

Appendix 4

- **Severe Winter Storm Task Group's Final Report**
 - **September 2004**

SEVERE WINTER STORM TASK GROUP FINAL REPORT

1) INTRODUCTION

a) General

- Discussions were held during the winter of 2003/2004 by senior management staff of Alberta Transportation and the highway maintenance contractors, related to the handling of severe winter storm events. These discussions identified several issues requiring further review and resolution in order to more effectively manage severe winter storms. The Severe Winter Storm Task Group (SWSTG) was formed and tasked with this review. See Appendix A
- Members of the SWSTG are:

| <u>Alberta Transportation</u> | <u>Maintenance Contractors</u> |
|-------------------------------|---------------------------------------------|
| Terry Carter (Chair) | Terry Hood (Volker Stevin Contracting Ltd.) |
| Nick Bucyk | John Carter (Alberta Highway Services Ltd.) |
| Steve Otto | Dwight Rewega (Transportation Systems Mgt.) |
| Rick Lemire | |
| Dale Kutz | |
- In addition, the SWSTG recognized the need to formalize procedures related to the owner's due diligence. That is, what is the department doing to ensure that contract requirements related to winter storm response are being adhered to and how is this being documented?

b) Severe Winter Storm Definition

Severe Storms: As a winter storm increases in severity (duration, extent and intensity), there will be a requirement for additional conventional snow and ice control equipment to address it, and for some types of storms {i.e., freezing rain} lasting for extended durations, additional snow and ice control chemicals. Maintenance decisions made during these conditions and the resources allocated to fight the storm will have a considerable effect on the outcome of the winter road conditions in most circumstances.

Further description on the severity of winter storms in Appendix B

2) IDENTIFIED ISSUES & RECOMMENDATIONS

a) Winter Readiness

i) Sand & Salt

Having sufficient sand and salt in stockpile at the onset of winter can be a concern, particularly in areas where there is a busy fall work program and/or areas with

minimal salt storage capacity. When freeze proofing of sand is done late in the fall, there is a serious salt supply problem if the salt storage capacity is not substantially greater than the quantity of salt required for freeze proofing. There have been situations where a storm has occurred shortly after completion of freeze proofing and prior to refilling of the salt shed. A “Protocol for Winter Readiness – Sand & Salt Supply” (Appendix C) was developed to provide guidance on this issue.

RECOMMENDATION 1: The “Protocol for Winter Readiness – Sand & Salt” be adopted as accepted practice and incorporated into the Contract Administration Manual.

ii) Winter Equipment

Contractors need to ensure that all winter equipment required under the contract is in place and in good working condition by the required dates. The annual calibration of the fleet of snowplow trucks needs to be undertaken as early as possible at the beginning of or prior to the winter season. It is important that the calibrations be completed not only for material usage purposes, but they are also an excellent indicator of potential hydraulic problems. Sander/hopper hydraulics can also be checked in the stands during summer hopper maintenance. Calibrations of plow floats should be done prior to snowplowing operations on chip seal roads, otherwise the contractor risks responsibility for potential damage.

The Contractor will develop a schedule for the annual calibration of all of their trucks. The schedule must be approved by the department and all calibrations should normally be completed by November 1 with the majority of the calibrations being completed prior to the onset of truck availability. This schedule should be reviewed at the Pre-Winter Strategy Review Meeting (see below). When one or more trucks in a shop are not configured or otherwise ready for winter maintenance activities, it is the contractor’s responsibility to monitor weather forecasts and conditions in other areas so that he can react in time for the onset of winter weather.

Reporting “availability” of winter snowplow trucks has been inconsistent across the province. A standard “Snowplow Truck/Loader Availability Bi-Weekly Report” (Appendix D) was developed to document snowplow truck availability.

RECOMMENDATION 2: The “Snowplow Truck/Loader Availability Bi-Weekly Report” be adopted on a trial basis (evaluation on whether to keep this report or not to come after a winter’s use).

RECOMMENDATION 3: The appropriate retendering specification review committee should develop and add specifications that detail what the department expects the contractor to do when preparing maintenance equipment for winter operations prior to the availability period.

iii) Operator Training

Training of operators at the beginning of the winter season is problematic as this may be the first opportunity for “hands on” training. Regardless, all new operators must at minimum complete the remainder of the contractor’s formal snowplow operator training program prior to being considered as available for snowplow operation. It is noted that some contractors have a period of ‘on the job training’ as the final phase of their operator training program, so that a new operator may work in controlled conditions before the end of his training program. It is the foreman’s responsibility to determine when a new operator is qualified for working solo.

iv) Subcontractors

Maintenance contractors are responsible for their subcontractors for winter operations and must ensure that the subcontractors are prepared for winter, just as they would ensure their own resources are prepared.

v) Pre-Winter Strategy Review Meeting

A pre-winter strategy review meeting should be held annually, prior to the onset of winter. The department and contractor managers should determine the attendees. Currently, most districts that hold similar meetings invite a representative of the RCMP and department and contractor field personnel. These meetings should address the status of winter preparations and strategies to deal with various winter maintenance issues that may arise, including those related to severe storms.

Also, part of the fall Executive Management Meeting (see Specification 51.2.41.2) should include a review of the contractor’s status on preparing for winter maintenance operations. This will typically be an overview of winter maintenance readiness and any significant issues with storm response.

vi) Department/Contractor Communication

During a severe winter storm, where there are many problems and difficulties occurring with winter response, there may be breakdowns in communication regarding resources and responses used to fight the storm. This can happen internally within either organization or between them or some combination thereof. The quicker a problem can be identified, the quicker a resolution can be achieved. Significant issues should be forwarded to higher levels in both organizations because they may have access to or be aware of other resources that can be brought to bear to fight the storm and road conditions.

b) Salt Shed Capacity

i) Ordering Salt

The current salt storage specification requires a minimum shed capacity of 200 tonnes, with some smaller sheds still in use. It is a given that local areas may run out of salt during severe storm events. This can be mitigated to a degree as follows:

- o Salt inventory will be maximized at the beginning of the winter season by following the protocol outlined in Appendix C.
- o Department practice in some areas has been to minimize the amount of salt in inventory at the end of the fiscal year. This practice is not necessary for financial or environmental reasons, and should be discontinued.

ii) Storage Capacity

Existing salt storage capacity province wide is estimated to be 65% of the average yearly salt requirement. Although this appears to be a reasonable provincial capacity, there are shops where the capacity drops to 10% of the annual requirement or less. These shops pose the greatest risk of salt shortages during severe winter storms. Maintenance facilities that have covered sand storage sheds offer the possibility for mixed storage of pickled sand and straight salt.

RECOMMENDATION 4: The department should specify a minimum salt storage capacity of 45% of the average yearly salt requirement or 250 tonnes (excluding salt used for pickling), whichever is greater (may not apply to all satellite shops).

c) Contractor Resources

i) Crossing Boundaries

Contractors may be required to cross contract boundaries during severe winter storms. A clear, documented process will facilitate this occurring in an expedient a manner as possible. A “Protocol for Moving Contractor Resources between Contract Areas” (Appendix E) was developed.

RECOMMENDATION 5: The “Protocol for Moving Contractor Resources Between Contract Areas” be adopted as accepted practice and incorporated into the Contract Administration Manual.

ii) Additional/Alternative Equipment

During severe winter storm events the contractor may require additional/alternative equipment resources other than those normally used to facilitate more effective snow and ice control efforts. Again, a clear, documented process will facilitate this

occurring in an expedient a manner as possible. A “Protocol for Contractor Use of Additional/Alternative Equipment” (Appendix F) was developed.

RECOMMENDATION 6: The “Protocol for Contractor Use of Additional/Alternative Equipment” be adopted as accepted practice and incorporated into the Contract Administration Manual.

iii) New technology & materials

Contractors could benefit from developing technologies, materials and management tools (such as better forecasts based on RWIS sensors, new de-icing chemicals, and decision making support software programs and tools). The department has the expertise to monitor and evaluate the state of the art for these developments. In particular, local area forecasts (created by Environment Canada for selected locations over the last 3 winters) has already shown to be useful when planning winter maintenance shifts. Weather forecasts that show changes in temperature, wind and precipitation and other relevant factors over time are especially valuable, as it helps the foremen decide whether to mobilize or demobilize equipment. In the long term, this would be particularly useful if the forecasts can be tied into software to support winter maintenance decisions.

RECOMMENDATION 7: That the department investigate the feasibility of getting local area forecasting for the Contractors across the province as soon as possible.

d) Availability of Salt

In general, it appears the salt shortages during severe winter storm events is not related to shortages of salt from the suppliers, but is related to transportation issues. It is anticipated that this will become less of an issue once the previously discussed recommendations related to salt management and storage are implemented.

In extreme storms that have an extended duration over most of Western Canada, even the supplier’s stockpiles can become depleted. In those rare cases, the department and maintenance contractor must work together to allocate the available salt supply on a network basis.

e) Spare Operators for Major Routes

Generally speaking across the province, spare snowplow operators are difficult to find, and difficult to keep. Finding employees willing to work only when called (i.e. very reduced hours), difficult shifts and often under extreme conditions is not easy. One suggested approach is to work towards a more process - based specification where a minimum operating hour capability per day is specified. The minimum level would be higher for shops maintaining major routes, less for shops only maintaining minor routes. The contractors would then have to manage their resources to meet this requirement.

RECOMMENDATION 8: The appropriate retendering specification review committee should develop a specification requiring an increased snowplow operating capability for major routes.

f) Road Closures

The department's road closure policy is outdated and as a result, there are inconsistencies in its application from district to district. A sub task group was formed to review the entire road closure issue. The group's membership includes representatives from the department, the contactors and the RCMP. Departmental representation includes Transportation Safety Services in order to explore how Inspection Services Officers could assist during road closures. The group's draft recommendations are due September 30, 2004.

g) Storm Debriefings

An effective post storm review can be a very effective tool in ensuring continual improvement for winter maintenance. This review should be undertaken following all severe winter storm events. A "Protocol for Post Storm Reviews" (Appendix G) was developed.

RECOMMENDATION 9: The "Protocol for Post Storm Reviews" be adopted as accepted practice and incorporated into the Contract Administration Manual.

h) Public Communication

i) Road Condition Reporting

The public demand for road condition information has been significantly increased in recent years. Information from the Province of British Columbia indicates that the most used of all government websites is the road condition website. In Alberta this past winter, the Alberta Motor Association (AMA) received more than 1.5 million hits on its road condition internet site, and an additional 340,000 road condition telephone inquiries. Discussions with the AMA indicate that the system is working well and public response has been good. One area identified for improvement, however, is more timely updating after the initial report is received indicating poor road conditions. The task group noted that AMA condition reports can be updated by phone, so that whoever sends in the road reports does not have to return to the shop to do so.

RECOMMENDATION 10: Maintenance contractors need to place more emphasis on timely updating of road condition reports. As a standard practice, regular road condition updates are required whenever poor road conditions have been reported to the AMA. At minimum, if road conditions are reported as poor in the morning AMA report, a

subsequent report should be sent at or before 1:00 pm. If conditions remain poor, an additional report should be sent at or before 4:30 pm.

ii) Winter Public Communications Strategy

If the public has basic understanding of winter driving and winter maintenance efforts, the department and contractors can expect to reduce the number of public complaints and reduce the number of accidents. Many of the complaints received stem directly from not understanding the business. The department's Communications Section is proposing a two part communications strategy this fall focusing on driver awareness and knowledge of winter highway maintenance. Some points to be covered include:

- Expectations of winter road conditions
- Driving to conditions
- False securities associated with 4-wheel drive vehicles
- Use of cruise control
- Difficulties associated with severe winter storms
- Experience of the highway maintenance contractors
- Structuring of the contract to ensure public safety

RECOMMENDATION 11: That the winter public communications strategy should proceed this fall as proposed.

iii) Promotion of Highway Maintenance Efforts

There are many venues where the department and the maintenance contractors can better promote highway maintenance efforts to the general public (i.e. trade shows, parades, fairs, etc.). Department/contractor attendance at these venues would greatly enhance public understanding and acceptance of highway maintenance efforts. Another idea would be media visits to plowing operations (e.g. reporter ride along).

RECOMMENDATION 12: Department/contractor participation in local events be encouraged and supported, as part of a comprehensive public communications strategy.

3) DEPARTMENTAL DUE DILIGENCE

As an owner, Alberta Transportation processes must demonstrate that the department is being duly diligent in ensuring the highway maintenance contractors are meeting their contractual requirements for snow and ice control. A "Protocol for Owner's Due Diligence for Winter Operations" (Appendix H) outlines steps that should be undertaken by the department as a minimum audit requirement.

RECOMMENDATION 13: The “Protocol for Owner’s Due Diligence for Winter Operations” be adopted as accepted practice and incorporated into the Contract Administration Manual.

APPENDICES

- A. Task Group Terms of Reference
- B. Severe Storm Definition
- C. Protocol for Winter Readiness - Sand & Salt Supply
- D. Snowplow Truck/Loader Availability Bi-Weekly Report
- E. Protocol for Moving Contractor Resources Between Contract Areas
- F. Protocol for Contractor Use of Additional/Alternative Equipment
- G. Protocol for Post Storm Review
- H. Protocol for Owner’s Due Diligence for Winter Operations

Appendix A

4 May 2004

TERMS OF REFERENCE
Severe Winter Storms Committee

Background

The Severe Winter Storms (SWS) Committee was formed by Alberta Transportation (AT) following a meeting in November 2003 between senior management of AT and the highway maintenance contractors (Contractors). The SWS Committee reports to the ARHCA/MPMG Steering Committee.

Scope

The Committee will develop business procedures for both AT and the Contractors that will be implemented to:

- Reduce the potential for poor preparation before a SWS, and
- Ensure the most effective level of resources will be used when working in SWS.

Membership

| | |
|------------------------------|---------------------------|
| Terry Carter, chair | AT, Edson District |
| Nick Bucyk | AT, Edmonton |
| John Carter | AHS, Smith |
| Terry Hood | Volker Stevin, Lethbridge |
| Dale Kutz | AT, Athabasca District |
| Moh Lali | AT, Edmonton |
| Rick Lemire | AT, Lethbridge District |
| Steve Otto, committee scribe | AT, Edmonton |
| Dwight Rewega | TSMI, Vegreville |

Topics to be discussed

| | |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>JOINT</i> | Winter Readiness Post-storm debriefings/reviews Public and internal communications Public expectations (including trucking associations) Accountability SWS Audit procedures |
| <i>AT</i> | Additional Resources within the department Road Closures Level of service and highway classification Specification changes |
| <i>CONTRACOR</i> | Salt Shed Capacity Resources Availability of Salt Spare Operators on major routes |

Tasks and Deliverables

1. Discuss topics and develop a statement of problems with current practices, possible solutions and recommended action by both AT and Contractors.
2. Report by the Committee on the current practices discussed in Task 1 compared to the guidelines in the *Contract Administration Manual (Highways and Bridge Maintenance) ver. 2, 2003*, to document the extent of change needed.
3. Develop the first draft, AT business processes for SWS.
4. Develop the first draft, Contractor business processes for SWS.
5. Review both draft documents.
6. Submit both documents for approval.

Schedule

- Kick-off meeting May 4 2004, Room 208 Twin Atria
- Other meetings as determined by the Committee
- 1st drafts of AT and Contractor Business Processes developed by Committee, by 29 June 2004
- Final drafts of AT and Contractor Business Processes submitted to Steering Committee, by July 16, 2004
- Final drafts of AT and Contractor Business Processes approved by AT Divisional Executive Committee, by 30 July 2004

Communications

Committee members are responsible to keep members of the ARHCA and AT informed of work in progress.

Messages, suggestions and complaints from outside the committee are to be directed through Terry Carter (AT) and Terry Hood (Contractors).

Appendix B

Storm Definitions

1. **Normal Storms:** The majority of storms fought in a winter are not severe storms.
2. **Minor Severe Storms:** Many winter storms with severe conditions do not last long enough or cover enough area to be considered “severe storms” generally, except at a local level. Maintenance forces could use additional resources at the time, but the event is either over too soon or it is impractical to reasonably bring in equipment for the short time and limited area requiring it.
3. **Severe Storms:** As a winter storm increases in severity (duration, extent and intensity), there will be a requirement for additional conventional snow and ice control equipment to address it, and for some types of storms {i.e., freezing rain} lasting for extended durations, additional snow and ice control chemicals. Maintenance decisions made during these conditions and the resources allocated to fight the storm will have a considerable effect on the outcome of the winter road conditions in most circumstances.
4. **Extreme Storms:** There is a point at which a severe storm can become an extreme storm. This is usually due to a combination of wetter, heavier snowfall in combination with high winds resulting in blowing and drifting snow. Extreme storms will almost certainly result in visibility conditions such that winter maintenance operations will become very hazardous to the snowplow operators (and the public) and there is a high probability they will need to cease operations for several hours until conditions improve. Road closures may be warranted and the road conditions will deteriorate to “poor winter driving conditions” or worse (i.e., “impassable” requiring physical closure due to snowfall accumulations and drifting.) The problems with extreme storms are compounded when the storm starts off “warm” and turns very cold afterwards. When a storm becomes “extreme”, then the snow and ice removal operation likely need alternative equipment afterwards such as graders, snowblowers, etc., as the road conditions typically exceed the capability of the snowplows to maintain it effectively.
5. **Severe Outcomes:** Once the storm is over, the winter road conditions depend both on the severity of the storm, the ability of the maintenance forces to control ice and snow accumulations during the storm, and the subsequent weather conditions. If the temperatures remain relatively warm during and after the storm (single digit minus temperatures or warmer), even if the storm was severe/extreme, it may not cause significant problems for winter maintenance forces to cleanup afterwards. If the temperatures become very cold, and/or there are a number of winter storms in short succession, then it will very much diminish the likelihood that the highways will be returned to “good winter driving conditions” within the timelines of the “Highway Maintenance Guidelines and Level of Service Manual”.

Severe outcomes are most likely with severe/extreme storms or a significant freezing rain event, followed by a drop in temperature below the effective temperatures of snow and ice control chemicals. Cold temperatures also make mechanical means of snow and ice control much more difficult as they increase the solidity of the ice/snowpack and the difficulty for snowplows, and even graders, to remove it. If conditions warm up shortly after a storm, a “severe” storm might not have that severe an outcome. If the conditions turn very cold after the storm, almost any storm will have a much more severe outcome than would otherwise be expected.

Appendix C

PROTOCOL FOR WINTER READINESS - SAND & SALT SUPPLY

ISSUE:

The Department needs to assure that there will be sufficient winter sand and salt in stockpile prior to the winter season.

PROTOCOL:

- The goal of the department and the contractor should be to have all sand in place, freeze-proofing complete, and the salt sheds refilled prior to the onset of full snowplow truck availability. Although the fall can be a busy time of year for completion of the summer program, winter preparedness must be a priority.
- As soon as the winter season is over, the Maintenance Contract Inspector (MCI) shall determine the quantity of sand remaining in stockpile at each maintenance yard. This quantity shall be subtracted from the normal yearly sand requirement for that beat to obtain the quantity required for the next winter season.
- Once the sand quantity required is known, the MCI will issue a work order for sand supply. Work order details as follows:
 - Normally should be issued by mid-May at the latest, earlier if possible.
 - A minimal amount is required to be in stockpile prior to the earliest expected winter event. Note, the previous year's surplus may be sufficient.
 - All sand should be in stockpile well before the anticipated onset of winter to allow time for freeze-proofing and refilling of the salt storage sheds. Completion date should be determined using the joint work planning process.
- The work order for freeze-proofing the sand stockpiles should also be issued. Work order details as follows:
 - Normally should be issued in conjunction with the sand supply work order.
 - Contractors will normally not freeze-proof stockpiles too early due to environmental concerns. If, however, the contractor's sand stockpile site is covered, this is a non-issue and the freeze-proofing can be done very early. Early freeze-proofing is a good idea whenever possible as this will alleviate the pressure on freeze-proofing resources later in the fall.
 - All freeze-proofing should be completed well before the anticipated onset of winter to allow time for refilling of the salt storage sheds. Completion date should be determined using the joint work planning process.
- Salt supply work orders will be issued to allow contractors to fill salt sheds during the summer months. Work order details as follows:
 - Normally should be issued by mid-May at the latest.
 - Quantity will be sufficient to fill storage shed. If storage shed capacity exceeds yearly salt requirement, the quantity may be limited to the yearly salt requirement. If the contractor desires to exceed this quantity, he shall submit a proposal to the MCI citing the reasons for the overage.

- All storage sheds should be full well before the anticipated onset of winter to allow time for freeze-proofing and refilling of the salt storage sheds.
- There may be circumstances when these requirements can be relaxed and the goal of having all material resources in place by the onset of full snowplow truck availability can be met. A few examples are:
 - Contractor has sufficient salt storage capacity to alleviate concerns that freeze-proofing the sand with salt will deplete the salt inventory.
 - Contractor is using materials or processes other than salt for freeze-proofing sand, again alleviating concerns that freeze-proofing will deplete the salt inventory.
 - The Contractor may have difficulty producing and stockpiling the required tonnage of sand. The Contractor and the department will discuss this type of problem with material supply as early as possible in order to avoid running out later in the winter.

In these cases, the contractor shall submit his plan to the MCI and if accepted, the work orders can be adjusted appropriately.

Appendix E

PROTOCOL FOR MOVING CONTRACTOR RESOURCES BETWEEN CONTRACT AREAS

General: Severe winter storms can produce poor highway conditions or road closures that can not be adequately worked on with the contractor's existing number of trucks, graders and operators. Specification 51.2.4 allows Alberta Transportation to direct a contractor to work outside normal contract boundaries on contract-related items, in emergency situations.

This protocol is not intended for those times when a contractor crosses over into an adjacent contract area at the end of a beat, to respond to local conditions. In this case, if there had not been a pre-arranged agreement between the two contractors, the department expects that at least the operator will communicate to the other contractor to let him know of the conditions and need to dispatch equipment, and proceed to work outside his normal area for short periods. These types of short term, informal agreements need to be discussed as part of pre-season preparation.

This document outlines the procedures and responsibilities for using a contractor's equipment and employees outside the normal contact areas in emergency conditions. The contractor who is working outside of his normal area is the Supplier. The contractor in the area affected by the severe winter storm is the Recipient.

In broad terms, the Supplier will act as if he was a sub-contractor to the Recipient. The Recipient will provide direction, supervision and materials to the Supplier during the course of the work. The Supplier will continue meet his own standards for personnel administration, safety and reporting work while working in the Recipients area. Specification 51.2.12 requires that the Recipient ensure that sub-contractors provide evidence of comparable insurance; for work during emergencies this requirement is waived by the department when the sub-contractor (i.e. the Supplier) holds another highway maintenance contract.

Process:

1. The MCI in the Recipients area recommends to his Operations Manager that additional resources are needed to respond to existing or anticipated weather and highway conditions. This recommendation will be made after the MCI and local superintendent discuss whether the Recipient will be able to meet specified response times to bring the overall highway network back to good winter driving conditions.
2. The Recipients Operations Manager (or designate) contacts other districts in the province to find an area that can provide trucks or graders. The Operations Managers in the Supplier's area must agree that this equipment is surplus to immediate local needs.
3. An MCI in the Supplier's area creates a work order to the Supplier, directing him to work in the Recipients area. The work order includes an extra work item for payment of subsistence expenses. This work order, or separate supporting documentation should include details of:
 - The number of hours of work anticipated in the Recipients area (including paid travel time both ways)
 - The equipment to be sent, including crew pickups, arrow boards/message boards, foreman, flag crews, or any other resource provided by the Supplier

- The name, contact information and location that the Supplier's operators will be met by a representative of the Recipient.
 - A description of the type of work to be done, and the general area that the Supplier will be working in.
4. The Recipient will provide a contact person at the location specified in the work order. This person will brief the incoming operators on:
 - Stockpile and refueling locations.
 - Highways to be worked on.
 - Specific work to be done (i.e. clearing one lane, clearing other lanes, removing packed snow & ice, spreading materials, etc.).
 - Local hazards and areas that require additional care and caution.
 - Communications – check that the incoming operators can establish contact with the Receiving contractor's foreman.
 - Arrangements for off-duty time (hotel, restaurants, etc.).
 - Issues related to supply and changing of snowplow blades should be sorted out between the Supplier and Recipient.
 5. The Recipient provides the loader and all sand/salt material (the Supplier may send the first load with the unit). Where possible, the Recipient will provide a loader operator, but when this is not possible the Supplier's operators will load their own hoppers. The Supplier's operators will only do on-highway work in their own equipment.
 6. The Department is responsible to pay for meals and accommodations for all of the Supplier's employees while they are working in the Recipients area, under the "99" work order item for subsistence. Meals and incidentals will be reimbursed according to the department's disbursements schedule, while accommodations will be paid by actual value of receipts. The Supplier is responsible to pay for fuel, blades and repairs to his equipment.
 7. The Supplier's equipment and operators can be recalled at any time to work in their own area. Otherwise, the Recipients superintendent will release the extra equipment back after getting the consent of the local MCI.
 8. Responsibility: The Recipient is responsible for actions to improve road conditions, regardless of which company's employees were involved in the work. The Supplier is responsible for his own employee's negligent actions, regardless of where these actions happened.
 9. The Supplier's MCI closes the work order once all of the equipment and operators are back in their own area.
 10. Alberta Transportation district staff will need to create a new segment in each contract for 'working outside contract area'.

Appendix F

PROTOCOL FOR CONTRACTOR USE OF ADDITIONAL/ALTERNATIVE EQUIPMENT

ISSUE:

During severe winter storm events the highway maintenance contractor may require additional/alternative equipment resources to facilitate more effective snow and ice control efforts.

PROTOCOL:

- The need for additional/alternative equipment can be identified either by the highway maintenance contractor or the department.
- The most common need is for additional motor graders. Loaders, snowblowers, tractors, liquid de-icer spreaders, etc. are other examples of additional/alternative equipment potentially required.
- The management of resources during snow and ice removal operations is the responsibility of the contractor. It is expected that the contractor will identify the need for additional/alternative equipment. The contractor shall request a verbal authorization from the engineer prior to mobilizing any additional equipment. If the engineer cannot be contacted, a message should be left and the contractor is authorized to proceed with the equipment mobilization as an emergency situation. The department will issue a work order for the additional equipment later.
Any conflicts arising from the use of additional or alternate equipment will be addressed by the dispute resolution process in the partnering agreement.
- Payment for the additional equipment will be made at the applicable unit prices or by extra work if there are no unit prices for that equipment.
If the amount of equipment used is greater than stipulated in the contractor's snow and ice control plan, payment can be by extra work and will include mobilization and other reasonable expenses. For example, the contractor's snow and ice control plan stipulates a certain number of motor graders will be available for snow and ice control. Any additional graders that the contractor hires or brings in will be paid for as extra work. Note, if one or more of the contractually required graders cannot respond the replacement grader will be paid at the applicable unit price, unless extenuating circumstances apply. The Contractor will track extra equipment and maintenance costs incurred from this unexpected work. The department will review these additional costs for compensation after the storm.
- All involved must realize that the greater the effort towards mechanical snow/ice removal (e.g. motor graders, Sandvik blades, etc.), the greater the potential for damage to the pavement surface, especially chip seal. If such a course of action is taken, the equipment needs to be operated in a manner that seeks to minimize pavement damage. If damage occurs, it must be reported promptly to the department and a decision made on whether or not to continue the operation.

- It is important that everyone involved in management of resources in severe winter storms understand that highway condition is paramount and costs are secondary. Discussion regarding payment issues for additional equipment should not be occurring during severe winter storms. This is a partnering issue and everyone must trust that payment issues will be settled fairly and equitably after the emergency has passed. Foremen and Maintenance Contract Inspectors need to be focusing efforts on returning the highways to good winter driving conditions, not dollars.
- Public and operator safety must be considered when using alternative equipment, particularly slow moving vehicles such as snow blowers and loaders. Poor visibility that often accompanies severe storms means that all equipment must have appropriate lights and other warning devices, and may justify additional manpower and equipment for traffic control.
- The use of additional or alternative equipment is a judgement call. Because severe storms are rare events, it is better to over-react and use additional resources than to continue with the standard mix of equipment.

Appendix G

PROTOCOL FOR POST STORM REVIEW

GENERAL:

It is imperative in the interest of accountability, service to the public and continual process improvement that the contractor response to winter storms be reviewed at a post storm review (PSR). The Contractor Superintendent and the Operations Manager should decide who the best participants are prior to each review meeting.

PROTOCOL:

- A PSR should be conducted after all severe winter storms, in particular those that do not meet public expectations (i.e. more than the usual number of complaints).
- In general, the PSR can be conducted at the next operational planning meeting. If, however, there appears to be significant issues arising from a particular storm, the Operations Manager or the Contractor may schedule a meeting sooner.
- The focus of the PSR should be constructive and geared to process improvement. There should be no discussion related to any punitive measures. Any such discussion should be deferred to a management meeting.
- A special emphasis should be made during the review to find opportunities to improve communications between all parties during these severe storms.
- The following sample snowplow truck hour spreadsheet is a suggested tool for use at a PSR. This spreadsheet provides a graphical view of the snowplow truck response over a period of days. It is broken down to shop and unit number. It is expected to generate discussion as to the level of effort expended from the onset of the storm to the return to good driving conditions. Notations should be made regarding weather (forecast & actual), road conditions, snowplow breaks in service (e.g. breakdowns, hours of service breaks, etc.), etc.

- The discussion and any recommended actions arising from the PSR should be captured in the meeting minutes.
- Future use of technology, particularly the Automated Vehicle Locating System (AVLS) has the potential to help the contractor's foremen allocate his resources most efficiently.

Appendix H

PROTOCOL FOR OWNER'S DUE DILIGENCE FOR WINTER OPERATIONS

ISSUE:

As an owner, Alberta Transportation processes must demonstrate that the department is being duly diligent in ensuring the highway maintenance contractors are meeting their contractual requirements for snow and ice control.

PROCESS:

- The key contractual requirement is that the contractor must comply with the accepted snow and ice control plan. As such, the department and contractor should annually review the plan and any proposed changes well before the beginning of winter maintenance activities. Changes to the snow and ice control plan must be accepted by the department and documented.
- Snowplow truck and loader availability is to be reported on the approved form (Appendix D).
- It is the Contractor's responsibility to ensure that snowplow operators are competent to perform the work. During the Pre-Winter Strategy Review Meeting, the department should review the process used by the contractor to ensure that all plow operators have a valid license and the necessary training.
- The department should conduct an annual Snowplow Check. The intent of the Snowplow Check is to confirm that the contractor's snowplows are able to respond within the time allowed in Specification 52.1.5, with the least disruption to the Contractor's operations. Done in one shop chosen at random per CMA per year
 - Conducted by an MCI and/or Operations Engineer, at the contractor's shop.
 - The Check will be done with little or no notice during the truck availability period for the shop AND when there is reasonable expectation of weather and road conditions that would require winter maintenance operations, with notification to the foreman or contractor designate for the site at the time of the inspection.
 - The department will check:
 - Mechanical safety of trucks in the shop (CVIP inspection stickers, obvious mechanical issues, etc.)
 - Records of a pre-winter mechanical inspection of all trucks (spreader, power float and other hydraulic & electrical truck equipment in operating condition; most recent calibration records)
 - All trucks in the shop are ready for winter operations
 - Loader operational and meets specifications.
 - Warning lights, flags & reflectors installed correctly (including alignment of lights)

- For trucks not at the shop, the truck locations and potential affect on response will be recorded.
- Operators list.
- Valid operator's license for operators at the shop.
- For operators not at the shop, the operator's location and potential affect on response will be recorded.
- Any problems noted are
 - Recorded
 - Inform shop foreman or contractor superintendent
 - Resolution discussed at next operational planning meeting
- Snowplow Checks will be documented using a standard form provided by the department.