

**PART E**  
**SPECIFICATIONS**

## **PART E - SPECIFICATIONS**

### **GENERAL**

#### **E1. GENERAL**

E1.1 These Specifications shall apply to the Work.

#### **E2. SNOW CLEARING REQUIREMENTS**

##### **E2.1 GENERAL WORK**

- (1) The entire shoulder width of highway type pavement shall be cleared of snow during the snow clearing operation.
- (2) The entire length of the curb along the centre median shall be cleared to the face of the curb.
- (3) Snow shall be cleared from centre median crosswalks and shall be stored on the side boulevards.
- (4) Snow from centre median openings and traffic storage lanes shall be removed and stored in the side boulevards.
- (5) Windrows at all intersections, cross walks, corridors, railway crossing and private approaches shall be removed in the initial clearing operations. The windrows shall be pushed downstream of traffic or into available storage area on the street right-of-way in order to eliminate blind spots for motorists. Snow shall not be piled on boulevards at corners so as to block visibility of vehicles moving through the intersection.
- (6) Windrows at pedestrian corridors shall be cleared for a distance of fifteen (15) metres approaching the corridor and five (5) metres leaving the corridor on undivided roadways and for a distance of fifteen (15) metres approaching the corridor on divided roadways.
- (7) Windrows at bus stops shall be removed to a distance of 12 m upstream from the bus stop sign. The bus stop platform shall be level to provide a safe footing for pedestrians.
- (8) Snow windrows at hydrants shall be removed a loader bucket width and a path cleared to hard surface from the curb to the hydrant.
- (9) Snow windrows shall be removed a loader bucket width and a path cleared to hard surface from the curb to the sidewalk at a limited number of locations designated as handicapped access. Actual addresses will be supplied to the Contractor after Contract award.
- (10) Snow shall be removed around all G.R.E.A.T. (Guard Rail Energy Absorbing Terminal) and Energite Barrel installations. The G.R.E.A.T. units are used as crash cushions on the ends of guard rails to avoid abrupt stoppage of a vehicle. The Energite Barrel installations are used as crash cushions near overhead signs or any posts which do not have breakaway bases. This work must be done carefully (by hand where necessary) such that the installations are not hit by snow clearing equipment or left covered in snow. The locations of the limited number of installations will be supplied to the Contractor after the award.

- (11) Where adequate storage exists adjacent to the street, snow spillage onto the street as a result of the snow clearing operation shall be removed immediately by the Contractor. Any snow not removed may be removed by the City and the cost of the Work charged to the Contractor.
- (12) Where adequate storage is not available on the boulevard adjacent to the street, and where reasonable care is employed, snow spillage onto adjacent sidewalk area will be removed by the City at its own cost.
- (13) The City reserves the right, at its sole discretion, to allow windrow snow storage on the curb lane where no storage exists, provided that a reasonable attempt, satisfactory to the Contract Administrator or his designate, is made to minimize the extent of the encroachment during the Contractor's snow clearing operation. This storage shall only be utilized when specifically directed to do so by the Contract Administrator or his designate and only during unusual snow and blizzard conditions.
- (14) Snow shall not be deposited on islands between a yield or turnoff and the main roadway.
- (15) Snow shall not be stored or deposited on private property.
- (16) Snow from snow clearing operations shall not be deposited in sidewalk areas. All sidewalk ends at intersections must be cleared of snow in order to provide access for pedestrians.
- (17) Snow from intersection windrows shall not be placed in bus stop areas.

#### E2.2 PRIORITY II (BUS ROUTES/COLLECTORS) STREETS (See Appendix "A")

- (1) Snow clearing activities on Priority II streets includes:
  - (i) Full width snow clearing and hauling.
  - (ii) Curb lane snow clearing
  - (iii) Truck plow snow clearing.
  - (iv) Interim plowing during major snowfalls.
  - (v) Other winter maintenance work.
- (2) Snow clearing on Priority II streets may be required after:
  - (i) A recent accumulation of 5 cm or more of snowfall.
  - (ii) Poor street conditions caused by less than 5 cm of recent snow accumulation accompanied by snow drifting.
  - (iii) Gradual accumulation of snowfall results in poor street conditions.
- (3) Priority II streets shall be completed within a twenty-four (24) hour period for a clearing operation of a recent accumulation following the time of commencement designated by the Contract Administrator.
- (4) Priority II streets shall be cleared to bare pavement over the full pavement width. The Contractor shall wing back snow windrows in order to create the required storage as directed by the Contract Administrator.
- (5) Payment for the full width snow clearing of Priority II streets will be made at the unit price Bid per lane kilometre and all the work herein described shall be considered as incidental to the Contract and no further compensation will be considered.

#### E2.3 PRIORITY III (RESIDENTIAL) STREETS (See Appendix "B")

- (1) Residential streets shall normally be cleared after:

- (i) A recent snow accumulation of 10 cm or more.
  - (ii) Poor street conditions caused by less than 10 cm of recent snow accumulation accompanied by snow drifting.
  - (iii) Gradual accumulation of snowfall resulting in poor street conditions.
- (2) Residential streets shall normally be cleared after Priority II streets.
  - (3) Priority III streets shall be completed within a thirty-six (36) hour period following the commencement time designated by the Contract Administrator.

When Priority III streets are plowed subsequent to the clearing operation of Priority II streets, the Priority III streets shall be completed within forty-eight (48) hours following the commencement time for the clearing of the Priority II streets.

- (4) Priority III streets shall be cleared to bare pavement over the full pavement width. The Contractor shall wing back snow windrows in order to create the required storage as directed by the Contract Administrator.

Notwithstanding the requirements of this specification, abnormal snow and ice conditions may make it impossible to adequately clear the Priority III streets to bare pavement. On those occasions, the Contract Administrator shall determine the level of snow clearing required and the time required to complete the operation.

- (5) Payment for the full width snow clearing of Priority III streets will be made at the unit price Bid per lane kilometre and all the Work herein described shall be considered as incidental to the Contract and no further compensation will be considered.

### **E3. HOURLY EQUIPMENT SERVICES**

#### **E3.1 GENERAL**

- (1) Snow clearing equipment shall be supplied on an hourly basis when requested by the Contract Administrator for winter maintenance activities between storms and opening up streets and keeping them open during major snow storms and blizzards.
- (2) Snow hauling equipment shall be supplied on an hourly basis when requested by the Contract Administrator for the loading and hauling away of snow between major snowfalls.
- (3) Any equipment supplied by the Contractor on an hourly basis shall meet the following specifications:
  - **Semi-Trailer Dump Trucks:** Category 3 GVW 36,500 kg
  - **J2 Class Loaders:** Rubber Tired - 4 Wheel Drive Loader, SAE Net Horsepower - 75-125 HP, Operating Weight - 15,000-20,000 lbs., Bucket Size – 1.2 – 2.3 cu. yd.
  - **J3 Class Loaders:** Rubber Tired - 4 Wheel Drive Loader, SAE Net Horsepower - 100-150 HP, Oper. Weight - 20,000-25,000 lbs., Bucket Size – 2.3 – 3.2 cu. yd.
  - **J5 Class Loaders:** Rubber Tired - 4 Wheel Drive Loader, SAE Net Horsepower - Minimum 150 HP, Operating Weight - 30,000-38,000 lbs Bucket Size – 3.2 cu. yd. and over.
  - **K4 Class Motor Graders:** Minimum 140 Flywheel Horsepower

- **K5 Class Motor Graders:** Minimum 160 Flywheel Horsepower

- (4) Contract supervision shall be in accordance with D15 of the Supplemental Conditions.
- (5) The Contract Administrator may request snow clearing equipment on an hourly basis up to the number of pieces of equipment specified in D7.
- (6) Contractors will be required to fill out approved work tickets showing hours of work, type of equipment, equipment model and serial number. All work tickets must be signed by the City inspector and a representative of the Contractor to be valid.
- (7) Payment for hourly equipment will be made based on the hours actually worked and the unit price per hour shown in Form B: Schedule of Prices. There will be no overtime premium for Work under this Contract.

**E4. EQUIPMENT**

**E4.1 LIGHTING**

Each vehicle and each piece of equipment shall be provided with all of the necessary lighting prescribed by the motor vehicle laws of the Province of Manitoba.

Notwithstanding the generality of the foregoing, the Contractor shall ensure that all equipment is equipped with lighting systems sufficient to facilitate the work. At a minimum, all equipment must be equipped with the following lighting:

- (1) at least two headlights;
- (2) at least two rear running lights;
- (3) turning signals front and rear;
- (4) stop light at rear;
- (5) at least one flashing or oscillating blue or amber light, clearly visible in all directions;
- (6) if the machine is in excess of 2 metres wide, at least four clearance lights (one green or amber light on each side at the front, facing the front, and one red light on each side at the rear facing rear-ward).

**E4.2 IDENTIFICATION**

All equipment shall be clearly labelled, indicating the Contractor's name and unit number. Letters and numbers used for identification purposes must be a minimum of 100 mm in height and positioned in such a manner as to be clearly visible when standing at either side of the machine.

**E4.3 COMMUNICATION**

At least one piece of equipment in a crew working in a specific area must have a means of two-way communications with the Contractor's Supervisor and office.

**E5. MEASUREMENT AND PAYMENT**

**E5.1** This section will govern payment for full width clearing of snow and hauling services for snow removal performed by the Contractor which include:

- (1) Clearing and hauling services for snow after a recent accumulation of snow;

- (2) Clearing and hauling services after a gradual accumulation of snow where, in the opinion of the Contract Administrator, such clearing and hauling services are warranted;
- (3) Clearing and hauling services after a recent accumulation of snow combined with a gradual accumulation of snow; and
- (4) Maintenance snow clearing services between storms and keeping streets open during major snow storms and/or blizzards

on the streets specified in this Contract.

- E5.2 In this Contract, each such direction by the Contract Administrator for clearing and hauling services for snow removal and the performance thereof by the Contractor shall be referred to as a "clearing operation".
- E5.3 The Contract Administrator will have the authority to determine whether any clearing and hauling operation constitutes a recent accumulation, a gradual accumulation or a combination of the two. The guideline to be utilized by the Contract Administrator for determining whether a clearing operation is a recent accumulation or a gradual accumulation will be that, where 5 cm or more of snow has fallen over the 48 hour period preceding the direction to commence clearing services, the accumulation will be considered a recent accumulation. Otherwise, the clearing operation will be considered a gradual accumulation.
- E5.4 Payment will be made for full width clearing and hauling operations on Priority II (Collector) Streets and Priority III (Residential) streets based on the unit price per lane kilometre and a snow accumulation factor (F) which is dependent on the quantity of snowfall and the type of snow accumulation. The payment for all clearing operations will be based on multiplying the unit price Bid (R) for items (1) to (3), on Form B: Schedule of Prices ( Unit Price), as the case may be, by the length in kilometres of traffic lanes cleared (L), as determined by the Contract Administrator, multiplied by the snow accumulation factor (F), as determined by the Contract Administrator; or  $\text{Payment} = R \times L \times F$ .

The snow accumulation for purposes of payment for a recent accumulation shall be the quantity of snow deemed to be cleared/hailed by the Contractor as determined by the Contract Administrator in accordance with this section. There may be hourly snow hauling, plowing and/or salting operations carried on by others on some portions of the street systems affected by this Contract. Therefore, the depth of the snow accumulation to be used for payment for the removal of a recent accumulation will be that portion of snow that has recently fallen immediately preceding the start of a clearing operation and during the said operation, but not including cleared or removed by others or by environmental processes, as determined solely by the Contract Administrator. The depth of snowfall will be based on official reports from a weather consulting service. Notice of any dispute by the City arising from the amount of snow accumulation used to calculate payments for a recent clearing operation shall be forwarded to the Contract Administrator within 15 days of the City notifying the Contractor of the amounts used for payment for a given clearing operation. Failure by the Contractor to give notice of such dispute within the time specified shall preclude the Contractor from disputing the amount for which the City will pay.

No payment will be made for gradual accumulation after March 15 of the Contract year in the event that all of the gradual accumulation has completely melted and does not physically exist on the street at the time of a plowing operation initiated by a recent accumulation. This determination will be made by the Contract Administrator.

The snow accumulation factor will be determined by the appropriate formula based on the type of accumulation and the quantity of snowfall. The formulae to be used to calculate the snow

accumulation factor for each payment scenario are identified in the following table and are further detailed in the sections and examples following the table:

Type of Accumulation	Snowfall Measurement	Snow Accumulation Factor Calculation
(1) Recent	0-10.0 cm	$F = 1.000$
(2) Recent	Greater than 10.0 cm	$F = 1 + (0.90 \times (x - 10) / 10)$ where $x$ is the number of centimetres of recent accumulation snowfall.
(3) Gradual	Up to but not including Dec. 15 of Contract year or since the preceding clearing operation, whichever is later.	$F = 1.000$ or $F = (0.30 \times y) / 10$ , whichever value is greater, where $y$ is the number of centimetres of gradual accumulation snowfall.
(4) Combination of recent and gradual	0-10.0 cm ( $x$ ) of recent and $y$ cm of gradual up to but not including Dec. 15 of Contract year or since the preceding clearing operation, whichever is later.	$F = 1.000$ or $F = (x + (0.30 \times y)) / 10$ , whichever value is greater, where $x$ is the number of centimetres of recent accumulation snowfall and $y$ is the number of centimetres of gradual accumulation snowfall.
(5) Combination of recent and gradual	Greater than 10.0 cm of recent ( $x$ ) and $y$ cm of gradual up to but not including Dec. 15 of Contract year or since the preceding clearing operation, whichever is later.	$F = 1 + (0.90 \times (x - 10) / 10) + ((0.30 \times y) / 10)$ , where $x$ is the number of centimetres of recent accumulation snowfall and $y$ is the number of centimetres of gradual accumulation snowfall.

- (1) For a clearing operation required as a result of a recent accumulation of ten (10) cm or less (0-10 cm), the accumulation factor (F) is 1.00. Payment will be made at the unit price Bid multiplied by the length in kilometres of traffic lanes cleared multiplied by 1.000.

*Example: The total payment for a clearing operation after 9.3 cm of recent accumulation would be unit price Bid x lane kilometres x 1.000).*

- (2) For a clearing operation required as a result of a recent accumulation in excess of ten (10) cm, the accumulation factor will be determined by adding 1.000 (which is the factor for the first ten (10) cm) to 90% of the snow accumulation in excess of 10 centimetres divided by 10. Payment will be made at the unit price Bid multiplied by the length in kilometres of traffic lanes cleared multiplied by the snow accumulation factor.

*Example: The snow accumulation factor for a clearing operation after 14.3 cm of recent accumulation, would be based on the calculation,  $F=1+(0.9 \times (14.3-10)/10)=1.387$ . The total payment for the clearing operation would be (unit price Bid x lane kilometres x 1.387).*

- (3) For a clearing operation required as a result of a gradual accumulation, the snow accumulation factor would be 1.000 or 30% of the gradual accumulation divided by 10, whichever value is greater. Payment will be made at the unit price Bid multiplied by the length in kilometres of traffic lanes cleared multiplied by the snow accumulation factor.

*Example: Assume that, on February 28, the condition of the Priority III streets was such that a plowing operation was required and that no snowfall had occurred in the past 48 hours.*

*The date of the last clearing operation was January 28 and 19 cm of snowfall (gradual accumulation) had fallen since that date. The snow accumulation factor would be 30% of 19 cm divided by 10, or  $F = (0.30 \times 19) / 10 = 0.570$ . Since the calculated factor is less than 1.000, the greater value of 1.000 would be used and the total payment for the clearing operation would be (unit price Bid x lane kilometres x 1.000).*

- (4) For a clearing operation required as result of a recent accumulation of 10.0 cm or less (0-10 cm) and where there has also been gradual accumulation measured up to but not including December 15 of the Contract year or since the immediately preceding clearing operation, whichever is later, the snow accumulation factor will be 1.000 or the value calculated by adding the recent accumulation to 30% of the gradual accumulation and dividing the sum by 10, whichever value is greater. Payment will be made at the unit price Bid multiplied by the length in kilometres of traffic lanes cleared multiplied by the snow accumulation factor.

*Example: Assume that during the Contract year there has been a snowfall on January 20 of 5.0 cm with severe winds, and in the opinion of the Contract Administrator, there is need for a snow clearing operation. Assume further that 14.5 centimetres of snow has gradually accumulated between December 15th and the commencement of the recent accumulation on January 20th. The snow accumulation factor and payment would be calculated as follows:*

- i) *The recent accumulation of 5.0 cm is added to 30% of the gradual accumulation of 14.5 cm and the sum divided by 10 or  $F = (5.0 + (0.30 \times 14.5)) / 10 = 0.935$ . Since the calculated factor is less than 1.000, the total payment for the clearing operation would be (unit price Bid x lane kilometres x 1.000).*

*Assume that in the above scenario the snowfall on January 20th was 8.0 cm. Then the snow accumulation factor and payment would be calculated as follows:*

- ii) *The recent accumulation of 8.0 cm is added to 30% of the gradual accumulation of 14.5 cm and the sum divided by 10 or  $F = (8.0 + (0.30 \times 14.5)) / 10 = 1.235$ . The total payment for the clearing operation would be (unit price Bid x lane kilometres x 1.235).*

- (5) For a clearing operation required as result of a recent accumulation of greater than 10.0 cm and where there has also been gradual accumulation measured up to but not including December 15 of the Contract year or since the immediately preceding clearing operation, whichever is later, the snow accumulation factor will be determined by adding 1.000 (which is the factor for the first ten (10) cm of recent accumulation) to 90% of the recent snow accumulation in excess of 10 centimetres divided by 10 and then adding 30% of the gradual accumulation and divided by 10. Payment will be made at the unit price Bid multiplied by the length in kilometres of traffic lanes cleared multiplied by the snow accumulation factor.

*Example - Assume that during the Contract year there has been a snowfall on January 20 of 16.8 cm and, in the opinion of the Contract Administrator, there is need for a snow clearing operation. Assume further that 20.5 cm of snow has gradually accumulated between December 15th and the commencement of the recent accumulation on January 20th. The snow accumulation factor and payment would be calculated by adding 1.000 for the first 10 cm of recent accumulation to 90% of 6.8 cm (which is the recent snow accumulation in excess of 10 cm) divided by 10 and then adding 30% of 20.5 cm (which is the gradual accumulation) divided by 10, or  $F = 1.000 + (0.90 \times (16.8 - 10) / 10) + ((0.30 \times 20.5) / 10) = 2.227$ . The total payment for the clearing operation would be (unit price Bid x lane kilometres x 2.227).*



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- E5.5 Payment shall be made for snow clearing services, such as maintenance snow clearing between snow storms and snow clearing during major storms/blizzards, as specified in E3 of the Specifications at the hourly rate Bid per equipment class on Form B: Schedule of Prices (Unit Price), as the case may be, multiplied by the hours actually worked for each specific class as determined by the Contract Administrator.
- E5.6 Payment for wings, ice blades, and/or straight blades for Motor Graders engaged in a full width snow clearing operation shall be included in the unit price Bid per lane kilometre.
- E5.7 Those attachments specifically requested by the Contract Administrator or his designate will be compensated for at the same rate per hour as those specified in the "Hourly Rental Rate for Streets and Transportation Department - 2004/2005 Snow Season".

**E5.8 The City shall guarantee to pay to the Contractor a minimum amount (referred to as the "guaranteed minimum amount") equal to 40% of the Bid price for each Contract year shown on Form B: Schedule of Prices (Unit Price).**

Payment for Work done shall be as provided in E5 and all such payments shall be deducted from the guaranteed minimum amount.

On December 31st of the Contract year, all payments received by the Contractor under this Contract will be totalled and the total compared with 10% of the Total Bid Price. If the total of the payments received is less than 10% of the Total Bid Price, then the difference between the aforesaid figures will be paid to the Contractor as an advance on the guaranteed minimum amount. The amount of the advance will be set off against subsequent payments for work done by the Contractor.

On February 28th of the Contract year, all payments received by the Contractor under this Contract for work done and as an advance on the guaranteed minimum amount will be totalled and that total compared with 25% of the Total Bid Price. If the total of the payments received is less than 25% of the Total Bid Price, then the difference will be paid to the Contractor as an advance on the guaranteed minimum amount. The amounts of any advances received by the Contractor will be set off against subsequent payments for work done by the Contractor pursuant to the Contract.

At the conclusion of the Contract year, all payments received by the Contract or under this Contract for work done or as an advance on the guaranteed minimum amount will be totalled and that total compared with the guaranteed minimum amount. Only when the total of the payments received is less than the guaranteed minimum amount will additional monies be payable by the City to the Contractor under the terms of this Contract.

- E5.9 It is the City of Winnipeg's intent to hold back five (5) percent of progress estimates for all Work performed under this Contract as a damage deposit relating to D23 of the Specifications. These funds will be released when damages are rectified in accordance with D23.