



# **CONTRACT ADMINISTRATION MANUAL**

## **HIGHWAY AND BRIDGE MAINTENANCE**







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### **- INTRODUCTION -**

This manual is a revised version and replaces Alberta Transportation's Contract Administration Manual for Highway and Bridge Maintenance issued in February 1999.

This manual is intended to provide a framework for consistent administration of highway maintenance contracts province wide. This manual outlines the duties and responsibilities of Alberta Transportation's highway maintenance sector employees, and provides proper protocol for handling issues that arise from contract interpretation and work specifications.

This manual is not intended to replace or modify the contents of the Department's highway maintenance contracts or specifications.

Any omissions, obvious errors, or recommendations for future updates to this manual should be forwarded to the Director, Maintenance, Specifications and Traffic Operations of the Department's Technical Standards Branch.

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## **1.0 GENERAL MAINTENANCE CONTRACT POLICY**

### **1.0.1 GENERAL**

Alberta Transportation wants to foster a strong working relationship with its Contractors. The relationship has been carefully structured to draw on the strengths of the government and private sector organizations involved in maintaining Alberta's roads and bridges.

A strong relationship helps the work to be completed safely, on time, on budget, and within the plans and specifications laid out in the contracts to which all participants have agreed.

### **1.0.2 MANUAL'S APPROACH**

Alberta Transportation employees will find that this manual sets out a philosophy and standard approach to contract highway and bridge maintenance administration for Alberta. Staff and Contractors in all regions of the Province will be using this document as a reference, training manual, and reminder of how Alberta's roads should be maintained. It is a common-sense, easy-to-read document that explains how the partnering process works between TRANS and its Highway and Bridge Maintenance Contractors.

Much of the information refers directly to the responsibilities of TRANS's Maintenance Contract Inspectors because they are the Province's front line – they work with Contractors' foremen and crews as well as the TRANS management every day.

### **1.0.3 BRIDGES**

Information on bridge maintenance is covered in the documents that are the extension for the Highway Maintenance Contracts. Section 6 of this manual explains the roles of Alberta Transportation's bridge staff as they administer the minor bridge maintenance programs. Definitions can be found in this section as well as in Section 6.

### **1.0.4 DEFINITIONS**

This is not an exhaustive list, but the definitions contained here might help the reader of the Contract Administration Manual.

#### ***Agricultural Fieldman***

An agricultural expert who works for an individual Municipal District or County. Ag Fieldmen are responsible for weed control and can issue weed notices to private landowners and government agencies.

***Alberta Infrastructure (AI)***

A government agency that owns several facilities where Contractors have their maintenance shops. They also play a role in monitoring and developing processes that address and minimize ongoing site contamination in many of the Contractors' current maintenance yards.

***ARHCA***

Alberta Roadbuilders and Heavy Construction Association

***BATG***

Budget Allocation Task Group

***BMB***

Business Management Branch, Alberta Transportation

***Claim (by Contractor)***

A claim is a request for additional compensation from the Department for alleged costs he has incurred or losses he has suffered during the performance of his duties under a Contract, when actual circumstances encountered were, in his opinion, at variance with terms described in the Contract.

***Claim (by Third Party)***

These claims can occur as a result of either real or perceived damage as the result of the actions of the Contractor, or his agents, as well as the actions of the Department, where there is a real or perceived negligence. Claims can also be received from Subcontractors or suppliers who are dissatisfied either with the amount or timing of payment, or have other issues with warranties, holdback, or related concerns generally affecting compensation, or in some cases affecting the firm's reputation in a negative manner.

***Construction Engineer (CE)***

Assists the Construction Manager in ensuring that the construction program is delivered. Construction Engineers supervise the consultants who prepare designs, tender packages, and provide project management on construction projects.

***Construction Manager (CM)***

Oversees the construction program in each Region.

***Contract Maintenance Area (CMA)***

The province has been divided into geographic areas. Each area has been awarded to a contractor who is responsible for the maintenance of the provincial highway system, as well as the reserves and parks roads and water works infrastructure, in that area. There are 30 CMAs in the province, each with approximately 1000 two-lane equivalent kilometres of provincial highway. A Maintenance Contract may be as small as a single CMA, but more commonly, a Contract is made up of multiple CMAs, to a current maximum of seven.

***Development/Planning Technologist***

The Development/Planning Technologist works from each District office, approving development permits, utility permits, permits for special events, community business signs, etc. Maintenance Contract Inspectors and Field Support Technologists provide field information for this position, often inspecting the area before, during, and after the work is performed.

***DFO***

Department of Fisheries and Oceans

***Disagreement***

A disagreement is a dispute between the Contractor and Alberta Transportation over application of the Contract Specifications or measurement of quantities in the field. A disagreement can be resolved at whichever level is appropriate. If it can be resolved at the field level, it is generally preferable to do so. If it can't be resolved at that level, it should be escalated to the next level.

Escalation should occur if the people involved do not have the expertise, experience, or authority to solve the disagreement. Escalation can also occur if the parties involved cannot achieve agreement at their level. Generally, as the issue becomes more difficult, increasingly senior levels of supervisory personnel/management become involved as they tend to have a wider perspective on the costs/benefits of a course of action, as well as the wider impact the decision may have on their respective organizations. An example of escalation levels could be:

<b>Alberta Transportation</b>	<b>Contractor</b>
1. Maintenance Contract Inspector (MCI)	Foreman
2. Operations Engineer (OE)	Superintendent
3. Operations Manger (OM)	Manager

This varies among Contracts.

***Engineer***

The person designated by the Minister to administer the Contracts for maintenance Work, and shall include a person authorized by the Engineer to perform, on his behalf, any of his functions under the Contract.

***Failure Definition Handbook***

This was developed by ARHCA and TRANS as a guideline to determining whether the work under discussion is acceptable. It supplements the Specifications, but does not supersede them.

***Inventory Section (from the Pavement Management System (PMS) Database)***

The PMS database breaks down the highway network into inventory sections based on the pavement geometrics and construction history. For example, the PMS database will have three inventory sections on one highway: one for the two-lane section, one for the same two-lane highway with a climbing lane, and one for the two-lane highway past the top of the hill. This system will be replaced with a new system called RoMaRa in the near future.

***Laneway Code***

A description of where a laneway is in relation to the centre line. Laneway codes begin with a designation for either right or left of the centre line, followed by a number designating the distance from the centre line. For more information, see Appendix 1, Linear Referencing System, TIMS Functional Specifications Report. Note that the carriageway codes used in Surface Condition Rating are similar, but not the same as, the laneway code.

***MCI***

Maintenance Contract Inspector

***Maintenance Process Management Group (MPMG)***

In support of TRANS's corporate mission, the MPMG contributes to the safe operation of Alberta's highway network by ensuring that consistent, prompt, and cost effective maintenance programs are implemented.

Group membership consists of:

- all Operations Managers
- the Director of Maintenance, Specifications, and Traffic Engineering
- a non-voting member responsible for the various administrative and technical aspects of the group's business
- a Regional Director – executive sponsor

Representatives from other branches of TRANS or other government agencies, as required, may provide assistance to the group on various matters for which they can provide expertise (eg. internal auditors, environmental consultants, Alberta Environment, Alberta Infrastructure, etc.). They may work on sub-committees, or with the MPMG as a whole.

***Maintenance Contract Management System (MCMS)***

A computer program which generates and tracks Work Orders and related information. It has been specifically designed for TRANS for management of the Highway Maintenance Contracts.

***Negotiation***

A negotiation is the process of determining a mutually agreeable solution to an issue between two parties. This process is typically used to address issues resulting from items not covered by the Contract terms, or where there are several alternative solutions to achieve a desired end result, which have benefits and costs to both sides and there is a need to identify the best mutual balance of cost/benefit.

***Operations Services Co-ordinator (OSC)***

The OSC assists the Operations Manager in the day-to-day administration and delivery of the highway maintenance program within a District.

***PPS***

Pavement Preservation Strategy

***Request for Proposal (RFP)***

A process for bidding on a Contract. This process is used by TRANS to decide which Contractor will be awarded the maintenance Work for a Contract Maintenance Area. More than just pricing is considered in the awarding of the Contract.

***Surface Condition Rating (SCR)***

The field staff manually rate pavement surfaces in terms of cracking, rutting, etc. and place the information in a database. This information is used for processes such as budgeting or programming.

***Segment***

For maintenance, a segment is a section of highway used for tracking maintenance Work or recording pavement condition. TIMS (Transportation Infrastructure Management System) uses the term segment for any user-defined portion of highway. These two uses of segments are similar.

For highway maintenance, there are five types of segments:

- Surface Condition Rating
- shop area
- winter maintenance
- CMA
- special location

***Surface Condition Rating Segment***

A Surface Condition Rating (SCR) Segment is a section of a single provincial highway with the same surface condition. This type of segment may not be shorter than 500 metres, and cannot be longer than two control sections. (An average SCR segment is approximately 8 km long.) The boundaries of a SCR segment may change yearly as the asphalt deteriorates or upgrades are made. SCR segments are used to report pavement related maintenance work such as crack sealing, patching, and pothole patching.

More information on how surface rating segments are defined can be found in the latest version of the *Surface Condition Rating Manual*.

Gravel surface highways can also be broken into SCR segments, based on whether the gravel has been treated for dust control or not.

***Shop Area Segment***

A Shop-Area Segment is the geographic area maintained by a single maintenance shop. It will contain part or all of several provincial highway control sections. Shop area segment boundaries do not change often. This type of segment is used to report maintenance work such as signs, guardrail, pavement messages, and litter pick-up.

***Winter Maintenance Segment***

A Winter Maintenance Segment is a geographic area that has the same level of effort for winter snow removal and ice control. These segments are only used for reporting snowplow truck hours of work and snow and ice control material usage, and were created to simplify reporting for the equipment operators. A winter maintenance segment typically covers a very large area.

***CMA Segment***

A CMA Segment is the entire area of the CMA. It is used to plan and report work that happens within the CMA, such as line painting and winter road patrols. Sometimes a District segment is used as an alternative to CMA segments for line painting and to track expenses outside the Contract such as rail crossing maintenance and overhead lighting.

***Special Location Segment***

A Special Location Segment is used to track maintenance work where other segments do not apply. Some typical special location segments are ferry sites, park roads, environmental structures, Vehicle Inspection Stations (VISs), and remote stockpile sites.

***Traffic Accommodation Strategy (TAS)***

Plans and written procedures detailing the traffic accommodation strategies for the work.

***TIMS***

Transportation Infrastructure Management System. It is TRANS's corporate data repository.

***Work Order (WO)***

A Work Order is a written or electronic document that defines the Work to be performed by the Contractor, the bid items to be used, and the required completion date, which may include a requirement for reduced response time, based on emergencies or other reasonable scheduling priorities.

**1.0.5 CONTRACTS – GENERAL**

The Highway Maintenance Contract is a legally binding document between Alberta Transportation and a Contractor. It outlines the maintenance Work to be performed on identified highways, roadways, and other defined government infrastructure, in a given geographic area, at a specified rate of payment.

Initially, each Contract was set up for a five-year period, but in some cases this has been extended by mutual agreement.

TRANS selected the Contractor for each of the Contract Maintenance Areas through a bid process called Request for Proposal. For each CMA, TRANS created an RFP that outlined what its highway maintenance requirements were and the method that would be used to choose the Contractor who would be responsible for the area. Contractors then responded to these RFPs.

TRANS personnel reviewed the proposals and selected the Contractors whose responses best met TRANS's requirements.

**NOTE:** Care should be used when changing any condition or requirement of a Maintenance Contract, so that the Contracts remain similar from area to area. The *General Specifications* section of the *Highway Maintenance Specifications* manual sets out the authority of the Operations Manager and/or the Maintenance Contract Inspector within the Contract.

Under most situations, conditions or requirements of a Maintenance Contract cannot be added, removed, or altered without the written approval of both the Executive Director, Program Management Branch in his capacity as "The Engineer" and the Contractor.

The Maintenance Contract is legally binding only between TRANS and a specific Contractor. Conditions of that Contract are not necessarily the same as those in a Contract with another Contractor in another maintenance area. The terms are generally location, work, and contract specific.

However, there are exceptions where one Contractor can move beyond the area specified in the Contract. For example, during an emergency situation or extreme weather conditions, Contractors may work outside of their Contract boundaries to assist in adjacent areas.

Work the department desires the Contractor to do outside the normal scope of the Maintenance Contract requires the mutual agreement of the Department and the Contractor before it can be undertaken by the Contractor. If the Contractor agrees to perform the additional work, depending on the value and type of work, there are several options that could allow TRANS to assign the work to the Contractor:

- the original Contract may be amended and approved by both parties
- a service agreement could be entered into
- a new Contract may be entered into
- the work may be done as Extra Work

Government personnel involved in making decisions on Contract requirements, payments, standards, etc., must be entirely familiar with the terms and conditions of their particular Maintenance Contract. Any decisions on the work must be made using the information set out in the Contract that applies to a specific Contractor and that particular maintenance area.

**NOTE:** The work execution plans, mobilization plan, and any special provisions or negotiated terms agreed to once the Contract has been signed are specific to an individual Maintenance Contract. These agreements may vary significantly from one Contract and maintenance area to another within the Province. Due to the staggering of timing of the RFPs and the extension of some Contracts, the version of the Highway Maintenance Specifications may vary from one Contractor to another.

**SPECIFICATION DEVELOPMENT:** Specifications for maintenance operations were originally developed by the Department in 1995 using the expertise of Department and industry representatives who had experience in a given maintenance activity. They have been

subsequently modified by joint committees of the Department and Contractor representatives to better capture best practises and to clarify an aspect of the specification which had been unclear or that was causing unnecessary difficulties for the Contractor or for administration by the Department. The Department has also sought to develop Specifications which are less prescriptive regarding the methods of work that are required and are concerned more with the final end product. Some activities, such as snow and ice control, remain more prescriptive due to the difficulties in reasonably specifying an end product that is clear enough for the Contractor to bid on, that does not increase liability concerns, and that adequately addresses the Department's concerns regarding provision of an adequate level of service for winter maintenance.

As such, the Specifications are the primary document for undertaking the highway maintenance Work. However, in some respect they should be considered a work in progress and will continue to evolve to address interpretation/administration issues, to address new technology, and to address finding the right balance of costs for doing the Work that achieves mutual Department and Contractor goals for quality, timeliness, and safety of the work. Innovation to improve maintenance operations should be considered on an ongoing basis, and technologies that accomplish this should be encouraged. In the long run, it is expected that proven technologies will ultimately end up in future Specifications.

#### **1.0.6 HIERARCHY OF DOCUMENTS (2001-2003 CONTRACTS)**

When there is a discrepancy between documents in a Maintenance Contract, the following hierarchy of documents should be used, in descending order:

- a) Special Provisions
- b) Specifications amendments
- c) applicable appendices contained in the document entitled *Dispute Resolutions Process for Government of Alberta Construction Contracts*, Edition 1, 1997
- d) plans
- e) general Specifications
- f) technical Specifications
- g) mobilization plan
- h) work execution plan

If there is a difference between scaled dimensions on plans and the figures written on them, the figures shall govern. In the event that two or more plans show conflicting information, the information on the most recently dated plan shall govern.

#### **1.0.7 HIERARCHY OF DOCUMENTS (EXTENDED CONTRACTS)**

If there are discrepancies discovered in extended Contracts, the following hierarchy of documents shall be followed, in descending order:

- a) Special Provisions (contained in 1998 Request for Proposals for Maintenance Contract Extensions)



- b) Specification amendments (contained in 1998 Request for Proposals for Maintenance Contract Extensions)
- c) supplemental Specifications (contained in 1998 Request for Proposals for Maintenance Contract Extensions)
- d) Special Provisions (contained in existing Contract)
- e) Specification amendments (contained in existing Contract)
- f) plans
- g) general Specifications
- h) technical Specifications
- i) mobilization plan
- j) work execution plan

### **1.0.8 PARTNERING**

Partnering can be described as a somewhat informal, voluntary relationship between Alberta Transportation and the Contractor, which identifies the processes for communicating and resolving issues in a positive manner. Partnering emphasizes the working relationship between parties involved in the Contract. It should not to be confused with the legal partnership set out in the Contract itself.

In partnering, the focus is on working together and building on everyone's strengths to find the best solutions and mechanisms for rapid issue resolution.

In the partnering process, each side has a corresponding responsibility:

- TRANS is committed to an attitude of co-operation with the Contractors and to treat the Contractors fairly, by placing the risk where it can best be managed.
- TRANS and the Contractor need to be committed to a relationship of fairness, openness, and the sharing of concerns, while safe-guarding public interest and safety.

An important part of the effective partnering process is continuous evaluation. This process ensures that the implementation plan agreed to by both TRANS and the Contractor is proceeding as intended.

**NOTE:** Although the intent of partnering is to work together to reach mutually-agreed-upon decisions, these decisions must not affect, alter, or replace the conditions of the legal Contract, without the approval at the appropriate level of authority in the respective organizations. It is essential that TRANS and its partners work well together. Here is a further explanation of the difference between a Contract and a partnering agreement:

- The ***Contract*** is a written, legal document that describes what is to be done, by when, by whom, to which Specifications and standards, etc.
- The ***partnering relationship*** addresses how the parties involved in the job Contract want to work together to fulfil the Contract for their mutual benefit and satisfaction.

Open lines of communication are essential in all aspects of the Contract. Ongoing communication is critical in the following areas:

- safety
- quality
- timeliness
- budgeting process
- ordering work

Timing of work is a good example of effective partnering between TRANS and a Contractor. If TRANS staff order all spring maintenance done at once, the Contractor would find the task almost impossible, his personnel and equipment would not be able to keep up. However, if the work is spread out over a reasonable amount of time, the Contractor can do the work effectively with a reasonable complement of manpower and equipment.

Consideration of the other person's point of view is the key to developing a good working relationship. Reviewing the work in a non-confrontational manner, without using adversarial language, is an important aspect of developing the partnership. Treating each other with respect, and as you would like to be treated in return, will tend to result in better solutions to problems as both sides consider the others' mutual interests. Neither side has perfect knowledge, understanding, or capabilities regarding highway maintenance, so it is important to reserve judgement until all of the appropriate facts regarding the situation are determined and known to both sides. Both sides of a partnership work hard to achieve their mutual goals: safety, quality, timeliness, cost effectiveness, and profitability, and if this is understood and appreciated, the relationship between partners can be a positive and mutually rewarding one.

### **1.0.9 PARTNERING MEETINGS**

These meetings are usually held annually or as required. The meetings are held to promote the concept of partnering to assist in the resolution of concerns at the lowest level possible. Other things discussed are the health of the partnership, how to solve some general and/or common problems (whether or not these problems are currently occurring in the partnership), and the importance of positive communication skills. The Contractor's employees who attend these meetings could be:

- Senior Management, as appropriate
- Contract Management
- General Foreman/Superintendent
- Office Administrator
- Area Foremen

The Alberta Transportation employees who attend these meetings could be:

- Regional Director
- Operations Manager
- Operations Engineer
- Operations Services Coordinator
- Maintenance Contract Inspectors
- Field Support Technologists

- Regional Safety Officer
- Regional Bridge Manager
- Bridge Technologist
- Bridge Engineer
- Regional Construction Manager
- Regional Infrastructure Manager

The OM and the Contractor's Manager determine the agenda and who should be attending the meeting. They would request a facilitator, if appropriate, to keep the meeting focused and to set up groups for round-table discussions. These meetings are designed to allow both sides opportunities to find workable solutions for any problem areas, and to promote a positive working relationship between the partners.

#### **1.0.10 OPERATIONAL MEETINGS**

These meetings are important communication tools between Alberta Transportation and the Contractors. They are attended by the Maintenance Contract Inspectors, the Operations Manager, Operations Engineer, the Contractor's management, Superintendents, and any others who can provide input and insight into the past, present tasks, and future jobs. When necessary, bridge representatives and safety staff may attend these meetings.

The Contractor and TRANS will meet monthly, unless mutually agreed otherwise, to discuss and review the following types of issues:

- work completed since the last meeting
- work the Contractor has planned for the next few weeks
- work the Department plans to issue within the next few weeks
- status of work in progress
- any project, technical, administration, or communication issue or problem
- safety issues or concerns

#### **1.0.11 MANAGEMENT STAFF MEETINGS**

Senior management staff from both the Department and the Contractor will participate in a management meeting a minimum of twice a year, or as mutually agreed, to discuss the following types of issues:

- the Department's budget and any budgetary constraints on the work
- updates and changes in the Contractor's business plan and financial plan
- contract performance measures
- Specification interpretations
- partnership relationship
- scope and magnitude of anticipated work for the next 6-month period (summer and winter work plans)

The Operations Manager(s), Operations Engineer(s), Contact Manager(s), and Contract Superintendent(s) usually attend these meetings.

## **1.1 CONTRACT ORGANIZATION AND RESPONSIBILITY**

### **1.1.1 ALBERTA TRANSPORTATION**

#### ***Maintenance Process Management Group (MPMG)***

The mandate of the MPMG is as follows:

- Provide support to the Divisional Executive Committee and be committed to working in a team approach with Technical Standards Branch and the Alberta Roadbuilders and Heavy Construction Association (ARHCA)
- Co-ordinate on a Provincial basis the annual processes that are necessary for efficient and consistent delivery of the maintenance program
- Be the custodian of the Department's maintenance management processes and the Maintenance Contract Management System (MCMS) by:
  - Ensuring that they continue to fit the purpose in an ongoing way
  - Providing a set of priorities to the Department for enhancement of the processes and systems based on user group input, management level need, cost effectiveness, and efficiency
- Maintain linkage between the maintenance management processes and the Transportation Infrastructure Management System (TIMS)
- Identify technology and research projects relating to highway maintenance and have a role in participating in the delivery and evaluation of projects that are undertaken
- Liaise with the ARHCA Maintenance Committee on matters of mutual interest that would benefit both the Department and Maintenance Contractors
- Work with the Technical Standards Branch in the development and consistent implementation of the following items as they relate to highway maintenance and operations:
  - Contract Specifications and tendering strategies
  - Standards, policies, and guidelines
  - Roadside management guidelines
- Monitor performance of the highway system and identify improvements and appropriate action plans for implementation
- Provide input into the Department's preservation, rehabilitation, and construction programs

The MPMG is responsible to the **Assistant Deputy Minister, Transportation & Civil Engineering Division**, who, through the MPMG Executive Sponsor, provides overall direction to the MPMG, which is accountable for the successful implementation of initiatives empowered to the MPMG under their Charter.

**1.1.2 MAINTENANCE CONTRACTOR**

A Maintenance Contractor is the company that entered into a Contract with Alberta Transportation to perform highway maintenance for certain areas in the Province. TRANS works with the Contractor to schedule the work. The Contractor ensures that all the work is done to specifications.

**1.1.3 SUBCONTRACTORS**

A Subcontractor is a Contractor that is hired by the Maintenance Contractor to perform a part of the highway maintenance Work. Only a certain percentage of the Contract is allowed to be subcontracted, and this amount is outlined in the Specifications. Alberta Transportation works with the Contractor, while the Contractor deals with the Subcontractor. Approval to subcontract, and approval of the Subcontractor, may be required by TRANS, depending on the value of the subcontract. The Specifications outline the approval process for hiring Subcontractors.

## **1.2 RESPONSIBILITIES**

### **1.2.1 CLARIFICATION**

The duties outlined below are not complete job descriptions. They are just part of the complete picture. Additional information regarding the authority of Alberta Transportation personnel can be found in the Highway Maintenance Specifications, General Specifications.

No one at TRANS is authorized to act as foreman or superintendent for the Contractor.

Only senior Department officials at TRANS are authorized to:

- extend or make changes to the Contract (unless otherwise noted)
- alter or waive the provisions of the Specifications or plans
- issue instructions contrary to the Specifications and plans. (Changes to Specifications and plans to achieve desired mutual objectives could be made with mutual agreement of the Engineer and Senior Management of the Contractor for a particular Contract.)

### **1.2.2 REGIONAL DIRECTOR (RD)**

The Regional Director provides direction and focus to budget priorities, safety policies, and Alberta Transportation goals and objectives within the Regions. The RD, through his management team, ensures the communication process between TRANS and the Contractor works effectively so that maintenance services are consistently delivered throughout the Province.

### **1.2.3 OPERATIONS MANAGER (OM)**

The Operations Manager manages the Contract and keeps Alberta Transportation's executive management informed on the progress of the work and how it is being performed.

***Only the OM is authorized to perform the following duties:***

- authorize Extra Work
- approve the rate of payment for equipment not listed in the Alberta Roadbuilders and Heavy Construction Association Equipment Rental Rates and Membership Roster when used on a Work Order for Extra Work
- approve new unit prices for undefined Work included in a specific Work Order
- authorise adjustment of Work Order completion dates

***The OM's responsibilities also include the following tasks, which may be delegated as appropriate:***

- ensure that TRANS budgetary and conditional targets for the Contract are achieved
- plan budgets for future work and prepare realistic forecasting of expenditures

- identify and authorise the Work to be performed
- prepare and approve monthly payments to Contractors
- reject defective material and Work and prohibit any work method or procedure that will result in a finished product that fails or will fail to meet the standards required by the Specifications or plans
- give final acceptance of any portion of the Work
- encourage the development of, and work with, the Contractor to implement innovative technologies to improve the cost, level of service, or delivery of highway maintenance operations
- inspect all Work done and material furnished. The inspection can extend to any part of the Work and to the preparation, fabrication, or manufacture of the material to be used.
- suspend the Work with cause
- approve Subcontractors
- attend Partnering and Operational Meetings
- resolve or assist with the resolution of any disputed contractual issues between TRANS staff and the Contractor

***Safety-related duties:***

- support the development and implementation of TRANS safety standards and guidelines for Maintenance Contractors working for TRANS
- conduct the pre-commencement meeting prior to the start of the Maintenance Contract
- assist in the resolution of Occupational Health & Safety (OH&S) issues with the highway maintenance Work or disputes between Contractors on TRANS Maintenance Contracts
- monitor public safety issues, bring them to the attention of the Contractor, and work together to ensure appropriate resolution
- liaise with TRANS staff to ensure safety issues that have been identified are dealt with promptly and appropriately
- resolve any disputed safety issues between TRANS staff and the Contractor
- complete the Annual Maintenance Contract Health & Safety Review with the Contractor's designated representative
- forward copies of all specified health and safety reports to the Regional Safety Officer

The OM will exercise such additional authority as may, from time to time, be delegated to him by the Engineer.

The OM is not authorised to extend or make changes to the Contract, alter or waive provisions, or issue instruction contrary to the Specifications or Plans. The OM is authorised to provide interpretations regarding the administration and management of the Specifications and Plans in conjunction with the MPMG, its committees, and the Contractors, to ensure that there is a reasonable level of consistency in the interpretation of the Specifications across the Province. The Contract Administration Manual is intended to provide some assistance in this role regarding various Specification interpretation issues that have been encountered in the past.

### **1.2.4 OPERATIONS ENGINEER (OE)**

The Operations Engineer assists the Operations Manager in the day-to-day administration and delivery of the highway maintenance program within a District. The OE may perform some or all of the following duties while assisting in the administration of the Maintenance Contract.

- attend Partnering Sessions and Operational Meetings
- assist the Maintenance Contract Inspector in defining the scope of Work for projects that are large in scale, complex, or otherwise difficult to assess
- prepare quantity and cost estimates for specific projects
- co-ordinate Work Orders among MCIs so that the Contractor is able to allocate appropriate resources to perform the Work on schedule
- ensure similar activities are ordered in a consistent manner in each Contract Maintenance Area
- monitor quality assurance/quality control measures required for specific Work activities
- track Contract and administrative expenditures on a monthly basis and assist the OM in forecasting year-end expenditures
- formulate budgets for all Work activities, matching funding allocations to infrastructure priorities
- monitor Contractor performance in terms of efficiency, quality, timeliness, and safety and provide reports to the OM
- encourage the development of, and work with, the Contractor to implement innovative technologies to improve the cost, level of service, or delivery of highway maintenance operations
- help resolve disputes between the MCI or other Alberta Transportation forces and Contractor
- gather data extracts from the MCIs' computers to be imported into the appropriate MCMS computer files and export data from OM-MCMS to the MCIs
- calculate progress estimates in MCMS
- other duties as delegated by the OM

#### ***Safety –related duties:***

The OE has similar duties to the OM, plus he can assist in the resolution of disputed safety issues.

### **1.2.5 MAINTENANCE CONTRACT INSPECTOR (MCI)**

Reporting to the Operations Manager, the Maintenance Contract Inspector is responsible for administering the road maintenance program for a Contract Maintenance Area, ensuring that highways are maintained to Alberta Transportation standards and guidelines. The MCI oversees and monitors road maintenance programs to ensure that work carried out by the Contractor meets the contractual agreement.



***The following is a partial list of the MCI's duties:***

- identify and/or approve Work identified by the Contractor and authorise it by issuing Work Orders to the Contractor. This involves working with the Contractor to establish quantities, scheduling, and reviewing planned work procedures.
- inspect work for compliance with the Specifications and completion within the time frames allocated
- identify and monitor warranty requirements
- verify, recommend acceptance/rejection, and authorise payment for completed work, following TRANS guidelines through the entry of Crew Work Sheet information into the appropriate computer program. The MCI must also recommend rejection of work that they consider to be unacceptable.
- assist the OM in managing expenditures in their CMA
- finalize the quantities on the Crew Work Sheets and review these with the Contractor. When required, audit the Work, verify, and as reasonable, question both the quantity and quality of Work to ensure Department and Contractor interests are mutually achieved.
- provide work quality and quantity information to the OM monthly, so that a progress estimate can be issued
- provide input to the OM for the annual Work quantities and budget
- negotiate Extra Work with the Contractor, then submit it to the OM for review and approval
- encourage the development of, and work with, the Contractor to implement innovative technologies to improve the cost, level of service, or delivery of highway maintenance operations
- Review Specifications with the Contractor, when necessary, to seek to clarify expectations before the Contractor starts the Work
- help develop or modify new or existing Specifications
- attend regular meetings with the Contractor
- observe any other Work under TRANS's jurisdiction for compliance to Specifications and standards, and to maintain or increase the safety of motorists using the highway (e.g., is the guardrail installed to the proper height or is the cable installed properly)
- assist in the administration of service agreements and small Contracts outside of the Highway Maintenance Contract
- other duties as delegated by the OM

***The MCI and FST share the following safety duties:***

- review over-all safety (e.g., on-the-job signage)
- periodically monitor the safety performance of the Contractor's personnel in the field
- periodically monitor, then document, arrangements made for public traffic while maintenance is in progress
- attend the pre-commencement meeting with the Contractor
- periodically attend the Contractor's monthly safety meetings as well as safety meetings that take place before any major work phases
- advise the OM and Regional Safety Officer of any unresolved safety issues
- report any health and safety violations by the Contractor's personnel to the Contractor as soon as reasonably possible, so that the violations can be corrected. In some cases, the

Contractor may be required to provide an action plan that will set out how the problem can be solved. The quicker the Contractor is aware of safety concerns, the quicker they can address them. A short discussion with field personnel followed by a discussion with the Contractor's Superintendent or corresponding supervisory personnel is generally appropriate.

- through the RSO, request assistance from an Occupational Health and Safety Enforcement Officer from Regional Management Division, Alberta Labour. This can only be done when both of the following conditions are present:
  - the Contractor has known violations of health and safety regulations noted against him
  - danger is not imminent
- take the following action when the Contractor fails to correct a hazard or fails to comply with an order by an Alberta Labour, Occupational Health and Safety enforcement officer:
  - advise the OM of the existing conditions, and request advice regarding appropriate response
  - shut down the job site until the safety issue has been resolved (where there is imminent danger). Contact and review the concern with the Contractor's Superintendent and, as appropriate, the field personnel to ensure that the matter is addressed in a timely and appropriate manner.
  - where imminent danger is not a concern, review the issue with the Contractor's Superintendent and where appropriate, field personnel, so that appropriate measures are taken to address the concern in a timely and appropriate manner. (Where field personnel have not complied or do not comply with requirements, Contractor supervisory personnel may be required to intervene.)
  - contact the RSO or TRANS Safety Office for advice
  - contact the Regional Office of Alberta Labour to advise the Enforcement Office of the non-compliance, if recommended by TRANS management/safety personnel

### **1.2.6 FIELD SUPPORT TECHNOLOGIST (FST)**

The Field Support Technologist assists the Maintenance Contract Inspector.

***The FST is authorised to perform the following:***

- provide technical advice and support on matters relating to both the survey and materials testing disciplines of road construction and maintenance
- either arrange for, or perform, quality assurance as required
- monitor quality assurance/quality control performed by the Contractor
- assist in interpreting the results of quality assurance tests for the Engineer
- review Work for warranty requirements
- monitor the Contractor's performance
- advise the MCI and/or Operations Manager when the terms and conditions of the Contract have not been followed
- monitor construction or maintenance projects for potential future maintenance concerns
- periodically review on-site construction Work for safety
- suspend Work due to significant worksite hazards until the safety issue has been resolved (where there is imminent danger)

- assemble fatality reports
- collect Surface Condition Rating data and inventory information
- survey stockpiles
- assist Development Planning Technologists/Operations Support Coordinators
- perform all aspects of the MCI's work, in the absence of the MCI
- assist MCIs when necessary
- assist in other areas, as required

The FST will exercise such additional authority as may be delegated to him by the OM.

### **1.2.7 REGIONAL SAFETY OFFICER (RSO)**

*The Regional Safety Officer performs the following duties:*

- evaluate how maintenance activities may affect the motoring public and advises on appropriate signing
- ensure that Alberta Transportation personnel involved in the Maintenance Contract understand their role as defined in the OH&S Act, especially for the Prime Contractor's responsibilities
- assists in discussions with the Contractor regarding roles and responsibilities
- advise the Contractor of identified safety deficiencies
- conduct periodic inspections of worksites, equipment, and facilities and report any health and safety violations to the Maintenance Contract Inspector/Operations Manager/Operations Engineer/ Operations Support Coordinator
- monitor accident reports. Ensure that any deficiencies that might have contributed to the accident are corrected quickly.
- investigate any incident where there has been a fatality, serious injury, or excessive third party property loss occurring at a maintenance work site
- review the Contractor's safety performance
- review monthly and yearly safety reports
- periodically attend Contractor's safety subcommittee meetings
- attend pre-commencement meetings and periodically attend the Contractor's monthly safety meetings
- periodically (or as requested) attend the Contractor/TRANS Operational Meetings and Partnering Sessions
- in cases of imminent danger, order work to stop until it is safe for the work to start again
- serve as the TRANS advisor on all safety related matters

### **1.2.8 THE BRIDGE SECTION**

The Regional Bridge Section normally consists of a Regional Bridge Manager, Bridge Engineer(s), and the Bridge Technologist(s), who deal with all aspects of bridge work occurring within the Region, including, but not limited to:

- construction

- rehabilitation
- maintenance
- inspections
- special programs (i.e. ultra-sonic inspections, paint inspections, copper sulphate electrode (CSE) chloride testing, etc.)
- scheduling and programming

The following personnel are listed in the order that the Contractor generally deals with them.

The **Bridge Technologist** has the most involvement in the day-to-day administration and delivery of the bridge maintenance Work. The Bridge Technologist deals with the Contractor's Bridge Superintendent (or representative) regarding all aspects of the Work.

The **Regional Bridge Manager** oversees the operation and administration of all bridge activities, and has final approval before any bridge Work is initiated.

The **Bridge Engineer** is usually involved in non-maintenance activities, but is a valuable resource providing engineering expertise.

## **1.3 MAINTENANCE CONTRACT INSPECTOR’S DIARY**

### **1.3.1 CONTENTS**

The Maintenance Contract Inspector must maintain a daily diary outlining his day-to-day operations with the Contractor. If needed, these diaries can be used in disputes or litigation. It is also important that the MCI keep a record of all e-mail and other correspondence with the Contractor and the general public.

The entries must be made by the MCI, or in his absence, the person monitoring the Contractor. Photos can add an extra dimension of proof to the diary. Cameras should have a date stamp. Pictures from a digital camera may be admissible in court, provided they have not been tampered with. This must be proven.

Daily entries should contain the following information (if known):

- weather
- location of Contractor’s work area and description of work underway
- instructions issued orally to the Contractor
- a record of visits from the Operations Manager and other officials, as well as resulting instructions or decisions
- changes from Work Order quantities, and an explanation of the reason(s)
- irregularities on any item
- explanations of incompleteness of field records
- explanations of defects and when they were rectified (provide photos)
- general progress of the Work and an account of extreme difficulties encountered by the Contractor (provide photos)
- special notations of items relating to Extra Work, including identification of Contractor/equipment
- Contractor’s claims, intent to claim, complaints, disagreements, etc. (provide photos if applicable)
- any significant events as they happen
- discussions or dealings with property owners
- discussions or dealings with officials of municipalities
- record of events that could affect the Contractor’s production
- record of accidents within the Contract limits and a record of conditions at the time of the accident (photos required), including description of all pertinent signing in place at the time
- discussions with Contractor with regard to Work schedules and quality of Work
- traffic accommodation, detours, construction signs, flagmen (photos required if applicable)
- location and quantity of Work done by the Contractor

## **1.4 SAFETY**

### **1.4.1 OCCUPATIONAL HEALTH & SAFETY**

When a Contractor signs the Contract for the maintenance area, he becomes the Prime Contractor as defined by the Occupational Health and Safety Act. The Contractor must establish and maintain a health and safety system so that his employees and Subcontractors comply with the safe work practices and regulations set out in the Act.

**NOTE:** In cases of imminent danger, the Maintenance Contract Inspector, Regional Safety Officer, Operations Engineer, Field Support Technologist, Operations Services Coordinator, Operations Manager, or any other knowledgeable Alberta Transportation representative will order the Work stopped until it is safe for the work to resume. If the Contractor does not comply, the OM needs to be advised immediately.

### **1.4.2 PUBLIC SAFETY REQUIREMENTS**

Alberta Transportation and the Contractor need to ensure that all Provincial Highways and roads under Departmental jurisdiction are kept in the safest possible condition for the travelling public, allowing for a reasonable response time to address the concern. Some of the most common safety issues/practices are:

- repairing potholes and highway failures in a timely manner. (These areas are to be appropriately marked as soon as they are identified or as soon as reasonably possible thereafter, with flags, red diamonds, temporary signs, or a combination thereof, to make the travelling public aware of hazards until they are repaired.)
- erecting critical regulatory signs such as stop and yield (may be a temporary installation until a permanent support can be installed)
- performing minor repairs such as resetting traffic signals from flash, or to flash if there is a malfunction with the signals, or to set up 4-way stop signs until the signals can be repaired
- removing snow and ice in a prioritized and timely manner, keeping in mind road, traffic, and weather conditions on a specific road and keeping required records of the snow and ice removal
- reporting to the RCMP, Alberta Motor Association, and radio stations of any significant changes in the highway condition as a result of weather changes or natural disasters
- removal of debris and/or dead animals that are a hazard to the travelling public
- ensuring work areas are safe. Considerations include (but are not limited to) traffic control, properly dressed and trained flagpersons, good visibility and sight distances to the work area, etc.
- ensuring that accident sites are controlled. Considerations include working in concert with emergency response forces.

The Maintenance Contract Inspector/Field Support Technologist/Bridge Technologist needs to be familiar with the Contractor's Safe Work Procedures, as they may impact public safety.

### **1.4.3 SAFETY TRAINING**

All Alberta Transportation staff need to review the safety plan that the Contractor submitted in his request for proposal (RFP). This should be done while reviewing the upcoming season. (e.g. Read the safety plans for crackfilling in the spring and snowplowing in the fall.)

All work done by the Prime Contractor needs to be performed following the Occupational Health & Safety Act and regulations, as well as applicable TRANS and Contractor guidelines, policies, and standards. The Contractor becomes the Prime Contractor for all respective work activities and work sites.

In general, safety at the job site is the Contractor's responsibility. If a work site has two or more Contractors, it is the responsibility of the Prime Contractor's personnel to ensure that the work is conducted in such a manner to create a safe environment for themselves, other employees, and the travelling public.

The Contractor is expected to have mandatory safety training for his personnel, which will vary according to the employees' roles. Some examples of applicable safety courses are:

- flagperson training
- WHMIS
- first aid
- TDG (Transportation of Dangerous Goods). This is mandatory if personnel are transporting dangerous goods.

The following examples of safety courses are not mandatory, but enrolment depends upon the duties of the Contractors' personnel:

- snowplow awareness (should be mandatory for new snowplow operators)
- defensive driving and operator training modules, such as those which were used by TRANS for its operator training program
- cutting torch training
- training for cleaning up avalanches. Anyone working in avalanche areas is to carry the appropriate emergency location devices, programmed to the correct frequency.

### **1.4.4 SAFETY REPORTING**

The Contractor must submit the following reports, as required:

- Accident Notification - incident report involving third party and/or Contractor's equipment as per General Specifications
- Monthly Health and Safety Report - these are monthly summary reports of safety meetings and reportable incidents
- Annual Maintenance Contractors Health and Safety Report - these forms are completed in April of every year, for the preceding fiscal year
- Year-End Health and Safety Summary – these forms are completed for the calendar year.

Forms need to be submitted to the Regional Safety Officer or the Operations Manager. Each District decides who is responsible for receiving and reviewing reports.

TRANS personnel must complete the following form, as required:

- Motor Vehicle Traffic Collisions Occurring In Maintenance/Construction Zones

Copies of these forms are in Appendix 3.

### **1.4.5 DUE DILIGENCE**

Due diligence means taking reasonable measures to protect from harm all those who could be expected to be affected by Work being performed. It is a standard by which employers can judge the content and effectiveness of their health and safety programs.

Due diligence can be used as a defence under the law, but it can only be used when appropriate health and safety policies, practices, and procedures are created, implemented, and enforced in the workplace.

From Alberta Transportation's position, there are two elements to due diligence:

- TRANS has the ultimate responsibility for the maintenance of the highway and the safety of the travelling public. TRANS must not jeopardize the safety of the public.
- TRANS and the Contractor must act with due diligence when inspecting the condition of the highway and the status of the Contractor's worksite to ensure the work is being performed in accordance with the appropriate specifications, policies, and procedures.

Employers (and government departments) need to be able to prove that they did all that was reasonably possible to ensure that the workers (or public) are protected as they carry out their tasks. This is done through:

- developing policies, practices, and procedures (developed by the employer of whomever does the work) for duties that need to be performed
- developing training programs and training employees to perform their jobs effectively
- monitoring and measuring effectiveness of policies and procedures
- communicating information on potential hazards
- auditing work
- developing accident investigation and reporting procedures
- documenting these safety measures



In routine operations such as snow removal, the Contractor has a set of guidelines and standards from TRANS that must be followed. The Contractor is obligated to meet these standards and guidelines, and to otherwise seek to use good judgement in the performance of the Work when the available standards and guidelines do not provide clear guidance on the actions to take. TRANS should inspect the Work and document the results of the inspections.

Due diligence by TRANS personnel is important – especially when public safety could be jeopardized.



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## **2.0 LIAISON REQUIREMENTS**

### **2.0.1 MEDIA**

Often the media will contact local Alberta Transportation employees for information. If the employee is knowledgeable about the matter and it is not expected to be a confrontational issue, the employee may provide information as requested.

Only facts and public policy should be stated to the press. Personal opinion should not be voiced and judgement should not be passed on any issue, particularly about the Contractor, the Minister, or any local, provincial, or federal policy. It is not wrong to admit you are not the best person to answer the media's question – it is smart.

A media contact form must be completed immediately after an interview and submitted to the Operations Manager and others as noted on the bottom of the form. Typical examples of the information requested are:

- accident and road closure information
- names of local clubs participating in the highway clean-up programs
- information on how pedestrian-activated crosswalk signals or traffic lights are timed

If you are unsure of an answer, refer the media to the OM who will then either answer for the Department or refer the issue to the Communications Branch (780-422-7070). The staff in this Branch has been trained for this type of work. If we provide the Communications Branch the information, they can provide the words for a response in a manner that is less likely to be misinterpreted.

See Appendix 2 for the Media Contact form.

### **2.0.2 EMERGENCY ROAD CLOSURE**

Since road closures usually happen unexpectedly, good communication has to exist between Alberta Transportation, the Contractor, the Royal Canadian Mounted Police, the media, and the local levels of government. Procedures need to be clear and non-conflicting so that the motoring public is not inconvenienced more than necessary.

Before the start of the winter, Contractors must provide TRANS with emergency contact names and phone numbers. Operations Managers should update Department emergency contact lists at this time. Lists should also be updated when changes in personnel occur.

#### ***Road Closures (Short-Term Emergency)***

Short-term emergency road closures do not require TRANS authorization. They are generally temporary in nature (usually lasting less than an hour, although they may be as long as four hours) and can be handled by the RCMP.

Emergency road closures are typically used to clear away damaged vehicles after a highway accident, to remove a hazard from the road or right of way, or for the RCMP to complete their accident investigation. The removal of vehicles from ditches during storm events should be discouraged as this activity may create a safety hazard to the other road users.

It may be necessary at times to provide traffic control while the problem is being corrected. If the road needs to be closed for longer than one hour, then consideration should be given to a long-term road closure.

### ***Road Closures (Long-Term)***

Long-term road closures require the approval of the OM for the area affected. In his absence, the Regional Director would approve it.

***As a rule of thumb***, TRANS will consider closing roads when visibility is reduced below 75 metres, lasts longer than 20 minutes, and conditions are not expected to improve in the near future. Roads are generally not closed for naturally occurring events such as fog, although severely reduced visibility conditions from any source may warrant an extraordinary response. The OM may use his discretion to close the road to minimize the potential for accidents, or, if accidents have already occurred, to minimize the potential for additional accidents to occur. This may also apply to other natural or manmade visibility concerns such as smoke or dust storms, where significant hazards to motorists can exist. One difficulty that may occur is that the location of these reduced visibility conditions could be rapidly changing through an area, making it difficult to determine how and where to respond.

Communication between adjacent Districts should be undertaken for continuous closures of all affected sections of a particular highway so motorists aren't inadvertently trapped.

Safety considerations for the Contractor, the public, and emergency agencies should be considered and addressed when identifying the need for closures or warning signs. For example, if the visibility is so poor that signs or road closures are warranted, it may be too dangerous to drive through the hazardous conditions to place signs, barricades, and other traffic control on the other side. As the Contractor will have to mobilize the signs and barricades from the nearest suitable shop, the anticipated length of the poor visibility event needs to be considered relative to the time it will take to set up the road closure and/or warning devices. Also, during winter operations, consideration may need to be given to whether it is a higher priority for the Contractor to maintain snow and ice control operations, or to man a road closure.

Roads might also be closed for such problems as avalanches, flooding, road or bridge wash-outs, or other significant physical risks to the public, based on the condition of the highway or bridges, or concerns in or adjacent to the right-of-way. When the road is closed for a physical problem involving an obvious significant risk to the public, the OM does not have to approve the closure, although he does need to be notified. He may also need to make a judgement call regarding the degree of risk involved versus measures required to mitigate it (signs and traffic control, temporary repairs, etc., versus road closures).

The reason for the road closure request needs to be confirmed – is it due to the physical condition of the road or bridge, for a risk in or adjacent to the right-of-way, or for poor visibility conditions?

The request for the road closure generally comes from the Contractor or the RCMP. Road closures need to be coordinated among all bordering Contract Maintenance Areas and among OMs. If the RCMP did not originate the request, they must be notified of the closure by the OM or his designate.

During a winter storm situation, AMA, the Contractor, Communications Branch, and local radio stations should be notified. If the closure is thought to be long-term, TRANS should notify Alberta Motor Association, Communications Branch, and the radio stations and newspapers, or work with the Contractor regarding notification procedures for the appropriate agencies and media outlets.

The OM should be updated regularly so that notification can be made to the Assistant Deputy Minister, Regional Director, and Communications Branch.

If the closure is for more than a few hours, then affected towns should be notified so that they can put their own Emergency Plans into effect.

Signs and barricades may be required so that the public is aware of the closure. The RCMP officers may man the barricade locations for the first hour or so, until the Contractor can mobilize his staff, if directed to do so by TRANS. Each site has to be analyzed on its own merit to determine whether the barricades need to be staffed. The OMs makes this decision. Also, as noted above, if the Contractor is undertaking winter maintenance operations, a decision may need to be made regarding whether the priority should be for the Contractor to continue with the winter maintenance work, or man barricades and control traffic.

If the closure is likely to be a long one, then any barricades should be placed so that services such as hotels and restaurants are not blocked to the travelling public, and so that there are reasonable places for the public to wait safely until the closure is lifted.

It is not generally advisable to name a detour route if the closure is weather-related, because the detour route then becomes the responsibility of TRANS.

Before TRANS staff decide whether traffic should be re-routed (detoured) around the road closure, the following should be considered:

- If the road has been closed because of blowing snow, dense smoke, etc., the same conditions may exist on any detour road, too. Sending traffic down the detour road may result in the potential for liability if traffic becomes stuck or accidents occur and motorists suffer injuries or vehicle damage as a result.
- The road chosen for the detour may not be able to accommodate the amount or size of traffic that would be re-routed.

- Permission needs to be obtained from the level of government that maintains that road – for example, the road could be the responsibility of a County or MD. Any damage done to the detour route roads would be the responsibility of TRANS.
- If TRANS needs to use a local road for a detour, staff should ask permission from the local authorities as early as possible. The local experts know their roads best and there may be a reason that one road should not be selected. (i.e., restricted bridge, surfacing structure, road bans, etc.)
- When setting up a detour, the use of a programmable message board should be considered. Ensure that the message on display is clear and easily understood by the public.

### **2.0.3 UTILITIES**

There are lines from telephone, power, cable, water, and pipeline companies buried in the road right-of-ways throughout Alberta. The locations of these lines must be identified before any digging or drilling is performed.

If a Contractor breaks one or more of these lines, it could be dangerous to the workers and the public. The breaks can also be disruptive to customers and expensive to fix.

Alberta One-Call is a non-profit association that relays requests for marking buried cable, etc., to its member companies. About 1/3 of applicable Alberta companies are members, so Contractors may still have to call individual companies that are not members of the association to mark cable or pipeline locations. Other private utility location companies may also need to be contracted for the location of utilities.

Alberta One-Call's (2003) phone number is: 1-800-242-3447, and their website is [www.alberta1call.com](http://www.alberta1call.com).

Digging or drilling may only start after the appropriate personnel have marked where the buried lines are located. Spot checks should be undertaken to ensure this is done.

Mowing Contractors should be advised to watch for indications that temporary phone lines have been placed above ground.

It is much easier to discuss potential utility problems ahead of time than arguing over claims of cut cable.

TRANS has utility infrastructure of its own, primarily power provided to lighting and other highway infrastructure. It should be noted that TRANS is not on Alberta One-Call, and that the location of many of these utilities are not definitely known so they need to be specially located if work is required in the vicinity.



### **2.0.4 LOCAL AUTHORITIES**

Alberta Transportation staff need to maintain good working relationships with municipal districts, counties, towns, etc. Here are a few examples of areas of mutual concern where the staff at these different levels of government should cooperate:

- clearing snow at intersections and through towns
- sweeping and cleaning medians
- line painting and message painting
- signs
- vegetation control

In 2001, TRANS became the road authority for the former Secondary Highway system. Communication with the local municipalities and counties is essential to ensure that they are aware of what to expect for Level of Service. For additional information on LOS, refer to the *Highway Maintenance Guidelines and Level of Service Manual (June 2000)*.

Local municipalities are allowed to enhance the LOS provided by the Contractor at no cost to the Department. Formal agreements with TRANS need to be undertaken for liabilities reasons, and so the local Maintenance Contract Inspector, foremen, and municipal maintenance staff are aware of all ongoing operations so as not to inadvertently interfere with each others activities.

### **2.0.5 PUBLIC CONCERNS**

When any Alberta Transportation staff member receives a concern from the public on the level of maintenance, perceived lack of maintenance, or regarding a specific activity, this is the recommended procedure to follow:

- a) listen to the concern,
- b) advise the person that you will investigate their concerns and get back to them,
- c) record their name and phone number so the call can be returned/answered,
- d) if required, obtain additional information from the Contractor, and
- e) if unsure of the response for any reason, contact the Operations Manager.

It is inappropriate to place blame on the Maintenance Contractor or to accept liability on behalf of the Department. Stick to the facts and avoid expressing opinions. If the concern is of a political nature, the Department staff member should advise the Operations Manager on the course of action taken, or forward it to him to handle.

If the concern has come through the Minister's office, it could be necessary to draft a reply that requires the Minister's signature. Discuss this with the OM. This request is best handled by the OM who may require input from the MCI in order to coordinate a response.

A concern might also be received by the Contractor. The OM should have developed a process locally with each Contractor on how to deal with these questions/comments. The Contractor is required to maintain records and provide information regarding calls received by the public to the Department upon request.

The procedure for how do deal with damage claims from the public is outlined in section 3.7.6.

### **2.0.6 PERMITS**

It is the Contractor's responsibility to obtain all necessary approvals and permits before any work is started. The Contractor must be able to produce the permits, should they be required.

These permits could include, but are not limited to:

- permission from Band Councils to enter Indian Reservations to complete work projects (Department assistance may be required)
- Transportation of Dangerous Goods permits
- permits associated with weed spraying (i.e. close to water courses, etc.). Check with the agricultural fieldman and the regulations for the actual distances.
- Environmental or Department of Fisheries and Oceans permits for any work done near or in a watercourse. (The permits related to bridge maintenance activities are discussed in Section 6.)
- permits for extended hours of operation for snowplow operators in the winter season
- permits for burning
- permits for water removal
- permits for working in ditches leading to fish bearing streams.

These approvals could change from one geographical area to another in the Province. Check with local authorities, such as the Department of Fisheries and Oceans or Alberta Environment, to discover which permits are required in the region.

### **2.0.7 LIAISON AND COORDINATION WITH CONSTRUCTION PROJECTS**

Maintenance Contract Inspectors and Field Support Technologists are the “eyes and ears” for the Bridge and Construction Technologists, Engineers and Managers, as well as the Regional Safety Officer.

If a MCI or FST sees something unsafe with signing, flagging, or work practices on construction or bridge projects, he should advise the Project Sponsor (Construction Engineer or Construction Manager). If there is imminent danger, stop and advise the Consultant or Contractor at that time. If unsure, ask the RSO, the Operations Manager, or Project Sponsor.

Liaison with the Consultant and/or Project Sponsor is beneficial on a construction project (i.e. for signing, guardrail, appurtenances, patching requirements, etc.)

At times, additional maintenance work may be required if a Provincial Highway is used as a haul road or for the portion of the road that is not under construction yet. Operations maybe required to do this additional work. With coordination through the Project Sponsor, construction funding may be available to assist with the additional work required. Well before work commences,

Operations staff will assist in task identification, design details, and the definition of project limits.

If a project is going to carry over to the next year, it is advisable to have a discussion with the Project Sponsor and/or Consultant to ensure that the roadway is left in a condition where it is safe to operate snowplows. Proper arrangements need to be made for the ongoing maintenance of any construction-related signing. A winter shut down meeting with the Project Sponsor, OM/OE, MCI, Consultant, and Construction Contractor should be conducted prior to the Construction Contractor departing the site. Special arrangements for payment may have to be arranged if the maintenance activities fall outside of the terms of the existing construction or maintenance contract.

Also, in the longer term, consideration needs to be given for the completed Construction project not to be left in a condition where there are hazards to snowplows. Some issues that can arise are the steepness of the asphalt sideslope immediately off the shoulder of the asphalt road surface. If a steep slope is left on the asphalt sideslope and a snowplow puts a wheel over the edge, this will increase the likelihood that the snowplow will be drawn into the ditch and roll over. The steepness of the sideslopes further down the slope is also a potential issue in terms of increasing the risk to snowplows. Another common risk is the condition of joints between pavement lifts or patches that may have a “lip” which the snowplow can catch, either damaging the plow and/or directing the plow truck into traffic or the ditch where it can roll over.

It’s important to seek answers for any concerns early in the process and through the course of the work, since the Department will be maintaining the roads, guardrails, appurtenances, etc., upon completion of the project. If a problem occurs after the Contractor has moved off site, contact the Project Sponsor to determine if the repair work is covered by warranty under the construction contract.

The OM is to receive a schedule and an emergency contact list for the construction project.

## **2.0.8 CARING FOR ALBERTA’S HIGHWAYS & ANNUAL HIGHWAY CLEAN-UP**

The *Caring for Alberta’s Highways Program* allows a group/company/individual to adopt a section of highway (3-5 kilometres in length). Any group, club, or individual is eligible to participate by contacting the district coordinator. Adoption is for a minimum of 3 years, with an option to renew. A sign will be provided at the beginning of the highway section identifying the group caring for it. Ordering of the sign may either be carried out through the maintenance contractor or directly by the program’s coordinator. In either case, a work order for installation through the Maintenance Contractor will be required.

The group agrees to pick up litter on this section at least once per year. The clean-up may be scheduled any time during the summer except on the same day as the Annual Highway Clean-Up (which is usually the first Saturday in May).

Alberta Transportation provides the identification signs, safety vests, and garbage bags required for the clean-up and the participants provide the volunteer labour and are required to carry liability insurance. Refer to the *Alberta Highway Clean-Up Manual Training Manual – 2001* for specific requirements. The Department's program coordinator will ensure that proper insurance is in place. Participants are required to contact the Contractor's maintenance personnel in their area one week before the scheduled clean-up date to arrange to pick-up the vests and bags. They also need to schedule for the garbage to be picked up.

The litter bags are collected and disposed of properly by the Contractor. (This is covered in the Maintenance Contract.)

The ***Annual Highway Clean-Up*** is a public service program sponsored by TRANS. It is open to all non-profit organizations. Junior Forest Wardens and 4-H Clubs have first priority to reserve their highway sections. Any unclaimed areas are then made available to private clubs at a later date. The clean-up takes place on the first Saturday in May, unless it is delayed by poor weather. In the event of poor weather the highway clean-up will be scheduled for the following weekend. If the clean up can not take place on the following weekend then it is to be cancelled.

TRANS pays an honorarium of \$22.50 per km (for cleaning up both sides of the highway) in rural areas, supplies the vests, garbage bags, and arranges the collection of the used litter bags. Within a 16 km radius of a population centre with a population greater than 5,000 people, the rate is \$43.50 per km (for cleaning up both sides of the highway). Participants sign up by contacting the district coordinator. Each group will be required to complete a "Highway Clean Up Agreement". The group needs to contact the Department or Contractor's local contact one week before the clean-up date to pick up bags and vests. The Contractor invoices TRANS for Extra Work required for the Annual Highway Clean Up. The invoice is paid by a separate job number, to which items such as the rental of garbage dumpsters may be charged.

**NOTE:**

- Youth must be at least nine years old to participate in Caring for Alberta's Highways Program or the Annual Highway Clean-Up.
- Youths between nine and 16 must pick up litter at the bottom of the ditch or on the back slope. They cannot be close to the road and they must be supervised closely by an adult.
- Volunteers in these programs may not clean medians on divided highways.
- All participating members in either program should be aware of the training requirements. These requirements can be found in the *Alberta Highway Clean-Up Training Manual*. Ensuring the highway clean-up is completed safely is the primary objective of the Department.

**Caution:** To distinguish areas that have been recently sprayed with herbicide, a blue/green dye that lasts a few days is now added to the chemical. Litter clean-up is not recommended while the dye can be seen. Maintenance Contract Inspectors work with the contractor to ensure spraying isn't performed for a minimum of 2 weeks prior to the Annual Highway Clean-Up. If area must be sprayed within the 2-week window, the MCI may wish to consider removing this area from the Annual Highway Clean-up program. The MCIs are to notify the Caring for Alberta's Highways groups when spraying is occurring in their areas.

## **2.1 ENVIRONMENTAL REQUIREMENTS**

### **2.1.1 GENERAL**

The Contractor needs to be aware of and follow all current environmental legislation and Federal, Provincial, and local by-laws and other legislation that could affect the maintenance operations, especially new Department of Fisheries and Oceans regulations for working near waterbodies.

The Contractor is responsible for cleaning up any inert solid waste that came from asphalt, concrete pavement, concrete, or soil cement, or any other waste created as the work occurred. Any work by-product that could be deemed as possible pollution must be cleaned up.

### **2.1.2 MAINTENANCE CONTRACT INSPECTOR'S ENVIRONMENTAL RESPONSIBILITIES**

The Maintenance Contract Inspector must observe and monitor environmental concerns throughout the assigned maintenance area. Weed spraying, as well as spills of oil or other material on roads or right-of-ways are items that could raise concerns.

When there is a potentially hazardous spill caused by a motor vehicle accident, the MCI must consider his own safety, then public and Contractor safety before any other responsibility.

The MCI should spot-check the Contractor's vehicles that are carrying dangerous goods for appropriate paperwork and placards.

The MCI should have Transportation of Dangerous Goods training and access to the *North American Emergency Response Guidebook*, which gives information on the product such as:

- potential hazards
- product codes, so that the MCI can match the number on the TDG placard with the name of the product
- public safety
- emergency response

**NOTE:** The MCI should have the telephone number for the Alberta Transportation Information Regarding Dangerous Goods line (1-800-272-9600), which is staffed 24 hours a day, 7 days a week. It is probably the only call that has to be made, other than notifying the Operations Manager. The dispatcher will notify all other agencies responsible.

### **2.1.3 SALT STORAGE AT GOVERNMENT OWNED SITES**

The impact of salt on the environment is a growing concern. Alberta Transportation operations are being scrutinized to ensure that salt is used effectively and contamination is prevented, reduced, or eliminated. Refer to Best Practice documents for the storage, handling, and application of ice control materials.

One source of contamination can occur from poor housekeeping around the salt sheds or sand piles. Spills that occur at these locations should be cleaned up immediately, using shovels and brooms, and the loader if applicable. Doors to the salt sheds need to be kept closed unless salt is being delivered or removed. The intention is to minimize the potential for salt dust to drift off-site or water to leach it off-site. Keeping the door closed ensures that the salt remains in the shed, away from wind, snow, and rain. The Contractor shall ensure that the salt is protected from the weather at all times.

Loading of salt into the storage structure shall be performed using a conveyor or blowpipe system. The use of front-end loaders and push-type vehicles to move the salt into the shed is not recommended.

If salty water from the stockpile is caught in a holding pond, the pond must be able to contain the amount of water from the next normal storm. It should be pumped down to ensure that this level can be maintained. The MCI should work with the Contractor to monitor the pond levels. Salt water should be disposed of in an approved location.

The Maintenance Contract Inspector should monitor the Contractor's activities at government-owned sites to ensure that they are following the operating plan for the facility. The Contractor will develop an operating plan for each facility in conjunction with the MCI/OE/OM.

In all maintenance facilities or sites including those provided by the Contractor, the Contractor shall conduct all activities in compliance with the Environmental Protection Act.

All contracts awarded after April 1, 2003 will require a mandatory Environmental Management Plan for all maintenance yards.

### **2.1.4 WEED SPRAYING**

Before setting the annual budget, the Maintenance Contract Inspector needs to meet with the Contractor and all the agricultural fieldmen in his Contract Maintenance Area to:

- discuss the previous year's weed spraying
- estimate the amount of chemicals needed and where they need to be applied for the upcoming season
  - budgets are limited, so it is important to select the most cost effective chemicals to treat problem areas
- determine who will be providing the service, Contractor or municipality, and the costs associated with each

Once the budget plans have been made, the MCI needs to meet with the Maintenance Contractor, the Foreman, and any Subcontractor who would be involved in the weed spraying. At this meeting, they would clarify the planned locations and quantities required for the current year's weed spraying program.

Often, the agricultural fieldmen will also be able to suggest what types of chemicals would be most effective for all types of applications.

Since 1998, the weed spraying chemical must include a visible dye to help identify areas that have been sprayed.

The MCI should stay in contact with the local agricultural fieldman when weed spraying is being done in case there are any other small areas that require spraying. The MCI should notify the local fieldman of any new weeds or areas to be sprayed that he notices during his travels through the area.

Alberta Transportation staff need to perform the following tasks:

- inspect the work for degree of kill and for warranty purposes
- mark the work if necessary
- review that the work has been reported accurately

The MCI should work with the agricultural fieldman to understand any “weed notices” that may be issued. They should discuss the actual problem, area of concern and method proposed to address the problem before the MCI issues a Work Order. Good communication, an early work plan, and keeping the agricultural fieldman involved can prevent most “weed notices”.

The Contractor should ensure that the MCI knows where the Subcontractor is spraying, so that he can answer questions from the public, farmers, and others. The Contractor also needs to supply the following for all areas worked under TRANS direction:

- accurate records of application rates
- locations
- chemicals used

Landowners from time to time may request that the right-of-way in front of their property not be sprayed. The Landowner must fill in a “No Weed Spray” request form annually for this request. Refer to Appendix 3. Once filled out, the Landowner agrees to control the weeds in front of his property. If the weeds are not controlled by the Landowner, TRANS reserves the right to use chemicals to treat the weeds. A copy of the agreement must be sent to the Maintenance Contractor. “No Spray” signs are to be installed.

**NOTE:** The Contractor must apply for special use approvals from Alberta Environment and/or the Department of Fisheries and Oceans for areas to be sprayed within 30 metres of any body of water.

**Spraying for Grasshoppers:** During dry seasons the department may receive requests to spray for Grasshoppers. The Department will not spray for grasshoppers but will permit the adjacent landowner to spray the right-of-way provided a completed “Spray for Grasshopper” form is forwarded to the district office. The form is located in Appendix 3.

### **2.1.5 EROSION**

Alberta Transportation has the legal jurisdiction of the highway right-of-ways and is therefore responsible for controlling erosion within its limits from runoff and/or flooding.

Design Guidelines for Erosion & Sediment Control for Highways, published by Technical Standards Branch, in March 2003, gives details on erosion & sediment control. In addition a field guide has been developed for Erosion Control for Highways. These documents are available on the department web site.

Erosion control is not part of the normal maintenance routine, and if done by the Maintenance Contractor, the work would probably be negotiated as Extra Work under a one-time bid item. This work may be tendered separately outside of the Maintenance Contract.

**Rule of Thumb:** Any erosion deeper than 300 mm (about one foot) needs to be repaired. The Maintenance Contract Inspector needs to check with the Operations Manager, Regional Erosion Works Coordinator, or other MCIs to find out which methods of repair have worked best under local conditions and whether the project has sufficient priority and funding to undertake the required repair.

**NOTE:** There is a requirement under government regulations to carry out an informal environmental assessment if the work is being carried out near a watercourse. Review any planned work with the OM before starting.

### **2.1.6 WORKING AROUND WATER BODIES**

Special attention must be paid to maintenance activities around water bodies. Such activities include bridge cleaning, minor bridge maintenance, culvert cleaning, and beaver dam removal. These activities may introduce materials into the water that may adversely affect resident fish species or the habitat that supports them. By adopting good management practices and incorporating appropriate mitigation measures into the work, potential adverse effects of fish and fish habitat can be alleviated or eliminated. See Alberta Transportation’s “*Fish Habitat Manual*”, and “*Best Management Practices for Fish Habitat Issues Related to Minor Bridge Maintenance*”.

#### ***The Fisheries Act***

The Fisheries Act is Federal legislation established to manage and protect Canada’s fisheries resources. As Federal legislation, the Fisheries Act is binding on Provincial and Municipal



governments. Sections 35 and 36 of the Fisheries Act that would apply to maintenance activities around fish bearing water bodies are outlined below.

Section 35 (1) is a general prohibition of any work or undertaking that results in the harmful alteration, disruption, or destruction of fish habitat (HADD).

Section 36 (3) prohibits the deposit of deleterious substances except in accordance to regulations or as authorized by Cabinet Order (Order in Council).

It is important to note in Section 36 (3) that it is the substance itself that makes the substance deleterious, **not** the quantity that is discharged.



## SECTION 3 HIGHWAY MAINTENANCE – CONTRACT ADMINISTRATION

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## **3.0 BUDGETING**

### **3.0.1 GENERAL**

The essence of the budgeting process is the ability to allocate the appropriate funding to each of the 4 0-plus activities that are carried out under the Maintenance Contract. This section will outline the process but will not include the preparation of non-contract or administrative budgets.

The Provincial funding allocation for provincial highway maintenance is determined by the Budget Allocation Task Group.

The Operations Manager and/or the Operations Engineer is responsible for preparing the budget inventory for each district in late October before the new fiscal year (April 1) starts. The final budget for the next fiscal year is usually known in January or February. The budget for all activities must fit within the funding allocation provided for each Contract Maintenance Area. As part of this process, Alberta Transportation has to meet the minimum dollar value, or quantity of work, set out in the individual contracts.

Breaking the budgeting process into steps makes the task much easier to tackle.

- a) **First**, commit the fixed cost activities for both winter and summer work, based on the contract bid prices.

#### **Winter Activities (Fixed)**

- 1100 Snow Removal & Ice Control: Truck Availability & Heated Storage
- 3000 Highway Maintenance Work
- 4400 Indirect Operating Costs

#### **Summer Activities (Fixed)**

- 3000 Highway Maintenance Work
- 4400 Indirect Operating Costs

- b) **Second**, set aside the funding for the core winter activities (variable) of plowing, sanding, and salting. The quantities for snowplow hours, sanding, and salting may be based on any of the following:

- a five-year average
- a rolling three-year average
- a best guess, based on existing stockpiles

For example, in one year, (for budgetary purposes), only 90% of the snowplow hours and salt are funded, while 100% of the sand quantity is funded. Once the winter money is committed, it is removed from the money remaining that could be allocated for summer work items. As the winter progresses, this money can be reallocated, as appropriate. The

money may be reallocated elsewhere in the Province, if winter hits harder at one location than another.

Any unused budget in these winter activities during the year must be returned to the Department.

**NOTE:** Although some of the activities listed below are flagged as budgetary guidelines in this manual, these may change from year to year. The Child Activity number may vary depending upon the Contract Specifications that apply for the Contract.

**Winter Activities (Variable)**

- 1100 Snow Removal And Ice Control: Snowplow Hours, Loader & Truck Hours
- 1200 Snow Removal And Ice Control: Grader Hours
- 1300 Snow Fence
- 1400 Ice Control Materials
- 3000 Inspections: Winter Road Patrols

**Summer Activities (Variable)**

- 1500 Subgrade Excavation, Gravel Roads
- 1600 Crack Sealing (*Guidelines*)
- 1700 Apply Surface Seals
- 1800 Pothole Patching
- 1900 Surface Patching
- 2000 Asphalt Surface Treatment
- 2100 Deep Patch
- 2200 Roadway and Raised Median Cleaning (*Guidelines*)
- 2300 Line Painting (*Guidelines*)
- 2400 Pavement Markings (*Guidelines*)
- 2500 Grading Gravel Surfaces (*Guidelines*)
- 2600 Regravelling (*Guidelines*)
- 2700 Dust Abatement (*Guidelines*)
- 2800 Maintenance of Livestock Guards
- 2900 Provide Traffic Control
- 3100 Milled Rumble Strips
- 3200 Mowing (*Guidelines*)
- 3300 Chemical Vegetation Control (*Guidelines*)
- 3400 Culvert Maintenance
- 3500 Culvert Installation/Rehab/Replacement
- 3600 Maintaining Signs (*Guidelines*)
- 3800 Maintaining Guideposts
- 3900 Maintaining Guardrail (*Guidelines*)
- 4000 Line Fence
- 4100 Bridge Maintenance/Rehab/Repair (*Guidelines*)
- 4300 Highway Cleanup
- 4400 Miscellaneous
- 4500 Ferry Operations

**Guideline-Driven Activities**

A number of activities have guidelines associated with them. This means funds have been equally allocated amongst the Districts to ensure that a consistent level of service is provided to users, regardless of their location. The aim is to make the boundaries between Districts transparent to the travelling public.

Budgeting for guidelines is relatively straightforward because the quantities for these activities are based on accurate inventories (e.g., line painting).

- The Field Support Technologist/Maintenance Contract Inspector/OE/Operations Services Coordinator needs to ensure that the inventories are as accurate as possible.
- The MCI/OE/OSC/OM will determine which portion of the inventory will be included in the work plan for a given year.

Occasionally, items which are normally guideline-driven may have quantities deleted in that budgetary area for a specific reason. For example, an area might not require line painting or crack sealing because there is upcoming construction at that location.

**Reactionary activities**

Any summer activities that are not guideline-driven are budgeted at the discretion of the OM. This reactionary work includes, but is not limited to, pothole repairs, pavement patching, culvert repairs, accident repairs, and clean-up. These activities are more unpredictable than the others and therefore are difficult to quantify for budgeting purposes, although reasonable estimates may be developed, based on past history.

Since the MCIs make regular inspections of the highways, they are familiar with areas requiring attention. This means they can effectively program work for the upcoming year. They must be able to prioritize the work so that trouble areas are fixed within the confines of the overall budget allocation.

As the Contracts mature and everyone gains more experience in administering them, it will become easier to predict the need for these activities.

**Budget Monitoring and Forecasting**

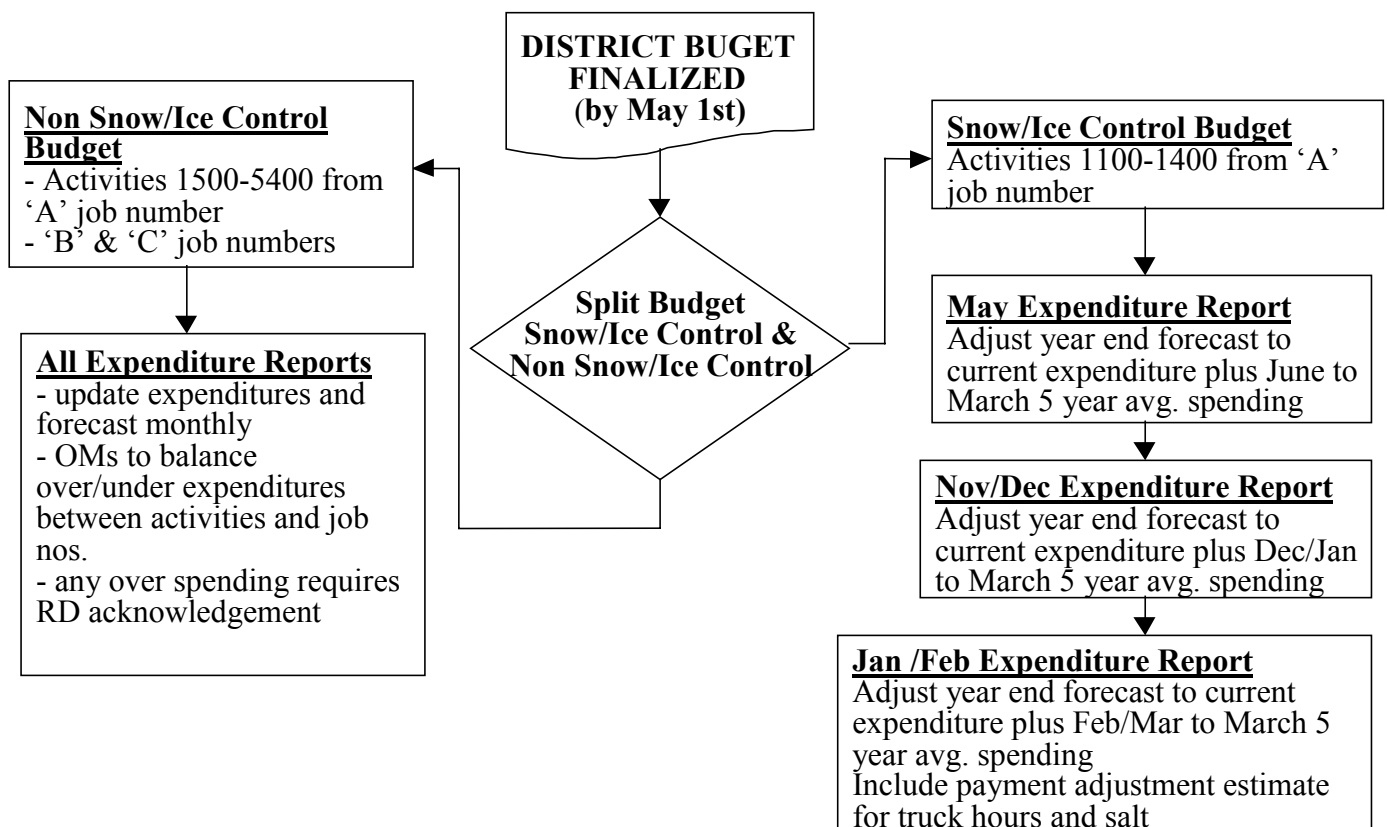
The Department is committed to using strong fiscal management and accurate fiscal forecasting practices. Every forecast must be the very best estimate of the costs that will be incurred in that fiscal year. It is important to note that a forecast is not:

- Budgeting (a budget is an allocation of funds)
- Doing additional work or cutting corners to meet the project “budget”
- An inclusion of contingencies (but it does include all likely expenditures)
- An inclusion of bonuses that will not occur (but it does include bonuses that will probably occur)

Forecasts must be updated in CPMS within 5 working days of the end of the month. Each month, the forecasts for every active job number are rolled up provincially. Every month the program forecasts are reviewed with the Assistant Deputy Minister and decisions are made to release more work or to scale back work.

The Department is responsible to ensure that the available funding is used to maximize value. Over expenditures are removed from future budgets and under expenditures are lost.

Each OM is responsible for providing accurate forecasts for his District’s job numbers. For the Highway Maintenance Program, all OMs have agreed to follow the process outlined below when it comes to budget forecasting.





### **3.0.2 BUDGET ALLOCATION TASK GROUP (BATG)**

#### ***Overview***

The Budget Allocation Task Group (BATG) was formed in the fall of 1997. The Group is chaired by a member of the MPMG who is responsible for providing recommendations on budgetary issues to the other members of the MPMG. Operations Engineers make up the core of the group. The group's task is to define a fair process for allocating the Provincial highway maintenance budget along with other minor programs.

The process that the BATG uses to allocate the maintenance funding is based on a number of fundamental principles and assumptions:

- A Contract Maintenance Area (CMA) is the smallest entity that can be effectively budgeted for, allowing roll-up to Districts, Regions, and the Province.
- A total budget for the Province will be allocated and must be distributed equitably among the CMAs.
- The process is intended to provide allocations that will meet the needs of the physical infrastructure (i.e., the funding should equal the cost of work required for a given year). However there are uncertainties in defining the work requirements because:
  - not all level-of-service guidelines are defined yet.
  - maintenance, by its nature, will always contain an unpredictable, reactive component.
- The Operations Managers administer the work on an annual basis. If all the necessary work cannot be done within the funding limits, then the work must be deferred until the following fiscal year.
- The extent and condition of the infrastructure and traffic volumes are integral to determining the amount of work needed.
- The allocation will be sensitive to differences in unit prices among all the Maintenance Contracts.
- Pavement rehabilitation will influence maintenance funding.
- Special funding may be made available for major initiatives such as major sign replacement, geotechnical projects, larger rehabilitation projects, and gravel purchases.
  - For example, sometimes buying a multi-year supply of gravel can mean obtaining a lower price and lower mobilization costs.

#### ***Process***

The allocations are determined using a five-step process. The following costs are deducted from the total budget for each CMA:

1. all non-contract costs such as utilities and administration
2. all contract fixed costs
3. all contract snow and ice control costs
4. all contract guideline-driven costs necessary to maintain level of service
5. the remaining provincial maintenance funding is allocated as *reactionary* funds to the maintenance areas

### ***Budgetary Guidelines***

The BATG felt that it was important to use budgetary guidelines for the allocation process because:

- the road users and maintenance Contractors have a right to expect that roads with similar traffic volumes will be maintained to a similar standard, regardless of location in the Province
- budgetary guidelines support the development of performance-based contracts
- budgetary guidelines help determine resource allocation
- budgetary guidelines help dictate some of the content of Work Orders
- budgetary guidelines ensure that remote or lower-traffic-volume highways can be adequately maintained

The BATG looked at every maintenance activity to determine if a guideline already existed or could be set to meet the annual work requirements on the road surface or associated appurtenances such as signs, guardrails, etc.

The group gathered information on road preservation, public expectations, appurtenance replacement, and pavement rehabilitation scheduling from Operations Managers, Operations Engineers, Operations Services Coordinators, and Maintenance Contract Inspectors. Two sets of guidelines emerged: *minimum* and *optimum*. However, given present funding from Treasury, the *minimum* standards were accepted as the realistic goal.

### ***Reactionary Work***

Reactionary funds (funds remaining after all other costs are allocated) can be anywhere between 5% and 7% of the total budget. These numbers could be revised as activities are covered under budgetary guidelines.

The reactionary funds are distributed among the CMAs, using a formula that considers two lane equivalent kilometres of highway.

The reactionary funding must pay for everything not already allocated. It includes activities such as:

- additional patching
- culvert cleaning, repair, and replacement
- traffic control
- beaver control
- brush control
- delineator replacement
- repairs for accident damage (e.g. signs, guardrail, etc.)
- minor bridge repair, wooden strip deck repair
- livestock guards
- fence repair
- minor erosion damage repair

- debris removal
- unscheduled patrols

### **3.0.3 REVIEW BUDGET QUANTITIES WITH MAINTENANCE CONTRACT INSPECTOR & FIELD SUPPORT TECHNOLOGIST**

The roles of the MCI and FST in preparing the budget are:

- to maintain an accurate inventory of the infrastructure
- to prepare accurate estimates of the work quantities required for the upcoming season (e.g., crack-sealing, pavement patching, line painting)

The inventory will be used by the BATG to determine the level of funding for budgetary guideline-driven work. The estimates will be used to allocate the funds once they are approved by the BATG.

The MCI should keep in mind that the budget allocation is only a guideline and should be fine-tuned as the fiscal year progresses. For example, savings in an early summer activity such as sweeping may be transferred to a later summer activity such as brushing or mowing.

### **3.0.4 REVIEW WITH MAINTENANCE CONTRACTOR**

Alberta Transportation should include the individual Contractors in the budgetary process before the fiscal year starts. Contractors and their staff may have information on areas of roadway or right-of-ways that need repairs or special attention.

When the Foreman and other members of the Contractor's management team are involved in the budget process, they understand the overall plan better and then can buy into the quantities of work ordered. Contractors should review the quantities and priorities being discussed so that they can stay within the budget and meet the overall timelines.

The MCI should communicate regularly with the Contractor to ensure that all areas are receiving appropriate attention.

Once the budget is determined, the Contractor will be able to prepare a preliminary plan of the work to suit the available resources (i.e., labour and equipment).

## **3.1 WORK PLANNING**

### **3.1.1 PAVEMENT REPAIR / SURFACE CONDITION RATING (SCR)**

Surface condition rating data can help determine approximate costs of pavement repair. However, this could change drastically in a season, depending on the weather, traffic, and the deterioration of the road surface.

### **3.1.2 SCHEDULING / OPERATIONAL PLANNING MEETING**

Scheduling work should be discussed regularly with the Contractor. Maintenance Contract Inspectors can then plan their schedules to inspect work whenever possible. These discussions will also ensure that work is ordered in a manner that the Contractor can complete the work on time and achieve the priorities of the Department. The Operational Planning Meeting is one such forum for these discussions.

### **3.1.3 MAINTENANCE CONTRACTOR'S RESOURCES**

Each Contractor has his own resources available to do the work. Effective communication between the Maintenance Contract Inspector and the Contractor is necessary to optimize the utilization of the Contractor's equipment. Communication is also required if the Contractor needs to mobilize specialized equipment or hire it from others. Efficient utilization of the Contractor's equipment is beneficial to both the Contractor and the Department.

### **3.1.4 SUB-CONTRACTORS**

Sub-contractors may work for others, so it is important that scheduling and planning are kept up-to-date. Other work commitments and obligations can complicate getting the work done on time.

### **3.1.5 SEASONAL WORK**

Most work done under the Maintenance Contract can be broken down into seasons. Alberta Transportation and the Contractor need to review both present and future work activities, then plan the work for each season during the Operational Planning Meetings. Any on-going or future work should be planned as early as possible and its status reviewed at Operational Planning Meetings.

For example, early in the summer, the Contractor should ensure that he has a salt supplier, a good sand source, adequate snow fencing supplies, and suitable equipment for the upcoming winter. In the winter, the Contractor should arrange for the supply of cracksealant and/or cracksealing Sub-contractors.

## **3.2 HIGHWAY MAINTENANCE WORK**

### **3.2.1 ONGOING MAINTENANCE**

**Reference:** *Spec. 53.39 Highway Maintenance Work*

Since this is one of the few performance-based specifications, there are different levels of understanding. Alberta Transportation staff need to be clear on the intent of the specifications and our expectations must also be realistic.

Highway maintenance work includes the performance of regularly scheduled maintenance tasks such as emptying litter barrels, washing signs and guideposts, straightening guideposts, replacing missing bolts on signs, etc. The Contractor is responsible for performing these tasks, as outlined in the Specification and in the Request for Proposal.

Regularly-scheduled work, non-critical work items, and safety-related items are paid for by TRANS. They are covered as a monthly lump sum pay item, along with the payment for fixed costs. The Contractor has outlined how he will handle these tasks in the RFP that is part of the Contract. Additional costs that are incurred while the work is being done will be paid by TRANS.

The Contractor's employees need to understand that this work – and not just bid items that are contracted at a unit price – is part of the overall job to be done. To ensure that everyone understands their responsibilities on general highway maintenance work, the following should happen:

- The **Contractor's Superintendent** and/or his Foreman need to arrange meetings to instruct employees on what the Contract requires. They also need to encourage the employees to keep up good highway maintenance work practices.
- The **Contractor's Foreman** should become familiar with the Contractor's Request for Proposal (RFP) and Specification 53.39, which outlines the responsibilities of the Contractor.
- The **Maintenance Contract Inspector** should be available to attend meetings to answer questions. He should be conscious that his responsibility is only to clarify concerns from a TRANS perspective, not direct work.

The MCI should discuss the work that needs to be done with the Superintendent and area Foreman, either informally or at the Operational Planning Meetings.

Highway maintenance work is reported via a Crew Work Sheet. Some regions have developed a *Highway Maintenance Inspection Report* that lists completed and required work. It covers routine activities, observations, and safety-related items discussed in Specification 53.39 and its subsections.

## **3.3 WORK ORDERS**

### **3.3.1 INTRODUCTION**

One of the key tasks of a Maintenance Contract Inspector is issuing Work Orders. The work to be performed under the terms of the Contract should be defined as specifically as possible by the activity and the bid item.

The work is usually identified in one of the following ways:

- a) Alberta Transportation identifies and orders the work
- b) the Contractor identifies work and requests a Work Order
- c) Third parties (i.e. public or politicians) may identify work that needs to be done

### **3.3.2 FACTORS TO BE CONSIDERED BEFORE ISSUING A WORK ORDER**

Some factors that need to be considered by the Maintenance Contract Inspector before he issues the Work Order are:

- a) the Contractor's availability of manpower, materials, and equipment necessary to do the Work Order
- b) work priorities and a reasonable spread of completion dates so that it is possible for the Contractor to complete the work on time. MCIs are not to extend Work Order due dates without the approval of the Operations Manager. The MCI may recommend to the OM to extend a work order
- c) determine whether the work is urgent and mobilization is expected in a short time frame
- d) determine whether the weather or other factors allow the work to be performed in a given time frame

Good communication skills and work planning sessions (like the Operational Planning Meetings) need to be used to discuss upcoming work. Alberta Transportation staff and the Contractor should discuss the quantities and time limits needed for the job before the Work Order is issued, so that both sides understand the logistics of getting the job done efficiently.

#### **Scheduling Issues**

Scheduling and payment issues may be averted by dividing the Work Order into two or more components. For example, when numerous signs are required, on one order the MCI could issue one Work Order to get the signs manufactured, then a second to get the signs up. The MCI should seek the Contractor's input on sizeable work orders to ensure that the work can be done within a reasonable time frame.

Work should be scheduled according to the agreed upon work planning document that was developed by the Contractor and the Department.

Effort must be made to resolve any conflict(s) in a timely manner. Disagreements should be resolved in the manner agreed to by both parties in the Partnering Conflict Resolution Process. Poor working relationships create numerous difficulties for the parties involved in the Work Order process.

TRANS personnel need to remember that each Contractor runs a private business that has to make a profit to survive. The Contractor's job is to maintain the level of service as described in the Contract documents.

### **Methods of Calculating Quantities and Necessary Materials**

There are several methods of calculating quantities of materials that will be necessary for a specific project:

- compiling technical data, such as surface condition rating, etc
- gathering historic data obtained from previous Work Orders
- using mutually-agreed-upon methods, such as those derived from random information taken at different locations throughout the segment, taking into account known inventory quantities or engineering judgement

Other methods may be just as effective.

### **3.3.3 GUIDELINES FOR ISSUING WORK ORDERS**

- a) Generally work should be ordered as per the work planning document submitted by the Contractor and agreed to by Alberta Transportation.
- b) Once the work has been identified, it has to be prioritized, based on public safety, available budget, and other departmental programs.
- c) The communication on the work to be done, either written or verbal, needs to include:
  - estimated quantities
  - where the work is to be done
  - what type of work activity is best suited to the task
  - when the work has to be completed (completion deadline)
- d) The Work Order is then generated and sent to the Contractor, by any of several different methods. For example, the order can be faxed, hand delivered, or electronically delivered.
- e) Once the Contractor has the Work Order, he knows the specifics for the work. Any concerns regarding the Work Order should be addressed at this time. The Contractor will try to schedule the work so that it is completed effectively when he has gathered both the material and staff to meet the timelines established in the work planning document.
- f) The completion date on the Work Order is very important, since TRANS tracks late and overdue Work Orders. Contractors will be evaluated partially on this basis. Each activity on the Work Order has a predetermined amount of time assigned to complete the work (measured in number of working days). The number of days required cannot be shortened, but the terms could be extended if the necessary conditions exist. Any extension to Work Orders must be approved by the Operations Manager. The Maintenance Contract Inspector may recommend to the OM that the Work Order be extended.

- g) Once the tasks on the Work Order are complete, the Contractor must submit work records to the MCI that certify that the work has been performed and completed according to the terms of the Contract.
- h) The Contractor needs to submit documentation on the work in progress. The OM will specify the form that the Contractor's invoice/documentation will take for work in progress.
- i) Work Orders can be issued on varying frequency such as fixed costs for the year. Others can be ordered monthly such as snow and ice control, road inspections, and the use of a grader for snow removal.

### **3.3.4 FINALIZATION OF WORK ORDER**

- a) All work and inspections completed (or in progress) by the Contractor will be reported and transmitted in batches electronically over the internet to the Maintenance Contract Inspector that issued the work. The Crew Work Sheets and Snow and Ice Sheets will contain the following information:
  - work order number(s)
  - quantities used
  - bid items used
  - where the work was done, identified by segment
  - all information required for MCMS
  - when the work was completed (it is not when the paper work is received)
  - status of Work Order (complete or incomplete?)
  - person reporting
  - any comments arising from the Work Order
- b) The batch frequency shall be weekly at a minimum, or as otherwise mutually agreed to.
- c) The Maintenance Contract Inspector reviews the electronic Crew Work Sheets and Snow and Ice Sheets in MCMS. If they are OK, then the MCI approves the Crew Work Sheet or Snow and Ice Sheet for payment. If errors are found, then the MCI rejects them for payment and it is sent back to the Contractor for clarification or correction. After processing a batch file, the MCI is to produce a batch report (called an Accept/Reject Report) and send it to the Contractor. This report advises the Contractor as to what has been accepted and not accepted for payment.
- d) Work done by Sub-contractors must also be reported on Crew Work Sheets.
- e) The Contractor should also identify any problems they encountered while performing the work, for future reference. Problems should be reviewed at Operational Planning Meetings or work planning/scheduling meetings.

### **3.3.5 WORK ORDERS IN EMERGENCY SITUATIONS**

Emergency situations require very short response times by the Contractor and may include work not specified in the Contract. The response to an emergency situation will be handled in either of the following ways:

- a) When the Contractor observes an emergency situation or is contacted directly by emergency services such as the RCMP, local fire department, Disaster Services, or other similar agencies



regarding an emergency situation, the Contractor shall co-operate with the request and, when necessary, take reasonable steps to ensure safe accommodation of the travelling public and protection of Department assets. The Contractor shall immediately notify the Maintenance Contract Inspector/Operations Engineer/Operations Manager of such requests.

- b) When the Department receives notification of an emergency situation, the Contractor's representative will be contacted and given verbal authorization to perform the Work. The Contractor shall respond to the emergency within the time specified by the MCI/OE/OM. After the emergency is responded to, a Work Order will be issued to the Contractor for compensation of work done.

The Contractor shall treat absence of, or damage to, critical traffic signs, in particular Stop and Yield signs, as an emergency situation.

A Work Order should **NEVER** be required before the work starts in an emergency.

### **3.3.6 SPECIFIED COMPLETION DATES**

The completion date is the date when the work was completed. It is not the date that Alberta Transportation received the paperwork from the Contractor.

The Maintenance Contract Inspector's computer defaults to the due date. The MCI has to physically change the completion date field to match the actual completion date.

### **3.3.7 WORK ORDER REVISIONS DUE TO CHANGES IN SCOPE**

Work Orders should only be revised if minor items were initially left out, if minor changes in the scope of the work are required, or if an error has been made.

**Rule of thumb:** If the revisions extend the scope of the work by more than 20 %, then two Work Orders should be used – one for the original work and the second for the additional work.

### **3.3.8 EXTENSIONS OF WORK ORDER DUE DATES**

Communication is a key component in getting the job done safely, effectively, and on time. In the spirit of partnering, an extension to a due date may occasionally be appropriate.

The MCMS program automatically assigns appropriate due dates on the Work Orders. These automatically assigned dates, however, can be over-ridden, as required.

If either Alberta Transportation staff or the Contractor think that the due date might need to be changed, then the change should be noted and agreed to before the Work Order is issued. Work Orders can be issued early, with an extended completion date that will allow the work to be on-

going. The other option is to break the work into smaller portions so that the work can be completed within the timeframe in the Specifications.

Extensions are only issued under extenuating circumstances, with the approval of the Operations Manager. The Maintenance Contract Inspector may recommend that the Operations Manager extend the due date of a Work Order.

For example, if the Contractor is already working at capacity to complete a project and an emergency situation arises where more work will be required, then the original work may need an extension.

Under normal circumstances, due dates placed on Work Orders give the Contractors plenty of time to schedule and complete the work. Weather is not usually an issue because a certain number of bad weather days are factored into the automatically-assigned due dates.

### **3.3.9 COMPLETED WORK ORDERS**

Work Orders may be marked as complete if work is finished on or before the due date.

If the work can no longer be physically completed within the timelines set out in the Work Order (for example, during a September snow storm, mowing cannot be performed), the work is not overdue. It should be marked as complete, with a lesser quantity.

### **3.3.10 CANCELING WORK ORDERS**

A Work Order may be cancelled for the following reasons:

- when a duplicate has been made for the same work
- if there were significant errors on the original Work Order
- if the scope of the work changes to a point where a new Work Order would be required
- if the work has not been done and is no longer required, providing it is not overdue. If overdue, it should be marked as “closed but incomplete”.
- Department fiscal year-end of March 31 has been reached
- the term of the Contract has expired
- budget cutbacks

### **3.3.11 CLOSED BUT INCOMPLETE WORK ORDERS**

Work Orders should be marked as *closed but incomplete* only if the work is overdue and can no longer be physically done (eg: because of extreme weather or work is no longer needed). There is no guarantee that the Work Order will be extended. Other priorities may be addressed instead.

The Maintenance Contract Inspector and the Operations Manager may discuss or suggest how the funds can be allocated to another activity. If the work is no longer appropriate (for example,

the season has changed and the work would no longer be effective), then the MCI and OM may want to look at using the funds in a more appropriate place.

### **3.3.12 OPEN AND OVERDUE WORK ORDERS**

If the work is overdue but still needs to be done, then the Work Order shall remain *open and overdue*. All Work Orders are assigned due dates and the Contractor is expected to meet those dates. If he doesn't, then it becomes overdue. By tracking the completion dates, Alberta Transportation can measure performance by measuring how much work is being completed by the due date.

### **3.3.13 OVERDUE WORK ORDERS COMPLETED BY OTHERS**

If the work is overdue and can still be done, but the Contractor agrees that he is unable to do it, then Alberta Transportation may get someone else to do the work.

**NOTE:** Through the use of a computer software program, TRANS is able to keep track of the overdue Work Orders. TRANS staff must ensure that all staff in the Province are issuing Work Orders and counting overdue work orders and overdue days in the same way. When this standardization occurs, measuring the amount of work not done will be an effective performance-measuring tool.

### **3.3.14 WORK ORDERS WITH EXTRA WORK**

*Reference: Spec. 51.2.28                      Extra Work*

Extra Work includes work not specified in the contract, or work for which there are no bid items, but it is processed like any other Work Order. However, since there is no bid item, "99" is used as the bid item code. (The numbers signify that the work is user-defined and specific to that Work Order.)

If the activity is used on a regular basis, then it should become a bid item. However, Alberta Transportation would have to approve this proposed change to the Contract through a standard procedure for creating and approving new bid items.

The rest of the procedures for Work Orders must be followed.

Further discussion on Unit Price Changes and Pricing for Extra Work can be found in Section 4.

A completion date should be negotiated with the Contractor so that work is done in a timely manner.

All Extra Work Orders must be approved by the Operations Manager before they are issued to the Contractor. The Maintenance Contract Inspector can recommend to the OM to approve an Extra Work Order.

### **3.3.15 CREATING NEW BID ITEMS**

When Extra Work is done on a regular basis, is an activity that can be well defined and has a reasonably significant quantity, a new bid item should be created instead of using the same “99” one-time bid item repeatedly. The procedure for creating a new bid item is as follows:

- a) The Operations Manager requests authorization to create a new bid item in a memo to the Director, Maintenance/Specifications & Traffic Engineering . This memo outlines what the new bid item is needed for, a short description of the new bid item, the proposed unit price, and unit of measure. Included with the memo will be all the supporting documentation to show how the unit price was determined.
- b) IF the the Director of MS&T agrees with the request the unit price approval is sent to the Director of Program Management Branch for insertion into the existing contracts. The PMB, then replies by memo with authorization for the new bid item. If the he Director of does not approve the new unit price then a memo is sent back to the OM with the reasons why the unit price was not approved. (in which case the OM and Contractor negotiate another unit price, then re-submit).
- c) The new bid item is created in the OM’s computer in MCMS and then downloaded to the MCI’s computer.

### **3.3.16 PREMIUM PAYMENTS FOR URGENT WORK**

The intent of the premium bid item is to give the Contractor fair compensation for the additional expense of disrupting originally-scheduled work and mobilizing on short notice.

Highway Maintenance *Specification 51.2.14.11 – Compensation for Accelerated Scheduling of the Work* states “This premium payment shall apply only once for all bid items related to the specified work on the Work Order, and will be made at the rate for the first eligible work performed.”

While these directions are clear when the Work Order only has one item on it, it is unclear for the following situations:

#### **Situation 1 – Premiums for several activities in the same location**

When more than one item is ordered for the same urgent situation (for example, when debris removal, guardrail repair, and sign replacement are all ordered at an accident site).

If there are two activities and only one premium will be paid, then pick the activity where the majority of the work exists.

- If one work crew completes all of the work, then only one premium is paid.

For example, if four operators with a gravel truck and loader are flagging and cleaning up a gravel spill on the road and they straighten the guardrail at the same location using the loader and hand tools, then only one premium is paid, since only one work crew had to be mobilized to do the work.

- If a different mix of manpower and equipment (different work crews) is mobilized for each activity, then a premium is paid for each activity.

For example, if a busy divided highway has a sudden local pavement failure that requires immediate flagging (marking the hazard on the road), followed by a hot mix grader patch later the same day, a premium is paid for both activities.

### **Situation 2 – Premiums for one activity at several locations**

When the same work is ordered at several locations in one Contract Maintenance Area, whether it is written as part of one Work Order or several, to be done within a short period of time (for example, when the Maintenance Contract Inspector orders several paver patches within one CMA, to be completed at the same time).

- If the same work crew does the same type of work at several closely-spaced locations, only one premium is paid.

**Rule of thumb** to decide if the work is “closely spaced” is when the work is all in the same maintenance shop area (even if the work is not normally reported by the shop segment).

For example, three hot mix paver patches done at the same time and all within 20 kilometres of the Contractor’s shop would only get one premium. This is a judgement call. Each area has to determine what “close” means.

### **3.3.17 AFTER HOURS CALL-OUT PAYMENTS**

**Reference:** *Spec. 53.39.7.3 After Hours Call-out*

This type of payment is classified as a premium payment.

After hours call-out payments are used to compensate the Contractor for the following:

- **if his staff is called out after hours.** After-hours are defined as outside of the hours 7:00 a.m. to 5:00 p.m., Monday to Friday. Statutory holidays are also considered to be outside regular business hours.
- **and the reason for the response has not been covered in the bid items for their area.** A payment covers the cost of one staff member and a pick-up truck. This rate would apply to doing the work, whether located near the shop or at some distance away.

The after-hours callout rate is a flat rate per callout.

The after hours callout will not be paid if:

- the Contractor did not have to mobilize additional forces to respond
- the Contractor is already receiving a premium for the activity
- the work would be paid under an appropriate bid item

Sometimes, an after hours call-out is a judgement call.

***There is no after hours call-out in this situation:*** It's midnight and a dead deer is on the highway. A passing snowplow shoves the deer off the road, to be picked up later. In this case, the workers were already in the area, and no extra staff members were required to perform the task. The work would be considered part of the plowing.

***There is an after hours call-out in this situation:*** The police call at midnight to say there is a dead deer on the road. A crew goes out and removes the dead deer. The call-out fee will be paid.

### **3.3.18 FISCAL YEAR END**

The Maintenance Contract Inspector should not issue Work Orders that have due dates past the fiscal year-end. In some cases the MCI has no choice, since the computer program has been preset and the number of days cannot be shortened.

Under normal procedures, Work Orders finish before year-end (March 31<sup>st</sup>). A new Work Order would be issued beginning April 1<sup>st</sup>.

If no work has been done on the Work Order, although it was issued before the end of the fiscal year, cancel it. Reissue the Work Order on April 1<sup>st</sup>, with a completion date that reflects the time needed to do the job.

In some instances, an MCI may be required to cancel a Work Order or label it *closed* due to the fiscal year-end of March 31<sup>st</sup>. For accounting purposes, it is necessary to have all Work Orders and Crew Work Sheets entered by the year-end cut-off date.

## **3.4 WORK RECORDS**

### **3.4.1 INVOICES AND TRACKING WORK**

The Contractor is required to furnish data to the appropriate Alberta Transportation representative.

The Maintenance Contract Inspector has a key role in keeping financial control for TRANS. Before a Contractor is paid:

- the MCI needs to enter the data into the appropriate computer program or accept data transfers from the Contractor.
- the MCI must approve quantities reported on the Work Sheets. This helps TRANS maintain financial control over the projects.
- the MCI must have a degree of comfort that the work is appropriate, acceptable, and that the invoice matches the Work that has been done before he approves the Crew Work Sheets for payment.

### **3.4.2 SNOW REMOVAL AND ICE CONTROL DAILY WORK SHEET FOR PLOW TRUCKS**

This information is required by Alberta Transportation as soon as possible after the work has ended. The Contractor should electronically submit the Snow Removal and Ice Control Daily Work Sheets on a regular basis. He should not keep them until (for example) the end of the month.

Usually the sheets are turned into the Maintenance Contract Inspector within 48 hours, but during extreme weather conditions, this time requirement may be relaxed. The 48-hour time frame has been revised to a maximum of weekly with electronic data transfer. This timing is negotiated between each Operations Manager and Contractor.

There should be one Snow and Ice Sheet for each Operator for each truck per 24-hour period. These sheets should be signed by the Operator and the Foreman (representing the Contractor), verifying that the information is correct. There could be more than one Operator per truck in a 24-hour period.

The Contractor should supply the following information (via the Snow and Ice Sheet) to the MCI:

- the location where the work was performed (winter segment number)
- the Work Order number
- bid item
- the number of hours and kilometres worked in each “winter segment” for each truck, daily
- each truck’s start and stop times, kilometres traveled (this information is for MCMS)
- salt and sand used in each segment, and source

- hour meter start and stop time. The MCI needs the hour meter and mileage readings when there is a segment change, so that the information can be put into MCMS and it can find the correct information.
- comments (e.g., plowing drifts, black ice, highway number being worked on, truck broke down and switched unit number, etc.)
- breaks taken by the Contractor (e.g., coffee breaks, refueling, or lunch breaks). The Snow Removal and Ice Control Daily Work Sheet should show every break, either directly in the hourly work records or as a comment.

The information on the Work Sheets must fulfill any information requirements necessary for Alberta Transportation.

### **3.4.3 CREW WORK SHEETS**

Crew Work Sheets are used for the following reasons:

- a) any work not covered under Snow Removal and Ice Control Daily Work Sheets
- b) once the work is in progress or is completed

Crew Work Sheets are submitted electronically to Alberta Transportation in a reasonable amount of time, or when the job is complete. This sheet records the following information:

- location where the work was performed (segment, but not a winter segment)
- Work Order number
- section for supplementary information (i.e., what type and size of sign was erected?)
- bid item (to record units, pay quantities, etc.)
- requirements for MCMS
- comment section for additional information

### **3.4.4 HIGHWAY MAINTENANCE WORK RECORDING SHEET**

This is a bid item for work that is recurring but cannot be forecasted or scheduled. Contractors are paid a lump sum fixed rate per month for this work. The Highway Maintenance Work Recording Sheet is a confirmation that work has been done as part of the monthly work. This work is recorded on a Crew Work Sheet.

This sheet needs to be submitted to Alberta Transportation weekly, or as determined between Contractor and Operations Manager. It contains information that has been completed by the Contractor. It records such tasks as road kill clean up, garbage pick-up, emergency sign repair, sign-and-guidepost cleaning, or straightening.

**NOTE:** The report needs to detail the required information on the quantities of work completed.

In each Region, Contractors and TRANS staff have worked out ways for a Contractor to identify other potential work that needs to be done. Two commonly used options are:

- writing the work on the Highway Maintenance Work Record Sheet
- informing the Maintenance Contract Inspector verbally of the potential work



**3.4.5 DATA FOR MAINTENANCE CONTRACT MANAGEMENT SYSTEM (MCMS)**

The Contractor is required to furnish data in a format compatible with the Alberta Transportation's Maintenance Contract Management System.

TRANS collects data on the work performed within each roadway segment. When this information cannot be gathered from the Work Orders or payment quantities, the Contractor is required to provide the information at no additional cost to TRANS, or as otherwise mutually agreed in accordance with General Specifications 51.2.14.

**3.4.6 INVENTORY TRACKING RECORDS**

Alberta Transportation may have existing stockpiles of material from previous Contracts. Some Districts may selectively replace stockpiles, based on the most economic and sensible manner of management of those materials.

The Contractor should provide records on how much TRANS-owned inventory has been used.

The inventory includes such items as signs, guardrails, culverts, or any other stock which was not purchased by the Contractor and could still be used by TRANS. Random checks may be performed by TRANS staff to verify quantities.

## **3.5 DEMERITS**

*Reference: Spec. 51.2.23                      Default*

### **3.5.1 PROCEDURE**

Demerits are a financial penalty system that Alberta Transportation assesses on a Contractor for unsatisfactory work.

Only Regional Directors can issue demerits. The dollar value of the demerit has to be defined in the letter written by the RD to the Contractor.

Demerits are not issued lightly. There is a process that TRANS staff needs to follow.

- The Maintenance Contract Inspector has noticed a serious discrepancy or problem. He needs to identify the problem and collect documentation to back up the concern before recommending to the Operations Manager that demerit points should be issued. It is important that the MCI or the OM review the issue with the Contractor.

Documentation may include such items as a list of Work Orders not completed on time, conflicting notes on items written in the MCI's diary vs. Crew Work Sheets or invoices provided by the Contractor, etc.

- The OM may review the documentation provided. If the proper supporting documentation is in place, the OM will recommend that the RD issue a demerit.

The OM may check with other OMs, the Internal Review Group, or others to ensure consistent handling of this delicate issue.

Demerits can be issued for the following reasons:

- failing to do work
- failing to promptly pay creditors
- failing to repair a defect
- failing to perform work adequately
- failing to keep available sufficient, trained, and experienced snowplow operators
- failing to maintain minimum required snow removal equipment on standby
- providing false documentation
- not redoing work when required
- compromising the safety of the travelling public
- 20% Late Report is exceeded

#### **NOTE:**

- *Reference: Spec: 51.2.23 - Default* of the *Highway Maintenance Specifications* must be met.

- The Contractor may appeal the demerit. The Program Management Branch will investigate all information. A final appeal could be handled either by mediation or by a mutually acceptable independent party.

## **3.6 WARRANTY**

### **3.6.1 THE CONTRACTOR'S GUARANTEE**

As outlined in the *Highway Maintenance Specifications*, each activity has a defined warranty period. The Contractor guarantees the work will be free from any defects or failure due to the Contractor's neglect, faulty workmanship, or faulty material.

The work needs to be able to withstand climate, maintenance, and normal operating conditions.

### **3.6.2 PROCEDURE FOR TRACKING WARRANTY WORK**

After the Contractor has confirmed that the work is complete, the warranty process begins. The Maintenance Contract Inspector can generate a report that identifies activities nearing the end of the warranty period. With this list in hand, the MCI can physically inspect these worksites and identify any failures in the work.

If a failure is found, then the MCI should advise the Contractor of the problem. In documenting the warranty work necessary to fix the failure, the MCI needs to generate a new Work Order, following the procedure below:

- a) Using the MCMS system, find the child activity screen.
- b) Change the warranty window from IN PROGRESS to WARRANTY.
- c) Generate the Work Order with a new due date and indicate that the Contractor cannot bill Alberta Transportation for this work.

In the same program, MCIs can track work that is still under warranty.

Once the warranty work has been completed, the Contractor submits a new Crew Work Sheet that advises the MCI that the work has been completed. There is no additional payment associated with this warranty procedure. The original warranty period is not extended due to the repair work.

#### **NOTE:**

- When work is originally performed, the Contractor and MCI may agree that a warranty should not apply or a full warranty is not reasonable because of specific circumstances surrounding that particular work. These exceptions need to be documented on the Work Order and in the MCI's diary. Ensure that both the Contractor and TRANS have a record of the agreement.
- The Contractor does the work. If the work fails because of extenuating circumstances, then the circumstances should be communicated to the MCI/Operations Manager. It would then be decided if the warranty was applicable. Communication is the key.
- The Contractor should track warranty work and correct deficiencies.

## **3.7 CONTRACT CLAIMS, NEGOTIATIONS, AND DISAGREEMENTS**

### **3.7.1 OVERVIEW**

Partnering and its associated dispute resolution process are used in the Maintenance Contracts to help prevent many of the formal claims and the need for both parties to require extensive additional documentation.

Because contracts do not tend to be perfect documents, disagreements may arise and negotiations may be necessary. The Operations Manager should negotiate with the Contractor to avert or resolve disagreements wherever possible.

However, the OM should not feel that it is possible to settle all disagreements before they become claims against Alberta Transportation, if demands by the Contractor are considered unreasonable.

TRANS's strength in handling claims is based upon on-project documentation. The OM and the Maintenance Contract Inspector must document as if they were going to court. An example includes, but is not necessarily limited to, the items listed in the MCI's diary subsection of this manual, photos, and video tapes.

Formal claims are a final means to settle disagreements between TRANS and the Contractor. Failure to maintain necessary documentation through the duration of the Contract to support TRANS's stand in event of a claim indicates poor performance by contract administration personnel.

### **3.7.2 PROCEDURE FOR CLAIMS AND APPEALS**

#### ***For Alberta Transportation Personnel***

The ***General Specifications*** section of the ***Highway Maintenance Specifications*** outlines the procedure that TRANS follows when the Contractor files a claim.

The TRANS claim review process has three levels:

- Level 1 Operations Manager
- Level 2 Regional Director
- Level 3 Executive Director, Program Management Branch, Corporate Services

If any level of the process determines that the Contractor's claim has some validity and the Contractor is entitled to some form of compensation, then the reviewer will attempt to negotiate a tentative settlement with the Contractor.

The Maintenance Contract Inspector may be asked to assist with the claim as it goes to higher levels within TRANS.

If the proposed settlement requires a change to a term or condition of the Contract, then approval in principle must be obtained in advance from the Executive Director, Program Management Branch, before starting negotiations. The submission to the Program Management Branch must be accompanied by a recommendation from the Regional Director.

***TRANS personnel*** need to keep the following in mind during the claims and appeal process:

- The OM needs to apply fair negotiations and fair judgement when dealing with disputes.
- The Contractor's work needs to be well-documented. Consult the MCI's Diary subsection of this manual.
- TRANS staff must know the Contract thoroughly. Review the Contract document, including Contractor's response to the Work Execution Plan in the original bid package.
- The MCI needs to work closely with TRANS management. If the MCI receives a claim notice from a Contractor, then he should immediately notify the OM.
- The OM should advise the MCI of the process to be followed for First Party Claims submitted by a Contractor.

The Contractor must not have access to the MCI's diaries or TRANS correspondence, except specific information relating to progress estimates and quantity measurements. No one at TRANS may give assistance, information, or advice to the Contractor to help him formulate the basis of his claim.

### ***For the Contractor***

When a Contractor is following the claim review process, he must follow each level in sequential order (one through three). Once the Contractor has received a decision from a claims level, he may submit the same claim in writing to the next level, and must indicate why he disagrees with the previous level's opinion. The Contractor cannot introduce new items or issues that have not been reviewed by the previous level.

If new items are introduced, the Contractor should be advised to submit them in writing to the first level for review. Each claim would then be reviewed independently, unless TRANS and the Contractor agree otherwise.

### **3.7.3 LEVEL 1 CLAIMS**

When a claim is received at Level 1, the Operations Manager should notify the Regional Director and Executive Director of the Program Management Branch (PMB) of the claim. The OM will attempt to negotiate a tentative settlement with the Contractor. If an agreement can be reached, then the proposed settlement, along with a written report, should be forwarded to PMB for approval. The proposed settlement must be accompanied by a recommendation from the RD.

If the OM cannot reach a tentative settlement, or believes that the claim is not valid, he will notify the Contractor in writing that the claim has been rejected, giving brief reasons for the rejection. In the letter, the OM needs to advise the Contractor that if he disagrees with the response, he may resubmit the claim to Level 2. Copies of this letter should be submitted to the RD and PMB.

#### **3.7.4 LEVEL 2 CLAIMS**

When a claim is received at Level 2, the Regional Director should advise Program Management Branch and Technical Standards. These branches of Alberta Transportation track claims and issues on a province-wide basis. This data provides TRANS with feedback on existing specifications and testing procedures because it identifies areas where revisions or further review are required. Information on all claim settlements is required to determine if a precedent is being set.

When reviewing a claim, the Regional Director has a number of resources available to him (i.e., the Maintenance Contract Inspector, Operations Manager, and branches of TRANS like Technical Standards, PMB and others). The decision arrived at should be fair and fall within the parameters of TRANS policy and the contract.

If the claim is accepted at Level 2, then the RD, with assistance from the OM, will:

- a) arrange for all required approvals prior to formal acceptance of settlement
- b) arrange for the Contractor to sign and seal a General Release, provided by PMB
- c) inform the Contractor in writing (with copies to PMB and Technical Standards)

If the claim is rejected, the RD needs to notify the Contractor in writing of the decision (with copies to PMB and Technical Standards) and advise the Contractor that there is one more level (Level 3) in the claims procedure.

#### **3.7.5 LEVEL 3 CLAIMS**

When a claim is received at Level 3, the Executive Director, Program Management Branch, starts an independent review. During the course of the review, before he discusses anything with the Contractor, he may call on the services of the Operations Manager, the Maintenance Contract Inspector, or any other Alberta Transportation employee who could provide assistance in resolving the dispute.

If the Contractor is still not satisfied after Level 3, he may, where applicable, proceed as outlined in the *Disputes Resolution Process for Government of Alberta Construction Contracts* manual, which outlines the procedures for negotiation, mediation, and arbitration.

### **3.7.6 THIRD PARTY CLAIMS AND DAMAGE CLAIMS**

In a *third party claim* (as defined in the Alberta Public Works Act), anyone working for or providing materials to the Contractor may file a claim against the Contractor. The list could include any or all of the following: a Subcontractor(s), labourers, or others providing material or services on the Contract.

A *damage claim* (insurance claim from the public) is a claim for injury, loss or damage arising in connection with the work. The most common damage claim is for cracked or broken windshields due to winter sanding.

a) **Procedure for third party claims** – When a Subcontractor, supplier, etc., files a third-party claim with Alberta Transportation, there is a time-sensitive process that must be followed. The Maintenance Contract Inspector needs to note when he received the claim in his diary, then pass it on to the Operations Manager the same day.

- Third party claims must be submitted **in writing**. Verbal statements are not sufficient.
- The OM must **immediately date stamp and forward** any submission to Program Management Branch.
- Claims must be acted on immediately because there is a statutory 90-day limit for filing claims under the Public Works Act from the last day the claimant worked or provided services or materials on site.

**Over the 90-day limit** – Although the Public Works Act has a 90-day limit for filing claims, there is no time limit in the contract itself. Therefore, a claimant should never be denied the opportunity to file a claim, even after the 90-day period has expired. (There is a similar 120-day limit in the labour and material bond for filing claims with the bonding company. The Public Works Act also states that a claim should not be filed within 30 days of the date the claimant last worked.)

- If the claim is legitimate and the Contractor is unable or unwilling to settle the claim, TRANS may follow any of these courses of action:
  - determine the value of the claim and pay the claimant directly from holdback funds
  - pay the disputed amount into court for judicial determination
  - if funds are insufficient, refer the claim to the bonding company for settlement

b) **Procedure for damage claims** – Damage claims must be submitted in writing. TRANS staff must follow this procedure for claims under \$1500:

1. Claimant notifies Department that Claimant's property has been damaged.
2. Department sends letter back to Claimant advising that their claim letter has been received. Letter A or B in Appendix 4.
3. Department forwards claim to Contractor.
4. Contractor responds to claimant in writing with copy to Department.



5. If Contractor denies liability, the Department will forward a letter advising the claimant what his/her options are. Letter C in Appendix 4. Attached to the letter will be the Departments Procedure for Damage Claims Question and Answer Sheet, located in Appendix 4.
6. Claimant comes back to Department saying he doesn't agree with the Contractor.
7. Department forwards claim to the Adjuster.
8. Adjuster advises Claimant in writing of his decision, with copies to the Contractor and Department.
9. If Claimant disagrees with Adjuster, he comes back to the Department .
10. Department advises Claimant that if he is dissatisfied with the Adjuster's decision he should pursue the matter through legal avenues like small claims court or deal with it as an insurance issue through his insurance carrier.

**NOTE:** If the damage is **GREATER THAN \$1,500.00** it **CANNOT** be forwarded to the Adjuster.

In that case, if the Claimant comes back to the Department saying he doesn't agree with the Contractor's decision, the Department advises the Claimant that we can do nothing further for him and if he wishes to pursue the issue his course of action would be to take the Contractor to court or have his insurance carrier try to resolve the issue.

Under the terms of the *General Specifications* of *Highway Maintenance Specifications*, the Contractor is required to review any damage claim received, then respond to the claimant in writing, with a copy to the OM.

The *General Specifications* section also outlines a third party evaluation process for disputed minor damage claims of value less than \$1,500. Where the claimant disagrees with the Contractor's response, the OM will refer claims of less than \$1,500 to an independent adjuster for evaluation. This independent adjuster deals with each claim on an individual basis, getting comments from both sides. If the adjuster agrees with the Contractor's response, TRANS pays the adjuster's fee. If the adjuster disagrees with the Contractor's response, the Contractor pays the adjuster's fee.

Once the Contractor has responded to the claimant in writing stating his position, TRANS, with the exception of the above noted minor damage claims, considers the matter closed. For cases where the claimant disagrees with the Contractor's response, or the adjuster's response where the claim is less than \$1500.00, the OM will suggest that the claimant consider other (legal) avenues to resolve the dispute.

The claimant is not to be provided with the Contractor's insurer's name. The claimant has the legal right to obtain the insurer's name from the Contractor but not from TRANS.

If the MCI receives a request for information regarding a claim, the request should be forwarded to the OM.

### **3.7.7 REVIEWS/AUDITS**

The Accountability and Audit section of the Program Management Branch of Alberta Transportation performs audits of the Maintenance Contracts and Contractors. Usually, the Operations Manager requests this group perform audits of a particular part of the Contract, but an audit can also be started by a request from the MPMG, a Regional Director, or any Assistant Deputy Minister.

Audits by the Accountability and Audit section will look at work done within the Contract; work done by the contractor for others is not included unless it clearly affects how the Contractor does work for TRANS. An audit can also look at work done by a Subcontractor.

Auditors rely on written records of past events. If the Maintenance Contract Inspector believes that the Contractor is misrepresenting the amount of work done or is not complying with some part of the Contract Specifications, he needs to clearly document the details so that an auditor could easily cross-check with the Contractor's records. In particular, the MCI's daily diary is an important source of information in any audit.

Because the Contract allows TRANS employees to look at the Contractor's records, an auditor's help isn't usually needed for simple disputes. However, a request for an auditor's assistance should be considered for complex or very detailed inquiries. If the MCI is not sure about the right action to take, talk it over with the OM, or seek advice from the Audit section.

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## **4.0 QUALITY ASSURANCE / QUALITY CONTROL (QA / QC)**

### **4.0.1 GENERAL APPROACH**

Maintenance Contract Inspectors are not expected to perform quality control work on projects because quality control (and in some cases, quality assurance) is the responsibility of the Contractor. However, each MCI needs to assure himself that the work quality is within the specifications. He should review the information provided by the Contractor and spot-audit, as appropriate.

A MCI can assess the quality achieved by the methods outlined in this section and by working together with the Contractor to resolve issues as they occur. The methods of testing, frequency of testing, and overall approach are not carved in stone, but they do require the MCI to have an in-depth knowledge of the following:

- specification requirements
- Alberta Roadbuilders and Heavy Construction Association (ARHCA)/ Alberta Transportation Quality Assurance /Quality Control process for minimum standards
- ARHCA/TRANS *Failure Definition Handbook*

ARHCA Highway Maintenance Contractors and TRANS jointly developed a booklet called the *Failure Definition Handbook*, as a guideline to determine whether the work under discussion is acceptable. This book supplements the specifications, but does not supersede them.

- materials quality test results

While the frequency of quality assurance audits, inspections, and testing are up to the Operations Manager, they must be within the parameters established by department guidelines. The OM will work with the MCI to develop a program that will ensure that the work is satisfactory.

### **4.0.2 PROJECT REVIEWS**

Maintenance Contract Inspectors need to ensure that all work is being done correctly, using approved quality guidelines and safety procedures.

Not all Contractors' organizations are structured in the same way. If the organizations differ significantly than outlined in this manual, the Operations Manager and the Contractor's representative need to decide who should be represented at each level for discussion.

- a) *Review project objectives with the Contractor.* Project objectives, such as meeting or exceeding Provincial specifications, safety, and timeliness, should be agreed to before and reviewed during the work process. These discussions allow Alberta Transportation and the

Contractor to develop a common understanding of the objectives. Without a common vision of the work, there could be conflict.

- b) ***Develop joint agreements between the MCI and the local Foreman.*** There is a section of the ***Failure Definition Handbook*** that deals with this process. It indicates that local conditions, traffic patterns, and past practices may set a guideline for expected quality. The MCI and the Contractor should review the situation and reach agreement on what is expected for work quality.

If there are problems with the work, the review should help both sides reach agreement on whether the work has failed and/or could be expected to fail, given the prevailing conditions.

- c) ***Provide on-going feedback.*** The feedback process opens the door to discussions as the work progresses, rather than after it has been completed.

On-going feedback creates a good business atmosphere for the following reasons:

- Providing the Contractor with on-going positive or negative feedback increases the opportunities to fix problem areas as the work is being done. It's less expensive to fix a potential problem area as it is being worked on than bringing workers and machinery back to the site to fix any problems.
- Even if the work is being done acceptably, there may be cost- or time-saving improvements that could be made to the work or work methods.
- Negative criticism of the completed work tends to create conflict, especially if the Contractor believed his staff did the work correctly. Input should be given in a timely manner so that the work can be corrected with as little cost or work disruption as possible.

- d) ***Resolve differences in opinion quickly.***

If problems cannot be settled quickly at a local level, it may be necessary to draw additional resources from both sides to resolve the concerns.

If the problems cannot be resolved with additional information or within an agreed time frame, a mutual decision should be made between TRANS and the Contractor that the problem be escalated to the next appropriate level (as determined in the partnering resolution process), as soon as possible.

- e) ***Develop a joint agreement for pavement repair warranty.*** A section of the ***Failure Definition Handbook*** discusses joint agreements for pavement repair warranty. It indicates that there may be circumstances where a patch would not reasonably be expected to be a long-term solution to a specific pavement repair. When TRANS and the Contractor agree that the repair cannot be expected to last for the full warranty period, they should agree on a reasonable warranty period for the work. If they cannot reach agreement on the warranty, the issue should be escalated.

There may be reasons for ordering work that has a high risk of not achieving the warranty period. For example, it may allow more lower-priced but shorter-lived work to be completed — skin patches vs. deep patches. When this happens, both sides understand the risks, and should be able to reach an agreement on what is expected before starting the work.

### **4.0.3 ON-SITE WORK INSPECTIONS**

- a) ***Visit the work site often.*** When the Maintenance Contract Inspector visits the work site often, he has a clearer understanding of the challenges that the Contractor faces with a specific project. As a working relationship develops over time, the number of site inspections may diminish as the following occur:
- both sides understand the real dimension of the work
  - both sides become comfortable with the quality achieved

The Contractor has the responsibility to inform the MCI where and when the work is taking place.

- b) ***Visit the work site early in the project cycle.*** Concerns are easier to address when they are identified early in the work. Once the crew has demobilized from the site, it becomes more difficult and costly for the Contractor to correct any deficiency.
- c) ***Visit the work site at random times.*** It is easier to obtain a full picture of how the work is proceeding if the MCI visits the sites at various times, rather than a set time during the day. Certain activities that are done early in the day may not be done later in the day.
- d) ***Visit the work site with the Contractor.*** This allows both parties to obtain a common view of the work.

### **4.0.4 DEFICIENCIES**

When deficiencies are identified to the Contractor as early as possible during the course of the work, there are more opportunities to change the existing work methods and correct the problem. If a problem is noted after the job is complete, the Contractor may have to redo the whole job. This gets even more expensive when the crew and equipment have been disbursed to other work sites and have to be recalled.

- If there are differences of opinion or ***apparent deficiencies***, the Contractor may be able to explain what is happening to the satisfaction of the Maintenance Contract Inspector.
- If there is an ***actual deficiency***, viewing the work together allows both sides the opportunity to reach agreement quickly on what the problem is. Once the problem is understood, it may be easier to develop a solution that both sides can agree to.

#### **4.0.5 WORK FAILURE**

When a Maintenance Contract Inspector observes that work has failed, he should:

- identify the specific problems of the work
- consider the discussions, outlined in the appendix of the *Failures Definition Handbook*, which summarize the discussions that occurred in the Failures Definition Committee. Review the sections on materials testing, remedial measures, and warranties
- document failures
- determine the significance of the failure
- determine whether warranty work or penalties are required
- provide information and review with Contractor and Operations Manager
- work with the Contractor to determine remedial measures. Regardless of the remedial measures used, the completed work must meet specifications.
- review repaired work
- provide feedback on results to Contractor and Operations Manager

#### **4.0.6 MATERIALS TESTING**

##### ***Random Material Audits***

Several specifications outline how materials used by the Contractor should be sampled. (*e.g., Reference Spec 52.7, Supply and Stockpile Sand*). Some specifications set out the standards for material acceptability and whether penalties apply if the standards are not met. It is the Contractor's responsibility to do all material sampling and testing as described in the specifications, and notify the Engineer of any materials that do not meet the specifications.

The Maintenance Contract Inspector may perform random audit tests to ensure that the material meets specifications.

- The MCI should identify any sub-standard or faulty material to the Contractor as soon as it has been identified so that the material can be upgraded.
- If the test results are marginal or controversial, the MCI should review the results with the Operations Manager in a timely manner before communicating with the Contractor, to confirm the appropriate course of action.
  - Additional material tests may be required where the test results are marginal or where additional confirmation is needed on the sub-standard quality of the material.
- The MCI should examine the Contractor's documentation on such items as quality of chemicals, quality sheets for line painting, and the results achieved on any testing the Contractor may have performed.

If the quality is unsatisfactory, the MCI has several options:

- Discuss the problem with the Contractor (talking it over at a local level).



- If agreement cannot be reached, the MCI and Contractor should jointly sample the disputed work or material, as appropriate (i.e., guardrail or crack sealer) and discuss it again, if necessary.
- If agreement still cannot be reached on quality of work, quantity of deficient work, or appropriate remedial measures, the problem should be escalated to the next level of authority as identified in the partnering relationship.

### ***Retests and Appeals***

All tests have margins of error. Therefore, the Contractor may request a retest of the material to verify the first test's results. Some specifications outline the process for retesting, while other controversial results may be dealt with through the escalation and appeal processes.

## **4.0.7 FINAL AUDITS**

The final inspection should just be a formality because both sides should have already reached an understanding on what was required, discussed any problem areas, and taken appropriate steps to fix the problems.

### ***Joint Final Inspections***

The Maintenance Contract Inspector and the Contractor should inspect the project together, so they can collectively identify any problems. It is more difficult to explain the concern with words than to actually go to the site and view it, so whenever possible, arrange a site visit.

The MCI should then document the results of the final inspection. If deficiencies (that are both specific and related to the specification) are identified, the solution should be discussed with the Contractor immediately. These deficiencies need to be brought up to the specification requirements in a timely manner.

**NOTE:** Contracts may have a standard form for the inspection so it may focus on the typical areas of concern for each activity.

### ***Individual Site Inspections***

It isn't always possible or necessary to inspect the completed project with the Contractor. There are also occasions where it may be useful to inspect the site before meeting with the Contractor. In either case, it is generally useful to inspect the site again with the Contractor.

## **4.0.8 REMEDIAL MEASURES**

Some of the maintenance activities have remedial measures outlined in the specifications. For other work, the remedial measures are less clear and they depend on the nature of the deficiency.

Both the Contractor and Alberta Transportation staff need to work together to achieve a common understanding of what needs to be done, and the standards being applied.

#### **4.0.9 WARRANTY**

Each specification identifies the warranty period applicable to the work being performed. Warranties for Extra Work will be determined if required. The Maintenance Contract Inspector and the Contractor should agree on the warranties before the Work Order is issued and before the work begins.

In special cases, the MCI and the Contractor may agree that local site conditions make it unlikely that the work will survive to the end of the warranty period. When this situation occurs, the two have the option of waiving or negotiating the warranty period to meet reasonable expectations.

#### **4.0.10 QUALITY ASSURANCE – SNOW REMOVAL AND ICE CONTROL**

For different classifications of highways, the Maintenance Contract Inspector is to check with the Foreman for the time that each storm ends and the time that the Contractor gets the roads into “good winter driving condition”.

Class A	> 15,000 AADT	6 hours
Class B	7,000 – 15,000 AADT	6 hours
Class C	5,000 – 7,000 AADT	8 hours
Class D	2,000 – 5,000 AADT	8 hours
Class E	1,000 – 2,000 AADT	12 hours
Class F	500 – 1,000 AADT	12 hours
Class G	100 – 500 AADT	18 hours
Class H	< 100 AADT	24 hours

These time frames are for a normal storm. Unusual weather conditions may make these time frames impossible to meet.

Good winter driving conditions exist when snow and ice have been removed from the driving lanes and excessive loose snow has been removed from the shoulders and centreline of the highway. Short sections of ice and packed snow are acceptable and can be expected between the wheel paths, as well as on the centreline (as defined in the *Highway Maintenance Guidelines and Level of Service Manual*).

While the target is “good winter driving conditions”, it may not be possible to achieve this in the specified time frame. Drifting or packed snow, freezing rain, or sudden temperature changes may hamper the workers, preventing them from achieving this. Care needs to be used in evaluating the Contractor’s efforts with this process. It needs to be based on a reasonable expectation on what can be achieved with the specified manpower, equipment, and materials.

The MCI needs to track how the roads are being cleared by storm and by winter control section. The MCI needs to confirm, on a sample basis, information supplied by the Contractor. This is done on the form labeled Snow Removal and Ice Control Chart.

More than one line per storm may be necessary as the storm moves through an area.

If the roads are not cleared within the specified timeframe(s), the reasons/rationalization must be discussed as soon as possible after the storm. If too much time elapses and other storms occur, it becomes difficult to remember the exact circumstances of the response and results achieved. If necessary, both sides should view the road together to discuss perceived deficiencies and appropriate responses.

See Appendix 3 for the Snow and Ice Control Chart.

## **4.1 PROPOSAL REVIEW**

### **4.1.1 REVIEW OF CONTRACTOR'S PROPOSAL**

During the Request for Proposal (RFP) evaluation process, which determines which Contractor obtains the Highway Maintenance Contract for a given area, the Contractors are requested to provide information through a Work Execution Plan. This plan should be reviewed periodically throughout the term of the Contract. The plan had 20 separate categories, outlined below:

Management Skills	Environmental Plan	Highway Maintenance Work Strategy
Supervisor's Skills	Safety Plan	Response Management
Supervisor's Experience	Mobilization Approach	Winter Strategy
Crew Skills (winter)	Quality Assurance	Crew Training Program
Crew Skills (summer)	Proposed Suppliers	Use of Technology
Response to Emergencies	Key Sub-Contractors	Provision of Data
Adequacy of Facilities	Winter Equipment	

**NOTE:** The *Work Execution Plan* does not supersede the requirements of either the specifications or special provisions documents. It provides a guideline on the work the Contractor has agreed to perform as a minimum, to meet the requirements of the Request for Proposal, unless reasonably agreed otherwise.

## **4.2 SPECIFICATIONS / UNIT PRICES**

### **4.2.1 STANDARD SPECIFICATIONS FOR HIGHWAY MAINTENANCE**

Each maintenance activity has a specification or a number of specifications in *The Highway Maintenance Specifications*. Maintenance Contract Inspectors need to be familiar with these specifications because they outline both the standard to which work is to be completed and the method for payment.

The *Highway Maintenance Specifications* manual is broken down into the following sections:

- 51 General Specifications
- 52 Winter Maintenance
- 53 Surface Maintenance
- 54 Roadside Maintenance
- 55 Miscellaneous Specifications
  - Standard Drawings
  - Standards for Signs

These sections are further broken into individual specifications for the work. (For example, *Specification 52.1, Snow Removal and Ice Control (Truck)*, covers the snowplowing operations.)

There is also a small, field version with the same title, which contains all of the maintenance specifications, excluding the *Standard Drawings* and *Standards for Signs*.

**NOTE:** Different Contracts use different versions of the Highway Maintenance Specifications, and some specifications have been amended. Ensure that the appropriate version of the specification is being used for the work.

By mutual agreement, migration to new specifications can be negotiated within the terms of the existing contract.

### **4.2.2 SPECIAL PROVISIONS**

Contracts between Alberta Transportation and Contractors contain Special Provisions that are also a type of specification. Where there is a conflict between a standard Specification in *Highway Maintenance Specifications* and a Special Provision, the special provision governs.

In the Special Provisions section of the Contract, there are a number of conditions that are unique to the Contract Maintenance Area. These Special Provisions typically provide information on, but are not limited to, the following items:

- **Provincial Highways** — listing provincial highways maintained (rural and urban)

- **Roads Other Than Provincial Highways** — listing non-provincial highways maintained. (i.e., vehicle inspection stations, park roads, rest areas, roads on Indian Reserves/Metis Settlements/Improvement Districts)
- **Other Infrastructure** – environment canals, ferries
- **Contractor Performance Rating System** — a working document on annual performance rating
- **Highway Maintenance Work** — information on the expectation and requirements for highway maintenance work including winter inspections
- **Snow Removal and Ice Control (Truck)** — specifying the number and type of plowing trucks required at each shop and their availability period
- **Usage of TRANS Sand/Salt Sites** — identifying use of sand/salt storage areas
- **Supply of Sodium Chloride (Salt)** — identifying type of salt required
- **Maintenance Facilities** — discussing Contractor leases for the facilities with Alberta Infrastructure
- **Snow Removal (Winging & Prewetting)** — listing requirements for winging shoulders and prewetting trucks
- **Clean-Up** - reviewing Annual Highway Clean-Up requirements.
- **TRANS Material Storage Requirements** — citing arrangements to store material in Contractor's leased facilities
- **Supply of Materials** — listing requirements for materials to be available (i.e., delineator strips, red diamonds to mark bumps, etc)
- **Location of Public Facilities** - identifying rest areas and litter bins
- **Maintenance of Traffic Control Systems** — listing requirements for maintaining TRANS traffic-control and pedestrian-activated signals
- **Supply of Arrow Boards** — listing requirements for arrow boards
- **Additional Specifications** — listing additional specifications for work such as ferry operations

### **4.2.3 SPECIFICATION AMENDMENTS AND SUPPLEMENTS**

The Operations Manager is responsible to ensure that all Maintenance Contract Inspectors are aware of specification amendments. When in doubt about the status of a specification or amendment, the MCI should check with the OM.

Since the initial specifications were written, modifications have been made to them to correct errors, omissions, or to account for other factors. These changes make the specification more accurately reflect the work. These amended specifications replace that portion of the general specifications they refer to.

Throughout the term of the contract, there will be other amendments made to cover situations not foreseen when the specifications were originally prepared. These amendments should be kept with *Highway Maintenance Specifications* so they can be referenced easily.

#### **4.2.4 MODIFICATIONS DUE TO CONTRACT EXTENSION PROCESS**

As part of the process for extending the term of the Highway Maintenance Contracts, certain specifications were reviewed and amended.

When changes are approved, the information will be given to the Maintenance Contract Inspector and the MCI's computer will be updated to reflect the changes, where they result in new bid items or unit price changes.

For Contractors successful in acquiring an extension, the specification amendments will govern.

#### **4.2.5 SPECIFICATION REVIEW COMMITTEE**

The MPMG set up the Specification Review Committee to review specifications and propose necessary amendments to the specifications. This committee works with the ARHCA Maintenance Committee to reach agreement on workable solutions to specification issues. Once any agreed-upon specification changes are documented, formal notification of the changes are sent to the Operations Managers. The OMs then forward them to the Maintenance Contract Inspectors.

If a specification does not adequately cover the work, the MCI needs to work with the OM to determine whether to:

- propose a change to the specifications (if the change is significant enough)
- do the work as Extra Work
- do the work as a one-time bid item (The special price classification for this is "XX99" on the MCI's computer.)

If, after reviewing the issue, the OM agrees that the recommended specification change has widespread implications for most contracts, the OM will forward it to the Specification Review Committee and advise the Contractor. The proposed revision will then proceed through the specification review process.

If it is not judged worthwhile to make a province-wide specification change, the required change can be made for the Contract area only. Appropriate payment would need to be negotiated with the Contractor and approved by the Engineer.

#### **4.2.6 MINOR SPECIFICATION ISSUES**

Sometimes, parts of a specification are not appropriate due to local circumstances. Special arrangements with the local municipalities or Indian Reserves/Metis Settlements must be taken into consideration.

Under these circumstances, the Maintenance Contract Inspector has two main choices:

- do the work as an Extra Work item
- request a new unit price for the modified work (for work that is expected to be required several times).

Minor specification issues can be dealt with by setting up a joint work group with the Contractor to review the item. With both Alberta Transportation and the Contractor working together to resolve an issue, they should be able to reach a mutually-agreeable solution.



## **4.3 CONTRACTOR REALITIES**

### **4.3.1 WORK DEFINITION**

The following is an approach to contract maintenance from the eyes of the Contractor. This section should help the Maintenance Contract Inspector develop a partnering approach to contract maintenance work.

The MCI and the Contractor need to discuss the work, setting out the specific size and complexity of the job. The MCI and the Contractor need to clarify the expectations for the work, and document it sufficiently so that they have an understanding as to what they have agreed to. The document should cover the following topics:

- **Quantity of Work** — the MCI and the Contractor need to agree on how much work has to be done. This includes information on estimated quantities of material required, the dimensions of the work (i.e., length, width and depth, information on sideslopes, backslopes, etc.), and other relevant information that fully defines the work. When the work is defined clearly, the Contractor can provide a price that accurately reflects the work under discussion.

*As a rule of thumb*, smaller quantities of work tend to be the most expensive for the Contractor to perform per unit of work. On small jobs, there is a higher proportion of mobilization, preparation, clean-up, travelling costs, and risk in relation to the size of the project.

- **Quality of Work** — On items not clearly identified in the Specifications, the MCI and the Contractor need to agree on the desired quality standard for the work. This includes such factors as the type of acceptable material, sources of acceptable material (particularly gravel, sand, and earth), desired standards for final acceptance and required material test information (if any).
- **Distribution of Work** — The MCI and the Contractor need to agree on the distribution of work for any given project. It is more cost effective for the Contractor to do work that is closely spaced in a small region relative to work that is spread widely across the contract area. When the work is spread out, lower productivity and extra travelling costs will increase the costs.
- **Limits on Work Methods** — The Contractor decides which work methods will be used on a project. However, the MCI can set limits on work methods where past experience has shown that a certain type of equipment or work method achieves or does not achieve acceptable results. (For example, compaction equipment may or may not be selected for spray patching, based on previous performance.)

The MCI should be careful not to set unreasonable limitations on work methods, equipment or materials. Those limitations may trigger a request from the Contractor for changes to the unit prices or warranty period for the work.

The MCI may reasonably specify that certain methods or pieces of equipment are not acceptable (e.g., using Sandvik tips to remove ice on paved highways). If the restrictions mean that the Contractor's costs will change, he may ask to adjust the price of the work to reflect the change.

The MCI and the Contractor need to review the proposed change so both sides can reach agreement on the implications and feasibility of the work method to achieve the desired objectives.

- **Payment Method** — The MCI should work with the Contractor to determine the most appropriate method of payment for the work. The options should be in easily measured, definable units such as unit prices, hourly, Extra Work, lump sum or a combination, depending on the work being undertaken.
- **Safety Requirements** — Safety is primarily the Contractor's responsibility. However, the MCI and the Contractor should work together to determine the appropriate safety requirements for the project, especially if safety procedures aren't well-defined for the work.

#### **4.3.2 SUMMARY OF FACTORS INFLUENCING PRICING**

When the MCI helps the Contractor improve productivity, efficiency, and cost-effectiveness without compromising quality and safety, there is an opportunity for the Contractor to provide better pricing to TRANS. Conversely, the Contractor may have additional costs and therefore require a higher unit price if the work is issued in such a manner that productivity, efficiency and cost-effectiveness are reduced for a given level of quality and safety.

The Contractor minimizes his costs by using an appropriate crew and equipment to achieve optimum productivity per unit of work. The major factors are summarized below:

##### ***a) Work Scheduling***

Contractors can provide better pricing if the work is scheduled so that the volume of work is kept relatively uniform. If the volume of work varies widely, Contractors face additional costs of:

- hiring and training new staff to cover peak periods
- renting or leasing vehicles for short periods
- purchasing extra equipment for the work
- hiring Sub-contractors (where the work could possibly be done by the Contractor)
- incurring extra costs for rush delivery of materials

Risks increase when:

- skilled workers leave because they have uncertain work schedules and low levels of work for long periods of time
- newly-trained-but-inexperienced workers (e.g., snow plow operators) are on the job

While some work is of higher urgency, there are often opportunities to schedule work with the Contractor so that the overall balance of work is kept at a relatively consistent level.

**b) Project Size**

Smaller projects are generally more costly per unit of work because the costs for mobilization, demobilization, preparation, clean-up, travelling time, etc., are spread over a smaller project. (e.g., Fifty tonnes of patching may have the same costs for mobilization, demobilization, preparation, etc., as 500 tonnes, so the smaller project has a proportionally larger cost per tonne than the larger project.)

**c) Project Work Breakdown**

A project may have many small pieces of work to do at different sites. It is generally less costly for Contractors to do a project that is only broken down into a few large pieces than the same quantity of work broken into many smaller pieces. Each individual portion of work will generally have its own costs for travelling, setup, and preparation required to do the work at each site. (e.g., Five hundred tonnes of patching done as five 100-tonne patches are much less costly per unit of work than fifty 10 tonne patches because there are reduced setup costs for each site and increased productivity achievable for being able to do the work as a continuous operation.)

**d) Work Distribution**

**e)** Work that is located at widely-spaced sites will generally be more costly than work that is located in a reasonably compact area. If the unit price for the work does not include direct payment for the travelling time, the Contractor needs to recover the costs of this time. (e.g., One pothole in each of 10 segments of highway is far more expensive for the Contractor to fix than 10 potholes in one segment.) **Work Timing**

It is preferable to do all of the work of a certain type (ie. paving) in a given area at the same time, rather than having to return several times in a season to complete the work. Mobilization costs increase relative to the quantity of work undertaken and setup times are also generally increased. This is a very inefficient and therefore costly way of operating. While working in this manner cannot always be prevented, it is desirable to make every reasonable effort to do so.

**f) Risk and Uncertainty**

Risk and uncertainty have their greatest effect on unit price work because the Contractor has agreed to do the work for a certain price regardless of the actual conditions and productivity achieved.

A Contractor is generally willing to accept this if the Contract is administered fairly because, over time, the debits and credits of a Maintenance Contract will average out. A Contractor can provide better pricing when he understands, controls, and can account for the risks he may encounter. This is one of the reasons that representatives of the Maintenance Contractors are involved with the review and development of new specifications.

Extra Work is much less affected by risk and uncertainty because the majority of the Contractor's costs will be covered. Hourly Work also generally minimizes risk, because the Contractor knows that he will be covered for the crew's hours of work. (When travelling time is not paid for, however, the Contractor has to cover the cost of travelling time in the hourly unit price. The risk rises when it takes more time to travel than estimated.)

A Contractor can adjust to some risks by lining up alternate work that can be performed if his crews encounter difficulties, although the Contractor may not be able to do this if the work schedule or type of work restricts the options.

### **4.3.3 RISKS THAT THE CONTRACTOR FACES**

If the Maintenance Contract Inspector works with the Contractor to understand and minimize the risks that the Contractor faces, the Contractor should be able to provide better pricing for the work. The Contractor has varying degrees of control over these typical risks:

#### ***a) Changes to the Scope of Work***

If the Scope of Work was clearly defined at the beginning of the project, it becomes a relatively straightforward process to determine how much the additional work exceeds what was originally authorized. It also helps if there is an agreed-upon process where the Contractor notifies the MCI when he believes there will be additional work required. This needs to be done as early in the project as possible, so that everyone understands what is required and how it will be paid for.

Potentially, the greatest source of uncertainty is additional work on a project beyond what has been reasonably anticipated. The MCI needs to work with the Contractor to determine how much time, equipment, and staff would be expected to accomplish the additional work and how the additional work will be paid for. If the scope changes because of unforeseen difficulties, it may not be a significant issue for a project being performed as Extra Work, although it may be a significant issue for Unit Price or Lump Sum Work.

#### ***b) Weather***

Weather delays are not generally within the Contractor's control. However, a Contractor can minimize the impact by being aware of weather forecasts and having alternate work for their crews. They can also try to do less weather-sensitive work when there is an anticipated risk of weather delays.

The Contractor may also face delays caused by weather-related damage to the work. If there are extra costs associated with significant weather damage to the project, the circumstances and possible solutions should be discussed at the appropriate level.

The MCI can help minimize weather delays by:

- working with the Contractor to select suitable timeframes for completing the work
- recognizing the risk of weather delays for a given type of work.

The Operations Manager may authorize extensions for Work Orders when weather delays affect the work, but this does not happen often. The time estimates allotted for specific work in the specifications were developed to include a number of weather days. At times, extra costs may be approved.

### ***c) Material Supply***

The Contractor may have problems receiving the materials within the desired timeframe or there may be interruptions in supply. While he may not have short term control over a given supplier, alternate suppliers that have a proven history of being able to supply on time can be chosen over the longer term. The MCI can minimize supply problems by ensuring that TRANS gives the Contractor and supplier adequate lead time.

### ***d) Material Quality***

Material quality issues may delay a project until they are resolved. The Contractor has some control of material quality issues in terms of the supplier and material selected. TRANS staff may be able to help minimize material quality issues by working with the Contractor to identify the most cost-effective material suitable for the project. (e.g., various asphalt mixtures, aggregate gradations, etc. )

The Contractor may also run into problems with the following:

- on-site materials that may not be suitable for construction purposes
- poor ground conditions (such as saturated soils), which can cause problems with equipment and with not achieving a satisfactory end product.

### ***e) Site Safety Hazards***

Each site has its own safety risks that usually fall into the following categories:

- injury to the travelling public
- employee safety
- damage to the travelers' vehicles
- damage to equipment or materials

The Contractor can minimize these risks by:

- employing an adequate Traffic Accommodation Strategy
- ensuring the appropriate safe work procedures are implemented

- using appropriate signs and other safety equipment

Even if the Contractor has fulfilled all his safety responsibilities, the unexpected can happen. Motorists often do not obey signs or other traffic control measures and cause accidents or delays in the work.

The MCI can assist by working with the Contractor to identify deficiencies and appropriate safety procedures for the project.

#### ***f) Equipment Breakdowns***

The Contractor faces an ongoing risk that important equipment will break down, causing project delays. This risk is almost entirely within the control of the Contractor because each machine should have a preventative maintenance program and a contingency plan that helps the Contractor obtain backup equipment to finish the project. However, it should be noted that some specialized equipment may not be easy to replace on short notice. Where a long delay is anticipated, the MCI can help by working with the Contractor to develop alternate work options or work methods.

#### ***g) Manpower and Scheduling***

The Contractor runs a risk that key personnel won't be available for a particular task. This risk can usually be minimized by using other crew members, standby operators, Sub-contractors, etc. The MCI can assist by working with the Contractor to ensure that the work is scheduled in such a way that the peaks and valleys of the demand for manpower are fairly uniform.

### **4.3.4 OVERHEADS AND PROFIT MARGINS**

Contractors need to account for overhead and profit margins in any work that they perform. Although they may not make profit on every activity, in terms of the Contract as a whole, they need to be profitable to ensure that they remain a viable company. Typical items that need to be accounted for in some manner in the Indirect Operating and Provisional Costs are as follows:

- administrative, financial, and management personnel
- offices and office equipment
- utility and communication costs
- work estimating costs
- vehicle costs
- travel and other expenses
- safety and training
- quality control
- insurance
- facility leases and rentals
- meetings
- taxes

It should be noted that even for Extra Work, where the margins are specified contractually, that these margins are not all profit to the Contractor. Many of the other costs listed above, that are not directly related to the work in question, need to be covered, before the actual profit can be determined.

Contractors need to ensure that they are making a profit on the whole Contract before they are willing to change unit prices for larger volumes of work. While some prices may make more profit than average, the Contractor will not be able to easily adjust the prices if he is losing money on other items.

Even for Extra Work projects where there are Contract-specified margins, these margins are not wholly Contractor's profit, as much of it is used to account for the Contractor's overhead and taxes.

The MCI needs to realize that the Contractor is most likely to be willing to make changes to unit pricing if there is a process of "give and take" that ensures that the Contractor is reasonably profitable as the end result. Of course, Contractor's profitability is only one of the goals of the partnership. Neither the quality of the work nor safety should be compromised in the name of profits. It is generally not desirable to renegotiate a significant number of items, however, it should be recognized that both parties may have issues with the pricing of the work that can be discussed and there may be room for agreement. This is more likely to occur when the overall negotiations within the contract as a whole consider the interests of both and are not perceived to be "one-sided" by the other party.

#### **4.3.5 UNIT PRICE CHANGES AND EXTRA WORK**

**NOTE:** Extra Work should not generally be used for large volumes of work. Profits are made through efficiency. The unit price is typically a blend between low, medium, and high productivity work. When low productivity work is paid for by unit prices and high-productivity work is paid for by Extra Work, the Contractor will likely lose money on the low-productivity work. At the same time, the specified Extra Work margins on the high-productivity work would not be sufficient, on average, to allow the Contractor to be profitable on the work as a whole.

Extra Work is a preferred option when there are no bid items to cover the work and the work cannot be clearly defined enough for it to become a new bid item. There are also times when the specifications define a task as Extra Work.

Occasionally, the Contractor is requested to perform work that is not entirely covered by the Specifications. This situation may happen for any of the following reasons:

- **No existing specification** — There is no specification for the requested work.

- **Inadequate specification for proposed work** — The existing specification does not wholly cover the work as requested. This occurs whether more or less manpower and equipment are required to perform the work than would normally and reasonably be expected. A substantially different work method may be needed or changes to manpower, equipment, and material requirements may be needed.
- **Provincial specification change** — The Specification Review Committee has finalized a specification change.

Given the previous conditions, the Contractor would generally be requested to do one of the following:

- a) **Provide a new unit price.** Requesting a Contractor to provide new unit prices is generally valid under the following circumstances:
- **Large volume of Work** — There is an expectation that there will be significant quantities of work done under this item.
  - **Work performed regularly** — It is expected that this work will be performed several times a year or would likely be performed regularly each year of the Contract.
  - **Clearly definable Work** — It is possible to clearly define the scope of the work before starting the project. Also, it is possible to determine a unit of measure that is relatively easy to measure and monitor.

When either the Maintenance Contract Inspector or the Operations Manager requests a unit price, the Contractor then provides his proposed price to the OM. The OM will either:

- agree with the proposed price and recommend it for approval to the Director of Maintenance Specifications and Traffic Engineering.
- disagree with the proposed unit price change and return it to the Contractor for further review and discussion

*If the price is approved*, the Director of Maintenance Specifications and Traffic Engineering will forward the approval to the Director of Program Management Branch. He will document the approval in a letter to the OM, who will forward this to the MCI and the Contractor. The MCI needs to ensure that his computer (MCMS) is updated to reflect the new price. The OM is responsible for the distribution of approved prices.

*If the price is rejected*, further negotiations may be required to reach a mutually satisfactory agreement.

- b) **Extra Work** — this classification is generally a valid option under the following circumstances:
- **Small volume of work** — the work will only amount to a small value; generally in the range of a few hundred to a few thousand dollars.
  - **One-shot project** — types of projects which are only likely to be done once within the term of the Contract or a very limited number of times.



- **Significant problems defining the scope of work** — projects in which it is very difficult to establish a clear scope of work. This also applies where it is difficult to find a unit of measure that will consistently pay for the work reasonably and fairly.

Extra Work is generally considered to be a fair option by the Contractors because they have a reasonable assurance that:

- their costs will be covered
- risk is minimized
- they will make a profit

The MCI should review projects that are planned as Extra Work with the OM so that it is clear that the work meets the criteria for that category.

#### **4.3.6 PRICING FOR EXTRA WORK**

*Specification 51.2.28, Extra Work*, specifies the terms under which Extra Work will be paid for. The following options are available:

- **Negotiated unit price** — The Operations Manager will negotiate with the Contractor to determine the new unit price. This option works well when the Scope of Work can be clearly defined and clear units of measure can be identified for the work.
- **Lump sum price** — This can be used when Alberta Transportation can tell the Contractor exactly what is needed to do the work. The Contractor needs to account for the amount of risk and the unknown factors that may come up during the project. More uncertainties usually mean a higher price.

MCIs should only request lump sum pricing when the work can be well-defined. When it can't be, TRANS will probably not receive the best price possible for the work. The Contractor also faces an increased risk of losing money if the estimates of quantities and work required are inaccurate.

- **Payment for labour, equipment, and materials** — The balance of the Extra Work specification outlines how the work will be paid for when labour, equipment, and material are paid for at specified rates or at the Contractor's cost plus markup.



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**SECTION 5            HIGHWAY MAINTENANCE ACTIVITIES**  
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## **5.0 GENERAL**

### **5.0.1 GUIDELINES**

The *Highway Maintenance Specifications* and *Special Provisions* are the base documents for administering the Contract. These guidelines and best practices have been set out to help the Maintenance Contract Inspector manage the Maintenance Contract, meet the Specifications and achieve Alberta Transportation's goals. The Specifications answer most of the questions on the required results (and sometimes methods) for the work, and these guidelines assist in effectively achieving each of the following goals for both TRANS and the Contractor:

- Public Safety
- Worker Safety
- Positive Working Relationships
- Timely Work
- Quality Work
- Cost Effective Work
- Positive Public Relations
- Maintaining Budget Limits
- Reasonable Profit Margins
- Accountability

As the MCI and the Contractor work together and discuss issues that exist or develop over the life of the Contract, mutual goals should be met consistently.

### **5.0.2 A FRAMEWORK**

Guidelines or best practices for certain activities are not intended to replace the Specifications and Special Provisions. However, they will add a frame of reference that will help new and experienced Maintenance Contract Inspectors with their work. The following sections highlight:

- how to administer certain specified activities within a Contract
- how to achieve the desired results by following best practices

## **5.1 WINTER MAINTENANCE**

### **5.1.1 DEFINITIONS**

#### **Average Snowstorm**

An average (or normal) winter snowstorm is defined as one in which snowfall amounts range between three and eight centimetres, the air temperature is lower than  $-10^{\circ}\text{C}$ , the wind velocity is less than fifteen kilometres per hour and the road surface is frozen.

#### **Good Winter Driving Conditions**

Good winter driving conditions exist when ice and snow have been removed from the driving lanes and excessive loose snow has been removed from the shoulders and centreline of the highway. Short sections of ice and packed snow are acceptable and can be expected within the driving lanes between the wheel paths as well as on centreline.

### **5.1.2 NOTIFICATION OF SNOWPLOW TRUCK STARTING TIMES**

**Reference:** *Spec. 52.1 Snow Removal and Ice Control (Truck)*

The Maintenance Contract Inspector should hold discussions with the Contractor to decide how and when the MCI needs to be notified that snowplow trucks have been dispatched.

Typical forms of notice are as follows:

- a) **Phone calls and voice messages** — The MCI may request that the Contractor phone him either in the morning, during regular work hours, or whenever the snowplow trucks have been dispatched. Generally, notification would be given at the start of the snowplowing operation for each shop and not as each truck is added to complement the operation.

The MCI may want to monitor the snowplowing operation during the night occasionally, especially when a significant winter storm is expected. This helps the MCI obtain a feel for how the work is being performed. However, after the relationship with the Contractor has matured, the MCI should be confident with the Contractor's work and would not need to be called each time a truck is mobilized for winter maintenance. Even with a matured relationship with the Contractor, the MCI on occasion may wish to audit the snowplowing operation.

- b) **Other means (faxes, e-mail, etc.)** — The Contractor could fax information on when snowplow truck mobilization has occurred when the MCI cannot be reached directly. E-mail and electronic data transfer may also be appropriate.

- c) **Snow & Ice Work Sheets** — The Contractor provides these sheets to the MCI for payment; they are also a record of the work accomplished.

### **5.1.3 SNOWPLOW TRUCK DISPATCH GUIDELINES**

*Reference: Spec. 52.1 Snow Removal and Ice Control (Truck)*

The Maintenance Contract Inspector could arrange for the dispatch of trucks in unusual circumstances, by contacting the Contractor to discuss appropriate times to dispatch the trucks.

The Local Features section in the Request for Proposals (RFPs) discusses local snow removal and ice control problems and hot spots. The MCI and the Contractor should be aware of these issues.

Usually, the Contractor will dispatch snowplow trucks when any of the following occur:

- good judgement and experience dictate
- winter driving conditions have deteriorated to a point where it is logical to dispatch them
- conditions match those set out in *Highway Maintenance Specifications*
- conditions match those set out in *Highway Maintenance Guidelines and Level of Service Manual*

The above mentioned documents outline some of the methods and guidelines the Contractor needs to follow to achieve *good winter driving conditions*. Good winter driving conditions are not always achievable in the desired time frame during certain winter storm events. The goal then, is to achieve the best winter driving conditions under the circumstances.

Other procedures that should be considered and discussed with the Contractor are the method and timing of:

- plowing shoulders
- plowing approaches to residents, livestock, and active granaries
- plowing/sanding intersections
- sand/salt application rates

Useful additional information may be found in the Operators' Training Modules on Snowplowing and Sanding that have been developed by Alberta Transportation and the Contractors

#### **5.1.4 ICE CONTROL ON PAVED HIGHWAYS WITH ICE BLADES**

**Reference:** *Spec. 53.27 Maintenance and Preparation of Gravel Surface Roads and Snow Removal and Ice Control on Gravel and Paved Surfaces*

Sometimes ice and packed snow builds up on a paved highway and cannot be easily removed by the snowplow truck. This build-up requires excessive amounts of salt and sand to melt it. Under extremely cold conditions, sand and salt won't work well, but blading will.

Ice blades on a grader may be proposed to remove the packed snow and/or ice. These usually work reasonably well, although they have some risk of damaging the pavement and need to be used with great care on chip seal coats. Generally, regular grader blades should be used. If a different blade is called for, use ice blades.

**NOTE:** Sandvik® is a proprietary name.

Graders equipped with Sandvik® tips are not usually recommended to remove ice from the highways. Experience shows that it is extremely difficult to avoid damaging the paved road surface. Rutting makes this problem worse. Do not use Sandvik® tips without considering the consequences.

#### **5.1.5 PROTECTION OF SEAL COATS DURING WINTER MAINTENANCE**

**Reference:** *Spec. 52.1 Snow Removal and Ice Control (Truck)*

When snowplowing on seal coats that were applied during the past summer, or on asphalt-stabilized base course surfaces (as determined by the Engineer), trucks need to be equipped with power floats, castor wheels, shoes, or rubber blades to reduce damage to these surfaces.

The use of other “protective equipment” will be subject to the approval of the Operations Manager. The Contractor shall repair (or have it repaired at his expense) any damage done to these surfaces as a result of snowplowing operations. Prior to the winter, the Maintenance Contractor and Maintenance Contract Inspector should inspect the road and document the condition of the chip seal via pictures, video, and/or notes to file. The Chip Seal Contractor is responsible for defective work during the warranty period.

The Contractor should be advised of these areas early in the summer so they can plan the proper location of work, personnel and suitable equipment, then reallocate them as necessary for the following winter's work.

Remember to check with the Regional Bridge Technologists, since they may also have seals on bridge decks that require protection.



### **5.1.6 DIRECTIONS TO CEASE SNOWPLOW OPERATIONS**

**Reference:** *Spec. 52.1 Snow Removal and Ice Control (Truck)*

The Contractor is expected to decide when it is appropriate to quit snowplowing. However, the Maintenance Contract Inspector, in consultation with the Operations Manager, may want to cease snowplow operations earlier than the Contractor would because:

- the driving lanes are in good winter driving conditions
- darkness or low visibility inhibit clearing intersections, crossroads, or approaches
- shoulders are clear of significant snow accumulation
- there is low danger of drifting
- snowfall has stopped
- icy sections have been treated
- curves, hills, bridges, intersections, and railway tracks have been treated as required.

Hours of service issues for the operators working on the crews can also lead to the order to quit. According to the National Safety Code, operators are permitted to work 13 hrs driving in a fifteen-hour work-day. An Hours of Service Exemption Permit can be obtained from Motor Transport to permit operators to work 15 hrs driving in an eighteen-hour work-day. When the Hours of Service Exemption Permit is used, the Contractor is to advise the OM.

**Note:** Hours of service issues have are currently having an impact on the Contractors ability to provide 24 hr coverage in all contract areas during extended storms. By law the contractors are not to exceed the number of hours stated on the permit. Although contractors to have a spare board they do not have a spare operator for every truck. During the extended winter storm some of the trucks will need to de-escalate until a fresh operator can be brought back to work after his break. At the present time the department and the contractors are looking at the issue together, to come up with a workable solutions that

When the MCI thinks that the Contractor may be performing winter maintenance work beyond that reasonably required for road, weather, and traffic conditions, the following steps should be followed:

- a) **Monitor snowplow operations** —The MCI needs to ensure that the snow removal and ice control operations are being performed in the required manner. To judge this, sometimes it is necessary to observe the snowplows in operation during a storm.
  - The MCI should inform the OM when he believes that the Contractor is dispatching units when they are not required.
  - The MCI needs to discuss winter operations with the Contractor when he believes that the Contractor's staff should make corrections to the operating procedures. Disagreements on potential liability issues regarding ceasing operations needs to be resolved in a mutually satisfactory manner between the Contractor and the MCI. If they are unable to resolve the issues, then the OM will need to get involved.

As the MCI monitors conditions, he might decide that the Contractor has done all that should reasonably be done to achieve the best winter driving conditions under the circumstances. The MCI may believe that the snow removal and ice control operations should cease. The MCI should not make this decision without consultation with the Contractor about conditions in surrounding areas.

**NOTE:** MCIs need to remember that ensuring their personal safety and the safety of others is more important than being on-site. It isn't advisable to follow snowplow trucks for long periods of time in blowing or drifting snow. Due care is required when passing them.

- b) **Review operating procedures** — The MCI and the Contractor should review the winter maintenance guidelines to reach a shared understanding of what is expected and required:
- before the winter season
  - on an on-going basis
  - if there are concerns

The operating guidelines are found in:

- *Highway Maintenance Guidelines and Level of Service Manual*
- *Highway Maintenance Specifications*
- the Local Features section of the RFPs

The Foremen and Operators need good judgement skills to make decisions based on present and anticipated road, weather, and traffic conditions that may not be clearly outlined in the winter maintenance reference literature.

MCIs need sufficient training and experience to provide qualified judgements about when winter maintenance is not being performed as required. They also need to work with the Contractor to develop confidence in the judgement of the Contractor's staff. The Operators usually have experience dealing with local winter conditions.

- c) **Discuss with the Contractor** — If the MCI believes that snow and ice removal should stop, the Contractor should be contacted. The Contractor may have information that shows that local conditions are not representative of the whole area or that operations should continue to improve the level of safety for motorists.

It is important that the MCI understands the combined road, weather, and traffic conditions well before making a decision on whether to shut down the snowplow operations. The MCI should review the situation with the OM, if possible.

- d) **Decide to cease operating** — The MCI has the authority to shut down winter maintenance operations if, after reviewing the situation with the Contractor, the MCI feels the work is not needed. If this happens, then the Contractor will want to have this directive in writing for liability purposes. The MCI needs to give the order verbally, then follow up with written notification. The MCI should not directly order the operators to stop, but should pass this

instruction on to his counterpart with the Contractor, or another appropriate Contractor supervisor so they can de-escalate the crews as required.

- e) **Review the decision to cease operating** — A decision to stop the operation of the snowplows will cause some controversy. MCIs should document the factors leading to the decision and review the effects of this decision in terms of the road conditions that followed.
- The MCI should review the decision with the OM.
  - The Contractor will also want to review the decision with Alberta Transportation staff so that they have a clear understanding of the criteria for ceasing snowplow operations. These criteria will be considered when there are similar situations in the future.

### **5.1.7 HOUR METER CHECKS**

**Reference:** *Spec. 52.1*                      *Snow Removal and Ice Control (Truck)*

The Maintenance Contract Inspector can look at the Snow & Ice Sheets to determine whether the hour meters are functioning and the readings are reasonable. Hour meter readings are used to double-check the hours billed on the Snow & Ice Sheets.

If the MCI has concerns about the operational status of an hour meter, he should contact the Contractor to do either of the following:

- Confirm that the meters are all in working order
- Make an appointment to check a snowplow truck to determine that the hour meter is functional

If the hour meter isn't functioning or is not functioning properly, the MCI should request the Contractor fix it within a reasonable time frame (within a day after a storm). Although the hour meter isn't 100% accurate, it provides a reasonable check that the hours reported represent the hours worked. Alberta Transportation pays on hours worked, not on the hour meter readings. In general, not all of the hours recorded on the Hour Meter are billable hours to TRANS.

Contractors have agreed to provide equipment in good working order. The hour meter is one piece of equipment that has contributed to problems in the past with verifying time worked. It is good practice to ensure the hour meters are working as required.

### **5.1.8 SPREAD-CONTROL DEVICES**

**Reference:** *Spec. 52.1*                      *Snow Removal and Ice Control (Truck)*

The Maintenance Contract Inspector has several methods at his disposal to confirm the use of the spread-control devices.

- a) **Check calibration records** — There is a process used to calibrate spread-control devices. It is recorded by the Contractor and the MCI has the right to see it.

- b) **Field-check operational snowplows** — The MCI can observe the use of the spread-control device in an operating snowplow if he makes arrangements with the Contractor to do so. The proper application rate depends on present and anticipated road, weather, and traffic conditions. The experience and judgement of both the Operator and the Foreman are key in deciding the application rate and the effectiveness of the application being considered. The Foreman and Operator should check to make sure the appropriate application rate is being used and adjust accordingly.

Information on the recommended application rates can be found in the *Maintenance Guidelines and Level of Service Manual* and other sources.

- c) **View spread-control records** — Each spread control device that meets the requirements of *Spec 52.1.3.8, Spread Control Device*, has the ability to perform data logging. When the MCI wants to review this information, he should contact the Contractor to view the data logging records.

The spread control records provide a good starting point for discussing application of snow and ice control materials and optimizing the usage of these materials.

### **5.1.9 SNOWPLOW TRUCK AVAILABILITY**

*Reference: Spec. 52.1 Snow Removal and Ice Control (Truck)*

#### ***Provision of Snowplows within Availability Period***

The Maintenance Contract Inspector needs to assure himself that snowplow trucks are available to perform snow removal and ice control work during the availability period identified in the Special Provisions.

Contractors need to communicate with the MCI about the availability of their trucks. The trucks do not need to be sitting in the shop waiting to be called. They can be out performing other work. However, there should be a viable plan to retrieve trucks and operators in a timely fashion.

Contractors are encouraged to seek other work when the trucks are not reasonably required for work for Alberta Transportation. Contractors may choose to use the Availability Rate (a bid item specified in the Request For Proposal) to cover many of the fixed costs for these trucks — including such items as depreciation, insurance, registration, lease costs, provision of loaders, etc. The Contractors want to maximize the availability paid to them to cover these fixed costs.

The MCI and the Contractor need to discuss criteria for when the truck can be considered to be available or not.

The Contract generally requires that 2/3 of the specified trucks need to be at the shop and ready to work (with trained and qualified operators) within one hour, and the other one third need to be available and at the shop within two hours, so that they are ready to plow or sand as required.

If a discussion between the MCI and the Contractor changes the criteria for considering whether the trucks are available or not, then the Operations Manager needs to be involved, so that he is reassured that the area is covered properly.

Some of the factors that need to be considered are:

- expected weather conditions
- numbers of trucks available
- distance of truck from home shop
- spare trucks
- additional and back-up Operators
- previous Contractor response times
- truck maintenance requirements
- Contractor's non-TRANS workload, etc.

The MCI has several methods of confirming whether a Contractor's truck is available. These include:

- a) **Notes on Snow and Ice Control Work Sheets** — The MCI may request that the Contractor note on the Snow and Ice Control Work Sheet when a unit has been substituted because another unit is out of service.
- b) **Availability Sheet** — The MCI may work with the Contractor to develop a form that indicates which days the unit was available and a schedule for providing this information. This is not the preferred alternative for the Contractor, since it requires the completion of an additional form every day during the winter, therefore increasing the Contractor's administration costs.
- c) **Lack of availability** — The MCI can work with the Contractor to develop a process to identify when units are not available, which would be provided to the MCI on an agreed upon schedule.

### ***Provision of Snowplows Outside of Availability Period***

The Specifications identify that the Contractor should make sufficient equipment and personnel available at the earliest possible time. The intent of this is the Contractor will mobilize and rig up as many trucks as soon as he can, given that the trucks may be doing other work and may not be readily available for snow and ice control operations. Payment for travelling time for trucks from other shop areas that are supporting snow and ice control operations should be given consideration during these storm events outside of the prescribed availability period.

### **5.1.10 ADMINISTRATION OF SNOWPLOW OPERATORS' BREAKS**

*Reference: Spec. 52.1 Snow Removal and Ice Control (Truck)*

**NOTE:** Breaks should be taken while the unit is parked safely off the road or at the maintenance shop. Breaks should be noted on the Snow/Ice Sheet.

When snowplowing, there are several breaks that the Operators would be expected to take. The Specifications note that some of these breaks are excluded from payment.

The excluded (unpaid) breaks include:

- fuel breaks
- meal breaks
- repairs or servicing
- equipment calibration
- plow blade changes

There are also breaks that the snowplow Operator should take, to ensure that the Operator stays alert and to ensure the equipment remains safe to operate.

Paid breaks include:

- **coffee breaks** – Each truck will be allowed 2 fifteen-minute coffee breaks per day.
- **equipment checks** – Operators stop for a short period of time (a few minutes) to check lights, windows, and mirrors to clean and/or adjust them as required to maintain safe working conditions for the snowplow. This time is also used to walk around to observe other concerns that may affect the plow's safe operation.
- **traffic breaks** – The snowplow Operator is expected to pull over at reasonable intervals, typically every 5 to 8 km or where it is safe to do so, to allow traffic to pass by.
- **Safety** – If visibility is severely limited and the snowplow trucks have to stop on the highway and cannot return to the shop for safety reasons, they should be paid. If the Operators and trucks are at the shop, they will only be paid for the actual work done, up to the point where visibility and road conditions deteriorated.
- **record keeping** – The recording of segments worked, tracking material used, and the time spent on each segment is included in record keeping.

### **5.1.11 EMERGENCY RESPONSE CHECK FOR SNOWPLOW FLEET**

*Reference: Spec. 52.1 Snow Removal and Ice Control (Truck)*

The Maintenance Contract Inspector ensures that the snowplow trucks can achieve the desired response time. If the Contractor is not taking adequate measures to provide this response, there are provisions for penalties in the Specifications.

- If this is a chronic problem and limited to a single Operator or shop, the Contractor should be allowed time to address the concern.
- If the Contractor does not take reasonable steps to address the concern, then penalties become a reasonable option.

#### **5.1.12 QUALITY ASSURANCE DRILLS FOR SNOWPLOW FLEET RESPONSE**

The quality assurance drill process should only be used as a last resort. It is extremely disruptive to the Contractor's operation and Alberta Transportation must cover the Contractor's costs for mobilizing for this test. It should only be considered if the Contractor has not made significant positive changes to his ability to respond when required for snow removal and ice control.

If the situation warrants, the Contractor needs to be told that conditions are serious enough for TRANS to call a quality assurance drill. The Maintenance Contract Inspector has the option of recommending to the Operations Manager that a quality assurance drill be conducted to test the response of the snowplow trucks.

The issue can be elevated to the next level of management, if agreement cannot be reached.

If the situation is serious enough to warrant a quality assurance drill, then the following concerns need to be addressed:

- a) **Several documented instances of inadequate response** — The MCI has documented several instances where the Contractor didn't:
  - provide adequate response in a reasonable time and this information has been communicated to the Contractor
  - take adequate measures to improve the response time.
  - consistently inform the MCI when a significant number of trucks were not available
- b) **Concern with response at several shops** — The concerns about response time are more than an isolated occurrence at one shop within a Contract Maintenance Area.
- c) **Approval of the Operations Manager** — The OM has reviewed the incidents and agrees that a quality assurance drill would be an appropriate measure to check response.
- d) **Expectation for snow removal and ice control** — The quality assurance drill should be conducted when the Contractor has a reasonable expectation that snow removal and ice control work will be required on the designated day of the quality assurance drill due to weather forecasts or other relevant weather information.

If the Contractor doesn't have an expectation of snow removal and ice control work for that day in that area, he would likely allocate his trucks and crews to other work and may have great difficulty responding in the required time frame.

- e) **Notification of Contractor** — Once the OM approves the quality assurance drill, the Contractor should be notified, in a reasonable timeframe, that the drill will occur.

- f) **Communication** — When TRANS is concerned about the Contractor's response time during a call-out, the issue needs to be raised at the Operational Planning Meetings. Communication needs to go both ways, so that both the Contractor and TRANS staff understands why the concerns exist.

### **5.1.13 DETERMINING SAND/SALT QUANTITIES**

*Reference: Spec. 52.7*

*Supply and Stockpile Sand*

*Reference: Spec. 52.8*

*Supply of Sodium Chloride (Salt)*

The Maintenance Contract Inspector needs to determine the quantities of sand/salt remaining after each winter season and determine the requirements for additional sand/salt for the upcoming winter season by any of the following methods:

- a) **Sand/salt stockpile measurements** — The MCI can request a survey of the stockpile to determine the quantity remaining. Since there are usually small quantities of freeze proofed sand left in the sand/salt pile in the spring, the MCI needs to decide whether it is cost-effective for the survey crew to provide highly accurate quantities. (The survey is also required for audit purposes.) If the quantity needs to be calculated into tonnes, it is necessary to have an accurate conversion figure for the amount of sand/salt (tonnes in a cubic metre ( $t/m^3$ )). He can do this by weighing a known volume of sand/salt. This is also important if the Contractor is selling sand/salt to other clients. Using the contract specified conversion rates for sand density can lead to errors for the estimate remaining.
- b) **Sand/salt usage** — The Snow & Ice Control Work Sheets provide records of the estimated amount of sand and salt used. Subtracting the quantity used from the quantity originally stockpiled should provide a good estimate of the quantity remaining. It's important to consider the equipment that the Contractor is using when trying to obtain accurate estimates. If using this method, confirm that the Work Sheet volumes are reasonably accurate. (e.g., if they are not using a bucket scale on the loader, it is important to know the typical capacity of the loader bucket.)
- c) **Estimate of stockpile size** — Maintenance personnel can often judge the size of a stockpile due to their experience with the stockpile in their shop or area with a moderate degree of accuracy.

### **5.1.14 MONITORING SAND/SALT QUANTITIES**

As an on-going task, the Maintenance Contract Inspector needs to evaluate the sand/salt usage over the course of a season to try to determine whether the usage was reasonable for the road, weather, and traffic conditions. The MCI will get the best overview of this by working closely with the Contractor throughout the winter on snow removal and ice control and appropriate application rates. At the end of the winter season, reported quantities should be compared to actual measured stockpiled quantities from the beginning and end of the winter season. If the quantities do not match reasonably closely, the MCI should review the material reporting procedures with the Contractor.



Any sand/salt sold to a third party by the Contractor should be reported as a negative quantity on a Crew Work Sheet on a monthly basis, or as otherwise mutually agreed.

### **5.1.15 FREEZE-PROOFING SAND**

**Reference:** *Spec. 52.5*                      *Sodium Chloride Treated Sand*  
**Reference:** *Spec. 52.6*                      *Calcium Chloride Treated Sand*

The Maintenance Contract Inspector needs to work with the Contractor by August or September to determine the required quantity of salt or other freeze proofing agents to add to the sand. The percentages vary according to whether it is fresh, untreated sand or whether it has previously been mixed with salt. Remember that leeching will occur due to wind, rain, and the previous winter's melt-water.

Salt in the stockpile has the following purposes:

- to keep the stockpile from freezing
- to provide a small amount of de-icing chemical along with the abrasive sand spread on the pavement

The MCI and the Contractor need to review that:

- the correct amount of salt has been used to keep the previously unmixed sand in stockpile from freezing
- the correct additional amount (percentage) of salt has been added to the freeze proofed stockpile remaining from the previous winter, sand/salt mixture does not freeze into large blocks while in the pile
- the stockpile is not pickled too late in the season because the salt needs time to mix with the moisture in the sand to form a brine. The brine reduces the freezing point of the water in the stockpile, therefore minimizing the extent that the stockpile freezes.

Other chemicals may be used (i.e., liquid calcium chloride or proprietary substances) to keep the pile from freezing.

Alternate chemicals are currently being developed and tested. These may be less harmful to the environment and less corrosive to concrete and steel. MCIs should monitor these developments and encourage testing within their areas.

### **5.1.16 REVIEW OF SAND SPECIFICATIONS**

**Reference:** *Spec. 52.7*                      *Supply and Stockpile Sand*

Not all sand material available to the Contractor will meet the gradation shown in *Spec. 52.7.2 Materials* or in the Special Provisions included in the Request For Proposal. The two most significant factors on whether the sand material is acceptable are:

- performance on the highway under prevailing road, weather, and traffic conditions. If it provides significant improvements in friction for most conditions, it is probably acceptable.
- top size. Top sizes for the sand material that exceeds 10 mm will cause increased problems with windshield claims, although even a 10 mm rock can chip a window. Therefore, it is generally undesirable to approve sand material that exceeds this top size.

**NOTE:**

- The sand material exceeding specified gradation in the 80 µm-sieve can be a concern to the Contractor. Depending on the type and quantity of material passing this sieve, it could increase the tendency to form sand lumps, freeze together, or plug equipment.
- The sand material that does not meet the specified gradation for the 80 µm-sieve is a concern to both the Contractor and TRANS as it can have a significant effect on snowplow truck productivity.

For a new sand source, the Maintenance Contract Inspector will request gradation tests results for the material. Sand materials that do not meet the specified gradation must be reviewed and approved by the Operations Manager before it is used.

The MCI and Contractor should also provide an evaluation of the material's suitability for its intended purpose to the OM. Before making any recommendations on different sanding materials, the MCI and Contractor need to consider the cost of the various alternatives.

### **5.1.17 SAND MIXING – SAMPLING**

**Reference:** *Spec. 52.7*                      *Supply and Stockpile Sand*

A sampling test and a sieve analysis test are outlined in *Spec 55.3 – Aggregate Production and Stockpiling*, in the *Highway Maintenance Specifications*.

### **5.1.18 GRAVEL ROAD WINTER MAINTENANCE**

**Reference:** 53.27

***Maintenance and Preparation of Gravel Surface Roads and Snow Removal and Ice Control on Gravel and Paved Surfaces***

Plowing of gravel surface roadways should be commenced before snow accumulations reach 10-15 cm on the roadway. However, if drifting conditions prevail, plowing operations may be commenced sooner. In general, winter maintenance schedules are determined by weather conditions.

Priority should be given to school bus routes and high traffic volume routes. Overall, priorities should be determined using local information.

During the first snow fall, it is desirable to mix snow into the loose gravel to stabilize the surface material when it freezes. This minimizes future gravel loss from snow plowing.

Ice blading may become necessary if the roadway becomes slippery due to compacted snow or ice. Ice blading roughens the surface for improved traction. Care must be taken to minimize gravel loss.

Winging of snow into the ditch will be necessary before plowed snow accumulates to a depth of 30 cm along the shoulder edge.

## **5.2 SURFACE MAINTENANCE**

All highway surfaces must be kept in a condition suitable for safe travel at the posted speed limit. Keeping the surface of all roads in a safe condition is the number one priority maintenance item.

Regular inspections of all paved surfaces are to be carried out by both the MCI's and the Maintenance Contractor. These inspections are to ensure that all areas of pavement failure have been promptly identified, signed and repaired.

Breaks or distortions that occur on the pavement's surface can pose a hazard to traffic; these areas must be identified and attended to immediately. Until the necessary repair work is done, warning signs must be placed on each side of break or distortion area. The hazard must be monitored until repaired.

Transverse cracking, surface oxidation, general hairline cracking, pavement joint separation and roller cracks, are examples of distresses which if left unattended, will eventually develop into more serious pavement failures. The MCI and the Contractor should work together to identify these areas for proactive maintenance planning.

### **5.2.1 DISPOSAL OF EXCAVATION**

**Reference:**    *Spec. 53.1*                      *Excavation and Backfill*

The Maintenance Contract Inspector should discuss the expectations for the disposal of excavated material before starting the work so the Contractor can make the necessary arrangements. There are two commonly-used methods of disposal of excavated material:

- a) **On-site** — This means a location near the excavation where the material can be dumped into a washout, erosion area, slope, etc., generally within the highway right-of-way. The appropriate location and acceptable final condition should be discussed with the Contractor. The material should be leveled so that the surface is smooth and uniform. This means it should not contain loose rocks, asphalt lumps, earth lumps or other debris on the surface. It should blend to match the existing ground. It cannot contain any contaminated material that would cause environmental damage. Any on-site leveling would be done at the Contractor's cost. Topsoil may need to be stripped to accommodate disposal of material. In this case, the topsoil would have to be replaced and the area should be reseeded.
- b) **Off-site** —The material would be hauled away to a borrow pit, gravel pit, etc., which are typically Alberta Transportation owned sites. Once the material has been dumped at the approved site, it may be necessary to do further work to level the material.

If the material requires additional effort to level it, then the MCI and the Contractor should discuss the required final condition and the method of payment for the work. Depending on the condition of the material, it may take time (possibly weeks) before the leveling can be properly completed because the material may need to dry before it is leveled. If the disposal location is not TRANS owned, then the Contractor needs appropriate authorization from the owners.

**NOTE:** If the material is left on the right of way to dry, it must not pose a public safety hazard, even in its “temporary” condition.

### **5.2.2 MEASUREMENT OF EXCAVATION**

**Reference:**    *Spec. 53.1*                      *Excavation and Backfill*

Measurement for excavating subgrade soil and/or granular materials will be in cubic metres, based on the volume of excavated material in its original position.

### **5.2.3 CRACKSEALING MEASUREMENTS**

**Reference:**    *Spec. 53.4*                      *Asphalt Pavement Crack Sealing*

**Reference:**    *Spec. 53.5*                      *Asphalt Pavement Crack Routing and Sealing*

**Reference: Spec. 51.2.14.8 Measurement and Verification of Quantities for Payment**

There are several different methods to determine crack lengths. The Maintenance Contract Inspector and the Contractor should discuss methods for determining the most appropriate method before the work starts. Common methods are:

- **Full measurement** – This requires a worker and a measuring wheel to physically measure the length of each crack which has been cracksealed in the highway section. This is the most accurate method but it is also the most time consuming and expensive method.
- **Random sampling** – This requires choosing a representative random sample section of highway within a given highway segment being cracksealed. The cracks are measured by a worker with a measuring wheel. The total number of cracks determined for the sample section is pro-rated for the highway segment cracksealed to determine the total number of cracks.

e.g., If there are 1,000 m of cracks in a 500 m sample section, then there are 10,000 m of cracks in a 5 km segment of highway cracksealed.

**NOTE:**

- The crack conditions in the sample section need to be representative of the entire highway segment cracksealed. The sample section also needs to be long enough to be representative.
- Sample sections should be 200 - 500 m long and include at least 10 transverse cracks to be representative. With care, this method can achieve reasonably accurate results with reduced effort and costs for measuring the cracks. Additional sample sections may be taken, as necessary, if the density of transverse or longitudinal cracking changes in the highway segment. This would then be pro-rated to the length of highway they represent.
- **Modified random sampling** – Rather than measuring the length of every crack, it is possible to estimate the length of transverse cracks in a sample section.

**Transverse cracks** are counted in the sample section, including partial cracks, and multiplying this number by the width of the highway. This is extremely effective when the majority of cracks are transverse cracks.

**Longitudinal cracks** usually need to be measured. If there is a single longitudinal crack down the centre line within the sample section, the length can be estimated. The total length of cracks is then determined by pro-rating the length of cracks in the sample section versus the length of the highway segment that has been cracksealed.

e.g., A 5 km segment of highway is cracksealed and it has been measured to have 4,900 m of longitudinal cracking. The road is 10 m wide and there are 51 transverse cracks in a 500 m sample section. Therefore, this 5 km of highway has 5100 m of transverse cracking.

The total length of cracking in this 5 km segment is found by adding the longitudinal cracks and the transverse cracks ( $4,900 + 5,100 = 10,000$  m).

With Modified Random Sampling, the MCI needs to ensure:

- the sample section is representative of the highway segment being cracksealed
- the sample section is long enough to be representative
- a minimum of one sample section is done per surface condition segment.

Sample sections should be at least 200 - 500 m long and include at least 10 transverse cracks to be representative. This method can achieve reasonably accurate results with reduced efforts and costs to measure the cracks. The number of sample sections used can vary to accurately reflect the changes in density of transverse or longitudinal cracking. The sample sections need to be representative of the average density of cracks on the segment. They can be pro-rated to the length of highway they represent.

- **Historical Information** — There may be historical information that identifies the length of cracks in a given highway segment. Where this is the case and it is believed that these numbers remain representative of the highway, the MCI and Contractor may agree to continue to use these numbers for payment for the work. Numbers may be adjusted to take into account new cracks that may have developed.

### *Timing of Measurements*

- **Premeasure** – Cracks can be measured before the work starts, and the quantities are to be agreed upon between the MCI and the Contractor.

The advantages of premeasuring include accurate budgeting information, as well as accurate quantity information that can be provided to the Contractor prior to the work. The disadvantages of doing this occur when there is a difference between cracks actually cracksealed and the cracks that either the Department or the Contractor expected to be cracksealed. Some reasons this might occur are due to cracks missed- say the longitudinal cracks or that new cracks have formed since the last measurement.

- **Post measure** – Cracks are measured after the work has been done.

The advantages of post measuring is that there is no dispute of the cracksealing work which has been done. The disadvantage of this is there may be some question as to where the actual end of the crack is after the cracks has been covered in cracksealing oil, and therefore whether the measurements accurately represent the work done.

To minimize disputes, it is recommended that measurement be undertaken jointly by TRANS and the Contractor. It is also worthwhile to review the cracksealing work as it is being done to ensure there are not any differences in common expectations as to what needs to be done.

### **5.2.4 CRACKSEALING VS. CRACKFILLING**

**Reference:** *Spec. 53.4 Asphalt Pavement Crack Sealing*

The intent of the cracksealing specification is to ensure that the crack is sealed. A crack does not need to be full to the pavement surface to be considered sealed. After the cold pour/hot pour is applied to the crack, the crack will appear fully filled, particularly after it has been squeegeed. It is not uncommon for the material to sag or settle in the crack and not look filled after a period of time. The crack would still be considered sealed and the material applied properly.

It is unreasonable to have the Contractor wait until the material sets up and then re-apply a second coat of material to fill the crack and this process adds no benefit to the final product. Cracksealing is done to prevent water from penetrating the pavement structure and provides a coating that minimizes weathering and decreases breakdown caused by traffic use. Raveling of the leading edges of the crack as well as damage due to pavement flex may also be reduced.

If rain washes out freshly-placed cracksealant, this becomes a warranty item. It needs to be reviewed by the Maintenance Contract Inspector and Contractor to see if/how the work should be redone.

### **5.2.5 CRACK WIDTH SPECIFICATIONS**

**Reference:** *Spec. 53.4 Asphalt Pavement Crack Sealing*

The Maintenance Contract Inspector and the Contractor should evaluate the size of the cracks in the highway before starting the work.

The specification says not to fill in cracks under 5 mm in width. With that in mind, a decision needs to be made on whether to crackseal areas that have cracks less than 5 mm, based on how many narrow cracks exist in the section to be measured. Cracks wider than 25 mm should be treated by another method. Decisions to crackseal cracks narrower than 5 mm should be based partially on the following:

- If the highway section is going to be cracksealed, then a decision is required on whether the narrow cracks should be sealed as well.
- If there is a relatively small portion of narrow cracks, it is likely worthwhile to seal them with the rest of the cracks.
- If the narrow cracks are in a clearly defined area that could be marked out in advance, it would be reasonable for the Contractor to be requested not to seal them.
- It is not reasonable for the Contractor to measure the width of the cracks while the crew is cracksealing and then try to determine which that some cracks should be sealed and not sealed as they are sealing.
- It is also unreasonable to expect that the crew would stop sealing a wider crack that narrows down to less than 5 mm in places.

### **5.2.6 SUITABILITY OF SPRAY PATCHING FOR SURFACE SEALING OR PATCHING**

**Reference:** *Spec. 53.7 Asphalt Pavement Surface and Crack Repair – Spray Patch*

The Maintenance Contract Inspector should work with the Contractor to determine if spray patching is appropriate. It is a useful method for repairing segregated areas and other asphalt surface deterioration.

While it will not fix underlying failures in the asphalt structure, sealing the surface will probably prolong the life of the pavement. This should be considered when determining the suitability of the method and the extent to which the warranty would apply.

Other options, such as deep patching, skin patching, using “hot mix” or “cold mix”, fogging, cracksealing, etc., may also be appropriate treatments, depending on the surface deterioration.

In some cases, multiple spray patch application may provide adequate treatment, especially on lower-traffic-volume highways.

It is not generally a good idea to spray patch over cold mix.

***As a rule of thumb:*** when spray patching, the patch should be 1.5 to 2.0 aggregate diameters deep (typically 10 - 13 mm deep) or the patch will not bind together well and will have an increased probability of wearing or peeling off quickly.

### **5.2.7 COMPACTION EQUIPMENT FOR SPRAY PATCHING**

**Reference:** *Spec. 53.7 Asphalt Pavement Surface and Crack Repair - Spray Patch*

Compaction of a repaired crack or defective area will only be required when specified in the Work Order. When compaction is specified in the Work Order, a supplemental payment for the equipment required will be made as Extra Work in accordance with Specification 51.2, General (for Maintenance Work).



### **5.2.8 POTHOLE MEASUREMENTS**

**Reference:** *Spec. 53.10 Asphalt Pavement Pothole Patching*

The Maintenance Contract Inspector needs to work with the Contractor to determine methods for counting and measuring potholes.

The MCI and the Contractor may agree that it is reasonable to add up a number of small potholes to be equivalent to one pothole. For example, three small potholes that would fit into a hardhat could equal 1 pothole, and from that size to a pothole 0.5 m<sup>2</sup> in area would be considered as 1 pothole. Generally, these smaller potholes need to be somewhat close to each other so that the Contractor doesn't have to move his vehicle between potholes. Another option to measuring the number of potholes is to use an equivalent number of potholes per tonne for asphalt mix.

### **5.2.9 ACP MIX AVAILABILITY**

**Reference:** *Spec. 53.11 Production of Asphalt Concrete Pavement Material*

**Reference:** *Spec. 53.13 Asphalt Pavement – Surface Patching*

**Reference:** *Spec. 53.14 Asphalt Pavement – Deep Patching*

Some Contractors do not have asphalt plants for maintenance, or the asphalt plants are located in places where they cannot reasonably be economically used for patching the entire contract area. The mobilization cost of moving a portable asphalt plant and setting it up are extremely high for small volumes of mix.

Therefore, much of the ACP mix will be purchased from other sources. Typically, when the material is required for patching, the Contractor is not the only party obtaining mix, so the Contractor must take what is available from the plant at that time. Also, an asphalt plant cannot readily change the mix type in the middle of a production run.

A Maintenance Contract Inspector must keep this in mind and work with the Contractor if they believe there is a need to obtain a mix different from the one that is readily available. TRANS should also be aware that there may be a significant premium to obtain an alternative mix, if it can be made available at all.

If the Contractor cannot acquire the mix desired, there are four common options:

- reduce the price
- adjust or waive the warranty to reflect the difference in material
- change the time frame of the work until the desired mix is available
- accept other mix designs

### **5.2.10 DEEP PATCHES VS. SURFACE PATCHES**

**Reference:** *Spec. 53.13*                      *Asphalt Pavement – Surface Patching*  
**Reference:** *Spec. 53.14*                      *Asphalt Pavement – Deep Patching*

The Maintenance Contract Inspector should work with the Contractor to determine the appropriate method to repair a given pavement defect and to identify the appropriate quantities and locations of patching required.

If a pavement defect indicates a deeper base failure, (i.e., alligator cracking) a decision needs to be made on whether the defect will be excavated and repaired with a deep patch or whether it will be surface-patched.

In most cases, a surface patch will probably last for a couple of years or more. The deep patch may last longer (several years), but it is much more expensive, so fewer patches can be completed for the same budget dollars.

If the failure rate is expected to be low, it makes sense to surface patch, as redoing a surface patch is generally not that costly relative to the cost of doing all repairs as deep patches..

If the MCI and the Contractor agree that the surface patching method may not survive the warranty period in all locations, then they can negotiate whether a warranty should be adjusted or waived.

### **5.2.11 PAVER PATCHING VS. MACHINE (GRADER) PATCHING**

**Reference:** *Spec. 53.13*                      *Asphalt Pavement – Surface Patching*  
**Reference:** *Spec. 53.14*                      *Asphalt Pavement – Deep Patching*

Paver patching is most appropriate for longer patch lengths (requiring more than 20 t) and high volume roads so that the paver has enough time to adjust and smooth out surface roughness. The Maintenance Contract Inspector and the Contractor should discuss paver patches under 20 tonnes as there are practical limits as to what a paver can effectively do. Grader patching is generally not appropriate on roads that allow trucks and trailer combinations known as Long Combination Vehicles (LCVs) unless extreme care is taken by the Contractor so that all wheels on the LCV can remain stable.

There still may be dips at the beginning or end of the work if the paver is expected to fill in large defects.

Pavers are inefficient when:

- they have to do many small patches
- they have to do part loads or one or two loads that need to cover the entire width of the highway.

Pavers are advantageous because they:

- provide a smoother product than grader patching with neater transitions at the ends
- tie into fixed highway features such as bridge approaches better than a grader patch
- work better for a long patch, rather than many closely-spaced small patches (since this will mean fewer transitions between the end of a paver patch and the old pavement)
- allow more cost-effectiveness and efficiency on large patches because the work can be done in one continuous operation rather than having to stop and start at the beginning and end of each patch. It also uses the material more effectively.

Grader patching has its pros and cons:

- it is generally less expensive, but takes skill to make the work smooth. The end transitions tend to be less neat than paver patches, although they can be done to a high standard.
- it is more cost effective for smaller patches.

**NOTE:** Patches that are located close to each other can be completed more economically than those that are widely spaced.

Paver patches 100 m or greater in length need to be reported to Dale Kossowan, Road Surface Data Coordinator, in Edmonton for pavement management purposes.

### ***Contractor pricing***

The Contractor may be able to negotiate better pricing for the patching if they are doing relatively large quantities of patching with larger patch sizes, although this is also dependent on location of the patches.

## **5.2.12 EMERGENCY PATCHING VS. NON EMERGENCY PATCHES**

***Reference: Spec. 53.13 Asphalt Pavement – Surface Patching***

The Maintenance Contract Inspector may authorize “emergency patching” when it is necessary to patch the highway for a short time to protect public safety. In these cases, the temporary patch is not intended to be a final solution, but is good enough until a permanent solution can be implemented. When necessary to undertake “emergency patching”, the Contractor shall complete the Work within 2 calendar days of the issuance of the Work Order.

For non-emergency patches, the Contractor shall complete the Work within 60 days of the issuance of the Work Order. In more urgent situations, the Contractor shall complete the Work within 10 to 30 days of the issuance of the Work Order. A “Surface Patching Premium” is to be paid for a non-emergency patch that must be completed within 10 days of the issuance of the Work Order. A “Surface Patching Interim Premium” is to be paid for a Non Emergency Patch that must be completed within 30 days of the issuance of the Work Order.

The Warranty period for “emergency patching” is 7 days. All other surface patching has a warranty period of one year.

“Emergency patches” would generally be authorized under the following circumstances:

- **Winter repair** – Almost any patching in winter would be expected to be temporary because it is difficult for the Contractor to achieve adequate compaction, bonding with the existing pavement, or to properly excavate and backfill the failed area. Although winter weather varies across the Province and from year to year, temporary patching is most commonly used between October 1 and April 30.
- **Spring repairs/extended rainy weather** – Usually in spring, there is moisture in the thawing ground that can minimize the chances of obtaining a good base for the repair. Moisture in the base also causes problems during extended rainy weather, so a temporary repair may be required until “drying” weather occurs.
- **Mix availability** – Hot mix is not generally available in the winter and may not be available until late spring, depending on the asphalt plant. A pavement failure may need a temporary fix to repair the asphalt until a local asphalt plant begins operation so that a more permanent fix may be constructed.
- **Highway overlays/reconstruction** – Where a highway is scheduled for an overlay or reconstruction in the near future, a judgement is required whether it is best to permanently fix the area or let the construction crew fix the problem. This should be reviewed with the Contractor and the Operations Manager.

### **5.2.12.1 PATCHING CREDITS: SINGLE PATCH VS MULTIPLE PATCHES**

#### ***Reference Spec. 53.13 Asphalt Pavement – Surface Patching***

For larger size patches or multiple patches in a concentrated area, a patching credit may apply. For Work Orders which require:

- That only a single patch be constructed, and the actual quantity of material used is in excess of 25 t, a “Surface Patching Price Adjustment – Single Patch” would be applied
- That in excess of 100 t of patching material within a specified work area up to 3 km in length, a “Surface Patching Price Adjustment – 100 tonnes” would be applied

The credits are to be applied with respect to the way the work was carried out, and not necessarily the way it was ordered. The Work Order needs to be written in the way that the work is intended to be carried out by the Contractor. To avoid any disputes over the application of the credits, it is highly recommended that the Maintenance Contract Inspector discuss in advance with the Contractor what he has planned for patching and how he is going to issue the Work Order. The Contractor will be able at this point to provide input on how they intend to carry out the work, and whether they believe the price adjustments are applicable.

### **5.2.13 ADDITIONAL EFFORT FOR SWEEPING/CLEANING RAISED MEDIANS**

**Reference:** *Spec. 53.17*                      *Roadway Sweeping & Raised Median Cleaning*

Sometimes, the road or raised median requires significantly more effort to clean because:

- it has not been cleaned for some time
- there has been a significant amount of traffic tracking mud and gravel onto the highway. (If the amount of mud and gravel is excessive, it may be possible to discover who made the mess and ask them to clean it up).
- excessive sanding was required during the previous winter

In these circumstances, the clean-up may require additional effort, additional passes of the sweeper, or additional equipment to bring the highway to acceptable condition. The Maintenance Contract Inspector is to discuss with Contractor the acceptable normal level of effort to clean the highway and raised medians. Additional effort may require additional payment.

If the Contractor has any concerns, the Contractor needs to discuss them with the MCI so that they can be resolved before the work starts.

The new specification for cleaning raised medians indicates that the debris that falls onto the highway from cleaning the raised medians will be considered incidental to the work.

The MCI should work with the Contractor so that this material can be cleaned up at the same time, before the roadway is swept. The Contractor can then perform the work in one operation and improve their efficiency of operation.

### **5.2.14 PAINTED ROADWAY LINES**

**Reference:** *Spec 53.20*                      *Painted Roadway Lines*

Both the Maintenance Contract Inspector and the Contractor should monitor this work on a regular basis to ensure the work is being done to the desired quality. If there are deficiencies, they should be discussed as soon as possible.

Ideally, any deficiencies will be immediately reported to the Contractor so that the line painting Sub-contractor can be notified before leaving the area or the Contract Maintenance Area. Refer to the specifications if there are substantial deficiencies in the quantity or quality of work; there could be penalties.

It is the Contractor's responsibility to advise the MCI when the line painting Sub-contractor is working in the area. The Contractor must provide reports of the application rates for paint and beads and which segments of line were painted so that the MCI is able to monitor the work effectively.

The MCI is required to take a few samples of the paint and beads for quality assurance.

Note: When switching from a two-lane highway to a four-lane divided highway, the centerline markings can be very confusing when they are no longer required. Sandblasting of the markings may be required.

### **5.2.15 NEW PAVEMENT MESSAGES VS. OLD PAVEMENT MESSAGES**

**Reference:** *Spec. 53.21 Painted Pavement Markings*

There will be occasions where the pavement will have existing pavement messages that use different dimensions or words from the current standard. The MCI has the following options to deal with this situation:

- a) **Perform sandblasting** – This option has the benefit of completely removing the existing message, but it is costly. Therefore, it should only be used where absolutely necessary. Generally, the existing message is still applicable, so it can remain.

Fog coats should be applied to the sandblasted areas.

If the pavement is new, sandblasting is not a good idea. It can cause the pavement to deteriorate quickly.

- b) **Use existing (old specifications) stencil** – With the approval of the Operations Manager, the existing (old specification) pavement message stencil can be used until an overlay occurs (if the existing pavement message stencil is still available).
- c) **Repaint over existing message with new stencil** – This option needs to be used with care. Generally, it is not advisable as it tends to create a poor visual appearance, unless the existing pavement message has almost worn off. If the message has to be left in this location, it can be made to look acceptable. (e.g., the points of the new and old arrow can be kept at the same spot.)
- d) **Repaint in new location** – If a new stencil is going to be used, it is best to paint it in a new location and let the old pavement message wear out. However, this can become cluttered and confusing for motorists. Also, depending on how thick the paint is on the existing pavement message, it may take a number of years for the existing message to wear off.

Judgement needs to be taken with this approach, as some messages need to be left at the current location, not moved.

### **5.2.16 SELECTING PAVEMENT MESSAGE WORK**

**Reference:** *Spec. 53.21*                      *Painted Pavement Markings*

Different style, size, and shape of pavement messages in the same intersection can be confusing for the travelling public. Therefore, it is preferable to repaint the pavement messages at one intersection all at one time, rather than piecemeal, unless there are other considerations such as some of the messages are still in good condition. Also, it is generally more efficient to have the Contractor paint more messages at one site, rather than fewer at many different sites.

If it can be scheduled, it is preferable to set up a program to repaint different intersections in different years. In general, pavement markings are not to be placed when temperatures are below 0°C. However, always ensure the specific product's guidelines are adhered to.

**NOTE:** Public safety will be the deciding factor. For example, the Maintenance Contract Inspector may choose to repaint all stop bars but not the words.

### **5.2.17 HIGHWAY MAINTENANCE WORK**

**Reference:** *Spec. 53.39*                      *Highway Maintenance Work*

**Winter road inspections:** The Special Provisions section of the Request For Proposal sets out how often a Contractor must inspect the highways to determine the winter driving conditions and to mobilize the appropriate response. Stop and yield signs, along with other road hazards, are also checked. This inspection helps the Contractor (and Alberta Transportation) know what work needs to be done now, as well as plan effectively for future work. It provides an opportunity to inspect the roads to ensure that the work has been undertaken with the appropriate degree of due diligence.

Some areas have scheduled and non-scheduled winter road patrols while others have only scheduled patrols. Check the Special Provisions in the Contract to find out what is specified for a particular Contract Maintenance Area. Most Operations Managers allow the Maintenance Contract Inspector to order non-scheduled winter patrols as required.

There may be local agreements about partial payment for road patrols that result in snowplow mobilization (and the rest of the patrol is not completed), or whether or not the Maintenance Contractor can initiate a non-scheduled patrol. The OM will know what the local agreements are.

All inspections must be reported by the Contractor. Included in that report must be the condition of the highway at the time of the report. As part of normal winter duties, the Contractor shall provide Daily Reports to the Alberta Motor Association and copies to the Department as required. The report shall be updated as required, to ensure that the travelling public is kept current with changing roadway or weather conditions. A copy of this report is included in Appendix 3.

In unusual conditions (floods, fires, etc.), “winter road inspections” may be ordered during warm weather to determine the condition of part or all of the highway network. Unless these patrols follow the route defined in the Special Provisions, their cost could be negotiated as Extra Work under a one-time bid item or paid as ‘On Demand Inspections’.

**Summer Road Inspections:** During the performance of road inspections, emergency duties, routine highway maintenance activities, or at any other time the Contractor’s personnel are travelling within the Contract area boundaries, such personnel shall observe conditions of the roadway surface, appurtenances, and right-of-way for the purpose of identifying emergency/priority Work to be performed. The Contractor shall immediately report any such Work to the Engineer.

Similar to the winter road inspection report for AMA, a summer road inspection report will be required to be filled in by the Contractor on a regular basis and submitted to the Engineer. Programmed work, such as mowing, line painting, and programmed patches, is not generally identified during this process.

**Public complaints:** MCIs often receive complaints from the traveling public. When this happens, the MCI should:

- listen carefully to find out what the complaint is about
- ask questions to find out as many details as possible
- promise to forward the complaint to the Contractor or OM for action, if it is legitimate
- make a follow-up phone call a day or two later to let the person know what has been done about the complaint

In many cases, the Contractor handles the majority of the complaints and follow-up calls received on road maintenance. The Contractor needs to communicate with Alberta Transportation on the complaints and the action taken to solve the problem.

**NOTE:** It is not appropriate for either TRANS staff or the Contractor to ignore a complaint. It is also not appropriate to pass a complaint on to someone else, unless that person is better qualified to answer the concern. It is also not appropriate for either TRANS staff or the Contractor to pass blame onto one another when talking to the public.



## **5.3 ROADSIDE MAINTENANCE**

### **5.3.1 HAND TRIMMING**

**Reference:** *Spec. 54.2 Hand Trimming (Original Contracts)*

In the new Specifications, hand trimming is considered incidental to the work. However, the Maintenance Contract Inspector should talk to the Contractor to clarify expectations on the amount of hand trimming to be done in each round of mowing.

Hand trimming around highway features is defined for items such as guideposts, signposts, and guardrail. It is not defined for items such as culvert ends, but the Specification indicates that the surface area trimmed will be paid for. There may be local agreements on these types of features.

The MCI should either make arrangements with the Contractor for the measurement of the culvert end, or agree on a standard area for payment around culvert ends that require hand trimming.

Areas with steep slopes (which are unsuitable for the use of mowers) requiring hand trimming to bring the vegetation below the level of the road surface, should be compensated for by payment of actual area trimmed.

### **5.3.2 CHEMICAL VEGETATION CONTROL**

**Reference:** *Spec. 54.4 Chemical Vegetation Control*

The Maintenance Contract Inspector should ensure good communication practices exist between the municipality's Agricultural (Ag.) Fieldman and the Contractor.

The issue of weed control is politically sensitive. There is a desire to achieve the highest level of weed control, consistent with the budget and sound weed control practices.

The Ag. Fieldman is a good resource regarding the use of different types of chemicals, proper application rates, etc., and can suggest various reference materials on weed control that would be useful to the MCI. Due to the high cost of chemicals, the most cost effective chemical should be requested. Decisions need to be made as to whether you are trying to control the weed or kill the weed.

It is the Contractor's responsibility to advise the MCI where and when spraying is taking place.

Some individuals have requested that a no-spray zone be placed adjacent to their property. Each one of these individuals is required to fill in an application on an annual basis. The application form is attached in Appendix 3.

See Section 2 on Weed Spraying for more information.

### **5.3.3 CULVERT DEBRIS**

**Reference:** *Spec. 54.6*                      *Cleaning Debris from Culverts*  
**Reference:** *Spec. 53.39*                      *Highway Maintenance Work*

When cleaning culvert debris by hand, the following criteria should apply in most situations:

- If only manual labour and hand tools are required to remove minor culvert debris, then this would generally be considered Highway Maintenance Work. A typical timeframe would be about 15 minutes per culvert end.
- Cleaning debris left over or caused from highway construction projects would be considered Extra Work.
- If the amount of debris is significant and takes a long time to clean (exceeding 30 minutes per culvert end), or there are numerous culverts that require cleaning, then the following options are reasonable:
  - to pay for the Work by bid item
  - to pay by Extra Work
  - to negotiate with the Contractor where this is not reasonable compensation

When using equipment (backhoes, etc.) to clean culvert ends to a significant extent, the Work should be classified as Extra Work.

The Contractor may be able to provide a better price under some circumstances. For example:

- when there are numerous culverts requiring end cleaning in a section of road
- when the Contractor has a unit rate for this work that provides adequate compensation

**Rule of Thumb:** If the debris goes into the culvert barrel further than one-third of a metre, then it should be paid for as a bid item (because it is outside the scope of Highway Maintenance Work).

### **5.3.4 DAMAGE TO GUIDEPOSTS**

**Reference:** *Spec. 54.19*                      *Guide Posts*

It is the Contractor's responsibility to take reasonable measures to protect the guideposts during snow removal and ice control work. Where the Operations Manager (or Maintenance Contract Inspector) and the Contractor agree that reasonable measures have been taken, the damaged or lost guideposts would be repaired and paid for under this activity.

The MCI should recognize that some guideposts will be lost in the course of normal winter snowplow operations and that it is only when the guidepost losses become excessive that there should be cause for concern.

If the Contractor has not taken reasonable measures to protect the guideposts, such as lifting the grader blade wing and going around the guidepost when winging shoulders, then the Contractor would be liable to replace some or all of the damaged guideposts at his expense.

In order to confirm whether the guidepost losses are reasonable or unreasonable, the MCI should regularly inspect the highway network to determine if there are areas experiencing an unusual level of guidepost loss. If he observes this early enough, the MCI may be able to determine the reason for the loss and can discuss the protective measures that need to be taken by the Contractor and the reason that they failed in this particular instance.

There may be circumstances due to weather, road and traffic conditions that minimize the Contractor's ability to protect the guideposts. (Some mitigating factors are poor visibility, icy roads, snow and ice buildup around the delineator, deep drifts or buildup of snow along the shoulder, loss by other forces, etc.)

If the MCI and the Contractor have regular discussions about the loss of guideposts throughout the winter (i.e., after each storm or on a monthly basis), they should not have difficulties determining who should be responsible for replacing the guideposts at the end of the winter.

For summer work, i.e. mowing, a similar philosophy would apply for the replacement of damaged guide posts. The Maintenance Contractor will be responsible for the replacement of all guideposts they knock out during their summer operations. Guideposts knocked down by third parties will be paid for under the guidepost replacement bid item.

### **5.3.5 USE OF RECONDITIONED GUIDEPOSTS**

***Reference: Spec. 54.19 Guide Posts***

There may be situations where the Contractor is able to use reconditioned or salvaged guideposts. If the condition of a guidepost is acceptable, it may be usable with an adjustment to the unit price so that Alberta Transportation and the Contractor benefit from the resultant cost savings and minimized garbage disposal.

### **5.3.6 GUARDRAIL MEASUREMENT**

**Reference:** *Spec. 54.23 Supply and Installation, Realign or Reset W-Beam Guardrail and Posts*

The specification indicates that the measurement for payment for guardrail “will be in metres of the length of W-Beam guardrail installed.” For measurement purposes, this can be considered to be 3.83 m (the bolt-to-bolt distance) multiplied by the number of sections of guardrail installed.

The length of guardrail being paid for cannot be longer than the guardrail in place. Measure from the centre of the post, and don’t count the overlap where one section of rail overlaps another.

#### **5.3.6.1 GUARDRAIL RESETTING**

**Reference:** *Spec. 54.23 Supply and Installation, Realign or Reset W-Beam Guardrail and Posts*

If the existing rail is at the correct height and just the posts are replaced (in whole or in part), only the new posts should be paid for as “Supply and Place”. However, if the existing rail is not at the correct height and the posts needed replacement, then the work to be paid would be “supply and install posts” and as well as “resetting”.

If only the guardrail needed to be adjusted then “resetting” would only be paid.

It is recommended that when doing any post replacement, that you determine whether or not the height of the rail needs to be adjusted. This should be clearly stated on the work order as “Resetting Required” or “No Resetting Required”.

NOTE: This specification is under review and may change in future specifications.

### **5.3.7 GUARDRAIL INSPECTIONS**

**Reference:** *Spec. 54.23 Supply and Installation, Realign or Reset W-Beam Guardrail and Posts*

The Maintenance Contract Inspector and the Contractor should conduct regular inspections of the guardrail posts to determine the soundness of the posts. This can usually be done by one of the following methods:

- removing fill around the post to a several centimetres below ground level and inspecting the guardrail post visually for rot
- tapping the post with a hammer to listen for signs of unsoundness (a “hollow sound” which can be determined through experience)
- splitting an occasional test post (that is already in the ground) to verify that the post is unsound

All new posts should be installed with a date stamp (with the date of installation, not the guardrail post purchase date). Only the year is required.

### **5.3.8 USE OF LONGER GUARDRAIL POSTS**

**Reference:** *Spec. 54.23 Supply and Installation, Realign or Reset W-Beam Guardrail and Posts*

In areas where unsuitable fill or steep sideslopes are found, the Maintenance Contract Inspector should request that the Contractor use 2.13 m posts instead of the typical 1.52 m posts. It is reasonable to pay for the longer posts as an Extra Work item or to negotiate a new bid item for approval.

### **5.3.9 STANDARD PROCEDURES FOR BRIDGE CLEANING/MAINTENANCE**

**Reference:** *Spec. 54.30 Bridge Structure Cleaning*

Maintenance Contract Inspectors need to consult with the Regional Bridge Technologists and have an understanding of what is required on each bridge structure.

In the event of exceptional difficulties of obtaining local water supplies, i.e. extreme drought, consideration may be given to extra costs for haul of water.

Refer to *Best Management Practices for Fish Habitat Issues Related to Minor Bridge Maintenance*,

## **5.4 MISCELLANEOUS SPECIFICATIONS**

### **5.4.1 BACKHAUL**

*Reference: Spec 55.2                      Hauling*

There are situations where a Contractor may want to haul material to a central location to do the Work. Typically, this would apply to granular materials (gravel or sand) or cold mix, where the material could be stockpiled until required.

If the Contractor has hauled the material from a given material source to their shop and they must then haul it to a location between the source and the shop, it is generally reasonable to pay for the backhaul.

On small projects, it may not make economic sense for the Contractor to move and maintain a loader or other equipment at a given material source for extended periods of time.

On large projects, with sufficient material requirements, it may be reasonable for the Contractor to maintain a loader at the material source so that backhaul would not be required. The Maintenance Contract Inspector will need to negotiate this with the Contractor.

### **5.4.2 REPORTING BRIDGE PROBLEMS**

Provincial bridge maintenance is the responsibility of the Regional Bridge Section. Should the Contractor, a Maintenance Contract Inspector, or any Alberta Transportation staff member note needed repairs on a bridge in the Province, it should be reported to the RBT as soon as possible.

Items to look for include, but are not limited to, the following:

- loose planks
- loose bridge decks
- high load damage
- wide load damage
- loose deck joints
- accident damage
- bridge railings that need repair
- scour or erosion
- ice damage
- drift or debris problems

## SECTION 6 BRIDGE MAINTENANCE ADMINISTRATION AND ACTIVITIES

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## **6.0 INTRODUCTION**

### **6.0.1 GENERAL**

In 1996, Alberta Transportation entered into a partnership with the existing Highway Maintenance Contractors to do minor bridge maintenance work. Historically, TRANS bridge crews did this work. When the work was outsourced, TRANS opted to extend the partnerships with the Contractors to include minor bridge maintenance work.

The key players in this partnership are regional TRANS staff and the Contractors in each region. The objectives of the partnership are ensuring that the public can travel safely on Alberta's roads and bridges, while protecting the Province's investment in its bridge infrastructure system.

More discussion on the role and responsibilities of the minor bridge maintenance partners is found in *Section 6.6, Typical Minor Bridge Maintenance Activities*.

## **6.1 CONTRACT ADMINISTRATION**

### **6.1.1 GENERAL**

This section provides information relating to the administration and management of Alberta Transportation Contracts for primary highway minor bridge maintenance, extended under the Highway Maintenance Contract.

Because of the evolving nature of standards, guidelines, legislation, regulations, specifications, engineering, and construction practices, the guidelines outlined here are general. However, before work begins, the Contractor must ensure that the legislation and the specifications for the work are up-to-date.

The Contractor is responsible for using current standards and guidelines. TRANS will monitor all aspects of the Contractor's work.

### **6.1.2 RELATIONSHIPS**

At the present time, highway and minor bridge maintenance activities are handled separately, using separate highway maintenance Work Orders and bridge maintenance Work Orders.

- For normal highway maintenance, the Maintenance Contract Inspector and Field Support Technologist liaise with the Contractor's highway maintenance representatives.
- For typical minor bridge maintenance, the Work is coordinated between the Bridge Technologist (BT) and the Contractor's bridge maintenance representatives.

To effectively administer both the highway and the bridge maintenance programs, the Regional staff must work together to identify, prepare, and assist in the delivery of the work.

There are occasions when the MCI might ask the BT that work be carried out on a bridge structure in order to maintain efficiency. For example, when a highway maintenance crew is repairing approach guardrails, the MCI could request that the bridge guardrails be repaired at the same time. In this instance, a separate bridge Work Order would not be produced.

The opposite may also occur. While the bridge maintenance crew is repairing a bridge, the BT might ask that the crew carry out minor repairs to the damaged approach rails that would normally be repaired by the highway maintenance contractor.

The Contractor, MCI, FST and BT also share information (on such items as accident damage) that may trigger work. This information usually comes through the following routes:

- when the Contractor or TRANS staff notice a problem or potential problem as they travel through the Region
- through public inquiries and complaints
- through regular inspections

Resources are also shared within this group. The MCI and FST have, on occasion, helped the BT to deliver work such as bridge deck sealing, ACP, or chip coat overlays on bridge decks.

### **6.1.3 CONTRACTS – GENERAL**

Highway Maintenance Contractors have signed a Memorandum of Endorsement accepting amendments to their existing Contracts and have ratified the changes to their existing Maintenance Contracts.

Bridge maintenance is part of the Highway Maintenance Contract between Alberta Transportation and the Contractor. All contractual and legal obligations contained within the original Highway Maintenance Contract are therefore extended to the typical minor bridge maintenance activities.

Other items in the Highway Maintenance Contract that also apply to the bridge maintenance activities include, but are not limited to, the following:

- change in the scope of work
- time limits to complete work
- Contractor personnel requirements
- Contract alterations or amendments

### **6.1.4 REFERENCE DOCUMENTS**

The Bridge Technologist has several reference documents that are used to assist in the administration of the bridge maintenance activities. Some of these are listed below:

- Occupational Health & Safety Statute and Regulations
- Guidelines for Bridge Operations (GAP)
- Specifications for Bridge Construction
- Bridge Inspection Manual (BIM)
- Alberta Transportation Policy Manual
- Traffic Accommodation in Work Zone Manual
- Bridge Inventory System (BIS)
- Approved Product Lists (paints, concrete sealers, patching materials, etc.)
- Applicable Standard and Typical Bridge Drawings
- Bridge Materials Specifications
- ECO Plan (provided to TRANS at the beginning of each year)
- Bridge Bulletin #1 – Navigable Waters Protection Act Approvals for Bridge Projects

**NOTE:** The current versions of the above specifications and documents would apply throughout the duration of the contracts, or as otherwise reasonably negotiated between the partners.

### **6.1.5 HIERARCHY OF DOCUMENTS (ORIGINAL DOCUMENTS)**

This list is revised from the hierarchy of documents used for Highway Maintenance Contracts, and is a guideline only. When there is a discrepancy between documents in an original Contract, the following hierarchy of documents should be used, in descending order:

- a) specific written instructions (on the Work Order)
- b) specific plans, drawings, and/or sketches
- c) Special Provisions
- d) plans/drawings
- e) general Specifications for bridge construction
- f) technical Specifications for bridge construction

If there is a difference between scaled dimensions on plans and the figures written on them, the figures shall govern. In the event that two or more plans show conflicting information, the information on the most-recently-dated plan shall govern.

### **6.1.6 HIERARCHY OF DOCUMENTS (EXTENDED CONTRACTS)**

If there are discrepancies discovered in extended contracts, the following hierarchy of documents shall be followed, in descending order:

- a) specific written directions (on Work Order)
- b) specific plans, drawings, and/or sketches
- c) Special Provisions (contained in 1998 Request for Proposals for Maintenance Contract Extensions)
- d) Specification amendments (contained in 1998 Request for Proposals for Maintenance Contract Extensions)
- e) supplemental Specifications (contained in 1998 Request for Proposals for Maintenance Contract Extensions)
- f) Special Provisions (contained in existing Contract)
- g) Specification amendments (contained in existing Contract)
- h) plans/drawings
- i) general Specifications for bridge construction
- j) technical Specifications for bridge construction

## **6.2 REGIONAL BRIDGE SECTION**

### **6.2.1 RESPONSIBILITIES**

The Regional Bridge Group consists of the Regional Bridge Manager, Bridge Engineer, and the Bridge Technologist, who deal with all aspects of bridge work occurring within the Region, including, but not limited to:

- construction
- rehabilitation
- maintenance
- inspections
- special programs (i.e. ultra-sonic inspections, paint inspections, copper sulphate electrode (CSE) chloride testing, etc.)
- scheduling and programming

The following personnel are listed in the order that the Contractor generally deals with each.

*The Bridge Technologist* has the most involvement in the day-to-day administration and delivery of the bridge maintenance Work. The BT deals with the Contractor's Bridge Superintendent (or representative) regarding all aspects of the work.

*The Regional Bridge Manager* oversees the operation and administration of all bridge activities, and has final approval before any bridge Work is initiated.

*The Bridge Project Engineer* is usually involved in non-maintenance activities, but is a valuable resource providing engineering expertise.

## **6.3 BRIDGE MAINTENANCE ADMINISTRATION**

### **6.3.1 IDENTIFICATION OF THE WORK**

There are several ways to identify necessary bridge maintenance. These include:

- **Personnel sources**
  - Regional bridge staff
  - Technical Standards staff
  - Maintenance Contract Inspectors
  - Field Support Technologists
  - Maintenance Contract personnel
  - construction personnel
- **Cyclic Inspection Services (inspections performed at a pre-specified time, from monthly to annually)**
  - Level I Bridge Inspection and Maintenance (BIM ) inspections
  - Level II BIM inspections
  - copper sulphate electrode (CSE) deck testing
  - chloride testing
  - ultra-sonic testing
  - timber core testing
  - *in situ* concrete strength testing
  - deck sealant penetration testing
  - deck delamination testing
- **Other Sources**
  - general public
  - local land owners
  - other government agencies
  - the news media

### **6.3.2 WORK PLANNING**

After the bridge maintenance Work has been identified, the BT, in consultation with the Regional Bridge Section and the Contractor, would then schedule the work.

Ideally, the BT would have enough work identified to allow the Contractor the flexibility to plan the delivery of the work in a cost-effective and efficient manner.

Consideration would also be given to the following:

- weather constraints – (i.e., concrete work that is normally done in summer would not typically be scheduled in winter)
- environmental constraints – (i.e., work that may have an environmental impact may have to be completed within the specified window)

- irrigation constraints – (i.e., work on irrigation canal bridges is often best done when the canals are not flowing, normally late fall through mid-spring)

Urgent or emergency work is relayed to the Contractor by the BT as soon as it is identified. Immediate completion of this type of work may often be required. Some examples of emergency bridge work are:

- high load or wide load collisions
- overload damage
- hazards created by other types of accident damage
- loose or protruding deck joint plate
- severe deflection of culverts
- any item or condition on a bridge structure that presents a danger to the traveling public

### **6.3.3 INITIATING WORK**

In order to initiate minor bridge maintenance Work, the Bridge Technologist (or someone from the Bridge Section) would produce a Bridge Maintenance Work Order. Different Regions may use slightly different names for this document (i.e., Bridge Maintenance Authorization (BMA)).

A sample Bridge Maintenance Work Order is included in Appendix 5.

Information usually provided by the BT on the Work Order includes:

- bridge file number (every bridge structure in Alberta has an identifying file number which is unique to that particular structure).
- job number (required for payment purposes)
- structure location
- structure type, including length, width, etc.
- environmental permits/licences (if required)
- written instructions and sketches, any applicable work details describing the work to be done
- amount of time to complete (if applicable)
- supplemental information, such as engineering drawings, standard drawings, approved material lists, etc.

After receiving the Work Order, the Contractor submits a price quote for the specified work in a standard format (usually lump sum, unit price, or cost-plus).

The Regional Bridge Section then accepts, negotiates, or rejects the Contractor's price. If an agreement cannot be reached on work plans, schedule, or price, TRANS reserves the right to put the work out for tender. In exceptional cases, TRANS may offer the work to another Contractor.

### **6.3.4 WORK PROCESS**

After the Contractor is notified that the work may proceed:

- The Contractor starts and completes the Work (while Alberta Transportation uses its personnel resources to review and confirm that the Work meets the Specifications)
- The Contractor arranges for an acceptance inspection (final inspection)
- TRANS does the inspection and accepts the Work, or advises the Contractor of any deficiencies
- The Contractor invoices TRANS for the completed Work Orders

### **6.3.5 CHANGE OF SCOPE**

When it becomes apparent that the scope of work or quantity of work may change significantly, the Contractor needs to immediately notify the Bridge Technologist. After reviewing the potential changes with the Contractor, the BT will agree to one of the following:

- continue with the work at the existing unit prices
- negotiate new unit prices or a revised lump sum cost
- discontinue the work and make the structure safe. The work may then be completed by separate contract or through another process.

### **6.3.6 WORK RECORDS**

Work records are kept as a project progresses. The Contractor would normally be responsible for completing and updating most of the work records, then forwarding these work records to the Bridge Technologist at project completion.

Work records are eventually placed either on the bridge correspondence file or in a separate work order file.

Some examples of work records are:

- technical data (i.e. concrete strength reports, pile data, surveys/profiles, etc.)
- pictures, sketches, or drawings
- health and safety summaries
- as-constructed drawings
- diaries (when required)

### **6.3.7 WARRANTY**

The warranty period follows the Regional guidelines for the type of work being ordered.

When the required warranty is shown on the Work Order, it starts on the date that the Work received final acceptance.



### **6.3.8 QUALITY ASSURANCE / QUALITY CONTROL (QA / QC)**

The Contractor is responsible for performing the quality control work on bridge maintenance projects, as detailed in the Specifications for Bridge Construction. The Bridge Technologist must check that the work is being done to a satisfactory quality standard. The BT can achieve this by:

- discussions of the QA/QC process with the Contractor
- on-site inspections
- review of Contractor's QA/QC results
- review of manufacturer's QA/QC results

Deficiencies identified during the course of work are easier for the Contractor to remedy than those identified after the completion of work.

On-site and final inspections are a vital part of the quality-assurance process. Random site visits are invaluable to ensure a high-quality product.

### **6.3.9 PERFORMANCE REVIEW**

Since minor bridge maintenance Work is an extension of the Highway Maintenance Contract, the review process is the same.

## **6.4 SAFETY**

### **6.4.1 HEALTH AND SAFETY**

Alberta Transportation recognizes public and worker safety as priorities. It supports the joint efforts of management, employees, consultants, and contractors in providing a safe working environment for everyone involved.

- All Contractors must have accreditation/recognition or have enrolled in a safety certification program relevant to bridge maintenance and highway maintenance, as recognized by Alberta Labour, Occupational Health and Safety.
- Contractors who have not yet achieved accreditation in such a program must do so within six months of signing the Contract.
- The Contractor needs to ensure that his own work force, as well as any Sub-contractors or Owner-operators have and follow a safety program and meet all OH&S requirements before starting minor bridge maintenance Work.

Many of the safety requirements that apply to Highway Maintenance also apply to Bridge Maintenance. See Section 1.4 on Safety.

### **6.4.2 RESPONSIBILITIES**

The Regional Bridge Section should have the expertise to recognize and act on or avoid potentially dangerous situations that may threaten public safety.

While issuing Work Orders or inspecting the Work, the Bridge Technologist needs to:

- understand safety regulations and requirements
- recognize shortfalls in these areas
- take the appropriate action

The Contractor is responsible for safety on the site. However, the BT could request changes to procedures if he is concerned that safety for the workers or the public could be affected. If there is imminent danger, action may include stopping the work. To accomplish this, the BT should have training and experience in safety measures as described in the following section.

### **6.4.3 SAFETY TRAINING**

The Bridge Technologist should have some training in the following areas:

- first aid and CPR

- OH&S Act and Regulations
- confined spaces
- trenching and excavating
- dangerous goods / hazardous waste
- traffic accommodation

Training is available through Alberta Transportation.

The BT should also have a good understanding of “reasonably practicable”, a legal standard for the OH&S responsibilities of employers, contractors, and prime contractors

The BT should also have a full understanding of the *due diligence* concept. See Section 1 for further information on the topic.

**6.4.4 SPECIFIC BRIDGE SAFETY ACTIVITIES**

Some of the activities where safety issues may specifically apply to bridge maintenance include:

- high rigging (working at heights), skeletal frames, scaffolding, man baskets, etc.
- crane safety and rigging
- working over water
- working in confined spaces
- trenches and excavations
- paint removal and collection of contaminants
- traffic routing and direction during maintenance (e.g., flag people, portable traffic lights during lane closures)
- use of specialized hazardous material and disposal of hazardous waste

It is the Contractor’s responsibility to ensure the workers are properly trained so that work is completed safely.

**6.4.5 SAFETY RECORDS**

This is a partial list of safety-related records that the Contractor is expected to have in minor bridge maintenance Work:

<i>Minutes and Reports</i>	<i>Person/Partner Usually Responsible For Generating The Information</i>
safety meeting minutes	Contractor
worksite inspection reports	Contractor or RSO
accident/incident reports	Contractor
diary entries	Contractor, BT, FST, MCI, etc.
safety infractions and related written notice to the Contractor	RSO, BT

The Bridge Technologist should have access to, or may request to see, minutes from safety meetings or tail-gate meetings that have been held by the Contractor whenever minor bridge maintenance Work is being performed.

The BT should receive the following reports so that he can monitor the events and ensure that corrections can be implemented, if necessary.

- copies of Accident/Incident reports when a problem occurs on the work-site. These reports should include third party damage or injury, personal injury, damage to public property, and significant damage to the Contractor's property.
- any worksite inspection reports issued to the Contractor by either the Regional Safety Officer or an OH&S official.

## **6.5 ENVIRONMENTAL REQUIREMENTS**

### **6.5.1 ENVIRONMENTAL REQUIREMENTS**

On January 1, 1999, Alberta Environment introduced the new Water Act. Covered under the Water Act is a document entitled “Code of Practice for Watercourse Crossings”, which came into effect in April 1999.

This is expected to be an all-encompassing document for Contractors who will be conducting bridge and culvert activities involving instream work. Contained within the Code of Practice for Watercourse Crossings will be much of the information found on the previously used Environmental Permits and Licenses. Included will be accepted work practices and procedures, and “work windows” for instream activities for each area of the Province.

The Contractor will continue to submit his work proposal, plans, sketches, etc., to AE for review prior to starting the work.

AE will be conducting random work site audits to ensure Contractors are complying with the Code of Practice.

It is important that Contractors work closely with AE throughout this process, and particularly during the initial transition period. It is also important that Contractors have a good understanding of both the new Water Act and the Code of Practice.

More information can be obtained from the Water section of Alberta Environment web page.

### **6.5.2 HAZARDOUS MATERIAL TRAINING**

The Contractor must comply with Provincial regulations and provide the appropriate training for his staff when:

- disposing of Hazardous Waste Material - (i.e., most paints, concrete sealers, wood preservatives)
- transporting Dangerous Goods - (includes such items as compressed gas, paints, paint thinners, and concrete sealers. The appropriate placarding of all vehicles involved is necessary).

## **6.6 TYPICAL MINOR BRIDGE MAINTENANCE ACTIVITIES**

### **6.6.1 LIST OF WORK**

Typical minor bridge maintenance activities for bridges and culverts on the Provincial highway system may consist of the following:

#### ***Bridges***

- joint repair (cover plates/seals)
- concrete patching
- concrete sealer application
- touch up painting
- galvanizing handrails
- accident damage repair
- resetting bearings
- Corbel cap replacement
- stripdeck replacement
- sub-deck replacement
- backwall sheeting
- approach slab repairs
- retrofit drain installations
- temporary abutment and pier support
- repair/replacement of structural steel members
- repair of wheelguards
- repair of win sheeting, piling
- replacement of pier caps
- repair of slope protection
- epoxy injections
- deck patching (epoxy polymers, silica fume, high early-high strength modified latex polymer patching, etc.)

#### ***Culverts***

- strutting (steel/wood)
- installation or repair of collars, headwalls, cut-off walls
- installation of liners
- shot-crete repairs
- installation or repair of concrete floor
- culvert extensions

## **6.7 HIGHWAY OPERATIONS MAINTENANCE RESPONSIBILITIES**

### **6.7.1 RESPONSIBILITIES**

The following is a list of typical bridge maintenance items that are the responsibility of Highway Operations staff and are normally carried out by Highway Maintenance Contractors.

- Monitor structures during the normal course of their road inspections and notify the Regional Bridge Manager of any problems or anything unusual at a bridge site (e.g., accident damage, deck joint problems, abnormal alignment, etc.)
- If there are any problems at a bridge site that are an immediate traffic safety concern, take immediate action to accommodate traffic and/or to alleviate the safety concern until the Regional Bridge Manager or his staff can assess the situation (e.g., barricade lane, remove debris from roadway surface, etc.)
- Supply, install, and maintain signing for bridge structures in accordance with current Department standards, including the maintenance of reflectors and hazard markers on bridge rails.
- Wash accessible bridge components such as the decks, drains, curbs, railing, signs, abutments, piers, and the splash zones and bottom chords of trusses (de-icing salts should be removed as soon as practical). If there are question on which components to wash, contact the Regional Bridge Manager or Bridge Technologist.
- Patch and crackfill ACP wearing surfaces.
- Minor repair of bank and headslope erosion and scour holes including replacement of rock rip rap.
- Maintain bridge drainage (trough drains at end of bridge, deck drains, etc.). Includes drainage of bridge approaches.
- Minor repair of timber strip decks.
- Remove minor drift, beaver dams, or other debris that may impede the flow at bridges and culverts.
- Minor repair of flexbeam railing (not posts).
- Repair or replace approach railing.
- Repair bumps at bridge approaches to reduce impact on structure.

Non-routine, more specialized maintenance activities may be carried out by the Highway Maintenance Contractor under direction of Regional bridge staff and funded through the bridge maintenance budget.





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## **7.0 INTRODUCTION TO MAINTENANCE CONTRACT MANAGEMENT SYSTEM (MCMS)**

### **7.0.1 AN OVERVIEW**

The Maintenance Contract Management System was developed by Alberta Transportation for two purposes: to track and order Work as well as to prepare payments to the Contractor.

*Impromptu* is currently utilized to manipulate data to provide reports required by the Department. These reports include lists that are sorted by the month that the warranty work expires (so that the work can be checked before the warranty ends) and lists of Work Orders that have not been completed by their due dates.

Enhancements have been made to the MCMS program. The Operations Support Group (OSG) represents the Maintenance, Specification and Traffic Engineering Section. They support each District and each other on computer issues relating to maintenance operations. The OSG recommends enhancements for all MCMS users and the Maintenance, Specification and Traffic Engineering Section prioritizes the enhancements.

EDS, our computer outsource provider, advises TRANS if enhancements can be made and at what cost. The Director of Maintenance, Specifications and Traffic Engineering then takes the request to the Regional Executive for approval. Once the request has been approved, EDS makes the improvements to the program. The update must then be loaded on all Maintenance Contract Inspector and Operations Manager computers. This can be done by using a combination of floppy discs, CD discs, PC Anywhere, or remote access to the computer.

### **7.0.2 TRANSPORTATION INFRASTRUCTURE MANAGEMENT SYSTEM (TIMS)**

In 1995, Alberta Transportation underwent a radical change in vision. TRANS became a smaller organization, using innovative partnerships to provide alternative means of service delivery. Information Technology was recognized as a strategic component in the execution of TRANS' business plan, and performance measures were identified to better manage accountability.

The need for a Transportation Infrastructure Management System emerged from the change in vision. This system is a business strategy employing people and technology to most effectively allocate limited funds among valid and competing needs. The scope of the TIMS includes all highway infrastructure elements situated within the highway right-of-way boundaries. Examples of these elements are roads, bridges, interchanges, signs, guardrails, pavement markings, and vehicle inspection stations.

To achieve its business vision, the necessary features of TIMS include:

- an inventory capability to identify the infrastructure elements to be managed and where they are located

- an infrastructure condition component to record the physical condition of these elements at a given time
- predictive models to establish the remaining useful life of the infrastructure and to evaluate the impact of individual maintenance or rehabilitation treatments or combination of treatments
- a cost benefit module listing various treatments and combinations of treatments, related costs, applicability, and the likely effect on the useful life of the infrastructure elements being assessed
- a module to propose a program of intervention for each major infrastructure element based on available budget and other criteria, including technical, economic, or political issues
- a second level of optimization to allow valid competing programs to be prioritized, based on criteria important to the business

TRANS' business partners will have various roles and responsibilities in the evolution of the TIMS. These include collecting and entering data for the system, using the system in partnership with TRANS, and helping develop new components as the system grows. These roles and responsibilities will evolve through discussions and mutual agreement in the months to come.

TIMS, as the Corporate Data Repository, will have information from MCMS deposited into it and updated regularly. Inventory of all appurtenances and their condition are also contained in TIMS. The data used by the Roadway Management and Rehabilitation Analysis System (RoMaRa – which replaced the Pavement Management System) will also reside in TIMS. The tools provided in RoMaRa will assist Maintenance Contract Inspectors, Operations Engineers, and Operations Managers in budgeting and choosing treatment options for pavement surface maintenance. These tools will help manipulate the data in TIMS so that information can be provided in the manner required.

The ability to keep the inventory updated in TIMS can also assist in preparing budgets and identifying needs for signs, guardrail, etc., by requesting reports of items grouped by condition.

### **7.0.3 MAINTENANCE CONTRACT MANAGEMENT SYSTEM ELECTRONIC DATA TRANSFER**

The process involves the following steps:

- a) Contractor sends a work sheet file containing one or many individual work sheets to an Alberta Transportation central server
- b) The Maintenance Contract Inspector copies the file into a 'validation application' on his own computer, only seeing the work sheet that applies to work orders created on his computer.
- c) The computer does a quick check that the file format is correct, and then the MCI validates the actual content.
- d) The MCI can either accept the worksheet, which will then be imported into MCMS, or reject it. If the work sheet is rejected, the application will produce a report showing what is rejected, which is returned to the Contractor. Before rejecting the sheet, it is a good idea to

contact the Contractor and inform him why it is being rejected. It could be something the MCI missed.

- e) The Contractor must then create a whole new work sheet and start over by sending it as part of a new file to the central server.
- f) The MCI can edit the Snow and Ice Work Sheets for any entry except header information and the start and stop times. The MCI can only edit the Crew Work Sheets for segment and MCMS quantity changes.

#### **7.0.4 MAINTENANCE CONTRACT MANAGEMENT SYSTEM BACKUP PROCEDURE/DATA INTEGRITY**

The following recommendations and directions are to ensure a backup copy of Maintenance Contract Management System data is available in the event that the database becomes corrupt or lost. In order to help computer support staff at Alberta Transportation, every Maintenance Contract Inspector and Operations Manager should store local backup files in the same directory on every MCMS computer. Each user should ensure that a backup copy of MCMS data is stored in three locations, one of which is “off-site”.

##### **a) Backup File on Local Hard Drive**

A complete MCMS backup must be done via the ‘OM Complete Database Backup’ window within ‘MCMS Administration’. The zipped file is created within 10 minutes while the MCMS database is closed. The backup process produces a zipped file with the same name every time and is stored in the C:\CMS\BACKUP\ directory. In order to prevent the new backup file from being overwritten next time, the file must be renamed, using a descriptive naming convention.

It is recommended that you store the last three backup files weekly.

##### **b) Copy of Backup File to District Network**

A copy of the backup files should be stored on the District network to ensure the MCMS database can be reconstructed if the hard drive fails. As backup files of the MCMS database are made, place a copy of the renamed zipped file into your assigned sub-directory on the shared area of the District network.

For example: S:\BACCMS\OM\OM971020.ZIP

```
\MCI-1\  
\MCI-2\JB981024.ZIP  
    \JB970924.ZIP  
    \JB970905.ZIP0  
    \JB970825.ZIP  
\MCI-3\  
\MCI-4\
```

For MCIs in remote offices, the large MCMS backup file (4 to 7 MB) can be transferred from a remote office to the District network (by PC Anywhere software) at a rate of 6 minutes per MB. Store the last four backup files monthly.

### **c) Off-Site Storage of Network Backup Tapes**

The District office should have a routine established to have one set of backup tapes stored at a completely removed location from the District office. This will ensure that most of the data is protected in the event of theft or fire.

## **7.0.5 ELECTRONIC DATA TRANSFER**

### ***Reviewing Snow Removal and Ice Control Work Sheets and Crew Work Sheets***

The Maintenance Contractors will transfer Snow Removal/Ice Control and Crew Work Sheets through an FTP-process to an Alberta Transportation Central Web Server. The file will be placed on the server for the Maintenance Contract Inspector to receive. Through the use of internet browser software, the MCI will connect to the server and download the appropriate file to his computer.

Security measures have been implemented to ensure the Maintenance Contractors and MCIs can only access the information that is meant for them.

Once the data has been downloaded to the MCI's computer, the MCI can then begin to process it. The MCI will accept or reject the information that he received. Once accepted, data will be transferred permanently to the MCI's MCMS database for entry into the payment system.

### ***Process***

For a more detail description of the process, please refer to the user manual.

MCIs connect to TRANS web server through an FTP process., (either Netscape or Microsoft Explorer)

- a) Once connected, select the appropriate file(s) to be downloaded to your computer
- b) Save file in c:\cms\ftp\_data
- c) Disconnect from TRANS web server when file(s) downloading is complete
- d) Open up MCMS Database and MCMS Application
- e) To access the Electronic Data Transfer system click on the appropriate "lightning" icon
  - Crew Worksheet EDT (Green icon)
  - Snow/Ice Sheets EDT (White icon)

Another way to access the EDT function is to click on the "Go To" menu.

- h) Import FTP File. To do this, click the right mouse button and select "Import FTP File"
- i) The system will then automatically do a Phase 1 validation of the data. If "Batch OK?" column reads 'No' contact your EDT representative. The EDT representative will be

responsible for resolving local EDT issues and bringing forward issues that may affect others in TRANS.

- j) If the 'Batch OK?' column is "Yes", proceed on with the Phase II sheet validation. To do this, select the batch file you wish to review, click on the right mouse button to display the popup menu and select 'Review Sheet.'
- k) Select individual sheet you wish to review. Verify sheet by clicking on the right mouse button and selecting 'Verify' from the popup menu.
- l) If 'Status Column' reads 'Rejected', check error message. The MCI will have the ability to only correct errors that do not affect the pay quantity. If the error can be corrected, please correct and make a note of it in the 'MCI's Comment' section. You will then need to verify the sheet again. If the error can not be corrected, leave sheet as rejected and proceed onto the next one.
- m) If 'Status Column' reads 'OK', review sheet to ensure all quantities are correct. If you disagree with the quantities submitted, reject the sheet and indicate why in the "MCI's Comment" Column. If everything is OK, accept the sheet and proceed on with the next one. Once the sheet has been accepted, the data will be added to the MCMS database.
- n) Once you have reviewed all sheets, print off an 'Accept/Reject' Report and send it back to the Maintenance Contractor. Before you send off this report to the Maintenance Contractor, please make sure that all sheets have been either accepted or rejected. Do not leave any sheets pending.

Some Contractors have an efficient way to deal with Crew Work Sheets that the MCI has questions on or where there is a minor change to be made. The MCI reviews the "Pending" crew work sheets with the Contractor's Administrator, then makes the determination of rejecting or accepting. This process gives the opportunity to make revisions without having to reject the work sheet.

### *Issuing Work Orders via E-mail*

Work can be issued via fax or e-mail. Most of the Contractors are set up to receive the Work Orders electronically. To send a Work Order via e-mail follow the procedure listed:

- a) Open MCMS and Generate Work Order
- b) Open Work Order screen and highlight a work order (to send) - Note only one work order can be sent at a time.
- c) On the **Options** menu, select **Reprint Work Order** (which will open the Work Order Print Screen)
- d) Select **File** menu, select **E-Mail**.
- e) If the "Choose Profile" dialog appears, choose Profile Name "**MS Exchange Settings**" and then press OK.
- f) On the **Mail Report** screen, select the **List** button (which will open the Address Book).
- g) Select or enter e-mail name/address, and then press OK (which will return to the Mail Report Screen).
- h) If you wish to attach a word document, excel spreadsheet, or digital photo, select the **Attach** button, and then locate and select the file you wish to attach.

- i) On the **Mail Report** screen, press the **Sent** button to send the work order document

### **7.0.6 FISCAL YEAR END**

Outlined in this section are the steps to create data for the next fiscal year.

#### ***Creating new data for next fiscal year on OM Computer:***

- a) On OM computer, log into MCMS and change Fiscal Year:
- From **Maintenance Contract Selection** screen, click Change **Fiscal Year** button on the toolbar
  - Change Fiscal Year
- b) Create Fiscal Year Segments
- Close Maintenance Contract Selection screen
  - Click:
    - Maintenance
      - System Administration
      - Segment Maintenance
  - Click the **Up Arrow** button on Fiscal year
  - Click **Yes** to 'Copy Segments from previous Fiscal Year' (actual year)?
- c) Create New Fiscal Year Unit Price:
- Click:
    - Maintenance
      - System Administration
        - Inflation Adjustment
  - Click the **New Sheet** button on toolbar
  - Enter Factor and Description. (if inflation is not available, enter 0. Factor can be recalculated later again.)
  - Click:
    - Options
      - Calculate Inflation
- (This would carry all the bid items with unit prices from last year to current year.)

**Note:** When you receive your inflation factor later, you can enter the inflation factor and do a "Calculate Inflation" again. Please remember, when the OM changes the unit price, it has no impact on any of the existing work orders. The new unit price is carried over only when adding a new work order. So you should close all the Work Orders with the old unit prices and start new Work Orders with new unit prices.

- d) Make extract file to MCI.



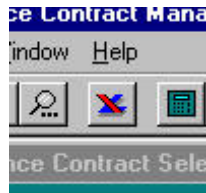
***Creating new work orders for next fiscal year on MCI computer:***

- e) On MCI machine, log into MCMS and change Fiscal Year
  - From **Maintenance Contract Selection** screen
  - Click **Change Fiscal Year** button on the toolbar
  - Change Fiscal Year
- f) Load OM data extract file.
- g) On **Work Order** screen, add a new Work Order. The Work Order date must be April 1 of the current year to March 31 of next year. If you have Work that will carry over into next fiscal year, you should close the existing Work Orders and start new ones in April.

**7.0.7 MAINTENANCE CONTRACT MANAGEMENT SYSTEM REPORTING**

The following reports can be exported to an Excel spreadsheet:

- Progress Estimate (parts 1 – 5)
- Recoverable Report
- Work Order List
- Salt & Sand Report
- Warranty Work Report
- Segment List (new)
- Unit Price Schedule Report (new)
- Total Authorized Quantity for Bid Item Report (new)



**Figure 1**

When one of these listed reports is displayed on screen, clicking the toolbar item in Figure 1 (red and blue X) will export the data from that report into an Excel Spreadsheet. All exported reports will be placed in c:\cms\Excel\_Reports\directory.



# APPENDIX 1

## CONTENTS

- Linear Referencing Method (LRM)



## Linear Referencing Method

The highway encompasses many infrastructure elements. Some of which are to be considered concerning the LRM, and they are:

1. Roads
2. Bridge Sites and Structures
3. Intersections
4. Anchor Points

### 5.1 Road

“Road” is an existing or proposed infrastructure element that provides, or will provide, a path for surface vehicles to travel between points. A road includes the land used, or surveyed, for the entire road corridor.

#### 5.1.1 Road Identifier

##### Primary and Secondary Highways

A Road’s label (road number) is inherited from the Highway Number. For example, the Road Number for Highway 1 is 1 (figure F1).

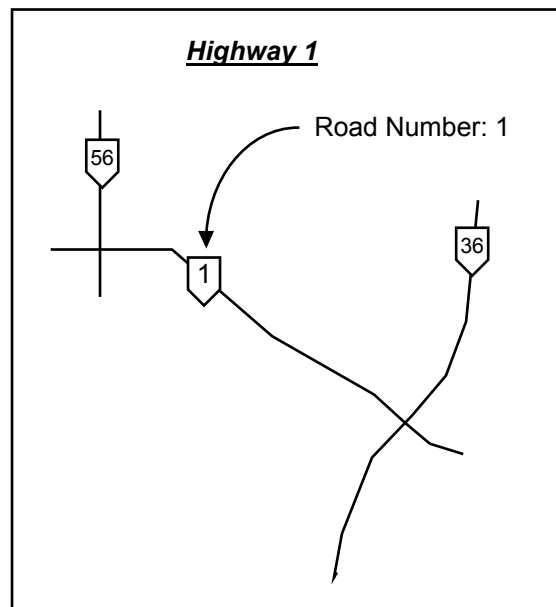


Figure F1: Highway with road number

## Municipal Roads

Presently, there is no standardized way of numbering Municipal Roads. Perhaps, the department can simply number them so that each number uniquely identifies each road. A description field would be used to store the locally establish address.

### 5.1.2 Control Section Identifier

#### Primary and Secondary Highways

A control section is a length of road that, together with the road number, uniquely identifies the road location. The control section number is a two-digit code (00 to 99) that defines a control section's relative location along the road. Typically, the control section numbers increase by increments of 2 in the direction of increasing chainage, normally west to east and south to north (figure F2).

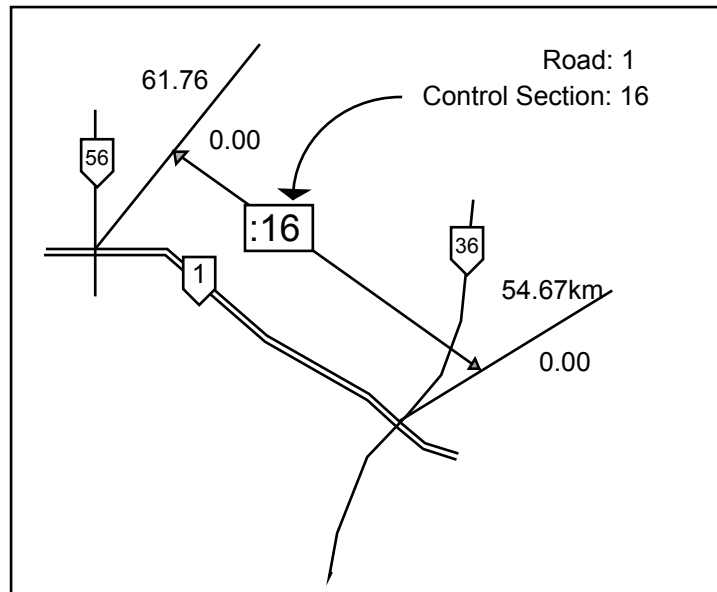


Figure F2: Control Section for a Road

#### Municipal Roads:

Municipal Roads do not have control sections.

### 5.1.3 Road Part Identifier

A cross-section of the road would show that a road has parts. It has at least two roadsides and a roadway (see figure F3 below). For a divided highway, the road may be made of two roadsides, two roadways and a median.

Therefore, Road Part is the longitudinal cross-section elements that constitute a road, namely, Roadside (RS), Roadway (RW), and Median (MN).

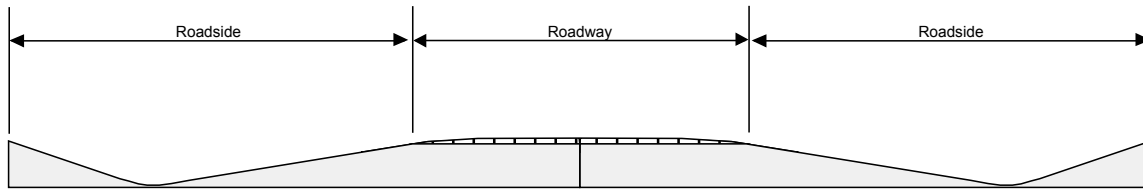


Figure F3: Cross-section of an Undivided Road

### 5.1.3.1 Roadway (Undivided, Divided, and Split):

A Roadway is that part of a road, including the shoulder, constructed, designed, or ordinarily used for the passage of vehicular traffic. The roadway includes the whole structure from top of side-slope to top of side-slope (for gravel roadways) or from edge of pavement to edge of pavement (for surfaced roadways) and from the surface to the bottom of the sub-grade layer. Where a length of road is comprised of two or more separate roadways, the term roadway refers to any one roadway separately and not all such roadways collectively. Linear references for a Roadway are dependents of Control Sections; that is, a roadway will never cross a control section boundary. The length of a Control Section equals the length of the longest roadway path. When there is a transition from divided to undivided highway there is a point where the two roadways become one. At that point, the kilometer post (up chainage direction) would read the length of the longest roadway path.

A road part label inherits the road, and control section labels. To distinguish between road parts within a road, road part is labeled with one of the following: “RW” for roadway, “RS” for roadside, and “MN” for median.

To distinguish roadways within a control section, roadways receive a two character alphanumeric identifier. The two character code will indicate if the highway is divided (see figure F4).

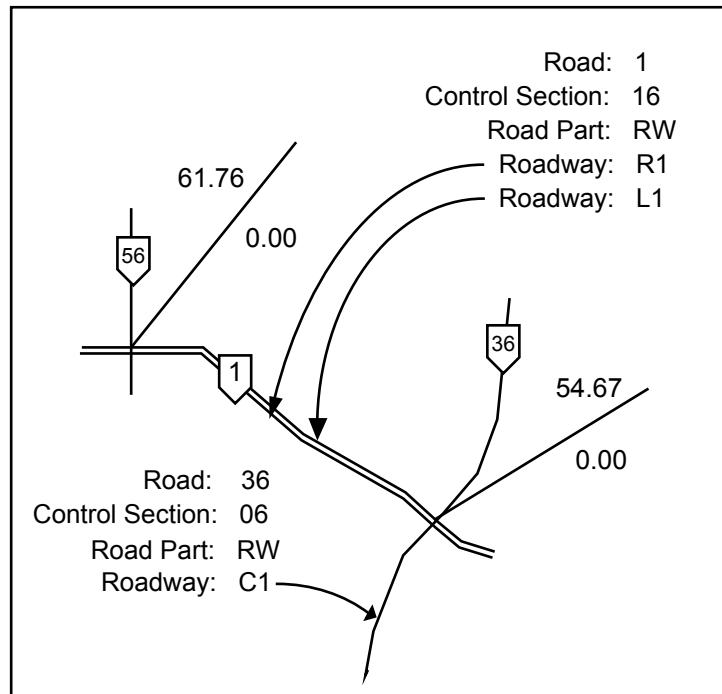


Figure F4: Road, Control Section, and Roadway Labels

For Divided and Split Roadways, each roadway is labeled using “R” for right of median or “L” for left of median while facing increasing chainage. The median used to determine the code R or L, is the center median that separates opposing traffic flow. The digit indicates the number of roadways from the center median.

For Undivided Roadways, there is no right or left of median; therefore, “C” is used to show that the roadway is approximately in the center of the right-of-way. The digit “1” is used because there is only one roadway.

Figure F5 shows, as an example, how the roadway-labeling scheme works.



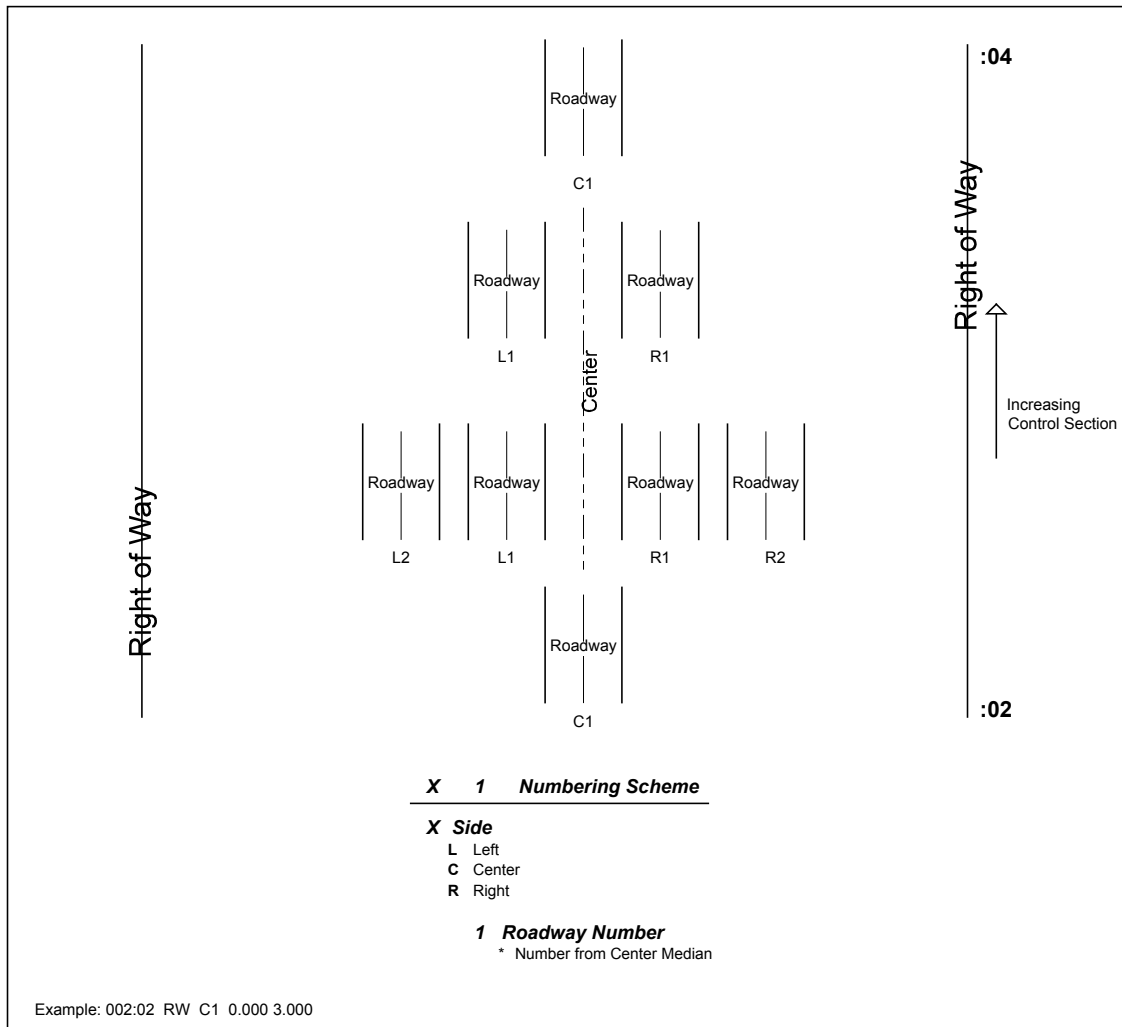


Figure F5: Roadway Labeling

### 5.1.3.2 Roadway Lane Numbering

Lane function and placement within a roadway designate them. Lane numbers are assigned in accordance with the number of occurrences of each lane type within a roadway segment. The lane number will represent the  $n^{\text{th}}$  occurrence of the lane type referenced to the yellow line (refer to following figures F6, F7, & F8 as examples).

Lanes will be referenced with respect to their placement from the yellow line as viewed up chainage. For undivided highways, the roadway is referenced as “C1.” The driving lanes will effectively be referenced as “DL R1”, the first driving lane to the right of yellow line, and “DL L1”, the first driving lane left of yellow line (figure F6).

Multi-lane highways will have multiple driving lanes in each direction referenced as “DL R1”, “DL R2”, “DL R3”, “DL L1”, “DL L2”, “DL L3”, etc.

Other lanes will also be referenced in the same way. Other lanes consist of the following types:

Code	Description
ALL	Acceleration Lane - Left
ALR	Acceleration Lane - Right
BR	Bridge
CL	Climbing Lane
CL/PL	Climbing/Passing Lane
DL	Driving Lane
DLL	Deceleration Lane - Left Turn
DLLT	Driving Lane - Optional Left Turn
DLR	Deceleration Lane - Right Turn
DLRT	Driving Lane - Optional Right Turn
PL	Passing Lane
TIL	Transition - Introduce Lane
TTL	Transition - Terminate Lane
UD	Undefined

Table T2: Lane Label Description

The placement of the lane within the roadway and the occurrence of the lane type follow the same conventions as driving lanes. Therefore, the expected sequence of lane types required to provide right turn acceleration and deceleration lanes at an intersection along the up-chainage direction of travel are:

- TIL R1 (Transition - Introduce Lane)
- DLR R1 (Deceleration Lane - Right)
- ALR R1 (Acceleration Lane - Right)
- TTL R1 (Transition - Terminate Lane).

If there were more than one lane of each type, the occurrence number would increase accordingly. For example, the addition of a dual right exit would have lane designations of “DLR R1”(or L1) and “DLR R2” (or L2).

Shoulders will be treated in the same manner. Undivided highways will have two shoulders referenced as “SH L1” and “SH R1” (figure F7), while divided highways will have four shoulders referenced as, for example, 2:02 RW L1 SH L1, 2:02 RW L1 SH R1, 2:02 RW R1 SH L1, 2:02 RW R1 SH R1. Notice that the R1 roadway has a SH L1 because there is a shoulder left of the yellow line (figure F8).

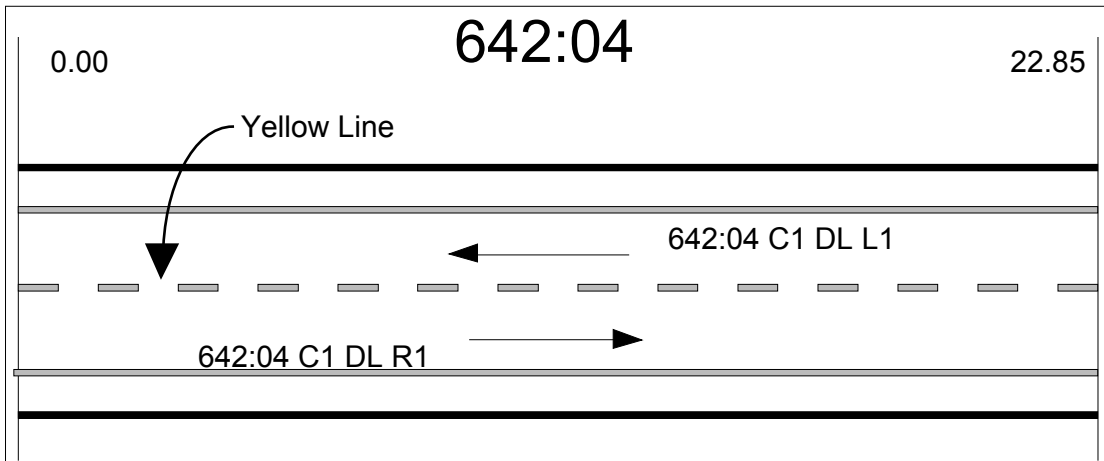


Figure F6: Lane labeling for an undivided highway

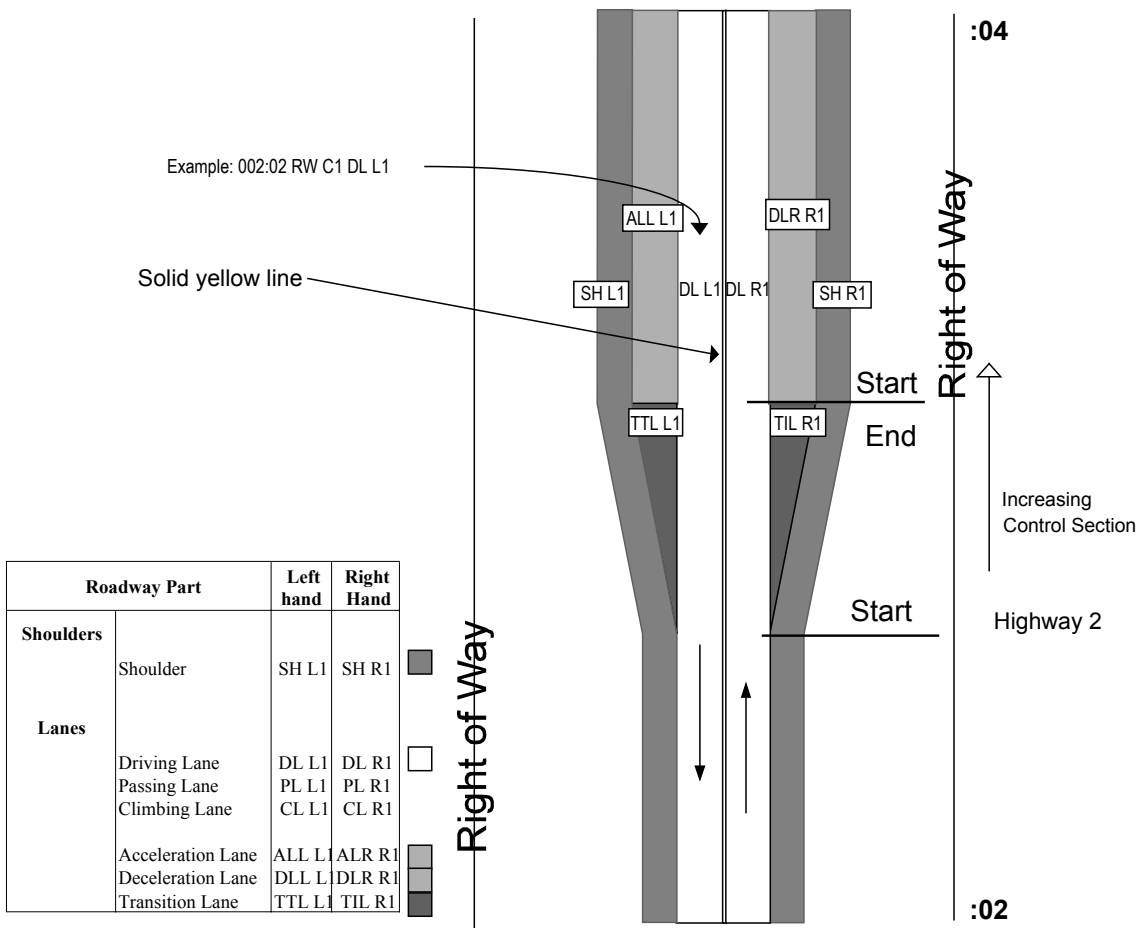


Figure F7: Lane labeling for an undivided highway

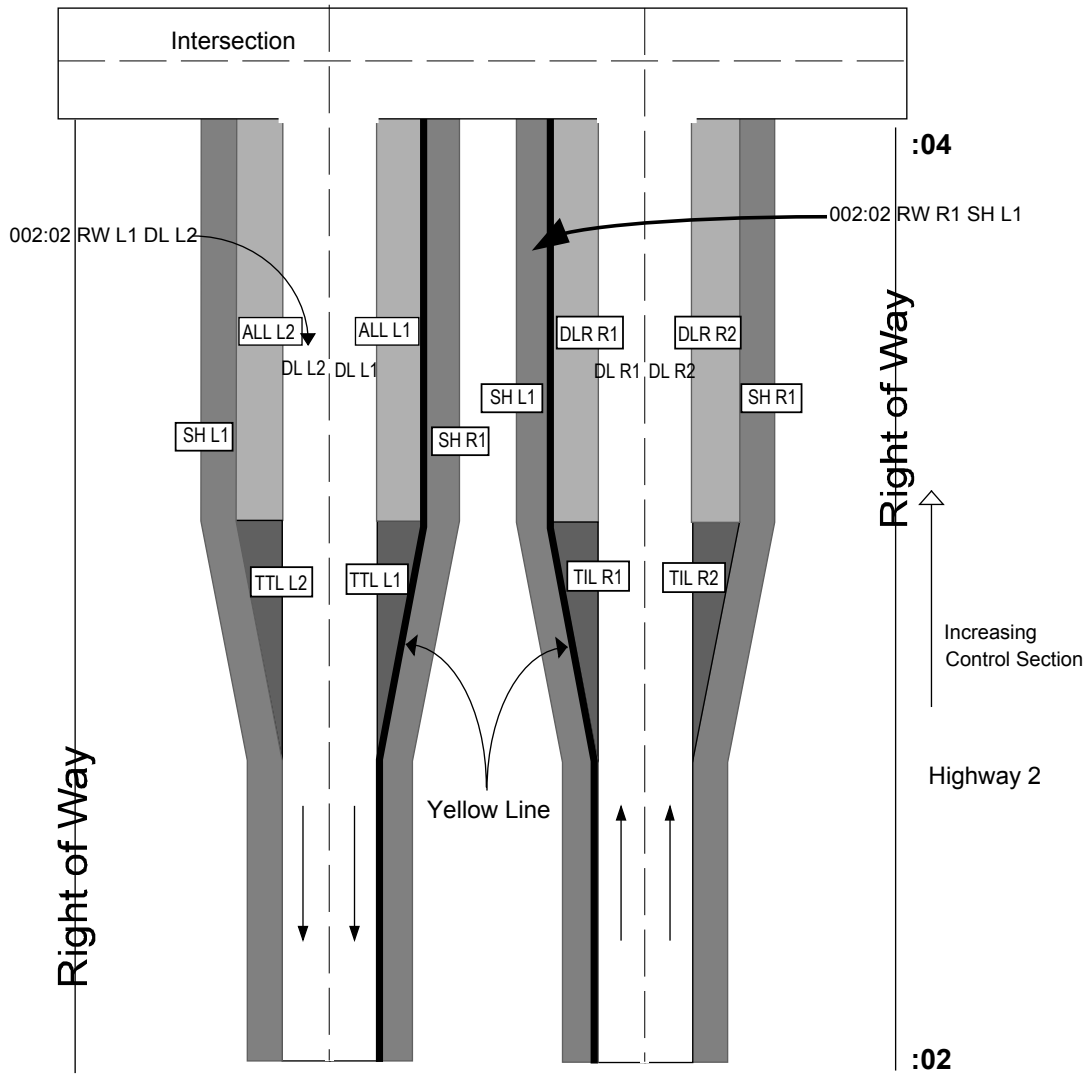


Figure F8: Lane labeling for a divided highway

### 5.1.3.3 Roadside

The Roadside (RS) is the part of a road between the edge of the roadway and the right-of-way boundary. To label Roadside, follow the same naming scheme as Roadway (see figure F9).

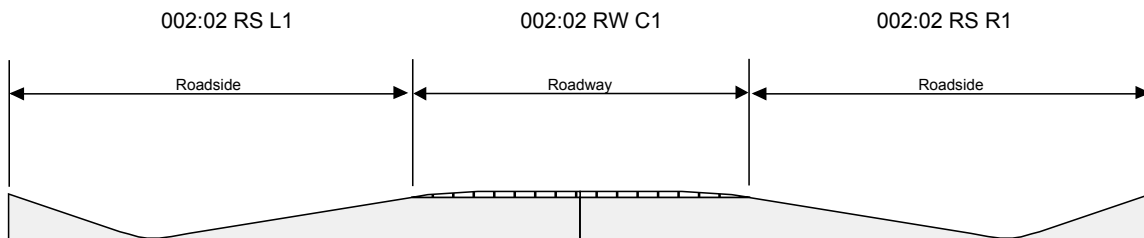


Figure F9: Roadside Labeling

### 5.1.3.4 Median

The Median is the part of a road that separates two roadways within the same road. To label Medians, follow the same naming scheme as Roadway (see figure F10 below).

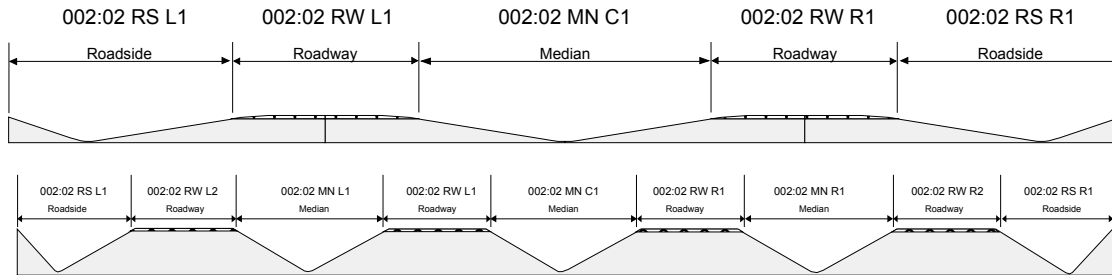


Figure F10: Median Labeling

### 5.1.3.5 Segment

A Segment is a longitudinal partitioning of a road that has homogeneous conditions or special significance. A Segment start and end points are relative to the beginning of a Roadway. There are many kinds of segments including but not limited to:

- Traffic segments -- have uniform traffic flow over it's length.
- Collision segments -- have uniform collision rates over it's length
- Surface width segments -- have uniform surface width
- Material layer segments -- have uniform material type in specific layer
- Material layer thickness -- have uniform thickness in specified layer
- Roadway Test segments -- road sections that have been constructed to test particular materials, procedures, or performance characteristics. Test segments are typically associated with Research & Development projects.



## **APPENDIX 2**

### **CONTENTS**

- **Accident Notification**
- **Annual Maintenance Contractors Health and Safety Report**
- **Monthly Health and Safety Report**
- **Year End Health and Safety Summary**
- **Motor Vehicle Traffic Collisions Occurring in Maintenance/Construction Zones**
- **Media Contact**







Contract No. \_\_\_\_\_

**ACCIDENT NOTIFICATION  
INCIDENT REPORT INVOLVING  
THIRD PARTY AND/OR CONTRACTOR'S EQUIPMENT**

DATE OF ACCIDENT: \_\_\_\_\_ TIME: \_\_\_\_\_  am  pm

HWY. NO. \_\_\_\_\_ LOCATION \_\_\_\_\_

CONSTRUCTION ZONE  Yes  No MAINTENANCE ZONE  Yes  No

OTHER: \_\_\_\_\_

IS HIGHWAY CLOSED  Yes  No TRAFFIC RESTRICTED  Yes  No

OTHER: \_\_\_\_\_

WEATHER CONDITIONS: \_\_\_\_\_ ROAD CONDITIONS \_\_\_\_\_

ACCIDENT CAUSE: REAREND  Yes  No SIDESWIPE  Yes  No

HEAD-ON  Yes  No OTHER \_\_\_\_\_

POLICE CONTACTED  Yes  No DETACHMENT \_\_\_\_\_ FILE # \_\_\_\_\_

CONTRACTOR'S NAME: \_\_\_\_\_

THIRD PARTY: \_\_\_\_\_

INJURIES (PLEASE CIRCLE ONE):

CONTRACTOR: NONE - MINOR - SERIOUS - FATAL THIRD PARTY: NONE - MINOR - SERIOUS - FATAL

BRIEF

DESCRIPTION: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

INFORMATION REPORTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

FORM COMPLETED BY: \_\_\_\_\_ PHONE NO. \_\_\_\_\_

IS FOLLOW UP REQUIRED BY THE DEPARTMENT?  Yes  No IF SO BY WHOM:

CONTACT NAME \_\_\_\_\_ PHONE NO. \_\_\_\_\_

**FAXED TO:** Project Sponsor <sup>TM</sup> and/or Department Safety Officer <sup>TM</sup>  
ADM Transportation and Civil Engineering <sup>TM</sup>  
Director, Highway Engineering Section <sup>TM</sup>



# ALBERTA TRANSPORTATION

## Annual Maintenance Contract Health and Safety Review

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This report is to be submitted annually during the month of April. It shall be completed jointly by the Contractor's Representative and the Operations Manager. The Health and Safety Review is intended to give an accurate summary of the Contractor's safety program for the previous calendar year.

Maintenance Contract Number \_\_\_\_\_

For the Period From: \_\_\_\_\_ To: \_\_\_\_\_

Contractor: \_\_\_\_\_

Contractor's O.H. & S. Certificate of Recognition Number: \_\_\_\_\_

Head Office Address: \_\_\_\_\_

Contractor's Representative: \_\_\_\_\_

Operations Manager: \_\_\_\_\_

Sub-contractors*	O.H. & S. Cert. of Recognition Number	Attended Safety Meetings	
1. _____	_____	YES	or NO
2. _____	_____	YES	or NO
3. _____	_____	YES	or NO

\* Typical Sub-contractor operations could consist of painting, bridge, mowing, spraying, etc.

### FIELD PERSONNEL

(This section to be completed by the Contractor's Representative)

1. Did the contractor employ competent workers? YES or NO
2. Were all flagpersons employed on site certified? YES or NO
3. Did contractor meet First Aid legislated requirements? YES or NO

### SITE CONDITIONS

1. Were the department's traffic accommodation standards met? \_\_\_\_\_
2. Did the contractor identify hazards and take the appropriate action? \_\_\_\_\_
3. Was appropriate personal protective equipment used? \_\_\_\_\_
4. Did the contractor conduct safety meetings? \_\_\_\_\_
5. Did the contractor conduct and record safety inspections? \_\_\_\_\_
6. Number of TRANS Safety Officer inspections: \_\_\_\_\_
7. Number of inspections by Alberta Labour O.H. & S. officers: \_\_\_\_\_

.....over

8. Number of Alberta Labour O.H. & S. orders issued: 6  
**Note:** A copy of the Alberta Labour O.H. & S. inspection reports may be required.
9. Were there **re-occurring** health and safety issues? YES or NO  
 If yes, please explain: \_\_\_\_\_  
 \_\_\_\_\_

**NUMBER OF CONTRACTOR INCIDENTS**

1. For total number of Serious Injuries and Accidents (involving contractor or sub-contractor) please refer to the Year End Health and Safety Summary.
2. For total number of vehicle/equipment accidents (involving contractor and sub-contractor) and Infrastructure damage accidents refer to the Year End Health and Safety Summary.
3. Number of incidents involving utilities: \_\_\_\_\_
4. Number of investigations conducted by contractor: \_\_\_\_\_
5. Were authorities involved? YES or NO  
 Which authorities? \_\_\_\_\_  
 \_\_\_\_\_

**CONTRACTOR'S OCCUPATIONAL HEALTH AND SAFETY PERFORMANCE**

1. Overall was the general contractor/sub-contractors health and safety performance satisfactory? \_\_\_\_\_
2. Please comment on the contractor's/sub-contractor's O.H. & S. program: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Did the contractor/sub-contractor follow their O.H. & S. Program? \_\_\_\_\_

The Contractor is to complete this Health & Safety Review annually during the month of April. Copies to be sent by May 15th.

CONTRACTOR'S REPRESENTATIVE: \_\_\_\_\_  
 Signature Date

OPERATIONS MANAGER: \_\_\_\_\_  
 Signature Date

**For Alberta Transportation Use Only:**

The Operations Manager will forward a copy to the Regional Safety Officer.  
 The Regional Safety Officer will forward a copy to the Dept. Health & Safety Manager

Revised 05/97

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## Monthly Health & Safety Summary

Maintenance Contract # \_\_\_\_\_ For the Month of \_\_\_\_\_  
Contractor: \_\_\_\_\_

- 1) **Number of Safety Meetings Conducted:** \_\_\_\_\_
- 2) **Number of Worksite Inspections completed by the Contractor:** \_\_\_\_\_
- 3) **No. of Serious Injuries and Accidents** (Involving contractor or sub-contractors)  
Refer to the OH&S Act, Section 13 (1.1)
- (a) Fatalities: \_\_\_\_\_
  - (b) Hospitalization longer than 2 days: \_\_\_\_\_
  - (c) Unplanned explosion, fire or flood: \_\_\_\_\_
  - (d) Collapse or upset of a crane, derrick, or hoist \_\_\_\_\_
  - (e) Collapse or failure of any component of a bldg. or structure necessary for structural integrity: \_\_\_\_\_

**Number of Serious Accidents:** \_\_\_\_\_

- 4) **Vehicle/Equipment Accidents** (Involving contractor or sub-contractors)  
**Record an accident only once, even though it could fit into more than one category.**
- (a) Snowplow :      Roll-over \_\_\_\_\_ Ran off Road \_\_\_\_\_  
                         Rear-ended \_\_\_\_\_ Sideswiped \_\_\_\_\_  
                         Head-On \_\_\_\_\_ Backing \_\_\_\_\_  
                         Other \_\_\_\_\_ Infrastructure Damage \_\_\_\_\_
- (b) Other Vehicle/Equipment Accidents with **Third Party:** \_\_\_\_\_  
(As per the Motor Vehicle Administration Act, Chapter M-22, Section 77(1))
- (c) Other Infrastructure Damage (excluding snowplow related accidents): \_\_\_\_\_  
(Guardrail, Railway Tracks, Bridges, Manhole Covers, Government Buildings)
- Number of Vehicle/Equipment Acc:** \_\_\_\_\_

Contractor Representative(print): \_\_\_\_\_ Date: \_\_\_\_\_  
Signature: \_\_\_\_\_

**NOTE: Contractors are still required to report accidents as per the General Specifications**

The Contractor is to complete this summary and forward to:  
Contractors Head Office      Date \_\_\_\_\_  
Operations Manager (A.T.) Date \_\_\_\_\_

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### For Alberta Transportation Use Only:

The Operations Manager will forward a copy to the Regional Safety Officer.  
The RSO will forward a copy to the Dept. H&S Manager (if so requested by the Manager).  
Revised 06/01

## Year End Health & Safety Summary

Maintenance Contract # \_\_\_\_\_ January - December, \_\_\_\_\_  
 Contractor: \_\_\_\_\_

**1) Serious Injuries and Accidents** (Involving contractor or sub-contractors)

Refer to the OH&S Act, Section 13 (1.1)

- (a) Fatalities: \_\_\_\_\_
- (b) Hospitalization longer than 2 days: \_\_\_\_\_
- (c) Unplanned explosion, fire or flood: \_\_\_\_\_
- (d) Collapse or upset of a crane, derrick, or hoist: \_\_\_\_\_
- (e) Collapse or failure of any component of a bldg. or structure necessary for structural integrity: \_\_\_\_\_

**Number of Serious Accidents:** \_\_\_\_\_

**2) Vehicle/Equipment Accidents** (Involving contractor or sub-contractors)

**Record an accident only once, even though it could fit into more than one category.**

- (a) Snowplow : Roll-over \_\_\_\_\_ Ran off Road \_\_\_\_\_  
 Rear-ended \_\_\_\_\_ Sideswiped \_\_\_\_\_  
 Head-On \_\_\_\_\_ Backing \_\_\_\_\_  
 Other \_\_\_\_\_ Infrastructure Damage \_\_\_\_\_

- (b) Other Vehicle/Equipment Accidents with **Third Party:** \_\_\_\_\_  
 (As per the Motor Vehicle Administration Act, Chapter M-22, Section 77(1))

- (c) Other Infrastructure Damage(excluding snowplow related accidents):  
 \_\_\_\_\_

(Guardrail, Railway Tracks, Bridges, Manhole Covers, Government Buildings)

**Number of Vehicle/Equipment Acc:** \_\_\_\_\_

Contractor Representative(print): \_\_\_\_\_ Date: \_\_\_\_\_  
 Signature: \_\_\_\_\_

**NOTE: Contractors are still required to report accidents as per the General Specifications**

The Contractor is to complete this summary by January 31 of the following year and forward to:

Contractors Head Office                      Date \_\_\_\_\_  
 Operations Manager (A.T.) Date \_\_\_\_\_

**For Alberta Transportation Use Only:**

The Operations Manager will forward a copy to the Regional Safety Officer.  
 The Regional Safety Officer will forward a copy to the Dept. Health & Safety Manager.

Revised 06/01



# REPORT OF MOTOR VEHICLE TRAFFIC COLLISIONS OCCURRING IN WORK ZONES

1. Date of Collision: Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_ Time of Collision \_\_\_\_\_

2. Highway Number \_\_\_\_\_ km in a \_\_\_\_\_ Direction from \_\_\_\_\_  
(East, West, etc.)

(nearest key point)

Contract Number \_\_\_\_\_ Station Number \_\_\_\_\_

3. Type of Construction Involved \_\_\_\_\_

Consultant's/Department Representative \_\_\_\_\_ Consultant Company \_\_\_\_\_ Region \_\_\_\_\_

4. Contractor \_\_\_\_\_

5. Number of Persons Injured \_\_\_\_\_

6. Number of Persons Killed \_\_\_\_\_

7. Names and Addresses of Operators Involved

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

8. Names and Addresses of Pedestrians Involved

1. \_\_\_\_\_
2. \_\_\_\_\_

9. Weather Conditions

1. Clear
2. Cloudy
3. Fog
4. Mist
5. Smoke
6. Dust
7. Rain
8. Snow
9. Sleet
10. Not Known

10. Light Conditions

1. Daylight
2. Dusk
3. Dawn
4. Darkness with Road Not Lighted
5. Darkness with Road Lighted
6. Flares
7. Flashing Lights
8. Not Known

11. Road Surface Type

1. Oilbound
2. Subgrade
3. Gravel
4. Soil Cement
5. Chip Seal
6. Gravel Base Course
7. Concrete
8. Pavement (a) Tacked  
(b) Not Tacked
9. Soil Asphalt
10. Dust Control

12. Road Surface Condition

- |        |          |                         |              |
|--------|----------|-------------------------|--------------|
| 1. Dry | 3. Muddy | 5. Icy                  | 7. Oily      |
| 2. Wet | 4. Snowy | 6. Loose Sand or Gravel | 8. Not Known |

13. Names of Consultant's Personnel Involved if any

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

14. Was contractor's personnel involved? Yes \_\_\_\_\_ No \_\_\_\_\_

15. Was contractor's equipment involved? Yes \_\_\_\_\_ No \_\_\_\_\_

16. If contractor's equipment involved, unit was:

- 1. Parked off highway \_\_\_\_\_
- 2. Parked on highway \_\_\_\_\_  
Right Side \_\_\_\_\_ Left Side \_\_\_\_\_
- 3. Traveling along highway: \_\_\_\_\_  
In direction of travel \_\_\_\_\_ Against direction of travel \_\_\_\_\_
- 4. Making turning movements \_\_\_\_\_
- 5. Backing \_\_\_\_\_

17. Details of Involvement with Project

\_\_\_\_\_ (Gravel Truck, Packer, Earth Mover, etc.)

18. All signs and barricades on diagram were:  
ReflectORIZED in accordance with standards for construction signs

Details, if otherwise

Clean \_\_\_\_\_

Dirty \_\_\_\_\_

General Condition of Signs

- 1. Good
- 2. Fair
- 3. Unacceptable



19. Flares were lighted Yes \_\_\_\_\_ No \_\_\_\_\_

Flashing lights were operating Yes \_\_\_\_\_ No \_\_\_\_\_

20. Pavement markings were:

- Spotting Only \_\_\_\_\_
- New \_\_\_\_\_
- Adequate \_\_\_\_\_
- Badly Worn \_\_\_\_\_
- Davidson Markers \_\_\_\_\_
- ReflectORIZED Tape \_\_\_\_\_
- None \_\_\_\_\_

21. Number of Flagmen on duty at time of collision: \_\_\_\_\_

22. Were Flagmen wearing proper uniform: Yes \_\_\_\_\_ No \_\_\_\_\_



23. What action was taken after the collision was reported to correct any hazardous conditions?

---

---

---

24. When and by whom? (Contractor, Consultant, Maintenance Contractor, etc.)

---

---

---

---

---

25. Attached diagram must indicate:

1. Location of collision
2. Paths of vehicles immediately before and after collision
3. Location and position of vehicles after collision
4. North arrow
5. All signs, flares, flashing lights, etc., and barricades in place at time of collision (show chainage)
6. Pavement markings at location of collision
7. Location of any Flagmen on duty
8. Geometrics of highway including width of travel surface, entrances, detours, etc.
9. All physical hazards such as potholes, bumps, excavations and windrows leading up to and including those at the collision scene.

26. Visible damage to public property (barricades, flexbeams, etc.)

Estimated cost of damaged property?      \$ \_\_\_\_\_

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27. Full written description of collision.

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28. Consultant's/Department Representative opinion or impressions as to what may have caused the collision.

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\_\_\_\_\_  
CONSULTANT'S/DEPARTMENT REPRESENTATIVE

\_\_\_\_\_  
DATE

# DIAGRAM OF CONSTRUCTION COLLISION

DIAGRAM TO SHOW ALL PROJECT SIGNS AND ROAD CONDITIONS EACH SIDE OF COLLISION

## INFORMATION NEEDED

1

SHOW ON THE PLAN OF THE ROADWAY:

1. roadway widths
2. indicate location and type of all pavement marking, signs and delineators
3. show sight distances from both directions
4. show percent of grade
5. show degree of curve
6. number vehicles



x = 1



x = 2

7. Use solid line to show path before collision



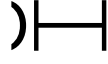
Dotted line after collision



8. Indicate distance to nearest intersection, bridge, or section line.
9. Indicate the nearest town by arrow in each direction of travel.
10. Date of inspection.

Draw Diagram in this Space

Indicate North  
by Arrow



NOTE: Detail plans from contractor can be used if more convenient

## SKETCH CROSS SECTION OF ROAD WHERE COLLISION OCCURRED

DRAW CROSS SECTION IN THIS SPACE

2

SHOW ON THE CROSS SECTION DIAGRAM:

1. Type and width of road way for:
  - a) shoulder
  - b) pavement
  - c) median
2. Show slope of pavement and shoulders

## MEDIA CONTACT

**BRANCH/REGION:**

**TYPE OF MEDIA:** Print      Radio      TV

**DATE:**

**NAME OF MEDIA:**

**TIME:**

**NAME OF REPORTER:**

**DEPT. CONTACT:**

**SUBJECT:**

<b>FAX/E-MAIL TO:</b> Ron Glen	(780) 415-9412
Jay Ramotar	(780) 422-6515
Leanne Stangeland	(780) 466-3166
Rob Penny	(780) 415-1268

## **APPENDIX 3**

### **CONTENTS**

- Quality Assurance – Snow and Ice Removal Chart
- AMA Road Report
- Service Agreement
- Work Order
- Grasshopper Control Program
- ROW Vegetation Control Application
- Hay Permit









## SERVICE AGREEMENT

### Alberta Transportation

**CONTRACTOR/COMPANY:**

**CONTACT:** \_\_\_\_\_ **PHONE NO:**  
**ADDRESS:**

**DESCRIPTION OF WORK/SERVICES TO BE PROVIDED:**

Estimated Cost: \_\_\_\_\_ (per year/term)

**TERM OF AGREEMENT:** From: \_\_\_\_\_ To:

**PAYMENT TERMS:** "This is to certify that the services ordered/purchased hereby are being purchased by Alberta Transportation, which is part of the Alberta Crown or is listed as a tax free Alberta Government agency, and are therefore not subject to the Goods and Services Tax."

#### CONDITIONS AND SPECIAL PROVISIONS

1. The contractor shall indemnify and hold harmless the Minister, his employees and agents, from any and all claims, demands, actions and costs whatsoever that may arise, directly or indirectly, out of any act or omission of the contractor, his employees or agents, in the performance of this Agreement.
2. Such indemnification shall survive termination of this Agreement.

Company Name

- 3. The Minister shall not be liable nor responsible for any bodily or personal injury or property damage of any nature whatsoever that may be suffered or sustained by the contractor, his employees or agents in the performance of this Agreement.
- 4. The contractor must carry Comprehensive General Liability Insurance against bodily injury and Property Damage claims. Insurance shall be in accordance with the Alberta Insurance Act and shall be maintained in full force and effect for the duration of the Agreement. Coverage must include liabilities assumed under written contract.
- 5. The contractor agrees to provide skilled, well trained and experienced employees.
- 6. The contractor shall comply with the safety regulations under the Occupational Health and Safety Act.
- 7. The contractor is responsible for all amounts due to Workers' Compensation in accordance with the Workers' Compensation Act.
- 8. If for any reason the contractor fails to provide services satisfactorily to Alberta Transportation, or comply with the conditions and special provisions of this Agreement, the Agreement may be terminated by the Minister or his representatives upon providing written notice to the contractor.

I/We understand and agree to the Conditions and Special Provisions which shall form a part of this agreement.

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**W.C.B. #:** \_\_\_\_\_ **Phone No.:** \_\_\_\_\_  
 -----  
 -----

To be Completed by Alberta Transportation:

Originated by \_\_\_\_\_ Location  
Accepted/Approved by:

\_\_\_\_\_ Date:  
Operations Manager

\_\_\_\_\_ Date:  
Regional Director (if required)





**PROVINCIAL HIGHWAY ACCESS AND WORK AGREEMENT FOR  
GRASSHOPPER CONTROL PROGRAM**

**ADJACENT LANDOWNER:**

**ADDRESS:**

**Phone:** (    )

**Fax:** (    )

WHO IS DOING THE WORK: LANDOWNER  TENANT  CONTRACTOR

**SPRAYER NAME:**

**ADDRESS:**

**Phone:** (    )

**Fax:** (    )

The Minister approves the Landowner/Tenant's use and access of the highway right-of-way to undertake spraying for grasshopper control:

Location of Work (Highway and From and To)

\_\_\_\_\_

\_\_\_\_\_

Type of chemical treatment used on the highway right of way:

Brand of chemical: \_\_\_\_\_

Quantity used: \_\_\_\_\_

Type of chemical used: \_\_\_\_\_

**DURATION OF AGREEMENT:**

**From:** \_\_\_\_\_ **To:** \_\_\_\_\_

**CONDITIONS AND SPECIAL PROVINSIONS**

1. The Landowner/Tenant/Sprayer shall hold harmless the Minister from any and all third party claims, demands, or actions that may arise, directly or indirectly, out of any act or omission of the Landowner/Tenant/Sprayer, its employees, agents or subcontractors.
2. Such hold harmless shall survive of this Agreement.
3. If for any reason the Sprayer fails to provide services satisfactorily to Alberta Transportation, or comply with the conditions and special provisions of this Agreement, the Minister or his representative upon providing written notice to the Sprayer may terminate the Agreement.

**(Continued on Reverse Side)**



*AGREEMENT No.* \_\_\_\_\_

**I/We understand and Agree to the Terms & Conditions, which form part of this agreement.**

**Adjacent Landowner:**

\_\_\_\_\_ **Date:** \_\_\_\_\_

**Name(printed):** \_\_\_\_\_

**I/We understand and Agree to the Terms & Conditions, which form part of this agreement.**

**Sprayer:**

\_\_\_\_\_ **Date:** \_\_\_\_\_

**Name(printed):** \_\_\_\_\_

**This Access and Work Agreement is hereby accepted and approved on behalf  
of Alberta Transportation**

**Approval Authority:**

\_\_\_\_\_ **Date:** \_\_\_\_\_

**Name(printed):** \_\_\_\_\_



## RIGHT OF WAY VEGETATION CONTROL APPLICATION (Chemical Spray Exemption)

NAME (please print): \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE NUMBER(S): \_\_\_\_\_  
(hereinafter the Applicant)

### Definitions

“Restricted Weeds” means those weeds classified as such by Alberta Regulation 171/2001, as amended, and made pursuant to the *Weed Control Act, R.S.A. 1980, c. W-6*, as amended.

“Noxious Weeds” means those weeds classified as such by Alberta Regulation 171/2001, as amended, and made pursuant to the *Weed Control Act, R.S.A. 1980, c. W-6*, as amended.

### Terms of Application

1. The Applicant hereby requests that Alberta Transportation refrain from using herbicides to control brush, restricted weeds and noxious weeds within the rights of way under its control and described as Designated Non-Treatment Areas in the attached list.
2. The Applicant warrants that he is the owner or has an interest by reason of being an occupant in the lands described as Designated Non-Treatment Areas in the attached list. The Applicant warrants that he has the full power and authority necessary to make this Application and comply with its terms.
3. The Applicant agrees to destroy all restricted weeds and control all noxious weeds and brush in the Designated Non-Treatment Areas to the standard required by Alberta Transportation.
4. Should the Applicant fail to destroy restricted weeds, and control noxious weeds and brush to the standard acceptable to Alberta Transportation, Alberta Transportation may at any time and by any means including the use of herbicides, undertake such activities as are necessary to achieve proper control of restricted weeds, noxious weeds and brush.
5. The Applicant agrees to indemnify and save harmless Alberta Transportation, its employees, agents and contractors from any and all claims, demands, actions, or costs of any claims, demands or actions, whatsoever, that may arise directly or indirectly out of the granting of this application by Alberta Transportation. Further, the Applicant also releases Alberta Transportation, its employees, agents or contractors from any claims, demands, or actions that may arise directly or indirectly out of any unintended spraying of the Designated Non-Treatment Areas by Alberta Transportation, its employees, agents, or contractors.

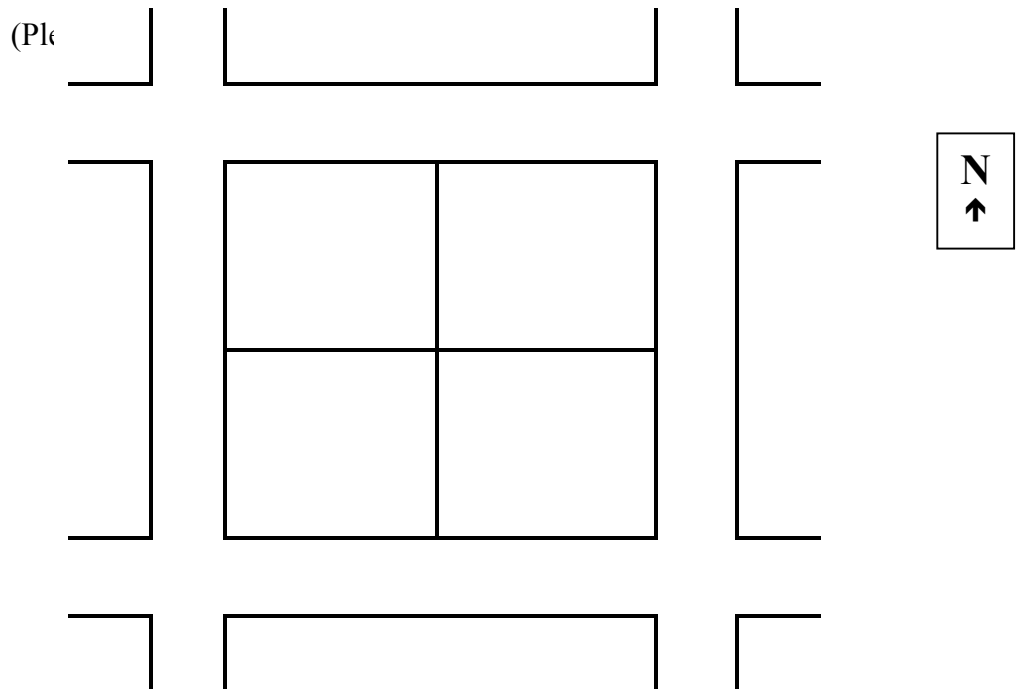
6. This application expires on September 30 of the year of application. Unless this application is renewed by the Applicant, with the approval of Alberta Transportation, Alberta Transportation shall resume control of restricted weeds, noxious weeds, and brush in the Designated Non-Treatment Areas in accordance with its standard practices.
7. Subject to the Applicant complying with the terms of this application, Alberta Transportation agrees to refrain from the use of herbicides within the Designated Non-Treatment Areas.

Application Date: This \_\_\_\_ day of \_\_\_\_\_, 200\_\_.

Signature of Applicant: \_\_\_\_\_.

### Designated Non-Treatment Areas

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_



Use additional pages for more Designated Non-Treatment Areas

Approved on behalf of Alberta Transportation: \_\_\_\_\_

Date: \_\_\_\_\_.

cc: Maintenance Contract Inspector





**PERMIT TO CUT HAY ON HIGHWAY RIGHT-OF-WAY**

Permission is hereby given to \_\_\_\_\_ of \_\_\_\_\_,

\_\_\_\_\_ Phone No. \_\_\_\_\_ to cut hay on the rights-of-way of Highway No.

\_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ on \_\_\_\_\_ of the said highway for the 20 \_\_\_\_\_ season.

The holder of this permit is the owner or lessee of the following lands: \_\_\_\_\_

The following conditions apply to all permits issues:

- (1) Cutting hay on the highway rights-of-way is not to be carried out by anyone before obtaining a permit to do so from the Alberta Transportation.
- (2) Applications for a permit to cut hay along the primary highway system will only be accepted up to and including June 15. Preference will be given to the adjacent landowner, other applications will be handled on a "first come, first serve" basis.
- (3) Anyone cutting hay under permit must cut all of the right-of-way from the shoulder of the highway to the fence line in the area under permit, unless this is not reasonably possible due to brush or wet soft ground.
- (4) Haying operations must be completed prior to \_\_\_\_\_ or this permit becomes invalid. The area will then be cut by the mowing contractor.
- (5) No permit holder will have the right to sub-let or sell the right to cut hay under a permit. No fee shall be charged for this permit.
- (6) The Department retains its right of entry and control including the right and privilege of cutting or spraying any portion of the right-of-way for the purpose of weed control, highway beautification, or for any other purpose at any time in the areas for which this permit has been issued.
- (7) The permit holder must carry out haying operations in such a manner that no hazards to highway traffic will exist due to the operations. In consideration of the granting of this permit, the permit holder hereby indemnifies and saves harmless the Government from any claims arising out of his operations.
- (8) The bales must be placed as far from the highway-driving surface as reasonably possible. As bales produce a potential hazard to vehicles leaving the highway surface, it is essential that all bales be removed from the rights-of-way as quickly as possible after baling. Under no circumstances will bales be allowed to remain on the right-of-way longer than two weeks after baling. If large round bales are made they shall be removed from the rights-of-way within two days of baling.
- (9) It is the responsibility of the permit holder to check with the local authorities, the District Agriculturist and adjoining farmers to see if the area has been treated with Herbicides or Pesticides.
- (10) Subject to mutual consent, this permit may be renewed for two additional one-year extensions. Annual renewal must be finalized by \_\_\_\_\_, 20 \_\_\_\_\_.

Approved on behalf of Alberta Transportation: \_\_\_\_\_ Date: \_\_\_\_\_.

cc: Maintenance Contract Inspector



## **APPENDIX 4**

### **CONTENTS**

- **Letter A ‘Response to Damage Claim’**
- **Letter B ‘Response to Damage Claim’**
- **Letter C ‘Response to Damage Claim’**
- **Procedures for Damage Claims ‘Question and Answers’**



[DATE]

[CLAIMANTS NAME]  
[ADDRESS]

DEAR [CONTACT PERSON]

RE: [CONTRACT NUMBER ]  
Damage Claim Filed Against [CONTRACTOR'S NAME]

We have received your letter dated [DATE OF LETTER], regarding damage involving [TYPE OF DAMAGE AND LOCATION]. As you are aware, the work was under contract with [CONTRACTOR NAME], [ADDRESS & PHONE NUMBER].

\*\*\*[INSERT PARAGRAPH A, OR B]\*\*\*

A	The Department has forwarded a copy of your letter to the contractor with a request that they investigate and deal with your concerns.
B	Before the Department can forward a copy of your letter to the contractor with a request that they investigate and deal with your concerns, we will require some additional information. Please supply us with [LIST OF INFORMATION REQUIRED]

For your information, I am attaching an outline of the damage claims procedure as adopted by Alberta Transportation.

If you have any questions or require assistance please contact our office at :

(ADDRESS)  
(PHONE NUMBER)  
(FAX NUMBER)

Yours truly,

[OPERATION MANAGER]  
[TITLE]  
enclosure

(Letter A)

**Date**

**address**

**Dear: contact person**

**RE: CONTACT NUMBER**  
**DAMAGE CLAIM FILED AGAINST - CONTRACTOR'S NAME**

We have received your letter dated **date**, regarding damage involving **type of damage and location**, and the contractor has denied your claim.

\*\*\*[INSERT PARAGRAPH A, B OR C]\*\*\*

A	In accordance with the enclosed damage claims procedure, the Department has forwarded your claim to an independent adjuster for a decision on this issue
B	Before the Department can forward your claim to the adjuster, we will require some additional information. Please supply us with List of Information required
C	We are sorry but, since your claim is greater than \$1,500.00, the department cannot provide any further assistance on this matter. If you are dissatisfied with the response from [CONTRACTOR NAME], you still have the option to pursue this matter through other legal avenues (ie. Small claims court), or deal with it as an insurance issue through your insurance carrier.

For your information, I am attaching an outline of the damage claims procedure as adopted by Alberta Transportation.

If you have any questions or require assistance please contact our office at :

**address**  
**phone number**  
**Fax Number**

Yours truly,

[OPERATIONS MANAGER]  
[TITLE]

enclosure

(Letter B)

[DATE]

[CLAIMANTS NAME]  
[ADDRESS]

DEAR [CONTACT PERSON]

RE: [CONTRACT NUMBER]  
Damage Claim Filed Against [CONTRACTOR'S NAME]

We have received a copy of a letter dated [DATE] sent to you from [CONTRACTOR] denying any compensation for the damages to your vehicle on the above noted Alberta Transportation highway contract. Please be advised that, if the damage to your vehicle is less than \$1,500.00, the department has a damage claims procedure that may be of some assistance to you.

For your information, I am attaching an outline of the damage claim guidelines which is in a question and answer format. Once you have read the guidelines, and if you disagree with the contractor's response to you, please forward your claim in writing to our office at the address below. Your claim must contain the date, time and location of the incident as well as an estimate of the damages and a description of the incident so that we can forward it to the adjuster for a second opinion:

If you have any questions or require assistance please contact our office at :

(ADDRESS)  
(PHONE NUMBER)  
(FAX NUMBER)

Yours truly,

[OPERATION MANAGER]  
[TITLE]

enclosure

(Letter c)





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## ALBERTA TRANSPORTATION PROCEDURES FOR DAMAGE CLAIMS

**QUESTION: HOW CAN I FILE A CLAIM FOR DAMAGES?**

**ANSWER:** Your claim must be in writing and contain the following information:

- Date
- Time
- Location
- Estimate of damage
- Description of the incident
- Your name and address (Phone number optional)

Forward your claim to the Alberta Transportation office at the address on the accompanying letter

**QUESTION: WHAT HAPPENS TO MY CLAIM?**

**ANSWER:** Alberta Transportation personnel will forward your claim to the contractor for his action.

The contractor will respond to you in writing, setting out his position with respect to your claim. He will either settle your claim or, if he considers your claim to be invalid, will provide reasons why your claim is being rejected. If you do not hear from the contractor within two weeks please advise the Alberta Transportation office at the address on the accompanying letter

**QUESTION: WHAT IF I DISAGREE WITH HIS REASONS?**

**ANSWER:** If you are unsatisfied with the contractor's response, the next course of action available to you is dependant on the value of your claim:

- If your claim is in an amount that is **GREATER than \$1,500.00** then your only recourse would be to pursue the issue either through legal avenues. (ie. small claims court), or deal with it as an insurance issue through your insurance carrier.
- If your claim is in an amount that is **LESS than \$1,500.00** then your claim file can be forwarded to an independent adjuster who will review your file and give his decision based on the information in that file and the contract terms.

**QUESTION: WHO IS THIS ADJUSTER AND WHAT CAN HE DO FOR ME?**

**ANSWER:** The adjuster is an individual who has been retained by the department with the concurrence of the contractor industry, to review claim files as they relate to the contractor's responsibility in the contract, and make a considered decision on the validity and value of the claim. He has expertise in the insurance adjustment area and a history of familiarity with this type of claim. His decision is binding on the Contractor and the Department.

**QUESTION: HOW DO I GET MY CLAIM TO THE ADJUSTER?**

**ANSWER:** In situations where you and the contractor cannot agree to a settlement, please advise the Alberta Transportation office at the address on the accompanying letter and the Department will forward the claim file containing your claim and the contractor's response to the adjuster.

Under the terms of his agreement with the Department, the adjuster will review the file and make a considered decision on the validity and amount of the claim. He will advise you in writing of his decision and forward copies of this decision to the contractor and the department. The adjuster's decision is binding on the contractor and the department. If he rules in your favour, the contractor is obliged to pay the amount of the decision.

**QUESTION: WHAT DO I DO IF THE ADJUSTER RULES AGAINST ME?**

**ANSWER:** The adjuster is neither a judge nor a mediator. His authority is restricted to making a decision based on whether or not the contractor followed the conditions of his contract.

The adjuster's review is based on the written information provided to him and under the terms of his agreement, is not rescindable. Once his decision is made the department cannot assist either the contractor or the claimant to have the decision changed.

If the adjuster does rule against you and you are unsatisfied with his response, you still have the right to pursue the issue through legal avenues (ie. Small claims court), or discuss the matter with your insurance carrier.

## **APPENDIX 5**

### **CONTENTS**

- **Bridge Maintenance Work Order**
- **Bridge Maintenance Authorization**



**BRIDGE MAINTENANCE  
 WORK ORDER**

Work Order Number
Bridge File
Job Number
Sub-Element
Structure Type
Road Authority

To: \_\_\_\_\_  
 \_\_\_\_\_

Existing Structure:			
Bridge Located in:		Location from nearest town:	
Stream:	Highway:	MD/ID/Cty:	District:
Skew : °	Roadway height above stream bed (m):	Clear roadway (m):	Environmental Permit:
<u>Repair As Follows:</u>			

<b>Cost Estimate</b>			
Material	\$	Upset Total	\$
Estimated Cost	\$	Invoiced Cost	\$
<b>PROJECT COMPLETION DETAILS</b>		<b>Authorization and Approval</b>	
DATE WORK COMMENCED:	Authorized by: _____ Senior Bridge Technologist Date: mmm dd / yy		
DATE WORK COMPLETED:			
CONTRACTOR'S REPRESENTATIVE:	Approved by: _____ Bridge Manager Date: mmm dd / yy		

Please provide additional comments as required on the back of this form.

Contractor's Proposal:

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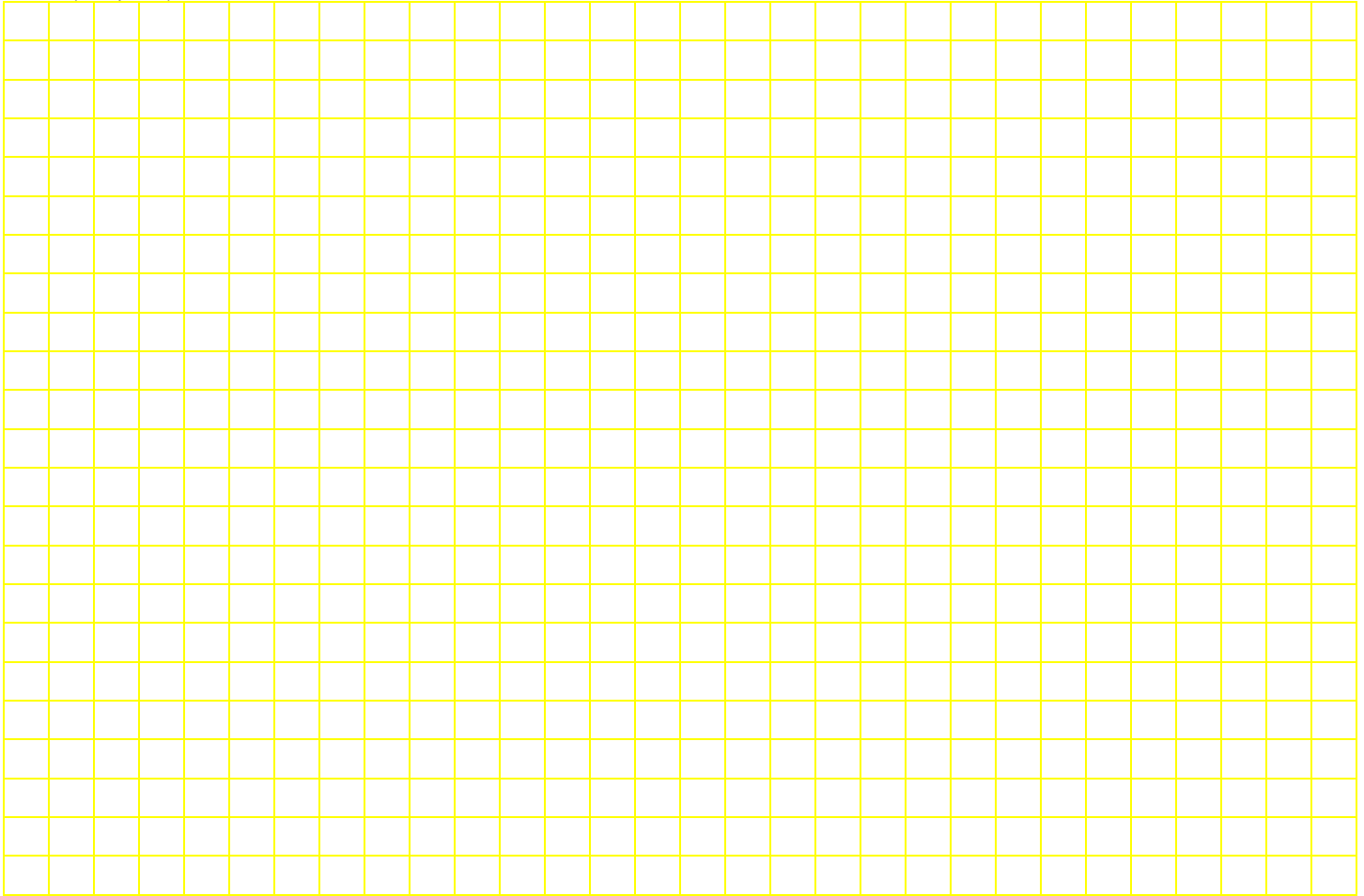
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Sketch (if required):

A large grid of yellow squares, intended for sketching. The grid consists of 20 columns and 20 rows of squares.

Contractor's Comments:

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**BRIDGE  
MAINTENANCE  
AUTHORIZATION**

Bridge File: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Authorization No. \_\_\_\_\_  
 District \_\_\_\_\_  
 CMA No: \_\_\_\_\_  
 Centre Code \_\_\_\_\_  
 Job No. \_\_\_\_\_  
 BPMS No. \_\_\_\_\_

Contractor: \_\_\_\_\_ ATTENTION: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Quote Date \_\_\_\_\_

Highway: \_\_\_\_\_ Legal Land Location: \_\_\_\_\_  
 Stream: \_\_\_\_\_ Nearest Town: \_\_\_\_\_

Existing Structure: \_\_\_\_\_

<b>Work Details:</b> _____		
<b>Completion Date:</b> _____	<b>Penalty for Late Completion:</b> _____	<b>Warranty:</b> _____
<b>Authorized By:</b> _____	<b>Name &amp; Title</b> _____	

<b>Contractor's Quote:</b>							
Item No.	Description	Unit	Estimated Quantity	Unit Cost	Total Cost	Actual Quantity	Actual Cost
1							
2							
3							
Total Quote _____					Total Cost _____		
<b>Quote Approved By:</b> _____		<b>Name &amp; Title</b> _____			<b>Date</b> _____		

<b>Department Acceptance of Quote</b>	
Approved By _____	
Name & Title _____	
Date _____	

<b>Department Acceptance of Work</b>	
Accepted By _____	
Name & Title _____	
Date _____	