherly Close	0.10
Banford Pl	0.13
Banner Rd	0.06
Basinview Hts	0.57
Beechwood Pl	0.17
Bentley Pl	0.10
Billings Rd	0.19
Birchview Pl	0.07
Birchview Way	0.24
Boomstick Ave	0.18
Brailsford Pl	0.17
Briarwood Pl	0.27
Brooks Rd	0.16
Brownsey Boulevard	0.26
Brule Dr	0.45
Caffery Pl	0.18
Callumwood Lane	0.29
Calvert Rd	0.44
Carpenter Rd	0.10
Cedar Brook Pl	0.24
Cedar Park Pl	0.18
Cedar Ridge Dr	0.41
Cedarview Pl	0.12
Charlene Pl	0.11
Charters Rd	0.13
Charval Pl	0.22
Christan Dr	0.23
Church Hill Dr	0.40
Cinnabar Pl	0.08
Clairview Rd	0.04
Clarkson Pl	0.05
Corvis Way	0.26
Country Rd	0.28
Croce Rd	0.08
Croydon Pl	0.16
Demamiel Dr	0.41
Demamiel Pl	0.25

Derbend Rd Main	0.29
Dixon Rd	0.40
Driftwood Dr	0.64
Driftwood Pl	0.05
Eustace Rd	0.06
Eustace Rd W	0.10
Eve Grove	0.13
Eve Grove Tee	0.04
Felderhof Rd	0.23
French Rd S	0.45
Galena Rd	0.52
Gatewood Rd (2000 Block)	0.10
Gatewood Rd (2300 Block)	0.09
Gladys Pl	0.11
Glenidle Rd	0.43
Goodmere Rd (6600 block)	0.29
Govenlock Pl	0.14
Grant Rd East	0.20
Grant Rd W Access	0.05
Guardian Rd	0.05
Harwick Lane	0.08
Haywood Rd	0.10
Jackson's Pl	0.03
Kamaureen Pl	0.18
Kennedy St North	0.20
Kennedy St South	0.06
Kirby Rd	0.37
Laidlaw Rd	0.10
Laronde Rd	0.11
Laura's Lane	0.09
Lincroft Rd (6600 Block)	0.16
Maple Ave N	0.09
Maple Park Terr	0.38
Marathon Lane	0.19
Marilyn Rd	0.09
Marsden Rd	0.14
Medberry Close	0.09
Melrick Pl	0.25
Meota Dr	0.23
Minnie Rd	0.15
Mowich Dr	0.23
Muir Pl	0.10
Nagle Rd	0.31
Narissa Rd	0.28
Nickson Way	0.19

Nordin Rd	0.19
Norton Rd	0.12
Nott Pl	0.14
O'Neill Rd	0.16
Opal Pl	0.24
Pascoe Rd	0.84
Pears Point Rd	0.05
Penang Rd	0.22
Phillips Rd	3.09
Pineridge Pl	0.15
Polymede Pl	0.16
Pond Pl	0.05
Poplar Dr	0.30
Possession Point Rd	0.18
Powliuk Cres	0.39
Quartz Dr	0.15
Rhodonite Dr	0.21
Richview Dr	0.54
Rivers Edge Pl	0.13
Rojean Dr	0.21
Rudd Rd	0.08
Saseenos Rd	0.26
Saunders Rd	0.07
Sea Cliff Rd	0.20
Sea Lion Way	0.10
Seabroom Rd	0.11
Selborne Dr	0.67
Sellars Rd	0.52
Siasong Rd	0.24
Slemko Rd	0.10
Snowden Pl	0.23
Solent Rd North	0.11
Solent St	0.15
Sooke Hanger Dr	1.22
Soule Rd	0.25
Spar Tree Way	0.45
Starlight Grove	0.25
Steeple Chase	0.52
Stone Creek Pl	0.11
Stone Hearth Lane	0.09
Stonewood Dr	0.27
Sunriver Pl	0.04
Talc Pl	0.29
Tara Pl	0.35
Terrott St	0.10

Thornton Hts	0.34
Throup Rd	0.17
Tominny Rd	0.34
Valleyview Pl	0.11
Vinson Lane	0.26
Water St	0.12
Watling Way	0.18
Westview Terr	0.31
Willowpark Way	0.69
Winnipeg Rd	0.09
Winona Close	0.03
Wisterwood Way East	0.13
Wisterwood Way West	0.33
Witter Pl	0.09
Woodgrove Pl	0.03
Worthington Way	0.13
In Progress	**3.11**
COLLECTOR	**0.32**
Riverstone Dr	0.32
LOCAL B	**0.41**
Burr Dr	0.08
Mountain Heights Dr	0.29
Winfield Dr	0.04
LOCAL C	**1.46**
Brailsford Pl	0.20
Felderhof Rd	0.16
Goodmere Rd	0.26
Lifehouse Court	0.09
Lincroft Rd (6500 Block)	0.06
Nagle Rd	0.16
Shambrook Drive	0.18
Stonewater Lane	0.16
West Trail Court	0.18
PRIVATE STRATA-OWNED (not in contract)	
Existing	**6.92**
Allwood Terrace	0.11
Austins Place	0.18
Bethany Place	0.43
Brooks Place	0.05
Demamiel Dr (Private)	0.26
Elise Close	0.04
Harmonys Place	0.04
Maple Ave N (Private)	0.17
Marshalls Place	0.04

Nighthawk Lane	0.37
Ocean Park Pl	0.10
Pandion Place	0.17
Rose Lee Place	0.09
Roxview Crt	0.06
Shepherds Way	0.14
Sooke River Road (Private)	4.21
Sookepoint Pl	0.04
Thornton Hts (Private)	0.28
Winnifred Place	0.13
In Progress	**0.92**
Fern Way	0.32
Forest Grove	0.10
Magnolia Lane	0.09
Nordin Rd (Private)	0.03
Shambrook Drive (Private)	0.38

DISTRICT OF SOOKE BRIDGES

Road / Bridge Name	Comment	Sidewalk & Type	Length (m)	Width (m)	Deck Surface
Bridges to be included in Contract					
Phillips Rd North	Phillips Road	timber	30.1	5.0	concrete
Phillips Rd South	Phillips Road	No	33.4	5.8	concrete
Charters Bridge	Sooke River Road	No	18.5	5.3	concrete
Todd Creek Bridge	Sooke River Road	No	12.5	5.3	timber
Shawyer Bridge	Gillespie Road	concrete	28.0	10.0	paved
Connie Bridge	Connie Road	No	18.2	4.3	chip seal on concrete

SCHEDULE 9 – Maintenance Services

DISTRICT OF SOOKE

HIGHWAY MAINTENANCE

STANDARDS AND SPECIFICATIONS

Contents

CHAPTER I - INTRODUCTION

The standards and specifications for highway Maintenance Services are described in this document. The activities are presented under the following categories:

- Chapter II - Surface Maintenance
- Chapter III - Drainage Maintenance
- Chapter IV - Winter Maintenance
- Chapter V - Roadside Maintenance
- Chapter VI - Traffic Maintenance
- Chapter VII - Emergency Maintenance
- Chapter VIII - Inspection
- Chapter IX - Terminology

1. MAINTENANCE SERVICES

Maintenance Services comprises:

- Routine Maintenance Services:
  The objective of the maintenance activity and the level of service required are described in Section A of each Maintenance Standard. The materials and methods to be used and performance standards are described in Section B of each Maintenance Standard. Response time is provided in Section C.1 of certain Maintenance Standards.

- Emergency Maintenance Services:
  When supplemental emergency work is undertaken as “Emergency Services” at the request of the District the Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule and Schedule 7, Contractor’s Equipment and Labour Fees.

- Additional Maintenance Services:
  When extra highway maintenance work is undertaken as “Additional Maintenance Services” at the request of the District, the Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule and Schedule 7, Contractor’s Equipment and Labour Fees.

2. HIGHWAY FEATURES INVENTORY

If the Contractor identifies any discrepancies between the Highway Features Inventory (Schedule 9) and the highway features actually present, the Contractor will notify the District immediately of any such discrepancies.

3. PROVINCIAL ARTERIAL HIGHWAY

Highway 14 (Sooke Rd/Westcoast Rd.) is owned and maintained by the Ministry of Transportation and Infrastructure in accordance with the road maintenance contract for the corresponding service area. The District may request maintenance services on Highway 14 as related to the Ministry maintenance contract. The Contractor will inform the District if works requested on Highway 14 fall outside the scope of the Ministry maintenance contract prior to commencing the work.

4. BRIDGE STRUCTURES

Bridge structure maintenance is included in this contract. Maintenance of bridge structures includes yearly inspections and washing and brushing to keep the bridges functional and safe for the travelling public as well as prolong the life of the structure. Maintenance of the running surfaces and pedestrian walkways includes all the standard highway maintenance functions described in Schedule 9.

5. PATHWAYS

Any bicycle path, sidewalk, multi-use trail, or other pedestrian path located within a highway right- of-way, parallel to a constructed highway, is included in this contract.

CHAPTER II - SURFACE MAINTENANCE

1. HIGHWAY PAVEMENT PATCHING

1.A Maintenance Service

Highway pavement patching will be performed by the Contractor as required on Highways to:

(a) maintain pavement surfaces in a smooth, stable and safe condition for the travelling public;

(b) seal pavement from moisture penetration; and

(c) extend pavement life;

in accordance with the following priorities and time constraints.

1.B Specifications

1.B.1 Materials:

The following materials will be supplied and used by the Contractor:

(a) asphalt concrete mix in accordance with MMCD Section 32 12 16;

(b) recycled asphalt mix comprised of less than 20% by weight of reclaimed asphalt pavement as acceptable to the District;

(c) crack sealing compound as per MMCD Section 32 01 17.6;

(d) special mixes or products (for repairs of areas less than 45 cm x 45 cm) in accordance with the manufacturers' specification and they include:

[i] Unique Patch Mix,

[ii] Everlasting Patch Mix, and

[iii] Instant Road Repair;

(e) Cold-Mix asphalt as approved by the District; and

(f) all other asphalt materials in accordance with MMCD Section 32, Roads and Site Improvements.

1.B.2 Performance Standards:

Paved surfaces will be restored by the Contractor to a smooth, free-draining, impermeable, well-compacted, stable and safe condition using materials as follows:

	HIGHWAY CLASSIFICATION			
Pavement Type	**Major**	**Collector**	**Local A**	**Local B & C**
[a] asphalt concrete pavement	Hot-Mix or Special	Hot-Mix or Special	Hot-Mix or Special or Premix	Hot-Mix or Special or Premix
[b] Cold-Mix pavement	Special or Hot-Mix	Premix or Special or Hot-Mix	Premix or Special or Hot-Mix	Premix or Special or Hot-Mix
[c] Treated/Sealed surface	Special or Hot-Mix	Special or Hot-Mix	Premix or Special or Hot-Mix	Premix or Special or Hot-Mix.

Table 1

1.B.3 Methods:

Any of the following methods are acceptable to correct the pavement deficiencies indicated:

(a) Temporary Patch

Used as a temporary correction of pavement deficiencies such as Pot-Holes, edge failures, depressions and settlements.

Used when prevailing road and weather conditions prohibit the correcting of the pavement deficiency by placing of a permanent patch or when specified patching materials are not available.

Constructed generally as follows:

[i] define the perimeter of the pavement deficiency and clean the area of all loose and foreign material,

[ii] prepare the area by applying a Tack Coat to the perimeter of the area to be patched, and

[iii] place the patching material in the prepared area and hand tamp or machine compact until all particles are well keyed into place.

Temporary patches that perform to the standards of a permanent patch may not need to be removed and replaced by a permanent patch if approved by the District.

(b) Replacement Patch (Permanent)

Used to correct pavement deficiencies such as Pot-Holes, Shoving, edge failure, depressions and settlements, and Alligatored areas with surface distortion.

Constructed generally as follows:

[i] define the perimeter of the pavement deficiency and make a vertical cut through the existing pavement 30 cm beyond the perimeter. Remove all pavement down to the top of the underlying undamaged structural layer. If the underlying layer is granular base, remove contaminated and foreign material and recompact any loose material.

[ii] Vertical cuts through multiple lifts of pavement shall be staggered horizontally by a minimum distance of 15 cm,

[iii] prepare the area by applying a Tack Coat to all asphaltic concrete pavement surfaces and a Prime Coat to all granular base surfaces.

[iv] place the specified patching material in the prepared area and spread with a shovel, grader, or by with a spreading machine,

[v] compact in layers not to exceed a compacted thickness 60 mm for asphaltic concrete mix or recycled asphalt mix; 25 mm for Cold-Mix; and the maximum thickness as specified by the applicable special mix manufacturers for special mixes;

[vi] compaction of each layer shall continue until all particles are well keyed into place using industry standard asphalt mix vibratory compacting equipment, and

[vii] the finished patch shall be consistent with the line, grade, and crossfall of the adjacent pavement;

(c) Overlay patch (permanent)

Used to correct pavement deficiencies such as depressions and settlements, Alligatored areas with surface distortion, Flushing, Ravelling and Rutting.

Constructed generally as follows:

[i] define the perimeter of the pavement deficiency and clean the area of all loose and foreign material,

[ii] prepare the area by applying a Tack Coat to all asphaltic concrete pavement surfaces within the perimeter,

[iii] place and compact a levelling course of patch material as required within the perimeter to ensure the final patch thickness does not exceed maximum allowable compacted thickness indicated below,

[iv] place the specified patching material in the prepared area and spread with a shovel, grader, or spreading machine in layers not to exceed a compacted thickness of 60 mm for asphalt concrete mix or recycled asphalt mix; 25 mm for Cold-Mix; and the maximum thickness as specified by the applicable special mix manufacturers for special mixes,

[v] edges of the patch that tie in elevation to existing pavements will be feathered to an angle of no less than 30 degrees from centreline

[vi] compaction of each layer shall continue until all particles are well keyed into place using industry standard asphalt mix vibratory compacting equipment,

[vii] the finished patch shall be consistent with the line, grade, and crossfall of the adjacent pavement, and

[viii] Shoulders shall be built up and compacted to match the pavement elevation and shall be consistent with the line, grade, crossfall of the adjacent shoulders.

(d) In-Place Recycled Patch (Permanent)

Used to correct all pavement

deficiencies.

Constructed generally as follows:

[i] define the perimeter of the pavement deficiency and clean the area of all loose and foreign material,

[ii] prepare the area by applying a radiant heat until the existing pavement is hot enough to be remoulded using a scarifying tool; and

[iii] a pavement rejuvenating agent may be added to the area at an application rate as recommended by the manufacturer,

[iv] if required add asphalt concrete mix or recycled asphalt mix to the area,

[v] remould the pavement by scarifying, remixing and redistributing it to the desired line, grade and crossfall, and

[vi] recompact the recycled pavement immediately after remoulding until all particles are well keyed into place using industry standard asphalt mix vibratory compacting equipment.

(e) Cold Pour, polymer modified crack sealing

compound Used to seal pavement cracks

Application to be according to manufacturer’s specifications and current industry standards. Any variation to be approved by the Municipal Engineer

1.B.4 Miscellaneous

(a) in all cases consideration will be given to the cause of the pavement failure. Insufficient or contaminated base materials may be causing the surface failure and this will be addressed before final patching repair (see the Maintenance Standard for Ditch and Watercourse Maintenance). If these improvements are not made then re-patching in the near future is inevitable;

(b) for pavement edge repairs the edge will be well defined and shoulder material replaced and compacted to give adequate lateral support to the patch;

(c) sufficient stockpiles of premix or special mixed material will be available at all times to meet patching requirements;

(d) patching will be done during warmer weather conditions (+10^{o}C), except in situations where work cannot be delayed in order to maintain the Highway in a safe condition for the travelling public

(e) traffic control will be performed in accordance with the Maintenance Standard for Highway Traffic Control;

(f) if the pavement deficiency at a single site is greater than 10 square metres, then the Contractor will immediately notify the District. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule; if so authorized by the District, or the District may elect to cause another contractor to undertake the work; and

(g) paved bicycle paths and/or pedestrian paths will be patched as part of the Highway; if included as an item in the Highway Features Inventory.

1.C Scheduling

1.C.1 Response Time

The following table represents the maximum response time within which the Contractor will perform the described maintenance by repairing the failure indicated from the time first detected by or reported to the Contractor:

	HIGHWAY CLASSIFICATION			
Pavement Deficiency (Distressed area < 10 m2)	**Major**	**Collector**	**Local A**	**Local B & C**
[a] Pot-Hole on traveled lane	24 hours	24 hours	48 hours	48 hours
[b] Shoving	72 hours	5 days	20 days	30 days
[c] Edge failure	10 days	20 days	30 days	30 days
[d] Pot-Hole on paved shoulders	72 hours	5 days	10 days	20 days
[e] Depressions and settlements	10 days	30 days	3 months	6 months
[f] Alligatored areas without surface distortion	30 days	3 months	6 months	1 year
[g] Alligatored areas with surface distortion	7 days	30 days	3 months	6 months
[h] Flushing and Bleeding	10 days	20 days	30 days	3 months
[i] Ravelling	30 days	3 months	6 months	1 year
[j] Rutting (over 25 mm deep)	15 days	1 months	3 months	6 months

Table 2

1.C.2 Schedule

(a) Crack sealing will be applied at a minimum quantity of 135 gallons (614 litres) per year in locations determined by mutual agreement between the contractor and the District. Additional crack sealing must be approved by the District and will be billed at the unit rate in Schedule 2 Part II -4.;

(b) Highway pavement patching will be performed by the Contractor in accordance with the Response Time set out in CHAPTER II -1.C.1.

2. GRAVEL SURFACE GRADING

2.A Maintenance Service

Gravel surface Grading will be performed by the Contractor as required on Highways to maintain a gravel Highway surface in a smooth and safe condition in accordance with the following priorities and time constraints.

2.B Specifications

2.B.1 Performance Standard

(a) Graded surfaces will be smooth and free draining, with Crown in accordance with CHAPTER II -2.B.2(b)[iv] or Super-Elevation, and no loose material which will not readily be compacted with traffic;

(b) If moisture is not present in the surface, water will be applied to aid compaction and prevent excessive dust or the loss of airborne Fines. Optimum moisture is usually obtained within a day after a good rainfall; and

(c) Under no circumstances will a Windrow be left on the Highway overnight.

2.B.2 Methods

The following two distinctly different methods are required depending on the gravel surface conditions indicated:

(a) Normal grading (Pot-Holes, Rutting, Ponding, Wash-Boarding and loss of aggregates)

Used when the Crown and Superelevation has been established and the surface smoothness needs to be re-established.

[i] the first passes will pull all easily loosened surface material across the surface and the cut will be sufficient to ensure that the grader blade is full,

[ii] the Windrow will be bladed back across the surface such that the crossfall is maintained in accordance with CHAPTER II - 2.B.2(b)[iv].

[iii] any rocks or boulders exceeding 80 mm will be moved off the surface if loosened or deposited by the grader; and

(b) Re-Shaping (no Crown and/or Super-Elevation) when required the Contractor will immediately notify the District. The Contractor will be entitled to a payment in accordance with the terms of Part 2 of the Fee Schedule if so authorized by the District, or the District may elect to cause another contractor to undertake the work.

Used when the Crown and Superelevation as well as the surface smoothness needs to be re-established,

[i] Re-Shaping may require a deeper cut than normal Grading in order to obtain surface Crown or proper superelevation on curves,

[ii] whenever the surface conditions allow it, the first pass will be made along the ditch line, redefining the ditch and pulling up any lost gravel from the fill slopes,

[iii] as Re-Shaping requires cutting down into the Road Base, sufficient moisture will exist to ensure the Fines and binder material are not lost or blown away when brought to the surface,

[iv] the grader will properly Crown (4% crossfall), or Super-Elevate the travelled lane if on a curve, when re-spreading the gravel back across the surface, and

[v] the reshaped surfaced will be compacted using industry standard compaction equipment.

2.B.3 Miscellaneous

(a) the grader blade will be gradually lifted to ensure material is not spread within 3 metres of a level railway crossing, or Bridge deck. After passing over a railway crossing the operator will stop the grader and walk back over the crossing to ensure no loose rocks or other material have been deposited on or between the rails; and

(b) signing for Grading will be performed by the Contractor in accordance with the Sign Manuals and the Maintenance Standard for Highway Traffic Control.

2.C Scheduling

2.C.1 Response Time

The following are maximum response times by the Contractor for the Grading of the surface conditions indicated, from initial detection by or notification to the Contractor:

	HIGHWAY CLASSIFICATION		
	Collector	**Local A**	**Local B &C**
Pot-Hole (average more than 1 per 25 metres of road), Rutting, Ponding and Wash-Boarding (exceeding 50 mm depth)	5 days	10 days	15 days

Table 3

2.C.2 Frequency

At least once per year under optimum moisture conditions, the gravel surface will be Graded by the Contractor, regardless of Grading frequencies, based on response to surface conditions.

2.C.3 Schedule

Gravel surface Grading will be performed by the Contractor in accordance with the Response Time and Frequency set out in CHAPTER II -2.C.1 and CHAPTER II - 2.C.2, respectively.

3. HIGHWAY SURFACE GRAVELLING

3.A Maintenance Service

Highway surface gravelling will be performed by the Contractor as required on Highways to:

- improve, smooth, stabilize and strengthen gravel surfaces, and
- restore proper Crown and

Superelevation in accordance with this Maintenance Standard.

3.B Specifications

3.B.1 Materials

The following materials will be supplied and used by the Contractor. These materials will all be in accordance with MMCD Section 31 05 17:

Location/Condition	Material
[a] surface with no granular base course, or not previously gravelled with granular surfacing	75 mm Crushed Granular Sub-Base aggregate
[b] all other Highways where paving is planned	19 mm Granular Base aggregate

Table 4

3.B.2 Performance Standards

(a) gravel and dirt Highway surfaces will be maintained by the Contractor to have a well-compacted, stable and free draining surface with Crown (4% crossfall), and proper super-elevation on curves;

(b) gravel and dirt Highway surfaces that are;

- contaminated with Fines such that the surface becomes soft and muddy when wetted by rainfall and worked by vehicle tires or Grading, or
- settled in areas such that the surface cannot be restored to a level and smooth condition when Grading in accordance with the Maintenance Standard for Gravel Surface Grading, or

- insufficient in surfacing aggregate such that clay or Fines are exposed and contaminate the surface during Grading, or such that bedrock or rocks that cannot be moved readily are exposed during Grading,

will be gravelled as follows:

minor surface gravelling (for previously gravelled surface areas of less than 100 square metres)

- gravel will be spread and bladed to a maximum depth of 10 cm, making sure to taper the ends of the gravelled section and to maintain the Crown,
- the surface will be well compacted, adding water if necessary to achieve solid density, and
- all granular lifts will be well compacted, adding water if necessary to achieve solid density;

(c) gravel and dirt Highway surfaces that have soft and unstable areas, where the surface is visibly soft and spongy under the wheels of moving vehicles, will be performed in accordance with the Maintenance Standard for Road Base Maintenance,

3.B.3 Miscellaneous

(a) no gravelling will be done when the Highway surface or Road Base is frozen; and

(b) the surface section of Highway to be regraveled will be inspected to ensure the Road Base is not causing stability problems. If the Road Base is unstable, then either major full-depth gravelling will be performed or the weak area will be repaired in accordance with the Maintenance Standard for Road Base Maintenance.

3.C Scheduling

3.C.1 Response Time

Minor surface gravelling will be performed by the contractor within the following maximum response times for the conditions indicated, from the time first detected by or reported to the Contractor:

	HIGHWAY CLASSIFICATION		
	Collector	**Local A**	**Local B&C**
[a] soft or unstable, and settled areas	10 days	20 days	30 days
[b] contaminated with Fines or insufficient surfacing	2 months	6 months	1 year

Table 5

3.C.2 Schedule

Minor surface gravelling will be performed by the Contractor in accordance with the Response Time set out in CHAPTER II -3.C.1.

4. HIGHWAY SHOULDER MAINTENANCE

4.A Maintenance Service

Highway Shoulder maintenance will be performed by the Contractor as required on Highways to:

- provide a smooth, un-rutted and safe stopping area off the travelled Highway surface;
- allow for free flowing drainage off the paved surface and through the Road Base; and
- remove or prevent the growth of any turf, sod, or other vegetation on the Shoulder;

in accordance with the following priorities and time constraints.

4.B Specifications

4.B.1 Materials

The following materials will be supplied and used by the Contractor depending upon the type of Shoulder base and surface:

(a) 19 mm Granular Base aggregate in accordance with MMCD:

Sieve Size (mm)	Percent Passing
19.00mm	100
12.50 mm	75-100
9.50 mm	60 – 90
4.75 mm	40 – 70
2.36 mm	27 - 55
1.180 mm	16 – 42
0.600 mm	8 - 30
0.300 mm	5 - 20
0.075 mm	2 - 8

Table 6

(b) asphalt materials in accordance with the Maintenance Standard for Highway Pavement Patching.

4.B.2 Performance Standard

Highway Shoulders will be maintained by the Contractor to a smooth, safe, free-draining and well compacted surface which is free of Sod and vegetation, as follows:

(a) paved and Treated Shoulders on paved Highways will be maintained in accordance with the Maintenance Standard for Highway Pavement Patching;

(b) gravel Shoulder sections longer than 100 m and wider than 1.5 m on paved Highways will be maintained as follows:

Shoulder Grading
Used to correct Shoulder surface deficiencies such as Sod and vegetation growth, loss of line, grade and crossfall, pavement drop-offs, loose Shoulder gravel and soft shoulder gravel,

- the Shoulder side slope will be re-shaped by grader blade, pulling up any lost material,
- the first passes on the Shoulder will Windrow material onto the Travelled Lane. If this material contains Sod and vegetation it will be picked up and removed for disposal,
- the next passes will pull remaining material back across the Shoulder, re-establishing the proper cross-section with a 4% crossfall, and
- Shoulders will be compacted using industry standard vibratory compaction equipment following the final pass. If there is not sufficient moisture present, the surface will be watered before compaction,

NOTE:

- Where there is Median or Roadside barrier or curbing between the pavement and the gravel Shoulder, Grading will not be necessary; and

(c) minor Shoulder gravelling

Used to restore correct Shoulder deficiencies such as settlements and eroded areas all less than 100 metres in length

- 19 mm Granular Base aggregate in accordance with CHAPTER II -4.B.1., will be added to a minimum depth of 5 cm and a maximum depth of 15 cm,
- shape the Shoulder to establish the proper cross-section with a 4% crossfall, and compact the surface adding water if necessary to achieve proper density, and
- each subsequent 15 cm Lift added will be compacted.

4.B.3 Miscellaneous

(a) Shoulders which are settled or eroded will be repaired at their base prior to adding gravel in accordance with the Maintenance Standard for Road Base Maintenance;

(b) any granular or other material remaining on the pavement will be removed in accordance with the Maintenance Standard for Pavement Surface Cleaning; and

(c) where a grass verge is maintained up to the edge of the pavement and where this lawn does not impede drainage of the highway surface, the

Contractor will not undertake Shoulder Maintenance.

4.C Scheduling

4.C.1 Response Time

The following table represents the maximum response time within which the Contractor will perform maintenance by repairing the failure indicated from the first time detected by or reported to the Contractor:

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B&C**
[a] a drop at the pavement edge 5 cm or more in depth on the inside edge of curving Highways	72 hours	72 hours	10 days	15 days
[b] pavement edge drop-off 5 cm or more in depth other than above	10 days	20 days	20 days	30 days
[c] settled or eroded sections more than 5 cm in depth	5 days	10 days	20 days	30 days
[d] loose or soft Shoulders	30 days	2 months	3 months	6 months
[e] loss of line, grade and crossfall	2 months	3 months	6 months	6 months
[f] removal of Sod and vegetation	6 months	6 months	1 year	1 year

Table 7

4.C.2 Frequency

Gravel Shoulders sections longer than 100 m and wider than 1.5 m on paved Highways will be graded once per year in the fall of the year regardless of the existence of Shoulder surface deficiencies.

4.C.3 Schedule

Highway Shoulder maintenance will be performed by the Contractor as follows:

Shoulder Grading and minor Shoulder gravelling will be performed by the Contractor in accordance with the Response Time set out in CHAPTER II - 4.C.1.

5. ROAD BASE MAINTENANCE

5.A Maintenance Service

Road Base maintenance will be performed by the Contractor as required on Highways to maintain and restore Road Bases to a well-drained, strong and stable condition in accordance with the following priorities and time constraints.

5.B Specifications

5.B.1 Materials

The following materials will be used by the Contractor in accordance with MMCD Section 31 05 17:

(a) Pit-Run Gravel;

(b) 75 mm crushed Granular Sub-Base;

(c) 19 mm crushed Granular Base aggregate;

(d) River Sand as per MMCD or the following gradation limits:

Screen Size (metric)	Percent Passing
4.750 mm	80-100
0.600 mm	20 - 100
0.300 mm	0 – 80
0.075 mm	0 - 4

Table 8

5.B.2 Performance Standard

(a) Highway Road Bases will be maintained by the Contractor to be well-draining, strong and stable such that they can withstand maximum legal vehicle loading without damage to the travelled surface,

(b) any damaged surfaces, such as areas that are Heaving or show Frost Boils, pavements that show localized alligatoring and depressions (deeper than 5 cm from surrounding surface area) or Highway surface areas that are soft and unstable, will be repaired by the Contractor by excavation and removal of material, backfilled with well-draining material and the surface will be restored by the Contractor to match the existing Highway surface,

NOTE:

- Only soft and unstable areas of under 10 square metres are included in this Standard. For areas larger than 10 square metres, then the Contractor will immediately notify the District. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule; if so authorized by the District, or the District may elect to cause another contractor to undertake the work;

(c) maintenance repairs to Road Bases will be performed by the Contractor as follows:

[i] where the water table is within 50 cm below the Highway surface, the Contractor will improve the Roadside drainage in accordance with the Maintenance Standard for Ditch and Watercourse Maintenance. This may include deepening ditches or constructing interceptor ditches to channel water away from the Highway;

[ii] whether or not the drainage was improved in accordance with CHAPTER II -5.B.2(a) all soft, unstable material that is contaminated with Fines and all saturated material will be removed to a maximum depth of 1 metre. Material will also be removed from a minimum of 0.5 metre on each side of the poor material;

[iii] the excavation will first be backfilled with a Lift of a minimum depth of 25 cm of River Sand in accordance with CHAPTER II -5.B.1, or for Local B & C Highways Pit Run Sand may be used provided this has a maximum Fines content (passing the .075 mm screen) of 6 per cent;

[iv] after a drainage layer has been added, the excavation will be backfilled to a level that is 75 cm below the Highway surface, in Lifts of compacted depth of no more than 25 cm, using a Pit Run material in accordance with CHAPTER II -5.B.1;

[v] from a depth of 50 cm up to a depth of 25 cm from the Highway surface (excluding pavement if it exists) the excavation will be backfilled in Lifts of compacted depth of no more than 15 cm, using a 75 mm crushed Granular Sub Base aggregate in accordance with CHAPTER II -5.B.1;

[vi] for Highways with pavement surfaces, the base and surfacing layer will be placed as follows:

- from a depth of 25 cm from the Highway surface (excluding pavement) the excavation will be backfilled in Lifts of compacted depth of no more than 10 cm, using 19 mm Granular Base aggregate in accordance with CHAPTER II -5.B.1, and
- the surface of the excavation will be patched in accordance with the Maintenance Standard for Highway Pavement Patching,

[vii] for Highways with gravel surfaces, the base and surfacing layer will be placed as follows:

- from a depth of 25 cm to a depth of 10 cm from the Highway surface, the excavation will be backfilled in Lifts of compacted depth of no more than 10 cm, using 19 mm Granular Base aggregate in accordance with CHAPTER II -5.B.1.
- the surfacing Lift of gravel will be added in accordance with the Maintenance Standard for Highway Surface Gravelling.

5.B.3 Miscellaneous

(a) as backfilled material will be well compacted, it may be necessary to add water to achieve proper density; and

(b) traffic control will be performed in accordance with the Maintenance Standard for Highway Traffic Control.

5.C Scheduling

5.C.1 Response Time

The following table represents the maximum response times, for the conditions indicated, within which the Contractor will perform Road Base maintenance, from the time first detected by or reported to the Contractor:

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
[a] Frost Boils or Heaving	48 hours	72 hours	5 days	7 days
[b] soft and unstable areas under 10 square metres	5 days	10 days	15 days	20 days
[c] Alligatored areas in conjunction with surface distortion greater than 5 cm	5 days	10 days	20 days	30 days

Table 9

NOTE:

- depressed areas of pavement less than 5 cm in depth will be patched in accordance with the Maintenance Standard for Highway Pavement Patching.

5.C.2 Schedule

Road Base maintenance will be performed by the Contractor in accordance with the Response Time set out in CHAPTER II -5.C.1.

6. PAVEMENT SURFACE CLEANING

6.A Maintenance Service

Pavement surface cleaning will be performed by the Contractor as required on Highways to:

(a) provide a safe, clean and dust free pavement surface;

(b) prevent pavement markings from becoming obscured;

(c) prepare the pavement surface prior to applying new pavement markings;

(d) prevent the obstruction of Highway drainage systems;

(e) in accordance with the following priorities and time constraints.

6.B Specifications

6.B.1 Performance Standard

(a) Pavement surfaces will be restored by the Contractor to a safe, clean, free-draining condition as required throughout the year, by removing all accumulations of sand and silt from Highway centrelines, Shoulders, curbs, intersections and alongside Median or Roadside barrier.

(b) All curbs are to be vacuum swept according to CHAPTER II -6.C.2

6.B.2 Methods

The following are approved methods:

(a) self-propelled broom on non-curbed roads;

(b) pick-up broom on curb and gutter sections and may be used on non-curbed Highway sections; and

(c) flusher truck on curb and gutter sections and may be used on non-curbed Highway sections;

NOTE:

- accumulations of over 5 centimetres of sand and silt on Highway sections with Roadside barrier, Median barrier or curbing will be removed by grader, loader, or by hand prior to mechanical brooming or water-flushing.

6.B.3 Miscellaneous

(a) all Highway surface cleaning will follow the direction of traffic flow;

(b) all sweeping will be carried out during or just after a rainfall to prevent any dust hazard, or if sweeping is done during dry periods one of the following alternatives will be used:

[i] the pavement will be first pre-wetted with a water truck before sweeping, or

[ii] a flusher truck or pick-up broom will be utilized; and

(c) traffic control will be performed by the Contractor as required in accordance with the Maintenance Standard for Highway Traffic Control.

6.C Scheduling

6.C.1 Response Time

(a) cleaning of paved Highway surfaces will be undertaken in the spring when the application of Winter Abrasives is no longer anticipated;

(b) cleaning of paved Highway surfaces designated for new pavement markings will be undertaken within 72 hours of scheduled application of new pavement markings, given minimum 2 weeks' notice by the District; and

(c) on any paved Highway, where dirt or material has been spilled or tracked onto the surface by an identifiable owner, the Contractor will immediately notify the District of the details; including owners name and vehicle license number. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule; if so authorized by the District, or the District may elect to cause another contractor to undertake the work.

6.C.2 Frequency

The following table gives the minimum frequencies for vacuum sweeping of curbs:

HIGHWAY CLASSIFICATION	MINIMUM FREQUENCY OF CURB VACUUM SWEEPING
Highway 14	30 days
Collector	After last road sanding in spring, after leaf fall in autumn and two additional sweepings at regular intervals between these two dates
Local	After last road sanding in spring, after leaf fall in autumn

Table 10

Subject to CHAPTER II -6.C.1, and unless otherwise noted in Table 10, the following table represents the maximum frequency within which pavement surface cleaning will be performed by the Contractor:

HIGHWAY CLASSIFICATION	***Frequency****
• Major Roads	once annually
• Collector Roads	once annually
• Local A, B & C Roads	once annually (paved surfaces)

Table 11 *surface cleaning for new pavement markings will be in addition to annual cleaning

NOTES:

- where sand and silt has accumulated adjacent to curbing or barriers and impairs free flow of drainage paths, cleaning will be performed in accordance with the Maintenance Standard for Curb and Barrier Maintenance, and

6.C.3 Miscellaneous

(a) All other accumulations of dirt and debris will be maintained in accordance with the Maintenance Standard for Rock and Debris Removal.

(b) Pavement surface cleaning will be performed by the Contractor in the spring, as well as before any pavement marking works, in accordance with the Response Times and Frequencies set out in CHAPTER II -6.C.1 and CHAPTER II -6.C.2., respectively.

(c) The Contractor will inform the District by email at Engineering@sooke.ca before and after all sweeping operations to provide the District the opportunity to inspect these operations. Failure to inform gives the District the right to ask for the work to be repeated if, in the opinion of the District, it is required.

7. ROCK AND DEBRIS REMOVAL

7.A Maintenance Service

Rock and debris removal will be performed by the Contractor as required on Highways to maintain the travelled Highway surface and Shoulders in a safe condition, free of all fallen rocks, dead animals or debris and to remove dead animals from the Right-of-Way in accordance with the following priorities and time constraints.

7.B Miscellaneous

7.B.1 Performance Standard

The Highway surface and Shoulders will be maintained by the Contractor in a safe and obstruction-free condition and the Right-of-Way will be kept clear of dead animals.

7.B.2 Miscellaneous

(a) all materials collected from the Highway surface and Shoulders will be disposed of at a location approved by the District. Dead animals will be disposed of at an approved disposal site; and

(b) when larger volumes of material (greater than 2 cubic metres per location) are on the Highway surface or Shoulders, the Maintenance Standard for Earth and Rock Slide Response will apply.

7.C Scheduling

7.C.1 Response Time

Rock or debris on the Highway surface and Shoulders or dead animals on the Right-of-Way will be removed by the Contractor within the following maximum allowable times from initial detection by or notification to the contractor.

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
[a] fallen rock(s), debris or spilled material over 500 cc size on the travelled surface	1 hour	3 hours	12 hours	12 hours
[b] fallen rock(s), debris or spilled material less than 500 cc size on the travelled surface	3 hours	12 hours	24 hours	48 hours
[c] dead animals on the travelled surface	3 hours	12 hours	24 hours	24 hours
[d] dead animals on the Right-of-Way	24 hours	24 hours	48 hours	48 hours
[e] fallen rock(s), debris or spilled material over 1000 cc size on the Shoulder	24 hours	48 hours	72 hours	72 hours
[f] fallen rock(s), debris or spilled material less than 1000 cc size on the Shoulder	48 hours	72 hours	5 days	10 days
[g] fallen trees and tree limbs on the travelled lanes	3 hours	3 hours	6 hours	12 hours
[h] fallen trees and tree limbs on the Shoulder	24 hours	48 hours	72 hours	72 hours

Table 12

NOTES:

- notwithstanding the above, if rock or debris of any kind is discovered on the travelled Highway surface at any time by the Contractor, it is expected that the object will be immediately removed if even to push it to the side of the travelled surface temporarily'

- if rock or debris is too large for immediate removal, the area will be marked with warning Signs and devices in accordance with the Maintenance Standard for Highway Traffic Control.

7.C.2 Schedule

Rock and debris removal will be performed by the Contractor in accordance with the Response Times set out in CHAPTER II -7.C.1

8. HIGHWAY STRUCTURES MAINTENANCE

8.A Maintenance Service

Highway structures maintenance will be performed by the contractor as required on Highways to clean and maintain the following:

(a) sidewalks, stairways and walkways, if included as an item in the Road Features Inventory;

(b) graffiti from Roadside and Highway facilities including bridge railings; and

(c) Roadside retaining walls;

in accordance with the following priorities and time constraints.

8.B Specifications

8.B.1 Materials

All materials will be supplied and used by the contractor as follows:

(a) Aggregates will be in accordance with MMCD Specification 31 05 17

(b) graffiti removal liquid products will be in accordance with manufacturers' specification.

8.B.2 Performance Standard

Repaired surfaces and structures will be restored by the Contractor to their original condition. All surfaces will be cleaned by the Contractor prior to any patching or painting to ensure adhesion. The worksite will be left in a neat and clean condition upon completion of all maintenance.

Sidewalks, stairways and walkways, if included as an item in the Road Features Inventory, will be washed of all dirt, grime and winter salt.

8.B.3 Miscellaneous

(a) maintenance which requires the use of asphalt materials, paint or concrete repair mixes and cement will be performed during dry and warm weather (+10^{o} Celsius), except situations where work cannot be delayed in order to maintain the Highway in a condition which is safe for the travelling public;

(b) all graffiti on concrete walls, rock walls, large rock faces or bridge railings will be removed using cleaning products, paint or removal liquids;

(c) Roadside retaining walls will be repaired by patching, adding support or cleaning. If the failure of a retaining wall is detected by the Contractor, this will be immediately reported to the District; and

(d) where necessary, traffic control will be performed by the Contractor as required in accordance with the Maintenance Standard for Highway Traffic Control.

8.C Scheduling

8.C.1 Response Time

The following are maximum response times within which the Contractor will perform maintenance, for the features and conditions noted, from the time first detected by or reported to the Contractor:

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
[i] graffiti on walls, rock faces and bridge railings	48 hours	48 hours	48 hours	48 hours
[iii] sand and debris on sidewalks, and stairways	10 days	20 days	30 days	30 days

Table 13

8.C.2 Schedule

Highway structures maintenance will be performed by the Contractor in accordance with the Response Times set out in CHAPTER II -8.C.1.

9. CURB AND BARRIER MAINTENANCE

9.A Maintenance Service

Curb and barrier maintenance will be performed by the Contractor as required on Highways to ensure that all curbs, traffic islands and Roadside or Median barriers are:

(a) clean and highly visible;

(b) free of any debris;

(c) properly connected and positioned as safety devices; and

(d) structurally sound;

in accordance with the following priorities and time constraints.

9.B Specifications

9.B.1 Materials:

The following materials will be supplied and used by the Contractor:

(a) when repairs are made to asphalt curbs or asphalt surfaced traffic islands the following material will be used

- asphalt concrete mix in accordance with MMCD Section 32 12 16;:

(b) when repairs are made to concrete curbs, concrete surfaced traffic islands or concrete barrier surfaces the following materials will be used:

- Portland cement in accordance with MMCD Section 03 30 20*;*
- epoxy repair products for concrete; and
- reflectors and adhesive;

(c) Roadside and Median barrier fasteners of the same type and quality as existing;

(d) concrete barrier replacement sections of the same type and quality as existing; and

(e) other materials, as required, of the same type and quality as on the existing installation.

9.B.2 Performance Standard

(a) maintenance:

[i] all drainage holes will be cleaned of debris to allow the free passage of water,

[ii] realignment of rails and curbs will be performed as required to restore

straight tangents and smooth curves,

[iii] all barrier posts will be maintained in a vertical position, and

[iv] all curbs are to be vacuum swept according to CHAPTER II -6.C.2.

(b) repair:

[i] damage to concrete barriers for each spot involving a maximum surface area of 900 square centimetres will be repaired using material of the same type and quality as on the existing installation, or an epoxy repair product,

[ii] concrete barriers will be replaced where damage exceeds a surface area of 900 square centimetres, or where there is structural damage including cracking and breakage,

[iii] damaged reflectors are to be replaced,

[iv] cracked and broken curbing will be repaired and replaced as required to provide a smooth, sound and interconnected curb, and

[v] settled, broken or pot-holed asphalt, or rock-paved, and exposed aggregate traffic island surfaces will be restored to a smooth stable condition.

9.B.3 Miscellaneous

(a) curbs, barrier and traffic island maintenance functions which require the use of materials as listed in CHAPTER II -9.B.1will be performed during dry weather conditions and warmer temperatures (+10^{o} Celsius) except in situations where work cannot be delayed in order to maintain the Highway in a condition which is safe for the travelling public:

(b) traffic control will be performed in accordance with the Maintenance Standard for Highway Traffic Control.

9.C Scheduling

9.C.1 Response Time

the following table represents the maximum response time, within which the Contractor will perform maintenance, from the time first detected by or reported to the Contractor:

Failure Mode	**Response Time (All Highways)**
[i] impaired free flow of drainage paths causing water ponding in travelled lanes (7am to 5pm)	2 hours
[ii] impaired free flow of drainage paths causing water ponding in travelled lanes (5pm to 7am)	6 hours
[iii] impaired free flow of drainage paths	48 hours
[iv] traffic accident damage to Median or Roadside barrier	72 hours
[v] damaged concrete barrier reflectors	10 days
[vi] damaged curbs and traffic islands	30 days
[vii] dirt or debris which reduces visibility of curb or paint	30 days
[viii] chipping or scarring caused by snowploughs or other equipment or vandalism	3 months
[xi] graffiti	48 hours

Table 14

9.C.2 Schedule

(a) The repair and maintenance of curbs, barrier and traffic islands will be performed by the Contractor in accordance with the Response Times set out in CHAPTER II - 9.C.1.

CHAPTER III - DRAINAGE MAINTENANCE

1. DITCH AND WATERCOURSE MAINTENANCE

1.A Maintenance Service

Ditch and watercourse maintenance will be performed by the contractor as required on Highways to provide:

(a) safe, unobstructed drainage for all Highway surface and natural Roadside runoff, and drainage water passing under or alongside Highway Rights-of-Way;

(b) space for storage of fallen rock in areas with steep slopes; and

(c) space for storage of ploughed snow in areas of high

snow fall; in accordance with the following priorities and time

constraints.

1.B Specifications

1.B.1 Materials

Rip-Rap of varying size will be used by the Contractor to repair and stabilize side slopes and embankments of ditches and watercourses.

1.B.2 Performance Standards

(a) ditches within Highway Rights-of-Way

[i] the District wishes to retain the bio-filtration performance of vegetated ditches to the maximum extent possible. Existing stable vegetation shall not be removed from a ditch unless absolutely necessary,

[ii] the ditch cross-section and size will be maintained such that run-off can be controlled. The cross-section will be maintained with a flat or "U" shaped bottom unless otherwise approved by the District,

[iii] when cleaning or Reshaping a ditch, Backslopes and Shoulder slopes will not be undermined and seeded slopes will not be disturbed,

[iv] the ditch elevation will be kept below the sub-grade to ensure free drainage of the Road Base and the ditch gradient will be sufficient to maintain a continuous flow (a minimum of 0.5 metre fall in 100 metres of ditch), and

[v] ditches will be widened and deepened at culvert entrance locations to provide a water collection area to prevent the culvert from becoming obstructed by debris;

(b) watercourses and drainage easements within Highway Rights-of-Way

[i] Debris within the Right-of-Way will be removed,

[ii] drainage easements and watercourses which usually only carry water during spring run-off or heavy rains will be cleared of any Debris which would restrict flow. Off-Take ditches will be thoroughly cleaned out to ensure adequate dewatering of Highway Rights-of-Way.

1.B.3 Miscellaneous

(a) paved or surfaced ditches will be cleaned by hand if debris has accumulated along them;

(b) ditch maintenance will not be scheduled when Shoulders are soft because of saturated conditions or during the spring thaw period. When ditch work is performed in these periods then Shoulder repair will be performed afterward; and

(c) traffic control will be performed by the Contractor as required in accordance with the Maintenance Standard for Highway Traffic Control.

1.C Scheduling

1.C.1 Response Time

(a) during periods of high volume water flow, such as during spring thaw or particularly heavy rainfall, any obstructions in ditches and water courses from fallen rock, sloughing Back-slopes, frozen drainage structures or debris will be removed by the Contractor as soon as possible. The following are **maximum** allowable response times from the initial detection by or notification to the Contractor:

HIGHWAY CLASSIFICATION			
Major	**Collecto r**	**Local A**	**Local B & C**
3 hours	4 hours	10 hours	10 hours

Table 15

(b) routine ditch maintenance to clear accumulated material which will obstruct water flow will be performed by the Contractor within the following periods of time from initial detection by or notification to the Contractor:

HIGHWAY CLASSIFICATION	**May 1 to Oct. 31**	**Nov. 1 to April 30**
Major	1 month	72 hours
Collector	2 months	72 hours
Local A	3 months	72 hours
Local B & C	3 months	72 hours

Table 16

NOTE:
where an unstable slope is continuously or seasonally filling in a ditch, the obstruction will be cleared before the ditch capacity is reached; and

1.C.2 Schedule

Ditch and watercourse maintenance will be performed by the contractor in accordance with the Response Times set out in CHAPTER III -1.C.1

2. DRAINAGE APPLIANCE MAINTENANCE

2.A Maintenance Service

Drainage appliance maintenance will be performed by the Contractor as required on Highways:

(a) to ensure that Highway surfaces are safe and well-drained;

(b) to prevent any erosion of Highways, side slopes and surfaces;

(c) ensuring that no maintenance is undertaken that will create the risk of increased flow to private property or erosion or undermining of private property; and

(d) in accordance with the following priorities and time constraints.

2.B Specifications

2.B.1 Performance Standards

(a) all Highway drainage appliances including, without limitation, Cross Culverts, catch basins, manholes, and related hardware will be maintained to permit unobstructed passage of water from the Highway surface and across or along the Right-of-Way.

(b) Any worn, bent, broken or damaged appliances shall be repaired. If replacement of damaged appliances is required or if any pipes require maintenance, then the Contractor will immediately notify the District. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule; if so authorized by the District, or the District may elect to cause another contractor to undertake the work.

(c) Notwithstanding CHAPTER III -2.B.1(b), where the inlet or outlet of the culvert is damaged, folded, bent or unravelled, repairs will be undertaken;

(d) asphalt spillways will be patched using a suitable asphalt mix in accordance with the Maintenance Standard for Highway Pavement Patching.

(e) Contractor shall maintain all driveway culverts up to 13 metres in length with the exception of any maintenance requiring excavation. If driveway culverts over 13 metres in length require maintenance, or if any driveway culverts require excavation in order to maintain, or if any driveway culverts require replacement, the Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule, if so authorized by the District, or the District may elect to cause another contractor to undertake the work.

(f) If regulations change regarding the reclassification of the contents of roadside catchbasins as hazardous wastes the Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule for

the disposal of the same, if so authorized by the District, or the District may elect to cause another contractor to undertake the work of disposal.

The Contractor shall inform the District whenever catch basins are scheduled to be cleaned out and shall confirm when the work has been completed.

2.B.2 Methods

Methods of clearing debris will vary according to the severity of the problem and will include:

(a) removing debris from culverts, debris catchment areas and catch basins by hand or by specialized machinery;

(b) flushing the appliance with a high-pressure hose to remove any build-up of debris; and

(c) cleaning out catch basins and manholes using a vacuum catch basin cleaner or removal by hand.

2.B.3 Miscellaneous

(a) water will be confined to drainage works. Any water permeating the Road base is unacceptable;

(b) drainage appliance maintenance requirements may be identified by

[i] ponding at the inlet of culverts,

[ii] folded, bent or unravelled inlets or outlets of culverts and catch basins,

[iii] sloughed or eroded Shoulders, and/or

[iv] a build-up of silts, sands or other debris in culverts, and catch basins.

(c) The Contractor will inform the District by email at Engineering@sooke.ca immediately before and after all catch basin cleaning operations. Failure to inform gives the District the right to ask for the work to be repeated if, in the opinion of the District, it is required.

2.C Scheduling

2.C.1 Response Time

(a) during periods of high-volume water flow, such as during spring thaw or heavy rainfall, any obstructions of drainage appliances will be removed by the Contractor and repairs will be undertaken by the Contractor. The following are maximum allowable response times from initial detection by or notification to the Contractor unless a more rapid response is required to prevent damage to property (public or private), in which case the Contractor shall respond as quickly as possible:

HIGHWAY CLASSIFICATION			
Major	**Collector**	**Local A**	**Local B & C**
3 hours	4 hours	10 hours	10 hours

Table 17

(b) drainage appliances maintenance to clear accumulated material or repair damaged appliances will be performed by the Contractor with the following periods of time from detection by or notification to the Contractor:

HIGHWAY CLASSIFICATION	May 1 to Oct. 31	Nov. 1 to April 30
Major	1 month	72 hours
Collector	2 months	72 hours
Local A	3 months	72 hours
Local B & C	3 months	72 hours

Table 18

(c) notwithstanding the response time in CHAPTER III -2.B.4(b), the Contractor will remove any obstruction or repair or replace a damaged appliance restricting flow capacity by 50 percent or more, within seven days of detection by or notification to the Contractor.

2.C.2 Schedule

Drainage appliance maintenance will be performed by the Contractor in accordance with the Response Time set out in CHAPTER III -2.B.4.

CHAPTER IV - WINTER MAINTENANCE

1. HIGHWAY SNOW REMOVAL

1.A Maintenance Service

Highway snow removal will be performed by the Contractor as required on Highways to:

(a) clear snow and remove ice build-up from Travelled Lanes or Shoulders; and

(b) ensure Highways are kept smooth, safe and open to the travelling public; in accordance with this Maintenance Standard.

1.B Specifications

1.B.1 Performance Standard

(a) plowing will be performed to ensure that snow accumulations remain below the maximum allowable as set out in CHAPTER IV -1.C to the full width of the travelled lanes of the road surface within the response time (CHAPTER IV -1.C.1) consistent with the Highway Classification;

(b) all loose snow and ice will be removed while plowing such that pavement surfaces or compacted surfaces are exposed;

(c) to apply this Standard, plowing routes and priorities will be established and submitted to the District; then prepare a timetable in consultation with the District, local school districts and transit authority to ensure optimum bus service; and

(d) compact snow and ice will be removed from paved Highway surfaces if requested by the District, as set out in CHAPTER IV -1.C.1. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule, or the District may elect to cause another Contractor to undertake the work.

1.B.2 Miscellaneous

(a) Plow speeds will be such that snow is thrown well off the Travelled Lanes, except in built-up areas where plow speeds will be adjusted to minimize inconvenience and prevent damage to persons and property;

(b) if the temperatures are within the effective range of the De-Icing Chemical during and after plowing of paved Highway surfaces, then spreading of De-Icing Chemicals will immediately follow plowing. On all Highway surfaces if temperatures are below the effective range of the De-Icing Chemical being used, then Winter Abrasives will be applied as specified in the Maintenance Standard for Winter Abrasive and De-Icing Application;

(c) the Contractor will make a reasonable attempt to avoid depositing snow at driveways and other entrances and around intersections;

(d) snow banks will be kept to the outside edge of gravel Shoulder surfaces as set out in CHAPTER IV -1.C to ensure that any water created by thawing conditions can readily drain from Highway surfaces. The Province is responsible for snow removal on the travelled lanes of Highway 14, but snow deposited on the sidewalk/pedestrian pathway on Highway 14 shall be removed under this Contract, treating Highway 14 as a “Major” road for performance standards; and

(e) all efforts will be made to minimize damage to Highways, District property or private property; such as, but not limited to Signs, Reflective Pavement Markers, fences, Median and Roadside barrier, curbs, Bridge Abutments and railing, lamp standards, etc. The Contractor, at his sole expense, will be responsible for repairing any damage to Highways, District or private property caused as a result of plowing operations.

1.C Scheduling

1.C.1 Response Time

(a) Highway surface plowing

[i] all Highways will have the Travelled Lanes surface ploughed within 48 hours of the last measurable snowfall; and

[ii] subject to CHAPTER IV -1.C.1(a)[i] the following table of maximum allowable total accumulations on each Highway Travelled Lane and maximum snow depths at which point plowing will have started, will determine response timing by the Contractor during snow fall:

HIGHWAY CLASSIFICATION	**Max Snow Depth when Plowing is to Be Started on Highway**	**Maximum Allowable Accumulation**	
		One Lane Each Direction	**All Other Lanes**
• Major	2.0 cm	6.0 cm	10.0 cm
• Collector and Goodridge Road	4.0 cm	8.0 cm	10.0 cm
• Local A	6.0 cm	10.0 cm	n/a
• Local B & C	10.0 cm	15.0 cm	n/a

Table 19

NOTES:

- to apply this Standard, plowing routes and priorities will be established and submitted to the District. The appropriate amount of equipment will be provided so that by starting to plow after a depth as shown in the second column, all the Highways in that Class will be ploughed before the maximum accumulation depth is reached,

- levels of service exceeding this Standard may also be required where, due to terrain and climatic variations, snow accumulations will vary at any one time along a Highway, and

- any other work the contractor may undertake independently, such as driveway plowing, will not compromise achievement of this Standard or the Maintenance Standard for Winter Abrasives and De-Icing Application in any way;

(b) compacted snow or ice on pavement surfaces

The following table represents maximum periods of time from the end of storm snowfall within which the removal of compacted snow or ice from paved Highway surfaces will be performed by the Contractor, if requested by the District:

HIGHWAY CLASSIFICATION			
Major	**Collector and Goodridge Road**	**Local A**	**Local B & C**
48 hours	48 hours	5 days	5 days

Table 20

NOTE:

- the use of De-Icing Chemicals may be required if the temperatures are at or above the minimum effective temperature of the De-Icing Chemical being used and rising (see the Maintenance Standard for Winter Abrasive and De-Icing Application);

(c) Shoulder Clearing

The following table represents maximum periods of time from the end of storm snowfall within which snow clearing operations by the Contractor will have pushed snow and ice back beyond the Shoulders edge:

HIGHWAY CLASSIFICATION			
Major	**Collector and Goodridge Road**	**Local A**	**Local B & C**
3 days	3 days	5 days	5 days

Table 21

NOTE:

- notwithstanding the above, on Major and Collector Roads at all Superelevated curves or locations where the Shoulder edge is higher than the Traveled Lanes, snow and ice will be pushed fully beyond the Shoulder edge within 48 hours of the end of snowfall to prevent snowmelt drainage onto the pavement.

1.C.2 Schedule

Highway snow removal will be performed by the Contractor as required in accordance with the applicable Response Time set out in CHAPTER IV -1.C.1.

2. WINTER ABRASIVE AND DE-ICING CHEMICAL APPLICATION

2.A Maintenance Service

Winter Abrasive and De-Icing chemical application will be performed by the contractor as required on Highways to maintain the Highways in a safe condition for the travelling public by eliminating hazardous, slippery surface conditions in accordance with this Maintenance

2.B Standard Specifications

2.B.1 Materials

Materials to be supplied by the District and used by the Contractor are:

(a) Winter Abrasive

The maximum allowable particle size for Winter Abrasive materials, and the mean Gradation limits for these materials when tested according to ASTM Designation C117, is as follows:

	HIGHWAY CLASSIFICATION	
	Major	**All Other Roads**
[i] maximum particle size	9.5 mm	12.5 mm
[ii] metric screen size		
12.50 mm	--	100
9.50 mm	100	80-100
4.75 mm	50-95	50-95
2.36 mm	30-80	30-80
.600 mm	10-50	10-50
.300 mm	0-25	0-25
.075 mm	0-6	0-6

Table 22

NOTE:

- the figures shown under item [ii] represent the percent of material which passes that particular screen size;

(b) De-Icing Chemicals

De-Icing Chemicals used in snow and ice control must be from the BC Ministry of Transportation Recognized Product List, or be accepted in writing by the District.

2.B.2 Performance Standard

(a) General:

[i] all travelled lanes will be kept free of slippery or hazardous conditions in accordance with the Response Time set out in CHAPTER IV -2.C.1(b)

[ii] De-Icing Chemicals are to prevent the development of slippery surfaces while Winter Abrasives are to provide improved traction on an already slippery surface. Winter Abrasives will be applied regardless of temperatures if surface conditions are slippery and hazardous,

[iii] to apply this Standard, routes and priorities will be established and submitted to the District; then prepare a timetable in consultation with the District, local school districts and transit authority to ensure optimum bus service, and

[iv] removal of compact snow and ice, if requested by the District, will be removed from paved Highway surfaces, as set out in section CHAPTER IV -2.C.1(a)[ii], and the Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule, or the District may elect to cause another Contractor to undertake the work.

(b) De-Icing Chemical

De-Icing Chemical is to be applied in advance of and during a forecasted weather event to minimize the development of Slippery surface conditions on Highways and to facilitate the removal of snow, compact snow and ice, as appropriate for the location. For the purposes of this Specification, a Weather Event includes any meteorological condition that permits the development of hazardous Slippery surface conditions which requires the application of Winter Abrasives, anti-icing or De-icing Chemicals and/or snow removal procedures to maintain or re-establish safe winter driving conditions.

2.B.3 Methods

Automated equipment with electronic spreader and hydraulic controls will be used to spread materials at controlled application rates.

(a) Winter Abrasive application

[i] Winter Abrasives will be spread 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 Highway,

[ii] speeds while spreading Winter Abrasives will be kept low enough that Winter Abrasives will not be distributed beyond the Travelled Lanes.

(b) De-Icing Chemical application

[i] De-Icing Chemicals are to be applied according to manufacturers specifications.

2.B.4 Miscellaneous

(a) additional winter patrols for inspection of Highway surface conditions will

be required to ensure Travelled Lanes are not slippery. Slippery conditions or icing may occur at shaded Highway sections, Overpasses and Bridge decks, particularly at night. Patrol vehicles will be prepared to deal with conditions when detected, by carrying Winter Abrasive or De-Icing Chemical;

(b) pre-snowfall or early snowfall application will greatly reduce snow and ice removal operations later due to the brine layer on the pavement. This will also ensure that no Black Ice forms on pavement surfaces;

(c) curves, school zones, intersections and Bridge deck locations will be given priority response;

(d) sufficient stockpiles of Winter Abrasive and De-Icing Chemical materials will be supplied by the Contractor; and

(e) pavement surface and air temperature sensing thermometers will be used to determine the difference in temperature between the air and the paved surface when deciding whether to use De-Icing Chemicals or Winter Abrasives.

2.C Scheduling

2.C.1 Response Time

(a) De-Icing Chemical application

[i] to prevent Black Ice and for pre-snowfall application

When temperatures are near-zero and falling and pavements are wet or when storm snowfalls are forecast or are just starting, the following are maximum response times for De-Icing Chemical application by the Contractor on paved Highway surfaces:

HIGHWAY CLASSIFICATION			
Major	**Collector and Goodridge Road**	**Local A**	**Local B & C**
2 hours	3 hours	5 hours (if still preventable)	n/a

Table 26

[ii] to remove compact snow and ice on paved surfaces:

When requested by the District the Contractor will, after snowfalls have ended and plowing operations on each Highway have been completed, treat paved Highway surfaces with De-Icing Chemicals within the following maximum response times to remove any compacted snow or ice remaining.

	HIGHWAY CLASSIFICATION			
	Major	**Collector and Goodridge Road**	**Local A**	**Local B & C**
[i] initial application	24 hours	48 hours	5 days	n/a
[ii] completely bare	48 hours	72 hours	10 days	n/a

Table 27

NOTES:

- the above response times are for temperature conditions at or above minus 6^{o} Celsius and rising when using Salt. Otherwise traction Winter Abrasives will continue to be applied in accordance with CHAPTER IV -2.C.1(b), notwithstanding the foregoing if hazardous Black Ice or slippery conditions are encountered during patrols immediate application of Winter Abrasives or De-Icing Chemicals will be undertaken,

(b) Winter Abrasive application to provide traction on icy or slippery surfaces

During and after snowfalls, any icy or slippery Highway surface conditions will be treated by the Contractor within the following maximum response times from initial detection by or notification to the Contractor.

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
[i] during snowfall				
• hills over 5% gradient (one lane each direction)	2 hours	2 hours	3 hours	6 hours
• curves under 40 kilometres per hour	2 hours	2 hours	3 hours	6 hours
• school zones & intersections	2 hours	2 hours	3 hours	6 hours
• other locations	3 hours	3 hours	6 hours	8 hours
[ii] **freezing rain** (all locations)	1 hour	2 hours	4 hours	5 hours
[iii] **Black Ice** (all locations)	1 hour	2 hours	4 hours	5 hours
[iv] **after snowfall** - hills (all lanes)	8 hours	8 hours	24 hours	48 hours
• all curves	8 hours	8 hours	24 hours	48 hours
• all other locations	24 hours	24 hours	36 hours	n/a

Table 28

NOTES:

- Notwithstanding the foregoing, if Black Ice or slippery conditions are encountered during patrols immediate application of Winter Abrasives of De- Icing Chemicals is expected and,
- This Maintenance standard is to be performed by the Contractor in conjunction with the Maintenance Standard for Highway Snow Removal

2.C.2 Schedule

Winter Abrasive and De-Icing Chemical application will be performed as required by the contractor in accordance with the applicable Response Time set out in CHAPTER IV -2.C.1

3. ROADSIDE SNOW AND ICE CONTROL

3.A Maintenance Service

Roadside snow and ice control will be performed by the Contractor as required on Highways to:

(a) remove snow and ice from sidewalks on Bridges; and

(b) clear snow accumulations from intersections, Medians and around Signs; in accordance with the following priorities and time constraints.

3.B Specifications

3.B.1 Materials

Winter Abrasive materials and De-Icing Chemicals will be provided by the District and used by the Contractor to provide traction against slippery conditions and to remove ice. See the Maintenance Standard for Winter Abrasives and De-Icing Application.

3.B.2 Performance Standard

(a) removal of all loose snow, slush and ice on Bridge sidewalks and walkways leading to these structures after Highway plowing operations, and

(b) where snow has been piled high enough to restrict Sight Distance at intersections, around Highway Signs, the snow will be cleared following snow plowing operations on the Highway.

3.B.3 Miscellaneous

(a) De-Icing Chemicals will be used in removing ice build-up when temperatures are at or above minus 6^{o} Celsius and rising; and

(b) traffic control will be performed by the Contractor as required in accordance with the Maintenance Standard for Highway Traffic Control.

3.C Scheduling

3.C.1 Response Time

(a) The following are maximum response times for the clearing of snow and ice on the facility noted, by the Contractor from the time first snowfall ceased or Highway snow plowing operations have finished:

	HIGHWAY CLASSIFICATION			
	Major	**Collector and Goodridge Road**	**Local A**	**Local B & C**
[i] Bridge Sidewalks	24 hours	48 hours	72 hours	n/a
[ii] Sidewalk Approaches to Structures	72 hours	5 days	5 days	n/a
[iii] Sight Distance obstructions	3 days	3 days	3 days	5 days

Table 29

(b) ice and snow, overhanging the Highway will be removed within 8 hours from the time first detected by or reported to the contractor.

3.C.2 Schedule

Roadside snow and ice control will be performed as required by the Contractor in accordance with the applicable Response Time set out in CHAPTER IV -3.C.1

CHAPTER V - ROADSIDE MAINTENANCE

1. ROADSIDE MOWING

1.A Maintenance Service

Roadside mowing will be performed by the Contractor as required on Highways to:

(a) provide neat and groomed Roadsides:

(b) provide a safe driving environment with good visibility of Signs, pedestrians, animals and other Roadside features;

(c) control weed and brush growth; and

(d) reduce possible fire hazards;

in accordance with the following priorities and time constraints.

1.B Specifications

1.B.1 Performance Standards

The Contractor will perform Roadside mowing as required in accordance with the following minimum standards, and based on Highway Classifications as appended in the inventory listings:

(a) maximum height of grass vegetation

[i] Shoulder edges – **First Cutting**

- Immediately after grass has developed a seed-head

[ii] Shoulder edges – **Second Cutting**

- **Major & Collector Roads** 30 cm
- **Local Roads** 50 cm

[iii] Sight-distance obstructions on curves, at intersections and driveways and to ensure Sign visibility, notwithstanding clause [ii] (above) 30 cm;

(b) definition of areas to mow

[i] Shoulder edges

- **Major & Collector Roads:** all grass within 3 metres from edge of pavement,
- **All Local Roads***:* all grass within 2 metres from edge of pavement,

[ii] Sight Distance obstructions

- all grass which reduces visibility,

(c) definition of areas not to mow

Notwithstanding the foregoing, except CHAPTER V -1.B.1(b)[ii] (above), the following restrictions apply:

[i] no mowing will be performed that would require a machine to operate all four wheels on a slope steeper than one metre rise in two and one-half metres horizontal,

[ii] no mowing of areas will be performed in excess of 2 metres above or 2 metres below the existing Highway elevation,

[iii] no mowing of swampy and wet low-lying areas will be performed that would cause damage to the Right-of-Way appearance.

1.B.2 Miscellaneous

(a) all mowing will be done with appropriate equipment in a manner resulting in a safe, neat and well-groomed appearance;

(b) the Contractor will abide by any mowing restrictions imposed by the District;

(c) where the presence of Sign posts, delineators, litter receptacles, picnic tables and Roadside barrier makes mowing difficult, hand-trimming, or herbicide treatment (if approved by the District and that meets all requirements of the appropriate legislation) will be performed to ensure a neat, attractive appearance.

District policy on use of non-selective herbicide, with Glyphosate as the only active ingredient:

- The original document licensing the individual applying the herbicide as a horticultural pesticide/herbicide applicator must be presented to the District before spraying is commenced.

- The District shall be advised of the timing and location before spraying is commenced. Signs must be placed on site advising the public that spraying has taken place and remain in place for four hours;

(d) no growth retardant chemical or other herbicide will be permitted for controlling grass growth except as noted in clause (c). above;

(e) the mowing of wider areas of the Right-of-Way may be undertaken as a method of controlling brush growth in lieu of brushing in accordance with the Maintenance Standard for Roadside Brushing; and

(f) traffic control will be performed by the Contractor as required in accordance with the Maintenance Standard for Highway Traffic Control.

1.C Scheduling

1.C.1 Response Time

The following table sets out the maximum response times, for the conditions indicated, within which the Contractor will perform Roadside Mowing, from the time first detected by or reported to the Contractor:

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
Sight-distance obstructions on curves, at intersections and driveways and to ensure sign visibility	72 hrs	72 hrs	10 days	20 days

Table 30

1.C.2 Schedule

Roadside mowing will be performed by the Contractor as required in accordance with the Performance Standards set out in CHAPTER V -1.B.1

2. ROADSIDE BRUSHING

2.A Maintenance Service

Roadside brushing will be performed by the Contractor as required on Highway rights-of way to:

(a) eliminate dangerous over-hanging trees;

(b) ensure safe Sight Distances; and

(c) allow unimpeded Roadside drainage;

(d) in accordance with the response times set out in CHAPTER V -2.C.

2.B Specifications

2.B.1 Performance Standards

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

Routine Maintenance Services

(a) Where trees or brush form a sound barrier or anti-glare screening, or are in planted or landscaped areas, or for Roadside beautification, no cutting or trimming will be permitted except for hand pruning unless special written permission is given by the Municipal Engineer;

(b) trees or brush restricting Sight Distance at curves, intersections, and driveways or restricting drainage will be removed when they exceed 30 cm in height, with the exception of trees over 75mm in diameter which require written permission by the Municipal Engineer prior to removal; and

(c) notwithstanding CHAPTER V -2.B.3(b)the Contractor is not required to cut in the following locations or circumstances:

[i] beyond the Highway Right-of-Way,

[ii] parks (areas beyond ditch backslopes require the approval of the District),

[iii] any portion of the Right-of-Way where the elevation is more than 2 metres above or below the Highway surface level; and

[iv] beyond the Right-of-Way (deemed to be the fence line where fences have been erected by the property owner, where laid out by the District or to brush lines where previous brush lines exist) of roads deemed to be “Public Highways” under Section 4 of the **Highway Act**. In all cases, safety must not be compromised.

2.B.2 Methods

(a) the following cutting methods are acceptable:

[i] hand cutting to within 15 cm of ground level

[ii] machine cutting as close as practical to ground level, provided any broken limbs or unsightly scars such as split and shredded stumps are hand trimmed immediately afterward for appearance.

NOTE:
- no vertical machine cutting is permissible, except with prior approval of the District, and
- machines that cause rutting on the Right-of-Way are not to be permitted;

(b) the following removal or disposal methods are acceptable:

[i] removal to an approved disposal site,

NOTE:
- Highway surfaces, ditches, and watercourses will be cleaned of any debris resulting from cutting or removal operations.

(c) mowing may be undertaken as a means of controlling brush growth (see the Maintenance Standard for Roadside Mowing). However, this will not be permitted where trees and brush serve to form a sound barrier, anti-glare screen, or are in planted or landscaped areas, or are intended for Roadside beautification.

NOTE:
- Roadside areas once brushed and within the applicable distance from the Shoulder edge will be subject to the Maintenance Standard for Roadside Mowing

2.B.3 Miscellaneous

(a) trees or limbs which are likely to fall on the Highway or pose a threat to adjacent lands will be removed.

(b) any limbs overhanging the road Right-of-Way, within two metres from the Pavement edge (leaving a clear corridor 4 metres wider than the paved surface), will be removed up to the heights in the following table. This does not apply to ornamental boulevard trees:

HIGHWAY CLASSIFICATION	**Required Clearance above the Travelled Lane**
• **Major & Collector Roads**	5 metres
• **All Local Roads**	4 metres

Table 31

(c) subject to CHAPTER V -2.B.1(c)[iv] no trees or brush outside the Right-of-Way will be cut without the permission of the landowner.

(d) Where there are unstable trees or overhanging limbs as described in

CHAPTER V -2.B.3(a), then the Contractor will immediately notify the District. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule, if so authorized by the District, or the District may elect to cause another contractor to undertake the work.

(e) Use of brush control chemicals will be allowed in the form of stump treatment with Glyphosate or the Hack and Squirt method, provided approval is obtained from the District and all necessary permits are obtained for meeting any external legislative requirements. No spray applications will be permitted.

2.C Scheduling

2.C.1 Response Time

The following table sets out the maximum response times, for the conditions indicated, within which the Contractor will perform Roadside Brushing, from the time first detected by or reported to the Contractor:

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
Unstable trees or limbs	24 hrs	36 hrs	48 hrs	72 hrs
Trees or limbs overhanging the Right-of-Way according to the requirements set out in CHAPTER V -2.B.3(a)	72 hrs	72 hrs	5 days	10 days
Sight-distance obstructions on curves, at intersections and driveways and to ensure Sign visibility	72 hrs	72 hrs	5 days	10 days

Table 32

2.C.2 Schedule

Roadside brushing will be performed as required by the Contractor in accordance with the Performance Standards set out in CHAPTER V -2.B.1

3. ROADSIDE LITTER COLLECTION

3.A Maintenance Service

Roadside litter collection will be performed by the Contractor on Highways to ensure that Roadside rights-of-way and facilities are maintained to an attractive appearance, free of litter and debris in accordance with the following priorities and time constraints.

3.B Specifications

3.B.1 Materials

The Contractor will provide and use suitable containers for collecting litter.

3.B.2 Performance Standard

There will be no litter visible from the travelled Highway for durations of time beyond those times specified in CHAPTER V -3.C.

- Roadsides

All litter that is visible from the traveled Highway will be removed. Bagged litter may be left on the Shoulder for truck pick-up by the contractor, provided this is done the same day. The Contractor shall dispose of all litter at the Contractor's expense at a disposal site considered suitable according to environmental and/or other legislation.

3.B.3 Miscellaneous

(a) any large items of refuse will be removed by mechanical means as soon as possible; and

(b) abandoned vehicles, equipment, household appliances and furniture will be reported to the District immediately. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule; if so authorized by the District, or the District may elect to cause another Contractor to undertake the work.

3.C Scheduling

3.C.1 Frequency

(a) Roadsides:

[i] the following table represents minimum litter collection frequencies by the Contractor for specific roads within the District

HIGHWAY	**Minimum Frequency of Litter Collection**
Throup Road	Weekly
Edward Milne Road	Weekly
Sooke Road / West Coast Road – Sooke River Bridge to Whiffin Spit Road	Weekly
Murray Road	Weekly
Otter Point Road – Sooke Road to Rhodonite Drive	Weekly
Eustace Road – Otter Point Road to Shields Road	Weekly
Shields Road	Weekly
Anna Maria Road	Weekly
Townsend Road – Sooke Road to 100m North	Weekly
Church Road – Throup Road to Sooke Road.	Weekly
Charters Road – Throup Road to Sooke Road	Weekly

Table 33

[ii] the following table represents **minimum** litter collection frequencies by the Contractor for each Highway Classification unless listed in the Table above. More frequent attention by the Contractor may be required after special events:

HIGHWAY CLASSIFICATION	**Minimum Frequency of Litter Collection**
• **Major Roads**	every 20 days
• **Collector Roads**	every 1 month
• **Local A, B & C**	every 4 months

Table 34

3.C.2 Schedule

Roadside litter collection will be performed by the Contractor in accordance with the Frequencies set out in CHAPTER V -3.C.1

CHAPTER VI - TRAFFIC MAINTENANCE

1. SIGNS AND DELINEATION MAINTENANCE

1.A Maintenance Service

Signs and delineation maintenance will be performed by the Contractor as required on Highways and Bridges to assist and guide motorists in the safe and orderly movement of traffic in accordance with the following priorities and time constraints.

1.B Specifications

1.B.1 Materials

All materials will be supplied and used by the Contractor, if Sign is replaced or maintained, as follows:

(a) Sign posts will be perforated hollow square tube, galvanized steel or of such other material as agreed between the District and the Contractor;

(b) metal or concrete posts for delineators will be as specified in the Sign Manuals. Plastic or fibreglass delineator posts will be in accordance with specifications approved by the District;

(c) Signs will be as specified in the Sign Manuals, or special purposes Signs as approved by the District;

(d) all finishes, materials, and colours will be as specified in the Sign Manuals.

(e) all necessary hardware for installation of Signs and delineators, such as lag screws and washers, will be of non-corrosive material to avoid discolouration of Sign and delineator faces; and

(f) delineator specifications shall be in accordance with the Sign Manuals.

1.B.2 Performance Standards

(a) all Signs, Sign posts, delineators and other Sign Systems will be of the proper type, size and construction as per the Sign Manuals, or as specified by the District.

(b) all Signs, Signs posts, delineators and other Sign Systems will be kept clean, legible, adequately reflectorized, erect and correctly placed as per the Sign Manuals, or as specified by the District.

(c) The District will supply all replacement Signs exceeding 1.8 square metres; and

(d) The Contractor may be required to install new Signs and delineators for re-aligned and reconstructed Highways or at new locations on existing Highways. New Sign types, sizes and locations will be as specified by the

District. The Contractor will supply all Sign support materials, all delineators and regulatory, warning and guide Signs as required. The Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule, or the District may elect to cause another contractor to undertake the work.

1.B.3 Miscellaneous

(a) the Contractor will ensure that sufficient quantities of all Signs, delineators and other Sign Systems are on hand at all times to meet the response times in CHAPTER VI - 1.C;

(b) Sign System material types on each Highway will be consistent;

(c) when power washing or steam cleaning Sign faces the pressure will not exceed 1000 p.s.i. (pounds per square inch) and the temperatures will not exceed 65^{o} Celsius;

(d) traffic control will be performed by the Contractor as required in accordance with the *Maintenance Standard for Highway Traffic Control*;

(e) any new installations and replacement of street name blades at intersections are to delineate both streets and are to be marked with block numbers;

1.C Scheduling

1.C.1 Response Time

The following table represents the maximum response times, within which the Contractor will perform maintenance or repair, from the time first detected by or reported to the Contractor:

		HIGHWAY CLASSIFICATION	
Type of Sign/Marking		**All Highways**	
		Unrecognisable	**Partially Obscured**
[i]	regulatory 'Stop', 'Yield' and 'No Entry'	2 hours	24 hours
[ii]	other regulatory	24 hours	72 hours
[iii]	warning with speed tab	Next business day	72 hours
[iv]	other warning	24 hours	72 hours
[v]	delineator (all)	72 hours	7 days
[vi]	school & pedestrian	72 hours	7 days
[vii]	guide	7 days	14 days
[viii]	informational	7 days	14 days
[ix]	all other Signs	7 days	14 days

Table 35

The Contractor may install temporary Signs until the next business day in order to meet the requirements of Table 35.

New Sign and delineator installations will be performed by the Contractor within 14 days of receiving the instruction from the District. However, regulatory and warning Signs will be installed within 4 days of receiving the instruction from the District.

1.C.2 Frequency

(a) all Signs, posts and delineators will be inspected by the Contractor at least twice a year and those which are damaged or missing will be replaced. An annual night inspection will be made of Signs and delineators to ensure adequate brilliance of reflectorized surfaces. This night inspection will take place after the Signs and delineators are washed. Any Sign or delineator showing limited or blotch reflectiveness over more than 20% of the surface area will be replaced;

(b) cleaning of Signs and delineators that become obscured from wind-blown snow, machine-thrown slush or snow will be in accordance with the applicable Response Time set out in CHAPTER VI -1.C.1.;

(c) all Signs and delineators will be washed by the Contractor at least once annually, after the winter. In addition, Signs and delineators which are subject to frequent mud and grime spray will be washed as required, particularly Signs or delineators up to one metre from the Highway surface including hazard markers; and

(d) wood Sign and delineator posts will be touched up or re-painted by the Contractor when the surface is discoloured or damaged. All wood posts will be re-painted at a minimum of at least once every three years.

1.C.3 Schedule

Sign and delineation maintenance will be performed by the Contractor in accordance with the Response Time and Frequency set out in CHAPTER VI -1.C.1 and CHAPTER VI -1.C.2 respectively.

2. HIGHWAY TRAFFIC CONTROL
Maintenance Service

Highway traffic control will be performed by the Contractor as required on Highways and Bridges to:

(a) minimize interruptions to the flow of traffic;

(b) maintain safe conditions for the travelling public; and

(c) maintain safe conditions for maintenance personnel while minimizing work stoppages;

in accordance with the following priorities and time constraints.

2.B Specifications

2.B.1 Materials

All traffic control devices and materials such as Signs, cones, barricades, radios, night time flashers and paddles will be supplied by the Contractor and will be in accordance with the Sign Manuals.

2.B.2 Performance Standard

The Contractor will perform traffic control as required to maintain the Highways and control traffic in a safe condition for the travelling public and working personnel. Traffic control will include the placement and use of traffic control devices as defined in the Sign Manuals number of traffic lanes and Sight Distance will affect the level of traffic control required.

(a) traffic controls necessary for Highway hazards:

[i] natural hazards:

- this refers to hazards that affect the safety of the travelling public and cannot be immediately repaired. Examples of this are Shoulder failures, debris on the Highway, washouts and severe Pot-Holes, and

- for hazards affecting the safety of the travelling public the minimum level of traffic control is the use of Signs in accordance with the Sign Manuals. Signs will be used to warn approaching traffic of the nature of the hazard. The hazard will be delineated using traffic control devices. Night time flashers will be used to delineate hazards left overnight; and

[ii] incomplete work:

- this refers to hazards created by incomplete maintenance projects. Examples of these kinds of hazards are uneven pavement, oil on the pavement surface, insufficiently cured or hardened concrete and Shoulder repair, and

- the minimum acceptable level of traffic control will be in accordance with the Sign Manuals. Signs will be used to warn approaching traffic of the nature of the hazard. The hazard will be delineated using traffic control devices. Night time flashers will be used to delineate hazards left overnight;

(b) traffic control for working personnel and equipment:

[i] the minimum level of traffic control for work off the travelled Highway or Bridge deck where no traffic lane is obstructed at any time is as follows:

- traffic control Signs will be used in accordance with the Sign Manuals,

[ii] the minimum level of traffic control for stationary work on the travelled Highway or Bridge deck that involves a traffic obstruction of a single lane or operations where a machine is working from a position on the Shoulder of the Highway is as follows:

- for Local A, B & C Roads, inclusive, traffic control will be in accordance with the Sign Manuals. If the Sight Distance is not adequate to permit self-regulating traffic control, a flagperson will be used to control the traffic in the obstructed lane. If the Sight Distance for the traffic approaching in the unobstructed lane does not meet the minimum as set out in *Section 2.B.4,a,* second flagperson will be used. For peak traffic in excess of 100 vehicles per hour a flagperson will be used to control traffic, and

- for Major and Collector Roads traffic control will be in accordance with the Sign Manuals. A flagperson will control traffic in the obstructed lane. If the Sight Distance for the traffic approaching in the unobstructed lane does not meet the minimum as set out in the Sign Manuals, a second flagperson will be used,

[iii] intermittent moving operations:

- this refers to maintenance work on the travelled portion of the Highway that is performed within 30 minutes duration. The work Zone will be confined to 2.0 kilometres or less in length and not more than one lane will be obstructed, and

- traffic control will be in accordance with the Sign Manuals. Cones will be used to completely delineate the work site. A flagperson will be used to control traffic approaching the work site;

(c) traffic control for complete closure of Highways

- traffic control will be in accordance with the Sign Manuals.

- Approval of detour arrangements must be obtained from the District on any Highway. Contractor is to inform Transit and

Emergency Services of any detours or road closures.

(d) intersection lane closure

- traffic control will be in accordance with the Sign Manuals and as directed by the District.

2.B.3 Methods

The placement and conduct of flagpersons in the work area will be in accordance with the Sign Manuals.

2.B.4 Miscellaneous

(a) Sight Distance for traffic control requirements will be defined as the length of unobstructed Highway visible to the driver and the following values (as a function of the posted speed limit) will be the minimum distances acceptable to the District. Sight Distance less than set out below will require additional control in accordance with CHAPTER VI -2.B.2(b)

60 kilometres per hour 110 metres
50 kilometres per hour 80 metres
30 kilometres per hour 60 metres

(b) where traffic flow is restricted due to the operations of the Contractor, such that the delay in normal travel through the work area exceeds 15 minutes, the contractor will adjust the operations or terminate work until traffic volume eases;

NOTE:

- portable lane control signals, which are usually battery operated, may be used as an alternative to flagpersons on two lane two-way Highways where traffic is restricted to single lane operation. The use of portable traffic signals will have prior written approval by the District and will only be considered for short duration activities on higher volume Highways. This type of traffic control is intended for use where construction or maintenance operations are active and will either be attended full time during night time operations or removed from the job site. The Contractor will be required to monitor traffic flows and adjust the timing to ensure optimum traffic flow and safety, and

- temporary traffic control signals may be erected upon prior approval by the District for long duration construction or maintenance activities such as a temporary crossing, truck access or one-way Bridge operation. The design and timing of temporary signals will require prior written approval of the District and will comply in all respects with Sections 126 to 138 of the *Motor Vehicle Act*, and Section 23.09 of the Regulations pursuant to the *Motor Vehicle Act.*

2.C Scheduling

2.C.1 Response Time and Frequency

For Highway obstructions caused by slides, washouts, or other hazards endangering the safety of the travelling public, traffic control will be initiated by the Contractor immediately from the time first detected by or reported to the Contractor.

2.C.2 Schedule

Highway traffic control will be performed by the Contractor in accordance with the Performance Standards set out in CHAPTER VI -2.B.2.

CHAPTER VII - EMERGENCY MAINTENANCE

1. FLOOD CONTROL AND WASHOUT RESPONSE

1.A Maintenance Service

Flood control and washout response will be performed by the Contractor as required on Highways to safeguard the travelling public, prevent damage to Highways and Highway structures, repair washouts and restore Highways to their original condition in accordance with the following priorities and time constraints.

1.B Specifications

1.B.1 Materials

The following is a list of materials, not all-inclusive, which will be supplied and used by the Contractor as required:

- sandbags;
- plastic sheeting;
- culvert pipe of various sizes;
- gravel; and
- Rip-Rap rock.

1.B.2 Performance Standard

(a) the Contractor will:

[i] make prior preparations and take all actions as required to control the flow of water on or adjacent to Highways,

[ii] protect the Highway from erosion due to heavy rains and during high runoff periods, and

[iii] repair subsequent washouts;

(b) the responses to flooding or heavy runoff are unique to the geography, hydrology and Highway design, however one or more of the following may be required by the Contractor:

[i] pre-flood preparations:

- place sandbags,
- protection of Highway embankment fills with plastic sheeting,

- placing gravel and/or Rip-Rap,
- dyking,
- digging temporary relief channels,
- closing sections of a Highway, and
- any other actions necessary to safeguard the public, the Highways and Highway structures,

[ii] during flood conditions

- placing sandbags,
- placing gravel and/or Rip-Rap,
- removing debris from inlets of culverts and catch basins,
- patrolling all affected Highways,
- constructing overflow channels and opening up fills,
- closing sections of Highways, and
- any other actions necessary to safeguard the public, the Highways and Highway structures,

[iii] washouts

- safeguarding the public by closing sections of Highways and/or providing traffic control,
- repairing washouts as quickly as practical to restore the flow of traffic,
- installing culverts,
- constructing detours, and
- any other actions necessary to safeguard the public, the Highway and Highway structures,

(c) in the event of a flood or washout affecting the travelled Highway, the Contractor will immediately respond to establish at least one through lane for traffic, either by repairing erosion or constructing a detour route around the affected section of Highway of a maximum additional travel length of 5 kilometres. Works to complete the restoration of the Highway will commence immediately after opening a minimum of one lane to traffic;

(d) subject to subparagraph e., for floods and washouts in which more than 20 cubic metres of material have been eroded from the Highway at a single site, the following will apply:

[i] the Contractor will immediately notify the District,

[ii] the Contractor will continue to perform work as set out in CHAPTER VII - 1.B.2(c). until notified by the District to cease,

[iii] the Contractor will be entitled to a payment for the quantity of material replaced in excess of 20 cubic metres in accordance with the terms of Part II of the Fee Schedule, and

[iv] the District may elect to cause another Contractor to complete the work;

(e) when less than 20 cubic metres of material is involved but the estimated costs to repair the Highway at a single site will exceed $500, determined in accordance with the provisions of Part II of the Fee Schedule, then the following will apply:

[i] the Contractor will immediately notify the District,

[ii] the Contractor will continue to perform work as set in CHAPTER VII - 1.B.2(c) until notified by the District to cease,

[iii] the Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule for work performed in excess of $500, and

[iv] the District may elect to cause another Contractor to complete the work.

1.B.3 Miscellaneous

(a) where floods or washouts result in Highway closures, the Contractor will inform the District immediately; and

(b) flood and washout areas will be controlled by the Contractor by flagpersons, Signs, barricades, temporary traffic lights and other means necessary in accordance with the Maintenance Standard for Highway Traffic Control.

1.C Scheduling

1.C.1 Response Time

(a) from the time first detected by or reported to the Contractor, any flooding or washout situations will be responded to by the Contractor immediately in order to inspect the site and implement immediate traffic control measures in accordance with the Maintenance Standard for the Highway Traffic Control; and

(b) flood control and washout repairs, including the establishment of detours as necessary, will be commenced by the Contractor within the following maximum times from first detection by or notification to the Contractor.

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
[i] washouts completely cutting a Highway	1 hour	2 hours	4 hours	4 hours
[ii] washouts cutting only one or more lanes and restricting traffic	2 hours	4 hours	8 hours	12 hours

Table 36

1.C.2 Schedule

(a) Flood control and washout response will be performed by the Contractor in accordance with the Response Time set out in CHAPTER VII -1.C.1; and

(b) If more than 20 cubic metres of material is eroded from the Highway at a single site, the Contractor will respond in accordance with CHAPTER VII - 1.B.2(d).

2. EARTH AND ROCK SLIDE RESPONSE

1.D Maintenance Service

Mud, earth and rock slide control and response will be performed by the Contractor as required on Highways to prevent slides from occurring and to remove deposited earth and rock and repair damage caused by mud, earth and rock slides in accordance with the following priorities and time constraints.

1.E Specifications

1.E.1 Materials

The following list of materials, not all inclusive, will be supplied and used by the Contractor at various times as required:

- Rip-Rap;
- sandbags; and
- timber

1.E.2 Performance Standard

The Contractor will respond to mud, earth and rock slides by closing the Highway and providing traffic control, removing obstructions to traffic, repairing all damage to Highways and providing detours where necessary. The Contractor will also monitor and patrol areas suspected of being unstable in accordance with the direction of the District.

(a) in the event of a slide affecting the travelled Highway, the Contractor will immediately respond to establish at least one through lane for traffic, either by repairing erosion, removing deposits or constructing a detour route around the affected section of Highway of a maximum additional travel length of 5 kilometres. Works to complete the restoration of the Highway will commence immediately after opening a minimum of one lane to traffic;

(b) subject to subparagraph c., for slides in which more than 20 cubic metres of material have been deposited upon or eroded from the Highway at a single site, the following will apply:

[i] the Contractor will immediately notify the District,

[ii] the Contractor will continue to perform work as set out in CHAPTER VII - 2.B.2(a) until notified by the District to cease,

[iii] the Contractor will be entitled to a payment for the quantity of material removed or replaced in excess of 20 cubic metres in accordance with CHAPTER VII -2.B.2(a) the terms of Part II of the Fee Schedule, and

[iv] the District may elect to cause another contractor to complete the work.

(c) when less than 20 cubic metres of material is involved but the estimated costs to repair the Highway at a single site will exceed $500, determined in accordance with the provisions of Part II of the Fee Schedule, then the following will apply:

[i] the Contractor will immediately notify the District,

[ii] the Contractor will continue to perform work as set out in CHAPTER VII - 2.B.2(a). until notified by the District to cease,

[iii] the Contractor will be entitled to a payment in accordance with the terms of Part II of the Fee Schedule for work performed in excess of $500.00, and

[iv] the District may elect to cause another contractor to complete the work.

1.E.3 Miscellaneous

(a) where slides result in Highway closures, the Contractor will inform the District immediately; and

(b) slide areas will be controlled by the Contractor by flagpersons, Signs, barricades, temporary traffic lights and other means necessary in accordance with the Maintenance Standard for Highway Traffic Control.

1.F Scheduling

1.F.1 Response Time

(a) from the time first detected by or reported to the Contractor, any mud, earth or rock slide situations will be responded to by the contractor immediately in order to inspect the site and implement immediate traffic control measures in accordance with the Maintenance Standard for Highway Traffic Control; and

(b) repair to sections of Highway lost or blocked by slide deposits will be commenced by the Contractor within the following maximum allowable times from first detection by or notification to the Contractor:

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
[i] slides completely cutting a Highway	1 hour	2 hours	4 hours	4 hours
[ii] slides cutting only one or more lanes and restricting traffic	2 hours	4 hours	8 hours	12 hours

Table 37

1.F.2 Schedule

Slide control and repair will be performed by the Contractor in the following ways:

(a) slide control and repair will be performed by the Contractor in accordance with the applicable Response Time set out in CHAPTER VII -2.C.1; and

(b) if more than 20 cubic metres of material is deposited on or eroded from the Highway at a single site, the Contractor will respond in accordance with the Performance Standards set out in CHAPTER VII -2.B.2(b).

3. HIGHWAY INCIDENT RESPONSE

2.A Maintenance Service

Highway incident response will be performed by the Contractor as required on Highways to:

(a) Re-establish traffic flow, working in cooperation with regulatory agencies, police authorities, and the Province;

(b) Eliminate potential contaminants (including but not limited to minor gas and oil spills) immediately, w working in cooperation with regulatory agencies, police authorities, and the Province;

(c) Respond immediately to dangerous goods incidents, working in cooperation with regulatory agencies, police authorities, and the Province to identify the material;

(d) Identify and document immediately, all traffic incidents and the actions taken; and

(e) repair damage to Highways from accidents and

vandalism; in accordance with the following priorities and

time constraints.

2.B Specifications

2.B.1 Performance Standards

(a) the Contractor will respond to Highway accidents by taking all necessary measures to provide traffic control and to contain any spillage on Highways in conjunction with Police and other authorities. The Contractor will immediately notify the District. The Contractor will be entitled to a payment for each accident occurrence in accordance with the terms of Part II of the Fee Schedule for work performed in excess of $500; if so authorized by the District. Accidents requiring Highway closure will be immediately communicated to the District for public announcement;

(b) the Contractor will repair any damage to Highways caused by accidents or vandalism in accordance with the Maintenance Standard for the involved part of the Highway and will keep records of all associated costs by completing a "Damage to Property" report, as attached to this Standard, and by forwarding this to the District. The Contractor will be entitled to a payment for each accident or vandalism occurrence in accordance with the terms of Part II of the Fee Schedule for work performed in excess of $500; if so authorized by the District, or the District may elect to cause another Contractor to complete the work. If the Contractor attempts to recover costs from parties responsible for causing incidents, the District will work cooperatively with the Contractor to assist in cost recovery;

(c) in event of a dangerous goods spill on or adjacent to a District highway:

[i] The Contractor will comply with the Ministry's Incident Response Management website that contains current policies and procedures supporting incident response for Highways;

[ii] The Contractor will respond to dangerous goods incidents in accordance with the Canadian Transport Emergency Centre (Canutec) Emergency Response Guidebook.

[iii] The Contractor will Remain at the site(s) until traffic flow in all lanes has been re-established and the site(s) are safe for Highway Users.

[iv] The Contractor will establish and record additional information as follows:

- type of terrain (include ditch, creek, river, lake, etc.),
- wind direction,
- name of shipper and point of origin,
- name of carrier, type of vehicle and identification markings (license number, tractor and trailer(s) unit numbers, placard number),
- name of consignee and destination,
- shipping document numbers, if any;

(d) for traffic accidents; photographs and diary notes of Highway conditions and location(s) will be forwarded if requested, to the District by the Contractor, if the Contractor attended the site;

2.B.2 Miscellaneous

The handling, offering for transport and transporting of dangerous goods will be in accordance with the *Transportation of Dangerous Goods Act.*

2.C Scheduling

2.C.1 Response Time

(a) the Contractor will immediately respond as set out in CHAPTER VII -3.B.1 from the time first detected or notified that an accident has occurred on a Highway or Bridge;

(b) photographs and diary notes of non-fatal Highway accidents will be forwarded by the Contractor to the District within 72 hours if the Contractor attended the site and was aware of the accident;

(c) fatal Highway accidents will be reported by the Contractor to the District

immediately upon detection by or notification to the Contractor;

(d) repairs to damaged Highway facilities, in accordance with the Maintenance Standard for the affected part of the Highway, will be commenced immediately by the Contractor if such damage restricts traffic movement in any way. Any other repairs will be completed by the Contractor within 7 days. Damage to Bridge structures is not included in this Standard; and

(e) a "Damage to Property" report, if damage has occurred to the Highway or its facilities, and photographs of the damage will be forwarded by the Contractor to the District within 7 days of the accident or vandalism.

2.C.2 Schedule Routine Maintenance Service

Highway incidence response will be performed by the Contractor in accordance with the applicable Response Time set out in CHAPTER VII - 3.C.1

DAMAGE TO PROPERTY REPORT

(Please print legibly or type)

Location of Incident _____

_____

(show direction or distance to nearest crossroad, street or landmark)

Description of Property Damaged _____

Date and Time of Incident and/or date reported or discovered _____

Estimated Cost of Repairs _____

Name and Address of person(s) who reported this incident to the District _____

_____

Vehicle Licence No. of responsible party _____ Driver's Licence No. _____

Owner's Name _____ Address _____

Insurance Company _____ Policy No. _____

Agent's Name _____ Address _____

Driver's Name _____ Address _____

Investigating Officer _____ Witness(es) _____

Brief Description of events _____

_____

_____

Date _____ Foreman _____

COST OF REPAIRING DAMAGES

1. Wage Costs (class, rate of pay, days/hours worked).

_____	$_____
_____	$_____
_____	$_____
_____	$_____
_____	$_____
_____	$_____
Total Cost of Wages	$ _____

3. Material and Other Costs (Attach Invoices) if Applicable

_____	$_____
_____	$_____
_____	$_____
_____	$_____
_____	$_____
Total cost of Material and other cost	$_____

2. Equipment Costs (size of unit and rate)

_____	$ _____
_____	$ _____
_____	$ _____
_____	$ _____
_____	$ _____
_____	$_____
Total Cost of Equipment	$ _____

SUMMARY

Total Cost of Wages	$___
20% on Wages	$_____
Total Cost of Equipment	$_____
Total Cost of Material	$_____
S.S Tax	$_____
Goods and Services Tax	$_____
Total Cost of Repair	$_____

NOTE:

Please include any available additional particulars, reports and photographs pertaining to the incident (Attach Extra Sheet if Necessary when reporting). If a request is received from the police and/or court authorities for total repair costs, for court use, please ensure all costs are listed and this form completed before advising the amount. On submission to the District, please indicate whether costs are complete or if more are to come.

4. Declared State of Emergency

4.A Maintenance Service

In the event of a Declared State of Emergency, the Contractor will immediately report to the Emergency Operations Centre in the Municipal Hall and make available to the District all equipment and personnel and will continue to do so until such time as the declaration is cancelled.

If the Contractor has contracts for snow removal that conflict with the aforementioned, the Contractor is to make all other equipment available to the District and the balance of their equipment available upon completion of their snow removal contract obligations.

(a) The Contractor will be entitled to payment in accordance with the terms of Part II of the Fee Schedule for work performed in the event of a Declared State of Emergency; if so authorized by the District.

(b) The Contractor will provide one VHF/UHF radio or equivalent for each channel that the Contractor uses to the Emergency Operations Centre during the declared State of Emergency for the purpose of maintaining communications with the Emergency Operations Centre.

CHAPTER VIII - INSPECTION

1. HIGHWAY INSPECTION

1.A Maintenance Service

Highway inspection will be performed by the Contractor as required on Highways to:

(a) identify needed maintenance and establish priorities for maintenance work assignment;

(b) ensure full Highway maintenance services are being provided effectively; and

(c) attend to emergency requirements;

in accordance with the following priorities and time constraints.

1.B Specifications

1.B.1 Performance Standard

Without limiting the provision of any of the Maintenance Standards, the following is a list of major Highway items which will be inspected by the contractor:

(a) asphaltic pavements regarding patching requirements and effectiveness of patching methods;

(b) gravel and dirt Highway surfaces regarding Grading and dust control requirements and effectiveness of programs;

(c) bridge surfaces, railings, structural members, walkways, and hung utilities regarding Signs of weakness, wear, defects, cracking.

(d) Signs regarding any damage, loss and reflectivity (requires nighttime inspection) and location;

(e) ditches regarding any blockages or lack of capacity to carry anticipated volumes of flow, particularly in the fall for expected winter and spring run-off and again during the spring thaw period;

(f) height of grass for any necessary mowing;

(g) height and encroachment of brush and trees for any necessary cutting;

(h) rock and debris on the Highway surface;

(i) winter Highway surface conditions for effectiveness of actions to provide traction (abrasives) or bare the pavement (plowing and de-icing);

(j) culverts for any restriction to flow at the entrance, damage to the pipe itself, and outlet erosion; Roadsides for any needed litter removal and cleanliness;

(k) Roadside or Median barrier which has been damaged or moved from its original position; and

(l) accidents where the Highway condition was considered a contributing factor or for all fatalities or serious injury accidents.

1.B.2 Miscellaneous

(a) inspection of conditions in order to schedule and perform works is implicit in each Maintenance Standard. Items listed in section B.1. are some of the major Highway features and facilities but do not include all items which will be addressed while inspecting Highways;

(b) certain operational actions can be expected during Highway inspection, such as the removal of rocks from the travelled surface. The Contractor will be prepared to take appropriate actions and ensure that no hazardous situation will be left unattended; and

(c) any conditions which are not specifically identified by the Maintenance Agreement or the Maintenance Standards are to be reported to the District immediately;

(d) inspection reports to be submitted to engineering@sooke.ca upon completion;

NOTE:

- the Contractor will inspect any condition reported to the Contractor via a public inquiry or complaint and will keep a record of all such contacts.

1.C Scheduling

1.C.1 Response Time

Notwithstanding the Frequencies set out in CHAPTER VIII -1.C.2 or the applicable Maintenance Standard, any emergency situations encountered will be dealt with by the Contractor immediately, including the following:

(a) removal of rocks, debris or animals from the travelled Highway;

(b) application of Winter Abrasives or De-Icing Chemicals if hazardous slippery conditions are encountered;

(c) installation of hazard markers or emergency warning devices; and

(d) mobile communication with the District to immediately advise of situations warranting Highway condition notification to the media.

1.C.2 Frequency

The following table lists frequencies within which Highways will be inspected by the Contractor:

	HIGHWAY CLASSIFICATION			
	Major	**Collector**	**Local A**	**Local B & C**
[i] during high water	4 hours	8 hours	24 hours	24 hours
[ii] winter patrols (when freezing temperatures and/or snowfall are anticipated)	8 hours	8 hours	12 hours	24 hours
[iii] spring, summer and fall(when neither winter patrols nor spring thaw patrols are needed)	48 hours	7 days	14 days	30 days

Table 38

1.C.3 Schedule

Highways will be inspected by the Contractor in the following ways:

(a) Highway inspection will be performed by the Contractor in accordance with the applicable Response Time and Frequency set out in CHAPTER VIII - 1.C.1 and CHAPTER VIII -1.C.2, respectively; and

(b) Items not specified in CHAPTER VIII -1.B.1that form part of the Highways will be inspected by the Contractor at least on an annual basis.

CHAPTER IX - TERMINOLOGY

In the Maintenance Standards, unless the contract otherwise requires, the following terms will have the following meanings ascribed to them:

AASHTO - American Association of State Highway and Transportation Officials.

Abutment - a wall supporting the end of a Bridge or Span and retaining the approach Fill.

Alligatored - an area of pavement identified by a checkerboard of cracks giving an alligator hide appearance that may or may not be accompanied by surface distortion.

ASTM - American Society for Testing and Materials.

Backfill - earth or other material used to replace material removed during construction, such as in culvert trenches, and behind Bridge Abutments and Retaining Walls.

Backslope - the slope at the opposite side of a Highway ditch from the Shoulder, and extending up to the natural ground level.

Black Ice - a very dangerous, slippery condition on a pavement surface created by transparent ice on the dark asphalt, which is found at times in shaded areas and is not noticeable in advance of driving onto Highway sections with such a condition.

Bleeding / Flushing - an area where the asphalt mix is too rich, leading to the asphalt oozing to the surface in puddles and leaving a slick and slippery area.

Break - when used in conjunction with asphalt emulsions, means the separation of the asphalt from the water component of the emulsion, which then allows the asphalt component to coat aggregate particles or old asphalt surfaces.

Bridge - a structure providing a means of transit for pedestrians and/or vehicles above the land and/or water surface of a valley, gorge, river, stream, lake, canal, tidal inlet or strait; above a Highway, railway or other obstruction, whether natural or artificial.

CGSB - Canadian Government Specifications Board.

CSA - Canadian Standards Association.

Classification - designates the kinds and levels of Maintenance services to be provided according to the amount and type of service the Highway is expected to provide, and for each individual Highway or portion of Highway is the Class which the District's records designate, and as may be amended from time to time by the District.

Colas - a Tack Coat product.

Cold-Mix - a high quality, carefully controlled mixture of asphalt material and mineral aggregate prepared in an asphalt plant, then stockpiled for future use. This is spread and compacted at the job site when the mix is at or near ambient temperature.

Core - small cylindrical deposit of Sod left on a Lawn following aeration by equipment.

Crack Sealed - a paved Highway surface on which asphaltic products have been used to seal cracks, extend life expectancy of the paved Highway and create a skid resistant surface.

Cross Culvert - a culvert crossing under a Highway to allow for the drainage from roadside ditches from one side of the Highway to the other.

Crown - the highest point of cross-section on a straight sections of Highway, usually the centre, and used to ensure run-off drainage.

Cut-Back - this is a liquid asphaltic material thinned by the addition of diesel, kerosene, gasoline or other compatible product which will evaporate after spreading and leave only asphalt residue.

Cutoff Wall - a wall intended to prevent seepage or undermining. Usually a buried vertical wall at the end of a culvert. Also referred to as a “curtain wall”.

Debris - litter, rubbish, vegetation, fallen rocks, dead animals, spilled materials, brush, branches or other tree components or other items, which are not part of the Highway by intention.

Debris Flow - brush, trash, floating log jams, etc., all moving in a stream at high water.

Sometimes collecting at culverts, bridges, or Trash Racks.

Declared State of Emergency - a declared state providing local authorities extraordinary powers to prevent, respond to or alleviate the effects of an emergency or disaster. This state may be declared by the District or the Province.

De-Icing Chemical - material used to remove or assist the removal of ice and compacted snow from the pavement surface by chemical means.

Dike - an earthen embankment constructed to provide a barrier to the inundation of adjacent areas.

Embedment - when referring to aggregate particles or stone chips, means the pushing of these into the asphalt or emulsion material so that they are as tightly inter-locked and coated with asphalt as is possible.

Emulsified Asphalt - this is a liquid asphaltic material thinned by the addition of an

Emulsifying agent and water, which will evaporate after spraying or spreading and working aggregate into it

Everlasting Patch Mix - a quick-setting patching product, also known as EPM.

Feathering - this means to rake out course/larger particles at the edges of an asphaltic patch so that the material can be spread very thinly, and avoid a ridge or bump.

Fill - gravel and earth material used to build a Highway up to the desired level, above the level of the surrounding ground.

Fill Slope - the sloping face of a Fill from ground level up to the top of a Fill.

Fines - very small particles of material (under 200 micrometers in size), typically the size of fine silt or clay particles. Fines act as a binder or glue when intermixed with sand and gravel.

Flashing Arrow Board An electronic device containing multiple lamps, which is used to direct traffic in a selected direction, must be capable of indicating change of direction, and varying intensity of the arrow when required. The arrow shall be a minimum of 130 cm x 60 cm and of sufficient intensity to be legible from a distance of 500 metres day and night.

Flushing / Bleeding - an area where the asphalt mix is too rich, leading to the asphalt oozing to the surface in puddles and leaving a slick and slippery area.

Frost Boil - a raised surface caused by the formation of ice in the underlying soils.

Gabion - a steel wire mesh basket filled with stones or broken concrete and forming part of a larger unit of several such baskets, usually for channel or end treatment, for erosion or scour control or other purposes.

Galvanized - steel or iron item which has a coating of zinc applied for rust protection.

Gradation - the distribution of size of material particles from course to very fine, determined by quantities retained on screens of decreasing mesh size or spacing.

Grading - the machine blading of dirt or gravel Highway surfaces to remove Ravelling and Rutting and establish proper cross-section.

Grass Verge - the area between the outside edge of the pavement and the ditch, that is maintained as lawn.

Hack and Squirt - the incision of tree bark and simultaneous application of herbicide to the cambium layer of trees.

Heaving - a predominantly upward movement of a surface caused by expansion or displacement, such as due to swelling clay, seepage pressure or frost action.

High Float - an Emulsified asphalt material (mixture of asphalt with or without petroleum solvent, and water containing an Emulsifying agent, which maintains the asphalt globules in suspension) meeting specific test requirements of Section 311 of the Standard Specifications Highway Construction.

Highway - has the meaning ascribed to it in the Maintenance Agreement.

Highway Facility - any man-made structure within the highway right-of-way

Highway Structures - any District-owned structure or improvement within the road right-of-way not otherwise maintained by another contract.

Hot-Mix - a high quality, carefully controlled, hot plant mix or asphalt cement and dense graded high quality aggregate, which is spread and compacted at the job site while the mix is at an elevated temperature.

Instant Road Repair - a quick-setting patching product.

Lawn - an established area of grasses forming a quality ground cover.

Lift - a specific measurable layer of material upon the Road Base.

Maintenance Agreement - means the agreement between the District and the Contractor for the provision of Maintenance Services.

Maintenance Standard - means the maintenance standard of the District for the particular maintenance activity described.

Multiplate - a steel culvert, three metres or more in diameter, field assembled by bolting together a number of corrugated steel plates.

Off-Take - the extension of ditches away from the line of the Highway and toward the Right-of-Way boundary or low ground for the purpose of dewatering a Highway Road Base or eliminating excessive Roadside water flow and erosion.

On-Hand - available on demand, as in a local stockpile of material.

Overband - the portion of an applied asphalt sealant which remains above the level of the flat surface of the Highway on either side of the crack or over the crack width itself, following completion of the crack Sealing

procedure.

Overlay - a layer of new asphalt over an existing asphaltic pavement, or a new layer of asphalt or concrete on a Bridge deck.

Pit-Run - native granular material extracted from a gravel pit.

Ponding - large puddles of water trapped on the Highway surface.

Pot-Hole - on a paved or Sealed Highway, an area where a piece of pavement has broken free and been removed, leaving a hole, usually the depth of the asphalt pavement layer and on a gravel Highway, a hole in which water puddles.

Premix - this is the same as Cold-Mix.

Prime Coat - this is a sprayed, thin layer of a liquid asphaltic material used to provide penetration and bonding between Road Base gravel material and asphaltic pavement mixes.

Progressive Work - work of a nature involving intermittent or continuously moving operations along a section of Highway.

Pull-Outs - these are widened areas alongside Shoulders of the Highway, where vehicles may pull off the travelled surface. Usually a site where a litter receptacle is located and may include an historical marker, picnic tables or other features.

Ravelling - on a paved Highway, an area where the asphalt mix is too lean, leading to the aggregate popping out of the mix or breaking away under wear and on a gravel Highway, where the course aggregate is loose and there are not enough Fines to allow compaction to a tight surface.

Reclamite - a Rejuvenator product.

Reflective Pavement Markings - a retro-reflective device mounted on the surface of some paved Highways to assist motorists in the safe and orderly movement of traffic.

Reject Sand - a mineral aggregate which is produced during aggregate crushing operations as a result of the rejection of a portion of the total aggregate at the crusher in order that the crusher product meets a required gradation.

Rejuvenator - an organic material with chemical and physical characteristics selected to restore aged asphalt to desired specifications.

Reshaping - the machine blading of dirt and gravel surfaces from ditch line to ditch line, to re-establish the proper shape of the Highway including Shoulder edges and Crown. This process also brings aggregate and Fines back onto the surface from Shoulders and ditches and involves a deeper cut than Grading.

Retaining 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 Highway is situated.

Rip-Rap - large stone, rock or concrete sections of various sizes placed compactly or irregularly to prevent scour by water or debris.

Road Base - the portion of Highway subsurface on which the travelling surface or wearing surface is placed.

Roadside - that part of the public Highway between the edge of Shoulder and the Highway Right-of-Way boundary. It does not include the Shoulder.

Rockpit - large hole filled with free-draining rock to provide a drainage structure for the disposal of surface water.

Rutting - typically wheel path depression due to heavy vehicular traffic and/or studded tire wear.

Salt - sodium chloride used as De-Icing Chemical on the Highway pavement surface.

Scarify - to roughen or loosen a material surface such as an asphaltic pavement using a rake or serrated edge. Also applies to the Reshaping of gravel Highway surfaces.

Scour - the local lowering of the stream bed by the erosive action of water.

(i) general Scour - occurs in a waterway opening as a result of obstruction of the flow.
(ii) local Scour - occurs at a Pier or Abutment as a result of local obstruction of the flow.
(iii) natural Scour - the Scour of a stream bed resulting from natural phenomena, such as channel meandering.

Sealed - a gravel Highway surface on which Emulsified oil and aggregate has been alternatively spread, including compaction for particle set, building up an asphaltic pavement layer; or
- a paved Highway surface on which asphaltic products have been used to seal cracks, extend life expectancy of the paved Highway and create a skid resistant surface.

Segregation - a variation in the gradation, or the particle size distribution, of an aggregate either as a component of an asphalt mixture or not, generally manifested as excessive coarse aggregates or excessive fine aggregates by proportion in part of the total aggregate.

Shadow Vehicle - a vehicle used primarily as a mobile sign support and situated a minimum of 100 metres behind the forward maintenance vehicle.

Shoulder - the area between the edge of the outside traffic lane and the ditch, including the following components: Shoulder top, edge and side slope but, does not include a grass verge.

Shoving - an area where the asphalt is soft enough to move under very heavy loading, usually at intersections stop lines due to braking pressure and heavy loads.

Sight Distance - driver visibility of the Highway, Signs and intersections as minimum distance to safely drive the Highway at these locations:

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

[i] for vehicles travelling on any travelled portion of a Highway:

Highway Classification	Minimum Highway Sight Distance
Major	120 metres
Collector & Local A	100 metres
Local B & C	60 metres

[ii] for vehicles stopped at an intersection; measured at a distance of 3 metres back of the outside edge of the thru vehicle lane, visibility in both directions to the travelled portion of the thru Highway will be:

Highway Classification	Minimum Highway Sight Distance
Major	85 metres
Collector & Local A	65 metres
Local B & C	45 metres

[iii] for vehicles on the travelled portion of the Highway the minimum Sight Distance to Highway Signs will be:

Highway Classification	Minimum Highway Sight Distance
Major	140 metres
Collector & Local A	110 metres
Local B & C	70 metres

(b) Sight Distance for traffic control requirements will be defined as the length of unobstructed Highway visible to the driver and the following values (as a function of the posted speed limit) will be the minimum distances acceptable to the District. Sight Distance less than set out below will require additional control as defined in section B.2 of the Maintenance Standard for Highway Traffic Control.
60 kilometres per hour 110 metres

50 kilometres per hour	80 metres
30 kilometres per hour	50 metres

Sign -a lettered board to convey information or direction or guidance and includes all regulatory, warning, guide or informational advisory, construction and maintenance, route markers, delineators, hazard markers displays and all special message/displays as defined by the District, but excluding electronically controlled messages/displays and reflective pavement markers.

Sign Manuals -the most recently published amendment or replacement of the following: the “Motor Vehicle Act and Regulations”, as produced by the Provincial Government, the “Traffic Control Manual for Work on Roadways” as produced by the Ministry of Transportation and Highways, and where the aforementioned are silent, the “Manual of Uniform Traffic Control Devices” as produced by the Transportation Association of Canada.

Sign System -includes all regulatory, warning, guide or informational advisory, construction and maintenance, route markers, delineators, hazard markers, posts, hardware (i.e. nuts, bolts, washers, rivets, etc.) and all special message/displays as defined by he District, but excluding electronically controlled messages/displays and reflective pavement markers.

Site (Dust Control) a specific site or location along a Highway requiring dust abatement.

Sod - a mat of grass roots and fibres containing earth and/or granular aggregate.

Struck Off -the use of an even, straight edge to remove excess crack sealant material above the level of the Highway surface in order to leave a uniform amount of sealant directly over the crack with edges of the spread evenly feathered to overlap the Highway surface on each side of the crack to the specified width.

Superelevation -this is the vertical rise in elevation from the outside edge of a Highway surface, to the inside edge on a curving section of Highway.

Tack Coat -this is a sprayed, thin layer of a liquid asphaltic material used to provide bonding or adhesion between old and new pavement material.

Talus -rock fragments of any size or shape (usually coarse and angular) derived from and laying at the base of a cliff or very steep, rocky slope.

Tight-Bladed -when operating a motor grader means the Grading of the surface with the grader's blade tight to the Highway surface but not cutting into it. This is accomplished by using very little down pressure on the blade.

Torching -the use of a portable hand-held propane torch to heat asphalt concrete surfaces.

Tracking -the pick-up of asphalt material on vehicle tires causing the spreading of the asphalt away from its original point of application.

Trash Rack -a pervious barrier constructed to catch debris and prevent blockage of a Bridge or the inlet of a Culvert or Multiplate structure.

Treated -a gravel Highway surface on which Emulsified oil and aggregate has been alternatively spread, including compaction for particle set, building up an asphaltic pavement layer.

Undermining -the action of wearing away supporting material as the undermining of a Road Base of Shoulder by stream erosion.

Unique Patch Mix -a quick-setting patching product, also known as UPM.

Utility Cut -an excavation in the Highway accommodating underground placement of utility lines such as gas, water, sewer and storm water.

Vulcanized -re-heated and re-worked existing asphaltic pavement utilizing Rejuvenator product(s) and additional new Hot-Mix, forming a new and homogeneous mat.

Wash-Boarding -transverse ridges, ripples or small bumps on a gravel/dirt Highway surface (right angles to travel), usually on hills or steeper sections, leading to very rough, vibrating or chattering ride.

Windrow -a ridge or longitudinal mound of material left behind a grader during initial cutting passes, and before being spread back over the surface.

Winging **-**the removal of snow ridges left on the shoulders of the Highway following a snow plowing operation.

Winter Abrasive **-**the sand or fine gravel applied to Highway surfaces during winter snow and ice conditions to provide traction for vehicles. May or may not contain De-Icing Chemicals.

CHAPTER X - APPENDICES

APPENDIX A

2017 PAVEMENT CONDITION ASSESSMENT

BY

OPUS CONSULTANTS LTD.

OPUS

2017 Pavement Condition Assessment

District of Sooke

2017 Pavement Condition Assessment

Prepared By
Neil Forrest

Reviewed By
Raphaelle Cardyn

Approved for Release By
Carol Campbell P.Eng

Opus International Consultants (Canada) Limited
Victoria Office
Suite 310, 1207 Douglas Street
Victoria BC V8W 2E7
Canada

Telephone: +1 250 952 5640
Facsimile: +1 250 920 5620

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Contents

Executive Summary

Introduction

Municipalities across Canada, including the District of Sooke (the District), are challenged with maintaining aging infrastructure which demands substantial rehabilitation at a time of competing needs and budgetary constraints.

The District sought assistance from Opus International Consultants (Canada) Limited (Opus) to assess its 90 centreline kilometers of road network ranging from arterial collectors to local roads, report current condition, and assist in identifying maintenance and rehabilitation strategies.

Pavement Condition Assessment

A comprehensive pavement condition data collection program was undertaken for the District's entire road network in June 2017. The surveys consisted of the following data capture:

- Pavement Surface Distress;
- Pavement Rutting, and;
- Pavement Roughness.

Current Condition

Pavement condition can be reported in a number of ways. For the District, the condition is reported by defect, and as a Pavement Condition Index (PCI). The PCI is used to provide a quick reference to overall condition, and is calculated using the cracking, ravelling and pothole surface distresses, and pavement rutting. The results of the PCI analysis are shown as an average by road class below:

Collector Road Network – The Collector Road network has an average PCI value of 61.7, which equates to a "Fair" condition on the PCI scale;
Local Road Network – The Local Road network has an average PCI value of 75.9, which equates to a "Good" condition on the PCI scale;

As an example, the District's current pavement condition as a PCI has been spread across the seven bin system and shown as a percentage within each condition state is shown in Table 5 below.

Table 5: Percentage of Road Network (centreline km) by PCI Range and Condition States

	Condition States (PCI Range)						
	Very Good	Good	Fair	Poor	Very Poor	Serious	Failed
Roadway Class	**100-85**	**84-70**	**69-55**	**54-40**	**39-25**	**24-10**	**9 -0**
Collector Roads	**27%**	**23%**	**29%**	**10%**	**8%**	**1%**	**4%**
Local Roads	**47%**	**11%**	**18%**	**8%**	**7%**	**5%**	**5%**

The PCI results for the Collector Road network show that 50% of the network is in good or very good condition, 29% of the network is in fair condition, 18% of the network in poor and very poor condition, and the remaining 5% is in serious to failed condition.
In contrast, the Local Road network has 58% in good or very good condition, 18% in fair condition, 15% in poor and very poor condition, and the remaining 10% in serious to failed condition.

Rehabilitation Strategy

The foundational principal of preserving pavement assets is to ensure that they are protected from the damaging effects of water ingress into the pavement and underlying sub-grade layers. All forms of surface distress that will allow entry of water should be treated.

The Districts' road network is a network of two halves. Half of the network is in good condition overall due to being newer or recently repaved. However, the other half (older) of the network falls into the "Fair" to "Failed" condition state category. Based on the current pavement condition rating, the rehabilitation tactics recommended for this strategy are to;

- Identify road sections where the current pavement condition rating is at its lowest, and;
- Apply the most effective treatment that will maintain current service levels.

Budget and Treatments

A model has been developed to enable forecasting of network budgets for each of the next 30 years. The model does not contain any logic that caps total budgets or "smooths out" peak budget calculations across a number of years. The District's engineering staff will use the model outputs to forecast future budget requirements and as the basis for producing forward work programs.

The model calculates a budget cost for each of the selected treatments for each of the next 30 years.

Recommended Future Actions

- The budget model has been delivered with settings derived by Opus from analysis of the condition data and pavement life assumptions. These assumptions and settings will be adjusted by the user based on experience with the model, as described in Section 6.3.

- The Distress Triggers, Treatment Triggers, and Deterioration rates should be reviewed every two years.

- At the completion of future rehabilitation work, the PCI should be reset to 100.

- In the District's GIS System, each road should be assigned an overarching road number, and then split into sections (10, 20 etc.) at easily identifiable locations such as change in road classification, change from urban to rural or vice-versa, intersection to intersection, or where road widths substantially differ (more than 2 metres in width). This enables the District to add in new sections when changes in the roadway occur.

- Further attribute data should be created for all street sections including construction details such as depth, material type, and construction date for each pavement layer. Where this data

does not exist, consider making assumptions. Replace with factual information at time of treatments.

- Where assumed values exist in the database, Opus recommends validating the assumptions over a period of four years. A business process should be established that then updates this data over the next four years. Having this data enables the District to make informed decisions around planning and spending going forward.

- Condition data should be collected again in three to five years' time, firstly to provide an idea of actual deterioration rates against the assumed rates within this report, and secondly to assess the effectiveness of any maintenance work that has been completed. The suitability of the budget model should also be reviewed at the same time, as it may be that a more sophisticated deterioration and optimization model is appropriate.

Conclusions

- The District's road network is a network of two halves. The first being in good overall condition due to new developments. The other half of the network is older and has roads that are in very poor to failed condition.

- The new budgeting tool will assist the District of Sooke Engineering staff to identify long term budgeting requirements to maintain it at a defined level of service over the long term.

- The new budgeting tool will also assist the District in identifying potential candidate for treatment,

- This tool and the associated calibration and verification work should signal the commencement of a long term business process which has an objective of ensuring that a sustainable level of investment in pavement rehabilitation maintains the street network at an agreed level of service.

1 Introduction

Municipalities across Canada are challenged with maintaining aging infrastructure which demands substantial rehabilitation at a time of competing need and budgetary constraints. The District of Sooke (District) is faced with this predicament and requires an innovative and proactive approach to managing infrastructure assets to meet desired levels of service.

The District sought assistance from a consultant to evaluate its road network and assist in identifying maintenance and rehabilitation strategies. Opus International Consultants (Canada) Limited (Opus) were subsequently commissioned by the District to provide these pavement management services.

1.1 Purpose

The purpose of this report is to;

- Describe the Road Network;
- Describe the condition data collection process;
- Make observations on current network condition;
- Provide a list of prioritized sections with recommended treatments;
- Recommend a rehabilitation strategy and indicative long term budget;
- Document the development and workings of a simple spreadsheet based pavement budgeting model; and
- Recommend future actions the District could take to improve its network knowledge.

2 Network

The District of Sooke is a municipality situated on the southern tip of Vancouver Island, Canada. Located approximately 38 kilometres by road from the city of Victoria, Sooke is considered the westernmost of the "Western Communities". Sooke has gained increasing popularity as a scenic tourist destination due to its beaches, vibrant arts community, and world renowned regional and provincial parks including Whiffin Spit Park, Sooke Potholes Provincial Park, West Coast Trail and the Juan de Fuca Provincial Trail. Sooke is also a popular cycling route due to its access to Victoria via the Galloping Goose Regional Trail.

2.1 Network Hierarchy

The District's road network is accessed from Highway 14, a Provincial Highway. The road network is approximately 90 centreline kilometres in length. The District's road network is split into two hierarchical classifications; collector roads, and local roads. The length surveyed in each class is shown in Table 1 and mapped in Figure 1.

Table 1: District of Sooke Road Inventory (Road-km)

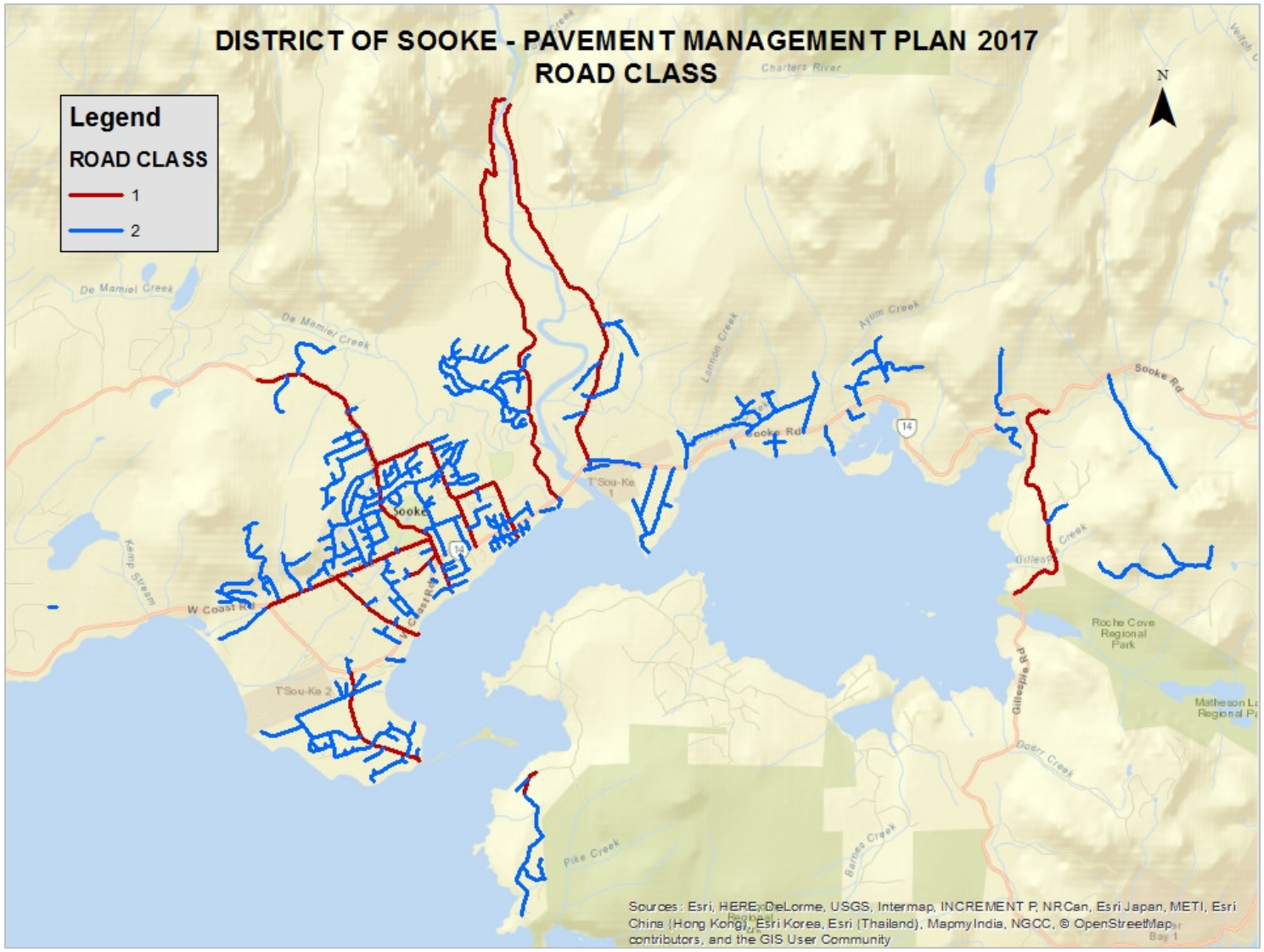
Road Class	Length (Km)
Collector Roads	21.521
Local Roads	67.058
Total Length	**88.579**

There are a number of road sections that were not surveyed due to various reasons. Table 2 shows the road sections, names, section lengths, and the reasons why they were not surveyed.

Table 2: District of Sooke – Roads not Surveyed (Road km)

Section ID	Road Name	Reason	Length (Km)
RD8	Croce Rd	no test - gravel	0.076
RD40	Penang Rd	no test - gravel	0.216
RD357	Atherly Close	no test - gravel	0.027
RD169	Lanark Rd	no test - gravel	0.042
RD147	Throup Rd	no test - gravel	0.171
RD2000012	Shepherds Way	no test - private	0.138
RD404	Medberry Close	no test - gravel	0.088
RD515	Sooke River Rd	no test - gated	0.073
RD496	Sooke River Rd	no test - gated	0.436
RD513	Sooke River Rd	no test - gated	0.205
RD397	Kirby Rd	no test - gravel	0.052
RD108	Gatewood Rd	no test - does not exist	0.077
RD109	Gatewood Rd	no test - does not exist	0.051
RD266	Coastal Heights	no test - does not exist	0.039
RD275	Blanchard Rd	no test - construction	0.05
Total Length			**1.741**

Figure 1: District of Sooke Road Classification Map



3 Data Collection

3.1 Pavement Condition Data Collection

MPE Siemens owns and operates an International Cybernetics Corporation (ICC) RT3000 data collection vehicle that simultaneously collects surface condition, roughness, rut, and GPS data streams. With the inclusion of the latest technology into the on-board systems, the data collection process has proven to be repeatable and extremely reliable. Details of this equipment can be supplied on request.

The District's road network comprises approximately 90 centreline kilometres of paved roads made up of suburban and rural arterial, collector, and residential roads. Surface distress, rutting and roughness testing was undertaken on the entire sealed network. Details of the Surface Condition Rating Methodology can be supplied on request.

A comprehensive pavement condition data collection program was undertaken for the District's streets during June 2017 by MPE Siemens as part of this study. The surveys consisted of the following data capture:

(a) ***Pavement Surface Condition*** – A detailed visual assessment of the pavement surface condition by experienced raters in accordance to ATSM D6433-11, a standardized rating methodology which is recorded in real time as the vehicle travels the road network. The focus areas in rating pavement distress include but are not limited to ravelling, cracking, potholes, bleeding, and distortion;

(b) ***Pavement Rutting*** – The transverse profile of the travel lane is measured on a continuous basis by laser sensors and used to calculate the average rut depths for each wheel path, and;

(c) ***Pavement Roughness*** – Longitudinal profile roughness measurements collected for each wheel path on a continuous basis using a Class II laser profiler (according to ASTM E950) to determine the pavement roughness as per the International Roughness Index (IRI).

4 Current Network Condition

4.1 Current Network Pavement Condition Index

The Pavement Condition Index (PCI) is a summary of pavement surface condition and was developed by the U.S. Army Corps of Engineers, and has become a recognized standard worldwide in the form of ATSM D6433-11. The index is based on the following surface defect types:

- Low ride quality
- Alligator cracking
- Bleeding
- Block cracking
- Bumps and sags
- Corrugations
- Depressions
- Edge cracking
- Joint reflections
- Lane/shoulder drop-off
- Longitudinal and transverse cracking
- Patching and utility cut patching
- Polished aggregate
- Potholes
- Rutting
- Shoving
- Slippage cracking
- Swelling
- Weathering and raveling

For the survey completed for the District in June 2017, each road was segmented into 10 metre segments and assessed for the defects listed above (where present). Each defect was recorded based on severity (low, medium, and high) and density (length or area of defect per segment).

The Pavement Condition Index (PCI) is a summary of overall pavement condition, and is calculated using the following equation:

PCI = 100 – TDV

The TDV (Total Deduction Value) is calculated using the defects listed above. Based on the severity and density of the defects, multipliers are used to "weight" the severity. The higher the severity of a defect, the higher the weighting to calculate the deduction value. Typically, deduction values are weighted as shown in Table 3 below:

Table 3: Typical Weighting of Defects by Severity

Defect Type	Severity	Weighting	Extent	Score	Deduction Value
Defect	Low	0.50	0-100%	0.50 x Extent	
	Moderate	0.75	0-100%	0.75 x Extent	
	High	0.90	0-100%	0.90 x Extent	

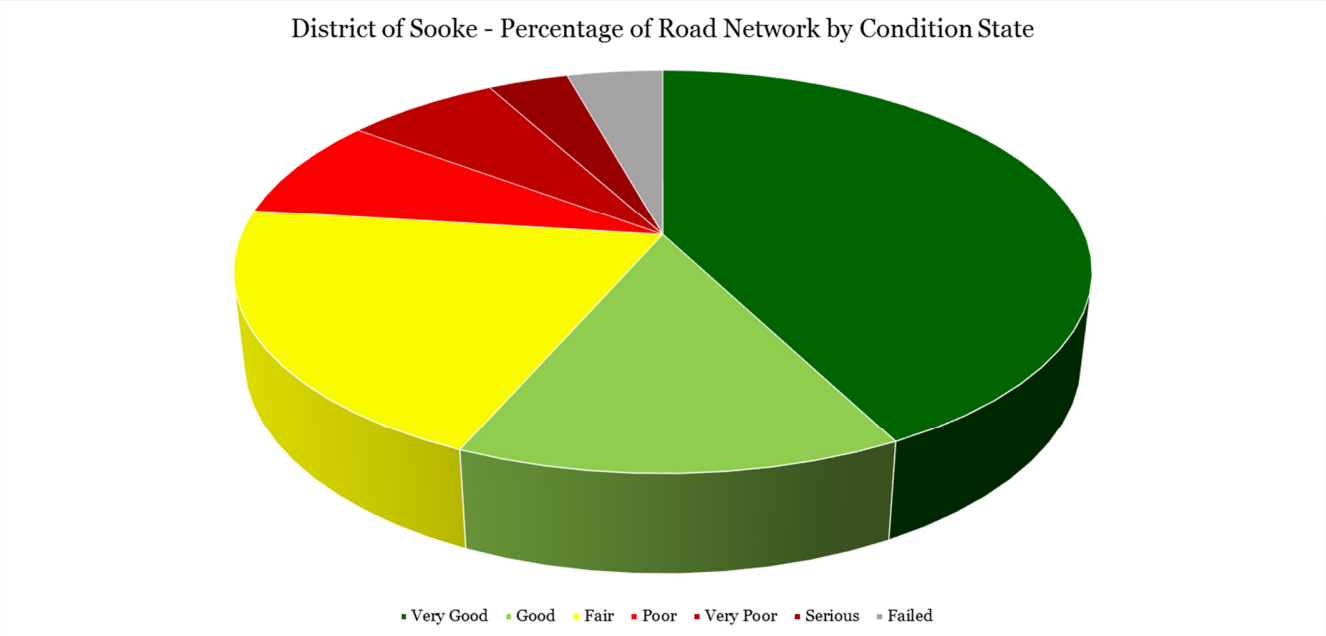
A condition state can be attributed to the PCI value, and can vary dependent on road class. For iterative purposes, table 4 below shows typical ranges of pavement condition rating values against corresponding condition states.

Table 4: Pavement Condition Rating and Corresponding Condition States

PCI Range	Condition State
100 - 85	Very Good
84 - 70	Good
69 - 55	Fair
54 - 40	Poor
39 - 25	Very Poor
24 - 10	Serious
9 - 0	Failed

Figure 2 shows the overall condition of the Districts' road network using the PCI values and corresponding condition states based on the PCI range above.

Figure 2: Percentage of Road Network by Condition State



The results in figure 2 show:

- 42% of the road network is in very good condition;
- 14% of the road network is in good condition;
- 20% of the road network is in fair condition;
- 8% of the road network is in poor condition;
- 7% of the road network is in very poor condition;
- 4% of the road network is in serious condition, and
- 4% of the road network is in failed condition.

Another output from the PCI analysis shows the average PCI by road class. This highlights road classes that the District may want to focus their efforts with regard to maintenance and rehabilitation activities.

A review of the current PCI analysis indicated the following:

Collector Road Network – The Collector Road network has an average PCI value of 61.7, which equates to a "Fair" condition on the PCI scale;

Local Road Network – The Local Road network has an average PCI value of 75.9, which equates to a "Good" condition on the PCI scale;

As an example, the District's current pavement condition as a PCI has been spread across the seven bin system and shown as a percentage within each condition state is shown in Table 5 below.

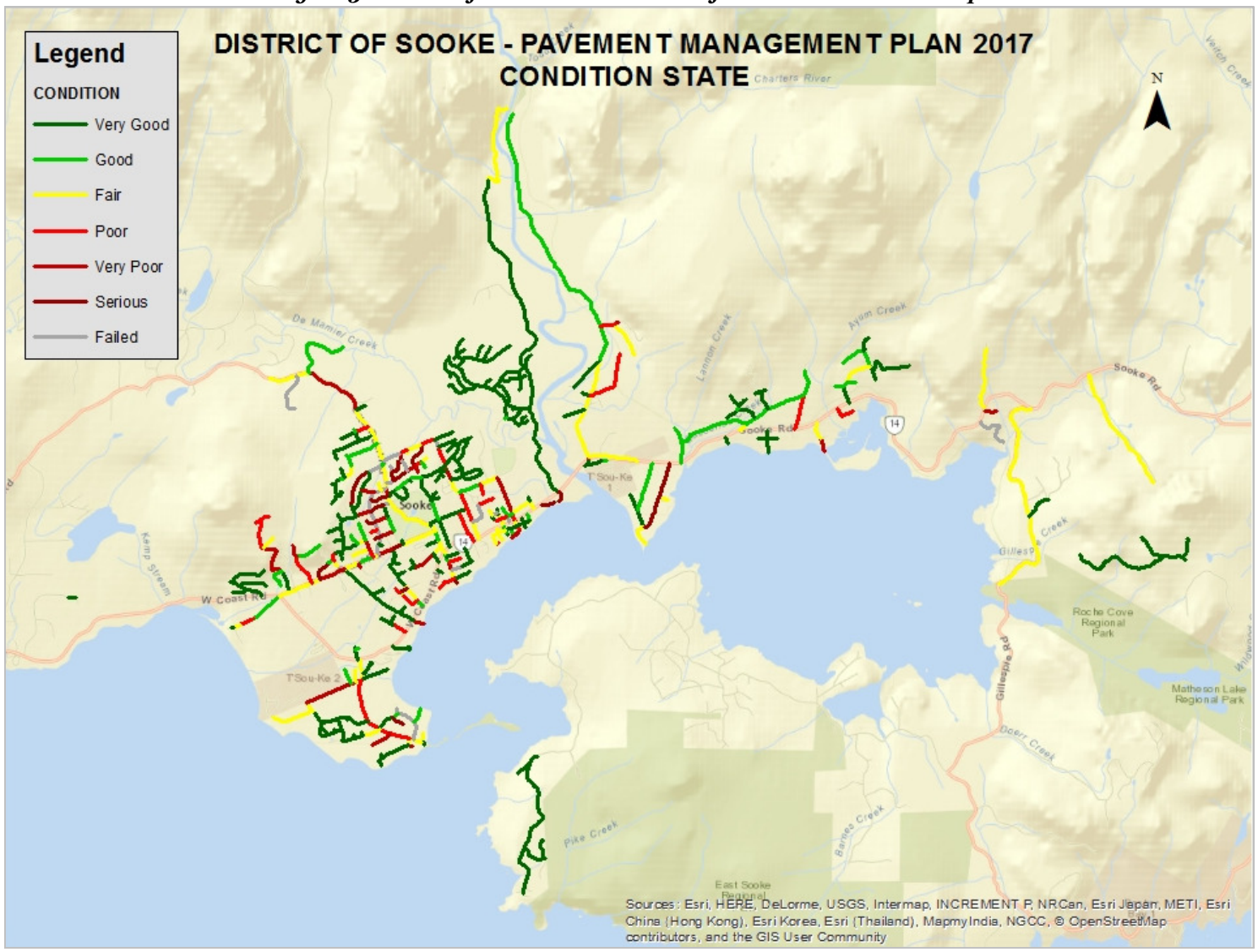
Table 5: Percentage of Road Network by PCI Range and Condition States

	Condition States (PCI Range)						
	Very Good	Good	Fair	Poor	Very Poor	Serious	Failed
Roadway Class	**100-85**	**84-70**	**69-55**	**54-40**	**39-25**	**24-10**	**9 -0**
Collector Roads	**27%**	**23%**	**29%**	**10%**	**8%**	**1%**	**4%**
Local Roads	**47%**	**11%**	**18%**	**8%**	**7%**	**5%**	**5%**

The PCI results for the Collector Road network shows that 50% of the network is in good or very good condition, 29% of the network is in fair condition, 18% of the network in poor and very poor condition, and the remaining 5% is in serious to failed condition.
In contrast, the Local Road network has 58% in good or very good condition, 18% in fair condition, 15% in poor and very poor condition, and the remaining 10% in serious to failed condition.

The PCI results have been mapped in Figure 3 below to illustrate road segments that fall into the condition states highlighted in Table 5.

Figure 3: District of Sooke – Pavement Surface Condition States Map



5 Causal Factors Affecting Current Condition

As the PCI is an index made up of various pavement defects, it is important to understand which modes of failure are responsible for the low PCI results and condition states.

This section highlights the current condition of the District's road network with regard to the following pavement condition parameters:

- Pavement Roughness;
- Cracking,
- Rutting;
- Ravelling, and;
- Patching and Utilities.

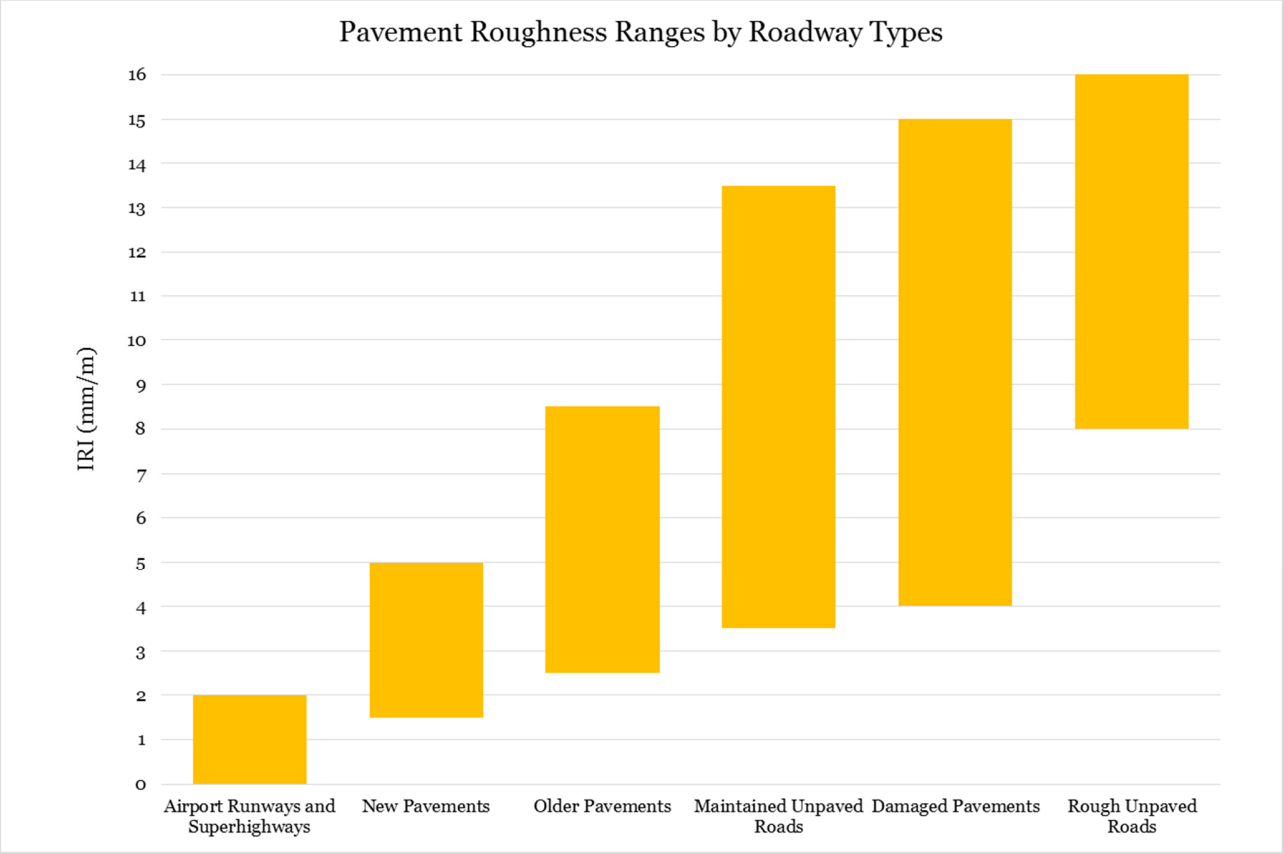
The data has been aggregated by road hierarchy and displayed as cumulative distributions for Collector, and Local Road classes. A cumulative distribution of each dataset shows the percentage of network length by road class that has a certain condition level or defect severity.

5.1 Current Network Pavement Roughness Condition

Pavement roughness is used to measure the longitudinal profile of highways, and is measured using the International Roughness Index (IRI), an internationally recognised measurement. Roughness equates to the difference in road surface level over a defined length.

Typical values in paved municipal environments would be between 1.5 for newly paved construction through 5-6 for deteriorated pavements. Values greater than 5-6 are often due to surface obstructions such as utility trenches or surface hardware (i.e. manhole covers, catch basins, etc.) located in the driving lanes. For clarification, the chart in Figure 4 shows the ranges that should be expected by roadway type.

Figure 4: Typical Pavement Roughness Ranges by Roadway Type

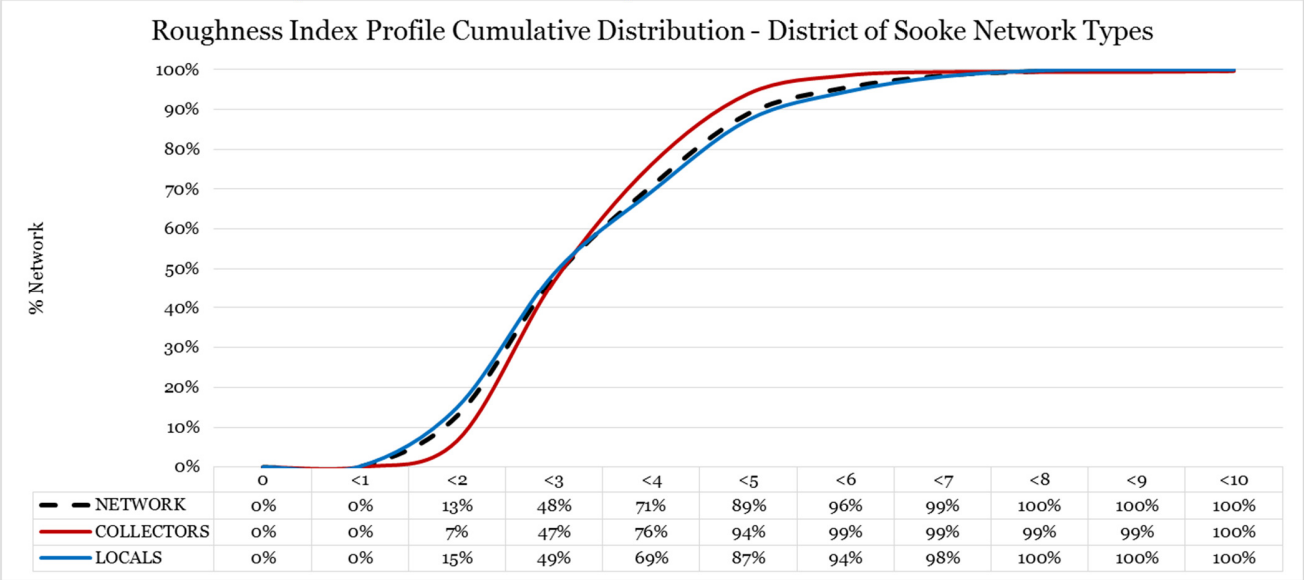


The cumulative distribution curves as shown in Figure 5 indicated very little difference in pavement roughness between the road classes as follows:

- **Collector Road Network** – the average IRI was 3.71 with 94% of the network having an IRI value of 5 or less. The remaining 6% of the network had an IRI between 5 and 10, which is expected for older pavements; and
- **Local Road Network** –the average IRI was 3.25 with 87% of the network having an IRI value of 5 or less. The remaining 13% of the network had an IRI between 5 and 8, which again falls within the threshold for older pavements.

The average condition of the District's road network with respect to roughness, are aligned with other similar municipalities within Greater Victoria that Opus is familiar with.

Figure 5: 2017 Pavement Roughness Cumulative Distributions



	0	<1	<2	<3	<4	<5	<6	<7	<8	<9	<10
NETWORK	0%	0%	13%	48%	71%	89%	96%	99%	100%	100%	100%
COLLECTORS	0%	0%	7%	47%	76%	94%	99%	99%	99%	99%	100%
LOCALS	0%	0%	15%	49%	69%	87%	94%	98%	100%	100%	100%

5.2 Current Network Pavement Cracking Condition

Cracking, if left untreated, enables the ingress of water into the underlying pavement layers and sub-grade, and can lead to increased rates of pavement deterioration.

The cumulative distribution curves for pavement cracking above are based on a crack index derived from the cracking defect types in Table 3, and calculated as per Table 4:

Table 3: Cracking Defect Types

Alligator Cracking	Longitudinal Cracking	Transverse Cracking
		

The crack index can range from 0 to 100, with 0 being no cracks and 100 being cracked throughout. It is derived by combining the severity and density ratios of each crack defect, then applying a weighting factor to each cracking type. The weighting factors are applied to each cracking type dependent on the failure mechanism. For example, alligator cracking has a higher weighting in the index as it is

considered to be the greatest factor to bring on rapid deterioration if not treated. Longitudinal and transverse cracking share the same, lesser weighting in the index as shown.

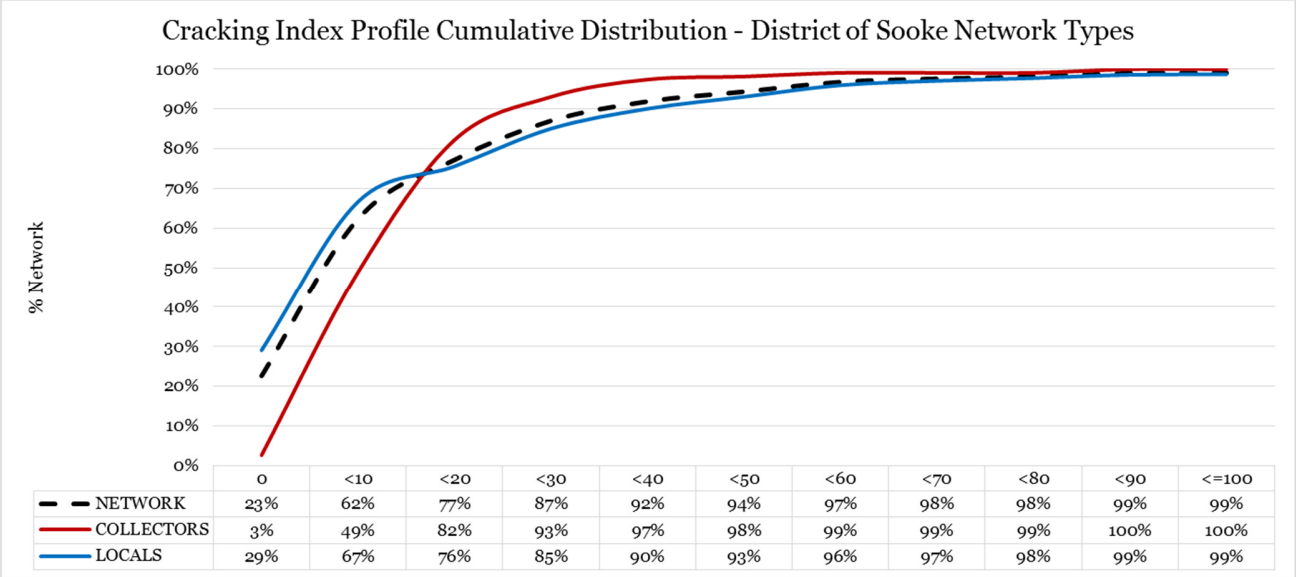
Table 4: Weightings and Calculations for Cracking Index

Cracking Type	Severity	Weighting	Extent	Score	Cracking Index Weighting
Transverse	Low	0.50	0-100%	0.50 x Extent	0.6
	Moderate	0.75	0-100%	0.75 x Extent	
	High	0.90	0-100%	0.90 x Extent	
Transverse Score = Sum of above					
Longitudinal	Low	0.50	0-100%	0.50 x Extent	0.6
	Moderate	0.75	0-100%	0.75 x Extent	
	High	0.90	0-100%	0.90 x Extent	
Longitudinal Score = Sum of Above					
Alligator	Low	0.50	0-100%	0.50 x Extent	1.0
	Moderate	0.75	0-100%	0.75 x Extent	
	High	0.90	0-100%	0.90 x Extent	
Alligator Score = Sum of Above					
Cracking Index = 0.6 x Transverse + 0.6 x Longitudinal + 1 x Alligator					

A review of the current pavement cracking condition cumulative distribution curves in Figure 4 indicated the following:

- **Collector Road Network** –the collector road network has more cracking throughout than the local road network, but the majority is of lower severity or density cracking. The breakdown is as follows: 3% of the network has no cracking present. 46% of the network has a cracking index of 10, 33% has a cracking index of 20, 11% has a cracking index of 30, 4% has a cracking index of 40, and the remaining 3% has a cracking index ranging between 50 and 80.
- **Local Road Network** – the local road network has less cracking throughout, but where cracking is present, the severity or density will be higher. The local roads results show 29% of the network having no cracking present. 38% of the network has a cracking index of 10, 9% of the network has a cracking index of 20, 9% of the network has a cracking index of 30, 5% of the network has a cracking index of 40, and the remaining 10% has a cracking index of ranging from 50 to 100.

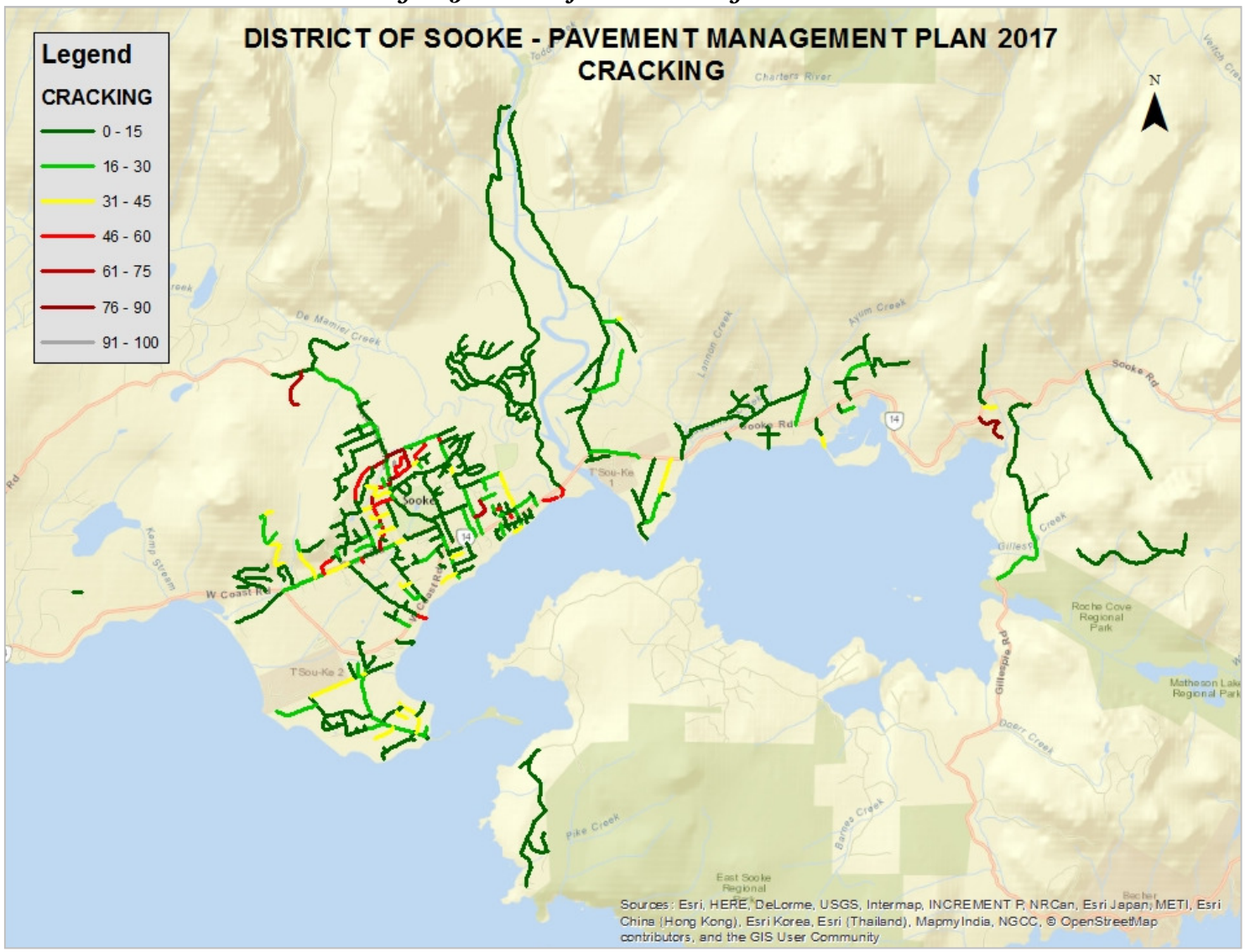
Figure 4: 2015 Pavement Cracking Cumulative Distributions



	0	<10	<20	<30	<40	<50	<60	<70	<80	<90	<=100
NETWORK	23%	62%	77%	87%	92%	94%	97%	98%	98%	99%	99%
COLLECTORS	3%	49%	82%	93%	97%	98%	99%	99%	99%	100%	100%
LOCALS	29%	67%	76%	85%	90%	93%	96%	97%	98%	99%	99%

The cumulative distribution chart provides a high level overview of the level of cracking present by road class, but does not provide the locational aspect. The cracking index results have been mapped to illustrate where the areas of high severity/density cracking exists as shown in Figure 5 below

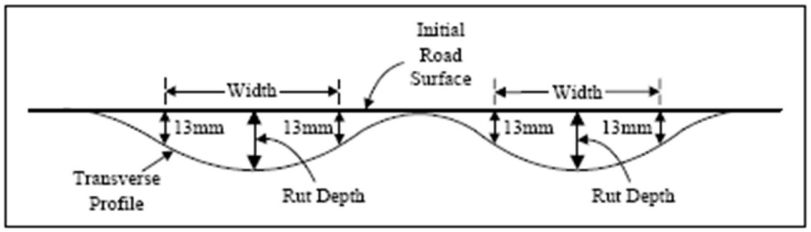
Figure 5: District of Sooke Cracking Index levels



5.3 Current Network Rutting Condition

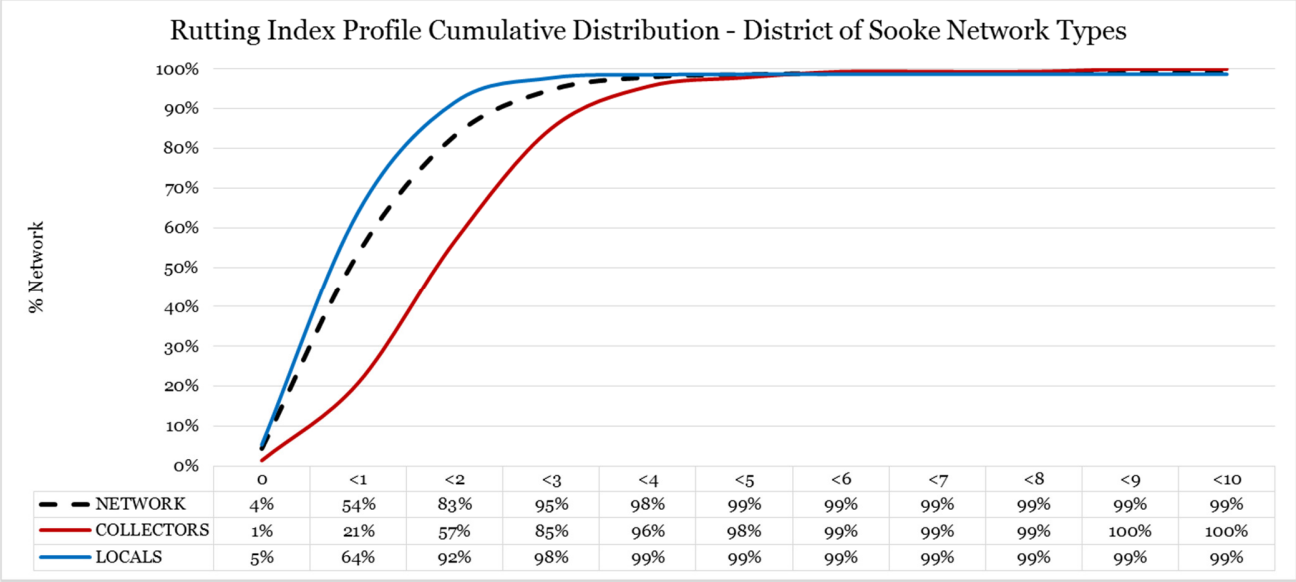
Rutting is the calculated average depth of rut in each wheel-path as measured from below a 2m straight edge. For this analysis the rut measurement for each 50m section was calculated as the average from the 10m collected survey data.

Overall, the level of rutting throughout the network by road segment was less than 10mm, and therefore not sufficient to warrant specific attention. The cumulative distribution curves as shown in Figure 6 indicate:



- **Collector Road Network** – The rutting levels on the collector road network are low with no rut levels above 8mm. 1% of the network has no rutting, 20% of the network has rutting of 1mm, 36% of the network has rutting less than 2mm, 28% of the network less than 3mm, 11% of the network has less that 4mm, and the remaining 3% of the network has rutting less than 8mm; and
- **Local Road Network** – The rutting levels on the local road network are lower to that of the collector road network due to less traffic loading. 5% of the network has no rutting, 58% of the network has rutting less than 1mm, 28% of the network with rutting less than 2mm, 6% of the network has rutting less than 3mm, and the remaining 1% of the local road network has rutting less than 10mm.

Figure 6: 2015 Rutting Cumulative Distributions



	0	<1	<2	<3	<4	<5	<6	<7	<8	<9	<10
NETWORK	4%	54%	83%	95%	98%	99%	99%	99%	99%	99%	99%
COLLECTORS	1%	21%	57%	85%	96%	98%	99%	99%	99%	100%	100%
LOCALS	5%	64%	92%	98%	99%	99%	99%	99%	99%	99%	99%

5.4 Current Network Ravelling Condition

Ravelling is the disintegration of the pavement from the surface downward due to the loss of aggregate particles. Ravelling usually occurs as a result of the aging of the asphalt binder, but can also be attributed to poor mixture quality, segregation, or insufficient compaction during construction. A ravelled surface enables the ingress of water into the underlying pavement and, if left untreated, can lead to increased rates of pavement deterioration.

Ravelling was collected similarly to cracking based on severity and extent with an overall index calculated as described in Table 5.

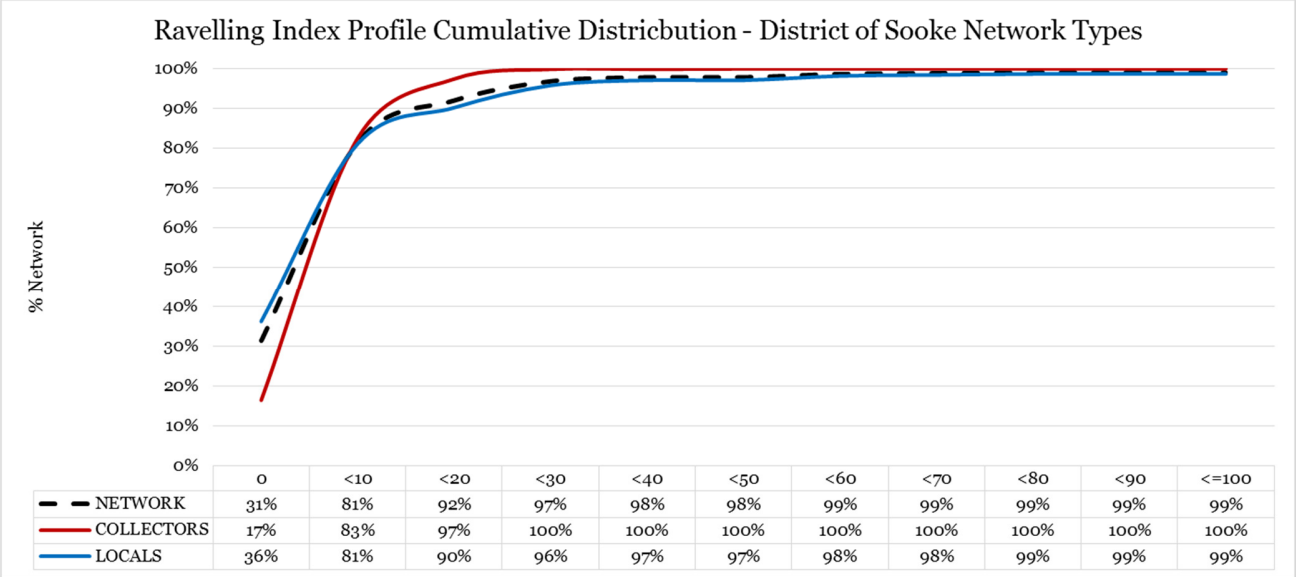
Table 5: Weightings and Calculations for Ravelling Index

Severity	Weighting	Extent	Score
Low	0.50	0-100%	0.50 x Extent
Moderate	0.75	0-100%	0.75 x Extent
High	0.90	0-100%	0.90 x Extent
			Ravelling Index = Sum of above

Looking at the results, the ravelling on the network is low with 31% of the network having no ravelling present. This is due to 31% of the network being newer or recently paved. The rest of the network has an equal amount of low and medium severity ravelling, with a smaller number of roads having high severity ravelling. The cumulative distribution curves as shown in Figure 7 showed that ravelling is a significant defect in older parts of the network, and that there was a noticeable difference between road classes as follows:

- **Collector Road Network** – The collector road network has a low level of ravelling present with 17% of the network having none. 66% of the network has 10% ravelling, 14% of the network has 20% ravelling, and the remaining 3% of the network has 30% ravelling; and
- **Local Road Network** – 36% of the network has no ravelling present, 45% of the network has 10% ravelling, 9% of the network has 20% ravelling, 6% of the network has 30% ravelling, 1% of the network has 40% ravelling, and the remaining 1% of the network has 50% to 100% ravelling.

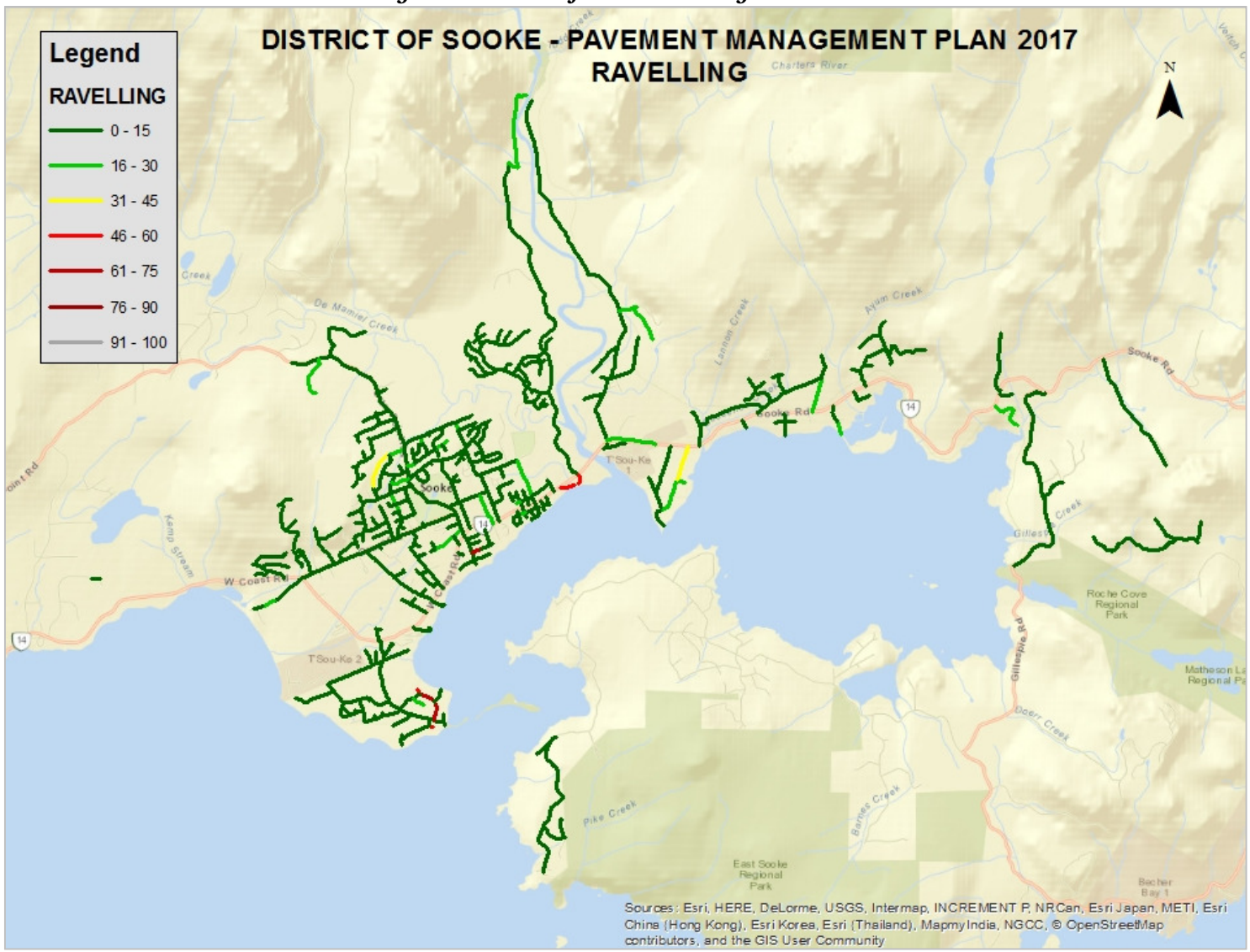
Figure 7: 2015 Ravelling Cumulative Distributions



	0	<10	<20	<30	<40	<50	<60	<70	<80	<90	<=100
NETWORK	31%	81%	92%	97%	98%	98%	99%	99%	99%	99%	99%
COLLECTORS	17%	83%	97%	100%	100%	100%	100%	100%	100%	100%	100%
LOCALS	36%	81%	90%	96%	97%	97%	98%	98%	99%	99%	99%

The cumulative distribution chart provides a high level overview of the level of ravelling present by road class, but does not provide the locational aspect. The results have been mapped to illustrate where the areas of high severity/density ravelling exists as shown in Figure 8 below.

Figure 8: District of Sooke Ravelling Index levels



5.5 Current Patching Condition

Patching can range in condition dependent on age, level of compaction at construction, joint permeability, and traffic volume. The condition of patching can also affect the overall road condition by enabling the ingress of water, which in turn can lead to increased rates of pavement deterioration. High severity patching can affect the overall ride quality of the roadway and also affect pavement roughness results. Furthermore, high severity patching can also lead to early damage of vehicles and increase fuel consumption.

Table 6: Weightings and Calculations for Patching Index

Low Severity Patching	Medium Severity Patching	High Severity Patching
		
Low severity patching has a condition range from brand new to slight aggregate loss and the opening of the sealed edges.	Medium severity patching has a condition range from slight aggregate loss and the opening of the sealed edges to cracking and aggregate loss throughout the patch, small depressions, and wider cracks at the edges.	High severity patching has a condition range from cracking and aggregate loss throughout the patch, small depressions, and wider cracks at the edges to aggregate loss that forms potholes, sinking and large depressions, and extensive higher severity cracking thoughout.

Patching was collected similarly to cracking based on severity and extent with an overall index calculated as described in Table 7.

Table 7: Weightings and Calculations for Patching

Severity	Weighting	Extent	Score
Low	0.50	0-100%	0.50 x Extent
Moderate	0.75	0-100%	0.75 x Extent
High	0.90	0-100%	0.90 x Extent
			Patching Index = Sum of above

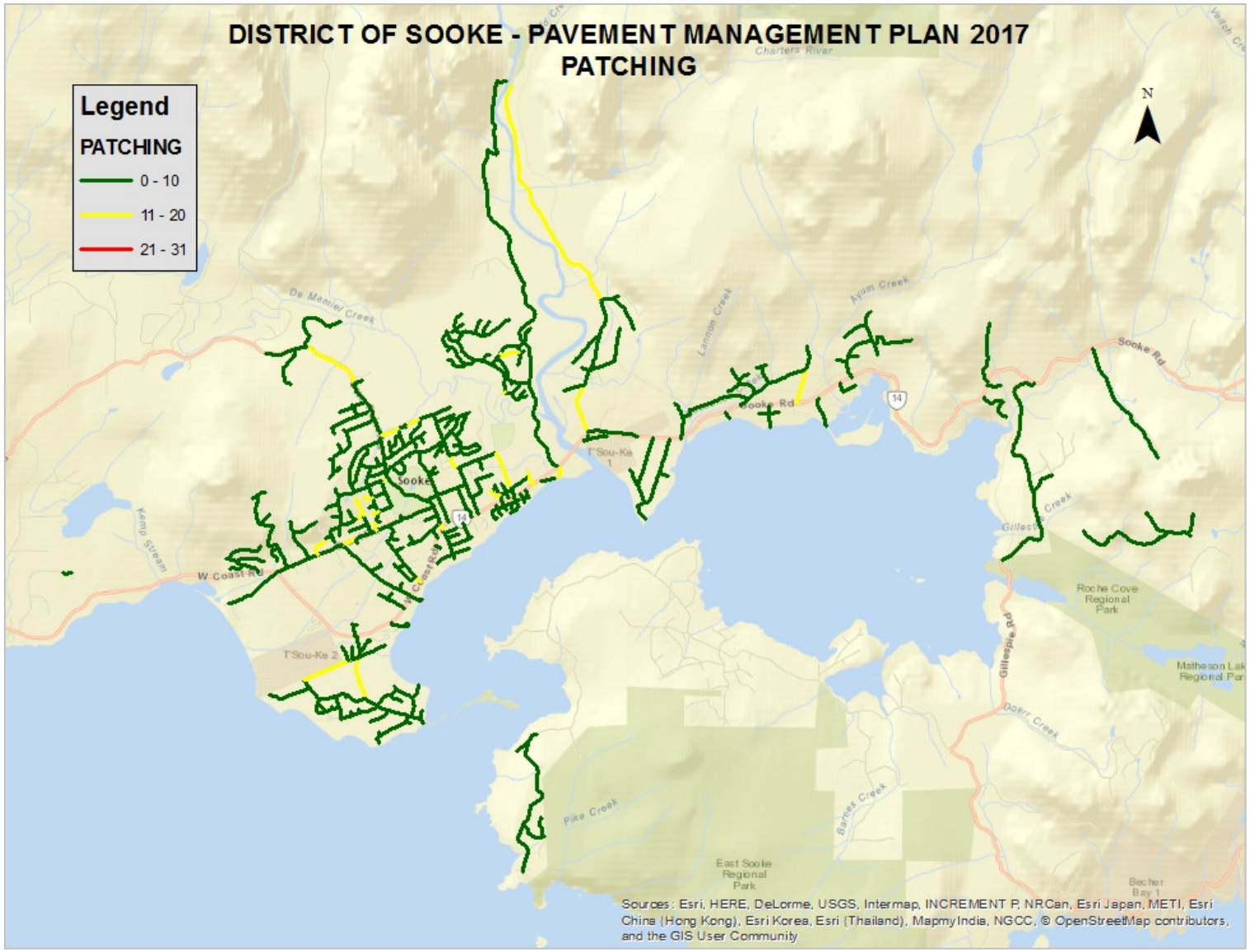
Patching is used in the derivation of the overall PCI Rating. Using the District's data, Table 8 shows how the patching index is derived, and provides a list of the roads that have a patching index greater than 10.

Table 8: Locations of High Patching Index Levels

Street	From	To	Class	Severity			Patch Index
				L	M	H	
Sooke River Rd	Sooke Road	Edward Milne Rd	1	0.0	24.4	0.0	18.3
Sooke River Rd	Edward Milne Rd	Soule Rd	1	12.2	1.7	10.5	16.9
Sooke River Rd	Meota Drive	2952m N of Meota Drive	1	21.9	1.4	1.4	13.2
Helgesen Rd	Otter Point Rd	Christan Dr	1	23.7	0.0	1.2	12.9
Helgesen Rd	Woodgrove Pl	Cedar Ridge Dr	1	24.6	0.0	0.0	12.3
Grant Rd W	Maple Ave S	Guardian Rd	1	24.3	0.0	0.0	12.2
Church Rd	Throup Rd	Church Hill Dr	1	23.8	0.0	0.0	11.9
Otter Point Rd	West Coast Rd	Eustace Rd	1	23.1	0.0	0.0	11.6
Otter Point Rd	Laronde Rd	Pascoe Rd	1	0.2	13.1	1.7	11.5
Whiffin Spit Rd	Francis Rd	Wright Rd	1	1.4	11.7	0.9	10.3
Solent Rd North	Harwick Lane	End	2	63.6	0.0	0.0	31.8
Demamiel Dr Cul De Sac	Demamiel Dr	End	2	38.8	0.0	0.0	19.4
Opal Pl	End	Pyrite Dr	2	0.0	24.3	0.0	18.3
Belvista Pl	End	Sooke Rd	2	0.0	1.5	18.0	17.3
Beaton Rd	Amethyst Way	Otter Point Rd	2	23.9	0.0	5.6	17.0
Larkspur Rd	Govenlock Pl	French Rd S	2	31.9	0.0	0.0	15.9
Drennan St	Sooke Rd	Golledge Ave	2	30.0	0.0	0.0	15.0
French Rd S	Larkspur Rd	End	2	28.3	0.0	0.0	14.1
Solent Rd North	End	Harwick Lane	2	27.9	0.0	0.0	13.9
Talc Pl	End	Pyrite Dr	2	26.9	0.0	0.0	13.5
Caldwell Rd	West Coast Rd	Powliuk Cres S	2	23.1	0.0	2.1	13.4
Pyrite Dr	Grant Rd W	Banner Rd	2	0.0	2.8	12.1	12.9
Winfield Dr	Grant Rd W	Rudd Rd	2	0.4	0.0	13.1	12.0
Golledge Ave	End	Dover St	2	23.5	0.0	0.0	11.7
Drennan St	Golledge Ave	End	2	20.9	0.0	0.0	10.4
Birchview Way	Willowpark Way	Snowden Pl	2	20.3	0.0	0.0	10.2

Figure 9 below, shows the areas where high severity patches exist.

Figure 9: District of Sooke – Locations of High Severity Patching



6 Rehabilitation Strategy and Budgets

6.1 Rehabilitation Strategy

The foundational principal of preserving pavement assets is to ensure that they are protected from the damaging effects of water ingress into the pavement and underlying sub-grade layers. All forms of surface distress that will allow entry of water should be treated.

The Districts' road network is a network of two halves. Half of the network is in good condition overall due to being newer or recently repaved. However, the other half (older) of the network falls into the "Fair" to "Failed" condition state category. Based on the current pavement condition rating, the rehabilitation tactics recommended for this strategy are to;

- Identify road sections where the current pavement condition rating is at its lowest, and;
- Apply the most effective treatment that will maintain current service levels.

6.2 Treatment Types and Budgets

The District's typical maintenance and rehabilitation treatments are Reconstruction for the most severely deteriorated road sections, and two Grind and Pave options; a 40mm single lift for lower severity defects and local roads, and an 80mm two-stage lift treatment for medium to high severity defects on collector roads. The District have also stated that the 80mm treatment will be used on local roads where traffic volumes have increased due to development or changes in traffic patterns.

Table 12 shows the costs of each treatment and the corresponding condition state most suited to these treatment types. The costs have been sourced from adjacent municipalities, and include shouldering, engineering, contingency, and Net GST.

Table 12: Treatment Costs

Treatment	Cost (m^2)	Condition State
Reconstruction	$80.00	Failed
Grind and Pave (80mm)	$38.00	Very Poor/Serious
Grind & Pave (40mm)	$18.00	Poor

6.3 Five Year Prioritized List of Segments and Treatments

In order to determine the prioritized list of segments, the model uses the current condition index as the deterioration parameter in the model. The deterioration rate for the network has been calculated by linearly regressing a PCI rating of 100 to achieve a typical service life of approximately 25 years.

Table 13 shows the deterioration rate and the treatment trigger values for each road class.

Table 13: Model Settings for Table 15 Output

Road Class	Collector Roads	Local Roads
	1	2
Annual Deterioration Rate	PCI 1.5	PCI 1.5
Treatment Trigger Values	40	40

Based on the results of the current and predicted condition index, the model output has identified a prioritized list of roads that require treatment for the next five years as shown in Table 14. The treatment identified for year 1 of the plan have been mapped in figure 10 below:

Table 14: Prioritized 5 Year Rehabilitation Program

Sect No.	Street	From	To	Class	PCI	Year				
						1	2	3	4	5
RD229	Helgesen Rd	Otter Point Rd	Christan Dr	1	0	RC				
RD134	Church Rd	Felderhof Rd	Helgesen Rd	1	5	RC				
RD110	Grant Rd W	Haywood Rd	Gatewood Rd	1	21	GP 80				
RD83	Maple Ave S	End	West Coast Rd	1	25	GP 80				
RD137	Church Rd	Church Hill Dr	Acreman Pl	1	27	GP 80				
RD106	Eustace Rd	Gatewood Rd (2000 Block)	Shields Rd	1	34	GP 80				
RD221	Otter Point Rd	Rhodonite Dr	Quartz Dr	1	35	GP 40				
RD234	Grant Rd W	Winfield Dr	Maple Ave S	1	35	GP 40				
RD111	Grant Rd W	Pyrite Dr	Haywood Rd	1	36	GP 40				
RD277	Otter Point Rd	Laronde Rd	Pascoe Rd	1	37	GP 40				
RD148	Charters Rd	Golledge Ave	Throup Rd	1	38	GP 40				
RD102	Murray Rd	Goodmere Rd	Lincroft Rd	1	39	GP 40				
RD292	Whiffin Spit Rd	Briarwood Pl	Deerlepe Rd	1	41		GP 40			
RD140	Church Rd	Country Rd	Throup Rd	1	41		GP 40			
RD79	Whiffin Spit Rd	Richview Dr	Briarwood Pl	1	42			GP 40		
RD2009Church	Church Rd	Acreman Pl	Felderhof Rd	1	43			GP 40		
RD228	Helgesen Rd	Christan Dr	Woodgrove Pl	1	45					GP 40
RD2009SookeRiver	Sooke River Rd	Sooke Rd	Edward Milne Rd	1	46					GP 40
RD434	Eakin Dr	Otter Point Rd	Kamaureen Pl	2	0	RC				
RD246	Pyrite Dr	Grant Rd W	Banner Rd	2	0	RC				

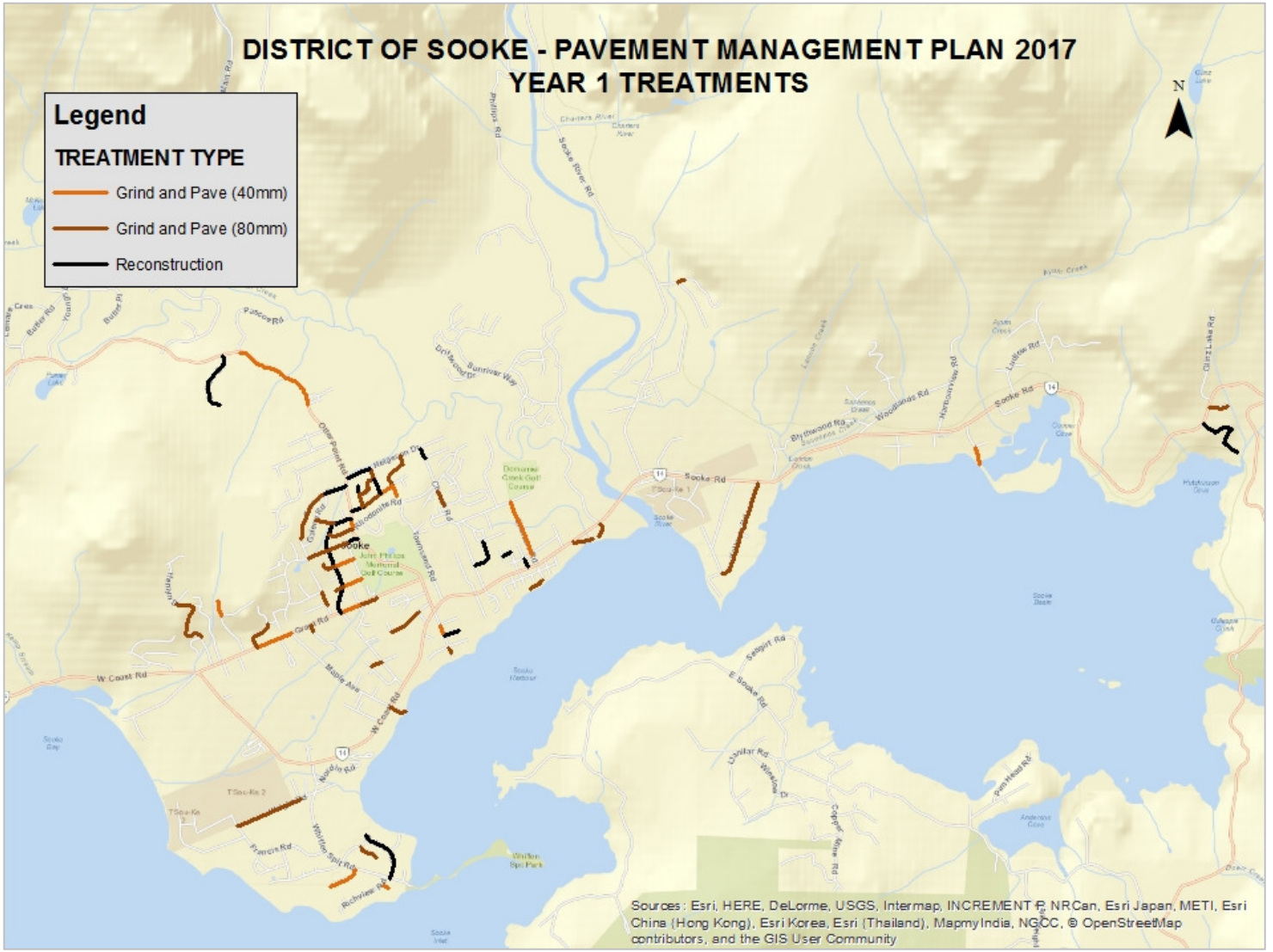
Sect No.	Street	From	To	Class	PCI	Year				
						1	2	3	4	5
RD255	Pyrite Dr	Cinnabar Pl	Talc Pl	2	0	RC				
RD258	Quartz Dr	Gatewood Rd	Otter Point Rd	2	0	RC				
RD26	Christan Dr	Eakin Dr	Rojean Dr	2	1	RC				
RD284	Pyrite Dr	Beaton Rd	Rhodonite Dr	2	1	RC				
RD142	Country Rd	Church Rd	Grant Rd East	2	1	RC				
RD247	Pyrite Dr	Banner Rd	Opal Pl	2	2	RC				
RD300	Dufour Rd	Possession Point Rd	Deerlepe Rd	2	2	RC				
RD298	Dufour Rd	Whiffin Spit Rd	Possession Point Rd	2	2	RC				
RD281	Sellars Rd	End	Otter Point Rd	2	2	RC				
RD257	Pyrite Dr	Talc Pl	Beaton Rd	2	3	RC				
RD208	Kamaureen Pl	Rojean Dr	End	2	3	RC				
RD152	Kennedy St North	End	Golledge Ave	2	3	RC				
RD301	Dufour Rd	Deerlepe Rd	End	2	5	RC				
RD176	Harwick Lane	Solent Rd North	Dover St	2	6	RC				
RD285	Pyrite Dr	Rhodonite Dr	Quartz Dr	2	7	RC				
RD259	Quartz Dr	Pyrite Dr	Gatewood Rd	2	8	RC				
RD447	Manzer Rd	Sooke Rd	End	2	8	RC				
RD251	Pyrite Dr	Opal Pl	Cinnabar Pl	2	8	RC				
RD253	Beaton Rd	Amethyst Way	Otter Point Rd	2	9	RC				
RD101	Goodmere Rd	Murray Rd	129 M East of Murray Rd	2	10	GP 80				
RD262	French Rd N	Galena Rd	Otter Point Rd	2	10	GP 80				

Sect No.	Street	From	To	Class	PCI	Year				
						1	2	3	4	5
RD237	Winfield Dr	Grant Rd W	Rudd Rd	2	10	GP 80				
RD184	Belvista Pl	Sooke Rd	End	2	11	GP 80				
RD445	Kamaureen Pl	Eakin Dr	Rojean Dr	2	12	GP 80				
RD254	Beaton Rd	Pyrite Dr	Amethyst Way	2	15	GP 80				
RD204	Cedar Ridge Dr	Eakin Dr	Helgesen Rd	2	15	GP 80				
RD245	French Rd N	176 M N of Maple Ave N	Galena Rd	2	16	GP 80				
RD207	Rojean Dr	Kamaureen Pl	Christan Dr	2	16	GP 80				
RD25	Christan Dr	Rojean Dr	Helgesen Rd	2	16	GP 80				
RD96	Powliuk Cres	Saunders Rd	Caldwell Rd N	2	17	GP 80				
RD99	Murray Rd	End	Horne Rd	2	17	GP 80				
RD458	O'Neill Rd	Deerlepe Rd	Cul de Sac	2	19	GP 80				
RD183	Belvista Pl	End	Sooke Rd	2	21	GP 80				
RD388	Kaltasin Rd	Seabroom Rd	Sooke Rd	2	22	GP 80				
RD209	Eakin Dr	Kamaureen Pl	Christan Dr	2	23	GP 80				
RD454	Talc Pl	End	Pyrite Dr	2	23	GP 80				
RD450	Opal Pl	End	Pyrite Dr	2	23	GP 80				
RD372	Kaltasin Rd	Glenidle Rd	Seabroom Rd	2	25	GP 80				
RD256	Rhodonite Dr	Pyrite Dr	Otter Point Rd	2	25	GP 80				
RD240	Guardian Rd	Grant Rd W	End	2	27	GP 80				
RD38	Henlyn Dr	Cedar Brook Pl	Alder Park Terr	2	27	GP 80				
RD167	Water St	End	Charters Rd	2	28	GP 80				
RD260	Quartz Dr	Galena Rd	Pyrite Dr	2	28	GP 80				

Sect No.	Street	From	To	Class	PCI	Year				
						1	2	3	4	5
RD321	Wright Rd	Francis Rd	Marathon Lane	2	28	GP 80				
RD29	French Rd S	Charval Pl	Larkspur Rd	2	28	GP 80				
RD392	Meota Dr	Brule Dr	End	2	28	GP 80				
RD30	Beaton Rd	French Rd N	Pyrite Dr	2	32	GP 80				
RD380	Polymede Pl	Sooke Rd	End	2	32	GP 80				
RD305	Briarwood Pl	End	Whiffin Spit Rd	2	36	GP 40				
RD203	Cedar Ridge Dr	End	Eakin Dr	2	38	GP 40				
RD436	Firwood Pl	Maple Park Terr	End	2	38	GP 40				
RD206	Eakin Dr	Christan Dr	Cedar Ridge Dr	2	38	GP 40				
RD248	Opal Pl	Pyrite Dr	Amethyst Way	2	39	GP 40				
RD250	Talc Pl	Pyrite Dr	Amethyst Way	2	39	GP 40				
RD307	Pears Point Rd	Richview Dr	Cul de Sac	2	39	GP 40				
RD439	Goodridge Rd	End	Medberry Close	2	39	GP 40				
RD47	Cedar Park Pl	Henlyn Dr	E End	2	40		GP 40			
RD97	Saunders Rd	Powliuk Cres	End	2	41		GP 40			
RD239	Firwood Pl	Grant Rd W	Maple Park Terr	2	42			GP 40		
RD94	Powliuk Cres	Caldwell Rd S	257 M N of Caldwell Rd	2	43				GP 40	
RD44	Tominny Rd	West Coast Rd	183 M NW of Hwy14	2	44				GP 40	
RD443	Horne Rd	Cul de Sac	Murray Rd	2	44				GP 40	
RD432	Cinnabar Pl	End	Pyrite Dr	2	44				GP 40	
RD516	Anna Marie Rd	Sooke Rd	378 M N of Sooke Rd	2	46					GP 40

Note: RC = Reconstruction, GP 80 = Grind and Pave (80mm), GP 40 = Grind and Pave (40mm)

Figure 10: District of Sooke – Locations of Rehabilitation Treatments in Year 1



7 The Budgeting Model

7.1 Purpose of the Model

The purpose of the model is to enable forecasting of network budgets for each of the next 30 years. The model does not contain any logic that caps total budgets or "smooths out" peak budget calculations across a number of years. The District's engineering staff have indicated they will use the model outputs to forecast future budget requirements and as the basis for producing forward work programs.

7.2 Road Sections

The network inventory supplied by the District has been used as the base for the model.

7.3 Model Deterioration Parameters

The results of the pavement condition surveys are used as the base figure to predict deterioration. The model uses the current pavement condition rating value and dependent on the typical service life of the pavement, is linearly regressed.

A road section without any cracking or ravelling will have an index of 100, with the index decreasing towards, but not reaching, zero as its condition worsens.

7.4 Deterioration Rate

The pavement deterioration rate of the PCI for each road section linearly regressed using the expected service life of treatments. The figure has then been averaged for each road class, and then projected each year until the PCI reaches a user set trigger level, at which time a treatment is scheduled.

The deterioration rate and the trigger levels, (see Section 5.6), work together to determine the average life for each treatment. The user can choose different deterioration rates for each class, in recognition that more heavily trafficked roads may tend to deteriorate faster.

The model will reset the condition rating to 100 once the initial treatment is triggered. The next rehabilitation treatment occurs when the calculated service life is reached.

7.5 Treatment Triggers and Selection

The user sets the level at which a treatment is triggered, which is called the Distress Trigger. Each road class can have its own trigger level, in recognition that a lower level of service may be acceptable for lower road classes. The condition index is reset to 100 after a treatment has been triggered.

7.6 Treatments

The condition of the highest priority street sections will require a default treatment based on road classification. As described in Section 5.2, these treatments range from reconstruction to grind and pave.

This model allows the choice of up to four treatments. Three have been used for the District's model which are:

- Reconstruction;
- Grind and Pave (80mm), and;
- Grind and Pave (40mm).

Based on the rule set for the treatment triggers and condition levels, the District's road network will only be treated with the most suitable treatment. The model will choose one of the more extensive treatments (reconstruction or the 80mm grind and pave) for the first treatment if the current condition is worse than the Distress Trigger. All subsequent treatments will be 40mm grind and pave.

The user sets an average $cost/m^2 for each treatment. These should be an average rate that reflects the achievable productivity and material costs for the range of construction locations and treatment variations likely to be encountered.

7.7 Model Outputs

The model calculates a budget cost for each of the selected treatments for each of the next 30 years.

The Dashboard sheet of the model shown in Figures 12 and 13, present a summary of model outputs in tables and graphs to enable visual assimilation of the overall modelled budget trends. More detailed outputs are in The Model spreadsheet provided separately.

The Dashboard results shown in Table 15, and Figure 12 below, are representative of the model settings included in the Table 13.

The model has identified a significant amount of treatments based on current condition, including $1.78M in reconstruction treatments, $1.48M in 80mm grind and pave treatments, and $415K in 40mm grind and pave treatments. This is a worst case scenario as only local roads that have seen increased traffic volumes or their classification has been elevated, will have the 80mm treatment applied.

Looking at the level of expenditure in subsequent years, it is recommended that the District consider a staged approach to tackling the "backlog" over the first 5 year period.

It should be noted that the dollar values are rounded to the nearest $1,000. Figure 13 shows the models output of condition index change over time.

Figure 12: Model Output of Annual and 5 Year Budgets Required

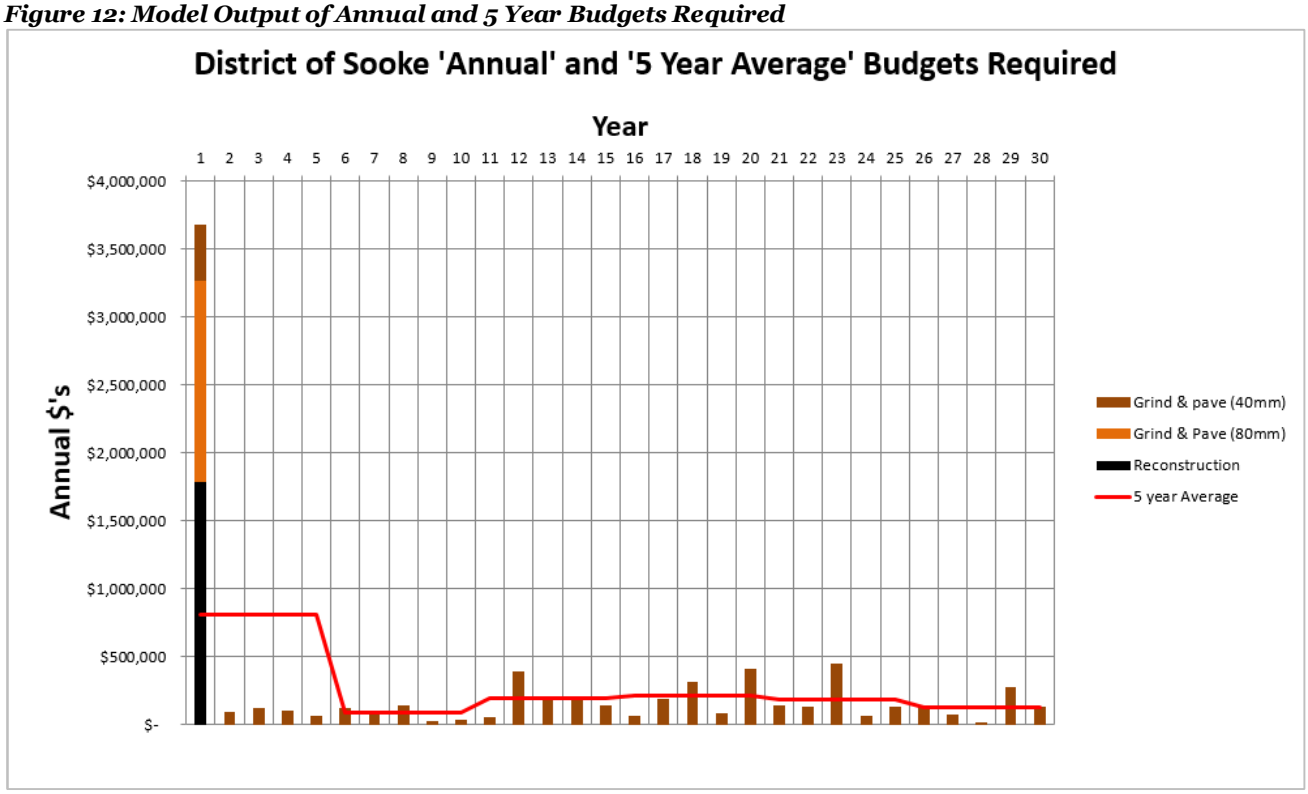


Figure 13: Model Output of Composite Index Change over Time

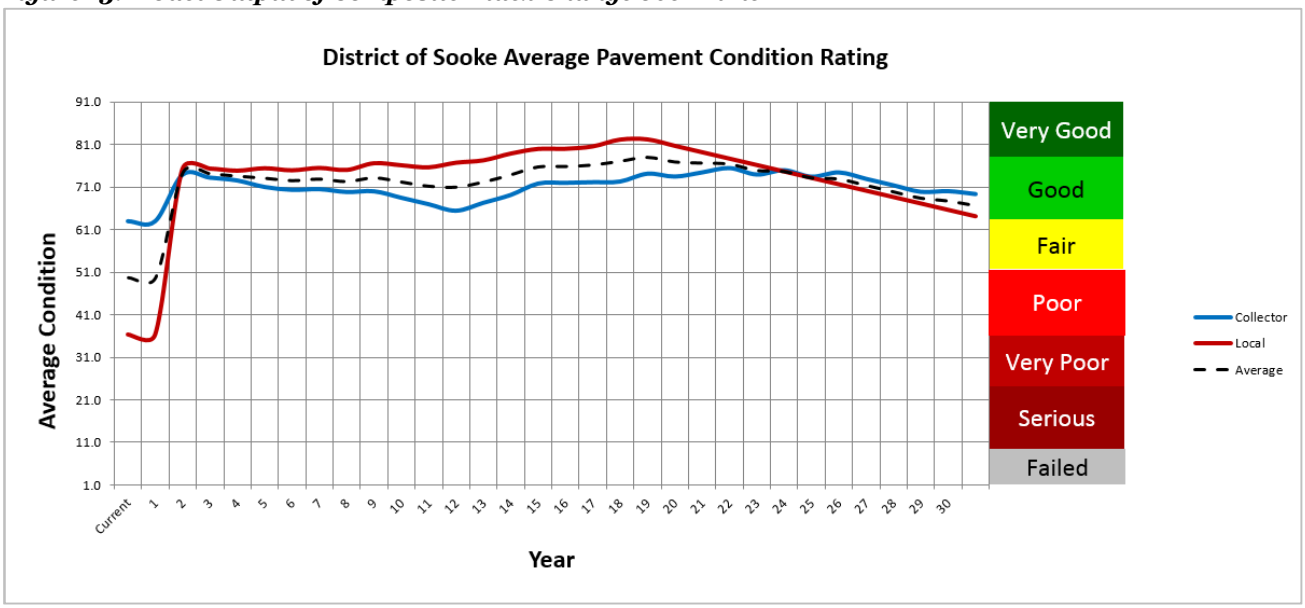


Table 15: Model Output of Five Yearly Block Budgets

Five Year Blocks	Block Budget
1-5	$4,058,645
6-10	$391,561
11-15	$999,277
16-20	$1,096,160
21-25	$919,591
26-30	$591,340

7.8 Overview of Model Operation

The model is operated as follows:

1. The user enters the latest condition data results into columns “A” to “J” in “The Model” tab.
2. The user can enter specific deterioration rates for each Class of road. These are used to linearly deteriorate the PCI values each year, for 30 years.
3. The Reset Value is left at 100. This is the value that the condition index is set to after a treatment has been scheduled.
4. Intervention Distress Trigger values are set by the user for each road classification. When the deteriorated index exceeds the set trigger value, the model schedules a treatment and resets the index to the reset value.
5. User entered Treatment Triggers for each Class/Surface Type/Treatment combination are used by the model to determine which treatment to schedule. This allows more extensive treatments to be scheduled for rehabilitating the initial backlog of street sections.
6. User entered unit rates for each treatment type are used by the model to calculate the cost of each scheduled treatment.
7. The model presents annual and summarised costs in tabular and graphic forms.

7.9 Model Calibration

The model requires calibration by engineering staff to meet the following requirements:

- Treatments are triggered in line with the District's levels of service – choosing the Distress Trigger and Deterioration rate; and
- The treatments used to treat the build-up of work are suited to the condition that triggers them – choosing the Treatment Triggers.

Distress Trigger and Deterioration Rate

Inspection should be made of a selection of street sections from each Class that engineering staff consider are approaching or well past requiring treatment and, preferably, for which the year of the last rehabilitation treatment is known. The average condition index of those sections that are considered to require treatment should be set as the Distress Trigger value for each Class. After determining the average rehabilitation life for each class, the Deterioration Rate/Year can be set so that the model's Resulting Average Life is as close as possible to this average found from inspection.

Treatment Triggers

The highest priority backlog street sections from each Class should be inspected, with a view to determining the values of the condition index that should be used to trigger Grind & Pave and Overlay treatments.

8 Recommended Future Actions and Conclusions

8.1 Recommended Future Actions

- The budget model has been delivered with settings derived by Opus from analysis of the condition data and pavement life assumptions. These assumptions and settings will be adjusted by the user based on experience with the model, as described in Section 6.3.
- The Distress Triggers, Treatment Triggers, and Deterioration rates should be reviewed every two years.
- At the completion of future rehabilitation work, the PCI should be reset to 100.
- In the District's GIS System, each road should be assigned an overarching road number, and then split into sections (10, 20 etc.) at easily identifiable locations such as change in road classification, change from urban to rural or vice-versa, intersection to intersection, or where road widths substantially differ (more than 2 metres in width). This enables the District to add in new sections when changes in the roadway occur.
- Further attribute data should be created for all street sections including construction details such as depth, material type, and construction date for each pavement layer. Where this data

does not exist, consider making assumptions. Replace with factual information at time of treatments.

- Where assumed values exist in the database, Opus recommends validating the assumptions over a period of four years. A business process should be established that then updates this data over the next four years. Having this data enables the District to make informed decisions around planning and spending going forward.

- Condition data should be collected again in three to five years' time, firstly to provide an idea of actual deterioration rates against the assumed rates within this report, and secondly to assess the effectiveness of any maintenance work that has been completed. The suitability of the budget model should also be reviewed at the same time, as it may be that a more sophisticated deterioration and optimization model is appropriate.

8.2 Conclusions

- The District's road network is a network of two halves. The first being in good overall condition due to new developments. The other half of the network is older and has roads that are in very poor to failed condition.

- The new budgeting tool will assist the District of Sooke Engineering staff to identify long term budgeting requirements to maintain it at a defined level of service over the long term.

- The new budgeting tool will also assist the District in identifying potential candidate for treatment,

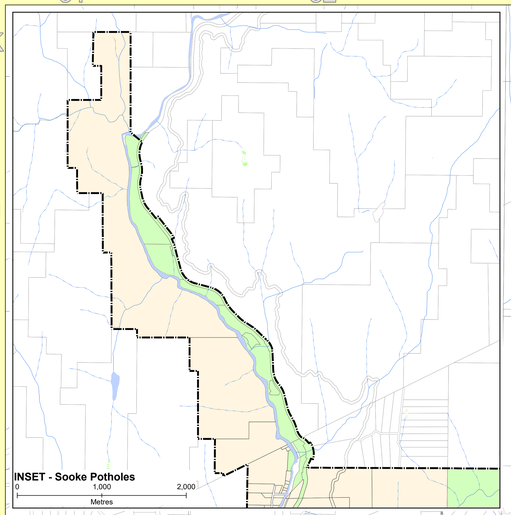
- This tool and the associated calibration and verification work should signal the commencement of a long term business process which has an objective of ensuring that a sustainable level of investment in pavement rehabilitation maintains the street network at an agreed level of service.

Opus International Consultants (Canada) Limited
Suite 310, 1207 Douglas Street
Victoria BC V8W 2E7
Canada

t: +1 250 952 5640
f: +1 250 920 5620
w: www.opusinternational.ca

APPENDIX B

SOOKE STREET MAP



Sooke Street Map

Legend

- Property Parcel
- Greenspace
- Water
- Sandbar
- Marsh

1:10,000

0 500 1,000

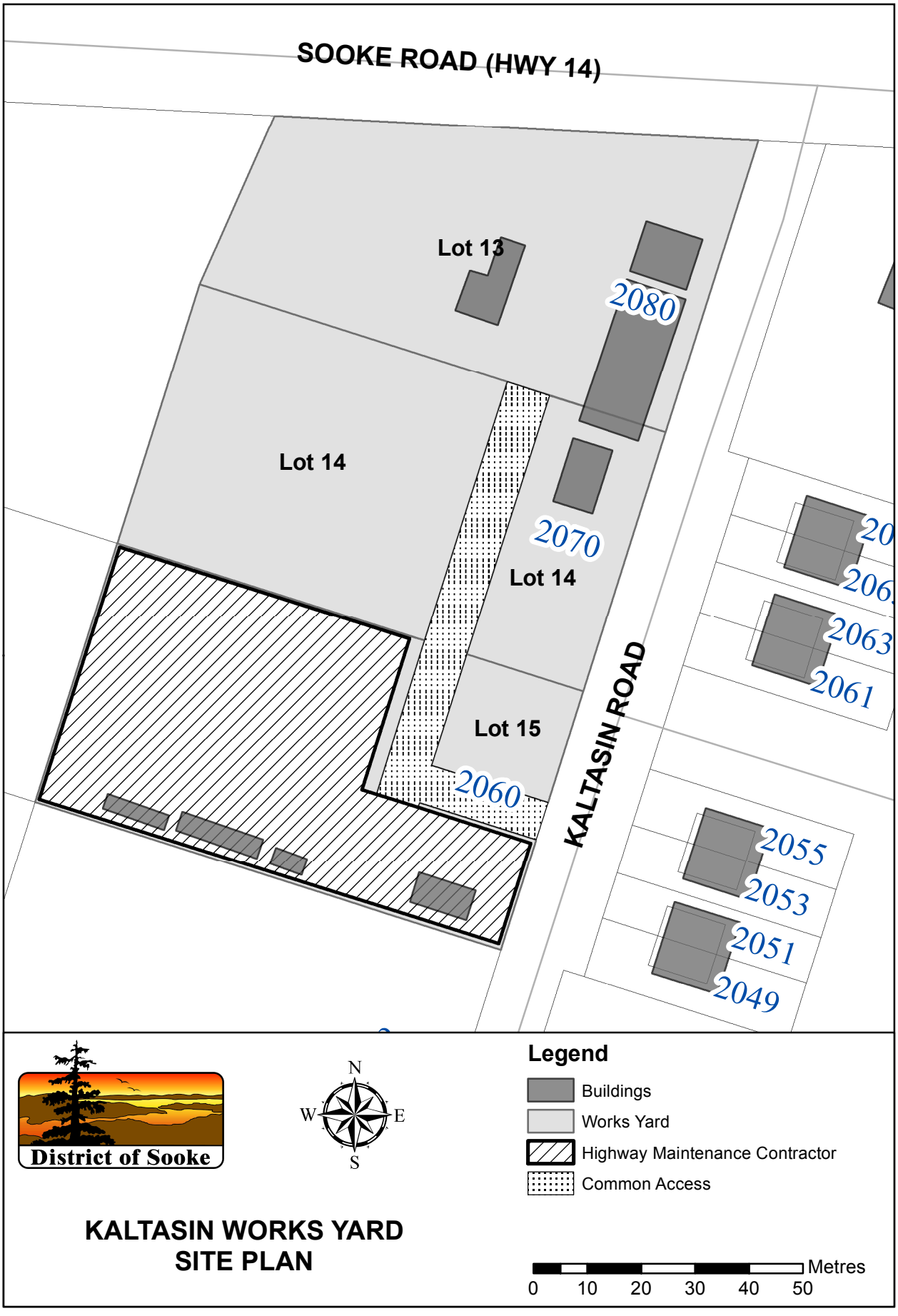
Metres

Updated: January 29, 2019

STREET INDEX

APPENDIX C

WORKS YARD



KALTASIN WORKS YARD
SITE PLAN