FORM N: DETAILED SPECIFICATIONS 21015

75 FT. AERIAL DEVICE VEHICLE WITH A CHIPPER BODY

1. INTENT

1.1 It is the intent of these specifications to describe new or used hydraulically operated, articulating aerial device vehicle complete with a nominal 11 ft. chipper body, installed on a conventional cab, single axle cab and chassis to be supplied by the Contractor. The vehicle shall be a 2019 model year or newer with less than 1500 hours on the entire vehicle.

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.

1.3 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.

1.4 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. OTHER SPECIFICATIONS AND STANDARDS

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

2.2 The complete dive vehicle shall comply with the applicable regulations:

- Manitoba Highway Traffic Act
- Canadian Motor Vehicle Safety Standards, CMVSS Transport Canada
- National Safety Mark, NSM
- Manitoba/Winnipeg Safety and Health Act, Parts 12, 22
- Canadian Standards Association, CSA
- Under Writers of Canada, U/L
- Society of Automotive Engineers, SAE

2.3 All welding and welding designs of the load supporting elements shall conform to the requirements of the Canadian Standards Association Standard (CSA) W47.1-03 and W59-03.

2.4 The completed unit shall include a Manitoba Government Inspection with Safety Sticker on the driver's side window.

2.5 The completed vehicle shall be complete with a National Safety Mark, NSM.

2.5.1 **State** NSM Number: _____

3. QUALIFICATIONS OF MANUFACTURER

3.1 The manufacturer of the aerial device and chipper body shall have a minimum of five (5) years continuous experience manufacturing and installing equipment of the type being offered. The manufacturer shall have in effect a complete and documented quality control program ensuring the compliance with all applicable standards.

4. QUALIFICATIONS OF THE BIDDER

4.1 The Bidder shall be a manufacturer or authorized distributor/supplier of aerial device vehicles and specialty equipment bodies.

4.2 For the purposes 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 major portion thereof, shall be dedicated to the installation, service, and maintenance of customized specialty bodies and equipment being offered.

4.3 Further to B12, Bidders shall provide a description of the facility including, but not limited to, number of qualified staff, years of service experience on specialty bodies, and general service capabilities within three (3) Business Days upon request of the Contract Administrator.

5. INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS

5.1 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 and/or equivalents shall be clearly stated and fully detailed. Deviations and/or equivalents will be considered subject to evaluation. In every instance where a brand name or design specifications is used, the City will also consider deviations and/or equivalents.

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

6. REFERENCES

6.1 Provide five (5) references where this equipment is used in a working environment where climatic conditions are similar to the City of Winnipeg.

_____
_____
_____
_____
_____

7. CONVENTIONAL CAB AND CHASSIS SPECIFICATIONS

7.1 **STATE YEAR, MAKE AND MODEL BEING BID:**_____

7.1.1 **STATE CURRENT HOURMETER:** _____

	GVWR		
7.2	Total	35,000 lbs.	_____
7.3	Front	14,000 lbs.	_____
7.4	Rear	21,000 lbs.	_____
	Chassis Dimensions		
7.5	Cab-to-axle	142 in. approx., suitable for aerial device and chipper body, **state** CA	_____
7.6	Wheelbase	208 in. approx., suitable for aerial device and chipper body, **state** WB	_____
	Engine		
7.7	Type	Diesel engine, Tier IV, **state** make, model and displacement	_____

7.8	Horsepower	300 hp approx., **state**	_____
7.9	Torque	750 lbf-ft approx., **state**	_____
7.10	Engine shut down	Low oil pressure / high water temperature	_____
7.11	Air intake warmer	Required	_____
7.12	Fuel shut-off	Electric solenoid type	_____
7.13	Air cleaner	Dry type	_____
7.14	Air intake restriction ind.	Dash mounted restriction indicator	_____
7.15	Oil drain plug	Magnetic type	_____
7.16	Oil filter	Full flow, spin-on or cartridge type	_____
7.17	Fuel filter	Spin-on or cartridge type	_____
7.18	Fuel/water separator	Heated, drainable, mounted under hood, located to be protected from road spray	_____
7.19	Block heater	Immersion type, 750 Watt with plastic, covered recessed male plug, located under driver's side door	_____
7.20	Coolant	Extended life coolant, antifreeze to -35°F (-37°C)	_____
7.21	Coolant hoses	Silicone type, Gates Blue Stripe or Premium type hoses	_____
7.22	Fan Drive	Thermostatically controlled, automatic type	_____
7.23	Air compressor	Water cooled, pressure lubricated, 13 cfm	_____
	Electrical System		
7.24	Alternator	160 Amp, **state** make and model	_____
7.25	Starter	Delco Remy 38MT HD or equivalent, **state**	_____
7.26	Batteries	Three (3), 12-volt, group 31, 2250 CCA combined capacity	_____
7.27	Battery Box	Under cab c/w enclosure, readily accessible	_____
7.28	Battery disconnect	In-cab mounted, lockable, **state** location	_____
7.29	Remote boost terminal	Remote battery boost terminal(s), protected from road spray, covered, **state** location	_____
7.30	Cab marker lights	LED	_____
7.31	Back-up alarm	Required, 97 dBA, located on inside-rear of frame rails	_____
7.32	Accessory switches	Six (6) required, dash mounted for body installation, labelled and backlit	_____
7.33	Radio circuit	Independent 20 Amp, 2-way radio circuit	_____
	Exhaust System		
7.34	Configuration	Single horizontal muffler with horizontal tailpipe	_____
	Transmission		
7.35	Model	Allison 3000 or 3500 EVS Series, **state** model	_____
7.36	Shift selector	Rotary shift control	_____
7.37	Cooling	Water to oil transmission cooler	_____
7.38	PTO provision	Required with maximum clearance from exhaust	_____
7.39	Oil level dipstick	Bayonet type with high and low level markings	_____

7.40	Trans. drain plug	Magnetic type	_____
	Front Axle		
7.41	Capacity	14,000 lbs. capacity	_____
	Rear Axle		
7.42	Capacity	21,000 lbs. capacity	_____
7.43	Ratio	For 110 km/hr top speed, **state** ratio	_____
7.44	Differential lock	Required for rear drive axle w/dash mtd. switch	_____
	Front Suspension		
7.45	Type	Taper leaf spring suspension, 14,000 lbs. capacity	_____
	Rear Suspension		
7.46	Type	Air ride or spring ride suspension, 21,000 lbs. capacity, **state** make, model and type of suspension being bid	_____
	Rims, Wheels, Hubs		
7.47	Front	22.5 x 8.25 polished aluminum, 10-bolt, hub piloted	_____
7.48	Rear	22.5 x 8.25 polished aluminum, 10-bolt, hub piloted	_____
7.49	Hubs	**State** type, front and rear	_____
7.50	Hub seals	Oil lubricated front and rear	_____
7.51	Wheel nut indicators	Required on every second wheel nut, front and rear	_____
	Tires, front		
7.52	Size	385/65 22.5	_____
7.53	Make & model	Michelin XZE, Goodyear G662 RSA or equivalent 18-ply tires, **state** tires	_____
	Tires, rear		
7.54	Size	11R 22.5	_____
7.55	Make & model	Michelin XDE M/S, Goodyear G182 or equivalent 14-ply tires, **state** tires	_____
	Frame		
7.56	Type	Single or double rail, to match GVWR, 1,000,000 in.-lbs. RBM, outside frame clear	_____
7.57	Application	Suitable for use with an aerial device and chipper body	_____
7.58	Chassis fasteners	Grade-8 threaded hex headed frame fasteners or huck-spin fasteners	_____
	Steering		
7.59	Type	Power	_____
	Brakes		
7.60	Type	Air, ABS	_____
7.61	Slack adjusters	Front and rear, clearance sensing, automatic type, greasable slack adjuster pins	_____
7.62	Parking brake	Dash mounted air operated parking brake knob	_____
7.63	Brake chambers	Front and rear, vented type	_____
7.64	Dust shields	Front and rear	_____
7.65	Air tanks	Aluminum tanks	_____

7.66	Tank straps	Aluminum or stainless-steel straps, $^{1}/_{16}$ in. rubber or neoprene isolators to prevent galvanic corrosion	_____
7.67	Moisture ejector	Bendix DV-2, heated, required in wet tank	_____
7.68	Drain valves	Manual, chain or cable operated, required on each air tank	_____
7.69	Air drier	Heated, **state** make and model	_____
	Fuel Tanks		
7.70	Type	Dual aluminum, 300 L combined capacity approx., fully fuelled upon delivery	_____
7.71	Tank straps	Steel mounting straps with $^{1}/_{16}$ in. rubber or neoprene isolators	_____
7.72	Fuel separator	Heated, drainable, c/w primer pump	_____
7.73	DEF tank	Diesel exhaust fluid tank, 22-30 L approx., **state** size and location	_____
	Cab		
7.74	Type	Conventional type, aluminum or steel w/corrosion inhibitor	_____
7.75	Hood	Fibreglass tilt	_____
7.76	Cab mounts	Rubber cab mounts	_____
7.77	Cab interior/trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab. Door panels to include storage pockets, front and rear	_____
7.78	Cab silencer package	Required for minimal decibel level	_____
7.79	Hood/Firewall/Engine	Insulated hood liner, engine cover and firewall	_____
7.80	Floor covering	Rubber mat with under-padding	_____
7.81	Floor mats	Two (2), rubber	_____
7.82	Driver seat	High back, air suspension w/foldable right hand armrest, seat belt, heavy-duty cloth upholstery, Cordura or equal, **state** material	_____
7.83	Passenger seat	High back, air suspension w/foldable left hand armrest, seat belt, heavy-duty cloth upholstery, Cordura or equal, **state** material	_____
7.84	Sun visors	Dual flip-up type	_____
7.85	Steering wheel	Tilt type	_____
7.86	12-Volt power outlet	Required	_____
7.87	Radio	Factory installed AM/FM with Bluetooth® capability, auxiliary input and USB port	_____
7.88	Starter switch	Key operated c/w four (4) sets of keys	_____
7.89	Key FOBS	Two (2)	_____
7.90	Interior light	Dome light with driver and passenger door switches	_____
7.91	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of -35°F (-37°C)	_____
7.92	Air conditioning	Required	_____
7.93	Power windows	Required	_____

7.94	Power door locks	Required	_____
7.95	Brake & accel. pedals	Hanging type brake and accelerator pedals	_____
7.96	Horn	Dual electric with air horn	_____
7.97	Exterior mirrors	Dual West Coast, stainless steel or polycarbonate, 7" x 14½" approx.	_____
7.98	Convex mirrors	6 in. aux., stainless steel, mtd. below West Coast mirrors, or integral type with polycarbonate mirrors, one (1) per side	_____
7.99	Downview mirror	Located over passenger door, 5" x 4" approx.	_____
7.100	Windows & windshield	Tinted	_____
7.101	Windshield wipers	Electric, intermittent	_____
7.102	Windshield washers	Electric	_____
7.103	Grab handles	Dual exterior with rubber inserts	_____
7.104	Entrance steps	Dual each side, open grate / grip type	_____
7.105	Winter front	Heavy-duty vinyl w/twist lock or snap type fasteners	_____
	Instrumentation		
7.106	Oil pressure	Gauge	_____
7.107	Coolant temperature	Gauge	_____
7.108	Transmission oil temp.	Gauge	_____
7.109	LOP/HWT	Warning light and buzzer	_____
7.110	Voltmeter	Gauge	_____
7.111	Air reservoir pressure	Gauge with LAP warning light and buzzer	_____
7.112	Engine hourmeter	Required, non-resettable type	_____
	Tow Hooks		
7.113	Location	Front mounted	_____
	Front Bumper		
7.114	Type	Heavy duty, custom made steel bumper, integral with superstructure, full width c/w license plate provision	_____
	Colour and Finish		
7.115	Exterior	White	_____
7.116	Interior	Dark grey or black	_____
7.117	Frame & suspension	Primed and finished with black Imron 5000 paint or equivalent	_____
	Accessories		
7.118	Flare kit	Three (3) triangular reflectors, CVSA approved	_____
7.119	Fire extinguisher	5 lb. ABC type, required in cab with mounting bracket	_____
7.120	First aid kit	Required, Provincial 1 approved kit, supplied loose	_____
	Manuals		
7.121	Operator’s manual	Required, one (1) per vehicle	_____
7.122	Parts/Repair/Service	Required, including preventative maintenance schedules for life of unit, USB or online manuals preferred	_____

Warranty

7.123	Chassis warranty	The Contractor shall provide all detailed published Warranty information (including all exclusions) at the time of delivery of the equipment. **State** the following:	
7.124	Basic vehicle	**State**	_____
7.125	Batteries	**State**	_____
7.126	Drivetrain	**State**	_____
7.127	Cab structure/corrosion	**State**	_____
7.128	Frame & crossmembers	**State**	_____
7.129	Cab paint	**State**	_____
7.130	Engine	**State**	_____
7.131	Towing coverage	**State**	_____
7.132	Transmission	**State**	_____
7.133	Axles, front & rear	**State**	_____
7.134	Exhaust system	**State**	_____

AERIAL DEVICE AND CHIPPER BODY SPECIFICATIONS

8.0 PERFORMANCE

8.1 The aerial device vehicle and chipper 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. _____

9.0 MAKE AND MODEL

9.1 **State make and model of aerial device unit being bid.**_____

9.2 **State make and model of chipper body being bid.**_____

10.0 WEIGHT DISTRIBUTION

10.1 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 7,000 lbs. payload of wood chips, and 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).

10.2 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: _____lbs.

, Rear axle weight: _____lbs.

, Total: _____lbs.

b) Vehicle with 7,000 lbs. of wood chips, 300 lbs. of cargo in compartment 1, 300 lbs. of cargo in compartment 2, and 900 lbs. of trailer tongue weight.

, Front axle weight: _____lbs.

, Rear axle weight: _____lbs.

, Total: _____lbs.

10.3 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. _____

11.0 AERIAL DEVICE

11.1 Mid-mounted, two boom articulated aerial device with a raised platform height of 70 ft., and a side reach of approx. 50 ft. _____

11.2 Working height – 75 ft., **state**. _____

11.3 Overall travel height (completed unit) – 158 in. approx. **State** overall height. _____

11.4 Rotation – continuous with shear ball type rotation bearing. _____

11.5 Upper boom – fibreglass, insulated. _____

11.5.1 Upper boom articulation – range of 270° from stored position. _____

11.6 Upper boom storage support – saddle type support extending past the outter edges of the upper boom. _____

11.6.1 The boom storage support shall include a securing strap or equivalent to fully secure the boom when travelling. _____

11.7 Lower boom – steel with fibreglass insert, insulated. _____

11.7.1 Lower boom articulation – range of 125° from stored position. _____

11.7.2 Lower boom protection system – to prevent excessive down pressure when stowing lower boom. _____

11.7.3 Lower boom storage provision – **state** details of storage provision. _____

_____

11.8 Boom lift cylinders shall have externally adjustable counterbalance holding valves. _____

11.9 Safety belt attachment – one (1), located at end of boom. _____

11.10 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, 12"L x 5"W with abrasive non-slip surface. The bucket shall have toe space on three (3) sides. _____

11.10.1 Nominal platform dimensions – 24" x 24" x 40" approx. _____

11.10.2 Platform capacity – 159 kg (350 lbs.). _____

11.10.3 Chain saw holder – fibreglass, required on platform. _____

11.11 Platform levelling system – automatic mechanical type. _____

11.12 Platform dump system – platform to manually tilt (pivot) 100°. _____

11.13 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.

12.0 OUTRIGGERS

12.1 Outrigger stabilizer supports – one (1) set required with a capacity to support all rated loads. _____

12.2 Base set – A-frame type, welded to front face of aerial device pedestal and to sub-frame. _____

12.3 Outrigger supports shall be designed to form an integral part of the sub-frame. _____

12.4 Outrigger hydraulic cylinders shall be equipped with pilot operated holding valves fully protected from damage. _____

12.5 Outrigger shoes – folding type, 12" x 12". _____

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

12.6.1 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. _____

13.0 HYDRAULIC CONTROLS

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

13.1.1 Control levers shall permit multiple simultaneous boom movements. _____

13.1.2 Platform control valves and control levers to be enclosed in a fibreglass cover, fully accessible. _____

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

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

13.2.1 Lower controls capable of positively overriding the platform controls. _____

13.3 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. _____

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

13.3.2 Outrigger down interlock – required on each outrigger to prevent aerial device operation if any outrigger is not in “down” position. _____

13.4 Dump hoist control – located alongside dump/aerial selector and passenger side outrigger controls. _____

13.5 All controls must be clearly identified with permanent, engraved type labels. Glued labels will not be accepted. _____

14.0 CHIPPER BODY

14.1 Material – all steel used in construction of chipper body shall be 14 ga. steel except where otherwise noted. **State** material being bid. _____

14.2 Length, outside – 11 ft. approx., **state**. _____

14.3 Width, outside – 8 ft. approx., **state**. _____

14.4 Height of sides – 63 in. approx., **state**. _____

14.5 Side construction – formed, clean side style sides without vertical reinforcements, welded into a 1-piece design. _____

14.5.1 Air vents – top of each side to be complete with screened air vents, two (2) per side. _____

14.6 Tailgate – 24 in. height approx., 1-piece, passenger side hinged, driver side latched. _____

14.6.1 There shall be minimal gap between tailgate, floor and sides when tailgate is in the closed position. _____

14.7 Floor material – 12-ga. steel. **State** material. _____

14.7.1 Floor to have a 60° slope along the joint to the side-wall. Slope shall extend upward approx. 4 in. _____

14.7.2 Rear cross sill at tailgate – 8 in. channel, housing all lights and license plate. _____

14.8 Hoist – double acting, hydraulic scissor lift hoist, state make, model and capacity. _____

14.8.1 Dumping angle – 50°. _____

14.9 Dump body prop – double prop, operable by a single person. **State** design. _____

14.9.1 Prop shall support dump body in raised position and permit servicing of hoist. _____

14.9.2 Dump body prop to be complete with receiving bracket. _____

14.10 Lower boom support saddle – located at top-rear of chipper body. Shall extend approx. 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. _____

14.11 Welding – all chipper body welds shall be continuous welds. _____

14.11.1 All welding performed shall conform to the best standards and practice of the industry. _____

14.11.2 The chipper body manufacturer shall have a documented quality control program in effect including inspection of welds by a qualified inspector. _____

15.0 STORAGE COMPARTMENTS

Driver's Side:

15.1 Compartment 1 – steel construction, 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. _____

15.1.1 Shelves – two (2) steel shelves, 18"W x 27"D approx. c/w 2 in. front face lip, height adjustable @ 3 in. increments, mounted in left side of compartment 1. _____

15.1.2 Material hooks – four (4) required in right hand side compartment, fixed type, two (2) mounted to back wall, one (1) per side. _____

15.1.3 Rigid door springs – one (1) per door. _____

Rear:

15.2 Ladder compartment – steel construction, located on driver's or passenger's side, inside rear of chipper body, rear access, 12"W x 25"H x full length approx. _____

15.3 Pole saw shelf – located directly above ladder compartment, 6 in. H approx., full length. _____

15.4 Top of ladder compartment and pole saw shelf shall be tapered @ 45° angle approx. _____

15.5 Rear door(s) – steel construction, full height and width. _____

Passenger's Side:

15.6 Compartment 2 – aluminum checkerplate or painted steel construction, 36"L x 48"H x 18"D approx., two (2) side-hinged doors, corrosion resistant hinges, cables or check chains to hold doors in position, frame mounted ahead or rear wheels. _____

15.7 Door handles (all compartments) – Trimark stainless steel or chrome plated, paddle type, flush mounted, lockable w/3-sets of keys. _____

15.8 Door hinges and latches – chrome or stainless steel with adjustable striker plates. _____

15.9 Drip mouldings – required above door openings. _____

15.10 All compartment door openings shall be sealed using automotive, bulb type rubber gaskets. _____

15.11 Door locks – all locks for Compartments 1-4 shall be keyed alike. _____

15.12 Rubber bumpers and/or check chains are required on all compartment doors where applicable to prevent paint scuff and door damage. _____

15.13 All compartment floors shall be lined with Dry Deck matting or equivalent. _____

16.0 HYDRAULICS

16.1 PTO – constant mesh, Muncie Powerclutch or Chelsea equivalent. _____

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

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

16.2 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. _____

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

16.3.1 Suction strainer – 100 micron, replaceable, in-tank mounted. _____

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

16.5 Shut-off valve – ball type, located between reservoir and pump, secured in open position with a bracket and bolt. _____

16.6 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. _____

16.7 Pressure gauge – glycerine filled, located at lower operating station. _____

16.8 Flashover protection system – required in hydraulic lines to boom tip. _____

16.9 Hydraulic oil – non-conductive, certified rating of 30 kV, Esso J13 or equal, state recommended oil being bid. _____

16.10 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. _____

16.10.1 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. _____

16.11 Steel hydraulic tubing – plated type, required where practicable except where flexibility is required. Tubing shall be guarded as required. _____

16.11.1 Hydraulic hoses – burst rated at 4-times working pressure, non-wire braid hoses, protected at all wear and scuff locations. _____

16.12 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. _____

16.12.1 Tool outlet shall be fitted with Bruning dripless quick couplers. Bruning outlet covers required for all fittings. _____

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

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

17.0 CAB GUARD

17.1 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 ⅛") steel tubing covered with ¾-G9 standard expanded metal. _____

17.1.1 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. _____

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

18.0 ELECTRICAL AND LIGHTING

18.1 All vehicle lighting shall conform to CMVSS and Manitoba Highway Traffic Act requirements. _____

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

18.2.1 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. _____

18.2.2 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. _____

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

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

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

18.2.6 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. _____

18.2.7 License plate lamp – P/N 15040, complete with license plate bracket. _____

18.2.8 Lighting harnesses – Truck-Lite 50 Series harness system, properly routed and secured. _____

18.2.9 All harnesses shall be internally grounded, no exceptions. _____

18.3 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. _____

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

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

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

18.6.1 Beacon guards – four (4) heavy duty 16 mm (⅝ in.) steel roundbar construction guards with a steel plate welded on top for protection. _____

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

18.6.3 Warning beacons and strobe lights shall be actuated by one switch located on the truck dash. _____

18.7 Traffic Advisor – LED, Whelen TANF85AA, mounted to front of cab guard, controller cab mounted. _____

18.8 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. _____

18.9 Power take-off warning light – chassis manufacturer's OEM backlit switch located on the truck dash. _____

18.10 Boom warning light – 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. _____

18.11 Outrigger warning light – 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. _____

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

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

18.12.1 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. _____

18.12.2 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. _____

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

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

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

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

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

19.0 INSTALLATION

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

19.2 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. _____

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

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

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

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

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

19.8 Departure angle of completed unit – state angle. _____

20.0 GREASING SYSTEM

20.1 Greasing system – system layout shall be designed to function under the operating principles of a parallel injection system, progressive systems will not be accepted. Greasing system to be incorporated into the cab & chassis where applicable, Parallel NLGI-0 or equivalent, automatic lubrication system, connected to all grease points. System outfitted with automatic low level shut-off, an in-cab monitor showing system status such as low level, low pressure and/or fault code display. _____

20.2 Pump reservoir – 6 kg or larger pump reservoir, readily accessible for refill, parameters preprogrammed to accommodate 500-hour service intervals. Pump must have correct fill adapter fitting for the City of Winnipeg maintenance staff to refill reservoir. Parker #H2-63 refill adapter fitting. _____

20.3 Power input – system power connection 12-Volt to ignition source with an accessible fuse protection. Greasing system to shut-down when engine is turned off. LED indicator lights connected to the truck batteries are not acceptable. _____

20.4 Air connection – compressed air connection for the automatic lubrication system pump must be connected to a secondary air tank supply of the chassis compressed air system. Red ¼ in. DOT approved airline must be applied and fitted with an air system protection check valve into the system secondary tank. _____

20.5 Grease lines, main – extreme low temperature type (e.g. Eaton Aeroquip SAE 100R16 Matchmate Global Ice) steel braided rubber hose with compatibility to accommodate working pressure of 6000 psi. System mainline must be outfitted with #04 JIC crimped ends. _____

20.5.1 Grease lines, secondary – $^{3}/_{16}$ in. nylon heavy wall secondary grease line or equivalent, and must be installed and protected from extreme environments such as heat sources and components producing vibration. _____

20.6 Prefill – all components connected to the automatic greasing system must be prefilled with OEM approved grease prior to installation of the greasing system. _____

20.7 Thread sealant – applied to main and secondary grease lines of each fitting. _____

20.8 Colour coded lines – all secondary grease lines must use colour coded line from the injector to the connected component. _____

20.9 Greasing points – **state** quantity of greasing points. _____

20.9.1 Grease points that cannot be connected to the automatic lubrication system must be connected with remote grease lines. Where remote lines are utilized, decals must be applied stating manual greasing is required with recommended grease application intervals. _____

20.10 Injector manifolds – all manifolds must be fitted with nylon lock nut hardware and securely mounted in an area away from debris impact. Special guards should be fitted for injector manifolds and hoses in areas of consistent debris impact, i.e., snow, ice, road spray, etc. _____

20.11 Environmental impact, over-greasing – the system layout and grease injector

delivery shall not over-grease any component to the extent where OEM warranties are voided. In addition, environmental impact features shall be incorporated in the automatic lubrication system, i.e., no grease pumped while parked or leaving excessive grease on roadways. _____

20.12 Any modification to install the greasing system that requires drilling, cross-drilling, enlargement of existing zerk fitting sizes by drilling and tapping or welding, must be pre-approved by the Contract Administrator prior to installation. Such activities can and will void warranty, thereby holding the Contractor liable for any costs and damages involved with the equipment and components connected to the greasing system. _____

21.0 MISCELLANEOUS

21.1 Safety belts – one (1) required. _____

21.2 Wheel chocks – required. _____

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

21.4 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"). _____

21.4.1 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. _____

21.5 Bucket cover – required. _____

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

21.6.1 Kick plate – $^{3}/_{16}$ in. steel or aluminum checkerplate, full width behind access steps. _____

21.7 Access ladder – mounted at rear of cab shield for access to top of cab shield, approx. 22 in. width. _____

21.7.1 Ladder rungs – grip strut type steps, 13-gauge steel, 8 in. depth approx. 14 in. spacing approx. _____

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

21.8 Hitch plate – ½ in. thick solid steel trailer hitch plate, (laminated plates unacceptable) installed to chassis frame, 20,000 lbs. capacity. _____

21.9 Pintle hitch – Premier 240 or equivalent, installed on hitch plate at a 24 in. height. _____

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

21.11 Trailer plug socket – shall be installed in rear hitch plate. _____

21.12 Grease fittings – required on tailgate release mechanisms, pivot points, and linkages as required. _____

21.13 Interfaces – any contact between aluminum and steel shall be separated by a $^{1}/_{16}$ in. rubber or neoprene sheet to prevent galvanic corrosion. Bolts between aluminum and steel shall be stainless steel. _____

22.0 PAINT AND FINISH

22.1 Aerial device steel sections – all steel components shall be powder coated or epoxy primered with poly-urethane finish, white, inside and out, prior to assembly. _____

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

22.3 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. _____

_____

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

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

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

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

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

22.9 Aluminum checkerplate – unfinished. _____

23.0 TECHNICAL DOCUMENTS AND MANUALS

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

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

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

23.1.3 Service facility description (see 4.3). _____

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

23.2.1 Certified weigh scale ticket of completed unit, fully fuelled (see 10.3). _____

23.2.2 Dielectric certificate (see 11.12). _____

23.2.3 Stability certificate (see 12.6.1). _____

23.3 Operator's manuals for aerial device and chipper body – two (2) required. _____

23.3.1 Parts, repair and maintenance manuals – USB 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.

24. DELIVERY

24.1 The completed 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 **four (4) calendar weeks** from the date of award. 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. _____

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

24.3 The Contractor shall contact the Contract Administrator prior to delivery of the equipment. _____

25. PERFORMANCE RELIABILITY

25.1 The responsibility for the design of the complete aerial device vehicle, its performance, and reliability shall rest upon the Contractor. _____

25.2 The term *"repeated failures"* as used herein is defined to mean that the same component, subassembly, or assembly develops repeated defects, breakdowns and/or malfunctions rendering the vehicle inoperative, or requiring repeated shop correction, service, and/or replacement during the Warranty period applicable for said component, subassembly, or 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. _____

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

26. WARRANTY

26.1 The warranty on the cab & chassis is listed above in 7.123 – 7.134.

26.2 The Contractor shall provide all detailed published warranty information (including all exclusions) at the time of delivery of the equipment. **State** the following warranties:

26.3 Aerial Device – **state**. _____

26.4 Chipper body – **state**. _____

26.5 Electrical, lighting, etc. – **state**. _____

26.6 Finish, i.e., paint, gelcoat, powder coat, etc. – **state**. _____

26.7 Provide details on any extended Warranty coverage available. _____

_____