



P.O. Box 1749  
Halifax, Nova Scotia  
B3J 3A5 Canada

**Item No. 21.1**  
**Halifax Regional Council**  
**November 18, 2025**

**TO:** Mayor Filmore and Members of Halifax Regional Council  
**FROM:** Brad Anguish, A/Chief Administrative Officer  
**DATE:** October 21, 2025  
**SUBJECT:** Transfer of Provincial PID's in HRM's Road Boundary

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### **INFORMATION REPORT**

#### **ORIGIN**

The September 12, 2023, Regional Council Meeting (Item 15.5.2):

MOVED by Councillor Lovelace  
THAT Halifax Regional Council:

2. Direct the Chief Administrative Officer provide a staff report on:

a) a plan for identification and transfer of provincial road reserves, parkland via subdivision, and stormwater infrastructure such as drainage corridors that should have been transferred to the municipality resulting from past provincial property transfers in 2006 and 2022; and,

b) a description of Halifax Water maintenance standards and planned activities to maintain/upgrade provincial stormwater infrastructure, including drainage corridors outside of and within the municipal Service Exchange Boundary, that fall under provincial authority in the Halifax Regional Municipality.

#### **EXECUTIVE SUMMARY**

In April 1996, the Halifax Regional Municipality was formed by amalgamating the former Halifax County. In June 1996, the Province of Nova Scotia and Halifax Regional Municipality entered into Agreement HRM-01, which defined road responsibilities, ownership, and cost-sharing arrangements. The agreement also defined a methodology for reviewing population density and expanding HRM's inventory of local roads once thresholds were met. A central core urban area was defined, and this became the Service Exchange Boundary within which HRM owned all public roads, except series 100 highways, associated ramps, and bridge infrastructure. The Service Exchange Boundary defines all municipal public road ownership.

Halifax Water have no responsibility outside the Service Exchange Boundary.

HRM-01 also defined the formula for changing the Service Exchange Boundary moving forward, defining a set population quota per kilometre, and fixing 3-year terms for reviews. The Agreement was referenced to govern road transfers from the Province to the Municipality in 2006 and 2022.

The Service Exchange Boundary also defines the area where Halifax Water provides stormwater services. The agreement provides for future transfers to be considered upon a request being made by HRM to Halifax Water and Halifax Water obtaining approval from the Nova Scotia Utility and Review Board (NSUARB).

HRM-01 does not define how property adjacent to the right of way may be conveyed during Service Exchange Boundary expansions (including identification and transfer of provincial road reserves, parkland via subdivision, and stormwater infrastructure such as drainage corridors). Neither the 2006 nor the 2022 road exchange included validated Parcel Identification numbers, or PIDs. To this point, the province has not agreed to a different methodology of road transfer, formula, or a way to confirm ownership of associated property infrastructure. HRM continues to work with the province on an as-required basis to validate ownership of PIDs and responsibility.

## **BACKGROUND**

On June 24, 1996, Agreement HRM-01 ('HRM-01') between the Province and HRM was signed, defining road responsibilities, ownership, and cost-sharing arrangements. It defined a central core urban area (defined by a boundary now referred to as the Service Exchange Boundary) within which HRM would own all public local roads except 100 series highways. The agreement also defined a methodology for reviewing population density and expanding HRM's inventory of local roads once thresholds were met.

Agreement HRM-01 provides for review of the urban core boundary every three years. Provincially owned roads would be transferred to HRM, expanding the urban core boundary, if the population density surpasses the threshold. HRM-01 requires density to be at least 90 dwelling units per square kilometer within 10 kilometers of the urban core as defined in the agreement and modified through successive transfers.

HRM-01 governed road transfers from the Province to the Municipality in 2006. In June 2022, the Province and the Municipality entered into a road transfer agreement that governed the transfer of roads that occurred on June 1, 2022. The intention was for this June 1, 2022, agreement to be a bridging agreement used just for the June 2022 road transfers and that the Province and the Municipality would negotiate an improved, overarching agreement that would replace HRM-01, and its related documents, as the agreement to govern to govern all future road transfers. A draft document has been prepared, but negotiations have been overcome by events related to the province's road transfer arrangement for all municipalities, including the Municipality.

Neither HRM-01 nor the June 1, 2022, Road Transfer agreement addressed whether any additional compensation would be provided to HRM when such roads were transferred. The following totals of lane kms were relayed to HRM in 2006 and 2022:

### **2006 (Attachment 1)**

123.06 lane km serviced roads  
1.2 lane km of 'K' class roads in area 'A'  
5.8 lane km of unlisted & unmaintained roads in area 'A'  
11.0 lane km of 'K' class roads in area 'B'  
**Total 141.06 +/- lane km**

### **2022 (Attachment 2)**

Area 1: 138.15 lane km  
Area 4: 164.05 lane km  
**Total 300 +/- lane km**

In 2007, HRM and Halifax Water entered into a transfer agreement, whereby the stormwater assets contained within the municipal road rights-of-way and easements within the urban core were transferred to Halifax Water. The agreement provided for future transfers to be considered upon a request being made by HRM to Halifax Water and Halifax Water obtaining approval from the Nova Scotia Utility and Review Board (NSUARB).

## **DISCUSSION**

### **Per motion 2(a): Identification of Provincial Assets to be Transferred to the Municipality from 2006 and 2022 road transfers**

After the road transfers of 2006 and 2022, the Municipality needed to determine the ownership of various assets (e.g., provincial road reserves, parkland via subdivision, and stormwater infrastructure such as drainage corridors) within the Municipal Service Exchange Boundary. Assets outside the Service Exchange Boundary reside with the Province of Nova Scotia. Considerations included:

- Whether HRM should or should not be providing summer or winter maintenance on a road section.
- Drainage issues affecting landowners.
- Landowners are looking to make improvements on or near their property.
- Capital upgrade is being considered, and right-of-way extents need to be known.
- Clarification of water or ingress/egress easement is required.
- Location of HRM infrastructure, relative to the right-of-way.
- Situations that may arise as Infrastructure Maintenance Operations performs its duties.

The Municipality has, or will undertake, with the Province, a review to identify all remaining parcels and registered ownership for both the 2006 and 2022 transfer requirements. At this time, the transfer for roads of 2022 have been duly completed by HRM and the Province as noted per the process. Roads transferred from 2006 have had Parcel Identifier (PID) information updated at the Land Registry Office (LRO). The LRO is in the process of updating PID information in the Land Registry system for 2022 road parcels and PID information. Road reserve and drainage corridor parcels not transferred in 2006 have been identified by HRM and sent to NSPW for confirmation. The intention is for NSPW to validate this information and subsequently create a quit claim deed to transfer to HRM.

### **Status**

<b>PID Items</b>	<b>2006 Transfer</b>	<b>PID owner Status on Property Online</b>	<b>Notes</b>	<b>Timeline</b>
2006 Road PID's	Document #85657642 at LRO	Complete	No action needed	Complete
2006 Drainage & Road Reserves (74)	Not yet quit claimed to HRM	Continues to show owner as PNS	HRM needs to receive a Quit Claim Deed from PNS. NSPW validating	Estimated 6 months ±

<b>PID Items</b>	<b>2022 Transfer</b>	<b>PID owner Status on Property Online</b>		
2022 Road PID's	Document #120728754 at LRO	Some HRM, others still 'Undetermined'	LRO continues to process. (Road PID list sent to LRO by HRM Legal)	Estimated 6 months ±
2022 Drainage & Road Reserves	Document #120728754 at LRO	Still indicating PNS ownership	LRO continues to process	Estimated 6 months ±

With respect to provincial 'parkland via subdivision, it should be noted that this process does not normally occur during the normal course of HRM subdivision processes. Transfers from the province are related only to ROWs and are not inclusive of parks that were created when the province owned the roads. Through the subdivision process, HRM and former entities (City of Halifax, Town of Bedford, etc.) would have been the recipients of parkland dedication.

### **Per motion 2(b): Maintenance of Stormwater Infrastructure**

The transfer agreement between the Municipality and Halifax Water defines the way assets are conveyed through HRM to Halifax Water within the Municipal Service Exchange Boundary. Adjustments to Halifax Water's Service Boundary are subject to the approval of the Nova Scotia Utility and Review Board (NSUARB).

*Per sections 29 and 30 in the attached Transfer Agreement (Attachment 3).*

*If the Province of Nova Scotia transfers to HRM responsibility for roads outside the existing area designated pursuant to section 2(e) of this Agreement, HRWC shall assume responsibility for municipal stormwater facilities and services in such additional area effective immediately upon the province's transfer of such responsibilities to HRM.*

Given these agreements confer stormwater infrastructure and responsibilities to HRWC, *and defines the terms upon which HRWC assumes such additional responsibilities, the transfer of said responsibilities shall be as agreed upon by the parties and approved by the Utility and Review Board, and, pending agreement or in default of agreement to the contrary, HRWC's additional services shall be provided on a full cost recovery basis.*

Provincial standards of stormwater maintenance and care are included in Chapter 3 of the attached Provincial document: <https://novascotia.ca/tran/publications/Highway-Maintenance-Standards-Manual.pdf>  
**Department of Transportation and Infrastructure Renewal, Highway Programs, HIGHWAY MAINTENANCE STANDARDS**, Complete Update: Effective April 1, 2019 (**Attachment 4**)

### **FINANCIAL IMPLICATIONS**

No financial implications currently. Should the province be unable to produce the totality of information required by the Municipality to undertake all aspects of Motion 2(a) and 2(b), the Municipality would undertake a capacity review at that time, upon Motion from Council.

### **COMMUNITY ENGAGEMENT**

There was no community engagement as part of this report.

### **LEGISLATIVE AUTHORITY**

#### ***Public Highways Act, R.S.N.S. 1989, c. 371***

11(3) The Minister may vest any local highway in a municipality.

11(4) The approval of the Governor in Council is not required for a conveyance pursuant to subsection (3).

#### ***Halifax Regional Municipality Charter, S.N.S. 2008, c. 39***

317 In this Part, "street" means a public street, highway, road, lane, sidewalk, thoroughfare, bridge, square and the curbs, gutters, culverts and retaining walls in connection therewith, but does not include bridges vested in the Halifax Dartmouth Bridge Commission and streets vested in His Majesty in right of the Province.

318 (1) All streets in the Municipality are vested absolutely in the Municipality.

318(2): In so far as is consistent with their use by the public, the Council has full control over the streets in the Municipality.

318(3) No road, or allowance for a road, becomes a street until the Council formally accepts the road or allowance, or the road or allowance is vested in the Municipality according to law.

322(1): The Council may design, layout, open, expand, construct, maintain, improve, alter, repair, light, water, clean, and clear streets in the Municipality.

381 (1) Where the Municipality is found liable for damages because of the unsafe condition of a street, bridge or sidewalk that was transferred to it by Her Majesty in right of the Province, it has a right of indemnity for all such damages, and for costs and expenses incurred in connection therewith, against Her Majesty.

381(2) Subsection (1) does not apply to a street, bridge, or sidewalk.

(a) reconstructed or rebuilt or repaired by the Municipality; or

(b) after ten years from the date on which it was transferred to the Municipality.

HRM 01 Province of Nova Scotia and Halifax Regional Municipality

Halifax Regional Municipality – Province, Road Transfer Agreement, dated June 1, 2022

Halifax Water – Halifax Regional Municipality Transfer Agreement 2007

## **ATTACHMENTS**

Attachment 1 – HRM Provincial Transfer 2006

Attachment 2 – HRM Provincial Transfer 2022

Attachment 3 – HRM HW Transfer Agreement

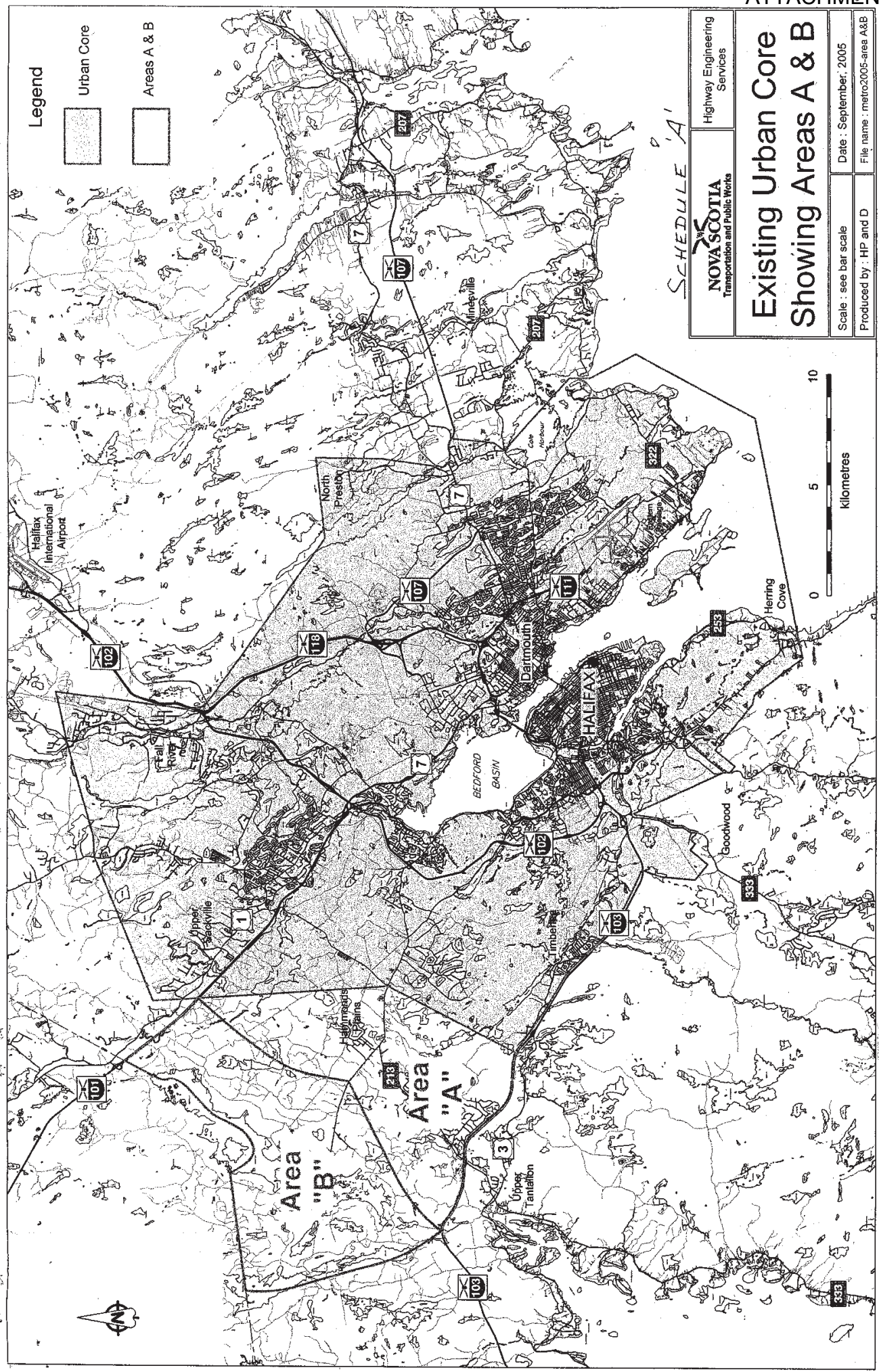
Attachment 4 – Highway Maintenance Standards

Attachment 5 – HRM 01 Agreement

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Report Prepared by: Beverley Audet, Director Infrastructure Maintenance and Operations, Public Works, 902.579.2719

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SCHEDULE 'A'

NOVA SCOTIA  
Transportation and Public Works

Highway Engineering  
Services

# Existing Urban Core Showing Areas A & B

Scale : see bar scale	Date : September, 2005
Produced by : HP and D	File name : metro2005-area A&B

## ROAD TRANSFER AGREEMENT

THIS ROAD TRANSFER AGREEMENT (this "Agreement") is effective as of the 1st day of June, 2022 (the "Effective Date").

BETWEEN:

**HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF NOVA SCOTIA**, as represented by the Minister of Public Works (the "Province")

-and-

**HALIFAX REGIONAL MUNICIPALITY**, a municipal corporation incorporated pursuant to the *Municipal Government Act*, S.N.S. 1998, c. 18 (the "Municipality")

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### BACKGROUND:

1. Section 11 of the *Public Highways Act*, R.S.N.S. 1989, c. 371, provides that the Minister of Public Works (formerly the Minister of Transportation and Infrastructure Renewal) may vest any local highway in a municipality.
2. Section 2 of the *Public Highways Act*, R.S.N.S. 1989, c. 371, defines a "highway" as a "public highway or public road and includes bridges thereon".

3. Section 318 of the *Halifax Regional Municipality Charter*, S.N.S. 2008, c. 39, provides that highways are vested in the Municipality where either: (i) the Council of the Municipality accepts the highway for vesting; or (ii) the road is vested by operation of law.
4. The Province and the Municipality are parties to an agreement effective as of and from June 24, 1996 relating, *inter alia*, to the conveyance of certain highways by the Province to the Municipality (the "**Agreement No. HRM-01**"). The Province and the Municipality are also parties to an agreement effective as of and from February 2, 2001 relating, *inter alia*, to the maintenance of certain bridges and approaches to bridges (the "**Agreement No. HRM-08**").
5. The Province gave notice to the Municipality, in accordance with the terms of Agreement No. HRM-01, by letter dated November 29, 2019, of the transfer by the Province to the Municipality of approximately 300 kms of highways in the core municipal areas outlined in the detailed lists, maps and parcel descriptions described in Appendix "A" (*Roads to be Transferred*), Appendix "C" (*Boundary Intersections*), and Appendix "D" (*Infrastructure Parcel Descriptions*).
6. The contemplated highway transfer was to take effect on April 1, 2021. This effective date was extended to June 1, 2022, by letter from the Province to the Municipality dated September 15, 2020. The contemplated highway transfer is hereinafter referred to as the "**June 1 Road Transfer**".
7. The Municipality and the Province are prepared to move forward with the conveyance of the identified highways, together with assets that are incidental to such roadways (as hereinafter defined), that are subject to the June 1 Road Transfer, in accordance with the terms of this Agreement.
8. This Agreement outlines the Province's and the Municipality's joint understandings, commitments, and terms and conditions associated with the June 1 Road Transfer.

#### **AGREEMENT:**

Now therefore, in consideration of the mutual covenants and agreements in this Agreement, the receipt and sufficiency of which are hereby acknowledged, and subject to the terms and conditions hereof, the parties, intending to be bound, hereby agree as follows:

1. **Transfer to the Municipality.** The highways outlined in Appendix "A" (*Roads to be Transferred*), and as more particularly mapped in Appendix "C" (*Boundary Intersections*) and described in Appendix "D" (*Infrastructure Parcel Descriptions*), and the Bridges outlined in Appendix "B" (*Major Supporting Roadway Assets (Bridges)*), will be conveyed by the Province to the Municipality by Quit Claim Deed, which is to be effective on June 1, 2022 (the "**Conveyance Date**").
2. **Execution of Deed and Other Instruments.** The Province shall execute the Quit Claim Deed referred to in Section 1 (*Transfer to the Municipality*) on or before the Conveyance Date. The parties shall further deliver all additional documents and instruments and do, or cause to be done, all such additional acts and things as any party may reasonably consider necessary to evidence the intent and meaning of this Agreement.
3. **Legal Responsibility for the Transferred Roads.** As of and from the Conveyance Date: (i) the Municipality accepts all legal rights and responsibilities for the transferred roads and any Supporting Roadway Assets that are applicable to such roadways; and (ii) the Province gives up all rights to the transferred roads and Supporting Roadway Assets, except as may be specified in this Agreement. For greater certainty, the Municipality's assumption of responsibility under this Section 3 (*Legal Responsibility for the Transferred Roads*) includes compliance with any road rights-of-way, road easements, drainage easements, and other legal encumbrances appurtenant to the transferred roads. For the purposes of this Agreement, "**Supporting Roadway Assets**" means those assets set forth in the Appendices to this Agreement that are either: (i) marked as 'supporting' or 'incidental' roadway

assets; or (ii) are clearly recognizable to both parties (acting reasonably) as assets that directly support the operation of the transferred roads, such as road structures (e.g. the roadbed, shoulders, curbs and gutters), drainage infrastructure (e.g. culverts, dissipation ponds), supporting drainage corridors, traffic signals and traffic lighting, other road signs, and guard rails. Bridges that are included as part of the assets to be transferred with this Agreement are listed in Appendix "B" (*Major Supporting Roadway Assets (Bridges)*).

4. **Operational Responsibility for the Transferred Roads.** As of and from the Conveyance Date, the Municipality is responsible for operation and maintenance of the transferred roads and the Supporting Roadway Assets. In addition to the roadbed, this operational responsibility extends to all curbs, culverts, and drainage structures that exist on, or are necessary for the reasonable operation of, the transferred roads and the Supporting Roadway Assets at the time of transfer. For greater certainty, the Municipality shall be responsible for maintenance of public sidewalks, bike lanes that are adjacent to the transferred roadways, and other adjacent infrastructure such as road shoulders, curbs, gutters, and ditches.
5. **Scope of Maintenance.** For greater certainty, the operation and maintenance assumed by the Municipality pursuant to Section 4 (*Operational Responsibility for the Transferred Roads*) includes: (i) all summer maintenance that may be required for the transferred roads and Supporting Roadway Assets to meet the Municipality's standards; and (ii) all SNIC (snow and ice control) that may be required for the transferred roads and Supporting Roadway Assets to meet the Municipality's standards.
6. **Exclusion of Bridge Asset (Legal Responsibility).** Notwithstanding Section 3 (*Legal Responsibility for the Transferred Roads*), the parties agree that the Province will retain the legal rights to one bridge asset located on Cranehill Road (the "**Cranes Bays Bridge**"), despite it being an Incidental Roadway Asset within the meaning of this Agreement. The Province will retain all such rights until the earlier of: (i) the tenth (10th) anniversary of the date on which a new bridge structure for the Cranes Bays Bridge is substantially completed (as further outlined in Section 7 (*Exclusion of Bridge Asset (Operational Responsibility)*) below); or (ii) the date on which both parties mutually agree to have such rights cede to the Municipality.
7. **Exclusion of Bridge Asset (Operational Responsibility).** Notwithstanding Sections 4 (*Operational Responsibility for the Transferred Roads*) and 5 (*Scope of Maintenance*), the parties agree that the operational responsibility for the Cranes Bays Bridge will not be assumed by the Municipality until the Province has replaced, at its own cost, the current bridge structure with a new bridge structure. Promptly after substantial completion of the new bridge structure, the Province shall notify the Municipality of such completion and provide the Municipality with a specific date upon which the Municipality will assume operational responsibility for the Cranes Bays Bridge.
8. **Exclusion of Traffic Line Painting.** Notwithstanding Sections 4 (*Operational Responsibility for the Transferred Roads*) and 5 (*Scope of Maintenance*), the Province shall perform the regularly scheduled roadway line painting for the transferred roads during the summer maintenance period for the Province's 2022 fiscal year. The Municipality shall perform this maintenance for the transferred roads after this time.
9. **Environmental Indemnification (Municipality).** The Municipality shall: (i) indemnify and save harmless the Province together with its Ministers, officers, employees and agents ("**Province Indemnitees**") from and against all liabilities, fines, suits, losses, claims, demands and actions, of any kind and nature whatsoever, for which the Province Indemnitees are, or may become, liable or suffer as a result of the presence, storage, use, disposal, transportation, release or discharge of any Hazardous Substance in, on, under or around the transferred roads and Supporting Roadway Assets; and (ii) take or cause to be taken any and all necessary remedial or clean-up action in response to the presence, storage, use, disposal, transportation, release or discharge of any Hazardous Substance in, on, under or around the transferred roads and Supporting Roadway Assets: (A) in compliance with the requirements of environmental law(s); and (ii) in accordance with the orders or directions of any Governmental Authority; provided, however, that the presence, storage, use, disposal, transportation, release or discharge of the

Hazardous Substance in question occurs on or after the Conveyance Date. For the purposes of this Agreement, "Hazardous Substance" means any substance (including petroleum product) which is prohibited, controlled or regulated by any Governmental Authority or becomes designated under any law as "toxic", "hazardous", "biomedical waste", "effluent", "refuse" or a "contaminant", a "pollutant", a "dangerous good" or any "waste" which is or becomes similarly designated under any law, and "Governmental Authority" means (A) any government, parliament or legislature, any regulatory or administrative authority, agency, commission or board and any other statute, rule or regulation making entity having jurisdiction in the relevant circumstances, (B) any person acting within and under the authority of any of the foregoing or under a statute, rule or regulation thereof, and (C) any judicial, administrative or arbitral court, authority, tribunal or commission having jurisdiction in the relevant circumstances.

10. **Environmental Indemnification (Province).** The Province shall: (i) indemnify and save harmless the Municipality together with its Mayor, Councillors, officers, employees and agents ("Municipal Indemnitees") from and against all liabilities, fines, suits, losses, claims, demands and actions, of any kind and nature whatsoever, for which the Municipal Indemnitees are, or may become, liable or suffer as a result of the presence, storage, use, disposal, transportation, release or discharge of any Hazardous Substance in, on, under or around the transferred roads and Supporting Roadway Assets; and (ii) take or cause to be taken any and all necessary remedial or clean-up action in response to the presence, storage, use, disposal, transportation, release or discharge of any Hazardous Substance in, on, under or around the transferred roads and Supporting Roadway Assets: (A) in compliance with the requirements of environmental law(s); and (B) in accordance with the orders or directions of any Governmental Authority; provided, however, that (a) the presence, storage, use, disposal, transportation, release or discharge of the Hazardous Substance in question occurred prior to the Conveyance Date, or (b) the presence, storage, use, disposal, transportation, release or discharge of the Hazardous Substance is at a location that has been identified by either party (acting reasonably) to be a site of illegal dumping that has not been, prior to the Conveyance Date, reasonably remediated by the Province.
11. **Application of Agreement No. HRM-01 and Agreement No. HRM-08.** This Agreement is intended to operate in conjunction with Agreement No. HRM-01 and Agreement No. HRM-08. All of the terms used in this Agreement that are defined in Agreement No. HRM-01 or Agreement No. HRM-08 will have the same meaning as described in Agreement No. HRM-01 or Agreement No. HRM-08, as applicable, unless otherwise defined herein or unless the context of this Agreement reasonably requires a different, or updated definition to give clarity to this Agreement. In the event of any conflict or inconsistency between this Agreement and Agreement No. HRM-01 or Agreement No. HRM-08, the terms of this Agreement will prevail.
12. **Updates to Agreement No. HRM-01 and Agreement No. HRM-08.** Promptly after the Effective Date of this Agreement, the Province and the Municipality shall, together with their respective legal counsel, meet and in good faith discuss Agreement No. HRM-01 and Agreement No. HRM-08, to determine which changes are necessary, appropriate or desirable to Agreement No. HRM-01 and Agreement No. HRM-08. The parties shall take commercially reasonable efforts to finalize such discussions on or before October 31, 2022 (or such later date as may be mutually agreed to by the parties). The changes to be discussed by the parties include the matters outlined in Appendix "E" (*Agreement HRM-01 Updates*) and may include any other terms and conditions that the parties deem appropriate. Agreement No. HRM-01, Agreement No. HRM-08 and this Agreement will continue to prevail until such time as they are replaced by a new agreement governing road transfers that is mutually satisfactory to the parties and such new agreement will apply both retroactively to the June 1 Transfer and to any future transfer of roadway assets.
13. **Term of this Agreement.** This Agreement will commence on the Effective Date and continue until the earlier of: (i) the date on which all of the transferred roads and Supporting Roadway Assets are no longer vested in the Municipality; or (ii) the date on which both parties mutually agree to terminate the

Agreement, by delivery of a termination notice by each party to the other.

14. **Assignment.** No party to this Agreement may assign it or any of its rights, duties, obligations or interests hereunder without the prior written consent of the other party, which consent may be given or withheld at its discretion (except that the Municipality may, at its discretion, subcontract any obligations described in this Agreement). Any attempt by a party to so assign all or any part of this Agreement or any of their rights, duties, obligations or interests under this Agreement, without the prior written consent of the other party, contrary to this Section 11 (*Assignment*) is null and void and without effect.
15. **Governing Laws.** This Agreement will be governed by and construed in accordance with the laws of the Province of Nova Scotia.
16. **Severability.** If any provision of this Agreement is held by a court of competent jurisdiction to be illegal, invalid or unenforceable, it will be deemed to be severed from this Agreement and the remaining provisions will nevertheless remain in full force and effect.
17. **Counterparts and Electronic Execution.** This Agreement may be executed in several counterparts, each of which will be an original and all of which will constitute but one and the same instrument. The parties agree that original signatures transmitted, received and reproduced via electronic transmission, email or electronic signatures will be treated for all purposes of this Agreement as original signatures and will be deemed valid, binding and enforceable by and against all parties. Each party agrees to deliver the originally signed Agreement upon request of the other party.

[signature page follows]

**IN WITNESS WHEREOF** the parties have, by their duly authorized representatives, executed this Agreement on the dates set forth below.

**WITNESSED BY:**

  
Witness *Ashley Burke*

**DATED AT** Halifax, Nova Scotia,  
this 1st day of June, 2022.

**HER MAJESTY THE QUEEN** in right of the Province of  
Nova Scotia, as represented by the Minister of Public Works


  
\_\_\_\_\_  
for the Minister of Public Works  
Name:  
Title:

**WITNESSED BY:**

  
Witness Hannah Forsyth

**DATED AT** Halifax, Nova Scotia,  
this 31 day of May, 2022.

**HALIFAX REGIONAL MUNICIPALITY**

  
\_\_\_\_\_  
for Halifax Regional Municipality  
Name: Jacques Dubé  
Title: Chief Administrative Officer

THIS AGREEMENT made the 18<sup>th</sup> day of June, 2007, At

BETWEEN:

HALIFAX REGIONAL MUNICIPALITY, a body corporate, hereinafter called "HRM"

OF THE FIRST PART

- and -

HALIFAX REGIONAL WATER COMMISSION, a body corporate, hereinafter called "HRWC"

OF THE SECOND PART

WHEREAS HRM has had the responsibility for the operation and administration of waste-water facilities and storm-water facilities in HRM pursuant to the *Municipal Government Act*, and owns various facilities for those purposes;

AND WHEREAS HRM and HRWC have agreed that it is in the public interest to transfer the responsibility for the operation and administration of certain of those facilities from HRM to HRWC;

AND WHEREAS HRM has the authority under section 60 of the *Municipal Government Act* to enter into an agreement with a service commission to provide and administer municipal services;

AND WHEREAS HRM has agreed to transfer its right, title and interest in municipal waste-water facilities and municipal storm-water facilities in the designated area to HRWC;

AND WHEREAS the provisions of the *Halifax Regional Water Commission Act* have been amended to permit regulation of the aforesaid operation and administration by the Utility and Review Board in accordance with the *Public Utilities Act*;

NOW THEREFORE the parties do agree as follows:

**Utility and Review Board**

1. This Agreement is subject to the approval of the Utility and Review Board.
2. The parties shall be bound by any final decisions of the Utility and Review Board with respect to the interpretation of any clause of this Agreement.

### Interpretation and Implementation

3. In this Agreement,

- (a) "Effective Date" means a date to be set by the Utility and Review Board as the effective date for the transfer of assets and responsibilities from HRM to the HRWC hereunder;
- (b) "full cost recovery" shall have such meaning as may be ascribed to it from time to time by the Utility and Review Board;
- (c) "HRWC Regulations" means such Rates, Rules and Regulations as may be approved by the Utility and Review Board and in effect from time to time;
- (d) "municipal waste-water facilities" means waste-water facilities operated for municipal purposes except those solely dedicated to servicing municipal buildings, municipal parks and recreation lands or dedicated to treating leachate at past or present landfill sites, and "municipal waste-water services" has a corresponding meaning;
- (e) "municipal storm-water facilities" means
  - (i) those storm sewers, ditches, pipes and culverts and other elements of "stormwater systems" as defined within the *Municipal Government Act* which are located within municipal road rights-of-way; and
  - (ii) storm-water retention and drainage facilities and other elements of "stormwater systems" as defined within the *Municipal Government Act* which are operated for municipal purposes except those solely dedicated to servicing municipal parks and recreation lands, or other municipal buildings or spacesin the designated area, being the area defined by the red line in the attached Schedule "A"; and "municipal storm-water facilities" and "municipal storm-water services" have corresponding meanings;
- (f) "Transfer Date" means:
  - (i) in the case of the assets associated with the Harbour Solutions Project, the date prescribed by section 12 of this Agreement; and
  - (ii) in the case of other assets, the Effective Date;
- (g) "unexpended balance" means the balance of funds earned but not expended less those amounts which have been committed against the funds by means of an invoice approved and entered as an account payable;
- (h) "Utility and Review Board" means the Nova Scotia Utility and Review Board; and
- (i) "waste-water facilities" has the same meaning as "wastewater facilities" in the *Municipal Government Act* and, without limiting the generality of the foregoing,

includes collection, pumping, treatment and discharge facilities, and "waste-water services" has a corresponding meaning.

4. This Agreement shall be interpreted and implemented in accordance with its purposes, which are:
  - (a) to transfer municipal waste-water facilities and municipal storm-water facilities and their operation and administration to HRWC from HRM, to better serve the public interest;
  - (b) to have such facilities operated as a public utility integrated with HRWC's existing water utility facilities to the extent deemed appropriate by the Utility and Review Board;
  - (c) to evolve the operation and administration of municipal waste water services and municipal storm-water services towards a system whereby the general taxpayer of HRM does not subsidize the utility rate payer of HRWC and the utility rate payer of HRWC does not subsidize the general taxpayer of HRM; and
  - (d) to have HRM pay a fee for service on a full cost recovery basis for waste-water services and storm-water services made necessary by the operation of other municipal services, including, but not restricted to, solid waste management services, and parks and recreation services.
5. In the event any provision in this Agreement is illegal or impossible to implement, or could only be implemented in a manner contrary to the purposes and intent of this Agreement, the parties shall attempt to give effect to the purposes of this Agreement by alternate means approved by the Standing Committee, or the parties hereto, without any amendment to this Agreement being required.

#### **HRM Co-operation**

6. In the event that it is determined by the Utility and Review Board at any time that any of the services to be operated by the HRWC pursuant to this agreement ought to be paid for by rates or charges against persons, developments or properties determined by the Board to benefit from the service, HRM agrees
  - (a) to use its best efforts to secure passage of any provincial legislation recommended by the Board in order to effectively implement such a rate-structure;
  - (b) to submit to HRM's Council any by-laws prepared by HRWC that would be necessary or advantageous to implement such a rate-structure; and
  - (c) to collect and remit to HRWC such rates or charges (whether levied and collected by HRM on HRWC's behalf, or whether levied by HRWC and collected by HRM on HRWC's behalf) as fully and effectively as is reasonably possible and, if charging HRWC a fee for collection; to charge a fee not exceeding full cost recovery.

**Real Property Owned by HRM**

7. With respect to real property owned by HRM:

- (a) Subject to more specific provisions herein to the contrary, all of the real property owned by HRM upon which municipal waste-water facilities and municipal storm-water facilities are situated, including the real property described in Schedule "B" hereto, except for municipal road rights-of-way, shall be transferred to HRWC by Warranty Deed on the Transfer Date or as soon as reasonably possible thereafter;
- (b) HRM shall seek to obtain approval of the Registrar General to register the transfers or conveyances under the *Registry Act*, or shall seek to obtain an amendment to the *Municipal Government Act* to exempt any transfers or conveyances between HRWC and HRM from compliance with the provisions of the *Land Registration Act*. In the event that such approval or exemption cannot be obtained, HRM covenants and agrees to proceed with migration of title under the *Land Registration Act*, at HRM's expense, as expeditiously as possible in order to complete the transfer to HRWC;
- (c) Where any real property is owned by HRM for multiple municipal uses or purposes, except where pursuant to Schedule "B" a property is to be subdivided to separate the ownership to reflect multiple municipal uses:
  - (i) if the predominant municipal use of the property is for purposes other than municipal waste-water or municipal storm-water facilities or services, HRM will retain title and grant an easement to HRWC to accommodate HRWC's use for municipal waste-water or municipal storm-water facilities or services;
  - (ii) if the predominant municipal use of the property is for municipal waste-water or municipal storm-water facilities or services, HRM will transfer title to HRWC, retaining such easement or other right, title and interest as is reasonably necessary to accommodate HRM's continued use for purposes other than municipal waste-water or municipal storm-water facilities or services, in which event HRM will be responsible for any maintenance associated with such use and shall indemnify and hold harmless HRWC in respect of any claims, demands or liabilities caused or contributed to by events, acts or omissions in regards to such use.

8. HRM agrees HRWC may make reasonable use of municipal road rights-of-way for municipal waste water services or municipal storm water services purposes. After April 1, 2008, HRWC's use shall be subject to the Streets By-law as amended from time to time.

### **Other Real Property Interests**

9. With respect to real property in which HRM has interests other than ownership in fee simple:
  - (a) Subject to more specific provisions herein to the contrary, all of the right, title and interest of HRM in any leases, easements, rights-of-way or licenses held by HRM pertaining to municipal waste-water facilities or municipal storm-water facilities shall be transferred to HRWC as soon as reasonably possible following the Transfer Date;
  - (b) Where such leases, easements and rights-of-way or licenses are held by HRM for multiple municipal purposes or uses, HRM will retain such right, title and interest as is reasonably necessary to accommodate HRM's continued use for purposes other than municipal waste-water services or municipal storm-water services purposes, in which event HRM will be responsible for any maintenance associated with such use and shall indemnify and hold harmless HRWC in respect of any claims, demands or liabilities caused or contributed to by events, acts or omissions in regards to such continued use;
  - (c) Any and all property interest of HRM in the valve at Maynard Lake, the outlet water control structure on Lake Banook and the screens at Sullivan's Pond shall remain with HRM. HRWC shall have the right and the obligation to operate and maintain these structures or facilities for storm water control purposes.
10. For as long as HRWC shall provide waste-water and/or storm-water services in or for HRM, HRM shall use its best efforts to facilitate the continued use of properties by HRWC to which HRM has had verbal licenses, informal rights of access, or easements by prescription.

### **Equipment and Other Personal Property**

11. With respect to equipment and other personal property owned, leased or possessed by HRM and subject to more specific provisions herein to the contrary:
  - (a) all of the personal property utilized by HRM in the operation or administration of municipal waste-water facilities and municipal storm-water facilities, including the equipment described in Schedule "C" hereto and the office computers, furniture and supplies of transferring employees, shall be transferred to HRWC, along with any corresponding debt; and
  - (b) title documents for the equipment described in Schedule "C" shall be provided by HRM on the Effective Date or as soon as reasonably possible thereafter.

### **Halifax Harbour Solutions Project**

12. With respect to the Halifax Harbour Solutions Project, including the assets described in

Schedule "D" hereto, and with respect to any contractual obligations associated with those assets, the parties agree that:

- (a) the Biosolids Trucking Contract associated with the Biosolids Processing Facility (Aerotech Park) shall be transferred by HRM to HRWC when the Halifax Treatment Plant is conveyed pursuant to paragraph (c) of this section;
- (b) the Biosolids Processing Facility Operating Contract associated with the Biosolids Processing Facility (Aerotech Park) shall be transferred by HRM to HRWC on the Effective Date;
- (c) the Biosolids Processing Facility (Aerotech Park) shall be transferred by HRM to HRWC between 60 and 180 days after its substantial completion;
- (d) other Halifax Harbour Solutions Project assets shall be transferred by HRM to HRWC between 60 and 180 days after substantial completion of each of the three waste-water treatment facilities to which that asset relates (i.e. Halifax, Dartmouth, or Herring Cove) in the event that no lien claim has been filed within 60 days of substantial completion, or otherwise upon resolution of any lien claims;
- (e) HRM shall comply with the *Builders' Lien Act* in respect of any holdback requirements and otherwise;
- (f) any warranties provided to HRM with respect to the treatment plants will be assigned to HRWC;
- (g) in the event there are contractual disputes, liens or other construction-related claims associated with these assets that arise prior to the closure of the Halifax Harbour Solutions Project project office HRM shall be responsible for them;
- (h) beginning on the Effective Date:
  - (i) HRWC will operate the Halifax Harbour Solutions Project assets and facilities and shall assist in their commissioning, and shall assume any contractual obligations associated with their operation;
  - (ii) HRWC shall assume responsibility for implementing the Pollution Prevention Program(s) and the Watershed Program associated with the Halifax Harbour Solutions Project; and
  - (iii) HRWC shall cooperate with HRM staff to provide information for inclusion in quarterly reports to HRM Council regarding the status of the Halifax Harbour Solutions Project, or such other reports as may be reasonably requested from time to time;
- (i) HRM will directly apply to the debenture debt for the Halifax Harbour Solutions Project the \$2,000,000 payment per year for 12 years which is being funded by

the Province of Nova Scotia;

- (j) HRM will transfer funds to HRWC on an annual basis, as required to fund the Pollution Prevention Program up to the completion date of the Halifax Harbour Solutions Project;
- (k) on or before September 1, 2008, or at such other time as may be agreed, HRWC shall transfer to HRM a Cash Flow Balancing Payment. The Cash Flow Balancing Payment shall be the sum of \$7,487,000 if the timing and amount of capital project costs are as currently budgeted. Otherwise the parties shall negotiate a suitable alternative designed to meet cash flow requirements of the project.
- (l) a final reconciliation of HHSP project costs shall be done at the conclusion of the project and:
  - (i) if the capital project costs actually incurred are less than those currently budgeted, the HRWC shall receive payment from HRM of the difference; and
  - (ii) if the capital project costs actually incurred are greater than those currently budgeted, the parties shall negotiate a solution to the short-fall in capital funding acceptable to the Utility and Review Board;
- (m) A copy of the current capital cost (cash flow) budget upon which this section is based, is attached hereto as Schedule "E".

### **Solid Waste Leachate Treatment**

13. HRM and HRWC agree that:

- (a) the cost of treatment of HRM's solid waste and composting leachates is appropriately borne by the solid waste system, not by the rate-payers of a wastewater utility;
- (b) the leasehold of the Highway 101 Landfill Leachate Treatment Facility ("LLTF") will remain with HRM, along with any corresponding debt;
- (c) for the remainder of fiscal year 2007-2008, HRWC agrees to operate the LLTF on the HRM approved budget of \$334,756.00 with HRM credited with any budgetary surplus and HRM compensating HRWC for any budgetary deficit, and any material change to the level of service or budgeted cost is subject to the agreement of the parties;
- (d) in subsequent fiscal years prior to the implementation by HRWC of rates and charges based upon a cost of service study, HRWC shall operate the LLTF on the same basis as in the fiscal year 2007-2008, unless otherwise ordered by the Utility and Review Board;

- (e) thereafter, HRWC will operate the LLTF on a full cost recovery basis following consultation with HRM and subject to the review and approval of the Utility and Review Board.
- (f) effective April 1, 2008, should there continue to be a requirement to treat leachates from the Otter Lake solid waste facility at the Mill Cove Water Pollution Control Facility, a fee per cubic meter shall be charged to HRM. This fee shall be negotiated between the parties based on the full cost recovery principle and, failing agreement, shall be submitted to binding arbitration as provided for herein.

### **Incidental Services**

14. Subject to maintaining current charge out rates until April 1, 2008, HRWC will assume responsibility, on a full cost recovery basis, for the operation of the following facilities, which are acknowledged by HRM not to constitute municipal waste-water facilities or municipal storm-water facilities:
- (a) waste-water treatment plants currently being operated by HRM for municipal properties serving other municipal purposes, (such as recreational purposes) or for third parties, including Twin Oaks Hospital/Birches Nursing Home in Musquodoboit Harbour, Harrietsfield Recreation Facility, the Musquodoboit Valley Memorial Hospital, and the Upper Sackville Recreation Facility;
  - (b) various pumping stations, identified in Schedule "F", currently maintained by HRM's Technical and Underground Services Division for municipal buildings serving other municipal purposes (such as ferry terminals); and
  - (c) such other facilities as may be agreed from time to time.

### **NSEL Operating Approvals**

15. HRM agrees to transfer all existing operating approvals for transferred assets to HRWC and HRWC agrees to accept the transfer of existing operating approvals from HRM, and such transfer shall be effected on the Transfer Date or as soon as reasonably possible thereafter. Such transfer is subject to the approval of the Minister of Environment and Labour and will be effective from the date of approval by the Minister. Notwithstanding the above, HRWC will assume responsibility for the obligations contained in the permits on the Effective Date.

### **Contractual Obligations, Debt and Debt Repayment**

16. Subject to more specific provisions herein to the contrary, on the Transfer Date HRWC shall assume responsibility for any contractual obligations and benefits of HRM in connection with the operation or administration of municipal waste-water or municipal storm-water facilities or services, and each party hereto shall execute any documents reasonably required to assign such obligations or benefits to the other party.

HRWC

17. Subject to the consent of the Municipal Finance Corporation if required, and subject to more specific provisions herein to the contrary, ~~HRM~~ shall assume the financial responsibility for the payments of interest and principal on the debenture debt associated with the assets being transferred to HRWC by HRM, as identified in Schedule "G" hereto, upon the Effective Date.

**By-law and Tipping Fee Revenue, Reserves and Accounts**

18. This section, together with Schedule "H", govern the agreement of the parties with respect to revenues currently levied by HRM through its by-laws or through sludge tipping fees and the transfer by HRM to HRWC of the unexpended balances of reserves or accounts in which such revenues have accumulated:

Pollution Control Charges currently levied Under By-Law S-100, s. 3-10

- (a) Except as provided otherwise herein, Pollution Control charges billed in the ordinary course of business on or before the Effective Date by HRWC on behalf of HRM will be remitted to HRM in accordance with current practice. Pollution Control charges billed after the Effective Date will be retained by HRWC. It is the intention of the parties that after the Effective Date the Pollution Control Charges become charges billed and collected by HRWC pursuant to its regulations, and will replace the charges currently collected for HRM pursuant to sections 3-10 of By-Law S-100.
- (b) If there exists any positive accumulated unexpended balance as at the Effective Date in HRM's Environmental Protection Reserve (Q105) and HRM's Wastewater Treatment Plant Existing Infrastructure Reserve (Q122), such balances shall be transferred to HRWC on the Effective Date, and expended by HRWC solely for the operational, administrative, development, maintenance and capital costs, including debt servicing charges and reserve accounts, of that portion of the waste-water collection and treatment systems comprising the interceptor sewers, waste-water treatment plants, pumping stations and associated forcemains which directly transfer waste-water to an interceptor sewer or a waste-water treatment plant and other facilities of a similar nature, exclusive of the primary collection system;
- (c) The accumulated unexpended balance as at the Effective Date of HRM's Wastewater and Stormwater Management Reserve (Q106) shall be transferred to HRWC on the Effective Date, and shall be expended by HRWC solely on the cost of administering and maintaining the waste-water and storm-water primary collection systems;

Sewer Redevelopment and Trunk Sewer Charges currently levied under By-law S-100, s. 11-15

- (d) After the Effective Date, sewer development and trunk sewer charges levied by HRWC pursuant to HRWC Regulations shall be collected by HRM for HRWC

and shall be remitted to HRWC each month. It is the intention of the parties that these charges shall replace the Sewer Redevelopment and Trunk Sewer Charges currently levied pursuant to By-law S-100;

- (e) The accumulated unexpended balance as at the Effective Date of HRM's Sewer Redevelopment and Trunk Sewer Reserve (Q104) shall be transferred to HRWC. HRWC shall expend that balance solely for the upgrading and installation of trunk sewer systems within existing developed areas;

Regional Capital Cost Charges currently levied under By-law C-600

- (f) After the Effective Date, regional capital cost contribution charges levied in applicable regions by HRWC pursuant to HRWC Regulations shall be collected by HRM for HRWC and shall be remitted to HRWC each month. It is the intention of the parties that these charges shall replace the Regional Capital Cost Charges currently levied pursuant to By-law C-600;
- (g) The accumulated unexpended balance as at the Effective Date of HRM's Regional Capital Cost Charge Reserve (Q137), less \$293,978.00 representing repayment of seed funding to establish an implementation team for Regional Capital Cost Charges, shall be transferred to HRWC, and HRWC shall expend that balance solely for capital items relating to waste-water treatment capacity;

Local Area Infrastructure Charges currently levied under Subdivision By-Law, sections 20-22 and 134

- (h) After the Effective Date, HRWC shall levy and collect, in applicable charge areas, local area capital cost contribution charges pursuant to HRWC Regulations and/or HRM's Subdivision By-Law. It is the intention of the parties that the charges thereby payable to HRWC shall replace the municipal waste-water and municipal storm-water facilities' portion of infrastructure charges currently payable to HRM in the charge areas established by HRM pursuant to HRM's Subdivision By-law;
- (i) The accumulated unexpended balance, if any, as at the Effective Date of HRM's local area infrastructure accounts for municipal waste-water or storm-water infrastructure, shall be transferred to HRWC, and shall be expended by HRWC solely within or for the benefit of the respective charge areas in which the funds were raised and solely for the purpose(s) identified in the applicable Schedule to HRM's Subdivision By-Law;

Sludge Tipping Fees

- (j) After the Effective Date, HRWC shall levy and collect sludge tipping fees pursuant to HRWC Regulations. It is the intention of the parties that the charges thereby payable to HRWC shall replace the sludge tipping fees currently payable to HRM;
- (k) The accumulated unexpended balance as at the Effective Date of HRM's Sludge

Tipping Fees Reserve (Q117) shall be transferred to HRWC and shall be expended by HRWC solely to defray the operating costs of waste-water treatment services.

Local Improvement Charges under By-Law L-100

- (1) There shall be no change to the manner in which Local Improvement Charges currently levied by HRM pursuant to By-law L-100 are levied or administered, save and except that municipal waste-water and municipal storm-water facilities shall be dealt with in the same manner as currently applies to municipal water services;

Other Funding

19. Subject to more specific provisions herein to the contrary, HRWC shall have the benefit of any existing funding commitments from HRM or third party funding sources relating to the operation of water services, municipal waste-water services and/or municipal storm-water services including, but not limited to, funding from reserves, the Gas Tax, HRWC dividend, local area capital cost contributions, Canada Strategic Infrastructure Fund, Canada-Nova Scotia Infrastructure Program, Provincial Capital Assistance Program, Municipal Rural Infrastructure Fund, FCM's Green Investment Fund/Sustainable Community Funding and any other similar benefit.
20. HRWC will adhere to the reporting obligations and other requirements of these funding sources.
21. The funding commitments and unexpended balance of various of the applicable reserves and accounts as at March 31, 2007 (subject to HRM annual audit) are set out in Schedule "H". These amounts together with any further accumulation until the Effective Date are intended to be transferred to HRWC except to the extent that Schedule "H" or more specific provisions herein indicate otherwise.

Employees

22. Subject to section 9 of Schedule "I", and to similar provisions in relation to employees whose employment is governed by the *Trade Union Act*, the employees of HRM's Technical and Underground Services Division, Wastewater Treatment Division and Environmental Engineering Services Division shall be transferred from HRM to HRWC on the Effective Date.
23. Employees whose employment is governed by the *Trade Union Act* will have the terms and conditions of the transfer of their employment from HRM to HRWC governed by any applicable Memorandum of Understanding between HRWC and the employees' respective bargaining agents or, in the absence of agreement, by the Labour Relations Board.
24. Grievances between a trade union and HRM in respect of transferred employees shall be dealt with as follows:

- (a) in the case of grievances which have been submitted to arbitration, or complaints which have been filed with the Nova Scotia Human Rights Commission, as at the Effective Date, HRM shall be responsible for their carriage and shall be responsible for any financial liability, or entitled to any financial benefit, arising from the outcome; and
  - (b) in the case of grievances which have not been submitted to arbitration as at the Effective Date, HRWC shall be responsible for their carriage and for any resulting awards except to the extent otherwise agreed by HRM and HRWC or as determined by the Utility and Review Board.
25. Upon termination, retirement or death of a Transferred Employee, HRWC shall use its best efforts to recover amounts owing to HRM by those employees, known as "Advance Pay"; as documented at the date of transfer in HRM's SAP HR system and shall remit such recoveries to HRM.
26. Upon the exercise of pre-retirement leave by a Transferred Employee, HRM shall indemnify HRWC to the extent of the amount accrued as at the Effective Date.
27. Except to the extent otherwise required by law for non-unionized employees, the terms and conditions of the transfer of their employment from HRM to HRWC shall be in accordance with Schedule "T" hereto.

### **Emergencies**

28. In the event of an emergency pursuant to the *Emergency Management Act*, HRWC will partner with HRM to provide a co-ordinated response and mutual aid with a view to minimizing the threat of harm to persons, property and the environment.

### **Expansion of Service Area**

29. In the event that the Province of Nova Scotia transfers to HRM responsibility for roads outside the existing area designated pursuant to section 2(e) of this Agreement, HRWC shall assume responsibility for municipal storm-water facilities and services in such additional area effective immediately upon the Province's transfer of such responsibilities to HRM.
30. The terms upon which HRWC assumes such additional responsibilities shall be as agreed upon by the parties and approved by the Utility and Review Board, and, pending agreement or in default of agreement to the contrary, HRWC's additional services shall be provided on a full cost recovery basis.

### **Transitional Arrangements**

31. The parties agree that the HRM employees situated in MacIntosh Street depot in Halifax and the Eric Spicer Building in Woodside will remain in facilities owned by HRM after they become HRWC employees. HRM agrees that those employees may continue to

occupy such area as they occupied at the Effective Date and receive IT support services at no cost to HRWC until a suitable alternate arrangement has been made by HRWC for them, or until these facilities are no longer required for HRM's use.

32. Subject to the preceding section, the parties agree that, following the transfer of the assets under this Agreement, and at the sole discretion of HRWC, there may continue to be a need for HRM to provide support services to HRWC in the areas of payroll, accounts receivable, accounts payable, facilities, training, insurance, legal, fleet, IT, procurement, plan reviews, surveying, engineering design, inspection and construction. The parties agree to negotiate a full cost recovery agreement effective April 1, 2008 respecting those of the aforesaid services which HRWC and HRM choose to continue. Support services currently supplied to the waste-water/storm-water operations at no cost will continue to be provided to HRWC on that basis until March 31, 2008.

33. Pending enactment of Legislation to confer upon HRWC the powers of the "Engineer" which are conferred upon HRM's "Engineer" pursuant to the *Municipal Government Act*, HRM's "Engineer" shall upon request from HRWC give due consideration to exercising his or her statutory powers for the benefit of HRWC's operation of the waste-water and storm-water facilities and services.

34. HRWC shall indemnify and hold harmless HRM in respect of any claims, demands or liabilities caused or contributed to by the exercise of the "Engineer's" powers pursuant to the preceding section hereof.

### General

35. Any liabilities associated with the ownership or operation of any assets to be transferred to HRWC pursuant to this Agreement shall be at the sole risk of HRM prior to the actual transfer of that asset being effected.

36. HRM shall indemnify and hold harmless HRWC in respect of any claims, demands or liabilities caused or contributed to by events, acts or omissions in regards the operation or administration of waste-water and sewage treatment facilities and municipal storm-water facilities prior to the effective date of this Agreement.

37. The parties agree to establish a special technical committee ("Special Technical Committee") comprised of equal representation from HRM and HRWC to resolve, on an ongoing basis, interface issues between HRWC's responsibilities for municipal storm-water services and HRM's responsibilities for Transportation and Public Works services and Community Development services.

38. The parties agree to establish a standing committee (the "Standing Committee") comprised of equal representatives from each of HRM and HRWC. The Standing Committee shall address any outstanding issues under the Agreement and attend to resolution of any matters required in connection therewith.

39. In the event that the parties are unable to resolve any dispute in respect of the implementation of this Agreement through the Special Technical Committee or the

Standing Committee the matter shall be submitted to arbitration pursuant to the *Commercial Arbitration Act*. Nothing in this clause derogates from section 2 of this Agreement.

DATED at Halifax, Halifax Regional Municipality, Province of Nova Scotia, this 12<sup>th</sup> day of June, 2007.

SIGNED, SEALED and DELIVERED )

in the presence of: )

[Redacted Signature]

Witness )

[Redacted Signature]

Witness )

[Redacted Signature]

HALIFAX REGIONAL MUNICIPALITY )

[Redacted Signature]

Peter J. Kelly )

MAYOR )

Per: )

[Redacted Signature]

Municipal Clerk )

HALIFAX REGIONAL WATER )  
COMMISSION )

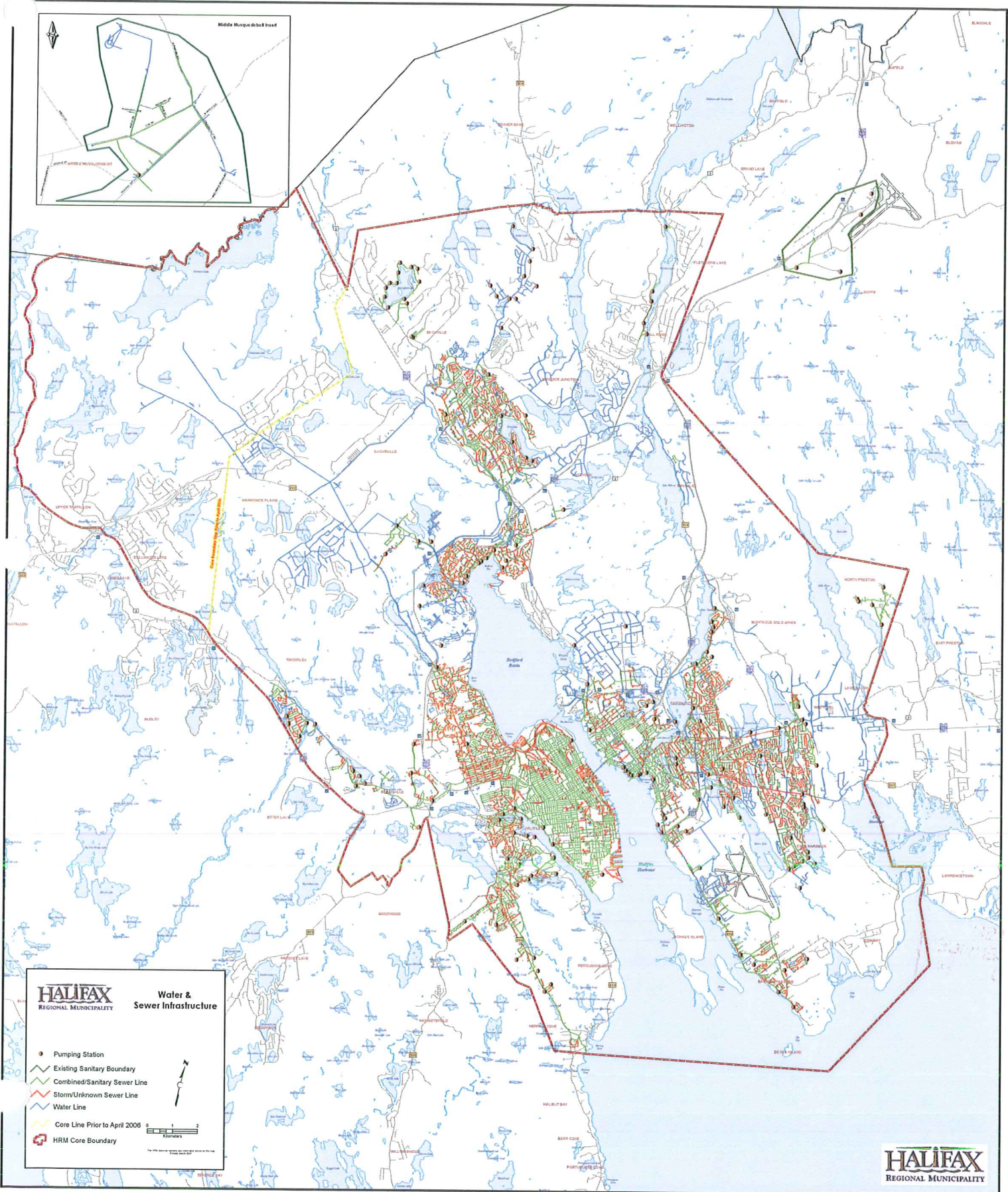
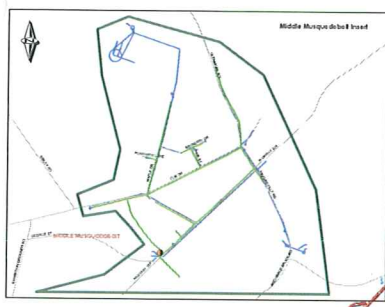
Per: )

[Redacted Signature]

Per: )

[Redacted Signature]

General  
Manager )



**HALIFAX**  
REGIONAL MUNICIPALITY

**Water & Sewer Infrastructure**

- Pumping Station
- Existing Sanitary Boundary
- Combined/Sanitary Sewer Line
- Storm/Unknown Sewer Line
- Water Line
- Core Line Prior to April 2006
- ◻ HRM Core Boundary

0 1 2  
Kilometers

The HRM Sewerage System Study Report, 2005

**SCHEDULE "B"**

**HALIFAX REGIONAL MUNICIPALITY STATION ID NUMBERS  
Technical and Underground Service Pumping Stations**

Station Identification Number	Pumping Station Reference Name	Civic Address	PID #
PW666410	Aerotech Drive	199 Aerotech Dr	40955288
PW661760	Ahmadi Drive	77 Ahmadi Cr	40767030
PW666390	Airport Dumping Station	142 Goudey Dr	00526574
PW661620	Armcrest	15 Taleen Dr	40561722
PW661770	Armenia Drive	95 Armenia Dr	40776254
PW664170	Armdale Rotary	2640 Joseph Howe Dr	00208355
PW661120	Auburn Avenue	56 Auburn Ave	00283291
PW664040	Balcombe Drive	1 Ferndale	00300848
PW661690	Balsam Road	8 Balsam Rd	40113136
PW661290	Barclay Avenue	15 Barclay Ave	40933939
PW666400	Barnes Drive	635 Barnes Dr	00526574
PW664220	Bayers Lake	118 Chain Lake Dr	40876625
PW661370	Bay Road	2193 St. Margarets Bay Rd	40026767
PW662810	Beaver Bank #2	998 Beaver Bank Rd	40830853
PW662650	Beaver Bank #3	1240 Beaver Bank Rd	40829459
PW662800	Beaver Bank #5	4 Pinehaven Dr	00466821
PW661720	Bedford Yacht Club	73 Shore Dr	00431007
PW661430	Bluewater Road	246 Bluewater Rd	40915696
PW661710	Brook Street	25 Brook St	40299067
PW661610	Cavalier Drive	145 Cavalier Dr	40128282
PW661150	Chain Lake	90 Susie Lake Cr	40899981

PW662790	Chandler Drive	271 Chandler Dr	40915290
PW664030	Crescent Avenue	33 Crescent Ave	00300145
PW661270	Colpitt Lake Road	15B Colpitt Lake Rd	40934226
PW661190	Costco	231 Chain Lake Dr	40701955
PW664060	Dingle Tower	67 Parkhill Rd	00279844
PW661200	Duffus Street	5211 Duffus St	40928384
PW666220	Fairfield Holding Tank	1660 Fairfield Rd	00079020
PW661630	Fall River #1	1479 Fall River Rd	00505974
PW661640	Fall River #2	113 Lockview Rd	40908071
PW661650	Fall River #3	313 Lockview Rd	40908121
PW661660	Fall River #4	407 Lockview Rad	40256810
PW661420	Farmers (Twin Cities)	20 Farmers Dairy Ln	00429266
PW662780	First Lake Drive	1A Kingfisher Wy	00359968
PW663830	Fish Hatchery Park	1441 Bedford Hwy	40106874
PW661790	Galloway Drive	30 Galloway Dr	41093501
PW661700	Golf Links Road	140B Shore Dr	40919128
PW661410	Governors Glen	72 Governors Lake Dr	40026734
PW661360	Greenhead Road	64 Greenhead Rd	40050585
PW661400	Greenwood Avenue	171 Greenwood Ave	40535817
PW661580	Hamilton Station	26 Woodys Ln	40912370
PW661330	Iris Avenue	20 Iris Ave	40892176
PW661600	Judy Anne Court	61 Judy Anne Ct	40471559
PW661080	Kearney Lake	128 Kearney Lake Rd	40920811
PW661440	Killarney Drive	11B Killarney Dr	40915787
PW666370	Lakeland #1	50 Lakeland St	40608804
PW666360	Lakeland #2	153 Lakeland St	41188889
PW663340	Lakeside #1	1447 St. Margarets Bay Rd	00347930
PW663350	Lakeside #2 (Rosewood)	16 Rosewood Ave	40033318

PW664020	Leiblin Drive	108 Leiblin Dr	00283648
PW661730	Lions Club	20 Shipyard Rd	00431031
PW661320	Long Pond	815 Herring Cove Rd	40074676
PW661670	Majestic Avenue	49 Majestic Ave	40842833
PW661680	Mann Street	79 Mann St	41163924
PW661570	Meadowlands Park (Churchill)	31 Meadowlands Park Dr	00375618
PW664050	Melville Cove	51 Purcell's Cove Rd	40932535
PW661590	Mowatt Crescent	85 Mowatt Cr	40915217
PW666350	North Green Road	80 North Green Rd	41175472
PW661780	Pennington Drive	168 Pennington Dr	41103318
PW666310	Pinehaven Drive	68 Pinehaven Dr	40932592
PW666330	Point Pleasant Drive	5599 Point Pleasant Dr	40935504
PW661260	Punch Bowl Drive	38 Punch Bowl Dr	40931982
PW661210	Ragged Lake	1 Ragged Lake Blvd	41076142
PW662230	Regatta Point	28 Armshore Dr	00251827
PW661280	Reserve Road	10 Reserve Rd	00252536
PW661390	Riverwood Drive	1A White Birch Dr	40442394
PW664180	Roaches Pond	33 Princeton Ave	00279570
PW661740	Shipyard Road	16 Shipyard Rd	00431031
PW661380	Silver Maple	34 Red Maple Dr	40356073
PW661450	Springfield Lake #1	834 Lakeview Ave	41018755
PW661460	Springfield Lake #2	656 Lakeview Ave	40905408
PW661470	Springfield Lake #3	538 Lakeview Ave	41077603
PW661480	Springfield Lake #4	439 Lakeview Ave	40905416
PW661490	Springfield Lake #5	330 Lakeview Ave	40905416
PW661500	Springfield Lake #6	245 Lakeview Ave	40905481
PW661510	Springfield Lake #7	188 Lakeview Ave	40905481
PW661520	Springfield Lake #8	99 Lakeview Ave	40905481

PW661530	Springfield Lake #9	41 Springfield Lake Rd	40545022
PW661540	Springfield Lake #10	224 Springfield Lake Rd	40906141
PW661550	Springfield Lake #11	54 Lakecrest Dr	40676215
PW661560	Springfield Lake #12	21 Megan Cr	40904658
PW666340	Symonds Road	530 Hammonds Plains Rd	40539546
PW666380	Trinity Lane	132 Trinity Ln	41178112
PW666320	Tucker Lake	300 Tucker Lake Rd	40906869
PW661750	Waterfront Drive	79 Waterfront Dr	40601700
PW661310	Wenlock Grove	31 Wenlock Gv	40934390
PW664090	Whimsical Lake	65 Inverness Ave	00311092
PW664160	Williams Lake	90 Williams Lake Rd	00310409
PW661100	Willowdale	10 Birchview Dr	40934317
PW661300	Woodcrest Avenue	48 Woodcrest Ave	00330795
PE661010	200 Waverley Road	200A Waverley Rd	40944480
PE662020	390 Waverley Road	390 Waverley Rd	40181182
PE661170	800 Waverley Road	831 Waverley Rd	40942310
PE661360	Akerley Boulevard Ext.	134 Akerley Blvd	40611931
PE661140	Akerley at Windmill	1 Akerley Blvd	40939548
PE661590	Allison Drive	50 Allison Dr	40402430
PE663090	Anderson Street	4 Anderson St	40946790
PE661370	Argus Drive	30 Argus Dr	40661753
PE661290	Atlantic Street	1A Atlantic St	00639732
PE661560	Attwood Crescent	34 Attwood Cr	00410696
PE663410	Autoport (Pleasant St)	1151 Main Rd	40094013
PE661660	Beaver Crescent	2A Beaver Cr	40085052
PE661070	Beckfoot Drive	38B Beckfoot Dr	00376921
PE661210	Belmont Avenue	63B Belmont Ave	40935751
PE664740	Bissett Lake	54A Attwood Cr	00410803

PE661150	Bruce Street	601 Portland Street	40946394
PE661600	Caldwell Road	734 Caldwell Rd	40446973
PE661710	Colby South (Lakeridge)	30 Lakeridge Cr	40711764
PE661690	Cole Harbour Road	1180 Cole Harbour Rd	40604811
PE661570	County Rehab	257 Bissett Rd	00402982
PE661160	Craigburn Court	4B Craigburn Ct	40942369
PE661400	Craigburn Drive	25B Craigburn Dr	40942351
PE661240	Crichton Avenue	260 Crichton Ave	40941452
PE661480	Dartmouth Cove	5B Canal St	40763476
PE661580	Eagle Lane	14 Eagle Ln	00601377
PE661100	Everette Street	84 Everette St	40935942
PE661080	Gaston Road	1A Campbell Ave	00242826
PE662470	Hartlen Point	2209 Shore Rd	40951311
PE661680	Humber Park	49 Gander Ave	40150344
PE663200	India Street	21 India St	40938623
PE662030	Jaybe Drive	5 John Brenton Dr	40942492
PE661490	King Street	130 Alderney Dr	00130419
PE661790	Lakemist Court	35 Lakemist Ct	41021072
PE661130	Main Street	6 Golf View Dr	40942963
PE661500	Maitland Street	16 Maitland St	40936981
PE661650	Maplewood Drive	90 Maplewood Dr	40542466
PE661190	Mason Street	28 Mason St	40935587
PE661450	Melrose	277 Melrose Cr	40765273
PE664730	Memorial Drive	2 Memorial Dr	40948580
PE661300	Morris Lake	47 Portland Estates Blvd	40542771
PE661110	Mount Hope Avenue	1 Mount Hope Ave	41025313
PE661610	North Preston#1(Lk Major)	851 North Preston Rd	40761942
PE661620	North Preston#2 (Downey)	71 Downey Rd	00638841

PE663720	North Preston#3 (Johnson)	112A Simmonds Rd	40658122
PE661630	North Preston#4 (Simmonds)	17 Amelia Ct	00339580
PE661640	North Preston #5(Cain)	266 Simmonds Rd	40771529
PE661550	O'Dell Drive	12B O'Dell Cr	40948606
PE661060	Oathill Crescent	13B Oathill Cr	40945313
PE661520	Old Ferry Road	3 Old Ferry Rd	40937039
PE661700	Old Lawrencetown Road	33 Old Lawrencetown Rd	40570434
PE661540	Park Avenue	2 Park Ave	40506867
PE661050	Plymouth Road	20B Plymouth Rd	40944555
PE663430	Quigley's Corner	1516 Shore Rd	40000903
PE661340	Rocklin Court	2B Rocklin Ct	40942393
PE661310	Russell Lake	69 Baker Dr	40401663
PE662460	Shamrock Court	16A Thorncrest Ct	40951261
PE664750	Sherwood Street	16 Sherwood St	40497075
PE664440	South East Passage	2019 Shore Rd	00401133
PE667800	South Ridge Circle	63 South Ridge Cir	41024894
PE661380	Sprucewood Court	11B Sprucewood Ct	40675209
PE661040	Stewart Harris Drive	76B Stewart Harris Dr	00212753
PE661670	Stratford Drive	39 Stratford Dr	40351835
PE661230	White Birch Lane	79 White Birch Ln	40434664
PE661250	White Street	38B White St	00268151
PE661120	Windmill Road	517 Windmill Rd	40172447
PE661800	Wright Avenue Ext.	Wright Ave Ext.	
PE661420	York's Lane	48 York's Ln	40392441

**TECHNICAL & UNDERGROUND SERVICES**  
**Stormwater Retention Ponds in HRM**

Retention Pond	Region	Civic Address	First Street	Second Street	PID #
Oceanview Drive	Central		Oceanview Drive	Blanchard Crescent	40919672
Stewart Harris Drive	East	76B	Stewart Harris Drive		00212753
Guysborough Avenue	East	64A	Woodlawn Road		00211631
Heritage Hills Forest Hills Parkway	East		Melrose Crescent	Samuel Daniel Drive	41174749
Cole Harbour Drive	East		Forest Hills Pkwy	Auburn Avenue	00633206
Gregory Drive	East		Cole Harbour Drive	Beauford Drive	03551881
Shubie Drive	East		Gregory Drive		00364901
Countryview Drive	East		Shubie Drive	Cromarty Drive	41215476
Commodore Drive	East		Countryview Drive	Ferindonald Close	41215476
Lemlair Row	East		Commodore Drive	At 118 highway	41215476
Main Street	East		Lemlair Row	At 118 highway	41215476
GlenForest Weir	West		Main Street	Forest Hills Pkwy	40080590
Lacewood Drive	West		Glenforest Drive		00336057
Glenbourne Estates	West	590	Lacewood Drive		00330670
Parkland Avenue	West		Parkland Avenue	Carlina Court	40832693
Chain Lake Drive	West		Chain Lake Drive	Langbrae Drive	40694754
Transom Drive	West	46	Transom Drive	Susie Lake Crescent	41059585
Transom Drive	West		Transom Drive	Behind pumping station	41234865
Chain Lake Drive	West	115	Chain Lake Drive	NE of civic Northwest Arm Drive	41235052
Old Sambro Road	West		Old Sambro Road		40416299
Graystone Road	West		At Cul-du-sac		00315309
Tamarack Drive	West		At soccer field		00283291
					40635401

**ELLENVALE RUN**

Description	PID
All property owned by HRM constituting a portion of the Ellenvale Run storm-water system	

### Wastewater Treatment Plants

WWTP	Address	Postal Code	PID #
Aerotech	449 Aerotech Drive, Enfield	B2G 1K3	00515239
Aerotech Lagoon and Dewatering Facility	449 Aerotech Drive, Enfield	B2G 1K3	00515239
Belmont/Marion Heights Subdivision	4 Belmont Avenue, Dartmouth, NS	B4B 1G2	00261453
Eastern Passage	1039 Main Road, Eastern Passage	B3G 1M2	00374678
Fall River	88 Lockview Road, Fall River, NS	B2T 1J1	40621286
Fame Subdivision	63 Pembroke Street, Waverley, NS	B2R 1L8	00519223
Lakeside/Timberlea	77 Riverview Drive, Timberlea, NS	B3T 1C7	40278228
Lively Subdivision	14 Woods Lane, Sackville	B4E 3A9	40607293
Middle Musquodoboit	7805 Highway 357, Middle Musquodoboit		40521478
Mill Cove	205 Waterfront Drive, Bedford		40728040
North Preston	111 Whynder Lake Road		40526857
Springfield	375 Springfield Lake Road, Sackville, NS B4E 3K4	B4E 3K4	40501843
Uplands Park	1231 Hammonds Plains Road, Hammonds Plains	B4B 1P6	40349904
Wellington	12 Wellington Drive, Wellington, NS B2T 1J4	B2T 1J4	00502310

**BISSETT ROAD AND MANN STREET PROPERTIES**

Address	Area	Description	PID#
257 Bissett Road* Cole Harbour	12.0 Acres*	Halifax Rehabilitation Centre, large buildings with ball field behind buildings and pumping station in field behind Rehab Centre*	00402982*
213 Bissett Road Cole Harbour	1.0 Acre	Bissett Road Depot contains large garage with 6 bays	40154080
Mann Street Bedford	1.0 Hectare		40873192
1 Mann Street Bedford	88,670 Sq. Ft.	Mann Street Depot, general office building, 5 bay garage, pumping station no. 29, salt silo and compound	40498644

**\*only that portion of PID 00402982 which is currently used by Technical and Underground Services Division of HRM is to be conveyed. Subdivision of the lot is required.**

**SCHEDULE "C"**

**ENVIRONMENTAL MANAGEMENT SERVICES  
Technical and Underground Services Vehicles**

Region	Vehicle Number	Description	Serial #
EAST	P339	D30581 P339 1996 CHEV 1 TON 2WD /CRANE	1GBKC34F3TJ111502
EAST	51VZ004	G29340 51VZ004 2002 GMC DS CARGO VAN	1GTDM19X22B515326
EAST	51TZ005	G29539 51TZ005 1999 FORD 1/2T PU 2WD	1FTZF172XXKA12156
EAST	53TF002	D30117 53TF002 2001 FORD 1 T 4X4 SUPERD	1FDXF47F61EC09256
EAST	52TS002	G30608 52TS002 2003 FORD F250 4X4 P&S	1FTNF21L83EC86163
EAST	TR1	000000 TR1 98 JC TRAILER 20 T MAN. TILT	2J9B3V5C1WK001136
EAST	B166	D29833 B166 1995 FORD CATCHBASIN CLEANER	1FDZW82EXSVA48989
EAST	55TY001	D30412 55TY001 2002 FREIGHTL / AQUATEC	1FVHBXAK63HK38726
EAST	B213	D29332 B213 1997 FORD CATCHBASIN CLEAN	1FDZS86E2VVA37785
EAST	78173	1992 GMC 5 Ton Water Truck	1GDP7H1J5NJ524757
EAST	53LH001	D29973 53LH001 2001 JCB BACKHOE	SLP214TC1U0900832
EAST	55TD001	D29970 55TD001 2002 VOLVO TANDEM DUMP	4V5KC9GF32N325911
EAST	B400	D29278 B400 1997 FORD F450 W/COMPRESSOR	1FDLF47F2VEC32697
EAST	WR90	D30188 WR90 1990 JOHN DEERE LOADER	DW544EB529228
EAST	52TZ009	G30273 52TZ009 2002 FORD F350 1T 2WD PU	1FTSF30L12ED24048
EAST	52TP009	G29382 52TP009 2006 FORD 3/4T 4X4/ PLOW	1FTNF21536EC91499
EAST	53TU001	D30627 53TU001 2001 GMC SIERRA 3500 Max Lift Cranes	3GDKC34F51M110228
EAST	52TZ006	G29966 52TZ006 2001 GMC SIERRA 3/4 T HD	1GTHC24U21E263422
EAST	P500	D29090 P500 1997 FORD F450 F AERIAL LIFT	1FDLE47FVEA80237
EAST	52TZ038	52TZ038 2006 GMC 1/2 T PU	1GTHC24U47E118603
CENTRAL	H73133	D28742 H73133 1987 JOHN DEERE 510C TURBO	738225
CENTRAL	53LH003	D30821 53LH003 2005 JCB BACKHOE	SLP214TC4U0904916
CENTRAL	55TD002	D29971 55TD002 2002 VOLVO TANDEM DUMP	4V5KC9GF52N325912

CENTRAL	TR2	1998 Trailer	2J9B3V5C3WK001137
CENTRAL	B207	D30246 B207 1997 VOLVO 5 T SALT SPR	4VHJAKFD0VR856346
CENTRAL	P320	D29080 P320 1997 FORD 1 TON 2WD CC SIN	1FTJW35F0VEA64633
CENTRAL	B401	Compressor Truck D30369 B401 1997 FORD 1T SUPERDUTY 2WD	1FDLDF47F3VEC32935
CENTRAL	53TF001	D30110 53TF001 2001 FORD 1 T 4X4 SUPERD with Plow	1FDXF47F41EC09255
CENTRAL	52TS001	G28704 52TS001 2003 FORD F250 4X4 P&S	1FTNF21L63EC86162
CENTRAL	P341	D30250 P341 1996 CHEV 1 TON 2WD/BIONIC	1GBKC34F5TJ111484
CENTRAL	52TP001	G29047 52TP001 2001 GMC SIERRA 3/4 T with Plow	1GTHK24U61E251521
CENTRAL	K119	D29496 K119 1997 TRACKLESS ART TRACTOR	MT5TD1030
CENTRAL	K120	D29207 K120 1997 TRACKLESS ART TRACTOR	MT5T1042
CENTRAL	K121	D29902 K121 1998 TRACKLESS ART TRACTOR	MT5TD1431
CENTRAL	B215	D30240 B215 98 VOLVO DMP/TAND/PLW&SLT	4VHJCLBE8WN862306
CENTRAL	B208	D30234 B208 1997 VOLVO 5 T SALT SPR	4VHJAKFD9VR856345
CENTRAL	B212	D29070 B212 1997 INTERN CATCHBASIN CLEAN	1HTGGADR2VH477128
CENTRAL	C180	D28482 C-180 1994 FORD SEWER FLUSHING UN	1FDYW90LARVA34373
CENTRAL	C188	1985 Jet Rodder Trailer	85600390
CENTRAL	H78158	D28638 H78158 1990 FREIGHTLI 5T TAND P&S	1FVX1WYB3LH442866
CENTRAL	52TP005	G30782 52TP005 2005 FORD 3/4 T 4X4 PLO	1FTNF21585EA65232
CENTRAL	53XZ001	D30860 53XZ001 2005 KOMATSU EXCAVATOR	5946
CENTRAL	52TZ037	Chev 2500 2 Wheel Drive	1FTHC24U67E117694
CENTRAL	71TZ059	2006 GMC 1/2 T PU G30896 71TZ059 2006 GMC 1/2 T PU	2LCFM1F1455000422
CENTRAL	B503	1998 1 Ton Chev 3500 Bucket Van	1GCHG35F8W1030315
CENTRAL	52TZ032	2006 F250 4X4 Crew Cab	1FTSW21536EC92008
CENTRAL	51VZ003	G30392 51VZ003 2002 GMC DS CARGO VAN	1GTDM19XX2B515493
CENTRAL	53TZ002	D30791 53TZ002 2005 FORD F450 4X2 SD Cube Van	1FDXE46P65EA74036
CENTRAL	52KJ001	2005 Generator W/Trailer 80 Kilowatts	2LCFM1F145S000419
CENTRAL	52KJ002	2005 Generator W/Trailer 80 Kilowatts	2LCFM1F145S000420

CENTRAL	52KJ003	2005 Generator W/Trailer 80 Kilowatts	2LCFM1F145S000421
CENTRAL	52KJ004	2005 Generator W/Trailer 80 Kilowatts	2LCFM1F145S000422
CENTRAL	77155	2005 Generator W/Trailer	J92373
VALLEYF ORD	SE360	2003 Generator W/Trailer Generator is 1989	T58511
WEST	71TZ068	GMC ½ TON 1500 4X4 Pick up 2006	3GTEK14XXGG196
WEST	53TZ003	D30822 53TZ003 2005 FORD F450 4X2 SD Cube Van	1FDX46P85ED49333
WEST	53LH002	D30630 53LH002 2002 JCB BACKHOE	39491
WEST	BRT-5	000000 BRT5 94 JDJ 12' LT DUTY FLATDECK	2J9UTB312R1022290
WEST	54KZ003	Float 2001	2C9FA12XF090095
WEST	M190-1	Arrow Board 1992	WNW1062
WEST	52TF002	GMC 3500 Mini Boom/Repair Truck 2001 D30185 1T FLATBED	3GDKC34F81M110224
WEST	53TC002	D30435 53TC002 2002 GMC SIERRA CAB CHA Compressor	3GDKC34F72M112211
WEST	54TB001	D30584 54TB001 2003 GMC 5T BOOM	1GDP8E1C43F518722
WEST	55TZ002	D30904 55TZ002 2006 VOLVO TANDEM	4V5KC9GF16N407108
WEST	78181	5 Ton Salt Truck/Asphalt Truck	1HTSCAAR8SH666632
WEST	B403	D29290 B403 1997 FORD 1 TON 2WD Compressor Truck	1FDLF47F9VEC87180
WEST	52TZ008	G29546 52TZ008 2002 FORD F350 1T 2WD PU	1FTSF30L32ED24049
WEST	52TZ024	G29127 52TZ024 2006 FORD 3/4 TON PU	1FTNF20546EB13554
WEST	52TP006	G29115 52TP006 2006 FORD 3/4T 4X4/ PLOW	1FTNF21556EB13562
WEST	51VZ009	G30948 51VZ009 2005 GMC MINI CARGO VAN	1GTDM19X95B508491
WEST	B200	GMC TopKick Water Truck 1996	1GDP7H1JTJ517838
WEST	72181	D30563 H78181 1995 INTERNATION 5 T P & S	1HTGCADR6TH36237
WEST	72171	AQUATECH Sewer Jet Truck	1FDYK82EXRVA13547
WEST	72172	D28660 H72172 1994 INTERN CATCH BASIN CL	1HTGLA6T9RH541787
WEST	52TU001	D28953 52TU001 2005 FORD F450 SUPERDUTY	1FDXF46P05EA44613
WEST		12 FT ALUMINUM BOAT	S-127#257193
WEST	SE322	000000 SE322 POLARIS RANGER TRUCKSTER	4XARD50A22D819306

		5HP MERCURY OUTBOARD MOTOR	0R025528
WEST	51KU002	EMERGENCY TRAILER 2004	2MXUA2A242B013422
WEST	52TF001	D30136 52TF001 2001 GMC 1T SUPERDUTY with crane	3GDKC34F31M1110227
WEST	53TU002	GMC D30116 53TU002 2001 GMC SIERRA 3500 with crane	3GDKC34FX1M110211
WEST	P501	D30203 P501 1997 FORD F350 w/Crane	1FDLF47FJVEA80236
WEST	52TZ004	G29964 52TZ004 2001 GMC SIERRA 3/4T HD	1GTHC24431E265289
WEST	52TP002	G29969 52TP002 2002 FORD 3/4 T 4X4 PLO	1FTNF21L12ED20555
WEST	P415	G29211 P415 1997 FORD 1/2 T PU 4WD / PLOW	2FTDF1826VCA99703
WEST	52TZ010	G30431 52TZ010 2002 FORD F350 1T 2WD PU	1FTSF30LX2ED24047
WEST	52KD001	000000 52KD001 2003 JDJD DUMP TRAILER	2J9UTDG2231022120

**FLEET REPLACEMENT – TUGS 2006-2007 FISCAL**

- Vegetation Control Tractors – replacing K119
- Vegetation Control Tractors – replacing K121
- 5 Ton Asphalt – replacing 78181
- Sewer Jet – replacing 72171
- 1 Ton/Boom (manhole truck) – replacing P321
- Pump Station 1 ton/boom – replacing P500
- Tandem non snow – replacing P360

**FLEET REPLACEMENT – TUGS 2007-2008 FISCAL**

Other Trucks/Vehicle/Equipment which are committed to being acquired in 2007-2008 Fiscal Year including, but not limited to, the following items:

- 72172 CB cleaner, box replacement west
- B400 compressor truck east
- 51TZ005 1/2 ton - replace with 3/4 ton with plow east
- P341 Service truck, replace central
- 78158 water truck , replace with 5 ton flat deck central
- B401 Compressor truck, replace central
- 78230 electrician van, replace with 1 ton extended van with bucket west
- P501 Pump station, replace with boom. West

Section	Tech Ident. No.	Description	Serial Number
Wastewater Treatment (Business Ops)	51KU001	000000 51KU001 1998 Marrd Arrowboard Trailer	2M9AM1289WD118168
Wastewater Treatment (Business Ops)	62TZ002	G00000 62TZ002 2004 Ford 3/4 T F21 4X4	1FTNF21L24EC84040
Wastewater Treatment (Business Ops)	62TZ003	G30593 62TZ003 2004 Ford 3/4T 4X4	1FTNF21L64ED17668
Wastewater Treatment (Business Ops)	C-171	000000 C-171 1994 JDJ Trailer	2J9UTB111R1022322
Wasterwater Treatment (Len Vantol)	55TZ001	D30396 55TZ001 2002 Sterling Tractor Trailer	2FWJABD13AK36619
Wasterwater Treatment (Len Vantol)	66TZ001	D30673 66TZ001 2004 Sterling Tank	2FZHAZCK44AM88262
Wasterwater Treatment (Len Vantol)	67KD001	000000 67KD001 2002 Pressvac Vac Tank Trailer	2P9S1528921005006

Wasterwater Treatment (Len Vantol)	71TZ065	G30586 71TZ065 2006 GMC ½T Pickup – Leased	3GTEK14X16G197195
Wasterwater Treatment (Len Vantol)	C-189	000000 C-189 1993 Utility Trailer	T31315
Pollution Prevention (John Sibbald)	51VZ010	G30949 51VZ010 2005 GMC Mini Cargo Van	1GTDM19X25B508462
Wastewater Treatment (Business Ops)		DUMP TRUCK	2FZHAWDA26AV94175

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**SCHEDULE "D"**

**Halifax Harbour Solutions Project – Asset Inventory (for transfer to HRWC)**

**Dartmouth – HHSP**

<b>Dartmouth WWTF</b>	<b>Civic Address</b>	<b>PID number</b>
Driveway, Private Road		41146820
Dartmouth WWTF	11 Mawiomi Place	41127069
Dartmouth Outfall and Diffuser	11 Mawiomi Place	41127069
<b>Dartmouth Collection system</b>	<b>Civic Address</b>	
Dartmouth Cove Pumping Stations		
- King Street Pumping Station (existing)		
- Dartmouth Cove Pumping Station (existing)		
- Old Ferry Road Pumping Station (existing)		
Jameison St. Pumping Station and CSO	2 Jamieson Street	00083048
Melva St Pumping Station and CSO	23 Melva Street	00228239
Park Avenue Pumping Station and CSO	2 Park Avenue	40506867
Shore Road CSO	101 Shore Road	40244154
Alderney Drive Pumping Station and CSO	130 Alderney Drive	00130419
Maitland Street CSO	16 Maitland Street	40936981
Old Ferry Road CSO Chamber	3 Old Ferry Road	40937039
Cuisack Street CSO	to be assigned	41146820
Tuff Cove CSO	321 Windmill Road	00063677
Windmill Road CSO	273 Windmill Road	00097220
Grove Street CSO	3 Grove Street	00097337
King Street CSO		
Dartmouth North Mainline Pipes		
Dartmouth Cove Mainline Pipes		
Dartmouth South Mainline Pipes		
Tupper Street sewer Shed separation work		
Lyle Street CSO Chamber & Outfall		
Wallace Street CSO Chamber		
Ferguson Road CSO Chamber		

**Halifax - HHSP**

**Halifax WWTF**

Halifax WWTF  
Halifax Outfall and Diffuser

**Halifax Collection System**

Halifax Tunnel		
Halifax Tunnel Cogswell St Entrance Shaft	2060 Upper Water Street	40928541
Halifax Tunnel Lower Water Street St Access Shaft	1632 Lower Water Street	40702102
Halifax Tunnel Sackville Street Exit Shaft		
All other tunnel drop shafts (4)		
Halifax Tunnel Ventilation Fan (Portable)		
Halifax North Mainline Pipes		
Halifax South Mainline Pipes		

Balmoral Pumping Station	5908 Chain Rock Drive	00001248
Pier A Pumping Station	986 Barrington Street	00142620
AST Pumping Station and CSO	636 Francklyn Street	41152596
Duffus Street Pumping Station	5211 Duffus Street	40701971
Sackville Street CSO	5128 Sackville Street	40928897
Maritime Museum of the Atlantic CSO	1661 Lower Water Street	40928921
Young Street CSO	3101 Barrington Street	00339697
North Street CSO & Outfall	2598 Provo Wallis Street	40424632
Upper Water Street CSO	2010 Upper Water Street	40928541
Salter Street Outfall		
Tower Road Pipe Bridge		
SCADA repeater Sites at A. Murray MacKay Bridge		
Duke Street CSO		
Chain Rock Outfall		

## Herring Cove – HHSP

### Herring Cove WWTF

Herring Cove WWTF		41117631
Herring Cove WWTF Access Driveway		
Herring Cove WWTF Outfall and Diffuser		

### Halifax Cove Collection System

Village Road Pumping Station 1	127 Village Road	41241217
Herring Cove Pressure Sewer and Force main		
Roache's Pond Retention Tank		00279570

## Aerotech Park

Biosolid Processing Facility		41177270
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**SCHEDULE "E"**

**HALIFAX HARBOUR SOLUTIONS PROJECT**  
Cash Flow Budget

HHSP - HRWC Cash requirements

Assumes a transfer date of August 1st  
Assumes that HRM will receive CSIF claims for HHSP - October 2007  
Assumes that HRM will receive remaining portion of PNS invested principal - August 2007

	Additions CSIF Funding	PNS Investment	HRWC Levies	Interest on Reserve	EMS Expenditures	Required from HRWC	Expenditures Capital Expenditures	Other Expenditures	Cumulative Balance	
Q105 Balance forward, March 31, 2007	\$84,500,000								\$84,500,000	
April		\$8,291,000	\$3,034,000	\$100,000	(\$1,130,000)		(\$13,000,000)	(\$300,000)	\$81,495,000	
May	\$6,400,000		\$2,646,000	\$100,000	(\$1,130,000)		(\$7,000,000)	(\$30,000)	\$82,481,000	
June			\$3,072,000	\$100,000	(\$1,130,000)		(\$7,000,000)	(\$30,000)	\$77,493,000	
July			\$3,444,000	\$100,000	(\$1,130,000)		(\$7,000,000)	(\$30,000)	\$72,877,000	
August		\$12,824,000		\$100,000			(\$7,000,000)	(\$30,000)	\$78,771,000	
September				\$100,000			(\$7,000,000)	(\$30,000)	\$71,841,000	
October	\$5,250,000			\$100,000			(\$7,000,000)	(\$30,000)	\$70,161,000	
November				\$100,000			(\$6,000,000)	(\$30,000)	\$64,231,000	
December				\$100,000			(\$5,000,000)	(\$30,000)	\$59,301,000	
January, 2008				\$100,000			(\$5,000,000)	(\$30,000)	\$54,371,000	
February				\$100,000			(\$12,000,000)	(\$30,000)	\$42,441,000	
March				\$100,000			(\$5,000,000)	(\$30,000)	\$37,511,000	
April				\$65,000			(\$5,000,000)	(\$30,000)	\$32,546,000	
May				\$65,000			(\$10,000,000)	(\$30,000)	\$22,581,000	
June				\$65,000			(\$8,000,000)	(\$30,000)	\$14,616,000	
July				\$65,000			(\$2,000,000)	(\$30,000)	\$12,651,000	
August				\$65,000			(\$3,000,000)	(\$30,000)	\$9,686,000	
September				\$65,000		\$7,487,000	(\$3,000,000)	(\$30,000)	\$14,208,000	
October				\$65,000			(\$3,000,000)	(\$30,000)	\$11,243,000	
November				\$65,000			(\$9,000,000)	(\$30,000)	\$2,278,000	
December				\$65,000			(\$2,000,000)	(\$30,000)	\$313,000	
January 2009				\$65,000				(\$30,000)	\$348,000	
February				\$65,000				(\$30,000)	\$383,000	
March				\$65,000				(\$30,000)	\$418,000	
April				\$7,000				(\$30,000)	\$395,000	
May				\$7,000			(\$372,000)	(\$30,000)	\$0	
	\$84,500,000	\$11,650,000	\$21,115,000	\$12,196,000	\$1,994,000	(\$4,520,000)	\$7,487,000	(\$133,372,000)	(\$1,050,000)	\$0

**SCHEDULE "F"**

**PUMPING STATIONS MAINTAINED BY TUGS  
FOR BUILDINGS SERVING OTHER MUNICIPAL PURPOSES**

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Station Identification Number	Pumping Station Reference Name	Civic Address	PID #
PW661130	Northcliffe Lane (use SAP cost #45040723)	111 Clayton Park Dr	00330639
PE661220	Alderney Ferry Terminal (use SAP #45060881)	88 Alderney Dr	40810277
PE661320	Dartmouth City Hall (use SAP #45060880)	90 Alderney Dr	00109090
PE661530	Special Events Building (use SAP #45060883)	5 Ochterloney St	00175174
PE661350	Woodside Daycare (use SAP #45060884)	335 Pleasant St	00232827
PE661330	Woodside Ferry Terminal (use SAP #45060885)	9 Atlantic St	00241687

**SCHEDULE "G"**

**HRM WASTEWATER RELATED DEBT AS AT JULY 31, 2007**

This is an analysis of all wastewater related debt that HRM is projected to have outstanding as of July 31, 2007. The amount of debt transferred on the Effective Date shall include any changes between July 31, 2007, and the Effective Date.

HALIFAX REGIONAL MUNICIPALITY  
WASTEWATER RELATED DEBT  
AS AT JULY 31, 2007  
Prepared May 17, 2007

Maturity	Interest rate	Outstanding as at March 31, 2007	2007/08		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16		2016/17		
			Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	
MFC 24-HBR-1	Oct 2024 2.94%-5.84%	89,000,000	5,165,538	5,500,000	4,960,738	5,500,000	4,710,338	5,500,000	4,449,913	5,500,000	4,177,663	5,500,000	3,895,513	5,500,000	3,605,663	5,500,000	3,309,468	5,500,000	3,008,088	5,500,000	2,702,876		
FCM GMIF-159	Oct 2014 1.39%-3.127%	18,000,000	262,815	1,000,000	508,570	1,000,000	464,070	1,000,000	459,340	1,000,000	452,570	1,000,000	404,160	1,000,000	374,630	1,000,000	349,870						
HSP		117,000,000	6,448,353	6,500,000	6,469,308	6,500,000	5,194,408	6,500,000	4,909,253	6,500,000	4,610,233	6,500,000	4,299,673	6,500,000	3,980,193	6,500,000	3,652,455	6,500,000	3,009,098	6,500,000	2,702,876		
<b>WIP projects</b>																							
1998 Fall	Dec 2010 4.625/5.625	27,370	6,842	1,567	9,642	13,885	1,192	2,958	437	11,831	10,025	940	10,025	313	3,688	42,301	1,295	1,295					
1999 Fall	May 2009 4.75/5.375	17,747	5,555	1,953	7,953	9,989	3,985	5,099	3,985	11,831	10,025	940	10,025	313	3,688	42,301	1,295	1,295					
2000 Spring	Dec 2009 5.75/6.75	177,116	59,039	11,808	60,959	10,025	1,590	10,025	1,590	10,025	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	
2001 Spring	May 2011 4.375/6.250	40,099	1,392	10,025	2,193	9,760	1,732	9,760	1,732	9,760	1,732	1,732	1,732	1,732	1,732	1,732	1,732	1,732	1,732	1,732	1,732	1,732	
2002 Spring	Nov 2011 3.125/6.125	48,801	9,760	2,792	9,760	11,242	4,307	8,988	42,301	11,242	10,025	940	10,025	313	3,688	42,301	1,295	1,295					
2002 Fall	Nov 2012 3.25/6.625	16,344	3,057	955	3,057	614	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	1,057	
2003 Spring	May 2013 3.50/5.375	90,385	2,453	15,065	4,229	15,065	3,522	15,065	3,522	15,065	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	3,522	
2004 Spring	Nov 2014 3.125/6.125	113,132	3,284	16,152	5,890	16,152	5,191	16,152	5,191	16,152	5,191	5,191	5,191	5,191	5,191	5,191	5,191	5,191	5,191	5,191	5,191	5,191	
2005 Spring	Nov 2014 3.125/6.125	219,427	5,894	31,608	9,735	27,303	7,725	27,303	7,725	27,303	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	
2006 Spring	June 2015 3.624/8.83	303,858	22,679	33,763	21,099	33,763	20,303	33,763	20,303	33,763	20,303	20,303	20,303	20,303	20,303	20,303	20,303	20,303	20,303	20,303	20,303	20,303	
2007 Spring	June 2016 4.10/4.41	48,407	4,841	13,507	60,551	25,996	4,841	25,996	4,841	25,996	4,841	4,841	4,841	4,841	4,841	4,841	4,841	4,841	4,841	4,841	4,841	4,841	
WIP projects		2,403,242	144,605	81,959	346,732	116,480	355,834	97,038	291,784	79,651	279,953	68,091	260,165	62,654	214,610	41,470	199,744	31,261	163,279	15,654	90,908	5,119	
<b>Closed projects</b>																							
1998 Spring	May 2009 4.75/5.375	365,598	11,446	60,953	19,651	60,953	9,006	60,953	9,006	249,970	249,970												
1999 Fall	Dec 2009 5.75/6.75	1,403,140	58,545	467,713	52,364	467,713	31,571	467,713	31,571	17,421	17,421	599	599	599	599	599	599	599	599	599	599	599	
2000 Spring	May 2010	52,292	2,090	17,421	4,365	14,061	1,787	14,061	1,787	17,421	17,421	17,421	17,421	17,421	17,421	17,421	17,421	17,421	17,421	17,421	17,421	17,421	
2001 Spring	Nov 2010	56,244	14,061	5,244	14,061	13,005	60,138	9,359	60,138	9,359	60,138	6,636	60,138	6,636	60,138	6,636	60,138	6,636	60,138	6,636	60,138	6,636	
2002 Spring	May 2011 4.375/6.250	240,552	8,288	1,801	5,619	5,619	887	5,619	887	5,619	5,619	1,879	5,619	1,879	5,619	1,879	5,619	1,879	5,619	1,879	5,619	1,879	
2002 Fall	Nov 2011 3.125/6.125	219,647	7,000	5,619	7,000	43,329	11,518	43,329	11,518	43,329	43,329	337	43,329	337	43,329	337	43,329	337	43,329	337	43,329	337	
2003 Spring	May 2012 3.25/6.625	247,284	12,880	4,126	10,974	10,974	8,813	10,974	8,813	10,974	10,974	8,813	10,974	8,813	10,974	8,813	10,974	8,813	10,974	8,813	10,974	8,813	
2003 Fall	Nov 2013 3.624/8.83	126,537	4,849	30,398	6,530	30,398	7,086	30,398	7,086	30,398	5,668	30,398	4,047	30,398	4,047	30,398	4,047	30,398	4,047	30,398	4,047	30,398	
2004 Spring	June 2014 2.55/5.45	469,696	1,926	4,320	1,193	4,320	1,021	4,320	1,021	4,320	832	4,320	832	4,320	832	4,320	832	4,320	832	4,320	832	4,320	
2005 Spring	June 2015 3.195/5.05	293,886	29,896	1,036	22,286	22,286	9,686	22,286	9,686	22,286	22,286	5,242	22,286	5,242	22,286	5,242	22,286	5,242	22,286	5,242	22,286	5,242	
2006 Spring	June 2016 2.87/4.56	178,285	3,803	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	178,285	
<b>Closed projects</b>		3,703,832	178,678	884,472	177,177	884,472	118,467	879,337	80,764	304,285	40,798	238,628	26,123	153,983	15,430	119,265	6,217	22,286	608				
<b>Total</b>		123,113,194	7,207,530	6,715,898	7,713,254	6,756,744	7,720,107	5,409,972	7,371,621	5,048,968	7,084,238	4,717,120	6,988,696	4,276,489	6,888,793	4,037,092	16,819,010	3,690,935	5,679,565	3,025,149	5,690,908	2,705,094	
Less Principal Funding		2,000,000		2,000,000		2,000,000		2,000,000		2,000,000		2,000,000		2,000,000		2,000,000		2,000,000		2,000,000		2,000,000	
\$2,000,000 for remaining 12 years																							
<b>Net</b>		5,207,530		5,715,898		5,713,254		5,409,972		5,048,968		7,084,238		4,988,696		4,888,793		14,819,010		3,679,565		3,690,908	

## SCHEDULE "H"

### Schedule of Reserves and Funding for Capital Work in Progress ("WIP") and Future Works

A. **Reserves:** The unexpended balances of various of the reserves referenced in section 18 of this Agreement as at March 31, 2007 (subject to annual HRM audit), and projected balances as at August 1, 2007 and March 31, 2008 are as shown in the following table:

Projected Reserve Schedule March 31, 2007 to March 31, 2008

	Q104	Q105	Q106	Q122	Q117	Total
Cash Balance March 31, 2007	\$7,574,745	(\$682,533)	\$5,698,984	\$2,649,688	\$613,609	\$15,854,493
Previous Commitments	(\$5,465,242)	(\$1,402,735)	\$0	(\$1,464,648)	\$0	(\$8,332,625)
<b>Uncommitted Cash Balance March 31, 2007</b>	<b>\$2,109,503</b>	<b>(\$2,085,268)</b>	<b>\$5,698,984</b>	<b>\$1,185,040</b>	<b>\$613,609</b>	<b>\$7,521,868</b>
2007/2008 Interest to Apr to July	\$93,362	\$0	\$333	\$35,700	\$8,864	\$138,259
2007/2008 Revenue Apr to July	\$566,667	\$2,259,862	\$4,116,333	\$333,333	\$0	\$7,276,195
2007/2008 Expenses Apr to July	(\$550,000)	(\$2,025,675)	(\$4,536,333)	(\$133,333)	\$0	(\$7,245,341)
<b>Projected Uncommitted Cash Balance Aug 1, 2007</b>	<b>\$2,219,532</b>	<b>(\$1,851,081)</b>	<b>\$5,279,317</b>	<b>\$1,420,740</b>	<b>\$622,473</b>	<b>\$7,690,981</b>
2007/2008 Interest to Aug to Mar	\$112,020	\$0	\$667	\$71,399	\$18,017	\$202,103
2007/2008 Revenue Aug to Mar	\$1,133,333	\$4,519,725	\$8,232,667	\$666,667	\$0	\$14,552,392
2007/2008 Expenses Aug to Mar	(\$1,100,000)	(\$4,051,349)	(\$9,072,667)	(\$266,667)	\$0	(\$14,490,683)
<b>Projected Balance at March 31, 2008</b>	<b>\$2,364,885</b>	<b>(\$1,382,705)</b>	<b>\$4,439,984</b>	<b>\$1,892,139</b>	<b>\$640,490</b>	<b>\$7,954,793</b>

*Notes:*

1. All 2007/08 Revenues, interest and expenditures were evenly prorated throughout the year e.g. April – July/07 at 33% and Aug – Mar/08 at 67%. These amounts are subject to change based on project activity between April 1/07 and the Effective Date, in which event the amount transferred will be adjusted accordingly.
2. Cash balances as at March 31, 2007 represent the unexpended balances for each reserve and the amounts are subject to HRM annual audit review.
3. The opening balance of Q106 has been adjusted to reflect the removal of a commitment that is no longer required.

**Reserve Descriptions (Reserve Type):**

- Q104 – Sewer Redevelopment and Trunk Sewer Reserve (Capital)
- Q105 – Environmental Protection Reserve (Operating and Capital)
- Q106 – Wastewater/Stormwater Management Reserve (Operating)
- Q122 – Wastewater Treatment Plant Existing Infrastructure Reserve (Capital)
- Q117 – Sludge Tipping Fees Reserve (Operating)

- B. **HRWC Water Dividend:** Unexpended water dividend allocated to WIP capital projects from 2006/07 and prior years will be repaid to HRWC. For the 2007/08, 2008-09 and 2009-10 fiscal years, HRWC will retain up to a maximum of \$3.6 million annually as was approved by the Regional Council at its May 30, 2006 meeting. However, these funds will continue to be reflected by HRM as property tax revenue until such a time a new Tax Agreement is approved.
- C. **Capital from Operating (Pay-As-You-Go):** HRM's commitment to fund the transferred WIP from Capital from Operating will continue on the basis of spending claims being submitted by HRWC on a monthly basis. HRWC will also provide a quarterly update on the completion status of each project. Any transfer of unexpended balance between these projects must be approved by HRM Council as per current practice.
- D. **Gas Tax Funding:** HRM will continue to administer the Canada-Nova Scotia Agreement on the Transfer of Federal Gas Tax Revenues. For projects funded on a quarterly basis from this source, included in the transferred WIP, HRWC will submit actual invoices to HRM for reimbursement and for the provision of annual auditing and completion of the Annual Expenditure Report. HRM also commits to continue funding future Stormwater and Wastewater projects at a minimum of \$5.1 million per year in fiscal 2007/08, 2008/09 and 2009/10 from its Gas Tax allocation as was approved by the Regional Council at its May 30, 2006 meeting.
- E. **External Cost Sharing Arrangements:** Some of the transferred WIP and expected future projects are funded in part with external cost sharing arrangements with other levels of government. HRM will continue to administer these arrangements. HRWC will be required to submit claims for cost recovery to HRM on a quarterly basis, who will then in turn submit claims to the funding agency. HRM will reimburse HRWC within 30 calendar days of submission of the invoices and claim documents, subject to section 20 of this Agreement. Any amounts not reimbursed by the external funding agency will be recovered from HRWC as a reduction of future claims.

These programs include:

1. Canada Strategic Infrastructure Fund (CSIF)

<i>Project Name</i>	<i>Approved Funding Allocation</i>
Diffuser Ratio Upgrades	2,500,000*
Combined Sewer Overflow Prevention:	15,000,000 (total category allocation)
Fairfield Holding Tank	300,000
Tupper Street – Combined Sewer Separation	200,000
Northwest Arm Sewer	250,000
Duke/Salter Sewer Separation	5,053,200
Other	1,411,300
Freshwater Brook	9,784,000
Total Project Allocation	16,998,500**
Pumping Stations	9,000,000 (total category

Upgrades/Wet Weather Flow	allocation)
Windmill Road PS, Dartmouth	25,000
Valleyford Holding Tank, Dartmouth	50,000
Quigley's Corner PS, Eastern Passage	785,000
Johnson Road PS, North Preston	100,000
Bedford Sackville Trunk Sewer	597,727
India Street – PS Elimination, Eastern Passage	150,000
Port Wallace Sanitary Sewer System	2,500,000
Anderson Street PS	53,852
Whimsical Lake PS, Halifax	680,000
Akerley & Windmill PS< Dartmouth	266,960
Main St PS, Dartmouth	35,000
Chandler Drive PS	695,000
Morris Lake PS	143,899
Infiltration/Inflow Reduction	410,318
Sackville Sanitary Sewer System	10,687
Roach's Pond, Halifax – Forcemain Upgrade	2,475,000
Total Project Allocation	8,978,263
Central Biosolids Dewatering Facility:	3,500,000 (total category allocation)
Total CSIF Funding	30,000,000

\*Funds fully expended and included in the Harbour Solutions Project

\*\* The project allocation currently exceeds the total approved category allocation. HRM staff will investigate alternatives to ensure the planned project allocation does not exceed the approved category allocation.

## 2. Canada Nova Scotia Infrastructure Program (CNSIP)

All projects under this program are complete (or will be complete by the effective date). HRM will retain responsibility for administrative closure on all projects and transfer the completed assets as per the agreement.

3. Provincial Capital Assistance Program (PCAP)

<i>Project Name</i>	<i>Approved Funding Allocation</i>
Peggy's Cove Water and Sewer Evaluation and Design Study	24,800
Bedford Hwy/Millview Water and Sewer	350,000
Total PCAP Funding	374,800

4. Municipal Rural Infrastructure Fund (MRIF):

<i>Project Name</i>	<i>Approved Funding Allocation</i>
North Preston Water and Sewer	3,033,332
Lively Water and Sewer	2,878,600
Total MRIF Funding	5,911,932

F. **Area Capital Cost Contributions:** Any unexpended balances to fund WIP from these sources will be transferred to HRWC as collected. The portion which HRWC was responsible to collect and transfer to HRM will now be retained by HRWC.

G. **FCM's Green Investment Fund Agreement/Sustainable Community Funding:** On the Effective Date, HRM will remit to the HRWC all unspent budgeted balances of its pollution prevention capital projects. The HRM account numbers, Project names, and unaudited balances as at March 31, 2007 are as shown in the table below, and the amounts actually transferred will be reduced to reflect expenditures and payables incurred prior to the Effective Date:

<i>Account Number</i>	<i>Project Name</i>	<i>Balance as at March 31, 2007</i>
CSI00692	Pollution Prevention (P2 at source)	\$35,668.35
CSI00698	Pollution Prevention (Flush-less Project)	\$20,000.00

HRM will remit 40% of funds derived from the FCM loan interest rate differential to the HRWC for fiscal years 07/08, 08/09, 09/10 in the amounts of \$140,410, \$133,050 & \$125,590 respectively. These funds must be utilized solely for pollution prevention projects and must follow all rules and regulations as defined under the FCM's Green Investment Fund Agreement. HRM and HRWC will work co-operatively in ensuring all additional pollution prevention project initiatives are approved through Regional Council, FCM and any additional oversight boards, committees, agencies or departments as may be necessary or advantageous to maximize external funding.

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SCHEDULE "I"

**NON-UNIONIZED EMPLOYEE TERMS OF TRANSFER OF EMPLOYMENT**

1. **Effective Date**

The terms of this Memorandum of Understanding shall become effective as of the transfer of HRM Wastewater to HRWC ("Effective Date"). This transfer will occur on the date set by the Nova Scotia Utility and Review Board.

2. **Classifications**

Transferring Employees shall, as of the Effective Date, continue in the same classifications they held with HRM prior to the Effective Date.

3. **Salaries**

Transferring Employees shall maintain their salary until such time as a formal salary review is undertaken. For greater certainty, Transferring Employees who are receiving a higher salary than that which they would receive under the above-mentioned salary review shall be "grandfathered" at that higher rate until such time as their salary under the review exceeds their "grandfathered" rate.

4. **Service**

Any service accumulated by Transferring Employees while employed with HRM will transfer to HRWC on the Effective Date.

5. **Vacations**

Transferring Employees shall maintain any vacation entitlement earned with HRM for the 2007 calendar year. Beginning January 1, 2008, Transferring Employees shall accumulate vacation entitlement pursuant to any HRWC policies from time to time in place in respect of non-union employees. Transferring Employees who have, prior to the Effective Date, received from HRM all required approvals for scheduled vacation leave in 2007 shall be entitled to take their vacation at the time scheduled, subject only to such operational requirements as may arise.

6. **Sick Leave**

- (a) Transferring Employees shall transfer to HRWC the number of sick days accumulated with HRM prior to the Effective Date.
- (b) Subsequent to the Effective Date, Transferring Employees shall accumulate sick leave entitlement pursuant to the terms of HRWC policies from time to time in place in respect of non-union employees.

7. **Pre-Retirement Leave**

Any pre-retirement leave accumulated by Transferring Employees prior to the Effective Date shall transfer to HRWC. Subsequent to the Effective Date, Transferring Employees shall accumulate pre-retirement leave on the basis of HRWC policies from time to time in place in respect of non-union employees.

8. **Pension**

The Transferring Employees will remain in the HRM pension plan subject to compliance with the *Pension Benefits Act* and the consent of the Superintendent of Pensions, if required. HRWC shall make contributions to the HRM plan at a level determined by the Actuary for the plan from time to time as the required employer contribution.

9. **Employees on Leaves of Absence, LTD and WCB**

Transferring Employees who, as of the Effective Date, are on employer-approved leaves of absence or who are receiving benefits pursuant to the Long Term Disability Plan of HRM or are off work and receiving Workers Compensation Benefits shall remain the employees of HRM until such time as they return to work (in the case of employees on leaves of absence) or provide a medical certificate, satisfactory to HRM and HRWC, stating their ability to return to full-time employment (in the case of employees receiving benefits pursuant to the long term disability plan or Workers' Compensation). At that time, the Transferring Employee shall become an employee of HRWC and their return to work shall be governed by the policies of HRWC then in place.



**Department of Transportation and Infrastructure Renewal**

**Highway Programs**

# **HIGHWAY MAINTENANCE STANDARDS**

**Complete Update: Effective APRIL 1, 2019**

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**NOVA SCOTIA DEPARTMENT OF TRANSPORTATION  
AND INFRASTRUCTURE RENEWAL (TIR)**

**HIGHWAY MAINTENANCE STANDARDS**

**Record of Revisions**

<i>Transmittal number</i>	<i>Date inserted</i>	<i>By</i>	<i>Transmittal number</i>	<i>Date inserted</i>	<i>By</i>	<i>Transmittal number</i>	<i>Date inserted</i>	<i>By</i>
1			21			41		
2			22			42		
3			23			43		
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## GENERAL MAINTENANCE STANDARDS (Revised April 1, 2019)

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1. All maintenance work and materials shall conform to the Department's "Highway Construction and Maintenance Standard Specifications" and "TIR Policies and Procedure Manual", except as modified in these Maintenance Standards.
2. The Supervisor shall be defined as any person designated by the Area Manager to supervise maintenance activities as described in these "Maintenance Standards". The Supervisor or other designated person may also direct others (CUPE staff) to perform work as required to meet these "Maintenance Standards".
3. On or before November 30<sup>th</sup> of each year, the Area Manager shall be responsible to obtain the "Annual Road Maintenance Improvement Report" from each Supervisor. This Report shall be used to prioritize and plan work for the upcoming maintenance season.

This report shall be considered a priority list of major maintenance projects only. Typical projects usually greater than \$5,000 in value shall include spreader patching, graveling roads, cross culvert replacement and bridge deck replacement. Routine maintenance work such as repairing washouts or replacing driveway culverts and capital reconstruction work shall not be included in this report.

If required, each deficiency shall be accompanied with a brief proposal on how to rectify the deficiency and an estimate of the cost for the proposed work.

4. The Supervisor shall maintain complete and accurate records of work completed during the year.
5. The timelines for Maintenance Standards, that apply to summer activities, are not in effect during the following periods with the exception of pothole patching and immediate hazards:
  - Winter operations (December to March)
  - Spring shoulder season (4 weeks past official end of winter operations)
  - Spring weight restrictions

When performing summer maintenance activities (other than pothole patching) during these periods, the Supervisor shall make every reasonable attempt to follow the timelines of these "Maintenance Standards" when practically possible.

6. During summer, winter and spring shoulder season operations, when the Supervisor encounters or is made aware of hazardous conditions (any condition which poses significant and immediate danger to the motoring public), they shall immediately take whatever safety precautions are necessary to safeguard the

## GENERAL MAINTENANCE STANDARDS (Revised April 1, 2019)

traveling public. If required, repairs shall be scheduled as soon as practically possible.

7. It is the responsibility of the Supervisor to ensure that the highway right-of-way is maintained in a condition that helps to safeguard the safe passage of vehicular traffic.
8. This "Maintenance Standard" establishes levels of service for maintenance activities on Provincial Highways. The following table defines highway maintenance levels of service based on road classification and traffic volumes.

**Summer Maintenance Activities and Response Time Table**

LEVEL OF SERVICE	Level 1A	Level 1B	Level 2	Level 3	Level 4
Type of Roads	All 100 Series and selected high volume highways	All Trunks and selected highways as per AADT limits	All Routes and selected highways as per AADT Limits	All local roads (including double chip ad sand seal roads)	All gravel roads
AADT Limits	Greater than 7,500	Between 7,500 – 4,000	Between 4,000 – 1,500	Less than 1,500	N/A

9. Where possible, the Supervisor may combine road patrols with other work being carried out during the day (or shift). The "Routine Road Patrol Frequency Table" below sets out the minimum frequency of inspections necessary to ensure reasonable levels of service on sections of highway, which have not been inspected during the normal course of other duties.

**Routine Road Patrol Frequency Table**

LEVEL OF SERVICE	FREQUENCY
Level 1A	2 times/week
Level 1B	1 time/week
Level 2	1 time/2 weeks
Level 3	1 time/month
Level 4	1 time/month*

*\* Level 4 with AADT less than 50 vehicles may be inspected 1 time/2 months*

## **GENERAL MAINTENANCE STANDARDS (Revised April 1, 2019)**

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In addition to the above stated frequencies, extra road patrols may be required to cover the following situations:

- Unique, unusual situations such as special events, truck routes, etc.
  - During spring break-up on highway subject to weight restrictions
  - During and after high wind or heavy rain
  - On Halloween
  - Emergency call out
  - Deteriorating weather and driving conditions
10. These Highway “Maintenance Standards” have been approved by the TIR Executive Director of Maintenance and Operations and shall apply to all TIR maintenance field staff. Subsequent reviews will be made yearly and revisions issued as required.
11. As part of the ongoing review process, specific geographic areas will be audited throughout the summer and winter seasons. These audits are intended to compare present field practices with these TIR “Maintenance Standards”.
12. It is recognized that during the performance of these standards, timelines may not be achievable under conditions beyond TIR control. When work cannot be completed within the timelines of these standards as a result of conditions beyond TIR control, the Supervisor shall document the conditions and correct the deficiency as soon as practically possible. The following typical conditions listed below are considered to be beyond TIR control:
- 12.1 Unsuitable weather conditions
    - i. i.e. extended grading cycle time due to rain
    - ii. as verified by Environment Canada historical data
  - 12.2 Severe storm conditions
  - 12.3 Motor vehicle accidents
  - 12.4 Major infrastructure failures
  - 12.5 Force Majeures (as determined by the District Director)

**GENERAL**

The objective of highway surface maintenance will be to ensure that travelled portions of the highway right-of-way are maintained in a condition that permits the safe passage of vehicular traffic.

The following "Maintenance Standards" outline the requirements for maintenance operations. These standards are set out in various components which make up the highway roadside system within the limits of the right-of-way.

Activity Type 110	Grading
Activity Type 111	Shoulder Maintenance
Activity Type 119	Grading Shoulders
Activity Type 113	Dust Control
Activity Type 121	Street Sweeping
Activity Type 123	Gravel Patching
Activity Type 132	Hand Patching
Activity Type 170	Spreader Patching
Activity Type 145	Storm Damage
Activity Type 199	Unclassified Maintenance

## **DEFINITION**

Grading is work performed by use of a grader on gravel roads to smooth and reshape the riding surface and to restore the proper cross section (no material added).

## **PURPOSE**

Traffic and weather conditions may cause deterioration of the travel surface of a gravel road which affects motorists' ability to operate at a reasonable and safe speed. Grading restores proper conditions to the road surface to improve ride quality and drainage.

## **GENERAL**

A gravel surface is one constructed with compacted granular material. This provides a riding surface for highways with lower traffic volumes.

Grading is performed to shape the road to a uniform surface cross section.

Rocks or debris as a result of grading operations that may pose a hazard shall be removed as soon as detected.

When conditions, as outlined in the "Standard" section, cannot be met through regular grading techniques, granular materials, labour and equipment (including the grader), may be added as required, whenever possible, and charged to "Activity Type 123, Gravel Patching".

When grading will not provide a passable travelled surface, vehicle weight restrictions may be applied to the road. If the road becomes impassable, it will be closed, subject to the approval of the Area Manager.

## **INSPECTION – Road Patrols**

During routine inspections or as situations arise, the Supervisor shall record deficiencies, post warning signs and schedule repairs as specified in the following "Standard" section.

**STANDARD**

The Supervisor will ensure all defects listed below are repaired within 28 days of detection, weather permitting.

**Note: These standards do not apply to gravel roads with AADT less than 50 as these are typically graded once per year, as required.**

- **Potholes:** Potholes are bowl-shaped depressions in the road surface. These potholes can be round, oval, or irregular in shape and vary in depth.

Potholes shall be repaired when traffic must **significantly** reduce speed or deviate from the normal travel plane.

- **Distortions:** Distortion is any deviation of the road surface from its original shape (other than that described in “Subsection 3 – Washboarding” below). Distortion usually takes the shape of dishing, bumps or dips, all of which give rise to pitch, roll, or a jarring drop in a moving vehicle.

Distortions shall be repaired when traffic must **significantly** reduce speed or deviate from the normal travel lane.

- **Washboarding:** Washboarding is a series of ripples perpendicular to the direction of travel most often experienced on hills.

The road surface shall be graded when a vehicle **significantly** chatters and bounces as it travels over a washboard surface, deviates from the normal travel lane or must significantly reduce speed.

- **Displaced Material:** Granular material will be displaced from the travelled portion of the roadway as a result of snow removal operations and vehicular traffic.

Wherever possible, displaced material shall be reclaimed to re-establish the original cross section and is typically done during spring and fall grading.

## RESOURCES

Equipment: 1-2 graders

Labour: 1-2 operators

Materials: Covered under “Activity Type 123, Gravel Patching” (Chapter 1, Section 7)

## NORMAL PRACTICE

- Complete hazard assessment.
- Set up temporary signing and traffic control devices.
- Road sections identified for grading shall be planned so all sections can be completed within one work day taking the weather forecast into account.
- Damp (**not wet**) weather provides the optimum conditions for grading and takes advantage of moisture for compaction.
- Graders will be used to recover materials and to remove vegetation from road edges and side slopes.
- Material shall be pulled from the outer edges toward the middle and worked back and forth to create the proper cross section.
- The crown shall be 3%, and curves will have super elevation.

## METHOD OF MEASUREMENT

Kilometres of completed grading (measured linear from start to end of grading). No counting of lanes or passes.

## NORMAL OUTPUT

5-8 kilometres per day for single grader

## **DEFINITION**

Shoulder maintenance is repairing or restoring washouts and low shoulders on non-paved shoulders by adding new gravel, recycled asphalt or using existing material.

## **PURPOSE**

To eliminate road shoulder hazards and restore proper road surface drainage.

## **GENERAL**

A non-paved shoulder is that portion of the roadway which is adjacent to and runs parallel to the pavement or travelled portion of the road. Shoulders give lateral support to the road structure, allow run-off of the surface water, and may provide an area for the emergency refuge off the travelled portion of the roadway.

Shoulder Maintenance is intended to ensure an acceptable shoulder surface, proper slope, and to provide a smooth transition from the edge of pavement to the gravel shoulder.

## **INSPECTION – Road Patrols**

1. During routine inspections, or as situations arise, the Supervisor shall record deficiencies, post warning signs and schedule repairs as specified in the following “Standard” section.
2. The Supervisor shall consider road sections that exhibit the conditions as specified in the “Standard” section during the preparation of the “Annual Road Maintenance Improvement Report”.
3. If any additional items are identified during routine inspections, the “Annual Road Maintenance Improvement Report” may be updated.

**STANDARD**

1. Erosion/Washouts/Low Shoulders less than 100 metres in length

Erosion and washouts are the loss of shoulder material. This condition usually occurs during rain storms, storm surges or when snow melts. The most common problem areas are where guardrail has been installed, along and/or at the bottom of steep grades, and inside of turns.

Low shoulders exist when the shoulder material is not flush with the edge of the pavement. This condition usually occurs due to insufficient granular material.

Washouts adjacent to the edge of the travelled lane and any low shoulders that pose a potential hazard (depth greater than 150 mm) to the traveling public shall be marked within 24 hours of detection.

Washouts and low shoulders shall be repaired as outlined in the “Erosion, Washout and Low Shoulders Response Time Table” below.

**Erosion, Washout and Low Shoulder Response Time Table  
 (Less than 100m in length)**

Erosion, Washout and Low Shoulder Response Times	Depth of Deficiency		
	100 mm to 150 mm	151 mm to 300 mm	Greater than 300 mm
Level 1A, 1B	30 days	14 days	7 days
Level 2, 3	90 days	30 days	14 days

2. Washouts / Low Shoulders greater than 100 metres in length

For continuous lengths greater than 100 metres and greater than 100 millimetres in depth, the condition shall be reported to the Area Manager and considered during the preparation of the “Annual Road Maintenance Improvement Report”. All washouts adjacent to the edge of the travelled lane and any low shoulders that pose a potential hazard to the traveling public shall be signed within 72 hours of detection.

3. If any additional items are identified during routine inspections following winter operations, the “Annual Road Maintenance Improvement Report” may be updated.

## **RESOURCES**

Equipment: 1-2 tandem or single axle trucks  
1 backhoe, excavator, or grader  
Compactor (optional as per circumstances)

Labour: 1-4 operators  
2-4 crew persons

Materials: Granular material or  
Recycled asphalt

## **NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices.
- Identify source of problem and eliminate it by re-grading, adding material **and/or** diverting water.
- Repair damage by recovering washed-out material if possible or adding material at the damage site.
- Compact as required, bring to grade and re-compact.

## **METHOD OF MEASUREMENT**

Tonnes

## **NORMAL OUTPUT**

5 to 45 tonnes of granular material

## **DEFINITION**

Reshaping and restoring non-paved shoulders by use of a grader and recovering windrowed material (no new material). If new material is added all costs for the operation will be accounted for under "Activity Type 111, Shoulder Maintenance".

## **PURPOSE**

To re-shape and re-grade existing shoulders; to restore smoothness and the cross-grade; to eliminate windrows which restrict drainage.

## **GENERAL**

A non-paved shoulder is that portion of the roadway which is adjacent to and runs parallel to the pavement or travelled portion of the road. Shoulders give lateral support to the road structure, allow run-off of the surface water, and may provide an area for the emergency refuge from the travelled portion of the roadway.

Shoulder grading is intended to ensure an acceptable shoulder surface, proper slope and to provide a smooth transition from the edge of pavement to the gravel shoulder. Shoulder grading includes grading material at guardrail locations and sweeping the road surface after grading.

## **INSPECTION – Road Patrols**

1. During routine inspections or as situations arise, the Supervisor shall record deficiencies, post warning signs and schedule repairs as specified in the following "Standard" section.
2. The Supervisor shall consider road sections that exhibit the conditions as specified in the "Standard" section during the preparation of the "Annual Road Maintenance Improvement Report".

## **STANDARD**

1. High Shoulders / Windrows

This is the build-up of gravel at the outside edge of the shoulder, and at guard rail locations.

The Supervisor shall take corrective action to ensure sheet water flow does not pond and reaches the ditch. Any ponding water that encroaches on the travel lane shall be addressed within 30 days of identification. High shoulders or windrows are to be eliminated through regular maintenance activities.

Windrow material located under guard rail shall be recovered through regular maintenance activities.

2. Shoulder Grading

Shoulder grading operations are generally scheduled in the spring to bring back gravel pushed out during snow removal operation.

The Supervisor will ensure all gravel shoulders on all level 1A highways, are graded, on a minimum rotation of once every three years.

Subsequent grading shall be performed as required.

**RESOURCES**

Equipment: 1-3 graders  
1 attenuator (as required)  
1 sweeper (utility tractor)  
1 roller

Labour: 3-6 operators  
Traffic control (as required)

Material: Not applicable to this activity

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices as required.
- Initial pass - recover the outer-most material and pull it toward and onto the edge of the paved surface overlapping 300 to 600 mm (repeat as required).

**CHAPTER 1 SURFACE MAINTENANCE**  
**Section 3 Shoulder Grading**

Plant Maintenance Order Type: RO01  
Activity Type: 119

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- Final pass - grade the material from the windrow of the first pass to establish the correct shoulder grade. Care shall be taken to re-grade the material without damaging the asphalt.
- Sweep the asphalt surface after the final pass.
- Roll the shoulder to compact the material.

**METHOD OF MEASUREMENT**

Kilometers of completed (single lane) shoulder

**NORMAL OUTPUT**

10-20 km of single lane shoulder per day

## **DEFINITION**

The application of dust control product to control airborne dust created by traffic.

## **PURPOSE**

To mitigate the negative effect of airborne dust with respect to visibility and nuisance dust.

## **GENERAL**

Work under this activity includes contracted supply and/or application.

Dust control products shall conform to the requirements outlined in the "Highway Construction and Maintenance Standard Specification", February 1, 1997 or latest edition. Specifications and application rates are provided in "Calcium Chloride" (Division 6, Section 7) or "Magnesium Chloride" (Division 6, Section 11).

Depending on local conditions, higher rates may be used where traffic volume warrant or for stabilization purposes. Lower rates may also be used provided the reoccurrence of dust does not exceed Standard 1.2.

The Supervisor may elect to use other dust control products only with prior approval of the Area Manager. Alternative dust control product must have the equivalent dust suppressant ability as other TIR approved products.

The application of dust control shall stop 15 metres before any paved surface.

## **INSPECTION – Road Patrols**

During routine inspections or as situations arise, the Supervisor shall record deficiencies and schedule repairs as specified in the following "Standard" section.

## **STANDARD**

### **1. Dust Control**

- 1.1 The Supervisor shall ensure dust control product is applied to gravel surfaces as listed below, to coincide with final spring grading provided weather conditions permit.

**CHAPTER 1 SURFACE MAINTENANCE**  
**Section 4 Dust Control**

Plant Maintenance Order Type: RO01  
Activity Type: 113

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- 1.1.1 50 metres on either side of residential and commercial buildings.
  - 1.1.2 The complete length of high-volume local roads, densely populated subdivision roads and truck routes.
  - 1.1.3 Roads bordering agricultural land as approved by the Area Manager.
  - 1.1.4 50 meters on each leg of an intersection.
  - 1.1.5 Horizontal alignments with restricted sight distances as approved by the Area Manager.
- 1.2 Additional applications may be required only where the effectiveness of the dust control has diminished over the course of the summer.

**RESOURCES**

Equipment: Truck or trailer mounted high volume tank c/w spray bar

Labour: 1 operator

Material: Dust suppression product

**NORMAL PRACTICE**

- Apply dust suppression product within 24-48 hours of final spring grading.
- Maintain inventory to allow timely scheduling of application as delivery may be delayed.

**METHOD OF MEASUREMENT**

Kilolitres of product applied

**NORMAL OUTPUT**

5 to 15 kilolitre/day

## **DEFINITION**

The removal and disposal of sand, granular material, and small debris from paved surfaces including intersections, shoulders, curbed streets and bridges, and along jersey barriers by hand or mechanical sweepers.

## **PURPOSE**

To prevent drainage problems on highway surfaces created by blockages; to prevent encroachment of granular material from intersecting roads or from the shoulder area onto the travelled portion of the roadway.

## **GENERAL**

Sweeping of sand, gravel or any other debris resulting from motor vehicle accidents or unsecured loads, where costs are not recoverable, shall be recorded under this activity.

## **INSPECTION – Road Patrols**

During routine inspections or as situations arise, the Supervisor shall record deficiencies and schedule repairs as specified in the following “Standard” section.

## **STANDARD**

1. Winter sand, gravel and debris should be removed from areas such as shoulders adjacent to barrier walls, curbs and gutters, intersections, paved shoulders, bullnoses, gore areas, asphalt gutters, paved medians and bridge decks including bridge curbs.
2. Sweeping of paved shoulders and roads with curb and gutter should be completed before cleaning of catch basins and sewers is undertaken.
3. Removal of sand and gravel from paved shoulders, bullnoses and gore areas, etc., should be completed before pavement markings are applied.
4. When detected, gravel or any other foreign material that is present on the paved travelled surface, and poses a potential hazard to motorists, shall be removed immediately.

## **RESOURCES**

Equipment: Mechanical vacuum truck or vehicle mounted sweeper  
Attenuator (where required)  
Motorized hand sweeper  
Push-brooms  
Trail Vehicle (where required)

Labour: 1 operator (as required by situation)  
1-4 labourers

Material: Not applicable

## **NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signage and traffic control devices as required.
- Where build-up has compacted over time, loosening by hand may be required along curbed sections.
- Sweep and collect materials for disposal or reuse.
- Material collected by a self-contained vacuum truck must be transported for disposal or re-use as appropriate.

## **METHOD OF MEASUREMENT**

Hectares (area swept by hand should be estimated to the nearest .01 hectare)

## **NORMAL OUTPUT**

1.75 hectares / day

## **DEFINITION**

Gravel patching is the application of granular material on existing gravel roads.

## **PURPOSE**

Placement and grading of gravel to strengthen and shape sections of non-paved and gravel surfaces to provide a smooth surface of uniform cross section.

## **GENERAL**

1. Excavation and backfilling of base failures shall be included in this activity.
2. A gravel surface is one constructed with compacted granular material. This provides a riding surface for highways with lower traffic volumes.
3. Rocks or debris from the gravel patching operation that may pose a hazard shall be removed as soon as detected.
4. When gravel patching does not provide a passable travelled surface, vehicle weight restrictions may be applied to the road. If the road becomes impassable, it will be closed, subject to the approval of the Area Manager.

## **INSPECTION – Road Patrols**

1. During routine inspections or as situations arise, the Supervisor shall record deficiencies and schedule repairs as specified in the following “Standard” section.
2. The Supervisor shall consider road sections that require large amounts of granular material (greater than 500 tonnes) that frequently exhibit the conditions as specified in the “Standard” section during the preparation of the “Annual Road Maintenance Improvement Report.

## **STANDARD**

Gravel patching may be undertaken when the following deficiencies cannot be repaired under “Activity 110”. Gravel patching shall be performed on an annual basis based on available funding.

- **Potholes:** Groups of irregular shaped holes of various sizes in the gravel surface. Potholes shall be repaired when traffic must significantly reduce speed or deviate from the normal travel lane.
- **Distortions:** Any deviation of the road surface from its original shape (other than described in “Washboarding”, below). Distortion usually takes the shape of dishing, bumps or dips which are noticeable, all of which give rise to pitch, roll, or jarring drop in a moving vehicle.
- **Soft Areas:** Subgrade soils are punched up through the gravel surface, usually with the broken surface area surrounded by depression or dishing type of distortion. Distortion is likely to occur at wheel tracks.
- **Loss of Gravel Surface:** Loss of gravel surface and exposure of sub-base on roads with an AADT greater than 50. Granular material is added for structural strength.
- **Flat or Reverse Crown:** Slope of the road is flat and non-existent, or reverse with road edges higher than the centre portion of the road surface. Proper drainage of the road surface will be affected. The condition is considered severe when the cross fall is flat or near flat, or when the edges of the road are higher than the road surface thereby trapping or preventing surface water to drain away.
- **Washboarding:** A series of closely spaced crests and valleys with the ripples perpendicular to the direction of travel.
- **Rebuild Cross Section:** When the crown of the road is non-existent or reverse with road edges higher than the centre portion of the road surface, proper drainage of the road surface will be affected.

The original cross section shall be re-established to allow the free flow of water from the road surface.

## RESOURCES

Equipment: Loader  
Grader  
Trucks  
Roller (Optional)

**CHAPTER 1 SURFACE MAINTENANCE**  
**Section 6 Gravel Patching**

Plant Maintenance Order Type: RO01  
Activity Type: 123

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Labour: 3 – 12 operators  
1- 3 Crew persons (as required)

Materials: Granulars – refer to “Standard Specifications”

**NORMAL PRACTICE**

- Complete hazard assessment.
- Erect temporary signing and traffic control devices.
- Rough grade road section to be graveled
- Excavate soft areas, if required.
- Haul and place gravel as required.
- Stabilize with dust suppressant (if necessary)
- Compact if necessary.

**METHOD OF MEASUREMENT**

Tonnes of aggregate

**NORMAL OUTPUT**

200-1000 tonnes per day

## **DEFINITION**

Hand patching is the process of repairing paved surface defects with hot or cold mix asphalt material placed by hand or automatic patching machine. This includes patching potholes, depressions, pavement edge defects or distressed areas and asphalt gutters.

## **PURPOSE**

To eliminate traffic hazards by filling holes and leveling depressions in the surface and to restore riding quality.

## **GENERAL**

For pothole, miscellaneous patching, and asphalt curb and gutter installation, any preparation work involved such as removal of asphalt and/or gravel and installation of granular material up to a depth of 300 mm shall be included in this activity.

Cold mix asphalt (bulk or pre-packaged) is normally used when hot mix asphalt is not available.

## **INSPECTION – Road Patrols**

1. During routine inspections or as situations arise, the Supervisor shall record deficiencies, post warning signs, schedule repairs and report as specified in the following “Standard” section.
2. The Supervisor shall consider road sections that frequently exhibit the conditions as specified in the “Standard” section during the preparation of the “Annual Road Maintenance Improvement Report”.

## **STANDARD**

1. Potholes

When weather conditions permit, asphalt concrete hand patching will be undertaken to repair potholes in accordance with these “Maintenance Standards”.

All potholes that are greater than 0.1 m<sup>2</sup> (i.e. 0.3m x 0.3m) and greater than 100mm deep shall be signed within 24hrs.

Pothole conditions not meeting the minimum criteria (less than 50mm) listed in the “Pothole Criteria and Response Time Table” shall be repaired within the construction season. Work may be performed in conjunction with other maintenance activities in the vicinity of the pothole.

**Pothole Criteria and Response Time Table**

Pothole Criteria	Level 1A	Level 1B	Level 2	Level 3
Description	Potholes which are greater than 0.1 m <sup>2</sup> in area (i.e. 0.3 m x 0.3 m) <b>and greater than 100 mm deep.</b>			
Action	Repair within 7 days	Repair within 21 days	Repair within 60 days	Repair within 120 days

Pothole Criteria	Level 1A	Level 1B	Level 2	Level 3
Description	Potholes which are greater than 0.1 m <sup>2</sup> in area (i.e. 0.3 m x 0.3 m) <b>and between 50 mm and 100 mm deep.</b>			
Action	Repair within 14 days	Repair within 30 days	Repair within 120 days	Repair within 180 days

2. Hand Patching

When planning work or establishing priority lists for asphalt patching the following types of defects shall be considered:

- Large concentration of small potholes.
- Wheel rutting: A longitudinal surface depression developed in the wheel tracks exceeding 50 mm.

- Cracking: Includes longitudinal, transverse, alligator and edge cracks.
- Edge loss: Loss of pavement surface adjacent to the shoulder.
- Distortions: Any deviation of the pavement surface from its original shape.
- Water ponding: Collection of water on the travelled portion of the highway.
- Repairs around various structures including catch basins, manholes, bridge approaches and bridge drains.

3. Asphalt Gutter Installation

The Supervisor shall note gutter defects that prevent the movement of water including deteriorated asphalt, loss of shape, cracking, worn edges, and excessive gaps between the gutter and the edge of pavement.

Repair, replacement or additional installations of asphalt gutter shall be determined by the Supervisor.

**RESOURCES**

Equipment: 1 – 2 trucks  
Compactor (tamper, roller)  
Hand tools (rakes, shovels, wheel barrow)  
Tack applicator  
Milling machine (optional)

Labour: 1 - 4 operators  
1 - 2 rakers  
1 - 2 crew person(s)  
Traffic Control persons (as required)

Materials: Tack  
Asphalt (hot or cold mix)  
Sand (optional for cold mix)

### **NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices.
- Clean out repair area by removing all loose materials.
- Tack coat area to be patched. Ensure all edges are tacked.
- Place asphalt mix into depressions to bring surface to the desired grade when compacted.
- Level asphalt mix with hand tools.
- Compact with a hand tamper or roller – compaction is particularly important.
- A dusting of sand may be used to prevent tracking of cold mix.

### **METHOD OF MEASUREMENT**

Tonne of asphalt mix

### **NORMAL OUTPUT**

Cold mix: 1–5 tonne per day  
Hot mix: 5-45 tonne per day

## **DEFINITION**

Spreader patching is the process of repairing paved surface defects with hot mix asphalt material placed by a mechanical spreader.

## **PURPOSE**

To eliminate traffic hazards, to improve riding quality and road surface conditions by leveling depressions and restoring crown or superelevation.

## **GENERAL**

Spreader patching is typically performed by contractors equipped with approved mechanical spreaders capable of achieving results as specified in the “Standard Specification for Construction Projects”.

Spreader patching includes Type C and D patching as described in the “Standard Specification for Construction Projects”.

## **INSPECTION – Road Patrols**

1. During routine inspections or as situations arise, the Supervisor shall record deficiencies, post warning signs, schedule repairs and report as specified in the following “Standard” section.
2. The Supervisor shall consider road sections that frequently exhibit the conditions as specified in the “Standard” section during the preparation of the “Annual Road Maintenance Improvement Report”.

## **STANDARD**

### **1. Spreader Patching**

Spreader patching shall be performed on an annual basis based on available funding.

When planning work or establishing priority lists for asphalt spreader patching the following types of defects shall be considered:

- Large concentration of small potholes.
- Segregation/Raveling: Pavement material loss leaving voids in the surface.
- Wheel rutting: A longitudinal surface depression developed in the wheel tracks exceeding 20 mm.
- Rippling: Wavy or washboard effect running across the pavement.
- Cracking: Includes longitudinal, transverse, alligator and edge cracks.
- Edge loss: Loss of pavement surface adjacent to the shoulder.
- Aprons: Asphalt placed at the intersection of paved and gravel roads.
- Distortions: Any deviation of the pavement surface from its original shape.
- Flushing: Pavement surface appears polished or asphalt cement appears on the pavement surface.
- Water ponding: Collection of water on the travelled portion of the highway.
- Repairs around various structures including catch basins, manholes, bridge approaches and bridge drains.

2. Asphalt Gutter Installation

The Supervisor shall note gutter defects that prevent the movement of water including deteriorated asphalt, loss of shape, cracking, worn edges, and excessive gaps between the gutter and the edge of pavement.

Replacement or additional installations of asphalt gutter shall be determined by the Supervisor.

**RESOURCES**

This work is normally contracted out.

**NORMAL PRACTICE**

Perform spreader patching as per the contract specifications.

**METHOD OF MEASUREMENT**

Tonne of asphalt mix

**NORMAL OUTPUT**

Up to 15 - 800 tonne per day

## **DEFINITION**

Damage to Department infrastructure caused by severe weather conditions and/or a natural disaster.

## **PURPOSE**

To repair and/or restore Department infrastructure to pre-storm conditions and preserve public safety during and after the event where possible.

## **GENERAL**

Work under this activity shall include all labour, equipment and materials and contracted services used for clean-up, repair, restoration, and public protection as a result of a severe weather event and/or a natural disaster.

The Department shall assist the applicable Emergency Measures Organization as required.

**This activity type can only be used with the approval of the District Director.**

## **INSPECTION – Road Patrols**

After a major severe storm, the Supervisor shall inspect all roads to identify the storm damage. All damage shall be noted and submitted to the Area Manager as soon as possible. Please refer to the draft “Storm Damage Expenditure Recording and Reporting” or specific guidelines and requirements, for assessments and documentation. This document is to be used as a guideline only. For Specific information, please contact the Area Manager.

## **STANDARD**

The work shall be carried out as per the various maintenance activity types.

The recording of pre/post repair conditions as well as all expenditures shall be tracked as per the Roads Order Creation Guidelines. This document can be found on the TIR Intranet site under SAP /Training Materials / Other.

## **RESOURCES**

All available and necessary equipment, labour, and material shall be made available to mitigate the effect of storm damage.

## **NORMAL PRACTICE**

- Assess the extent of the damage and place signs/protection as required.
- Document damages as per the Draft Guidelines “Storm Damage Expenditure Recording and Reporting” as noted under the above heading INSPECTION – Road Patrols.
- Perform required work with all precautions taken in normal roadwork situations related to the activity being performed.

## **METHOD OF MEASUREMENT**

All labour hours, equipment hours, rentals, material costs, and contracted work are to be recorded under the applicable maintenance activity type. Applicable activities are to roll up to “Activity Type 145, Storm Damage”.

## **NORMAL OUTPUT**

Not applicable

**DEFINITION**

Work under this Activity shall be any work NOT defined in any other Activity of these “Maintenance Standards”.

**PURPOSE**

“Activity Type 199, Unclassified Maintenance” is to only be used when no other Activity Type describes the work being performed. The Area Manager shall be informed of charges to “Activity Type 199, Unclassified Maintenance”.

**GENERAL**

Work under this Activity may include any minor clean up or other work related to motor vehicle accidents when the total Department billing cost does not exceed \$500.

**INSPECTION – Road Patrols**

When work is encountered that is not defined in any other Activity of these “Maintenance Standards”, “Activity Type 199, Unclassified Maintenance” may be used.

**STANDARD**

Not Applicable

**RESOURCES**

The labour or equipment required

**NORMAL PRACTICE**

Perform the necessary work

**METHOD OF MEASUREMENT**

All labour hours are to be recorded under “Activity Type 199, Unclassified Maintenance”.

**NORMAL OUTPUT**

Not applicable

**GENERAL**

The objective of highway roadside maintenance shall be to provide safe sight distances for the traveling public. Grass, weeds and brush must be cut when they reduce visibility to features such as signs, intersecting roads and driveways. The general appearance of the roadside right-of-way shall be maintained in a safe and aesthetically acceptable condition as described in these "Maintenance Standards".

The following "Maintenance Standards" outline the requirements for maintenance operations by the Supervisor. These standards are set out in various components, which make up the highway roadside system within the limits of right-of-way.

Activity Type 114	Brush Cutting – Machine
Activity Type 155	Brush Cutting – Manual
Activity Type 115	Mowing – Machine
Activity Type 156	Mowing – Manual
Activity Type 116	Debris & Litter Clean Up
Activity Type 194	Seeding
Activity Type 195	Weed Control

## **DEFINITION**

The removal of large quantities of brush, shrubs and small trees using mechanically self-propelled equipment.

## **PURPOSE**

To remove undesirable roadside vegetation in order to maintain sight distances, control roadside growth, ensure proper drainage, and to provide a reasonably neat appearance to the highway right-of-way.

## **GENERAL**

All brush shall be disposed of properly. This shall include the removal, mulching or chipping to achieve a reasonable neat appearance to the highway right-of-way.

Where traffic, pedestrians, housing or other obstructions prohibit the use of certain mechanical equipment, vegetation control shall be achieved with the use of manual hand cutting tools.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor shall record deficiencies, schedule repairs and report as specified in the following “Standard” section. The Supervisor shall consider road sections that frequently exhibit the conditions as specified in the “Standard” section during the preparation of the “Annual Road Maintenance Improvement Report”. Only large sections of planned machine brush cutting (estimated cost greater than \$5,000) shall be included in the “Annual Conditions Defect Report”.

## **STANDARD**

### **1.0 Brush Cutting**

- 1.1 Brush (including tree branches) as indicated in the “TIR Manual, Brush Cutting Policy PR5039”, except as noted below, shall be cut to a height of not greater than 150 mm from the ground. Brush cutting shall be performed on an annual basis based on available funding.

**CHAPTER 2 ROADSIDE MAINTENANCE**  
**Section 1 Brush Cutting – Machine**

Plant Maintenance Order Type: RO02  
 Activity Type: 114

- 1.2 When detected, brush (including trees) on the right-of-way that create the following conditions, shall be cut as indicated below:
  - 1.2.1 Brush that reduces stopping and passing visibility, including such areas as intersections and interchanges shall be cut immediately.
  - 1.2.2 Brush that obstruct signs (see chart)
  - 1.2.3 Brush (including tree branches) that restricts vertical clearances, and shoulders where the vegetation is infringing on guard rails and inside of curves shall be cut within 60 days.
  - 1.2.4 Brush within the shoulder area which restricts passing site distance, and driveway entrances shall be cut within 30 days.

Response time from item 1.2.2 above:

Response Times	Level 1A	Level 1B	Level 2	Level 3 & 4
<b>Stop Signs (and All Critical Signs)</b>	Immediately	Immediately	Immediately	Immediately
<b>Regulatory and Warning Signs</b>	14 Days	14 Days	60 Days	60 Days
<b>Information Signs</b>	90 Days	120 Days	120 Days	180 Days

2. Tree Removal

Trees that are old, dying, diseased, weakened, undermined or unsound and represent a threat to private property, traffic or pedestrians shall be removed. Hazardous trees identified for removal shall be considered during the preparation of the “Annual Road Maintenance Improvement Report”.

**RESOURCES**

Equipment: Tractor with a mower attachment or  
 Grader with a brush cutter or  
 Excavator with a brush cutter  
 Attenuator (if required)  
 Skid Steer with a brush cutter

Labour: 1-2 operators  
 Traffic control person (as required)

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices (as required).
- Cut brush as required.

**METHOD OF MEASUREMENT**

Hectares (1ha = 10,000 metres squared)

**NORMAL OUTPUT**

0.8 - 2.0 hectares per day

## **DEFINITION**

The removal of brush, shrubs and other vegetation from localized areas using hand tools where mechanically self-propelled equipment is not practical.

## **PURPOSE**

To remove undesirable roadside vegetation in order to maintain required sight distances, control roadside growth, ensure proper drainage and to provide a reasonably neat appearance to the highway right-of-way.

## **GENERAL**

All brush cut by hand shall be disposed of properly. This shall include the removal, mulching or chipping to achieve a reasonably neat appearance to the highway right-of-way.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor shall record deficiencies, schedule repairs and report as specified in the “Standard” section.

The Supervisor shall consider road sections that frequently exhibit the conditions as specified in the “Standard” section during the preparation of the “Annual Road Maintenance Improvement Report”.

## **STANDARD**

### **1.0 Brush Cutting**

- 1.1 This work shall consist of cutting brush within the highway right-of-way, which shall include but is not limited to selected areas such as embankment slopes, ditches and back slopes.

Brush (including tree branches) as indicated in the “TIR Manual, Brush Cutting Policy PR5039”, except as noted below, shall be cut to a height of not greater than 150 mm from the ground. Brush cutting shall be performed on an annual basis based on available funding.

**CHAPTER 2 ROADSIDE MAINTENANCE**  
**Section 2 Brush Cutting – Manual**

Plant Maintenance Order Type: RO02  
Activity Type: 155

- 1.2 When detected, brush (including trees) on the right-of-way that create the following conditions, shall be cut as indicated below:
  - 1.2.1 Brush that reduces stopping and passing visibility, including such areas as intersections and interchanges shall be cut immediately.
  - 1.2.2 Brush that obstruct signs (see chart)
  - 1.2.3 Brush (including tree branches) that restricts vertical clearances, and shoulders where the vegetation is infringing on guard rails and inside of curves shall be cut within 60 days.
  - 1.2.4 Brush within the shoulder area which restricts passing site distance, and driveway entrances shall be cut within 30 days.

Response time from item 1.2.2 above:

Response Times	Level 1A	Level 1B	Level 2	Level 3 & 4
<b>Stop Signs (and All Critical Signs)</b>	Immediately	Immediately	Immediately	Immediately
<b>Regulatory and Warning Signs</b>	14 Days	14 Days	60 Days	60 Days
<b>Information Signs</b>	90 Days	120 Days	120 Days	180 Days

2. Tree Removal

Trees that are old, dying, diseased, weakened, undermined or unsound and represent a threat to private property, traffic or pedestrians shall be removed. Hazardous trees identified for removal shall be considered during the preparation of the “Annual Road Maintenance Improvement Report”.

**RESOURCES**

Equipment: Various hand tools: axe, power saw, bush saw, pole saw

Labour: 2-4 crew persons  
Traffic control person (as required)

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices (as required).
- Cut designated brush/ tress as required.

**METHOD OF MEASUREMENT**

Square meters per day

**NORMAL OUTPUT**

500 – 2500 square meters per day

**CHAPTER 2 ROADSIDE MAINTENANCE**  
**Section 3 Mowing – Machine**  
**Mowing – Hand**

Plant Maintenance Order Type: RO02  
Activity Type: 115  
Activity Type: 156

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**DEFINITION**

Mowing is the process of controlling the growth of the grass, brush and weeds within the highway right-of-way by using mechanical and/or hand mowing equipment.

**PURPOSE**

The control of unwanted vegetation growth is required:

- To maintain required sight distance at curves and intersections.
- To ensure proper drainage at channels, ditches, etc.
- To define the road side for safety purposes and to create a reasonably neat appearance of the highway right-of-way.

**GENERAL**

Areas to be mowed include shoulders, side slopes, medians, traffic island and boulevards. Where traffic, pedestrians, housing or obstructions prohibit the use of certain mechanical equipment, mowing may be achieved with the use of manual cutting tools.

**INSPECTION**

During routine inspections or as situations arise, the Supervisor shall record deficiencies and schedule repairs as specified in the following “Standard” section.

**STANDARD**

1. Mowing (Manual or Machine)
  - 1.1 For all Level 1A and selected Level 1B Highways, the Supervisor shall ensure the Department’s policy TIR Manual Procedure, PR5023, “Mowing” is followed.

**CHAPTER 2 ROADSIDE MAINTENANCE**  
**Section 3 Mowing – Machine**  
**Mowing – Hand**

Plant Maintenance Order Type: RO02  
Activity Type: 115  
Activity Type: 156

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- 1.2 For all other Level 1B, Level 2 highways where vegetation will exceed 300 mm in height, mowing of roadside vegetation shall be carried out yearly, by September 30.

The width to be mowed shall be from the edge of pavement to the back or end of the shoulder rounding.

- 1.3 For all Level 3 and Level 4 roads, mowing of roadside vegetation shall be carried out at the discretion of the Supervisor.
- 1.4 For all levels of roads within urban areas, grass shall be maintained to a height of less than 200 mm at all times for raised curbed medians, intersection islands and boulevards.

**RESOURCES**

**Machine mowing:**

Equipment: Tractor with mower attachment  
Attenuator (as required)

Labour: 1-2 operators

**Hand mowing:**

Equipment: Push type mowers  
Grass whips

Labour: 2-4 crew persons

Traffic Control: (as required)

**CHAPTER 2 ROADSIDE MAINTENANCE**  
**Section 3 Mowing – Machine**  
**Mowing – Hand**

Plant Maintenance Order Type: RO02  
Activity Type: 115  
Activity Type: 156

---

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices.
- Mow vegetation as required.

**METHOD OF MEASUREMENT**

Machine: hectares (1 Ha = 10,000 square metres)

Hand: square metres

**NORMAL OUTPUT**

Machine: 0.5-3 hectares per day

Hand: 1000-3000 square metres per day

## **DEFINITION**

The physical removal from the right-of-way and the subsequent disposal of objectionable items such as, but not limited to, roadside rubbish, dead animals, unlawful signs, fallen trees, and loose brush. This includes fallen rocks on the driving surface and shoulders.

## **PURPOSE**

Debris and Litter Clean-up acts as a precaution against damage or injury to the travelling public and personnel or equipment engaged in maintenance operations.

## **GENERAL**

All debris shall be removed from the right-of-way and disposed of according to department policy and current provincial and federal government regulations.

All dead animals on the travelled portion and shoulder area of the right-of-way shall be removed and disposed of properly. In areas where a dead animal could create a health hazard, it shall be removed and disposed of within 24 hours.

In non-residential areas it is acceptable to discard animal carcasses off shoulder, but within highway right-of-way.

All carcasses shall be disposed of in accordance with the latest agreement between TIR and DNR.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor shall record deficiencies, schedule work and report as specified in the following "Standard" section.

## **STANDARD**

1. Debris Control
  - 1.1 The Supervisor shall ensure all debris and litter on the highway right-of-way as outlined below in the "Debris and Litter Clean-up Criteria Table" is removed or disposed of.

**Debris and Litter Clean-up Criteria Table**

<b>Debris Control</b>	<b>Level 1A</b>	<b>Level 1B</b>	<b>Level 2</b>	<b>Level 3 Local Roads</b>	<b>Level 4 Gravel Roads</b>
<b>Paved Surface</b>	Immediately	Immediately	Immediately	Immediately	Full width gravel surface:  Greater than 0.01m <sup>3</sup>  Within 7 Days
<b>Non-Paved Shoulder</b>	Greater than 0.03 m <sup>3</sup>  Within 72 hrs	Greater than 0.03 m <sup>3</sup>  Within 72 hrs	Greater than 0.03 m <sup>3</sup>  Within 7 days	Greater than 0.03 m <sup>3</sup>  Within 7 days	
<b>Beyond Shoulder</b>	Greater than 0.4 m <sup>3</sup> yearly  before Nov. 30	Greater than 0.4 m <sup>3</sup> yearly  before Nov. 30	Greater than 0.4 m <sup>3</sup> yearly  before Nov. 30	Greater than 0.4 m <sup>3</sup> yearly  before Nov. 30	Greater than 0.4 m <sup>3</sup>  before Nov. 30

*The following examples clarify object sizes listed in the above table:*

$$0.01 \text{ m}^3 = 0.3 \text{ m} \times 0.3 \text{ m} \times 0.1 \text{ m (or 12" x 12" x 4")}$$

$$0.03 \text{ m}^3 = 0.3 \text{ m} \times 0.3 \text{ m} \times 0.3 \text{ m (or 12" x 12" x 12")}$$

$$0.4 \text{ m}^3 = 0.75 \text{ m} \times 0.75 \text{ m} \times 0.70 \text{ m (or 30" x 30" x 28")}$$

$$0.4 \text{ m}^3 = 1.0 \text{ m} \times 1.0 \text{ m} \times 0.4 \text{ m (or 39: x 39" x 16")}$$

**2. Additional Debris and Litter Clean-up**

Any routine removal work not governed by the criteria in the “Debris and Litter Clean-up Criteria Table” shall be undertaken during daily maintenance activities when in the vicinity of the work.

Any major removal work not governed by the criteria in the “Debris and Litter Clean-up Criteria Table” shall be undertaken as required.

**CHAPTER 2 ROADSIDE MAINTENANCE**  
**Section 4 Debris and Litter Clean-up**

Plant Maintenance Order Type: RO02  
Activity Type: 116

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**RESOURCES**

Equipment: Mechanical lifting device, if required  
Shovels  
Truck

Labour: 1- 2 Operators  
1- 2 division crew person(s)

Materials: N/A

**METHOD OF MEASUREMENT**

Labour hours

**NORMAL OUTPUT**

N/A

## **DEFINITION**

This operation consists of seeding a grass mixture to the highway right-of-way by mechanical or manual means.

## **PURPOSE**

To provide a vegetation cover on highway right-of way to control erosion, weed growth and to provide a pleasing appearance.

## **GENERAL**

Seeding shall be carried out as per seed supplier guidelines. Hydro-seeding shall be carried out in accordance with “Hydro-seeding” in of the Department’s “Highway Construction and Maintenance Standard Specifications”, Division 7 Section 5.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor shall record deficiencies and schedule repairs as specified in the following “Standard” section.

## **STANDARD**

Unless stabilized by other means, all areas located at or near a watercourse, disturbed by ditching or any other maintenance operations will be seeded in order to avoid erosion as outlined in the Department’s “Maintenance Ditching Guidelines”

## **RESOURCES**

Equipment: Hydro-seeder  
Hand seeder

Labour: 0-1 operator  
0-1 labourer  
Traffic control (as required)

Materials: Grass seed  
Topsoil and mulch

### **NORMAL PRACTICES**

- Seed areas of Highway right-of-way affected by ditching or repair work with a hydro-seed mix as detailed in the Department's "Standard Specifications", Division 7 Section 5.
- Seed the grass mixture at a rate of 20 to 40 kg/ha.
- Re-seed as required.

### **METHOD OF MEASUREMENT**

Square metres

### **NORMAL OUTPUT**

1000 to 7000 square metres per day

## **DEFINITION**

To control the growth of weeds and unwanted vegetation through the use of herbicides or any other organic products.

## **PURPOSE**

The control of weeds and unwanted vegetation is required to:

- Maintain required sight distance at curves and intersections.
- Ensure proper drainage at channels, ditches, etc.
- Control the spread of noxious weeds.
- Define the road side for safety purposes and to create a reasonably neat appearance of the highway.

## **GENERAL**

The Supervisor will have the option to control weeds by spraying and must obtain approval from DOE prior to commencing any work.

The Supervisor will follow all department policies and guidelines, government and municipal acts and regulations and obtain all necessary permits pertaining to the use of herbicides for weed control.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor will record deficiencies and schedule repairs as specified in the following “Standard” section.

## **STANDARD**

Refer to the “Integrated Roadside Vegetation Manual” developed for TIR.

**RESOURCES**

Equipment: Mechanical spray equipment

Labour: 1-2 division crew person(s)

Materials: Various herbicides

**METHOD OF MEASUREMENT**

Hectares (1 Ha = 10,000 square metres)

**NORMAL OUTPUT**

1 – 5 Hectares per day

**GENERAL 1**

A highway drainage system is designed to transfer and remove water from the highway and other areas and to intercept, transfer and dispose of surface water flowing towards the road. The system is also designed to prevent excess moisture from entering and damaging the granular base and sub-base courses, causing premature surface failure.

The following "Maintenance Standards" outline the requirements for maintenance operations by the Supervisor.

These standards are set out in various components, which make up the highway drainage system within the limits of the right-of-way.

Activity Type 117	Grader Ditching
Activity Type 118	Ditching
Activity Type 142	Culvert Installation - Concrete
Activity Type 143	Culvert Installation - Driveway
Activity Type 144	Culvert Installation - Roadway
Activity Type 146	Catch Basin Installation
Activity Type 147	Catch Basin Maintenance
Activity Type 151	Storm Sewer Maintenance
Activity Type 152	Storm Sewer Installation
Activity Type 158	Culvert Maintenance

**GENERAL 2**

1. The Area Manager shall be notified if proposed work may potentially change the design of an existing facility, such as listed below:
  - Add, relocate or abandon an outfall or ditch.
  - Significantly modify the cross-section or grade line of a ditch, culvert or sewer
  - Replace the lining of a ditch with a different type (i.e. replace grass with rip rap).
2. The Supervisor shall ensure all drainage obstructions within the right-of-way are removed. The work of removing obstructions shall be completed to ensure the volume of water released will not cause flash flooding. The Supervisor shall lower the water to a safe level, before removing the obstructions. The Area Manager shall be notified of any problems identified outside the right-of-way limits.

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**General**

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Plant Maintenance Order Type: RO03

3. The Supervisor shall record any recurring problems originating with municipal or privately-owned drainage systems or impacting on private property and refer them to the Area Manager.
4. The Supervisor is responsible for obtaining all appropriate government approvals and following all By-Laws, Acts, Regulations and Departmental Policies.
5. The Supervisor is responsible for all aspects of beaver control, including ensuring the dams are removed. All work to control beavers shall follow the TIR Manual Procedure - PR5097 Removing Beaver Dams, January 2010.

## **DEFINITION**

Grader ditching is the cutting, cleaning or shaping of roadside ditches on low volume gravel roads using a grader.

## **PURPOSE**

The purpose of grader ditching is to establish a channel to convey water away from the gravel road surface and/or to intercept water before it reaches the road. Grader ditching is also used to allow free drainage of the road bed.

## **GENERAL**

The Supervisor will evaluate and choose the most cost effective and efficient method to ditch. Factors to consider are the length and volume of flow as well as discharge/culvert locations.

Grader ditching includes installing, maintaining or removing sediment control devices. This also includes seeding/mulching.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor will identify areas that would benefit from grader ditching and schedule repairs.

## **STANDARD**

On low volume gravel roads where drainage problems exist (i.e. where water free flows on the road surface or there is no ditch), grader ditching may be performed.

## **RESOURCES**

Equipment: Grader

Labour: 1 operator  
0-1 crew person  
Traffic control persons (as required)

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 1 Grader Ditching**

Plant Maintenance Order Type: RO03  
Activity Type: 117

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Materials: Clear stone (flow checks) (as required)  
Seed

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices, if required.
- Remove large rocks and debris before making initial pass.
- Clean up unwanted windrow of discharged material.
- Reshape roadbed and back slope.
- Install appropriate environmental controls/seed as required.

**METHOD OF MEASUREMENT**

Lineal metres

**NORMAL OUTPUT**

From 100 to 1000 lineal metres per day

## **DEFINITION**

Maintenance ditching is defined as the correction of the grade of existing ditches or increasing the capacity of the ditch. Ditching is the cutting, cleaning or re-shaping of ditches using boom-type equipment such as excavators or backhoes.

## **PURPOSE**

The purpose of ditching is to establish a channel to convey water away from the road surface and/or to intercept water before it reaches the road. Ditching is also used to allow free drainage of the road bed.

## **GENERAL**

Ditching includes maintaining all roadside and drainage ditches including watercourse inlets and outlets, easements, medians and side and back slopes of embankments.

Ditching includes installing, maintaining or removing sediment control devices. Also includes seeding/mulching.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor will record deficiencies and schedule work.

All large sections of planned ditching greater than 500 metres in length and areas of troublesome erosion or severe erosion over 100 square metres will be prioritized by the Supervisor and provided to the Area Manager during the preparation of the "Road Maintenance Improvement Report".

## **STANDARD**

### 1. Maintenance

Ditches will be maintained to facilitate the efficient movement of water and to ensure that the functional capacity is maintained to accommodate peak flows.

Ditches will be cleaned as required, before September 30<sup>th</sup> to ensure that any deficiencies are addressed that constitute or have the potential to create an

unsafe condition to the travelling public, adjacent properties, or represent a threat to the highway infrastructure.

Obstructions that are causing significant damage to the ditch, roadbed, shoulders, adjacent properties or which pose an unsafe condition to the travelling public will be removed immediately.

All areas affected by ditching operations shall be protected from erosion.

2. Erosion and Sediment Control

The Supervisor will ensure ditches (including side slopes, back slopes and slope protection) from erosion. When severe erosion occurs, the Supervisor will ensure the eroded areas are repaired.

Any observations of severe erosion over 100 square metres are to be repaired in consultation with the Area Manager.

The Supervisor should consider problematic areas of erosion during preparation of the "Annual Road Maintenance Improvement Report".

The Supervisor will ensure immediate action is taken to prevent sediment from entering any downstream watercourse, wetland, or environmentally sensitive areas, in accordance with all government acts and regulations.

**RESOURCES**

Equipment: Backhoe and/or excavator  
1-3 tandem or single axle trucks  
Hand tools (shovel)

Labour: 1-4 operators  
0-1 crew persons  
Traffic control persons (as required)

Materials: Clear stone (flow check) (as required)  
Seed

**NORMAL PRACTICE**

- Complete hazard assessment.
- Obtain Disposal of Surplus Material release form and location to dump waste.
- Set up temporary signing and traffic control devices, as required.
- Ditch from the lowest elevation to the highest.
- Install flow checks as required.
- Seed as required.

**METHOD OF MEASUREMENT**

Lineal metres (excluding the length of culverts)

**NORMAL OUTPUT**

400-1000 lineal metres per day

<b>CHAPTER 3 DRAINAGE MAINTENANCE</b>	Plant Maintenance Order Type: RO03
<b>Section 3 Culvert Installation</b>	Activity Type: 142
<b>Concrete</b>	Activity Type: 143
<b>Driveway</b>	Activity Type: 144
<b>Roadway</b>	

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**DEFINITION**

Installation or replacement of culverts ( $\leq 3$  metre diameter) which have failed or are beyond repair.

**PURPOSE**

The purpose of culvert installation is to provide an opening under a roadway, railway or driveway to allow the movement of water, livestock, or pedestrians.

**GENERAL**

Culvert installation work shall be recorded using the following Activity types:

- “Activity Type 142, Culvert Installation” - concrete (use for all concrete pipe work)
- “Activity Type 143, Culvert Installation” - driveway (use for all wood, corrugated or polyethylene pipe in a driveway application)
- “Activity Type 144, Culvert Installation” - roadway (use for all corrugated or PE pipe under a roadway)

The Supervisor shall be limited to installing only the type of pipe listed in the “Culvert Material Options Table” below.

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 3 Culvert Installation Concrete**  
**Driveway**  
**Roadway**

Plant Maintenance Order Type: RO03  
 Activity Type: 142  
 Activity Type: 143  
 Activity Type: 144

**Culvert Material Options Table**

Culvert Type	Road Classification			
	100 Series	Trunks	Routes	Local Road Gravel & Paved Surface
Reinforced Concrete Pipe	Yes	Yes	Yes	Yes
Corrugated Aluminum Alloy Pipe	No	No	Yes	Yes
High Density Polyethylene Pipe (double walled) (HDPE)	No	No	Yes	Yes <sup>2</sup>
Corrugated Aluminized Steel Pipe	No	No	No	Yes <sup>1</sup>

<sup>1</sup> The PH of the water shall be between 5 and 9

<sup>2</sup> On gravel roads, polyethylene pipe shall only be an option on LOW VOLUME roads when 300 mm of cover is ensured. Bedding is recommended at 100 mm to 150 mm of compacted Type1 granular material.

The Supervisor shall obtain all necessary environmental approvals prior to commencing any work involving brooks, streams, rivers or fish habitat.

**INSPECTION**

During routine inspections or as situations arise, the Supervisor shall record deficiencies, post warning signs and schedule repairs as specified in the following “Standard” section.

The Supervisor shall consider road sections that frequently exhibit the conditions as specified in the “Standard” section during the preparation of the “Annual Road Maintenance Improvement Report”.

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 3 Culvert Installation Concrete**  
**Driveway**  
**Roadway**

Plant Maintenance Order Type: RO03  
Activity Type: 142  
Activity Type: 143  
Activity Type: 144

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**STANDARD**

Culvert Installation

Roadway: Any culverts that are in a condition that cause damage to the roadway or are creating a hazard will be immediately signed/protected and / or repaired. These culverts will be replaced within seven (7) days pending approval where required.

Driveway: Any driveway entrance maintained by TIR in accordance with TIR Manual, PR5000 Driveway Entrances that is impassible will be addressed immediately. These culverts will be replaced, if necessary, within twenty-one (21) days pending approval where required.

When detected, any culverts that have been deemed as being beyond repair will be prioritized for replacement as funding allows.

All in-stream culvert installation / replacement work shall be completed yearly between June 1<sup>st</sup> and September 30<sup>th</sup>, unless an approved extension has been obtained from Nova Scotia Environment.

Culverts greater than 900 mm in diameter shall be replaced in consultation with the Area Manager.

**RESOURCES**

Equipment: Backhoe or excavator  
Tandem or single axle trucks with tag  
Compactor (Tamper)  
Hand tools (shovels, rakes)  
Lifting device (chain, sling)

Labour: 2-3 operators  
1-2 crew person(s)  
Traffic control persons, as required

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 3 Culvert Installation Concrete**  
**Driveway**  
**Roadway**

Plant Maintenance Order Type: RO03  
Activity Type: 142  
Activity Type: 143  
Activity Type: 144

---

Materials: Culverts  
Couplings and bolts  
Granular materials  
Rip rap

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices, as required.
- Excavate trench for new culvert or remove damage culvert.
- Install new/replacement culverts and couplings if needed.
- Backfill with acceptable materials.
- Compact.
- Install rip rap
- Add surface cover per TIR Manual PR5000 (Driveway Entrances)

**METHOD OF MEASUREMENT**

Lineal metres of pipe installed as measured from inlet to outlet. The length of coupling devices shall not be added to the length of pipe.

Note: Reinstating asphalt surfaces above culverts shall be recorded under the appropriate surface Maintenance Activity.

**NORMAL OUTPUT**

6 to 25 metres

## **DEFINITION**

Installing new catch basins, manholes, ditch inlets, replacing existing catch basins, manholes, ditch inlets that have failed or are beyond repair.

## **PURPOSE**

The purpose is to eliminate surface water from roadways by utilizing structures such as catch basins and ditch inlets.

## **GENERAL**

A “catch basin” is a structure that acts as a receptacle or container to catch surface water and divert it to an underground drainage system.

A “ditch inlet” is a structure having an opening to allow run-off from a ditch to be carried to an outfall or storm sewer.

A “manhole” is a structure having an opening to provide access to underground services.

**Warning:** Catch basins and manholes are “confined spaces”. Entry to a confined space must comply with pertinent legislated safety requirements.

## **INSPECTION**

The Supervisor shall consider all structures that have deteriorated or may fail and require replacement during the preparation of the “Annual Road Maintenance Improvement Report”.

## **STANDARD**

As directed by the Area Manager, the Supervisor shall ensure new structures are installed, and all existing structures that have been identified as being beyond repair are replaced.

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 4 Catch Basin Installation**

Plant Maintenance Order Type: RO03  
Activity Type: 146

---

Any structures that have failed and are causing damage to the roadway or are a hazard will be signed and/or protected and replaced or repaired immediately.

Note: Repairs will be done under “Activity 147, Catch Basin Maintenance”.

**RESOURCES**

Equipment: Backhoe or excavator  
1-3 tandem or single axle trucks with tag  
Compactor (tamper)  
Hand tools (shovels, rakes)  
Lifting device (chain, sling)  
Pump  
Trenching safety devices, as required

Labour: 2-4 operators  
2-4 crew persons  
Traffic control persons, as required

Materials: Catch basins  
Manhole covers  
Granular material  
Grout

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices, as required.
- Check with utilities/municipality for underground wires or lines.
- Excavate and install granular materials for bedding.
- Install catch basin, pipe (grout as required) and granular material.
- Backfill and compact.

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 4 Catch Basin Installation**

Plant Maintenance Order Type: RO03  
Activity Type: 146

---

**METHOD OF MEASUREMENT**

Each: number of manholes and catch basin

**NORMAL OUTPUT**

1-2 installations per day

## **DEFINITION**

Catch basin maintenance includes cleaning of debris and materials from catch basins, manholes and ditch inlets. Also includes replacing catch basin and manhole frames and covers, ditch inlet grates, and structural repairs.

## **PURPOSE**

The purpose is to facilitate the efficient movement of water and to ensure that the functional/structural capacity is maintained to accommodate peak flows.

## **GENERAL**

Catch basins and ditch inlets will be cleaned/repared as required to ensure that any potential deficiencies are addressed. These deficiencies may include unsafe conditions to the traveling public, flow restrictions, or impact to the highway infrastructure.

**Warning:** Catch basins and manholes are “confined spaces”. Entry to a confined space must comply with pertinent legislated safety requirements.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor will record deficiencies, post warning signs, schedule repairs and report as specified in the following “Standard” section.

The Supervisor shall consider all structural repairs during the preparation of the “Annual Road Maintenance Improvement Report”.

Before major storm events any catch basins, manholes and ditch inlets that have a history of flooding should be inspected and appropriate action taken.

## **STANDARD**

### 1. Cleaning

A yearly spring inspection of all structures will be completed as soon as practically possible after winter operations has ended. The Supervisor will ensure all debris

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 5 Catch Basin Maintenance**

Plant Maintenance Order Type: RO03  
Activity Type: 147

---

from catch basins, manholes and ditch inlets are removed every two (2) years or as required. This will be scheduled after sweeping operations have been completed.

All sumps shall be cleaned as required to maintain a minimum depth of 75 mm below the bottom of the outlet.

The Supervisor will ensure all debris that is restricting drainage flow is removed from the ditch inlet grates as conditions dictate.

2. Replace Catch Basin Grate or Manhole Cover

All missing or damaged catch basin grates and manhole covers shall be protected and signed immediately and replaced as soon as possible.

3. Repairs

Catch basin, manhole and ditch inlet defects including damaged or depressed frames that that create an unsafe condition to the traveling public or represent a threat to the highway infrastructure will be repaired immediately. If unsafe conditions or threat to infrastructure is not imminent, they are to be repaired within 60 days.

Any structure with defects that are beyond repair or are not cost effective to repair, shall be replaced as defined by "Activity Type 146, Catch Basin Installation".

**RESOURCES**

Equipment: Backhoe or excavator (as required)  
Vacuum truck (as required)  
Hand tools (shovels, rakes, brooms)  
Jack hammer (as required)

Labour: 1-2 operators  
1-2 crew persons  
Traffic control persons (as required)

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 5 Catch Basin Maintenance**

Plant Maintenance Order Type: RO03  
Activity Type: 147

---

Materials: Catch basin frames and grates  
Manhole frames and covers  
Risers, Grout, lumber, etc.

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices, as required.
- Remove debris.
- Carry out necessary repairs.

**METHOD OF MEASUREMENT**

Each

**NORMAL OUTPUT**

1 - 20 per day

## **DEFINITION**

Storm sewer maintenance includes cleaning debris and materials from storm sewers including pipes and outfall structures. It also includes repairing structural defects and leaks in the system.

## **PURPOSE**

To facilitate the movement of water and to ensure that the functional capacity is maintained to accommodate peak flows.

## **GENERAL**

This system includes sewers, connections, concrete curbs and gutters, junction chambers, laterals, manholes and outfall structures.

An "outfall" structure is constructed at a pipe outlet from a storm sewer system. This structure is to provide a transition between the pipe outlet and a watercourse and to prevent erosion at the outlet or in the outfall channel.

Storm sewers and outfall structures will be cleaned/repared as required to ensure that any potential deficiencies are addressed. These deficiencies may include unsafe conditions to the traveling public, flow restrictions, or impact to the highway infrastructure.

## **INSPECTION**

During routine inspections or as situations arise, the Supervisor will record deficiencies, post warning signs, schedule repairs and report as specified in the following "Standard" section.

The Supervisor shall consider all structural repairs as described in the "Standard" section, during the preparation of the "Annual Road Maintenance Improvement Report".

Before major storm events any storm sewer systems that have a history of flooding will be inspected and appropriate action taken.

## **STANDARD**

### 1. Cleaning

A yearly spring inspection of all storm sewer system inlet and outlets will be completed as soon as practically possible after winter operations has ended. Additional inspections may be warranted based on the findings of inlet and outlet inspections. The Supervisor will be responsible to ensure debris is removed from storm sewer system every two (2) years or as required. This will be scheduled after sweeping operations have been completed. The Supervisor shall ensure debris is removed from any part of a storm sewer system that is restricting drainage flow as conditions dictate.

### 2. Erosion

The Supervisor shall ensure all undermining of pipe, outfall structures, and ditch erosion within 5 m of the end of the pipe, and removal of obstructions that are reducing the flow capacity, that create an unsafe condition to the traveling public or represent a threat to the highway infrastructure will be repaired immediately. If unsafe conditions or threat to infrastructure is not imminent, they are to be repaired within 60 days.

### 3. Repairs

Storm sewer defects that create an unsafe condition to the traveling public or represent a threat to the highway infrastructure will be repaired immediately. If unsafe conditions or threat to infrastructure is not imminent, they are to be repaired within 60 days.

Any storm sewers with defects that are beyond repair or are not cost effective to repair, shall be replaced as defined by "Activity Type 152, Storm Sewer Installation".

## **RESOURCES**

Equipment: Backhoe or excavator  
Tandem or single axle truck  
Vacuum truck  
Hand tools (shovels, rakes)  
Lifting device (chain, sling)

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 6 Storm Sewer Maintenance**

Plant Maintenance Order Type: RO03  
Activity Type: 151

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Labour: 1-2 operators  
1-2 crew persons  
Traffic control persons (as required)

Materials: Grout  
Granular material

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices, as required.
- Excavate as required.
- Remove debris.
- Carry out necessary repairs.
- Backfill as required.

**METHOD OF MEASUREMENT**

Lineal metre of storm sewer maintained.

Note: Does not include work to catch basins, manholes or ditch inlets as defined by “Activity Type 147, Catch Basin Maintenance”.

**NORMAL OUTPUT**

50 to 200 lineal metres per day

## **DEFINITION**

Storm sewer installation includes installing new storm sewer piping including outfall structures or replacing existing storm sewers that have failed or are beyond repair as defined by "Activity Type 151, Storm Sewer Maintenance".

## **PURPOSE**

To carry storm water runoff collected through gutters, ditch inlets, and catch basins, to an outfall.

## **GENERAL**

This system includes sewers, connections, concrete curbs and gutters, junction chambers, laterals, manholes and outfall structures.

An "outfall" structure is constructed at a pipe outlet from a storm sewer system. This structure is to provide a transition between the pipe outlet and a watercourse and to prevent erosion at the outlet or in the outfall channel.

<p><b>Warning:</b> Storm sewers are "confined spaces". Entry to a confined space must comply with pertinent legislated safety requirements.</p>
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## **INSPECTION**

The Supervisor will provide the Area Manager with a prioritized list of all storm sewers that have deteriorated and require replacement. This list will also include any drainage problems that may require new installations. The Supervisor shall consider all structural repairs or replacements during the preparation of the "Annual Road Maintenance Improvement Report".

## **STANDARD**

As directed by the Area Manager, the Supervisor will ensure any new storm sewer is installed or all existing storm sewers that have been identified as being beyond repair are replaced.

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 7 Storm Sewer Installation**

Plant Maintenance Order Type: RO03  
Activity Type: 152

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Any storm sewers that have failed and are causing damage to the roadway or are a hazard will be signed and/or protected and replaced immediately.

**RESOURCES**

Equipment: Backhoe or excavator  
Tandem or single truck with tag  
Compactor (tamper)  
Hand tools (shovels, rakes)  
Lifting device (chain, sling)  
Pump  
Trenching safety devices

Labour: 2 operators  
1-3 crew person  
Traffic control persons (as required)

Materials: Pipe  
Granular materials

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices, if required.
- Check with utilities and Municipality for underground wires or lines.
- Excavate and install granular materials for bedding.
- Install pipe and granular material.
- Backfill with acceptable material and compact trench.

**METHOD OF MEASUREMENT**

Lineal metres of pipe installed.

Note: Any installation of catch basins, manholes or ditch inlets shall be recorded under "Activity Type 146, Catch Basin Installation".

**NORMAL OUTPUT**

20 to 50 lineal metres per day

## **DEFINITION**

Culvert maintenance includes repairing existing culverts, cleaning ends or complete lengths, repairs to rip rap, excavation, backfill and surface gravel. Also includes any ditching work within 3 metres of each end of the culvert.

## **PURPOSE**

The purpose is to facilitate the efficient movement of water and to ensure that the functional/structural capacity is maintained to accommodate peak flows.

## **GENERAL**

A culvert is a structure with an opening of less than 3.0 metres in width designed to provide an opening under a roadway, railway or side entrance, to allow the movement of water, livestock or pedestrians. A culvert may be constructed of concrete, corrugated metal, treated wood or polyethylene pipe (PE).

When the Supervisor is unable to clear blocked culverts by conventional means (such as high-pressure water flushing), the culvert shall be replaced as defined under Culvert Installation – “Activity #142” Concrete Culverts, “Activity #143” Driveway Culverts and “Activity #144” Roadway Culverts.

The Supervisor will ensure the timely repair of all entrance and cross culverts that have failed, may fail or are not functioning properly as defined under Culvert Installation – “Activity #142” Concrete Culverts, “Activity #143” Driveway Culverts and “Activity #144” Roadway Culverts.

## **INSPECTION**

During routine inspections or as situations arise; the Supervisor shall record deficiencies, post warning signs, and schedule repairs as specified in the following “Standard” section.

## **STANDARD**

### 1. Culvert Cleaning

Existing drainage structures will be maintained to facilitate the efficient movement of water and to ensure that the functional capacity is maintained to accommodate peak flows.

When detected, all culverts that constitute or have the potential to create an unsafe condition to the traveling public, adjacent properties, or represent a threat to the highway infrastructure, will be cleaned as required, before October 31.

Obstructions that are severely restricting drainage flow or causing significant damage to the culvert, ditch, roadbed, shoulders, adjacent properties or pose an unsafe condition to the traveling public shall be removed immediately.

Any bars or grids, which have been installed to prevent unauthorized entry, are to be checked to ensure they are in place and secure. Damaged bars or grids shall be repaired by October 31<sup>st</sup>.

Culvert inlets with bars and grids installed shall be monitored frequently to ensure that debris does not accumulate and cause flooding.

### 2. Culvert End Washouts (Rip Rap)

It is the property owner's responsibility to maintain the rip-rap around the culvert ends. When detected, hand laid or grouted rip-rap that has become dislodged and is causing an obstruction at the culvert, the obstruction only shall be removed.

### 3. Culvert Repairs

Any severe defects not outlined in this "Standard" Section shall be reported immediately to the Area Manager.

## **RESOURCES**

Equipment: Backhoe or excavator (as required)  
Vacuum truck (as required)  
Hand tools (shovels, rakes, brooms)  
Jack hammer (as required)

**CHAPTER 3 DRAINAGE MAINTENANCE**  
**Section 8 Culvert Maintenance**

Plant Maintenance Order Type: RO03  
Activity Type: 158

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Labour: 1-2 operators  
1-2 crew persons  
Traffic control persons (as required)

Materials: As required

**NORMAL PRACTICE**

- Complete hazard assessment
- Set up temporary signing and traffic control devices, as required
- Remove debris, if required
- Carry out necessary repairs

**METHOD OF MEASUREMENT**

Each culvert, regardless of length

**NORMAL OUTPUT**

1-3 per day

**GENERAL**

Traffic control devices inform the user of traffic regulations, warn of roadway characteristics and road hazards, and provide information necessary for route selection. These devices consist of signs, pavement markings, guard rails and jersey barriers.

The following Maintenance Standard outlines the requirements for Maintenance operations by the Supervisor.

These standards are set out in various components, which make up the highway traffic control system within the limits of the right-of-way.

Activity Type 131	Jersey Barrier Maintenance
Activity Type 133	Sign Maintenance and Repair
Activity Type 134	Sign Installation
Activity Type 135	Pavement Markings
Activity Type 136	Traffic Line Painting
Activity Type 164	Guide Post Maintenance
Activity Type 165	Guide Post Installation
Activity Type 166	Guard Rail Maintenance
Activity Type 167	Guard Rail Installation

## **DEFINITION**

Repairing the jersey barriers for minor defects, replacing reflectors and replacement of barrier sections deemed beyond repair.

## **PURPOSE**

To ensure the structural integrity and functionality of the jersey barrier.

## **GENERAL**

Concrete Jersey barriers are engineered devices designed to deflect or restrain vehicles from crossing over into oncoming traffic and to protect motorists from roadside hazards.

## **INSPECTION – Road Patrols**

During routine inspections or as situations arise the Supervisor shall inspect the concrete barriers for deficiencies, post warning signs and schedule work.

All reflectors mounted on the jersey barriers shall be inspected by the Supervisor and replaced where necessary on a yearly basis prior to November 30<sup>th</sup>.

## **STANDARD**

Emergency safety precautions (barricades, safety drums etc.) are to be taken immediately by the Supervisor, when notified, to ensure the safety of the traveling public.

The Supervisor will ensure any “breakouts” are secured within seven (7) days of the barrier being damaged by fastening steel guardrail channels to sound concrete on either side, installing pre-cast jersey barrier(s) sections, or by other methods approved by the Area Manager.

## **RESOURCES**

Equipment: Service truck or truck and tag, if required  
Excavator or backhoe or boom truck for lifting, if required

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 1 Jersey Barrier Maintenance**

Plant Maintenance Order Type: RO05  
Activity Type: 131

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Attenuator, if required  
Jack hammer, compressor, drills, etc., as required

Labour: 1-3 operators  
2-5 crew persons  
Traffic control, as required

Materials: Guardrail, delineators, grout, barrier sections, etc. depending on the nature of the repair

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices, as required.
- Carry out necessary repairs.

**METHOD OF MEASUREMENT**

Lineal metres

Reflector replacements are recorded as the total length of barrier serviced or the length of lane closure as the accomplishment length.

**NORMAL OUTPUT**

Varies according to the nature of work.

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 2 Sign Maintenance and Repair**  
**Sign Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 133  
Activity Type: 134

---

**DEFINITION**

Sign Maintenance and Repair is maintaining signs and posts, including repairing, repainting and washing of existing signs and posts. Includes replacing signs and/or posts missing or beyond repair.

Sign Installation is installing new signs and posts at a new location where no sign was previously in place.

**PURPOSE**

To ensure the integrity of the signs, to inform the highway users of traffic regulations, to warn of roadway characteristics, and to provide information necessary for route selection.

**GENERAL**

Signs are devices which may be regulatory, warning or informational and are installed or maintained to provide information and to ensure the safety of the traveling public along public highways. The Supervisor will ensure signs are erected where directed by the District Traffic Supervisor or Provincial Signing Officer on public highways. No permanent sign shall be installed at a new location or removed from its existing location without the approval from the Area Manager and District Traffic Authority.

The following signs shall be considered as **critical signs**:

- Stop
- Yield
- One Way
- Do Not Enter

The Supervisor should consult with the District Traffic Supervisor and/or approved signing plan for proper traffic signage. The Supervisor may also refer to a current copy of the "Manual of Uniform Traffic Control Devices" for sign classification and installation information.

"TIR Manual, PR5052 - Guide Sign Installation at Intersections" provides guidelines for sign installations.

The Supervisor is responsible to have an adequate supply of regulatory and warning signs in stock at all times.

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 2 Sign Maintenance and Repair**  
**Sign Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 133  
Activity Type: 134

---

Signs are classified as follows:

1. Permanent Signs:

Regulatory Signs: Advise the highway user of traffic regulations which apply at any time or place upon a highway as per the Public Highway Act.

Warning Signs: Give advance notice of conditions upon or adjacent to a street or highway that are potentially hazardous to drivers.

Information Signs: Provide information for destinations, selection of route, location of off-highway facilities, and for identification of geographical features or points of interest.

2. Temporary Conditions Signs

Signs erected to warn highway users of conditions that last a short period of time (i.e. Low Shoulder, Bump, Hazard Markers, etc.). The requirement for these signs is outlined in the "Manual of Uniform Traffic Control Devices".

**INSPECTION – Road Patrols**

During routine inspections or as situations arise, the Supervisor shall identify all illegible, poor reflectivity, improperly oriented, or missing signs and schedule work as specified in the "Standard" section.

Any signs greater than 3 square metres which require replacing shall be discussed with the Area Manager prior to replacement.

**STANDARD**

1. Sign Maintenance and Repairs

The Supervisor shall ensure all signs are maintained and repaired in accordance with the "Sign Work Response Time" table on next page.

Sign Maintenance and Repairs shall include, but is not limited to the following:

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 2 Sign Maintenance and Repair**  
**Sign Installation**

Plant Maintenance Order Type: RO05  
 Activity Type: 133  
 Activity Type: 134

- 1.1 Repair or clean all signs that are illegible (i.e. mud covered, faded, poor reflectivity, bent, improperly oriented, twisted, vandalized, broken or cracked).
- 1.2 Replace all signs or posts that are missing or replace signs or posts that are beyond repair, bent, improperly oriented, twisted, broken or cracked.
- 1.3 Report vandalized or stolen signs to the proper authority along with an estimate of cost to replace.

2. Sign Installation

Any new sign (including posts) that is installed at new locations as directed by the Area Manager and in consultation with the District Traffic Supervisor.

**Sign Work Response Time**

Response Times	Level 1A	Level 1B	Level 2	Level 3 & 4
<b>Stop Signs</b>	Immediately	Immediately	Immediately	Immediately
<b>All Other Critical Signs</b>	3 Days	3 Days	7 Days	14 Days
<b>Regulatory and Warning Signs</b>	14 Days	14 Days	21 Days	60 Days
<b>Information Signs less than 1 m<sup>2</sup></b>	30 days	60 days	90 days	90 days
<b>Information Signs greater than 1 m<sup>2</sup></b>	60 days	90 days	90 days	120 days

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 2 Sign Maintenance and Repair**  
**Sign Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 133  
Activity Type: 134

---

**RESOURCES**

Equipment: Crew vehicle  
Hand tools as required  
Post hole digger / Auger  
Backhoe / Excavator

Labour: 1-3 crew person(s)  
0-1 Operators

Materials: Sign posts

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices.
- Check with utilities/municipality for underground wires or lines.
- Install/repair sign and post.
- Ensure it is straight and level.

**METHOD OF MEASUREMENT**

“Activity 133, Sign Maintenance and Repair” – Each

“Activity 134, Sign Installation” – Each (including posts)

**NORMAL OUTPUT**

“Activity 133, Sign Maintenance and Repair” – 10-20 per day

“Activity 134, Sign Installation” – 3-16 per day

## **DEFINITION**

Work under this activity shall include the application of pavement markings including directional arrows, stop bars, crosswalks, cross hatching, gore area markings, etc.

## **PURPOSE**

To establish new markings or to re-establish markings that have worn as a result of traffic, weather, etc.

## **GENERAL**

Pavement markings are traffic control devices applied to provincial highways to provide the safe and orderly movement of traffic. Pavement markings perform definite functions, by complimenting regulations and warnings by other devices such as traffic signs or signals.

Work under this activity shall be in accordance with the “Manual of Uniform Traffic Control Devices”, except as modified in these “Maintenance Standards”.

School crosswalks are included with pavement markings.

If Municipal crosswalks are painted by Department forces, these costs are a recoverable item see “TIR Manual, P01005, Installation of Pedestrian Crosswalks”.

## **INSPECTION – Road Patrols**

During routine inspections or as situations arise the Supervisor shall record deficiencies and schedule repairs specified as in the following “Standard” section.

## **STANDARD**

### 1. Pavement Markings

School Crosswalks markings shall be applied yearly, as required, before August 31<sup>st</sup>.

Other pavement markings shall be applied, as required, before October 15<sup>th</sup>.

2. Additional Pavement Markings

Additional pavement markings will be applied as directed by the District Traffic Supervisor.

**RESOURCES**

Equipment: Crew vehicle  
Roller/sprayer  
Templates

Labour: 3-4 crew persons  
Traffic control as required

Materials: Paint  
Glass beads

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices (as required).
- Do required painting.
- Apply glass beads while paint is wet.
- Allow paint to dry before allowing traffic on markings, if possible.

**METHOD OF MEASUREMENT**

Square metres

**NORMAL OUTPUT**

60-80 square metres per day

## **DEFINITION**

Traffic line painting are control devices applied to paved Provincial highways to define the centre line divider, lane dividers and edge lines of the road way.

## **PURPOSE**

Traffic lines perform definite functions for the safe and orderly movement of traffic.

## **GENERAL**

Painting of centre line, lane dividers and edge lines are usually applied using an automated paint truck.

## **INSPECTION – Road Patrols**

Centre line markings should be reviewed or verified to ensure compliance with the safe passing sight distance requirements for the posted speed limits.

During routine inspections or as situations arise the Supervisor shall record deficiencies and schedule the repairs as specified in the “Standard” section.

## **STANDARD**

Any changes in the existing centerline markings authorized by the District Traffic Supervisor shall be marked in the field PRIOR to May 31<sup>st</sup>.

All Level 1A highways shall have traffic lines painted PRIOR to July 31<sup>st</sup>.

All Level 1B and Level 2 highways shall have centre lines painted PRIOR to August 15<sup>th</sup>.

All Level 1B and Level 2 highways shall have edge lines painted as outlined in “TIR Manual, PO1058, Traffic Line Painting”.

Level 3 highways and any additional traffic lines will be painted as outlined in procedure in “TIR Manual, PO1058, Traffic Line Painting”.

## **RESOURCES**

Equipment: 1 automatic paint truck  
2 lead/ trail vehicles

Labour: 5 operators/painters

Materials: Totes of paint (yellow & white)  
Glass beads

## **NORMAL PRACTICE**

Activity is carried out by Provincial outfit or contracted out.

## **METHOD OF MEASUREMENT**

Traffic line painting shall be recorded under “Activity 136, Traffic Line Painting” as line kilometers.

Line kilometers are defined as single or double centre lines, edge lines or lane divider (skip) lines usually painted by an automated paint vehicle (i.e. A road with a centre line and two edge lines would have three (3) line kilometers per road kilometer.).

## **NORMAL OUTPUT**

15-80 line kilometers per day

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 5 Guide Post Maintenance**  
**Guide Post Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 164  
Activity Type: 165

---

**DEFINITION**

Work under “Activity Type 164, Guide Post Maintenance”, shall include straightening, resetting posts and replacing reflective delineators.

Work under “Activity Type 165, Guide Post Installation”, shall include new installations or replacing missing, broken, excessively split or cracked guide posts.

**PURPOSE**

Guide posts are generally used for shoulder delineation. They can also be used to restrict access to and from provincial highways.

**GENERAL**

Guide posts that have excessively heaved, settled, or are excessively inclined, shall be reset to the proper horizontal and vertical alignment.

The Nova Scotia Standard Specifications, “Steel Guardrail Systems and Wooden Guide Posts” (Division 5, Section 6) provides specifications for the posts, rail and installation.

**INSPECTION – Road Patrols**

During routine inspections or as situations arise, the Supervisor shall identify and schedule repairs for any missing or severely damaged posts, as specified in the following “Standard” section.

**STANDARD**

1. Guide Post Maintenance

Guide posts requiring repair, including straightening, resetting and replacing reflective delineators, shall be repaired as funding permits.

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 5 Guide Post Maintenance**  
**Guide Post Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 164  
Activity Type: 165

---

2. Guide Post Installation

Guide posts requiring replacement, including those that are missing, broken, excessively split or cracked, shall be replaced as funding permits.

New installations of guide posts will be made at the discretion of the Supervisor in consultation with the Area Manager.

**RESOURCES**

Equipment: Auger or backhoe  
Shovels

Labour: 1 operator  
1-2 crew person(s)  
Traffic control persons (as required)

Materials: Guideposts

**NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices.
- Excavate area for guidepost installation using applicable tool for the soil type.
- Install post ensuring it is plum and the correct length is exposed.
- Backfill and compact around post.
- Place subsequent posts at spacing recommended in Standard Specifications.
- Ensure the elevation and alignment of the posts is maintained.
- Install reflective delineators.

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 5 Guide Post Maintenance**  
**Guide Post Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 164  
Activity Type: 165

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**METHOD OF MEASUREMENT**

“Activity 164, Guide Post Maintenance” - Each Post

“Activity 165, Guide Post Installation” - Each Post

**NORMAL OUTPUT**

Sandy/silty soil – 10-25

Rock - 2-5

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 6 Guard Rail Maintenance**  
**Guard Rail Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 166  
Activity Type: 167

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**DEFINITION**

Work under “Activity Type 166, Guard Rail Maintenance”, shall include horizontal and vertical realignment of guard rail sections, including replacing reflective delineator.

Work under “Activity Type 167, Guard Rail Installation”, shall include new installations or replacing existing posts or blocks that are missing, broken, excessively split or cracked. Also includes replacing rails and channels that are severely dented, bent, flattened or twisted and repairing cables.

**PURPOSE**

A guard rail system is used to protect the motorist from a roadside hazard. Hazards can include bridge abutments or piers, light standards, embankments, etc.

**GENERAL**

To ensure the structural integrity of a guardrail system and safety to the travelling public: rails and channels that are severely damaged are to be replaced, cable guardrail shall be tensioned to specified range and guard rail posts that have been excessively damaged or misaligned will be reset to the proper horizontal and vertical alignment.

The guard rail system is to be installed as per the “Nova Scotia Standard Specifications”, “Steel Guardrail Systems and Wooden Guide Posts” (Division 5, Section 6).

New installations will be made at the discretion of the Supervisor, in consultation with the Area Manager.

A guardrail system includes all rail elements, related hardware, reflectors, posts and blocks.

When a section of steel beam guard rail has been damaged by a motor vehicle accident, the Supervisor shall ensure immediate measures are taken to prevent additional hazards to traffic until such time as permanent repairs can be made. This cost may be recoverable.

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 6 Guard Rail Maintenance**  
**Guard Rail Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 166  
Activity Type: 167

**INSPECTION – Road Patrols**

During routine inspections or as situations arise, the Supervisor shall record deficiencies, post warning signs and schedule repairs as specified in the following “Standard” section.

The Supervisor shall consider all road sections that exhibit the conditions as specified in the “Standard” section, subsection 2, during the preparation of the “Annual Road Maintenance Improvement Report”.

**STANDARD**

1. Guard Rail Maintenance

Guard rail posts that have excessively heaved, settled or are excessively inclined shall be reset to the proper horizontal and vertical alignment.

All guard rail maintenance defects shall be repaired yearly. The Supervisor shall consider all guard rails sections that exhibit the conditions above during the preparation of the “Annual Road Maintenance Improvement Report”.

Guard rail maintenance shall also include the replacement of reflective delineators on posts and shall be repaired by Nov 30th.

2. Guard Rail Installation

Guard Rail Systems that are severely damaged and have lost structural integrity are to be replaced in accordance with the “Guard Rail Installation Response Time Table” below. Missing or damaged components that do not affect the structural integrity of the system shall be replaced as funding permits.

**Guard Rail Installation Response Time Table**

<b>Guard Rail Installation</b>	<b>Level 1A</b>	<b>Level 1B &amp; 2</b>	<b>Level 3 &amp; 4</b>
Repair or Replacement (Excluding EAGRT's)	21 Days	60 Days	120 Days
EAGRT's	60 days	NA	NA

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 6 Guard Rail Maintenance**  
**Guard Rail Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 166  
Activity Type: 167

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Areas where additional hazards have been identified, removal and replacement of guard rail sections over 50 metres in length will be undertaken in consultation with the Area Manager.

If a hazard exists with the guard rail system, emergency safety precautions (barricades, signs, jersey barriers, drums, etc.) are to be taken immediately to safeguard the traveling public.

## **RESOURCES**

Equipment: Post hole digger, Auger or backhoe  
Drill (40 cm minimum length)  
Shovels  
Wrenches  
Crow Bar

Labour: 1 operator if using backhoe  
2-3 crew persons  
Traffic control persons (as required)

Materials: Posts  
Nuts and bolts  
W beams and box beams  
Cable  
Zinc rich paint  
Collapsible ends  
Box beam posts  
Cable barrier posts  
Wire rope  
End Treatment Components

## **NORMAL PRACTICE**

- Complete hazard assessment.
- Set up temporary signing and traffic control devices (as required).

**CHAPTER 5 TRAFFIC CONTROL**  
**Section 6 Guard Rail Maintenance**  
**Guard Rail Installation**

Plant Maintenance Order Type: RO05  
Activity Type: 166  
Activity Type: 167

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- Ensure the elevation and alignment of all guard rail is erected according to the Nova Scotia Standard Specifications, “Steel Guardrail Systems and Wooden Guide Posts” (Division 5, Section 6).
- Guardrail should be raised, when construction or maintenance activities alter the elevation of the roadway, to maintain the effective height above the road surface.

**METHOD OF MEASUREMENT**

Guard rail maintenance: Work shall be recorded under “Activity Type 166, Guard Rail Maintenance” as metres measured from centre bolt hole to centre bolt hole (3.81 metres).

Guard rail installation: Work shall be recorded under “Activity Type 167, Guard Rail Maintenance” as metres measured from centre bolt hole to centre bolt hole (3.81 metres).

Any work involving only posts shall be recorded as metres of the length of rail affected by the associated posts (i.e. Straightening or replacing one guard rail post may involve removing two lengths of guard rail and would be recorded as  $2 \times 3.81 \text{ m} = 7.62 \text{ m}$ ).

**NORMAL OUTPUT**

Guardrail installation: 50 – 100 metres  
Guardrail maintenance: 300-500 metres

**DEFINITION**

Snow and ice control includes plowing, anti-icing (direct liquid application (DLA)), salting, pre-wet salting, sanding, and ice blading of roads before, during and after winter weather events.

**PURPOSE**

The winter maintenance standards establish levels of service on provincial highways. The winter maintenance levels of service for snow and ice control are based on road classification and traffic volumes.

**GENERAL**

The Supervisor is responsible for ensuring that highways are maintained in accordance with these Winter Maintenance Standards.

The use of salt in environmentally sensitive areas will be monitored and alternatives to salt will be used where practical.

The use of brine as a DLA and/or to pre-wet salt reduces the amount of salt applied to the roads (thereby reducing the impact to the environment), shortens the amount of time required to clear the roads and improves public safety.

The Supervisor shall ensure an accurate inventory of salt is maintained. For stockpiles that have been cross sectioned, the conversion factor of approximately 1405 kg/m<sup>3</sup> shall be used. The conversion factor shall be updated annually.

The Supervisor (or other authorized personnel) shall keep accurate and legible daily logs. The log shall consist of the following information:

- Temperature every hour
- Type and amount of precipitation every hour
- Dispatch, loading and end times for all vehicles
- Operators on duty
- Start and stop time of storm event
- Type of activity being performed (plowing, salting, DLA, pre-wetting, sanding)
- Vehicle breakdowns or accidents
- Emergency calls to the dispatch

## CHAPTER 6 SNOW AND ICE CONTROL

Plant Maintenance Order Type: RO90  
Activity Type: 104  
Activity Type: 105  
Activity Type: 106  
Activity Type: 109

- Amount of material loaded (salt, brine and sand)
- Supervisor in charge

### INSPECTIONS

1. Winter road patrols shall be carried out by designated personnel to monitor road and weather conditions as required. Inspection by road patrols shall cover all routinely observed road conditions, in addition to ensuring that winter levels of service are maintained.
2. The Supervisor is to follow the Department road reporting protocol regarding normal winter road condition reporting. The Supervisor (or other authorized personnel) shall update the Road Condition Reporting System (RCRS)/511 three times per day (6:00 am, 1:00 pm, 4:00 pm) during the winter season, and three times per day (8:00 am, 1:00 pm, 4:00 pm) during the shoulder seasons and when weather requires. Any changes in severe weather or road conditions, which occur between specified reporting periods, should be updated immediately on the RCRS/511.

### STANDARD

1. The following winter maintenance levels of service for snow and ice control are based on road classification and traffic volumes:

**Levels of Service Table**

LEVEL OF SERVICE	Level 1A	Level 1B	Level 2	Level 3	Level 4
Type of Roads	All 100 Series and selected high volume highways	Trunks and selected highways as per AADT limits	Routes and selected highways as per AADT Limits	All local roads	All gravel, double chip seal and sand seal roads
AADT Limits	Greater than 7,500	Between 7,500 – 4,000	Between 4,000 – 1,500	Less than 1,500	N/A

2. While this Maintenance Standard establishes levels of service, it is acknowledged that conditions may occur, which temporarily prevent achieving levels assigned. In such cases, attempts shall be made to keep highways open by utilizing all available equipment.
3. During severe weather conditions, when it becomes evident to the Supervisor that available resources are not sufficient to maintain highways open and passable, the Supervisor shall immediately notify the Area Manager and the RCMP (or local Police force). The Area Manager will determine if the road shall be closed. The Supervisor is required to erect and maintain all road closures following the process outlined in TIR Manual PR5094 Emergency Highway Closing Mobilization.
4. Pre-treating with DLA may be carried out on various sections of paved roads as conditions warrant. Equipment can be deployed up to 16 hours prior to the start of the weather event (snowfall, frost/black ice). If the weather event is expected to start out with above freezing temperatures and rain, do not pre-treat as the chemical will be washed away. If the DLA pre-treatment is applied, an application of salt and/or pre-wet salt is not required at the beginning of the storm.
5. Pre-treating with pre-wet salt may be carried out on paved roads as conditions warrant. Equipment can be deployed up to 2 hours prior to the start of the weather event (snowfall, freezing rain, sleet). If the weather event is expected to start out with above freezing temperatures and rain, do not pre-treat as the salt will be washed away. If the pre-wet salt is applied, an application of salt is not required at the beginning of the storm.
6. From the time unfavourable road conditions occur and winter equipment is required for the safety of the public, it is essential that the response time is kept to a minimum.
7. The Supervisor shall deploy winter maintenance operations prior to the accumulations of the specified snow depth if the roads are hazardous, slippery, or ice or slush is developing.

**Winter Levels of Service Description Table**

CLASSIFICATION	DESCRIPTION	TIME LIMIT
Level 1A	Essentially bare pavement	Within 8 hours
Level 1B	Essentially bare pavement	Within 12 hours
Level 2	Centre line bare	Within 12 hours
Level 3	Centre line bare	Within 24 hours
Level 4	Snow packed	Within 24 hours

8. Levels of Service

8.1 Level 1A – Essentially Bare Pavement

The defined level of service for Level 1A is essentially bare pavement and is the objective to be reached as soon as possible after the storm has ended or abated, normally within eight (8) hours. This level of service applies to 100 Series highways and other selected high-volume highways with an average daily traffic volume greater than 7,500 vehicles per day. To achieve this level of service, the Supervisor shall ensure snow is removed and de-icer is applied as described in these Maintenance Standards.

The use of de-icer is to be controlled, in terms of both quantity and frequency, to meet the specified level of service.

De-icers may be in the form of: 1) brine, or alternative, applied as a DLA; 2) as pre-wet salt, or 3) dry salt. DLA may be completed prior to the start of the storm. DLA may be used on road temperatures as low as -10°C. Pre-wet salt may be used on road temperatures as low as -10°C. Do not pre-wet, or use DLA, if road temperature is below -10°C and falling. It is important to evaluate and monitor pavement temperatures, road and weather conditions and trends to ensure proper de-icing treatment and timing of treatment is made.

Sand shall not normally be applied on Level 1A highways. Sand shall only be applied to Level 1A highways during severe cold weather when extremely slippery conditions exist.

A summary of Level 1A service is shown in the “Levels of Service Table” above.

## 8.2 Level 1B – Essentially Bare Pavement

The defined level of service for Level 1B is essentially bare pavement and is the objective to be reached, as soon as possible after the storm has ended or abated, normally within twelve (12) hours. This level of service applies to Trunk highways and other selected highways with an average daily traffic volume between 7,500 and 4,000 vehicles per day. To achieve this level of service, the Supervisor shall ensure snow is removed and de-icer is applied as described in these Maintenance Standards.

The use of de-icer is to be controlled, in terms of both quantity and frequency, to meet the specified level of service.

De-icers may be in the form of: 1) brine, or alternative, applied as a DLA; 2) as pre-wet salt, or 3) dry salt. DLA may be completed prior to the start of the storm. DLA may be used on road temperatures as low as -10°C. Pre-wet salt may be used on road temperatures as low as -10°C. Do not pre-wet, or use DLA, if road temperature is below -10°C and falling. It is important to evaluate and monitor pavement temperatures, road and weather conditions and trends to ensure proper de-icing treatment and timing of treatment is made.

Sand is to be applied to all roads or sections of a road designated as being in environmentally sensitive areas. The use of salt in environmentally sensitive areas will be monitored and alternatives to salt will be used where practical.

A summary of Level 1B service is shown in the “Levels of Service Summary Table” above.

## 8.3 Level 2 – Centre Line Bare

The defined level of service for Level 2 is a minimum of centre line bare conditions and is the objective to be reached as soon as possible after the storm has ended or abated, normally within twelve (12) hours and be maintained until conditions permit baring the pavement full width. This level of service applies to 200 and 300 series Routes and other selected highways with an average daily traffic volume between 4,000 and 1,500 vehicles per day. To achieve this level of service, the Supervisor shall ensure snow is removed and de-icer is applied as described in these Maintenance Standards.

The use of de-icer is to be controlled, in terms of both quantity and frequency, to meet the specified level of service.

De-icers may be in the form of: 1) brine, or alternative, applied as a DLA; 2) as pre-wet salt, or 3) dry salt. DLA may be completed prior to the start of the storm. DLA may be used on road temperatures as low as -10°C. Pre-wet salt may be used on road temperatures as low as -10°C. Do not pre-wet, or use DLA, if road temperature is below -10°C and falling. It is important to evaluate and monitor pavement temperatures, road and weather conditions and trends to ensure proper de-icing treatment and timing of treatment is made.

Sand is to be applied to all roads or sections of a road designated as being in environmentally sensitive areas. The use of salt in environmentally sensitive areas will be monitored and alternatives to salt will be used where practical.

A summary of Level 2 service is shown in the “Levels of Service Summary Table”.

#### 8.4 Level 3 – Centre Line Bare

The defined level of service for Level 3 is a minimum of centre line bare condition and is the objective to be reached as soon as possible after the storm has ended or abated, normally within twenty-four (24) hours, and be maintained until conditions permit barring the pavement full width. This level of service applies to all local paved roads with an average daily traffic volume of less than 1,500 vehicles per day. To achieve this level of service, the Supervisor shall ensure snow is removed and de-icer or sand is applied as described in these Maintenance Standards.

The use of de-icer or sand is to be controlled, in terms of both quantity and frequency, to meet the specified level of service.

De-icers may be in the form of: 1) brine, or alternative, applied as a DLA; 2) as pre-wet salt, or 3) dry salt. DLA may be completed prior to the start of the storm. DLA may be used on road temperatures as low as -10°C. Pre-wet salt may be used on road temperatures as low as -10°C. Do not pre-wet, or use DLA, if road temperature is below -10°C and falling. It is important to evaluate and monitor pavement temperatures, road and

weather conditions and trends to ensure proper de-icing treatment and timing of treatment is made.

Sand is to be applied to all roads or sections of a road designated as being in environmentally sensitive areas. The use of salt in environmentally sensitive areas will be monitored and alternatives to salt will be used where practical.

The application of de-icer or sand will normally take place after a snowfall. The application of de-icer or sand may be applied at the beginning of a storm to hills, turns, intersections or railway crossings or where geographical conditions require.

A summary of Level 3 service is shown in the “Levels of Service Summary Table”.

Note: For purposes of pilot projects alternatives to above can be considered with prior approval of the Executive Director of Maintenance and Operations.

#### 8.5 Level 4 – Snow Packed

The defined level of service for Level 4 is a minimum of snow packed condition and is the objective to be reached as soon as possible after the storm has ended or abated, normally within twenty-four (24) hours. Plowing should commence when an accumulation of approximately 150mm occurs.

This level of service applies only to gravel roads, double chip seal roads and sand seal roads. To achieve this level of service the Supervisor shall ensure snow is removed and sand is applied as described in these Maintenance Standards.

Gravel, double chip seal and sand seal roads shall only have sand or other approved abrasives applied. The use of salt or other de-icers is strictly prohibited.

The use of sand or other approved abrasives is to be limited, in terms of both quantity and frequency, and normally applied only to hills, turns, intersections, and railway crossings after a storm has ended. Level areas will not normally be sanded unless severe slippery conditions exist. Urban areas may require the full length of the road be sanded.

A snow packed surface is described as a smooth, hard, good driving surface

with satisfactory friction with shoulders that are free of loose snow.

During warming trends, it may be more efficient and economical to bare the surface than to try to maintain a snow packed condition.

With the exception of double chip seal and/or sand seal roads, the Supervisor shall ensure all snow packed surfaces that have washboarded, rutted, potholed, or which exhibit signs of developing slipperiness or where slipperiness has developed, especially due to rain or in rain conditions are ice bladed.

A summary of Level 4 service is shown in the “Levels of Service Summary Table”.

**Levels of Service Summary Table**

LEVEL OF SERVICE	Level 1A	Level 1B	Level 2	Level 3	Level 4
Type of Road	All 100 Series and selected high volume highways	Trunks and selected highways as per AADT limits	Routes and selected highways as per AADT Limits	All local paved roads	All gravel, double chip seal and sand seal roads
AADT Limits	> 7,500	7,500 – 4,000	4,000 – 1,500	< 1,500	n/a
<b>Primary Objective</b>	Essentially bare pavement *	Essentially bare pavement *	Centre line bare	Centre line bare	Snow packed
Time to meet primary objective after the end of storm, not exceeding	8 hours	12 hours	12 hours	24 hours	24 hours
<b>Direct Liquid Application (DLA)</b> Application of DLA	up to 16 hours prior to start of storm	up to 16 hours prior to start of storm	up to 16 hours prior to start of storm	up to 16 hours prior to start of storm	n/a
Max. Application Rate	up to 120 l/lane km.	up to 120 l/lane km.	up to 120 l/lane km.	up to 120 l/lane km.	n/a
<b>Pre-Wet</b> Application of Pre-wet Salt	up to 2 hours prior to start of storm	up to 2 hours prior to start of storm	up to 2 hours prior to start of storm	up to 2 hours prior to start of storm	n/a
Max. Application Rate	up to 30%	up to 30%	up to 30%	up to 30%	n/a
<b>Salting</b> Application of salt	Beginning of storm (if no pre-treatment) and during, as required	Beginning of storm (if no pre-treatment) and during, as required	Beginning of storm (if no pre-treatment) and during, as required	Beginning of storm where required (if no pre-treatment), and after	n/a
Max. ** Application Rate (rate based on 2-lane road)	125 kg/CL km	125 kg/CL km	110 kg/CL km	85 kg/CL km	n/a
<b>Plowing</b> Begin plowing when snow accumulation	≤ 25 mm	≤ 25 mm	≤ 50 mm	During storm, as per route prioritization	During storm, as per route prioritization (150mm accumulation)
Max allowable accumulation	≤ 75 mm	≤ 100 mm	≤ 150 mm	n/a	n/a
<b>Sanding</b> Application of sand	- Not normally sanded - Sand only during severe cold with slippery conditions	Beginning of storm for environmentally sensitive areas or during severe cold with slippery conditions	Beginning of storm for environmentally sensitive areas or during severe cold with slippery conditions	- Beginning of storm where required and after storm - for environmentally sensitive areas - slippery conditions when required	- After storm - For environmentally sensitive areas - Slippery conditions when required
suggested Application Rate (rate based on 2-lane road)	n/a	800 kg/CL km	800 kg/CL km	500 kg/CL km	500 kg/CL km

\* When pavement temperature drops below -10°C the effectiveness of salt is decreased significantly. Time of day and temperature trends must be considered in salting decisions. With prior approval from the Area Manager, the Supervisor shall use sand or other approved abrasive materials to maintain an even surface free of loose snow with satisfactory friction. A roadway free of snow and ice is considered always to have satisfactory friction. A snow-covered roadway has satisfactory friction if permitted vehicles can be driven on it with safety.

\*\* Reduced application rates may be used. Reduced rates may be considered based on road temperature, trends, type of weather event, and time of year.

**RESOURCES**

Equipment: Snow removal equipment

Labour: Operators  
Dispatchers

Materials: Salt, sand, brine

**NORMAL PRACTICE**

- When conditions dictate, call out operators.
- Perform necessary activities to reach the specified levels of service

**METHOD OF MEASUREMENT**

“Activity 104, Plowing” – Machine Hours

“Activity 105, Salting” – Tonnes

“Activity 106, Sanding” – Tonnes

“Activity 109, DLA” – Litres

**NORMAL OUTPUT**

N/A

## Appendix A - Activity Condition Code

Condition Code	Activity Type	Condition Description	Time Line	Criteria Date
110.1	GRADING	General	28	
110.2	GRADING	Gravel Roads: AADT < 50 (Graded once per year)		
111.1	SHOULDER MAINTENANCE	Potential Hazards (depth > 150mm) MUST BE SIGNED	1	
111.2	SHOULDER MAINTENANCE	Lengths > 100m and Depth > 100 mm MUST BE SIGNED	3	
111.3	SHOULDER MAINTENANCE	Level 1A, 1B: Depth 100-150mm	30	
111.4	SHOULDER MAINTENANCE	Level 1A, 1B: Depth 151-300mm	14	
111.5	SHOULDER MAINTENANCE	Level 1A, 1B: Depth >300mm	7	
111.6	SHOULDER MAINTENANCE	Level 2, 3: Depth 100-150mm	90	
111.7	SHOULDER MAINTENANCE	Level 2, 3: Depth 151-300	30	
111.8	SHOULDER MAINTENANCE	Level 2, 3: Depth >300mm	14	
113	DUST CONTROL	Within 24-48 hours of final spring grading		
114.1 Machine 115.1 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Brush that reduces stopping and passing visibility in Intersections and Interchanges	1	
114.2 Machine 115.2 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Brush in <u>shoulder areas</u> that restrict passing site distance and driveway entrances	30	
114.3 Machine 115.3 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Brush obstructing vertical clearances and shoulders-infringing on guard rails	60	
114.4 Machine 115.4 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 1A: When Blocking - All Critical Signs	1	
114.5 Machine 115.5 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 1A: When Blocking - Regulatory / Warning Signs	14	
114.6 Machine 115.6 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 1A: When Blocking - Information Signs	90	
114.7 Machine 115.7 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 1B: When Blocking - All Critical Signs	1	
114.8 Machine 115.8 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 1B: When Blocking - Regulatory / Warning Signs	14	
114.9 Machine 115.9 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 1B: When Blocking -Information Signs	120	
114.10 Machine 115.10 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 2: When Blocking - All Critical Signs	1	
114.11 Machine 115.11 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 2: When Blocking - Regulatory / Warning Signs	60	

## Appendix A - Activity Condition Code

Condition Code	Activity Type	Condition Description	Time Line	Criteria Date
114.12 Machine 115.12 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Leve 2: When Blocking - Information Signs	120	
114.13 Machine 115.13 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 3 & 4: When Blocking - All Critical Signs	1	
114.14 Machine 115.14 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 3 & 4: When Blocking - Regulatory / Warning Signs	60	
114.15 Machine 115.15 Manual	BRUSH CUTTING - MACHINE OR MANUAL	Level 3 & 4: When Blocking - Information Signs	180	
115.1 Machine 156.1 Manual	MOWING - MACHINE OR MANUAL	Within Urban areas: height > 200mm (medians, intersections, islands and boulevards)	1	
115.2 Machine 156.2 Manual	MOWING - MACHINE OR MANUAL	L1A & L1B (Per TIR Manual PR5032)		
115.3 Machine 156.3 Manual	MOWING - MACHINE OR MANUAL	L1B, L2 - height > 300mm		30-Sep
115.4 Machine 156.4 Manual	MOWING - MACHINE OR MANUAL	Level 3 & 4 - (as needed)		
116.1	DEBRIS AND LITTER CLEANUP	All Roads – When dead animal carcasses create a health hazard	1	
116.2	DEBRIS AND LITTER CLEANUP	L1A - Paved Surface	1	
116.3	DEBRIS AND LITTER CLEANUP	L1A - Non-Paved Shoulder > 0.03 sq. m.	3	
116.4	DEBRIS AND LITTER CLEANUP	L1A - Beyond Shoulder >0.4 sq. m.		30-Nov
116.5	DEBRIS AND LITTER CLEANUP	L1B - Paved Surface	1	
116.6	DEBRIS AND LITTER CLEANUP	L1B - Non-Paved Shoulder >0.03 sq. m.	3	
116.7	DEBRIS AND LITTER CLEANUP	L1B - Beyond Shoulder > 0.4 sq. m.		30-Nov
116.8	DEBRIS AND LITTER CLEANUP	L2 - Paved Surface	1	
116.9	DEBRIS AND LITTER CLEANUP	L2 - Non-Paved Shoulder >0.03 sq. m.	7	
116.10	DEBRIS AND LITTER CLEANUP	L2 - Beyond Shoulder >0.4 sq. m.		30-Nov
116.11	DEBRIS AND LITTER CLEANUP	L3 –Paved Surface	1	
116.12	DEBRIS AND LITTER CLEANUP	L3 – Non-Paved Shoulder >0.03 sq. m.	7	
116.13	DEBRIS AND LITTER CLEANUP	L3 – Beyond Shoulder >0.4 sq. m.		30-Nov
116.14	DEBRIS AND LITTER CLEANUP	L4 – Gravel Surface >0.01 sq. m.	7	

## Appendix A - Activity Condition Code

Condition Code	Activity Type	Condition Description	Time Line	Criteria Date
116.15	DEBRIS AND LITTER CLEANUP	L4 - Beyond Shoulder >0.4 sq. m.		30-Nov
118.1	DITCHING	Ditches cleaned as required		30 -Sep
118.2	DITCHING	Obstructions causing damage or unsafe conditions	1	
118.3	DITCHING	Siltation - immediately	1	
119.1	SHOULDER GRADING	High Shoulders and Windrows that cause ponding water on road	30	
119.2	SHOULDER GRADING	Level 1A: 3 yr. rotation or as required		
121.1	STREET SWEEPING	When a hazard.	1	
121.2	STREET SWEEPING	Roads with paved shoulders and/or curb and gutter – before cleaning of catch basins		
121.3	STREET SWEEPING	Paved shoulder, bullnoses and gore areas – before pavement markings applied		
123	GRAVEL PATCHING	Annually as funding permits		
131.1	JERSEY BARRIER MAINTENANCE	Hazards: TO BE MARKED	1	
131.2	JERSEY BARRIER MAINTENANCE	Replace all reflectors		30-Nov
131.3	JERSEY BARRIER MAINTENANCE	Breakouts	7	
132.1	HAND PATCHING	Potholes > 0.1 m2 -MUST BE SIGNED	1	
132.2	HAND PATCHING	L1A - Area 0.1 sq. m. Depth 50-100mm	14	
132.3	HAND PATCHING	L1B - Area 0.1 sq. m. Depth 50-100mm	30	
132.4	HAND PATCHING	L2 - Area 0.1 sq. m. Depth 50-100mm	120	
132.5	HAND PATCHING	L3 - Area 0.1 sq. m. Depth 50-100mm	180	
132.6	HAND PATCHING	L1A - Area 0.1 sq. m. Depth >100mm	7	
132.7	HAND PATCHING	L1B - Area 0.1 sq. m. Depth >100mm	21	
132.8	HAND PATCHING	L2 - Area 0.1 sq. m. Depth >100mm	60	
132.9	HAND PATCHING	L3 - Area 0.1 sq. m. Depth >100mm	120	

## Appendix A - Activity Condition Code

Condition Code	Activity Type	Condition Description	Time Line	Criteria Date
133.1 Maint. 134.1 Install	SIGN MAINT/INST	All Road Levels - STOP SIGNS	1	
133.2 Maint. 134.2 Install	SIGN MAINT/INST	L1A – All Other Critical Signs (Yield, One-Way, Do Not Enter)	3	
133.3 Maint. 134.3 Install	SIGN MAINT/INST	L1A - Regulatory/Warning	14	
133.4 Maint. 134.4 Install	SIGN MAINT/INST	L1A - Information Signs < 1 sq. m.	30	
133.5 Maint. 134.5 Install	SIGN MAINT/INST	L1A - Information Signs > 1 sq. m.	60	
133.6 Maint. 134.6 Install	SIGN MAINT/INST	L1B - All Other Critical Signs (Yield, One-Way, Do Not Enter)	3	
133.7 Maint. 134.7 Install	SIGN MAINT/INST	L1B - Regulatory/Warning	14	
133.8 Maint. 134.8 Install	SIGN MAINT/INST	L1B - Information Signs < 1 sq. m.	60	
133.9 Maint. 134.9 Install	SIGN MAINT/INST	L1B - Information Signs > 1 sq. m.	90	
133.10 Maint. 134.10 Install	SIGN MAINT/INST	L2 - All Other Critical Signs (Yield, One-Way, Do Not Enter)	7	
133.11 Maint. 134.11 Install	SIGN MAINT/INST	L2 - Regulatory/Warning	21	
133.12 Maint. 134.12 Install	SIGN MAINT/INST	L2 - Information Signs < 1 sq. m.	90	
133.13 Maint. 134.13 Install	SIGN MAINT/INST	L2 - Information Signs > 1 sq. m.	90	
133.14 Maint. 134.14 Install	SIGN MAINT/INST	L3 & L4 - All Other Critical Signs (Yield, One-Way, Do Not Enter)	14	
133.15 Maint. 134.15 Install	SIGN MAINT/INST	L3 & L4 - Regulatory/Warning	60	
133.16 Maint. 134.16 Install	SIGN MAINT/INST	L3 & L4 - Information Signs < 1 sq. m.	90	
133.17 Maint. 134.17 Install	SIGN MAINT/INST	L3 & L4 - Information Signs > 1 sq. m.	120	
135.1	PAVEMENT MARKINGS	School Crosswalk Markings		31-Aug
135.2	PAVEMENT MARKINGS	Other Pavement Markings		15-Oct
136.1	TRAFFIC LINE PAINTING	Changes to existing CL (TO BE MARKED)		31-May
136.2	TRAFFIC LINE PAINTING	L1A - ALL Lines		31-Jul
136.3	TRAFFIC LINE PAINTING	L1B & L2 - CENTRE LINES Yearly		15-Aug

## Appendix A - Activity Condition Code

Condition Code	Activity Type	Condition Description	Time Line	Criteria Date
142.1	CULVERT INSTALL (CONCRETE)	Culverts Deemed Beyond Repair (Replaced as funding permits)		
142.2	CULVERT INSTALL (CONCRETE)	In-stream culvert work		30-Sep
142.3	CULVERT INSTALL (CONCRETE)	Culvert failure, causing damage: MUST BE SIGNED	1	
142.4	CULVERT INSTALL (CONCRETE)	Culvert failures, causing damage: Replace	7	
143.1	CULVERT INSTALL (DRIVEWAY)	Culverts Deemed Beyond Repair (Replaced as funding permits)		
143.2	CULVERT INSTALL (DRIVEWAY)	In-stream culvert work		30-Sep
143.3	CULVERT INSTALL (DRIVEWAY)	Driveway Impassable: Immediate repair	1	
143.4	CULVERT INSTALL (DRIVEWAY)	Culvert failures, causing damage: Replace	21	
144.1	CULVERT INSTALL (ROADWAY non-concrete)	Culverts Deemed Beyond Repair (Replaced as funding permits)		
144.2	CULVERT INSTALL (ROADWAY non-concrete)	In-stream culvert work		30-Sep
144.3	CULVERT INSTALL (ROADWAY non-concrete)	Culvert failure, causing damage: MUST BE SIGNED	1	
144.4	CULVERT INSTALL (ROADWAY non-concrete)	Culvert Failure, causing damage: Replace	7	
146	CATCH BASIN INSTALLATION	When Failed and Causing Damage to Roadway	1	
147.1	CATCH BASIN MAINTENANCE	Cleaning - every 2 years–		
147.2	CATCH BASIN MAINTENANCE	CB sumps maintained to 75mm below outlet		
147.3	CATCH BASIN MAINTENANCE	Missing or damages grates / covers – TO BE SIGNED / PROTECTED immediately	1	
147.4	CATCH BASIN MAINTENANCE	Missing or damaged grates / cover (replace as soon as possible)		
147.4	CATCH BASIN MAINTENANCE	Repairs: Damage that threatens infrastructure or creates unsafe conditions	1	
147.5	CATCH BASIN MAINTENANCE	Repairs: Non-imminent damage	60	
151.1	STORM SEWER MAINTENANCE	Storm Sewer – Cleaning (2 years)		
151.2	STORM SEWER MAINTENANCE	Repairs: Damage that threatens infrastructure or creates unsafe conditions	1	
151.3	STORM SEWER MAINTENANCE	Repairs: Non-imminent damage	60	

## Appendix A - Activity Condition Code

Condition Code	Activity Type	Condition Description	Time Line	Criteria Date
152	STORM SEWER INSTALLATION	When Failed or Causing Damage	1	
158.1	CULVERT MAINTENANCE	Culverts to be cleaned as required		31-Oct
158.2	CULVERT MAINTENANCE	Obstructions that may cause damage or unsafe conditions	1	
158.3	CULVERT MAINTENANCE	Damaged bars/grids		31-Oct
164	GUIDE POST MAINTENANCE	Repair, straightening, resetting, repl. Delineators (as funding permits)		
165	GUIDE POST INSTALL	Replacement (as funding permits)		
166.1	GUARD RAIL MAINTENANCE	Excessively heaved, settled or inclined (as funding permits)		
166.2	GUARD RAIL MAINTENANCE	Reflective Delineators		30-Nov
167.1	GUARD RAIL INSTALLATION	L1A - Severely damaged rails, posts & blocks	21	
167.2	GUARD RAIL INSTALLATION	L1B & L2 - Severely damaged rails, posts & blocks	60	
167.3	GUARD RAIL INSTALLATION	L3 & L4 - Severely damaged rails, posts & blocks	120	
167.4	GUARD RAIL INSTALLATION	Missing / damaged components not severe - (replaced as funding permits)		
167.5	GUARD RAIL – INSTALL - EAGRT'S	L1A – Severely damaged	60	
170	SPREADER PATCHING	On an annual basis as funding permits		
194	SEEDING	As per the "Maintenance Ditching Guidelines"		
195	WEED CONTROL	As per the "Integrated Roadside Vegetation Manual"		
OK	NO DEFECTS	OK	0	

**Nova Scotia**



**Department of  
Transportation  
and Public Works**

**AGREEMENT NO. HRM - 01  
HALIFAX REGIONAL MUNICIPALITY**

**NOW THIS AGREEMENT WITNESSES** that in consideration of the covenants, promises and agreements hereinafter contained to be by them observed, performed and paid, the Parties mutually agree as follows:

**FUTURE DELINEATION**

1. (a) The Minister and the Regional Municipality agree that highways within an area of the Regional Municipality which meet the following criteria (which area is referred to in this paragraph as the "Urban Density Area") shall be transferred to the Regional Municipality:
  - (i) The urban density area must abut or lie within 10 kms of the area shown as the "Central Urban Core" shown in Schedule "C" which is attached to this agreement.
  - (ii) The urban density area must be at least 1 kilometre wide at any point.
  - (iii) The urban density area must be at least 1 kilometre by 1 kilometre in extent.
  - (iv) There must be at least 90 dwelling units per square kilometre in the urban density area.

Where there are substantial blocks of urban non-residential uses or large water bodies which preclude residential development, an equivalent area of residential development beyond the blocks must be added to the urban density area to determine its dimensions. The dwelling unit density will then be calculated only for the areas for residential development. This provision does not include large blocks of undeveloped land such as a municipal water supply water shed or unserved, future expansion areas for industrial parks.

- (b) Notice of the transfer of highways located within an area which meets the criteria set out in sub-paragraph (a) will be made by the Minister to the Regional Municipality prior to October 1, 1999, and on October 1 of every third year thereafter. Transfer of the highways shall take place on April 1, 2000, and on April 1 of every third year thereafter.
- (c) The parties hereto shall each monitor the location of new development within the Regional Municipality not within the area shown on Schedule "C" for possible future transfer to the Regional Municipality.

**PERSONNEL**

2. (a) The Regional Municipality agrees to hire Department of Transportation & Public Works employees directly displaced due to the street transfer, to a maximum of 29 employees,

subject to availability of suitably skilled individuals and in accordance with the following:

- i) Such employees shall be eligible to participate in a pension plan with the Halifax Regional Municipality commencing at the time of appointment to positions with Halifax Regional Municipality. Halifax Regional Municipality and the Province will cooperate to transfer fully funded pension benefits from the provincial pension plan subject to the provisions of a reciprocal pension transfer agreement to be established between plans.
  
- (b) Nothing in this agreement is intended to restrict or prevent Halifax Regional Municipality from contracting out for services related to street maintenance.

### COST-SHARING OF HIGHWAY MAINTENANCE

3. In Paragraphs 3 to 10 of this agreement

- (a) "highway" means and includes those cost shared streets within the Regional Municipality listed in Schedule "A" and are shown marked in blue in Schedule "B", which Schedules are attached to and form part of this agreement;
  
- (b) "maintenance" means
  - (i) the work of maintaining the full width of the pavement of the highway and includes repaving, patching, crack filling, application of slurry seal and seal coating, grading of shoulders, application of dust layer including shoulders, upkeep of shoulders; repair to curbs, gutters, and the drainage system from the gutters to the main storm sewer; cleaning and repair of ditches, culverts, catch basins and catch basin connectors to the main storm sewers; installation, replacements, repairs and addition to guide posts and/or guardrail; pre-marking and painting of centre lines, channelization lines and edge lines; street cleaning to a maximum of 3 times per year; mowing within the highway boundaries including medians; installation of new approved traffic control signals; placement, replacement and/or repairs to traffic signs and standards dealing with the directing of through traffic only; installation of new approved overhead sign structures,
  
  - (ii) the maintaining of a bridge, a bridge being defined as a structure having a clear span of 10 feet or more and includes the cost of maintaining the bridge railing and bridge deck including the sidewalk surfaces, repaving, seal coating, pre-marking and painting centre lines, channelization lines and edge lines, but shall not include bridge

lighting, snow removal, ice control, or maintaining water or sewer lines. The placing of additional water and/or sewer lines on the bridge will be with the written permission of the Department. The Department will pay the full cost of any repairs to the substructure or superstructure not specified above including bridge painting.

- (c) maintenance does not include snow removal or ice control; maintenance of street lights, traffic signals or the cost of supplying electrical power to same; local traffic control signs; medians except mowing; sidewalks; painting of crosswalks and curbs; water lines or fire hydrants; raising or lowering catch basins or manholes, water valves, sanitary sewers or main storm sewers, unless these adjustments are made necessary by repaving; or any repairs made necessary by the carrying out of non-shareable work by the Regional Municipality or others,
  - (d) repaving, installation of new approved traffic control signals and installation of new approved overhead sign structures, although included in this maintenance agreement, are capital expenditures and must be requested separately through the person designated by the Deputy Minister of Transportation and Public Works (hereinafter, Deputy Minister).
4. The Regional Municipality agrees to maintain the highways in good and proper repair.
5. Except as otherwise provided in this agreement, the Regional Municipality shall arrange for the carrying out of all maintenance.
6. (a) Notwithstanding anything contained in this agreement, the Minister shall not be liable to make any contribution for any maintenance work undertaken by the Regional Municipality under this agreement, unless the Regional Municipality
- (i) submits to Deputy Minister, specifications, estimates for each item of work required, and other particulars as he may require respecting the proposed work; and
  - (ii) obtains from the Deputy Minister written consent to such work, which shall include the items of work to be cost shared and the estimated cost of each item.
- (b) The cost of any work required in excess of the original approved total estimated cost, plus 10%, must receive additional approval in writing from the Deputy Minister before the Department will share in this cost.

7. The Minister will pay to the Regional Municipality fifty (50) percent of the cost of all maintenance completed in accordance with the provisions of this agreement.
8. Where it is the opinion of the Minister that the Regional Municipality has failed to maintain the highways as herein provided, the Minister may undertake and complete such maintenance as he deems necessary and for this purpose may employ or use any workmen, machinery and equipment required to carry out and complete such maintenance.
9. The Regional Municipality shall pay to the Minister fifty (50) percent of the cost of all maintenance done by the Minister in accordance with Paragraph 8 of this agreement within 60 days following submission of an account to the Regional Municipality.
10. The Regional Municipality shall, at the request of the Minister, permit anyone designated by him to inspect or audit any books, records, agreements or any other documents relating to maintenance undertaken by the Regional Municipality under this agreement.

#### **OTHER CONSIDERATIONS**

11. The Minister and the Halifax Regional Municipality agree that the following form part of this agreement:
  - a) the Minister will accept ownership and control of the Victoria Road Interchange including all ramps and that portion of Highway 111 formerly owned by the City of Dartmouth.
  - b) The Minister will accept ownership and control of Rte.333 from Tr 3 to the former city boundary, a distance of 3.8 kms
  - c) The Province will provide snow and ice control on the Akerley Blvd. Extension from Burnside Dr. to the Interchange of Hwy 107 and Akerley Blvd. This service will commence in 1996/97 and be discontinued upon completion of Burnside Dr. to interconnect with Hwy 107.
  - d) The Department will provide snow and ice control on Ragged Lake Blvd. and Evergreen Place on a year by year basis until the park develops further.
  - e) The Department agrees to accept a maximum of twenty kilometres of subdivision streets meeting the following criteria:
    - i) streets must be located in Halifax Regional Municipality outside the defined core area.

- ii) streets must be built to Department Specifications.
- iii) streets must be approved during the period from April 1, 1995 to April 1, 1998.
- f) The Department agrees to lease the Bedford Maintenance facility to Halifax Regional Municipality for a period of two years at a rate of \$1.00 per year with the option to extend the same conditions until the Glendale Road/Duke Street Connector and diamond interchange at Highway 102 are fully operational.

**TERM OF AGREEMENT**

- 12. (a) This agreement will terminate upon the agreement of both parties to so terminate it.
- (b) This agreement is effective as of and from JUNE 24, 1996. *WJ*

IN WITNESS WHEREOF the Minister has hereunto subscribed his hand and affixed his seal and the Regional Municipality has set and affixed its corporate seal, authenticated by the signatures of the Mayor and the Clerk of the Regional Municipality, hereunto duly authorized.

**SIGNED, SEALED AND DELIVERED**  
in the presence of:

[Redacted Signature]

WITNESS

[Redacted Signature]

WITNESS

[Redacted Signature]

WITNESS

HER MAJESTY THE QUEEN in Right of the  
Province of Nova Scotia

[Redacted Signature]

RICHARD W. MANN  
MINISTER OF TRANSPORTATION AND  
PUBLIC WORKS

THE HALIFAX REGIONAL MUNICIPALITY

[Redacted Signature]

per: MAYOR *-JD*

[Redacted Signature]

per: CLERK