

**FORM A: BID**  
(See B7)

1. Contract Title SUPPLY & DELIVERY OF TREE TRIMMING AERIAL DEVICE VEHICLES

2. Bidder

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Street

\_\_\_\_\_  
City

\_\_\_\_\_  
Province

\_\_\_\_\_  
Postal Code

\_\_\_\_\_  
Facsimile Number

(Mailing address if different)

\_\_\_\_\_  
Street or P.O. Box

\_\_\_\_\_  
City

\_\_\_\_\_  
Province

\_\_\_\_\_  
Postal Code

The Bidder is:

(Choose one)

a sole proprietor

a partnership

a corporation

carrying on business under the above name.

3. Contact Person

The Bidder hereby authorizes the following contact person to represent the Bidder for purposes of the Bid.

\_\_\_\_\_  
Contact Person

\_\_\_\_\_  
Title

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Facsimile Number

\_\_\_\_\_  
E-mail address

4. Definitions

All capitalized terms used in the Contract shall have the meanings ascribed to them in the General Conditions and D3.

5. Offer

The Bidder hereby offers to perform the Work in accordance with the Contract for the price(s), in Canadian funds, set out on Form B: Prices, appended hereto.

6. Commencement of the Work

The Bidder agrees that no Work shall commence until he is in receipt of a notice of award from the Award Authority authorizing the commencement of the Work.

7. Contract The Bidder agrees that the Bid Opportunity in its entirety shall be deemed to be incorporated in and to form a part of this offer notwithstanding that not all parts thereof are necessarily attached to or accompany this Bid.

8. Addenda The Bidder certifies that the following addenda have been received and agrees that they shall be deemed to form a part of the Contract:

No.	_____	Dated	_____
	_____		_____
	_____		_____

9. Time This offer shall be open for acceptance, binding and irrevocable for a period of sixty (60) Calendar Days following the Submission Deadline.

10. Signatures The Bidder or the Bidder's authorized official or officials have signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Signature of Bidder or  
Bidder's Authorized Official or Officials

\_\_\_\_\_

\_\_\_\_\_  
(Print here name and official capacity of individual whose signature appears above)

\_\_\_\_\_

\_\_\_\_\_  
(Print here name and official capacity of individual whose signature appears above)

**FORM B: PRICES**  
 (See B8)

**SUPPLY & DELIVERY OF TREE TRIMMING AERIAL DEVICE VEHICLES**

**UNIT PRICES**

ITEM NO.	DESCRIPTION	SPEC. REF.	UNIT	APPROX QTY	UNIT PRICE
1	Tree Trimming Aerial Device with Chipper Body	10022	Each	2	\$ _____
1a	Operator's Manual for Item 1	10022 (18.3)	Each	4	\$ _____
1b	Parts, Repair and Service Manuals for Item 1	10022 (18.3.1)	Each	2	\$ _____
1c	14 969 kg (33,000 lbs.) GVWR Cab & Chassis Vehicle for Item 1	10023	Each	2	\$ _____
1d	Operator's Manual for Item 1c	10023 (28.1)	Each	4	\$ _____
1e	Parts, Repair and Service Manuals for Item 1c	10023 (28.2)	Each	2	\$ _____
2	Over-Centre Tree Trimming Aerial Device	10024	Each	1	\$ _____
2a	Operator's Manual for Item 2	10024 (17.3)	Each	3	\$ _____
2b	Parts, Repair and Service Manuals for Item 2	10024 (17.3.1)	Each	2	\$ _____
2c	13 608 kg (30,000 lbs.) GVWR Cab & Chassis Vehicle for Item 2	10025	Each	1	\$ _____
2d	Operator's Manual for Item 2c	10025 (28.1)	Each	3	\$ _____
2e	Parts, Repair and Service Manuals for Item 2c	10025 (28.2)	Each	2	\$ _____

\_\_\_\_\_  
 Name of Bidder

**FORM N: DETAILED SPECIFICATIONS 10022**  
**ITEM 1**

**TREE TRIMMING AERIAL DEVICE WITH CHIPPER BODY**  
*(Forestry)*

**1.0 SCOPE**

- 1.1 It is the intent of these specifications to describe hydraulically operated, articulating aerial device vehicle complete with a nominal 3.35 m (11 ft.) dump body, installed on a conventional cab, single axle cab and chassis to be supplied by the Contractor. (See Detailed Specifications 10023 for chassis description).
- 1.2 The aerial device shall be the manufacturer's latest model, as may be modified by these specifications. The aerial device, including all auxiliary equipment, shall be furnished complete and ready for use. All parts not specifically mentioned, but which are required for the complete unit shall conform in strength, quality of material and workmanship, to the best standards and engineering practice of the industry.
- 1.2.1 It will be the responsibility of the bidder to inform the City of any errors or omissions in these specifications, for under this contract the contractor shall be held responsible for the design, performance, reliability and satisfactory operational function of the unit.
- 1.3 The ratings specified herein merely state the minimum values acceptable to the City, not implying that those values are sufficient for the design of the particular equipment being bid.

**2.0 STANDARDS**

- 2.1 Canadian Standards Association Standard CAN/CSA-C225-M00 Vehicle-Mounted Aerial Devices, forms an integral part of these specifications and shall have precedence in any conflict concerning minimum acceptable standards.
- 2.2 The completed aerial device vehicle shall comply with the Canadian Motor Vehicle Safety Act and the Manitoba Highway Traffic Act and all regulations thereunder, including, but not limited to, a Manitoba Government Inspection with safety sticker.
- 2.3 All welding and welding designs of the load supporting elements shall conform to the requirements of Canadian Standards Association Standard W47.1 and W59.

**3.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS**

- 3.1 All items in these specifications must be answered indicating compliance or non-compliance. **Bidders shall state "yes" for compliance or state deviation, or give reply where requested to do so.** Deviations shall be clearly stated and fully detailed. Alternatives will be considered subject to evaluation.
- 3.2 Each bidder is required to fill in every blank. **Failure to do so may be used as a basis for rejection of bid.**

**4.0 PERFORMANCE**

- 4.1 The aerial device vehicle and dump body shall be capable of operating safely and efficiently in any working position and in confined areas, and shall be suitable for use in a tree trimming vocation, during the summer and winter conditions normal to the City of Winnipeg.

**5.0 MAKE AND MODEL**

- 5.1 **State make and model of aerial device unit being bid.**\_\_\_\_\_

Note: Bidders shall complete Detailed Specifications 10023 for the supply & delivery of a 14 969 kg (33,000 lbs.) GVWR Cab & Chassis in accordance with the instructions given.

5.2 **State make and model of chipper body being bid.** \_\_\_\_\_

**6.0 WEIGHT DISTRIBUTION**

6.1 The completed vehicle shall not exceed the City of Winnipeg's limit for gross vehicle weight, axle and tire loads with the unit fully fuelled and operational, two (2) operators, a 3175 kg (7,000 lbs.) payload of wood chips, and 408 kg (900 lbs.) of trailer tongue weight.

Note: The City of Winnipeg and the Province of Manitoba limits the gross vehicle weight and axle and tire loads to:

- Front axle (steering axle) – 7300 kg (16,094 lbs.).
- Rear axle (single axle) – 9100 kg (20,062 lbs.).
- Tire load – 9 kilograms for each millimetre width of tire (approx. 500 lbs. per inch of tire width).

6.2 State the following weight distributions: (Note: All weight distributions stated shall include two (2) operators, a full hydraulic tank, and fully fuelled.)

a) Vehicle with no payload:

, Front axle weight: \_\_\_\_\_ kg  
, Rear axle weight: \_\_\_\_\_ kg  
, Total: \_\_\_\_\_ kg

b) Vehicle with 3175 kg (7,000 lbs.) of wood chips, 136 kg (300 lbs.) of cargo in compartment 1, 45 kg (100 lbs.) of cargo in both compartments 3 and 4, (see Section 11.0) and 408 kg (900 lbs.) of trailer tongue weight.

, Front axle weight: \_\_\_\_\_ kg  
, Rear axle weight: \_\_\_\_\_ kg  
, Total: \_\_\_\_\_ kg

6.3 Weigh scale ticket – the Contractor shall provide a certified weigh scale ticket upon delivery of the completed unit. The scale ticket shall include front and rear axle weights including two (2) operators and a full tank of fuel. \_\_\_\_\_

**7.0 AERIAL DEVICE**

7.1 Mid-mounted, two boom articulated aerial device with a raised platform height of 16.8 m (55 ft.), and a side reach of approx. 12.2 m (40 ft.). \_\_\_\_\_

7.2 Working height – 18.3 m (60 ft.), state. \_\_\_\_\_

- 7.3 Overall travel height (completed unit) – 4.01 m (158 in.) approx. State overall height. \_\_\_\_\_
  - 7.4 Rotation – continuous with shear ball type rotation bearing. \_\_\_\_\_
  - 7.5 Upper boom – fibreglass, insulated. \_\_\_\_\_
  - 7.5.1 Upper boom articulation – range of 270° from stored position. \_\_\_\_\_
  - 7.6 Upper boom storage support – saddle type support extending past the outer edges of the upper boom. \_\_\_\_\_
  - 7.6.1 The boom storage support shall include a securing strap or equivalent to fully secure the boom when travelling. \_\_\_\_\_
  - 7.7 Lower boom – steel with fibreglass insert, insulated. \_\_\_\_\_
  - 7.7.1 Lower boom articulation – range of 125° from stored position. \_\_\_\_\_
  - 7.7.2 Lower boom protection system – to prevent excessive down pressure when stowing lower boom. \_\_\_\_\_
  - 7.7.3 Lower boom storage provision – state details of storage provision. \_\_\_\_\_

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  - 7.8 Boom lift cylinders shall have externally adjustable counterbalance holding valves. \_\_\_\_\_
  - 7.9 Safety belt attachment – one (1), located at end of boom. \_\_\_\_\_
  - 7.10 Personnel platform – one (1) side-hung, single man fibreglass platform. Front mounted interior to exterior long-formed step required on one (1) side of bucket, 30.5 cm L x 12.7 cm W (12"L x 5"W) with abrasive non-slip surface. The bucket shall have toe space on three (3) sides. \_\_\_\_\_
  - 7.10.1 Nominal platform dimensions – 61 cm x 61 cm x 101.6 cm (24" x 24" x 40"). \_\_\_\_\_
  - 7.10.2 Platform capacity – 159 kg (350 lbs.). \_\_\_\_\_
  - 7.10.3 Chain saw holder – fibreglass, required on platform. \_\_\_\_\_
  - 7.11 Platform levelling system – automatic mechanical type. \_\_\_\_\_
  - 7.12 Platform dump system – platform to manually tilt (pivot) 100°. \_\_\_\_\_
  - 7.13 Aerial device shall be certifiable below 46 KVAC. A factory document to certify that the equipment is designed to withstand 100 KVAC (wet and dry) during testing is to be supplied upon delivery of the aerial device. The leakage during the test shall not exceed 1.5 micro amps per KV/ft. \_\_\_\_\_
- Note: Dielectric testing costs shall be paid for by the Contractor.
- 8.0 OUTRIGGERS**
- 8.1 Outrigger stabilizer supports – one (1) set required with a capacity to support all rated loads. \_\_\_\_\_

- 8.1.1 Base set – A-frame type, welded to front face of aerial device pedestal and to sub-frame. \_\_\_\_\_
- 8.2 Outrigger supports shall be designed to form an integral part of the sub-frame. \_\_\_\_\_
- 8.3 Outrigger hydraulic cylinders shall be equipped with pilot operated holding valves fully protected from damage. \_\_\_\_\_
- 8.4 Outrigger shoes – folding type, 30.5 cm x 30.5 cm (12" x 12"). \_\_\_\_\_
- 8.5 Stability requirements – to meet CSA Standard CAN/CSA-C225-M00. The use of ballast is not acceptable. \_\_\_\_\_
- 8.5.1 The Contractor shall perform a stability test on the completed unit in accordance with CSA Standard CAN/CSA-C225-M00 and shall provide a stability certificate showing the date and results of the test prior to final inspection. \_\_\_\_\_

**9.0 HYDRAULIC CONTROLS**

- 9.1 Platform controls – one (1) single lever control with double interlock, located at platform end of boom, protected from actuation. Control must be full metering. \_\_\_\_\_
- 9.1.1 Control levers shall permit multiple simultaneous boom movements. \_\_\_\_\_
- 9.1.2 Platform control valves and control levers to be enclosed in a fibreglass cover, fully accessible. \_\_\_\_\_
- 9.1.3 Emergency stop button – red palm button, instantaneously stops all motion (engine shutdown not acceptable). \_\_\_\_\_
- 9.2 Master control group – located at lower frame with controls for all bucket functions and emergency stop button. \_\_\_\_\_
- 9.2.1 Lower controls capable of positively overriding the platform controls. \_\_\_\_\_
- 9.3 Outrigger control levers – located on each side of unit, fully protected from damage and accidental actuation. Each control set to operate the outrigger on its respective side only. \_\_\_\_\_
- 9.3.1 Outrigger functions to be isolated from all other functions by a selector valve located with the left outrigger controls. \_\_\_\_\_
- 9.3.2 Outrigger down interlock – required on each outrigger to prevent aerial device operation if any outrigger is not in “down” position. \_\_\_\_\_
- 9.4 Dump hoist control – located alongside dump/aerial selector and passenger side outrigger controls. \_\_\_\_\_
- 9.5 All controls must be clearly identified with permanent, engraved type labels. Glued labels will not be accepted. \_\_\_\_\_

**10.0 CHIPPER BODY**

- 10.1 Material – all steel used in construction of chipper body shall be

- 14 ga. steel except where otherwise noted. State material being bid. \_\_\_\_\_
- 10.2 Length, outside – 3.35 m (11 ft.) approx., state. \_\_\_\_\_
- 10.3 Width, outside – 2.44 m (8 ft.) approx., state. \_\_\_\_\_
- 10.4 Height of sides – 1.6 m (63 in.) approx., state. \_\_\_\_\_
- 10.5 Side construction – formed, clean side style sides without vertical reinforcements, welded into a 1-piece design. \_\_\_\_\_
- 10.5.1 Air vents – top of each side to be complete with screened air vents, three (3) per side. \_\_\_\_\_
- 10.6 Tailgate – 61 cm (24 in.) height approx., 1-piece, passenger side hinged, driver side latched. \_\_\_\_\_
- 10.6.1 There shall be no gap between tailgate, floor and sides when tailgate is in the closed position. \_\_\_\_\_
- 10.7 Floor material – 12-ga. steel. State material. \_\_\_\_\_
- 10.7.1 Floor to have a 60° slope along the joint to the side-wall. Slope shall extend upward approx. 4 in. \_\_\_\_\_
- 10.7.2 Rear cross sill at tailgate – 20.3 cm (8 in.) channel, housing all lights and license plate. (See Section 14.0). \_\_\_\_\_
- 10.8 Hoist – double acting, hydraulic scissor lift hoist, state make, model and capacity. \_\_\_\_\_
- 10.8.1 Dumping angle – 50°. \_\_\_\_\_
- 10.9 Dump body prop – double prop, operable by a single person. State design. \_\_\_\_\_  
\_\_\_\_\_
- 10.9.1 Prop shall support dump body in raised position and permit servicing of hoist. \_\_\_\_\_
- 10.9.2 Dump body prop to be complete with receiving bracket. \_\_\_\_\_
- 10.10 Lower boom support saddle – located at top-rear of chipper body. Shall extend approx. 10.2 cm (4 in.) longitudinally and provide support to the side walls of the lower boom. Saddle to be padded to prevent chaffing of the lower boom. \_\_\_\_\_
- 10.11 Welding – all chipper body welds shall be continuous welds. \_\_\_\_\_
- 10.11.1 All welding performed shall conform to the best standards and practice of the industry. \_\_\_\_\_
- 10.11.2 The chipper body manufacturer shall have a documented quality control program in effect including inspection of welds by a qualified inspector. \_\_\_\_\_

**11.0 STORAGE COMPARTMENTS**

Driver's Side:



- 11.1 Compartment 1 – steel construction, 147 cm H x 122 cm W x 69 cm D (58"H x 48"W x 27"D) approx. c/w two (2) vertical flush mount doors with chrome or stainless steel hinges and hinge pins, mounted between chipper body and cab. \_\_\_\_\_
- 11.1.1 Shelves – two (2) steel shelves, approx. 46 cm W x 69 cm D (18"W x 27"D) c/w 5 cm (2 in.) front face lip, height adjustable @ 3 in. increments, mounted in left side of compartment 1. \_\_\_\_\_
- 11.1.2 Material hooks – four (4) required in right hand side compartment, fixed type, two (2) mounted to back wall, one (1) per side. \_\_\_\_\_
- 11.1.3 Rigid door springs – one (1) per door. \_\_\_\_\_
- 11.2 Compartment 2, ladder compartment – steel construction, located on driver's side, inside rear of chipper body, rear access, approx. 30.5 cm W x 63.5 cm H (12"W x 25"H) x full length. \_\_\_\_\_
- 11.2.1 Pole saw shelf – located directly above ladder compartment, 15 cm (6 in.) high approx., full length. \_\_\_\_\_
- 11.2.2 Top of ladder compartment and pole saw shelf shall be tapered @ 45° angle approx. \_\_\_\_\_
- 11.2.3 Rear door – steel construction, full height and width. \_\_\_\_\_
- Passenger's Side:
- 11.3 Compartment 3 – aluminum checkerplate construction, 66 cm L x 66 cm H x 46 cm D (26"L x 26"H x 18"D) approx., bottom hinged, corrosion resistant hinges, cables or check chains to hold door in horizontal position, frame mounted ahead or rear wheels. \_\_\_\_\_
- 11.3.1 Compartment 4 – aluminum checkerplate construction, 66 cm L x 66 cm H x 46 cm D (26"L x 26"H x 18"D) approx., bottom hinged, corrosion resistant hinges, cables or check chains to hold door in horizontal position, frame mounted behind rear wheels. \_\_\_\_\_
- 11.4 Door handles (all compartments) – Trimark stainless steel or chrome plated, paddle type, flush mounted, lockable w/3-sets of keys. \_\_\_\_\_
- 11.5 Door hinges and latches – chrome or stainless steel with adjustable striker plates. \_\_\_\_\_
- 11.6 Drip mouldings – required above door openings. \_\_\_\_\_
- 11.7 All compartment door openings shall be sealed using automotive, bulb type rubber gaskets. \_\_\_\_\_
- 11.8 Door locks – all locks for Compartments 1-4 shall be keyed alike. \_\_\_\_\_
- 11.9 Rubber bumpers and/or check chains are required on all compartment doors where applicable to prevent paint scuff and door damage. \_\_\_\_\_
- 11.10 All compartment floors shall be lined with Dry Deck matting or equivalent. \_\_\_\_\_

## 12.0 HYDRAULICS

- 12.1 PTO – constant mesh, Muncie Powerclutch or Chelsea equivalent. \_\_\_\_\_
- 12.1.1 Hydraulic shift with in-cab controls, operable from a normal driving position. \_\_\_\_\_
- 12.1.2 PTO hourmeter – non-resettable type, installed to record PTO operating hours. \_\_\_\_\_
- 12.2 Pump – supplied as per aerial device and dump body manufacturer’s recommendation to meet aerial and dump requirements and sized to eliminate the need for a 2-speed throttle system. State make and model being bid. \_\_\_\_\_
- 12.3 Hydraulic oil reservoir – steel construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge. \_\_\_\_\_
- 12.3.1 Suction strainer – 100 micron, replaceable, in-tank mounted. \_\_\_\_\_
- 12.4 Return line filter – 10 micron spin-on type, serviceable without oil loss. \_\_\_\_\_
- 12.5 Shut-off valve – ball type, located between reservoir and pump, secured in open position with a bracket and bolt. \_\_\_\_\_
- 12.6 Relief valve – located prior to aerial device and dump body functions, set at system pressure. Relief in outrigger isolation valve to be set 200 psi above aerial device system pressure. \_\_\_\_\_
- 12.7 Pressure gauge – glycerine filled, located at lower operating station. \_\_\_\_\_
- 12.8 Flashover protection system – required in hydraulic lines to boom tip. \_\_\_\_\_
- 12.9 Hydraulic oil – non-conductive, certified rating of 30 kV, Esso J13 or equal, state recommended oil being bid. \_\_\_\_\_
- 12.10 Emergency operating system – 12-Volt auxiliary power pack, must provide hydraulic power to all aerial device functions including elevation and rotation, accessible from both lower and upper controls. \_\_\_\_\_
- 12.10.1 System on/off switches – three (3) toggle type, spring loaded in “Off” position, located at master control group and each set of outrigger controls. One (1) captive air operated switch located at platform control station. \_\_\_\_\_
- 12.11 Steel hydraulic tubing – plated type, required where practicable except where flexibility is required. Tubing shall be guarded as required. \_\_\_\_\_
- 12.11.1 Hydraulic hoses – burst rated at 4-times working pressure, non-wire braid hoses, protected at all wear and scuff locations. \_\_\_\_\_
- 12.12 Hydraulic tool outlet – required at boom tip, set to operate at 30 L/min. (8 gpm) @ 13 790 kPa (2000 psi), suitable for use with open or closed centre tools. Control handle shall be spring centred with a detent in one direction. \_\_\_\_\_
- 12.12.1 Tool outlet shall be fitted with Bruning dripless quick couplers. Bruning outlet covers required for all fittings. \_\_\_\_\_

12.13 Selector valve – required for selecting aerial or dump functions, located on passenger side, accessible from ground level. \_\_\_\_\_

12.14 Dump valve shall be wired through the lower stow switch so as not to allow dump function when aerial is in the stowed position. \_\_\_\_\_

**13.0 CAB GUARD**

13.1 Cab guard – full width, extending from front bumper to back of cab, constructed of 5 cm x 5 cm x 3.2 mm (2" x 2" x 1/8") steel tubing covered with 3/4-G9 standard expanded metal. \_\_\_\_\_

13.1.1 Front of cab guard supported by two (2) supports bolted to front bumper. Spotlight mounting plate to be located at front-centre of cab guard. \_\_\_\_\_

13.2 Bucket support – heavy duty rubber located at rear of cab guard, suitable for keeping the bucket stationary in transport mode. \_\_\_\_\_

**14.0 ELECTRICAL AND LIGHTING**

14.1 All vehicle lighting shall conform to CMVSS and Manitoba Highway Traffic Act requirements. \_\_\_\_\_

14.2 Supplier installed lighting and lighting equipment shall be LED Truck-Lite (except where otherwise noted) and shall include the following components:

14.2.1 Combination stop, turn and taillights – two (2) P/N 44302R, with P/N 40700 mounting grommets, flush or recessed mounted in rear sill, flash rate 70-90 fpm. \_\_\_\_\_

14.2.2 High mounted taillights – two (2) P/N 44302R, with P/N 40700 mounting grommets, flush mounted in top corners of body, flash rate 70-90 fpm. \_\_\_\_\_

14.2.3 Back-up lights – two (2) P/N 44206C with 40700 mounting grommets, flush or recessed mounted in rear sill. \_\_\_\_\_

14.2.4 Light cluster – three (3) P/N 10250R with P/N 10700 mounting grommets, top centre mounted at rear of body, protected to avoid damage. \_\_\_\_\_

14.2.5 Clearance lights – P/N 10250R and 10250Y with P/N 10700 mounting grommets, flush or recessed mounted. \_\_\_\_\_

14.2.6 Clearance lamp mounting locations:

i) Sides – two (2) per side, one (1) top-rear corner mounted in body, one (1) lower-rear corner mounted in body. \_\_\_\_\_

ii) Rear – two (2), located one on each outermost corner or rear sill. \_\_\_\_\_

14.2.7 License plate lamp – P/N 15040, complete with license plate bracket. \_\_\_\_\_

14.2.8 Lighting harnesses – Truck-Lite 50 Series harness system, properly routed and secured. \_\_\_\_\_

- 14.2.9 All harnesses shall be internally grounded, no exceptions. 

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- 14.3 Junction box – P/N 50400, complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame, protected from road spray. 

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- 14.4 All plug-in connectors shall be coated with Truck-Lite NYK Compound prior to assemble. 

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- 14.5 Trailer connector – 6-pole, Pollak 11-614 or equal, wired to code, installed in rear hitch plate. 

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- 14.6 Warning beacons – four (4) Whelen L21HAC, mounted one on each front-side of cab guard, one on each rear corner of chipper body. 

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- 14.6.1 Beacon guards – four (4) heavy duty 16 mm ( $\frac{5}{8}$  in.) steel roundbar construction guards with a steel plate welded on top for protection. 

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- 14.6.2 Strobe lights – two (2) Whelen 5GA00FAR, rear facing in rear sill, located inside of reverse lights. 

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- 14.6.3 Warning beacons and strobe lights shall be actuated by one switch located on the truck dash (see chassis spec.). 

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- 14.7 Traffic Advisor – LED, Whelen TANF85AA, mounted to front of cab guard, controller cab mounted. 

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- 14.8 Spotlight – Star Warning Systems, P/N 2021 Go-Light, mounted on front-centre of cab guard c/w metal light guard and remote operating control mounted on dashboard. 

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- 14.9 Power take-off warning light – chassis manufacturer’s OEM backlit switch located on the truck dash (see chassis spec.). 

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- 14.10 Boom warning light – 25.4 mm (1 in.) diameter red lens mounted on instrument panel or chassis manufacturer’s red warning light installed in switch pack, normally “on” when boom is not in fully stored position. Grote 44421, DAP52-4000 or Preco equivalent micro switch is required. 

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- 14.11 Outrigger warning light – 25.4 mm (1 in.) diameter red lens mounted on instrument panel or chassis manufacturer’s red warning light installed in switch pack, normally “on” when any outrigger is not in fully stored position. Grote 44421, DAP52-4000 or Preco equivalent micro switches are required, enclosed to prevent damage. 

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- 14.11.1 All dash mounted warning lights to be identified with permanent type labels. No labels allowed on upper surface of dash. 

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- 14.12 Inverter – 110 Volt, 2500 Watts, supplied and installed in accordance with Manitoba Department of Labour Standards. State make and model being bid. 

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- 14.12.1 Inverter installation – located in passenger side compartment, upper shelf with an expanded mesh metal guard for protection. Power switch to be dash-mounted wired through ignition. 

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14.12.1 Duplex receptacle – one (1) required on passenger side near steel compartment. The receptacle shall be GFI, CSA approved, weatherproof type, with hinged cover. Exact location to be determined at time of installation.

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14.13 All wiring from body supplier installed accessories shall be colour coded, loomed and properly secured.

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14.14 All electrical connectors shall be crimped and soldered, then sealed using heat shrink tubing.

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14.15 All joining of wires shall be soldered and sealed using heat shrink tubing (crimp-on electrical connectors for joining of wires are not acceptable).

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14.16 Any holes required to run wires through shall be drilled (not punched), grommited and sealed as necessary.

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14.17 There shall be no splices allowed on any chassis or aftermarket wiring harnesses.

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**15.0 INSTALLATION**

15.1 The Contractor shall install the aerial device and dump body on the chassis specified in Detailed Specifications 10023 (appended hereto).

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15.2 Aerial device shall be installed in accordance with CSA Standard CAN/CSA-C225-M00 and in accordance with the aerial device Manufacturer's guidelines.

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15.3 Mounting of the dump body shall be in accordance with the chassis manufacturer's guidelines for body mounting, including, but not limited to, guidelines for tire and suspension clearance and fuel filler installation.

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15.4 Tire/body clearance – 76 mm (3 in.) plus full suspension travel.

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15.5 Welding to truck chassis frame is not permitted (with the exception of hitch plate installation).

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15.6 Mounting brackets shall be bolted to chassis frame using grade-8 fasteners.

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15.7 Any holes required in chassis frame web must be drilled and reamed to fit bolts.

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15.8 All non-continuous body seams (joints) caulked with an automotive grade sealant.

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15.9 Departure angle of completed unit – state angle.

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**16.0 MISCELLANEOUS**

16.1 Safety belts – one (1) required.

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16.2 Wheel chocks – required.

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16.3 Rear fenders – black plastic or polyurethane, ½-round fenders c/w stainless steel mounting hardware.

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- 16.4 Outrigger pads – two (2), plywood construction with rope handles. Nominal pad dimensions of 61 cm x 61 cm x 7.6 cm (24" x 24" x 3"). 

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- 16.4.1 Outrigger pad storage compartments – required, for one (1) pad each side. Compartments shall have a raised front lip and shall be located beneath chipper body ahead of rear axle. 

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- 16.5 Bucket cover – required. 

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- 16.6 Access steps – passenger side mounted between cab and dump body, c/w two (2) steps, 56 cm (22 in.) width approx., for access to ladder/cab guard platform. 

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- 16.6.1 Kick plate – 4.8 mm (<sup>3</sup>/<sub>16</sub> in.) steel or aluminum checkerplate, full width behind access steps. 

---
- 16.7 Access ladder – mounted at rear of cab shield for access to top of cab shield, approx. 56 cm (22 in.) width. 

---
- 16.7.1 Ladder rungs – grip strut type steps, 13-gauge steel, 20 cm (8 in.) depth approx., 35.5 cm (14 in.) spacing approx. 

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- 16.7.2 Grab handles/railings – located as required for ergonomic access to top of cab guard and top of chipper body. Grab handles chrome plated type. 

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- 16.8 Hitch plate – 12.7 cm (<sup>1</sup>/<sub>2</sub> in.) thick solid steel trailer hitch plate, (laminated plates unacceptable) installed to chassis frame, 9072 kg (20,000 lbs.) capacity. 

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- 16.9 Pintle hitch – Premier 240, installed on hitch plate at a 61 cm (24 in.) height. 

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- 16.10 Lunette eyes for trailer safety chains – one (1) each side of hitch, Buyers Products B56728 or equal. 

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- 16.11 Trailer plug socket – shall be installed in rear hitch plate. 

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- 16.12 Grease fittings – required on tailgate release mechanisms, pivot points, and linkages as required. 

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- 16.13 Interfaces – any contact between aluminum and steel shall be separated by a 1.6 mm (<sup>1</sup>/<sub>16</sub> in.) rubber or neoprene sheet to prevent galvanic corrosion. Bolts between aluminum and steel shall be stainless steel. 

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- 16.14 Automatic greasing system – complete dump body and chassis shall be supplied with a Groeneveld/CPL Systems Inc. automatic greasing system including all required grease points on dump body, approx. twenty-six (26) points on cab & chassis, and automatic low level shut-off with in-cab red light indicator. 

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- 17.0 PAINT AND FINISH**
- 17.1 Aerial device steel sections – all steel components shall be powder coated or epoxy primed with poly-urethane finish, white, inside and out, prior to assembly. 

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- 17.2 Fibreglass upper boom and lower boom insert – white Gel-Coat. 

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17.3 Complete dump body, steel compartments, hitch plate, steel brackets, etc. (with the exception of the sections noted below) shall be sandblasted, properly cleaned, primed and finished with the Endura EP32 Intermix Epoxy Primer and 3-5 mils of Endura EX-2C Topcoat, or equivalent paint process. State paint details.

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17.4 Underside of floor – shall be coated with black Line-X heavy duty smooth coating, 120 mil thickness.

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17.5 Access steps – shall be coated with black Line-X heavy duty abrasive coating, 120 mil thickness.

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17.6 Cab guard and supports – shall be coated with black Line-X heavy duty abrasive coating, 120 mil thickness.

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17.7 Chipper body exterior roof – shall be coated with black Line-X heavy duty abrasive coating, 120 mil thickness.

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17.8 Interior of chipper body – finished with coal tar epoxy or equivalent.

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17.9 Aluminum checkerplate – unfinished.

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**18.0 TECHNICAL DOCUMENTS AND MANUALS**

18.1 Bidders shall supply the following within five (5) working days of request of the Contract Administrator:

18.1.1 Two (2) sets of three view drawings showing complete unit including chassis, aerial device, dump body, cab guard, toolboxes, etc.

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18.1.2 Front and rear axle weights of the complete unit (chassis, aerial device, dump body, etc.) full hydraulic oil tank, fully fuelled and two operators.

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18.1.3 Service facility description (see 22.1).

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18.2 Prior to final inspection of the unit, the Contractor shall provide the following:

18.2.1 Certified weigh scale ticket of completed unit, fully fuelled (see 6.3).

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18.2.2 Certification letter (see B9.2(a)).

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18.2.3 Stability certificate (see 8.5.1).

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18.2.4 Dielectric certificate (see 7.13).

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18.3 Operator's manuals for aerial device and chipper body – quantity as per Form B: Prices.

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18.3.1 Parts, repair and maintenance manuals – quantity as per Form B: Prices, CD format preferred, required with the following comprising a set:

i) Aerial unit lubrication chart;

- ii) Maintenance manual;
  - iii) Unit parts book;
  - iv) Electric wiring diagram; and
  - v) Hydraulic circuit diagram.
- 

**Note:** The manuals supplied with this contract must be in English and shall be specifically for the unit supplied. General purpose manuals will not be acceptable. The Contract will not be considered complete until these have been delivered. Manuals must be supplied at the time the unit is delivered.

## 19.0 **TRAINING**

- 19.1 Operator training – the Contractor shall be required to provide **two (2) Business Days** of training, in Winnipeg by qualified staff, for City of Winnipeg operating personnel. All costs associated with the training, shall be at the Contractor's expense. The training sessions shall be sufficient in duration and shall provide adequate familiarization and orientation of the equipment, to the satisfaction of the Contract Administrator.
- 
- 19.2 Mechanical training – the Contractor shall be required to provide **two (2) Business Days** of training, in Winnipeg by qualified staff, for City of Winnipeg maintenance personnel. All costs associated with the training, shall be at the Contractor's expense. The training session shall be sufficient in duration and shall provide adequate familiarization and orientation of the equipment, to the satisfaction of the Contract Administrator.
- 
- 19.3 Training materials and applicable manuals or on-line training information shall be provided by the Contractor to the Operator Training Branch of Public Works at the earliest possible opportunity, no later than 4-weeks prior to delivery of the equipment and related attachments. The training materials shall be sent preferably in electronic format and hard copy. Training videos shall be supplied on either CD or DVD format.
- 
- 19.3.1 Training materials shall be sent to:

Public Works Human Resources Division  
Operator Training Branch  
102-1155 Pacific Ave.  
Wpg. MB R3E 3P1

E-mail: [blaxdal@winnipeg.ca](mailto:blaxdal@winnipeg.ca)

## 20.0 **DELIVERY**

- 20.1 Delivery – the unit shall be serviced, ready for operation, fully fuelled and delivered F.O.B. with the freight prepaid to the Winnipeg Fleet Management Agency, 185 Tecumseh Street, Winnipeg, Manitoba within **forty (40) calendar weeks** from the date of official notification of award of Contract. The Contractor shall contact the Contract Administrator prior to delivery of the equipment. Equipment shall be delivered within 8:00 am and 3:00 pm on Business Days.
- 
- 20.2 A pre-delivery inspection shall be performed by the Contractor on all



equipment.

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## **21.0 PERFORMANCE RELIABILITY**

21.1 The responsibility for the design of the complete unit, its performance and reliability shall rest upon the Contractor.

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21.2 The term "*repeat failures*" as used herein is defined to mean that the same component, assembly, or sub-assembly develops repeated defects, breakdowns and/or malfunctions rendering the unit inoperative, or requiring repeated shop correction, service and/or replacement during the warranty period applicable for said component, assembly, or sub-assembly. Minor items or ordinary service adjustments are not included, or considered under the scope of "repeated failures", as well as other factors, such as operational damage due to accidents, misuse or lack of proper maintenance, service and lubrication attention by not following the manufacturer's preventative maintenance schedules.

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21.3 Where the unit develops "repeated failures" in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.

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## **22.0 WARRANTY**

22.1 For the purpose of warranty repairs, the Contractor shall have an authorized service facility located within 10 km of the boundaries of the City of Winnipeg. The facility, or a portion thereof, shall be dedicated to the service and maintenance of the equipment being offered. Further to B9.1, Bidders shall provide a description of the service facility including, but not limited to, number of qualified service staff, years of service experience on aerial and chipper body equipment, and general service capabilities. A description of the service facility shall be provided within 5-Working Days upon request of the Contract Administrator.

22.2 If a suitable warranty facility is not available within 10 km of the boundaries of the City of Winnipeg, the Bidder may propose that warranty work be performed by the City of Winnipeg Repair Facilities. Any work performed by the City of Winnipeg Repair Facilities shall be charged to the Contractor at the Facility's shop rate in effect at the time the work is performed (for example, shop rate for 2010: \$82.<sup>00</sup>/hr regular time, \$112.<sup>00</sup>/hr overtime and callout).

22.3 The Contractor shall warrant **all equipment** and all parts thereof, against any defects of workmanship, construction and materials, and agrees to repair or replace without cost to the City any article that has become defective and not proven to have been caused by negligence on the part of the user within **two (2) years** from the date the equipment is put into service by the City of Winnipeg.

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22.4 A new two (2) year warranty period shall be provided for any article that is repaired or replaced under the terms of the "repeated failures" clause (Section 21.0 Performance Reliability). The new warranty period shall be effective from the date of acceptance of the repaired or replaced article.

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**DETAILED SPECIFICATIONS 10023**  
*ITEM 1c*

**14 969 kg (33,000 LBS.) GVWR CAB & CHASSIS VEHICLE**  
*(Tree Trimmer w/Chipper Body Chassis)*

**1.0 TYPE**

1.1 Shall be a 14 969 kg (33,000 lbs.) GVWR Conventional Cab & Chassis suitable for use as a tree trimming aerial device vehicle with a 3.35 m (11 ft.) chipper body. The vehicle shall be furnished complete and ready for use with all features and equipment as described herein.

1.2 **STATE MAKE AND MODEL OF CHASSIS BEING BID:** \_\_\_\_\_

**2.0 OTHER SPECIFICATIONS AND STANDARDS**

2.1 All applicable SAE standards form an integral part of these specifications and shall have precedence in any conflict concerning minimum acceptable standards.

2.2 The completed unit and all its components shall comply with all C.M.V.S.S. and Manitoba Highway Traffic Act regulations and requirements including, but not limited to, a Manitoba Government Inspection with Safety Sticker on the driver's side window.

**3.0 SERVICE FACILITY**

3.1 For the purpose of warranty repairs, the Bidder shall have an authorized service facility located within 10 km of the boundaries of the City of Winnipeg. The facility, or a portion thereof, shall be dedicated to the service and maintenance of the type equipment being offered. Further to B9.1, Bidders shall provide a description of the service facility including, but not limited to, number of qualified service staff, years of service experience, and general service capabilities within three (3) Business Days upon request of the Contract Administrator.

3.2 If a suitable warranty facility is not available within 10 km of the boundaries of the City of Winnipeg, the Bidder may propose that warranty work be performed by the City of Winnipeg Repair Facility. Any Work performed by the City of Winnipeg Repair Facility shall be charged to the Contractor at the Facility's shop rate in effect at the time the work is performed (for example, shop rate for 2010: \$82.00/hr regular time, \$112.00/hr overtime and callout).

**4.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS**

4.1 All items in these specifications must be answered indicating compliance or non-compliance. **Bidders shall state "yes" for compliance or state deviation**, or give reply where requested to do so. Deviations shall be clearly stated and fully detailed. Alternatives will be considered subject to evaluation.

4.2 Each bidder is required to fill in every blank. **Failure to do so may be used as a basis for rejection of bid.**

ITEM	SPECIFICATION	BIDDER TO STATE "YES" OR STATE DEVIATION
<b>5.0</b>	<b>GVWR</b>	
5.1	Total	14 969 kg (33,000 lbs.) _____
5.2	Front	5443 kg (12,000 lbs.) _____
5.3	Rear	9526 kg (21,000 lbs.) _____

**DETAILED SPECIFICATIONS 10023 – ITEM 1c (continued)**

**6.0 Chassis Dimensions**

- 6.1 Cab-to-axle 350.5 cm (138 in.) approx., state \_\_\_\_\_
- 6.2 Wheelbase 521 cm (205 in.) approx., state \_\_\_\_\_

**7.0 Engine**

- 7.1 Make and Model State make, model and displacement \_\_\_\_\_
- 7.2 Type Diesel, inline 6-cylinder, non SCR type \_\_\_\_\_
- 7.3 Horsepower 171.5 kW (230 hp) gross \_\_\_\_\_
- 7.4 Torque 895 N-m (660 lb-ft) \_\_\_\_\_
- 7.5 Engine shut down Low oil pressure / high water temperature \_\_\_\_\_
- 7.6 Anti-idling programming Required to shut engine off after 15-minutes unless PTO is engaged \_\_\_\_\_
- 7.7 Air intake warmer Required \_\_\_\_\_
- 7.8 Fuel shut-off Electric solenoid type \_\_\_\_\_
- 7.9 Air cleaner Dry type \_\_\_\_\_
- 7.10 Air intake restriction ind. Dash mounted restriction indicator \_\_\_\_\_
- 7.11 Oil drain plug Magnetic type \_\_\_\_\_
- 7.12 Oil filter Full flow, spin-on or cartridge type \_\_\_\_\_
- 7.13 Fuel filter Spin-on or cartridge type \_\_\_\_\_
- 7.14 Fuel/water separator Heated, drainable, mounted under hood, located to be protected from road spray \_\_\_\_\_
- 7.15 Block heater Immersion type, 1000 Watt approx. with plastic, covered recessed male plug, located under driver's side door \_\_\_\_\_
- 7.16 Coolant Extended life coolant, antifreeze to -37°C (-35°F) \_\_\_\_\_
- 7.17 Coolant hoses Silicone type, Gates Blue Stripe or Premium type hoses \_\_\_\_\_
- 7.18 Fan Drive Thermostatically controlled, automatic type \_\_\_\_\_
- 7.19 Air compressor Water cooled, pressure lubricated, 368 L/min. (13 cfm) \_\_\_\_\_

**8.0 Electrical System**

- 8.1 Chassis wiring Multiplexed wiring \_\_\_\_\_
- 8.1.1 PTO protection Visual and audible alarm sounding when transmission is shifted into gear with PTO "on" \_\_\_\_\_
- 8.1.2 Diff. lock protection Shall disengage differential lock over 7 km/hr approx. \_\_\_\_\_
- 8.1.3 Outrigger protection Visual and audible alarm sounding when transmission is shifted into gear with outrigger(s) down \_\_\_\_\_
- 8.1.4 Pre-trip lighting insp. Required to automatically inspect all vehicle lighting systems and circuits and inform driver of malfunction \_\_\_\_\_

**DETAILED SPECIFICATIONS 10023 – ITEM 1c (continued)**

8.1.5	Wipers override	Required to automatically engage delay wipers with wipers “on” in Park	_____
8.1.6	Park brake alarm	Audible alarm to sound when transmission is shifted into gear with Park brake engaged	_____
8.1.7	Automatic headlights	Headlights automatically “on” when wipers actuated	_____
8.1.8	Door ajar warning	Visual and audible alarm sounding when transmission is shifted into gear with door(s) ajar	_____
8.2	Alternator	Delco Remy 35-SI, 135 Amp	_____
8.3	Starter	Delco Remy 41-MT/OCP 450 Series with thermal protection	_____
8.4	Batteries	Three (3), 12-volt, group 31, 1800 CCA combined capacity	_____
8.5	Battery box	Under cab or frame mounted c/w enclosure, readily accessible, state location	_____
8.6	Battery disconnect	In-cab mounted, state location	_____
8.7	Remote boost terminal	Remote battery boost terminal(s), protected from road spray, covered, state location	_____
8.8	Cab marker lights	LED	_____
8.9	Back-up alarm	97dBA, located on inside-rear of frame rails	_____
8.10	2-way radio circuit	Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled	_____
8.11	Accessory switches	Two (2) required, dash mounted for “Beacon” and “PTO”, plus four (4) additional switches labelled “Aux”. All switches wired through ignition, complete and wired for body installation, labelled and backlit	_____
<b>9.0</b>	<b>Exhaust System</b>		
9.1	Configuration	Stationary extreme outboard single left hand, chrome vertical discharge on driver’s side, underframe routing, vertical portion cab mounted. Discharge tip shall have a backlash type end.	_____
<b>10.0</b>	<b>Transmission</b>		
10.1	Model	Allison 3500 RDS Series	_____
10.2	Shift selector	Dash mounted digital push button preferred, state type	_____
10.3	Cooling	Water to oil transmission cooler	_____
10.4	PTO provision	Required with maximum clearance from exhaust	_____
10.5	Oil level dipstick	Bayonet type with high and low level markings	_____
10.6	Trans. drain plug	Magnetic type	_____
<b>11.0</b>	<b>Front Axle</b>		
11.1	Capacity	5443 kg (12,000 lbs.) capacity	_____

**DETAILED SPECIFICATIONS 10023 – ITEM 1c (continued)**

**12.0 Rear Axle**

- 12.1 Capacity 9526 kg (21,000 lbs.) capacity \_\_\_\_\_
- 12.2 Ratio For 110 km/hr top speed, state ratio \_\_\_\_\_
- 12.3 Differential lock Required for rear drive axle w/dash mtd. switch \_\_\_\_\_

**13.0 Front Suspension**

- 13.1 Type Taper leaf spring suspension, 5443 kg (12,000 lbs.) capacity \_\_\_\_\_

**14.0 Rear Suspension**

- 14.1 Type Air ride suspension, 9526 kg (21,000 lbs.) capacity, state make and model of suspension being bid \_\_\_\_\_
- 14.2 Susp. control valve Manual dump valve for air suspension c/w dash mtd. switch, indicator light, gauge and buzzer \_\_\_\_\_
- 14.3 Automatic dump Air bag shall automatically dump when PTO is engaged \_\_\_\_\_

**15.0 Rims, Wheels, Hubs**

- 15.1 Front 22.5 x 8.25 steel disk, 10-bolt, hub piloted \_\_\_\_\_
- 15.2 Rear 22.5 x 8.25 steel disk, 10-bolt, hub piloted \_\_\_\_\_
- 15.3 Hubs Steel or iron hubs, front and rear \_\_\_\_\_
- 15.4 Hub seals Oil lubricated front and rear \_\_\_\_\_
- 15.5 Wheel nut indicators Required on all wheel nuts, front and rear \_\_\_\_\_

**16.0 Tires, Front**

- 16.1 Make & model Michelin XZE or Goodyear G622 RSA, 14-ply, state tires \_\_\_\_\_
- 16.2 Size 11R 22.5 \_\_\_\_\_

**17.0 Tires, Rear**

- 17.1 Make & model Michelin XDE M/S or Goodyear G282, 14-ply, state tires \_\_\_\_\_
- 17.2 Size 11R 22.5 \_\_\_\_\_

**18.0 Frame**

- 18.1 Type To match GVWR, 1,000,000 in.-lbs. RBM, outside frame clear \_\_\_\_\_
- 18.2 Application Suitable for use with an aerial device w/chipper body \_\_\_\_\_
- 18.3 Chassis fasteners Grade-8 threaded hex headed frame fasteners or huck-spin fasteners \_\_\_\_\_
- 18.4 Afterframe As required for aerial device and chipper body Installation, 190.5 cm (75 in.) approx., state \_\_\_\_\_

**19.0 Steering**

- 19.1 Type Power \_\_\_\_\_

**20.0 Brakes**

- 20.1 Type Air, ABS, S-cam drum brakes, front and rear \_\_\_\_\_

**DETAILED SPECIFICATIONS 10023 – ITEM 1c (continued)**

20.2	Slack adjusters	Meritor (clearance sensing), automatic type	_____
20.3	Parking brake	Spring set, four (4) chamber system	_____
20.4	Brake pots	Vented type	_____
20.5	Dust shields	Required, front and rear	_____
20.6	Moisture ejector	Bendix DV-2, heated, required in wet tank	_____
20.7	Drain valves	Manual, chain or cable operated, required on each air tank with the exception of wet tank	_____
20.8	Air drier	Wabco System Saver 1200, heated	_____
<b>21.0</b>	<b>Fuel Tank</b>		
21.1	Type	Aluminium, 189 L (50 US Gal) capacity, fully fuelled upon delivery	_____
21.2	Tank straps	Steel mounting straps with 1.6 mm ( <sup>1</sup> / <sub>16</sub> in.) rubber or neoprene isolators	_____
21.3	Fuel separator	Heated, drainable	_____
<b>22.0</b>	<b>Cab</b>		
22.1	Type	Conventional type, aluminum or steel w/corrosion inhibitor	_____
22.2	Hood	Fibreglass tilt	_____
22.3	Cab mounts	Air suspension	_____
22.4	Cab interior/trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
22.5	Cab silencer package	Required for minimal decibel level	_____
22.6	Hood/Firewall/Engine	Insulated hood liner, engine cover and firewall	_____
22.7	Floor covering	Rubber mat with under-padding	_____
22.8	Floor mats	Two (2), rubber	_____
22.9	Driver's seat	High back, air suspension w/foldable right hand armrest, seat belt, heavy-duty cloth upholstery, Cordura or equal, state material	_____
22.10	Passenger seat	High back, air suspension w/foldable left hand armrest, seat belt, heavy-duty cloth upholstery, Cordura or equal, state material	_____
22.11	Sun visors	Dual flip-up type	_____
22.12	Steering wheel	Tilt type	_____
22.13	12-Volt power outlet	Required	_____
22.14	Radio	Factory installed AM/FM with CD player	_____
22.15	Starter switch	Key operated c/w three (3) sets of keys	_____
22.16	Interior light	Dome light with driver and passenger door switches	_____
22.17	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of -37°C (-35°F)	_____

**DETAILED SPECIFICATIONS 10023 – ITEM 1c (continued)**

22.18	Air conditioning	Required	_____
22.19	Brake & accel. pedals	Hanging type brake and accelerator pedals	_____
22.20	Horn	Dual electric	_____
22.21	Exterior mirrors	Dual West Coast, stainless steel or polycarbonate, 17.8 cm x 36.8 cm (7" x 14½") approx.	_____
22.22	Convex mirrors	15.2 cm (6 in.) aux., stainless steel, mtd. below West Coast mirrors, or integral type with polycarbonate mirrors, one (1) per side	_____
22.23	Windows & windshield	Tinted	_____
22.24	Windshield wipers	Electric, intermittent, arctic type blades	_____
22.25	Windshield washers	Electric	_____
22.26	Grab handles	Dual exterior	_____
22.27	Entrance steps	Dual each side, open grate / grip type	_____
22.28	Winter front	Heavy-duty vinyl w/twist lock or snap type fasteners	_____
<b>23.0</b>	<b>Instrumentation</b>		
23.1	Oil pressure	Gauge	_____
23.2	Coolant temperature	Gauge	_____
23.3	Transmission oil temp.	Gauge	_____
23.4	LOP/HWT	Warning light and buzzer	_____
23.5	Voltmeter	Gauge	_____
23.6	Air reservoir pressure	Gauge with LAP warning light and buzzer	_____
23.7	Engine hourmeter	Required, non-resetable type	_____
<b>24.0</b>	<b>Tow Hooks</b>		
24.1	Location	Front mounted	_____
<b>25.0</b>	<b>Front Bumper</b>		
25.1	Type	Steel, full width c/w license plate bracket	_____
<b>26.0</b>	<b>Colour and Finish</b>		
26.1	Exterior	White	_____
26.2	Interior	Blue or grey	_____
26.3	Frame & suspension	Primed and finished with black Imron 5000 paint or equivalent	_____
26.4	Front bumper	Black	_____
26.5	Wheels	Powder coated white	_____
<b>27.0</b>	<b>Accessories</b>		
27.1	Flare kit	Three (3) triangular reflectors, CVSA approved	_____
27.2	Fire extinguisher	4.5 kg (10 lb.) ABC type, required in cab with mounting bracket	_____

**DETAILED SPECIFICATIONS 10023 – ITEM 1c (continued)**

**28.0 Manuals**

28.1	Operator's manual	Required, quantity as per Form B: Prices	_____
28.2	Parts/Repair/Service	Required, including preventative maintenance schedules for life of unit, CD or online format preferred, quantity as per Form B: Prices	_____

**29.0 Warranty**

29.1	Basic vehicle	Two (2) years, unlimited km	_____
29.2	Batteries	One (1) year or 100 000 km	_____
29.3	Drivetrain	Two (2) years, unlimited km	_____
29.4	Cab structure/corrosion	Five (5) years, unlimited km	_____
29.5	Frame & crossmembers	Five (5) years, unlimited km	_____
29.6	Cab paint	One (1) year or 100 000 km	_____
29.7	Engine	Four (4) years or 320 000 km including engine electronics and injectors	_____
29.8	Towing coverage	Four (4) year or 320 000 km	_____
29.9	Transmission	Two (2) years, unlimited km	_____
29.10	Axles, front & rear	Two (2) years or 240 000 km	_____
29.11	Exhaust system	Four (4) years or 160 000 km	_____



## DETAILED SPECIFICATIONS 10024 ITEM 2

### OVER-CENTRE AERIAL DEVICE (Forestry)

#### 1.0 SCOPE

- 1.1 These specifications describe a tree trimming aerial device vehicle complete with a hydraulically operated, over-centre, articulating aerial device and a steel flat deck. The aerial device and flat deck shall be installed on a single axle cab and chassis to be supplied complete by the Contractor. (See attached Detailed Specifications 10025 for chassis description).
- 1.2 The aerial device shall be the manufacturer's latest model, as may be modified by these specifications. The aerial device, including auxiliary equipment, shall be furnished complete and ready for use. All parts not specifically mentioned, but which are required for the complete unit, shall conform in strength, quality of material and workmanship to the best standards and engineering practice of the industry.
- 1.3 It will be the responsibility of the Bidder to inform the City of any deficiencies in these specifications, for under this Contract the Contractor shall be held responsible for the design, performance, reliability and satisfactory operational function of the unit.
- 1.4 The ratings specified herein merely state the minimum values acceptable to the City. There is no intent of implying that these values are sufficient for the design of the particular equipment being bid.

#### 2.0 STANDARDS

- 2.1 Canadian Standards Association Standard CAN/CSA-C225-M00 Vehicle Mounted Aerial Devices forms an integral part of these specifications and shall have precedence in any conflict concerning minimum acceptable standards.
- 2.2 The completed aerial device vehicle shall comply with all C.M.V.S.S. and Manitoba Highway Traffic Act regulations and requirements including, but not limited to, a Manitoba Government Inspection with Safety Sticker.
- 2.3 All welding and welding designs of the load supporting elements shall conform to the requirements of Canadian Standards Association Standard W47.1 and W59.

#### 3.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS

- 3.1 All items in these specifications must be answered indicating compliance or non-compliance. **Bidders shall state "yes" for compliance or state deviation, or give a reply where requested to do so.** Deviations shall be clearly stated and fully detailed. Alternatives will be considered subject to evaluation.
- 3.2 Each bidder is required to fill in every blank. **Failure to do so may be used as a basis for rejection of bid.**

#### 4.0 PERFORMANCE

- 4.1 The aerial device vehicle shall be capable of operating safely

and efficiently in any working position and in confined areas, and shall be suitable for use in a tree trimming vocation, during summer and winter conditions normal to the City of Winnipeg.

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## 5.0 **MAKE AND MODEL**

### 5.1 **State make and model of aerial device unit being bid.**\_\_\_\_\_

**Note:** Bidders shall complete Detailed Specifications 10025 for the supply & delivery of a 13 608 kg (30,000 lbs.) GVWR Cab & Chassis in accordance with the instructions given.

## 6.0 **AERIAL DEVICE**

- 6.1 Type – rear, centre-mounted, two boom, over-centre articulated aerial device with a raised platform height of 16.8 m (55 ft.), and a side reach of approx. 11.6 m (38 ft.). \_\_\_\_\_
- 6.2 Working height – 18.3 m (60 ft.). \_\_\_\_\_
- 6.3 Overall travel height (completed unit) – 381 cm (150 in.) approx., state. \_\_\_\_\_
- 6.4 Rotation – continuous with shear ball type rotation bearing. \_\_\_\_\_
- 6.5 Upper boom – fibreglass, insulated. \_\_\_\_\_
- 6.5.1 Upper boom articulation – range of 270° from stored position. \_\_\_\_\_
- 6.6 Upper boom storage support – saddle type support extending past the outer edges of the upper boom. \_\_\_\_\_
- 6.6.1 The boom storage support shall include a ratchet securing strap or equivalent to fully secure the boom when travelling. A storage hook shall be provided on the support for storage of the unsecured strap. \_\_\_\_\_
- 6.7 Lower boom – steel with fibreglass insert, insulated. \_\_\_\_\_
- 6.7.1 Lower boom articulation – range of 125° from stored position. \_\_\_\_\_
- 6.7.2 Lower boom protection system – to prevent excessive down pressure when stowing lower boom. \_\_\_\_\_
- 6.7.3 Lower boom storage provision – mechanical securing device, rod actuated from lower control station. \_\_\_\_\_
- 6.8 Boom lift cylinders shall have externally adjustable counterbalance holding valves. \_\_\_\_\_
- 6.9 Safety belt attachments – one (1) located at end of boom. \_\_\_\_\_
- 6.10 Personnel platform – one (1) side-hung, single man fibreglass platform. Front mounted interior to exterior long formed step 30.5 cm L x 13 cm W (12"L x 5"W) approx. with abrasive non-slip surface required on one (1) side of bucket. The bucket shall have toe space on three (3) sides. \_\_\_\_\_

- 6.10.1 Nominal platform dimensions – 61 cm x 61 cm x 102 cm (24" x 24" x 40"), state. 

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- 6.10.2 Platform capacity – 159 kg (350 lbs.), state. 

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- 6.10.3 Personnel platform shall hydraulically swivel 90°. 

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- 6.10.4 Chain saw holder – fibreglass, required on platform. 

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- 6.11 Platform levelling system – automatic, mechanical type. 

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- 6.12 Platform dump system – platform to tilt (pivot) 100°. 

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- 6.13 Aerial device shall be certifiable below 46 KVAC. A factory document to certify that the equipment is designed to withstand 100 KVDC (wet and dry) during testing is to be supplied prior to the delivery of the aerial device. The leakage during the test shall not exceed 1.5 micro amps per kV/ft. 

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Note: The completed unit shall be dielectrically tested by the Contractor prior to delivery. Testing costs shall be paid for by the Contractor.

**7.0 OUTRIGGERS AND SUBFRAME**

- 7.1 Outrigger stabilizer supports – two (2) sets required with a capacity to support all rated loads. 

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- 7.2 Base set – A-frame type, welded to rear face of aerial device pedestal and to sub-frame. 

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- 7.3 Auxiliary set – modified A-frame, mounted behind chassis cab on top of chassis frame, welded to sub-frame. 

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- 7.4 All outrigger supports shall be designed to form an integral part of the sub-frame. 

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- 7.5 Outrigger hydraulic cylinders shall be equipped with pilot operated holding valves, fully protected from damage. 

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- 7.6 Outrigger shoes – rigid type, 30.5 cm x 30.5 cm (12" x 12") approx. State dimensions. 

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- 7.7 Subframe – plated type, full length, fastened to top of chassis frame. 

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- 7.7.1 Upon request of the Contract Administrator, the Bidder shall supply the method of attaching subframe and subframe mounting plans. The information shall be supplied within five (5) Business Days of request from the Contract Administrator. 

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- 7.8 Stability requirements – to meet CSA Standard CAN/CSA-C225-M00. The use of a ballast is not acceptable. 

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- 7.9 The Contractor shall perform a stability test of the completed unit in accordance with CSA Standard CAN/CSA-C225-M00 and shall provide a stability certificate showing the date and results of the test prior to final inspection. 

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**8.0 HYDRAULIC CONTROLS**

8.1 Platform controls – one (1) single lever control with double interlock, located at platform end of boom, protected from actuation. Control must be full metering.

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8.1.1 Control lever shall permit multiple simultaneous boom movements.

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8.1.2 Platform control valves and control lever to be enclosed in a fibreglass cover accessible from top.

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8.1.3 Emergency stop button – red palm button, instantaneously stops all motion (engine shutdown not acceptable).

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8.2 Master control group – located at lower main frame with controls for all bucket functions and emergency stop button.

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8.2.1 Lower controls capable of positively overriding the platform controls.

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8.3 Outrigger control levers – located at rear of unit, fully protected from damage and accidental actuation. Each control set to operate the outriggers on its respective side only.

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8.3.1 Outrigger functions to be isolated from all other functions by a selector valve located with the left outrigger controls.

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8.3.2 Outrigger down interlock – required on each outrigger, to prevent aerial device operation if any outrigger is not in down position.

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8.4 All controls must be clearly identified with permanent, engraved type labels. Glued labels will not be acceptable.

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**9.0 HYDRAULICS**

9.1 PTO – constant mesh, Muncie Powerclutch or Chelsea equivalent.

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9.1.1 Hydraulic shift with in-cab controls, operable from a normal driving position.

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9.1.2 PTO hourmeter – non-resettable type, installed to record PTO operating hours.

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9.2 Pump – supplied as per aerial device manufacturer’s recommendation to meet aerial device requirements and sized to eliminate the need for a two (2) speed throttle system. State make and model being bid.

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9.3 Hydraulic oil reservoir – steel construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge.

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9.3.1 Suction strainer – 100 micron, replaceable, in tank mounted.

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9.4 Return line filter – 10 micron spin-on type, serviceable without oil loss.

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9.5 Shut-off valve – ball type, located between reservoir and pump,

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- secured in open position with a bracket and bolt. \_\_\_\_\_
- 9.6 Relief valve – located prior to aerial device functions, set at system pressure. Relief in outrigger isolation valve to be set 1379 kPa (200 psi) above aerial device system pressure. \_\_\_\_\_
- 9.7 Pressure gauge – glycerine filled, located at lower operating station. \_\_\_\_\_
- 9.8 Flashover protection system – required in hydraulic lines to boom tip. \_\_\_\_\_
- 9.9 Hydraulic oil – non-conductive, certified rating of 30 kV, Esso J13 or equal, state recommended oil being bid. \_\_\_\_\_
- 9.10 Emergency operating system – 12-Volt auxiliary power pack, must provide hydraulic power to all aerial device functions including elevation and rotation, accessible from both lower and upper controls. \_\_\_\_\_
- 9.10.1 System on/off switches – three (3) toggle type, spring loaded in off position, located at master control group and each set of outrigger controls. One (1) captive air operated switch located at platform control station. \_\_\_\_\_
- 9.11 Steel hydraulic tubing – plated type, required where practical except where flexibility is required. Tubing shall be guarded as required. \_\_\_\_\_
- 9.11.1 Hydraulic hoses – burst rated at 4 times working pressure, non-wire braid hoses, protected at all wear and scuff locations. \_\_\_\_\_
- 9.12 Hydraulic tool outlet – required at boom tip, set to operate at 30 L/min. @ 13 790 kPa (8 gpm @ 2000 psi.), suitable for use with open or closed centre tools. Control handle shall be spring centred with a detent in one (1) direction. \_\_\_\_\_
- 9.12.1 Tool outlet shall be fitted with Bruning dripless quick couplers. Bruning outlet covers required for all fittings. \_\_\_\_\_
- 10.0 DECK AND COMPARTMENTS**
- 10.1 Deck surface – 4.76 mm (<sup>3</sup>/<sub>16</sub> in.) checker plate steel construction. \_\_\_\_\_
- 10.1.1 Dimensions – 4.27 m L x 2.44 m W (14' L x 96" W). \_\_\_\_\_
- 10.1.2 Upon request of the Contract Administrator, the Bidder shall supply detailed drawings of the deck construction. The drawings shall be supplied within five (5) working days upon request. \_\_\_\_\_
- 10.2 Deck underside to incorporate a full depth storage compartment (possum belly) complete with a hinged, latchable tailgate. \_\_\_\_\_
- 10.3 Storage compartments – one (1) each side, fibreglass construction, approx. 76 cm L x 122 cm H x 46 cm D (30"L x 48"H x 18"D) mounted at front of deck with stainless steel fasteners. \_\_\_\_\_
- 10.3.1 Transverse compartment – approx. 76 cm L x 76 cm H x 142 cm D (30"L x 30"H x 56"D), aluminum construction, located between storage compartments, equipped with fixed, full depth mid-height shelf, accessible

- from each end and lined with Dry-Deck matting, mounted with stainless steel fasteners. \_\_\_\_\_
- 10.3.2 Door handles – Trimark stainless steel or chrome plated, paddle type, flush mounted, lockable with all locks keyed alike w/3-sets of keys. \_\_\_\_\_
- 10.3.3 Door hinges and latches – chrome or stainless steel with adjustable striker plates. \_\_\_\_\_
- 10.3.4 Drip moulding – required above door openings. \_\_\_\_\_
- 10.3.5 Rigid door springs – one (1) per door. \_\_\_\_\_
- 10.3.6 Material hooks – four (4) per compartment, fixed type, mounted on side walls, two (2) each wall. \_\_\_\_\_
- 10.3.7 Compartment door openings shall be sealed using automotive, bulb type rubber gaskets. \_\_\_\_\_
- 10.4 Compartment top and sides covered with 1/8" aluminum checker plate. \_\_\_\_\_
- 10.5 Underslung compartments – two (2) total, one (1) per side ahead of rear wheels, nominal dimensions 76 cm W x 46 cm H x 46 cm D (30"W x 18"H x 18"D), 4.76 mm (<sup>3</sup>/<sub>16</sub> in.) checker plate aluminum construction, lockable paddle style chrome or stainless steel handles, keyed alike w/3-sets of keys, gas shock opening device. \_\_\_\_\_
- 10.6 Tire/deck clearance – 7.6 cm (3 in.) clearance with air bag suspension fully lowered. \_\_\_\_\_
- 11.0 BOOM SUPPORT & CAB GUARD**
- 11.1 Boom support – "A" frame, anchored directly to sub-frame and located immediately behind cab. \_\_\_\_\_
- 11.2 Lower boom support saddle shall extend a distance of 10 cm (4 in.) longitudinally and provide support to the side walls of the lower boom. Saddle to be padded to prevent chaffing of the lower boom. \_\_\_\_\_
- 11.3 Boom storage assembly to include ratchet securing strap with boom mounted storage hooks for storage of unsecured strap, or over-centre latch. \_\_\_\_\_
- 11.4 Bucket support – deck mounted, approx. 5 cm (2 in.) steel tubing construction with rubber bumper pad, suitable for keeping the bucket stationary in transport mode. \_\_\_\_\_
- 11.5 Cab guard – full width, extending from front bumper to back of cab, constructed of 5 cm x 5 cm x 3.2 mm (2" x 2" x 1/8") steel tubing covered with 3/4-G9 standard expanded metal. \_\_\_\_\_
- 11.6 Front of cab guard supported by two (2) supports bolted to front bumper. \_\_\_\_\_
- 11.7 Access to cab guard shall be from the deck area. A 3/4-G9 standard expanded metal access platform shall cover the transverse compartment, full width of deck. A deck mounted, mid-height access step shall be \_\_\_\_\_

provided on the driver's side to access the platform, steel grip strut material. \_\_\_\_\_

**12.0 REAR BUMPER**

12.1 Rear bumper – heavy duty step bumper, approx. 30.5 cm (12 in.) wide with grip strut step surface and tapered ends. \_\_\_\_\_

12.1.1 Bumper shall have a heavy duty tubular steel frame, designed and constructed to withstand severe use. \_\_\_\_\_

12.2 Rear kick plate – 4.76 mm (<sup>3</sup>/<sub>16</sub> in.) aluminum checker plate, full width between bumper and deck surface. \_\_\_\_\_

12.3 Mid-height step – mounted between bumper and deck surface, approx. 18 cm x 76 cm (7" x 30") with grip strut step surface and tapered ends, reinforced as required. \_\_\_\_\_

12.4 Grab handles – mounted on deck, approx. 76 cm (30 in.) high, tubular steel or steel round-bar construction. \_\_\_\_\_

**13.0 ELECTRICAL AND LIGHTING**

13.1 All vehicle lighting shall conform to CMVSS and Manitoba Highway Traffic Act requirements. \_\_\_\_\_

13.2 Supplier installed lighting and lighting equipment shall be LED Truck-Lite (except where otherwise noted) and shall include the following components:

13.2.1 Combination stop, turn and taillights – two (2) P/N 44302R, flush or recessed mounted in rear sill with P/N 40700 mounting grommets, flash rate 70-90 fpm. \_\_\_\_\_

13.2.2 Back-up lights – two (2) P/N 44206C, flush or recessed mounted in rear sill with 40700 mounting grommets. \_\_\_\_\_

13.2.3 Light cluster – three (3) P/N 10250R with P/N 10700 mounting grommets, protected to avoid damage. \_\_\_\_\_

13.2.4 Clearance lights – P/N 10250R and 10250Y with P/N 10700 mounting grommets, flush or recessed mounted. \_\_\_\_\_

13.2.5 Clearance lamp mounting locations:

i) Front – two (2), located one on each side of fibreglass compartments, mid-height. \_\_\_\_\_

ii) Sides – two (2) per side, one (1) front-side corner of deck, one (1) rearmost section of deck. \_\_\_\_\_

iii) Rear – two (2), located one on each outermost corner. \_\_\_\_\_

13.2.6 License plate lamp – P/N 15040, complete with license plate bracket. \_\_\_\_\_

13.2.7 Lighting harnesses – Truck-Lite 50 Series harness system, properly routed and secured. \_\_\_\_\_

- 13.2.8 All harnesses shall be internally grounded, no exceptions. \_\_\_\_\_
- 13.3 Junction box – P/N 50400, complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame, protected from road spray. \_\_\_\_\_
- 13.4 All plug-in connectors shall be coated with Truck-Lite NYK Compound prior to assemble. \_\_\_\_\_
- 13.5 Mini light bars – two (2) Whelen R2LPPA, mounted to cab guard at front corners, shock/rubber mounted. \_\_\_\_\_
- 13.5.1 Beacon guards – 16 mm ( $\frac{5}{8}$  in.) steel round bar construction on each side with a steel plate welded on top for protection. \_\_\_\_\_
- 13.5.2 Strobe lights – six (6) Whelen 5GA00FAR, two (2) rear facing on outer most edges of cab guard, two (2) rear facing in rear deck sill inside of reverse lights, two (2) side facing in side rail one per side. \_\_\_\_\_
- 13.5.3 Mini light bars and strobe lights shall be actuated by one switch located on the truck dash, wired through ignition/accessory switch (see chassis spec.). \_\_\_\_\_
- 13.6 Power take-off warning light – chassis manufacturer’s OEM backlit switch located on the truck dash (see chassis spec.). \_\_\_\_\_
- 13.7 Boom warning light – 2.5 cm (1 in.) diameter red lens mounted on instrument panel, or chassis manufacturer’s red warning light installed in switch pack, normally “on” when boom is not in fully stored position. Grote 44421, DAP52-4000 or Preco equivalent micro switch is required. \_\_\_\_\_
- 13.8 Outrigger warning light – 2.5 cm (1 in.) diameter red lens mounted on instrument panel, or chassis manufacturer’s red warning light installed in switch pack, normally “on” when any outrigger is not in fully stored position. Grote 44421, DAP52-4000 or Preco equivalent micro switches are required, enclosed to prevent damage. \_\_\_\_\_
- 13.8.1 All dash mounted warning lights to be identified with permanent type type labels. No labels allowed on upper surface of dash. \_\_\_\_\_
- 13.9 Inverter – 110 Volt, 2500 Watts, supplied and installed in accordance with Manitoba Department of Labour Standards. State Make and Model being bid. \_\_\_\_\_
- 13.9.1 Inverter installation – located in passenger side compartment, upper shelf with an expanded mesh metal guard for protection. Power switch to be dash-mounted wired through ignition. \_\_\_\_\_
- 13.9.2 Duplex receptacle – one (1) required on passenger side near fibreglass compartment. The receptacle shall be GFI, CSA approved, weatherproof type, with hinged cover. Exact location to be determined at time of installation. \_\_\_\_\_
- 13.10 All wiring for body/aerial installed accessories shall be colour coded, loomed and properly secured. \_\_\_\_\_



- 13.11 All electrical connectors shall be crimped and soldered, then sealed using heat shrink tubing. \_\_\_\_\_
- 13.12 All joining of wires shall be soldered and sealed using heat shrink tubing (crimp-on electrical connectors for joining of wires are not acceptable). \_\_\_\_\_
- 13.13 Any holes required to run wires through shall be drilled (not punched), grommited and sealed as necessary. \_\_\_\_\_
- 13.14 There shall be no splices allowed on any chassis or aftermarket wiring harnesses. \_\_\_\_\_

**14.0 INSTALLATION**

- 14.1 The Contractor shall supply and install the aerial device and steel deck on the chassis specified in Detailed Specifications 10025 (appended hereto). \_\_\_\_\_
- 14.2 Aerial device shall be installed in accordance with CSA Standard CAN/CSA-C225-M00 and in accordance with the aerial device manufacturer's guidelines. \_\_\_\_\_
- 14.3 Mounting of the steel deck shall be in accordance with the chassis manufacturer's guidelines for body mounting, including, but not limited to, guidelines for tire and suspension clearance. \_\_\_\_\_
- 14.3.1 Upon request of the Contract Administrator, Bidders shall supply a diagram and description showing the body manufacturer's recommended body and deck to chassis mount. Diagrams shall be supplied within five (5) working days upon request. \_\_\_\_\_
- 14.4 Welding to the truck chassis frame is not permitted. \_\_\_\_\_
- 14.5 Mounting brackets shall be bolted to chassis frame using Grade 8 fasteners. \_\_\_\_\_
- 14.6 Any holes required in chassis frame web must be drilled and reamed to fit bolts. \_\_\_\_\_
- 14.7 All non-continuous body seams (joints) shall be calked with an automotive grade sealant. \_\_\_\_\_
- 14.8 Departure angle of completed unit – state angle. \_\_\_\_\_

**15.0 MISCELLANEOUS**

- 15.1 Safety belt – one (1) required. \_\_\_\_\_
- 15.2 Rear fenders – black plastic or polyurethane, ½-round fenders c/w stainless steel mounting hardware. \_\_\_\_\_
- 15.3 Outrigger pads – four (4), plywood construction with rope handles. Nominal pad dimensions of 61 cm x 61 cm x 7.6 cm (24" x 24" x 3"). \_\_\_\_\_
- 15.3.1 Outrigger pad storage compartments – fibreglass construction, for \_\_\_\_\_

- two (2) pads each side. Compartments shall have a raised front lip and shall be located beneath deck ahead of rear axle. \_\_\_\_\_
- 15.4 Wheel chocks – two (2), rubber approx. 25 cm L x 23 cm W x 15 cm H (10"L x 9"W x 6"H). \_\_\_\_\_
- 15.5 Bucket access steps from deck – three (3), evenly spaced, mounted on pedestal, grip strut step construction, approx. 18 cm x 35.5 cm (7" x 14"). \_\_\_\_\_
- 15.5.1 Grab handles – required to ergonomically access bucket. \_\_\_\_\_
- 15.6 Bucket cover – one (1) required. \_\_\_\_\_
- 15.7 Traffic cone storage – required at driver's side rear corner of deck. \_\_\_\_\_
- 15.8 Automatic greasing system – complete cab & chassis vehicle shall be supplied with a Groeneveld/CPL Systems Inc. automatic greasing system including approx. twenty-six (26) points on cab & chassis. The greasing system shall be equipped with an automatic low level shut-off and an in-cab red light indicator. \_\_\_\_\_
- 15.9 Isolators – all interfaces between aluminum and steel shall be separated by a 1.6 mm (<sup>1</sup>/<sub>16</sub> in.) thick rubber or neoprene sheet and are to be bolted through with stainless steel bolts and non-conductive bushings. \_\_\_\_\_
- 16.0 PAINT AND FINISH**
- 16.1 Aerial device steel sections – all steel components shall be powder coated or epoxy primed with poly-urethane finish, white, inside and out, prior to assembly. \_\_\_\_\_
- 16.1.1 Fibreglass upper boom and lower boom insert – white Gel-Coat. \_\_\_\_\_
- 16.2 Fibreglass storage compartments – colour impregnated Gel-Coat to match chassis cab colour. \_\_\_\_\_
- 16.3 All steel sections (including cab guard, kick plates, bumper, boom rests, outriggers, etc.) shall be sand-blasted, properly cleaned, primed and finished with Endura EP32 Intermix Epoxy Primer and 3-5 mils of Endura EX-2C Topcoat, Black or equivalent paint process. State paint details. \_\_\_\_\_
- 
- 16.4 Upper surface of deck – shall be coated with black Line-X heavy duty abrasive coating, 120 mil thickness. \_\_\_\_\_
- 16.5 Underside of deck – shall be coated with black Line-X heavy duty smooth coating, 120 mil thickness. \_\_\_\_\_
- 16.6 Access steps – shall be coated with black Line-X heavy duty abrasive coating, 120 mil thickness. \_\_\_\_\_
- 16.7 Cab guard and supports – shall be coated with black Line-X heavy duty abrasive coating, 120 mil thickness. \_\_\_\_\_
- 16.8 Aluminum checkerplate – unfinished. \_\_\_\_\_

## 17.0 TECHNICAL DOCUMENTS AND MANUALS

17.1 Bidders shall supply the following within five (5) working days of request of the Contract Administrator:

17.1.1 Two (2) sets of three view drawings showing complete unit including chassis, aerial device, flat deck, cab guard, toolboxes, etc. \_\_\_\_\_

17.1.2 Subframe mounting plans (see 7.7.1). \_\_\_\_\_

17.1.3 Deck construction details (see 10.1.2). \_\_\_\_\_

17.1.4 Body and deck mounting plans (see 14.3.1). \_\_\_\_\_

17.1.5 Estimated front and rear axle weights of the complete unit (chassis, aerial device, etc.) full hydraulic oil tank, fully fuelled and two operators. \_\_\_\_\_

17.1.6 Service facility description (see 21.1). \_\_\_\_\_

17.2 Prior to final inspection of the unit, the Contractor shall provide the following:

17.2.1 Certified weigh scale ticket of completed unit, fully fuelled. \_\_\_\_\_

17.2.2 Certification letter (see B9.2(a)). \_\_\_\_\_

17.2.3 Stability certificate (see 7.9). \_\_\_\_\_

17.2.4 Dielectric certificate (see 6.13). \_\_\_\_\_

17.3 Operator's manuals for aerial device – quantity as per Form B: Prices. \_\_\_\_\_

17.3.1 Aerial parts and maintenance manuals – quantity as per Form B: Prices, CD format preferred, required with the following comprising a set:

- i) Aerial unit lubrication chart;
- ii) Maintenance manual;
- iii) Unit parts book;
- iv) Electric wiring diagram; and
- v) Hydraulic circuit diagram. \_\_\_\_\_

Note: The manuals supplied with this contract must be in English and shall be specifically for the unit supplied. General purpose manuals will not be acceptable. The Contract will not be considered complete until these have been delivered. Manuals must be supplied at the time the unit is delivered.

## 18.0 DELIVERY

18.1 The unit shall be serviced, ready for operation and delivered F.O.B. with the freight prepaid to the City of Winnipeg, Winnipeg Fleet Management Agency, 185 Tecumseh Street, Winnipeg, Manitoba within **forty (40) calendar weeks** from the date of official notification of award of Contract. The Contractor shall contact the Contract Administrator prior to delivery of the equipment. Equipment shall be

delivered within 8:00 am and 3:00 pm on Business Days.

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18.2 The Contractor shall fax all equipment serial numbers and hour-meter readings to the Contract Administrator one (1) calendar week prior to delivery.

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18.3 A pre-delivery inspection shall be performed by the Contractor on all equipment.

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**19.0 TRAINING**

19.1 Operator training – the Contractor shall be required to provide **two (2) Business Days** of training, in Winnipeg by qualified staff, for City of Winnipeg operating personnel. All costs associated with the training shall be at the Contractor's expense. The training sessions shall be sufficient in duration and shall provide adequate familiarization and orientation of the equipment to the satisfaction of the Contract Administrator. All particulars surrounding the specified time required to perform the training shall be provided to the Contract Administrator by the Contractor one (1) week prior to the delivery of the completed equipment. The training shall be coordinated through the Contract Administrator.

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19.2 Mechanical training – the Contractor shall be required to provide **two (2) Business Days** of training, in Winnipeg by qualified staff, for City of Winnipeg mechanical personnel. All costs associated with the training shall be at the Contractor's expense. The training sessions shall be sufficient in duration and shall provide adequate familiarization and orientation of the equipment to the satisfaction of the Contract Administrator. All particulars surrounding the specified time required to perform the training shall be provided to the Contract Administrator by the Contractor one (1) week prior to the delivery of the completed equipment. The training shall be coordinated through the Contract Administrator.

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19.3 Additional training aides – state if additional VHS, CD, or computer based training aides are available.

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**20.0 PERFORMANCE RELIABILITY**

20.1 The responsibility for the design of the complete aerial device vehicle, it's performance and reliability shall rest upon the Contractor.

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20.2 The term "*repeated failures*" as used herein is defined to mean that the same component, assembly, or sub-assembly develops repeated defects, breakdowns and/or malfunctions rendering the unit inoperative, or requiring repeated shop correction, service and/or replacement during the warranty period applicable for said component, assembly, or sub-assembly. Minor items or ordinary service adjustments are not included, or considered under the scope of "repeated failures", as well as other factors, such as operational damage due to accidents, misuse or lack of proper maintenance, service and lubrication attention by not following the manufacturer's preventative maintenance schedules.

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20.3 Where the unit develops "repeated failures" in service, the Contractor

shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.

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## 21.0 **WARRANTY**

21.1 For the purpose of warranty repairs, the Contractor shall have an authorized service facility located within 10 km of the boundaries of the City of Winnipeg. The facility, or a portion thereof, shall be dedicated to the service and maintenance of the equipment being offered. Further to B9.1, Bidders shall provide a description of the service facility including, but not limited to, number of qualified service staff, years of service experience on dump body equipment, and general service capabilities. A description of the service facility shall be provided within 5-Working Days upon request of the Contract Administrator.

21.2 If a suitable warranty facility is not available within 10 km of the boundaries of the City of Winnipeg, the Bidder may propose that warranty work be performed by the City of Winnipeg Repair Facilities. Any work performed by the City of Winnipeg Repair Facilities shall be charged to the Contractor at the Facility's shop rate in effect at the time the work is performed (for example, shop rate for 2010: \$82.<sup>00</sup>/hr regular time, \$112.<sup>00</sup>/hr overtime and callout).

21.3 The warranty on the aerial device shall include 100% replacement parts and labour at no cost to the City and shall cover the complete equipment and all parts thereof against defects of workmanship, construction and materials for **two (2) years** from the date the equipment is put into service by the City of Winnipeg.

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Note: See Cab & Chassis Specifications and Supplemental Conditions for additional Warranties.

21.4 A new two (2) year warranty period shall be provided for any article that is repaired or replaced under the terms of the "repeated failures" clause (Section 20.0 Performance Reliability). The new warranty period shall be effective from the date of acceptance of the repaired or replaced article.

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**DETAILED SPECIFICATIONS 10025  
 ITEM 2c**

**13 608 kg (30,000 LBS.) GVWR CAB & CHASSIS VEHICLE**

**1.0 TYPE**

1.1 Shall be a 13 608 kg (30,000 lbs.) GVWR Conventional Cab & Chassis suitable for use as a tree trimming aerial device vehicle with a 4.27 m (14 ft.) flat deck. The vehicle shall be furnished complete and ready for use with all features and equipment as described herein.

1.2 **STATE MAKE AND MODEL BEING BID:** \_\_\_\_\_

**2.0 OTHER SPECIFICATIONS AND STANDARDS**

2.1 All applicable SAE standards form an integral part of these specifications and shall have precedence in any conflict concerning minimum acceptable standards.

2.2 The completed unit and all its components shall comply with all C.M.V.S.S. and Manitoba Highway Traffic Act regulations and requirements including, but not limited to, a Manitoba Government Inspection with Safety Sticker on the driver's side window.

**3.0 SERVICE FACILITY**

3.1 For the purpose of warranty repairs, the Bidder shall have an authorized service facility located within 10 km of the boundaries of the City of Winnipeg. The facility, or a portion thereof, shall be dedicated to the service and maintenance of the type equipment being offered. Further to B9.1, Bidders shall provide a description of the service facility including, but not limited to, number of qualified service staff, years of service experience, and general service capabilities within three (3) Business Days upon request of the Contract Administrator.

3.2 If a suitable warranty facility is not available within 10 km of the boundaries of the City of Winnipeg, the Bidder may propose that warranty work be performed by the City of Winnipeg Repair Facility. Any Work performed by the City of Winnipeg Repair Facility shall be charged to the Contractor at the Facility's shop rate in effect at the time the work is performed (for example, shop rate for 2010: \$82.<sup>00</sup>/hr regular time, \$112.<sup>00</sup>/hr overtime and callout).

**4.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS**

4.1 All items in these specifications must be answered indicating compliance or non-compliance. **Bidders shall state "yes" for compliance or state deviation**, or give reply where requested to do so. Deviations shall be clearly stated and fully detailed. Alternatives will be considered subject to evaluation.

4.2 Each bidder is required to fill in every blank. **Failure to do so may be used as a basis for rejection of bid.**

ITEM	SPECIFICATION	BIDDER TO STATE "YES" OR STATE DEVIATION
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**5.0 GVWR**

5.1	Total	13 608 kg (30,000 lbs.)	_____
5.2	Front	4536 kg (10,000 lbs.)	_____
5.3	Rear	9072 kg (20,000 lbs.)	_____

**DETAILED SPECIFICATIONS 10025 – ITEM 2c (continued)**

**6.0 Chassis Dimensions**

- 6.1 Cab-to-axle 305 cm (120 in.) \_\_\_\_\_
- 6.2 Wheelbase 475 cm (187 in.) approx., state \_\_\_\_\_

**7.0 Engine**

- 7.1 Make and Model State make, model and displacement \_\_\_\_\_
- 7.2 Type Diesel, inline 6-cylinder, non SCR type \_\_\_\_\_
- 7.3 Horsepower 165.5 kW (225 hp) gross \_\_\_\_\_
- 7.4 Torque 841 N·m (620 lb-ft) \_\_\_\_\_
- 7.5 Engine shut down Low oil pressure / high water temperature \_\_\_\_\_
- 7.6 Anti-idling programming Required to shut engine off after 15-minutes \_\_\_\_\_
- 7.7 Air intake warmer Required \_\_\_\_\_
- 7.8 Fuel shut-off Electric solenoid type \_\_\_\_\_
- 7.9 Air cleaner Dry type \_\_\_\_\_
- 7.10 Air intake restriction ind. Dash mounted restriction indicator \_\_\_\_\_
- 7.11 Oil drain plug Magnetic type \_\_\_\_\_
- 7.12 Oil filter Full flow, spin-on or cartridge type \_\_\_\_\_
- 7.13 Fuel filter Spin-on or cartridge type \_\_\_\_\_
- 7.14 Fuel/water separator Heated, drainable, mounted under hood, located to be protected from road spray \_\_\_\_\_
- 7.15 Block heater Immersion type, 1000 Watt with plastic, covered recessed male plug, located under driver’s side door \_\_\_\_\_
- 7.16 Coolant Extended life coolant, antifreeze to -37°C (-35°F) \_\_\_\_\_
- 7.17 Coolant hoses Silicone type, Gates Blue Stripe or Premium type hoses \_\_\_\_\_
- 7.18 Fan Drive Thermostatically controlled, automatic type \_\_\_\_\_
- 7.19 Air compressor Water cooled, pressure lubricated, 368 L/min. (13 cfm) \_\_\_\_\_

**8.0 Electrical System**

- 8.1 Chassis wiring Multiplexed wiring \_\_\_\_\_
- 8.1.1 PTO protection Visual and audible alarm sounding when transmission is shifted into gear with PTO “on” \_\_\_\_\_
- 8.1.2 Diff. lock protection Shall disengage differential lock over 7 km/hr approx. \_\_\_\_\_
- 8.1.3 Outrigger protection Visual and audible alarm sounding when transmission is shifted into gear with outrigger(s) down \_\_\_\_\_
- 8.1.4 Pre-trip lighting insp. Required to automatically inspect all vehicle lighting systems and circuits and inform driver of malfunction \_\_\_\_\_
- 8.1.5 Wipers override Required to automatically engage delay wipers with wipers “on” in Park \_\_\_\_\_

**DETAILED SPECIFICATIONS 10025 – ITEM 2c (continued)**

8.1.6	Park brake alarm	Audible alarm to sound when transmission is shifted into gear with Park brake engaged	_____
8.1.7	Automatic headlights	Headlights automatically “on” when wipers actuated	_____
8.1.8	Door ajar warning	Visual and audible alarm sounding when transmission is shifted into gear with door(s) ajar	_____
8.2	Alternator	Delco Remy 35-SI, 135 Amp	_____
8.3	Starter	Delco Remy 41-MT/OCP 450 Series with thermal protection	_____
8.4	Batteries	Three (3), 12-volt, group 31, 1800 CCA combined capacity	_____
8.5	Battery box	Under cab or frame mounted c/w enclosure, readily accessible, state location	_____
8.6	Battery disconnect	In-cab mounted, state location	_____
8.7	Remote boost terminal	Remote battery boost terminal(s), protected from road spray, covered, state location	_____
8.8	Cab marker lights	LED	_____
8.9	Back-up alarm	97dBA, located on inside-rear of frame rails	_____
8.10	2-way radio circuit	Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled	_____
8.11	Accessory switches	Two (2) required, dash mounted for “Beacon” and “PTO”, plus four (4) additional switches labelled “Aux”. All switches wired through ignition, complete and wired for body installation, labelled and backlit	_____
<b>9.0 Exhaust System</b>			
9.1	Configuration	Stationary extreme outboard single right hand, chrome vertical discharge on passenger’s side, underframe routing, vertical portion cab mounted. Discharge tip shall have a backslash type end.	_____
<b>10.0 Transmission</b>			
10.1	Model	Allison 2500 RDS Series	_____
10.2	Shift selector	Dash mounted digital push button or column shift preferred, floor mounted shifter acceptable, state type	_____
10.3	Cooling	Water to oil transmission cooler	_____
10.4	PTO provision	Required with maximum clearance from exhaust	_____
10.5	Oil level dipstick	Bayonet type with high and low level markings	_____
10.6	Trans. drain plug	Magnetic type	_____
<b>11.0 Front Axle</b>			
11.1	Capacity	4536 kg (10,000 lbs.) capacity	_____
<b>12.0 Rear Axle</b>			
12.1	Capacity	9072 kg (20,000 lbs.) capacity	_____



**DETAILED SPECIFICATIONS 10025 – ITEM 2c (continued)**

12.2	Ratio	For 110 km/hr top speed, state ratio	_____
12.3	Differential lock	Required for rear drive axle w/dash mtd. switch	_____
<b>13.0</b>	<b>Front Suspension</b>		
13.1	Type	Taper leaf spring suspension, 4536 kg (10,000 lbs.) capacity	_____
<b>14.0</b>	<b>Rear Suspension</b>		
14.1	Type	Air ride suspension, 9072 kg (20,000 lbs.) capacity, state make and model of suspension being bid	_____
14.2	Susp. control valve	Manual dump valve for air suspension c/w dash mtd. switch, indicator light, gauge and buzzer	_____
14.3	Automatic dump	Air bag shall automatically dump when PTO is engaged	_____
<b>15.0</b>	<b>Rims, Wheels, Hubs</b>		
15.1	Front	22.5 x 8.25 steel disk, 10-bolt, hub piloted	_____
15.2	Rear	22.5 x 8.25 steel disk, 10-bolt, hub piloted	_____
15.3	Hubs	Steel or iron hubs, front and rear	_____
15.4	Hub seals	Oil lubricated front and rear	_____
15.5	Wheel nut indicators	Required on all wheel nuts, front and rear	_____
<b>16.0</b>	<b>Tires, Front</b>		
16.1	Make & model	Michelin XZE or Goodyear G622 RSA, 14-ply, state tires	_____
16.2	Size	11R 22.5	_____
<b>17.0</b>	<b>Tires, Rear</b>		
17.1	Make & model	Michelin XDE M/S or Goodyear G282, 14-ply, state tires	_____
17.2	Size	11R 22.5	_____
<b>18.0</b>	<b>Frame</b>		
18.1	Type	To match GVWR, 900,000 in.-lbs. RBM, outside frame clear	_____
18.2	Application	Suitable for use with an aerial device w/flat deck	_____
18.3	Chassis fasteners	Grade-8 threaded hex headed frame fasteners or huck-spin fasteners	_____
18.4	Afterframe	As required for aerial device and flat deck installation 190.5 cm (75 in.) approx., state	_____
<b>19.0</b>	<b>Steering</b>		
19.1	Type	Power	_____
<b>20.0</b>	<b>Brakes</b>		
20.1	Type	Air, ABS, S-cam drum brakes, front and rear	_____

**DETAILED SPECIFICATIONS 10025 – ITEM 2c (continued)**

20.2	Slack adjusters	Meritor (clearance sensing), automatic type	_____
20.3	Parking brake	Spring set, four (4) chamber system	_____
20.4	Brake pots	Vented type	_____
20.5	Dust shields	Required, front and rear	_____
20.6	Moisture ejector	Bendix DV-2, heated, required in wet tank	_____
20.7	Drain valves	Manual, chain or cable operated, required on each air tank with the exception of wet tank	_____
20.8	Air drier	Wabco System Saver 1200, heated	_____
<b>21.0</b>	<b>Fuel Tank</b>		
21.1	Type	Aluminium, 189 L (50 US gal.) capacity, fully fuelled upon delivery	_____
21.2	Tank straps	Steel mounting straps with 1.6 mm ( <sup>1</sup> / <sub>16</sub> in.) rubber or neoprene isolators	_____
21.3	Fuel separator	Heated, drainable	_____
<b>22.0</b>	<b>Cab</b>		
22.1	Type	Conventional type, aluminum or steel w/corrosion inhibitor	_____
22.2	Hood	Fibreglass tilt	_____
22.3	Cab mounts	Air suspension	_____
22.4	Cab interior/trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
22.5	Cab silencer package	Required for minimal decibel level	_____
22.6	Hood/Firewall/Engine	Insulated hood liner, engine cover and firewall	_____
22.7	Floor covering	Rubber mat with under-padding	_____
22.8	Floor mats	Two (2), rubber	_____
22.9	Driver's seat	High back, air suspension w/foldable right hand armrest, seat belt, heavy-duty cloth upholstery, Cordura or equal, state material	_____
22.10	Passenger seat	High back, air suspension w/foldable left hand armrest, seat belt, heavy-duty cloth upholstery, Cordura or equal, state material	_____
22.11	Sun visors	Dual flip-up type	_____
22.12	Steering wheel	Tilt type	_____
22.13	12-Volt power outlet	Required	_____
22.14	Radio	Factory installed AM/FM with CD player	_____
22.15	Starter switch	Key operated c/w three (3) sets of keys	_____
22.16	Interior light	Dome light with driver and passenger door switches	_____

**DETAILED SPECIFICATIONS 10025 – ITEM 2c (continued)**

22.17	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of -37°C (-35°F)	_____
22.18	Air conditioning	Required	_____
22.19	Brake & accel. pedals	Hanging type brake and accelerator pedals	_____
22.20	Horn	Dual electric	_____
22.21	Exterior mirrors	Dual West Coast, stainless steel or polycarbonate, 17.8 cm x 36.8 cm (7" x 14½") approx.	_____
22.22	Convex mirrors	15.2 cm (6 in.) aux., stainless steel, mtd. below West Coast mirrors, or integral type with polycarbonate mirrors, one (1) per side	_____
22.23	Windows & windshield	Tinted	_____
22.24	Windshield wipers	Electric, intermittent, arctic type blades	_____
22.25	Windshield washers	Electric	_____
22.26	Grab handles	Dual exterior	_____
22.27	Entrance steps	Dual each side, open grate / grip type	_____
22.28	Winter front	Heavy-duty vinyl w/twist lock or snap type fasteners	_____
<b>23.0</b>	<b>Instrumentation</b>		
23.1	Oil pressure	Gauge	_____
23.2	Coolant temperature	Gauge	_____
23.3	Transmission oil temp.	Gauge	_____
23.4	LOP/HWT	Warning light and buzzer	_____
23.5	Voltmeter	Gauge	_____
23.6	Air reservoir pressure	Gauge with LAP warning light and buzzer	_____
23.7	Engine hourmeter	Required, non-resetable type	_____
<b>24.0</b>	<b>Tow Hooks</b>		
24.1	Location	Front mounted	_____
<b>25.0</b>	<b>Front Bumper</b>		
25.1	Type	Steel, full width c/w license plate bracket	_____
<b>26.0</b>	<b>Colour and Finish</b>		
26.1	Exterior	White	_____
26.2	Interior	Blue or grey	_____
26.3	Frame & suspension	Primed and finished with black Imron 5000 paint or equivalent	_____
26.4	Front bumper	Black	_____
26.5	Wheels	Powder coated white	_____
<b>27.0</b>	<b>Accessories</b>		
27.1	Flare kit	Three (3) triangular reflectors, CVSA approved	_____

**DETAILED SPECIFICATIONS 10025 – ITEM 2c (continued)**

27.2	Fire extinguisher	4.5 kg (10 lb.) ABC type, required in cab with mounting bracket	_____
<b>28.0 Manuals</b>			
28.1	Operator's manual	Required, quantity as per Form B: Prices	_____
28.2	Parts/Repair/Service	Required, including preventative maintenance schedules for life of unit, CD or online format preferred, quantity as per Form B: Prices	_____
<b>29.0 Warranty</b>			
29.1	Basic vehicle	Two (2) years, unlimited km	_____
29.2	Batteries	One (1) year or 100 000 km	_____
29.3	Drivetrain	Two (2) years, unlimited km	_____
29.4	Cab structure/corrosion	Five (5) years, unlimited km	_____
29.5	Frame & crossmembers	Five (5) years, unlimited km	_____
29.6	Cab paint	One (1) year or 100 000 km	_____
29.7	Engine	Four (4) years or 320 000 km including engine electronics and injectors	_____
29.8	Towing coverage	Four (4) year or 320 000 km	_____
29.9	Transmission	Two (2) years, unlimited km	_____
29.10	Axles, front & rear	Two (2) years or 240 000 km	_____
29.11	Exhaust system	Four (4) years or 160 000 km	_____