

FORM A: BID
(See B8)

1. Contract Title SUPPLY AND DELIVERY OF SINGLE AXLE CHASSIS WITH VARIOUS BODY CONFIGURATIONS

2. Bidder

Name of Bidder

Usual Business Name of Bidder as it appears on Invoice (if different from above)

Street

City

Province

Postal Code

Email Address of Bidder

Facsimile Number

(Mailing address if different)

Street or P.O. Box

City

Province

Postal Code

GST Registration Number (if applicable)

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

Email 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/she 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 B9)

SUPPLY AND DELIVERY OF SINGLE AXLE CHASSIS WITH VARIOUS BODY CONFIGURATIONS

UNIT PRICES					
ITEM NO.	DESCRIPTION	SPEC. REF.	UNIT	QUANTITY	UNIT PRICE
1.	Single Axle Chassis (35,000 GVWR)	17012	Each	2	
1a.	13' x 8' Streets Maintenance Dump Body	17012	Each	2	
2	Single Axle Chassis (39,000 GVWR)	17012	Each	3	
2a.	13' x 8' Streets Maintenance Dump Body with Tail Chute	17012	Each	3	
2b.	Snow-Plow Mounting Equipment	17012	Each	3	
3	Single Axle Chassis (33,000 GVWR)	17013	Each	1	
3a.	13' x 8' Parks Dump Body	17013	Each	1	
4	Single Axle Chassis (33,000 GVWR)	17013	Each	3	
4a.	13' x 8' Parks Dump Body	17013	Each	3	
4b.	Water Tank, Support Bands and Stabilizers	17013	Each	3	
5	Single Axle Chassis (33,000 GVWR)	17013	Each	1	
5a.	13' x 8' Parks Dump Body	17013	Each	1	
5b.	Water Tank, Support Bands and Stabilizers	17013	Each	1	
5c.	Watering Arm	17013	Each	1	
6	Single Axle Chassis (33,000 GVWR)	17014	Each	2	
6a.	13' x 8' Landscape Development Dump Body	17014	Each	2	

FORM B: PRICES
 (See B9)

SUPPLY AND DELIVERY OF SINGLE AXLE CHASSIS WITH VARIOUS BODY CONFIGURATIONS

UNIT PRICES

ITEM NO.	DESCRIPTION	SPEC. REF.	UNIT	QUANTITY	UNIT PRICE
7	Single Axle Chassis (33,000 GVWR)	17015	Each	6	
7a.	Forestry Chipper Body	17015	Each	6	
8.	Single Axle Chassis (33,000 GVWR)	17016	Each	2	
8a.	Sewer Jet Body with Single Piston Pump	17016	Each	2	
9	Single Axle Chassis with Crew Cab (33,000 GVWR)	17017	Each	1	
9a.	13' x 8' Sewer Dump Body	17017	Each	1	
9b.	Articulating Crane	17017	Each	1	

 Name of Bidder

FORM N: DETAILED SPECIFICATIONS 17012

SINGLE AXLE CHASSIS WITH A 13' X 8' STREETS MAINTENANCE DUMP BODY

1.0 DESCRIPTION OF EQUIPMENT/APPLICATION

- 1.1 These specifications describe **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** and other equipment and features as specified herein. These units are an integral portion of the City of Winnipeg Central Services Streets Maintenance equipment fleet as they are utilized year round for both the construction season as well as during winter maintenance season. All vehicles (qty 5) will be used for hauling rubble, broken concrete, aggregates, snow and hot asphalt in addition three (3) of the vehicles will be configured to accommodate City of Winnipeg owned Tenco/Frink Truck Plows. The utilization of the trucks is 80% Hauling and 20% snow. The truck will be used by only one operator.



- 1.2 The **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** shall be new 2017 model year or newer.
- 1.3 The **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** and all other items/components shall be the manufacturer's latest model. The equipment shall be furnished complete and ready for operation. Any parts or accessories not specifically mentioned, but which are required to complete and place the equipment and associated attachments in successful operation shall be furnished as though specifically mentioned in these specifications. The equipment and associated and attachments, and all parts thereof, shall conform in strength and quality of material and workmanship, to the best standards and engineering practice of the industry.

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 **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** shall comply with the applicable regulations:
- Highway Traffic Act
 - Manitoba Motor Vehicle 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
- City of Winnipeg Lighting Visibility
Standard=<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.

2.3 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 units.

2.4 The manufacturer/installer shall be a certified vehicle completer and must affix their National Safety Mark (NSM) certification sticker on each unit.

State NSM number: _____

3.0 SERVICE FACILITY

3.1 For the purpose of warranty repairs, the supplier shall have an authorized service facility located within 10 kilometres 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 B11, 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.

4.0 REFERENCES

4.1 If available, please provide five (5) references where this equipment is used in a working environment where climatic conditions are similar to the City of Winnipeg.

5.0 MAKE & MODEL

5.1 **State** make and model of the **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** being bid: _____

6.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS

6.1 Each bid will be evaluated based on adherence to all terms, conditions and requirements outlined in the Bid Opportunity package.

6.2 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.

6.3 **EACH BIDDER IS REQUIRED TO FILL IN EVERY BLANK. FAILURE TO DO SO MAY BE USED AS A BASIS FOR REJECTION OF BID**

7.0 **PERFORMANCE RELIABILITY**

- 7.1 The responsibility for the design of the **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body**, its performance and reliability shall rest upon the Contractor.
- 7.2 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, of 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 schedule.
- 7.3 Where the **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** develops “repeated failures” in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.
- 7.4 The equipment shall be capable of consistent top performance in City of Winnipeg Environment. **Note: The City of Winnipeg has four seasons with ambient temperatures ranging from approximately 90°F (32°C) to -40°F (-40°C)**

8.0 **FUEL**

- 8.1 The **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** must be fully fuelled upon delivery (**no exceptions**).

9.0 **QUALIFICATIONS OF MANUFACTURER & CONTRACTOR**

- 9.1 The manufacturer of the **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** shall have five (5) years continuous experience manufacturing **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body**.
- 9.2 The manufacturer shall have in effect a documented quality control program ensuring that the quality of materials and workmanship, including welding, conforms to the best standards and engineering practice of the industry.
- 9.3 The Contractor shall have five (5) years continuous experience servicing, repairing and maintaining **Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body** of the type being offered.

10.0 **CHASSIS SPECIFICATIONS**

When used in this Specification 17012:

“**Dump Body**” shall be used to describe Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body

“**Dump Body/Snow Plow**” shall be used to describe Single Axle Chassis with a 13' x 8' Streets Maintenance Dump Body, Tail Chute and Snow-Plow Mounting Equipment

CHASSIS:

10.1 Weights: _____

The Trucks shall not exceed the City of Winnipeg's limit for gross vehicle weight, axle and tire loads

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 (tandem axle) – 9100 kg (20,056 lbs.)
- Tire load – 9 kilograms for each millimeter width of tire (approximately 500 lbs. per inch of tire width).

10.2 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, all attachments and full of fuel.

10.3 GVWR

Dump Body _____

- GVWR Total 35,000 lbs.
- GVWR Front 14,000 lbs.
- GVWR Rear 21,000 lbs.

Dump Body/Snow Plow _____

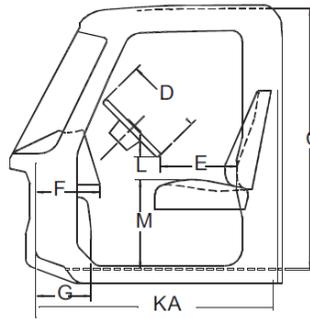
- GVWR Total 39,000 lbs.
- GVWR Front 16,000 lbs.
- GVWR Rear 23,000 lbs.

10.4 Dimensions:

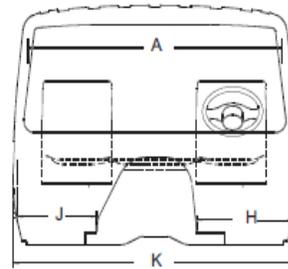
All Dimensions are Approximate

Dimensions are in inches

- A Shoulder Room 70.6
 - C Inside Height 56.8
 - D Steering Wheel Diameter 18.0
 - E Steering Wheel to Seat Back (Maximum) 18.2
 - F Bottom of Instrument Panel to Dash 13.9
 - G Engine Cover Width
 - H Lateral Foot Room – Driver 20.2
 - J Lateral Foot Room – Passenger 18.8
 - K Outside Cab Width 82.2
 - L Steering Wheel to Top of Seat Cushion 5.8
 - M Top of Front Seat Cushion to Floor 19.6
 - KA Inside Length 52.4
- Driver Seat Track Travel Fixed Seat: 7.9 in. fore/aft — Air Suspension Seat: 7.4 in. fore/aft



STANDARD CAB



FRONT VIEW

10.5 Cab to Axle

As required for:
 Dump Body
State:

Dump Body/Snow Plow
State:

10.6 Wheelbase

As required for:
 Dump Body
State:

Dump Body/Snow Plow
State:

10.7 After-Frame

As required for:
 Dump Body
State:

Dump Body/Snow Plow
State:

10.8 Bumper To Back Of Cab

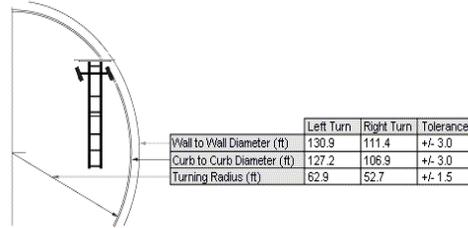
BBC Approximately 106-110 in.
State:

10.9 Turning Radius

Turning Radius

State: vehicle turning radius

Example:



- a) **Wall to Wall (ft.)**
- b) **Curb to Curb(ft.)**
- c) **Turning Radius (ft.)**

ENGINE:

- | | | | |
|-------|--|---|-------|
| 10.10 | Type | Tier IV Final Diesel, inline 6-cylinder | _____ |
| 10.11 | Horsepower | Approximately 330 HP gross | _____ |
| 10.12 | Torque | Approximately 1000 lb-ft | _____ |
| 10.13 | Engine Shut Down | Low oil pressure / high water temperature | _____ |
| 10.14 | Air Intake Warmer | Required: | _____ |
| 10.15 | Fuel Shut-Off | Electric solenoid type | _____ |
| 10.16 | Air Intake
(Dump Body, two (2) vehicles) | Required: Dual under-hood/outside air intake | _____ |
| 10.17 | Air Intake
(Dump Body/Snow Plow, three (3) vehicles) | Required: Dual under-hood/outside air intake provision complete with under hood air valve, dash mounted actuated, for snow plow application. | _____ |
| 10.18 | Air Cleaner
(Dump Body, two (2) vehicles) | Dry type – suitable for application | _____ |
| 10.19 | Air Cleaner
(Dump Body/Snow Plow, three (3) vehicles) | Dry type, suitable for application | _____ |
| 10.20 | Air Intake Restriction | Dash mounted restriction indicator | _____ |
| 10.21 | Oil Drain Plug | Magnetic type | _____ |
| 10.22 | Oil Filter | Full flow, spin-on type | _____ |
| 10.23 | Fuel Filter | Spin-on type | _____ |
| 10.24 | Fuel/Water Separator | Heated, drainable under hood | _____ |
| 10.25 | Fuel Line Primer Pump | Required: | _____ |
| 10.26 | Block Heater | Immersion type, Approximately 1000 Watt with covered recessed male plug, located under driver's side door | _____ |

10.27	Radiator	Aluminum 1000 - 1200 square inch State: size	_____
10.28	Coolant	Extended Life coolant, antifreeze to -35°F (-37°C)	_____
10.29	Coolant Filter	Required:	_____
10.30	Coolant Hoses	Silicone type or Gates Blue Stripe	_____
10.31	Fan Drive	Thermostatically controlled, automatic type with dash switch	_____
10.32	Air Compressor	Water cooled, pressure lubricated, 15-18 cfm	_____
10.33	Diesel Exhaust Fluid (DEF) Tank	Approximately 19 – 36 Litres or largest size per application. Located Driver's side State: size and location	_____

ELECTRICAL SYSTEM:

10.34	Electrical Connector's	Plug-in, sealed type	_____
10.35	Anti-Corrosion Electrical Package	Controllers and sensitive electrical components (PCM, Harnesses etc.) mounted in cab State: locations	_____



10.36	Alternator	Delco Remy 36SI Heavy Duty, Brushless type 160 -180 Amp Pad Mount Remote Sense State: make and model	_____
10.37	Starter	Delco Remy 41MT Heavy Duty Over-Crank Protection State: make and model	_____
10.38	Circuit Breakers	Auto-reset, readily accessible	_____
10.39	Batteries/Battery Location	Three (3) batteries, 12-volt, group 31, approximately 2700-2850 CCA combined Batteries not to impede with the installation of the body State: location	_____
10.40	Battery Disconnect	In-cab mounted outboard of driver's seat State: location	_____

10.41 Battery Boost Terminal Remote battery boosts terminal(s), **protected from road spray,** _____
State: location

Exact location to be determined at pre- production meeting

10.42 Cab Marker Lights LED Cab or Sun Visor Marker Lights _____

10.43 2-Way Radio Circuit Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled _____

10.44 Accessory Switches **Required:** Six (6) _____
All switches complete and wired for body installation, labeled and backlit

10.45 Mega Fuse Box Located in-cab or under-cab and shall be sealed. _____
State: location and method of sealing

EXHAUST SYSTEM:

10.46 Configuration **Required:** Horizontal exhaust cylinder and vertical right hand tail pipe. _____
Exhaust not to impede in the installation of the body.
State: type and location

10.47 Overall Exhaust Height To clear dump body cab shield _____

10.48 Exhaust Heat Shield **Required:** _____



TRANSMISSION:

10.49 Transmission _____
• Allison 3000 RDS with 6-speed programming for two (2) vehicles with Dump Body
• Allison 3500 RDS with 6-speed programming for three (3) vehicles with Dump Body/Snow Plow
• Ratio shall be as per inter-city application.
• Transmission shall come with load base Management Programming.

10.50	Allison SCAAN	The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator, the Allison SCAAN	_____
10.51	Transmission Fluids	Synthetic	_____
10.52	Shift Selector	Digital push-button type, dash mounted	_____
10.53	Cooling Capacity	Water to oil transmission cooler, as per manufacturer's recommendation for severe duty cycle	_____
10.54	Oil Level Dipstick	Bayonet type with high and low level markings	_____
10.55	Transmission Drain Plug	Magnetic type	_____
	<u>FRONT AXLE:</u>		
10.56	Front Axle	Set back axle , Meritor 14,000 lbs. capacity, with synthetic fluid for two (2) vehicles with Dump Body	_____
		Set back axle , Meritor 16,000 lbs. capacity, with synthetic fluid for three (3) vehicles with Dump Body/Snow Plow	_____
	<u>REAR AXLE:</u>		
10.57	Rear Axle	Meritor 21,000 lbs. capacity, with synthetic fluid for two (2) vehicles with Dump Body	_____
		Meritor 23,000 lbs. capacity, with synthetic fluid for three (3) vehicles with Dump Body/Snow Plow	_____
10.58	Ratio	For 110 km/hr State: ratio	_____
10.59	Inter-Axle Lock	Required: with dash mounted switch	_____
10.60	Differential Lock	Required: for drive axle with dash mounted switch	_____
10.61	Hub Seals	Oil lubricated front and rear type	_____
	<u>FRONT SUSPENSION:</u>		
10.62	Type	Multi-leaf spring suspension, 14,000 lbs. capacity for two (2) vehicles with Dump Body	_____
		Multi-leaf spring suspension, 16,000 lbs. capacity for three (3) vehicles with Dump Body/Snow Plow	_____

REAR SUSPENSION:

10.63	Rear Suspension	Air ride suspension, 21,000 lbs. capacity for two (2) vehicles with Dump Body	_____
		Air ride suspension, 23,000 lbs. capacity for three (3) vehicles with Dump Body/Snow Plow	_____
10.64	Suspension Control Valve	Manual dump valve for air suspension complete with dash mounted switch, indicator light, gauge and buzzer	_____
10.65	Auto Refill	Required: at 5 km/hr	_____
		Exact speed will be determined at a pre-production meeting	

RIMS, WHEELS AND HUBS:

10.66	Front Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.67	Rear Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.68	Hubs	Aluminum material	_____
10.69	Wheel Nut Indicators	Required: on all wheel nuts	_____

TIRES:

10.70	Front Tires	Dump Body: 315/80R 22.5 18 ply, snow, mud and ice rated for requested GVWR and dump body application	_____
		Dump Body/Snow Plow: 385/65R 22.5 18 ply, snow, mud and ice rated for requested GVWR and dump body/snow plow application	_____
10.71	Rear Tires	11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application	_____

FRAME:

- | | | | |
|-------|--|--|-------|
| 10.72 | Frame | Single rail | _____ |
| 10.73 | Rust Inhibitor
(Frame/Cross Member) | ARMOUR-SEAL™
FRAME & CHASSIS COMPONENT
PROTECTIVE UNDERCOATING: (or
equivalent) | _____ |

Sodium, magnesium and calcium chloride resistant.

Semi-permanent, high strength rubberized polymer blended.



RHOMAR Industries, Inc.

Tricia McKnelly-Anderson
Account Manager
2107 E Rockhurst
Springfield, MO 65802
1.800.688.6221
417.866.5593 (fax)
www.rhomar.com
www.rhomar.com/products/armour-seal.

- | | | | |
|-------|------------------------------|---|-------|
| 10.74 | Chassis Fasteners | Grade-8 threaded hex headed frame fasteners | _____ |
| 10.75 | Rear Frame Towing Provisions | Towing provisions with 7-way pin receptacle to end of frame with two (2) extra feet of wiring and air lines to for ease of body installation. | _____ |

STEERING:

- | | | | |
|-------|------|---|-------|
| 10.76 | Type | Tilt and telescopic, power, rated for front GVWR rating. Reservoir approximately 2 quart with see through tank. | _____ |
|-------|------|---|-------|

BRAKES:

- | | | | |
|-------|-----------------|---|-------|
| 10.77 | Brakes | Air, ABS, S-cam drum brakes, front & rear | _____ |
| 10.78 | Slack Adjusters | (Clearance sensing), automatic type | _____ |
| 10.79 | Parking Brake | Required: | _____ |

10.80	Brake Pots	Vented type	_____
10.81	Dust Shields	Required: front and rear	_____
10.82	Air Tanks	Shall be aluminum tanks with aluminum or stainless steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion	_____
10.83	Moisture Ejector	Required: Wabco, heated in all air tanks	_____
10.84	Drain Valves	Required : Manual, chain or cable operated, on each air tank	_____
10.85	Air Dryer	Wabco Heated System Saver 1200 or equivalent State:	_____
<u>FUEL TANK:</u>			
10.86	Fuel Tank	Dual 40-45 gallon (80-90 total fuel capacity) fuel tanks. Shall not impede in the installation of the body. State: fuel capacity	_____
10.87	Fuel Water Separator	Required: heated	_____
10.88	Tank Straps	Aluminum or Stainless Steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion State:	_____
<u>CAB:</u>			
10.89	Type	Conventional with corrosion inhibitor	_____
10.90	Cab Construction	Aluminum or Galvanized Steel State:	_____
10.91	Cab Mounts	Air suspension	_____
10.92	Hood	High visibility hood	_____
10.93	Hood Fender Extensions	2-3 in. front fender extensions	_____
10.94	Front Grille	Stationary mounted to hood	_____
10.95	Cab Interior / Trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
10.96	Cab Silencer Package	Required: for minimal decibel level	_____
10.97	Hood/Firewall/Engine Insulations	Insulated hood liner, engine cover and firewall	_____
10.98	Floor Covering	Rubber mat with under-padding	_____
10.99	Floor Mats	Two (2), rubber	_____

10.100	Driver's Seat	High back, air suspension foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.101	Passenger Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.102	Dashboard	Ergonomic (Wing) Design	_____
			
10.103	Sun Visors	Dual flip-up type	_____
10.104	Steering Wheel	Tilt and telescopic type	_____
10.105	12-Volt Power Outlet	Required: Two (2) with independent circuit	_____
10.106	Radio	Factory installed AM/FM/ with "hand free" Blue Tooth capability	_____
10.107	Starter Switch	Key operated complete with three (3) sets of keys	_____
10.108	Interior Light	Dome light with driver and passenger door switches	_____
10.109	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of (-40°C)	_____
10.110	Air Conditioning	Required:	_____
10.111	Brake, Accelerator, Pedals	Floor or hanging type brake and accelerator pedal State:	_____
10.112	Horn	Dual electric	_____
10.113	Exterior Mirrors	Mirrors heated, lighted, 4-way motorized adjustment (with convex mirrors), suitable for 102 in. equipment width	_____
10.114	Down-View Mirror	Required: over passenger door Approximately 5 in. x 4 in.	_____
10.115	Windows & Windshield	Tinted	_____
10.116	Power Windows	Power driver and passenger side	_____
10.117	Doors	Power door locks	_____
10.118	Windshield Wipers	Electric intermittent	_____

10.119	Wiper Blades	Heavy duty with winter type boot	_____
10.120	Windshield Washers	Required: Electric, with spray nozzles on wiper blades	_____
10.121	Grab Handles	Dual exterior State: locations	_____
10.122	Grab Handles	Dual Interior	_____
10.123	Entrance Steps	Dual each side, open grate / grip type	_____
10.124	Winter Front	Heavy-duty vinyl with twist lock or snap type fasteners	_____
10.125	Exterior Sun Visor	Required:	_____

10.126 Strobe LED Lights (Beacons)

Qty two (2) Amber/Blue LED Beacons,
Class 1 High Dome Strobe Lights
complete with switch and labels.
Mounted with aluminum or stainless
steel brackets to B-Pillar

Note: Beacons and Mini Light Bar to be
controlled by a single 3-Way switch with
the following functions:
Amber – Off – Amber/Blue



Note: Need to be forward enough as not
to interfere with the cab shield if
equipped with one.



Whalen L31HMF

OR

SWS 22609



**Location to be determined at a pre-
production meeting**

INSTRUMENTATION:

10.127 Instrumentation

- Oil Pressure Gauge _____
- Coolant Temperature Gauge
- Transmission Oil Temperature Gauge
- Voltmeter Gauge
- Air Reservoir Pressure Gauge with LAP Warning Light And Buzzer
- Low Oil Pressure Warning Light and Buzzer
- High Water Temperature Warning Light and Buzzer
- Non-Resettable Type Engine Hour-Meter

TOW HOOKS:

10.128 Location

Front mounted and Rear mounted _____

10.129 Weigh Scale Systems

Required: Model Air Weigh scale system for front and rear axles. _____

System must be tested and calibrated prior to delivery.

COLOURS:

10.130 Exterior Colour

White _____

10.131 Interior Colour

Grey _____

ACCESSORIES:

10.132 Flare Kit

Three (3) triangular reflectors, CVSA approved. Kit must be mounted or secured. _____

10.133 Fire Extinguisher

5 lbs. Fire Extinguisher ABC type installed and secured
State: location _____

10.134 Back-Up Camera

Required: Quantity two (2)
Location # 1 - back of vehicle
Location # 2 - top of cab shield complete with protective guard _____



Locations to be determined at pre-production meeting

10.135 Back-Up Camera Screen

In-Dash (Ergonomic (Wing) Dashboard) _____

OR

Dash mounted if standard dashboard is specified. _____



Back-Up Camera Screen location to be determined at a pre-production meeting.

DUMP BODY SPECIFICATIONS

10.136 Type Double Wall Dump Body _____

10.137 Outside Length Nominal 13 ft. _____

10.138 Inside Length Approximately 12 ft. 6 in. _____

10.139 Outside Width To match chassis track width
 Nominal 8 ft. 6 in. _____

10.140 Inside Width Approximately 8 ft. _____

10.141 Front Height To match chassis cab height. _____

10.142 Construction Material (Inside) All material that touches the material (internal walls, floor, gate, front wall, dog house) used in construction to be 3/16 in. Hardox 450 with **exception of the cab shield.** _____

10.143 Construction Material (Outside) 10 Gauge 44W Structural Steel _____

FLOOR:

10.144 Material 3/16 in. Hardox 450 _____

10.145 Floor 1-Piece or 2-Piece maximum and pieces shall be continuously welded _____

10.146 Width Nominal 86 in.
State: _____

10.147 Long Sill Material 3/16 in. formed steel, tapered hat section design, 8 in. – 10 in. height, continuously welded to the floor _____

10.148 Floor Slope Approximately 60 degree slope along the joint to the side wall. Slope shall extend upwards approximately 4 - 8 in. _____

If required design and installation to be determined at a pre-production meeting.

FRONT:

10.149 Construction 3/16 in. Hardox 450 continuously welded to sides and floor. _____

10.150 Front Section Shall be constructed to incorporate a nominal 12 in. L x 12 in. W x 60 in. H provision (Well Front) to contain the installed hoist _____

10.151 Cab Shield Formed from single sheet of mild steel, 24 in. deep, sloped @ 10° or to match cab contour complete with reinforced ends. _____

10.152 Cab Shield Clearance Cab shield sides to provide adequate headroom and clearance for entry and egress of vehicle cab. _____

SIDES:

10.153 Construction and Material Construction – double wall
Outside Material 10 Gauge 44W
Inside Material 3/16 in. Hardox 450 _____

Clean side style formed sides without vertical reinforcements, welded into a 1-piece design, including self-cleaning bottom rail and formed, self-cleaning centre horizontal rib and sloped top rail

10.154 Side Height Approximately 42 in. _____

10.155 Rear Side Post 3/16 in. Hardox 450, one (1) per side. _____

10.156 Top Side Rail Material **Heavy Duty**
Rectangular tubing with 3/16 in. wall
State: size
Or
Fabricated from 3/16 in. Hardox 450 _____

State: method of construction _____

10.157 Plank Gussets For 2 in. x 6 in. planks with ½ in. diameter bolt holes. _____

10.158 Planks 2 in. x 6 in. planks painted black on all sides, installed and bolted in gussets _____

TIE DOWNS AND LADDERS:

10.159	Tie Downs Eyes	<p>Required: Four (4), Located on inside of dump body.</p> <ul style="list-style-type: none">• Two (2) near top/rear of each side• Two (2) near top/front of each side <p>Tie downs shall be D-Rings.</p> <p>Tie downs eyes to have a lifting capacity rated for full box weight for lifting box during installation</p> <p>Exact locations to be determined at a pre-production meeting</p>	_____
10.160	Inside Steps	<p>One (1) per side, located at rear of body Approximately 12 in. L x 5 in. W, located approximately 20 in. from floor.</p>	_____
10.161	Access Ladders	<p>Required: Two (2)</p> <ul style="list-style-type: none">• Bolt-on installation• Fold-Down (Retractable) Design• one (1) located curb-side corner• one (1) located driver's side corner <p>Design and installation to be determined at a pre-production meeting</p> <p>Refer to Appendix A</p>	_____
10.162	Ladder Rungs	<p>Traction type rungs</p> <ul style="list-style-type: none">• 13-gauge steel, 2¼ in. width• 4-hole design• Traction Tread Products or equal. <p>Refer to Appendix A</p>	_____
10.163	Ladder Rungs Location	<p>First rung to be 18-22 in. from ground level, approximately 14 in. rung spacing to top of body.</p> <p>Design and location to be determined at a pre-production meeting</p> <p>Refer to Appendix A</p>	_____
10.164	Grab Handles	<p>Located for ergonomic access to top of box.</p> <p>Design and location to be determined at a pre-production meeting</p> <p>Refer to Appendix A</p>	_____

TAILGATE:

10.165	Style	Shall be a top hinge with grease-able hinge.	_____
10.166	Tailgate Height	Approximately 48 in.	_____
10.167	Tailgate Operation	Tailgate shall not protrude above floor in horizontal or full down position.	_____
10.168	Standard	There shall be no gap between tailgate and the floor and sides when tailgate is in the closed or horizontal position.	_____
10.169	Tailgate Construction	Formed construction with one or two equally spaced horizontal or vertical ribs, and a self-cleaning bottom rail. Inside liner with 3/16 in. Hardox 450 State: method of construction	_____
10.170	Tailgate Reinforcement	Required: Tailgate shall be reinforced with either heavy duty $\frac{3}{8}$ in. end plates, or $\frac{1}{4}$ in. steel tubing.	_____
10.171	Anchor Pins	Top tailgate anchor pins $1\frac{1}{4}$ in. diameter, self-locking/storing to top of side posts. Greaseable or composite; top hinge pivot system If retainer pins are used to lock top tailgate anchor pins, then a small steel check chain is required, permanently fastened to the retainer pin.	_____
10.172	Support and Spreader Chains	$\frac{3}{8}$ in. transport Grade 70, adequately fastened complete with chain storage and two (2) removable links per chain. Support and spreader chains shall be equipped with a protective cover.	_____ _____
10.173	Tailgate Locking Mechanism	In-cab control, air operated with air brake pot or air cylinder operated trip. State: method The locking mechanism shall be adjustable to ensure adequate lock-up with tailgate closed.	_____ _____

TARPAULIN:

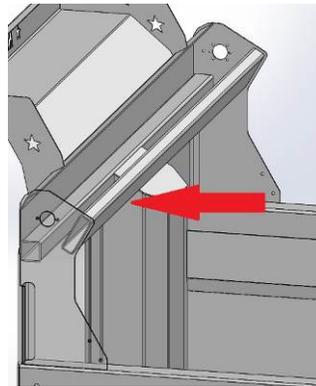
10.174 Tarpaulin Type _____
 Electric flip tarp, operable in-cab from driver's seat with aluminum arms. Elbow to ensure arms recess as low as possible along box sides and not in the way of loading.

State: make, model and type of material

Important: Designed to maintain the heat for hot asphalt transport.

10.175 Tarp System _____
 Tarp system shall stow on the cab shield, i.e., shall not protrude into the box area.

10.176 Tarp Protection System _____
Required: to protect the roll from shifting material in the body



Design and location to be determined at a pre-production meeting

10.177 Tarp Operation _____
 Tarpaulin shall not block the visibility of the mini light bar when tarpaulin is in the stowed position.

HOIST:

10.178 Requirements: _____
 3-Stage, front mounted telescopic hoist, nitrided, quenched and polished cylinder stages, protected against corrosion, Mailhot G3 Series

Hoist to be sold, installed and serviced by an authorized dealer

10.179 Make and Model **State:** _____

10.180 Bore _____
 Approximately 5 in.
State: _____

10.181 Hoist Capacity _____
 Approximately 20 – 30 tons
State: capacity _____

10.182 Hoist Dump Angle 45° from horizontal, cylinder must lower under its own weight with empty load in low ambient temperatures. _____

10.183 Hoist Connection **Required:** live swivel _____

10.184 Hoist Grease Fittings **Required:** on all pivot pins. _____

IN-CAB CONTROLS:

10.185 Cab Controls Programmed through OEM dash mounted switches _____

10.186 Switches All switches shall be back-lit for night time use and clearly identified with engraved style, permanent type labels. _____

Supply corresponding valve and solenoid necessary for operation _____

Switches:

- PTO Engagement
- Dump Box Up/Down
- Tailgate Open/Close
- Amber Lighting
- Blue Lighting
- Tarp Open/Close



HYDRAULICS (DUMP):

10.187 PTO Muncie or Chelsea electric/hydraulic power shift _____
State: make and model

10.188 Hydraulic Pump **Required:** Transmission mounted PTO Pump to operate the dump body. Parker Dump Pump or equivalent in accordance with B6 Substitutes _____
State: make and model

10.189 Requirements Shall be a 3-Line system _____

10.190 Suction Line Valve **Required:** easily accessible, lockable with bolts. _____

- 10.191 Hydraulic Oil Reservoir Passenger side, chassis frame mounted, **Aluminum** or **Stainless Steel** construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge. _____
State: material
- 10.192 Hydraulic Oil Univis N15 or equivalent _____
State: type
- 10.193 Capacity Approximately 25 – 30 gallon _____
State: size
- 10.194 Drain Plug ¾ in. diameter. _____
- 10.195 Fittings **NO:** black steel or cast fittings _____
State: type
- 10.196 Labelling Reservoir shall be clearly labelled "Hydraulic Oil" with a permanent type, engraved style label. _____

HYDRAULIC FILTERS:

- 10.197 Return Filter Serviceable without oil loss, tank mounted, complete with clogging indicator. _____
- 10.198 Filter Standard Filters shall contain a corrosion resistant coating, beta rating of 200, 10 micron particle size, and shall be ergonomically located for servicing. _____
- 10.199 External Hydraulic Filter Pan External Hydraulic filter shall have a stainless steel or aluminium pan located directly under the filter in case of a potential hydraulic leak and to avoid hydraulic fluid falling to the road. Design shall not impede the servicing of the filter. _____



- 10.200 Shut-Off Valve Ball type, located between reservoir and pump, secured in open position with a bracket and bolt. _____

10.201	Hydraulic Hoses	Wire braid reinforced, rated for system operating pressure with 4 to 1 safety factor for burst pressure.	_____
10.202	Protection	Hydraulic hoses to be protected at wear and scuff location.	_____
10.203	Hose Fittings	Hydraulic full flow, crimp-on (non-reusable) type.	_____

ELECTRICAL & LIGHTING:

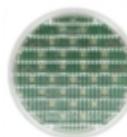
10.204	Conformance	All lighting to conform to: <ul style="list-style-type: none">• C.M.V.S.S.• Manitoba Highway Traffic Act.• City of Winnipeg Lighting Visibility Standard http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf	_____
10.205	Lighting	Supplier installed shall be high count LED lighting and shall be Truck-Lite, Whelen or equivalent	_____
10.206	Connection System	Weather Pack Sealed Connection System	_____



10.207	Grommets	Rubber grommets unless otherwise specified	_____
10.208	Combination Turn/Stop And Taillights	One (1) per side P/N Truck-Lite 44302R with P/N 44710 mounting grommets	_____



10.209	Back-Up Lights	One (1) per side P/N Truck-Lite 44206C with P/N 44710 mounting grommets	_____
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10.210 3-Light Cluster

Three (3)
P/N Truck-Lite10250R with P/N 10403
mounting grommets



10.211 Clearance Lights

High count LED
P/N Truck-Lite10250R or 10250Y with P/N
10403 mounting grommets.



10.212 Blue Strobe Lights

One (1) per side with mounting grommets
P/N Whelen 5GA00FBR

10.213 Amber Strobe Lights

One (1) per side with mounting grommets
P/N Whelen 5GA00FAR



10.214 License Plate Light

Complete with license plate bracket.
P/N Truck-Lite 36140 (Light)
P/N Truck-Lite 36710 (Bracket)

Installed on Hitch Plate – Upper Right
Corner



10.215 Rear Light Mounting Location (Rear Sill)

- Combination Turn/Stop and Taillights, qty two (2), one per side
- Back-Up Lights, qty two (2), one per side
- 3-Light Cluster, qty three (3)
- Rear-Corner Clearance Lights, qty two (2), one per side

The lights shall be situated so that no debris contacts the lights while dumping.

Refer to Appendix A

10.216	Rear Light Mounting Location (Rear Posts)		_____
	<ul style="list-style-type: none">• Amber Strobe Lights, qty two (2), one per side• Blue Strobe Lights, qty two (2), one per side• Rear-Corner Clearance Lights, qty two (2), one per side		
	Refer to Appendix A		
10.217	Clearance Light Mounting Locations:		_____
	<ul style="list-style-type: none">• Front – qty two (2), located one on each bottom corner• Sides – qty two (2) per side, located on front and rear bottom corners.		
10.218	Standard	No clearance light shall protrude beyond the dump body.	_____
10.219	Standard	Taillights and back-up lights shall be fully visible when tailgate is lowered to horizontal position.	_____
10.220	Harnesses	Harness system, properly routed and secured. All harnesses shall be internally grounded, no exceptions.	_____
10.221	Junction Box	Junction box complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame.	_____
10.222	All Plug-In Connectors	All plug-in connectors shall be coated with NYK compound prior to assembly.	_____
10.223	Back-Up Alarm	97 dB(A), installed near rear of dump body, located to be protected from damage.	_____

10.224 Mini Light Bar

- Whelen RDLPPAB Amber/Blue LED Mini Light Bar or equivalent in accordance with B6 Substitutes
- Mounted to top of cab guard
- Protected by Branch Guard
- 360° visibility when tarpaulin is in stowed position.
- Mini Light Bar shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Light Bar Amber/Blue" with a permanent type, engraved style label.

Note: Beacons and Mini Light Bar to be controlled by a single 3-Way switch with the following functions:
Amber – Off – Amber/Blue



10.225 Branch Guard

Heavy duty branch guard constructed by 3/8 in. round bar or equivalent.



10.226	Wiring	All LED strobe lights shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Strobes" with a permanent type, engraved style label. All wiring for back-up alarm, warning lights, strobes and trailer connector shall be colour coded, loomed and properly secured.	_____
10.227	Trailer Connector	6-Way Round or SAE J560 7-Way Flat trailer receptacle. Type to be determined at pre-production meeting	_____
10.228	Electrical Connectors	All electrical connectors shall be crimped, soldered and then sealed using heat shrink tubing.	_____
10.229	Joining Of Wires	All joining of wires shall be soldered and sealed using heat shrink tubing or approved OEM weather tight connections (crimp on electrical connectors for joining wires are not acceptable).	_____
10.230	Wiring Routing	Any holes required to run wires through shall be drilled (not punched), grommeted and sealed	_____
<u>WELDING:</u>			
10.231	Standard	All welds shall be continuous welds. All welding performed shall conform to CSA Standard W47.1-03 and W59-03.	_____
<u>INSTALLATION:</u>			
10.232	Drilling	Any holes required in the chassis frame web must be drilled and reamed to fit bolts.	_____
10.233	Standard	Drilling on chassis frame flanges is not permitted. Welding on the chassis frame is not permitted, with the exception of installation of dump body pivot support.	_____
10.234	Tire Clearance	Three inches (3 in.) with rear suspension air bags lowered.	_____
10.235	Clearance	Clearance between dump body and back of truck cab shall be 3 in.	_____

MISCELLANEOUS

10.236 Rear Hitch Plate

3/4 in. thick solid steel, (laminated plates not acceptable) installed to chassis frame. _____



Design (including overhang) and installation to be determined at pre-production meeting.

10.237 Pintle Hitch and Receiver

Premier 240 or approved equal, installed on hitch plate at a 24 in. height. _____

Receiver – 2 in. x 6 in. Length
State: size _____



Design and installation to be determined at pre-production meeting

10.238 D-Ring with Mounting Bracket
(Required for Trailer Safety Chains)

One (1) each side of hitch
Buyers Products B48 or equal. _____



10.239 Shovel Holder

Shovel holder with handle latch to secure shovel in place _____

Buyers Products P/N SH675SS



Location to be determined at pre-production meeting

10.240 Rear Fenders

Heavy Duty rear poly half-moon fenders. _____
Shall be installed to have sufficient clearance from body and when chassis suspension is dumped for dump body operation.



10.241 Mud Flaps

Required: Black rubber, no-name, front and rear of back tires complete with anti-sail bracket on each mud-flap. Rear mud flaps shall not contact the ground when the dump body is at maximum dump angle



10.242 Isolators

All interfaces between aluminium and steel shall be separated by an approximately 1/16 in. thick rubber or neoprene sheet and are to be bolted through with stainless steel bolts and non-conductive bushings

10.243 Grease Fittings

Required: on tailgate release mechanisms, pivot points and tailgate

GREASING SYSTEM:

10.244 Complete unit shall have Groeneveld CPL Systems Inc. or Lubecore Auto Greasing System.

10.245 Single Line, EP2 and automatic low level shut-off with in-cab red light indicator.

10.246 All grease fittings for the entire chassis and body (including cylinder mounts, pivot points, dump body prop, plow etc.), shall be readily accessible or shall be equipped with remote grease zerks as required.

10.247 **Grease Points:**

Approximately twenty-six (26) points on cab & chassis

Approximately eight (8) – twelve (12) points on body (depending on body configuration)

State: quantity of grease points on cab & chassis: _____

State: quantity of grease points on body: _____

10.248 Grease pump will pump Original Equipment Manufacturer specified EP2 grease from -40°C to + 50°C.

10.249 One way check valves on each line _____

10.250 Low temperature compatible 800 bar/12000 PSI grease line with a bending radius of 3/4 inch. With a 5 year line breakage guarantee for on road trucks. _____

10.251 One piece flow dividers with manual over ride. _____

10.252 **Warranty:** three (3) years parts and labour. _____

TOOLBOXES

10.253 Tool Boxes Aluminum Tool Boxes _____

- Mounted on driver or passenger side frame
- Approximately 24 in. x 24 in. x 48 in.
- Barn Door style doors

State: Quantity, dimensions, material, and recommended location as set by the manufacturer



SAFETY:

10.254 Dump Body Prop **Double Prop Design** _____

- Steel tubing construction, to support dump body in raised position and permit servicing of hoist
- Operable by a single person
- Designed so as not to interfere with hoist cylinder or surroundings
- Operating Handle to be positioned outside of chassis frame rails for operator safety (Driver's Side)
- Dump body prop to be complete with receiving bracket.
- Safety Lock Pin and Chain required to hold arms in the "Up" position (Driver Side)
- Refer to below pictures for sample designs

Design and installation to be confirmed at a pre-production meeting.



Driver Side - Up



Driver Side - Down



Driver Side - Down



Driver Side - Up



Passenger Side - Down



Safety Lock Pin and Chain

10.255 Dump Body Prop Colours

All components (prop, handle and receiving bracket) shall be painted with **Safety Orange** for ease of identification

10.256	Dump Body Stowage Warning System	Required: Warning light and buzz system shall be installed on the dash and shall be actuated when dump body is not in the fully stowed position. State:	_____
10.257	PTO	Programmed: To disengage the PTO when 5 kph is reached to prevent the driver from driving off when the body is up. Exact speed to be determine at pre-production meeting	_____
10.258	Pre-Trip Exterior Light Inspection	Programmed: When activated, the vehicle lights repeatedly flash in a specific sequence to allow the operator to verify that the exterior lights are functioning. The light test sequence tests: <ul style="list-style-type: none">• Park Lights• Headlights (low and high beams)• Right/left front/rear turn lights• Brakes Lights• Mini Light Bar• Beacon(s)• Strobe Lights• Clearance Lights	_____
10.259	Warning Light Over Ride	Programmed: Rear strobe lights to be programmed to allow for an over-ride for turn signals and brake lights when strobe lights are on. Other drivers will be able to determine if the truck is stopping or turning when strobe lights are on.	_____
		<u>FINISH:</u>	
10.260	Preparation	Complete dump body and all ladders, hitch plates, reservoirs, steel brackets, etc. shall be sandblasted, properly cleaned, primed and finished with the Endura or DuPont paint process as follows:	_____
10.261	Primer	Required: Epoxy or Polyurethane primer Endura EP321 Intermix Epoxy Primer or DuPont polyurethane. Two (2) coats – Dry Film Thickness 3.0 – 4.0 mils	_____

10.262 Paint

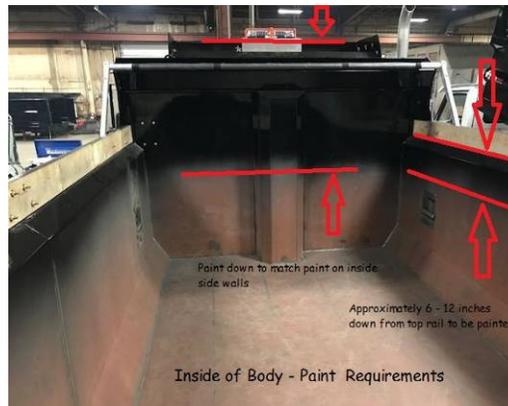
Required: Polyurethane
Colour: Black

Endura EX-2C or DuPont Polyurethane

Two (2) coats:
3 - 5 mils Wet Film Thickness with a total
combined overall average Dry Film
Thickness of 4 – 6 mils

Note: Vendor is not required to finish paint
the entire inside of the body, but a coat of
primer in accordance with primer
specifications must cover the entire inside
of the body. However, the top rail and
approximate 6 - 12 in. (from the top rail)
of all inside surfaces of the body shall be
painted.

Front inside wall to match paint line of
inside side wall



SNOW PLOW HITCH PLATE AND TAILGATE CHUTE CONFIGURATION:



10.263 **Three (3) Units to have the following:** _____

SNOW PLOW HITCH PLATE AND TAILGATE CHUTE

Note: Configurations to be priced only as indicated on Form B: Prices

SNOW PLOW HITCH PLATE CONFIGURATION:

10.264 Front PTO Provisions 1310 adapter flange for front PTO provision required to operate dump body and front plow _____

10.265 Front Frame Extension 24 in. Front Frame Extension _____
Note: Integral (bolt-on not acceptable)

10.266 Front Hitch Plate: _____

Front hitch plate shall be installed to successfully hook-up with a City owned Tenco TCP-12T-42-E2 12 ft. snow plow with a Quik-Tach quick coupler system. In addition, the hydraulics and in-cab controls shall successfully operate the dump body and be compatible with the successful operation of the snow plow.



10.267 Type: _____

Heavy duty, quick disconnect hitch with the female section consisting of two (2) jaws welded to the plate. The hitch plate shall be capable of hooking-up and handling loads imposed by a City owned Tenco TCP-12T-42-E2 12 ft. snow plow with a Quik-Tach quick coupler system. The hitch plate shall be a "Low Mount" hitch design and shall rest below the truck cab so hood can tilt forward at all times without having to remove or adjust any portion of the hitch



10.268 Construction _____

Heavy duty steel hitch plate, Approximately 25 in. H x 45 in. W x ½ in. T with vertical reinforcements as required.

10.269 Main Plate _____

Main plate shall be bolted to end of truck chassis frame rails with additional diagonal bracing from bottom of main plate to chassis frame.

10.270 Lift Arm _____

Telescopic lift arm shall be adjustable type, 30 in. approximately

10.271 Snow-Plow Lights _____

Front fender mounted snow-plow lights require



10.272 Front Bumper Extensions _____

Front bumper extensions – full width heavy duty steel bumper extensions.



PLOW CONTROL AND DUMP BOX FUNCTION:

- | | | | |
|--------|-----------------|--|-------|
| 10.273 | Functions | Parker Single Joystick or equivalent in accordance with B6 Substitutes control, non-proportional, dual mode for dump box and plow functions. | _____ |
| 10.274 | Switch | A switch on the control panel shall actuate plow functions in one mode, dump function in the other mode. | _____ |
| 10.275 | Vertical Axis | The vertical axis (forward and backward) shall control the plow raise/lower and the dump raise/lower. Joystick forward plow and box lower, joystick rearward plow and box raise. | _____ |
| 10.276 | Horizontal Axis | The horizontal axis (side to side) shall actuate plow angle left/right in "Plow" mode, nothing in "Dump" mode | _____ |

HYDRAULICS (DUMP AND PLOW):

HYDRAULICS:

- | | | | |
|--------|----------------|--|-------|
| 10.277 | Hydraulic Pump | Front mounted, variable displacement, load sensing axial piston pump <u>Parker</u> or equivalent in accordance with B6 Substitutes
State: make and model | _____ |
| 10.278 | Type | Hydraulic pump shall be crankshaft driven by splined tubular drive shaft (square style drive shafts are not acceptable) attached to pump with a taper lock collar. | _____ |



- | | | | |
|--------|----------------------|--|-------|
| 10.279 | Grease Fittings | Hydraulic pump drive shaft shall be equipped with accessible grease fittings on U-joint crosses | _____ |
| 10.280 | Hydraulic Valve Bank | Electric solenoid controlled <u>Parker</u> or equivalent in accordance with B6 Substitutes
State: make and model | _____ |

10.281	Manual Override	Each section to have a manual override on the valve in case of electric control failure.	_____
10.282	Valve Enclosure	Hydraulic valve bank shall be fully enclosed in a waterproof steel box, mounted on the truck frame. The top portion shall be bolted for access to valves.	_____
10.283	Plow Hydraulic Connectors	Quick disconnect, installed in banks in convenient location, equipped with covers and plugs.	_____
10.284	Suction Line Valve	Required: easily accessible, lockable with bolts.	_____
10.285	Hydraulic Oil Reservoir	Passenger side, chassis frame mounted, Aluminum or Stainless Steel construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge. State: material	_____
10.286	Hydraulic Oil	Univis N15 or equivalent State: type	_____
10.287	Capacity	Approximately 25 – 30 gallon State: size	_____
10.288	Drain Plug	¾ in. diameter.	_____
10.289	Labelling	Reservoir shall be clearly labelled "Hydraulic Oil" with a permanent type, engraved style label.	_____
<u>HYDRAULIC FILTERS:</u>			
10.290	Return Filter	Serviceable without oil loss, tank mounted, complete with clogging indicator.	_____
10.291	Pressure Side Filter	Non-bypass type, absolute rated filter element, located before oil reaches the valve bank, complete with clogging indicator	_____
10.292	Standard	Both filters shall contain a corrosion resistant coating, beta rating of 200, 10 micron particle size, and shall be ergonomically located for servicing.	_____

10.293 External Hydraulic Filter Pan

External Hydraulic filter shall have a stainless steel or aluminium pan located directly under the filter in case of a potential hydraulic leak and to avoid hydraulic fluid falling to the road. Design shall not impede the servicing of the filter.



10.294 Shut-Off Valve

Ball type, located between reservoir and pump, secured in open position with a bracket and bolt.

10.295 Hydraulic Hoses

Wire braid reinforced, rated for system operating pressure with 4 to 1 safety factor for burst pressure.

10.296 Protection

Hydraulic hoses to be protected at wear and scuff location.

10.297 Hose Fittings

Hydraulic full flow, crimp-on (non-reusable) type.

TAILGATE CHUTE CONFIGURATION:

10.298 Tailgate Chute

- Installed in lower-middle section of tailgate
- Approximately 19 in. Wide X 27 in. High



Design, size and installation to be determined at a pre-production meeting.

10.299 Material _____

- Outside 10 Gauge 44W Structural Steel construction
- All parts of tailgate chute exposed to the aggregate to be made of Hardox 450

10.300 Manual Latch _____
 Locate on passenger side

11.0 **WARRANTY**

11.1 The body warranty on the complete vehicle (excluding the chassis) 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 one (1) year from the date the equipment is put into service by the City of Winnipeg. _____

11.2 All warranty information shall be detailed and include all exclusions. The successful bidder shall provide all published warranty information upon delivery of the equipment. Bidder shall State: all warranty information _____

BODY WARRANTY

11.3 Main Frame - Structural **State:** _____

11.4 Frame – Non-Structural **State:** _____

11.5 Components e.g. Pumps **State:** _____

11.6 Hydraulics **State:** _____

11.7 Hoist and Cylinder **State:** _____

11.8 Electrical **State:** One (1) year _____
State:

11.9 LED Lighting **State:** _____

11.10 Paint **State:** _____

CAB & CHASSIS WARRANTY

11.11 Basic Vehicle - Chassis **State:** One (1) year, unlimited km, _____
State:

11.12 Electrical **State:** One (1) year _____
State:

11.13 LED Lighting **State:** _____

11.14 Batteries **State:** One (1) year, unlimited km _____
State:

11.15 Drivetrain **State:** Two (2) years, unlimited km _____
State:

11.16 Cab Structure/Corrosion **State:** Five (5) years, unlimited km _____
State:

- | | | | |
|-------|-----------------------|--|-------|
| 11.17 | Frame & Cross-Members | Five (5) years, unlimited km
State: | _____ |
| 11.18 | Cab Paint | One (1) year or 160,000 km
State: | _____ |
| 11.19 | Engine | Three (3) years or 240 000 km
State: | _____ |
| 11.20 | Transmission | Two (2) years, unlimited km
State: | _____ |
| 11.21 | Axles - Front & Rear | Two (2) years or 161 000 km
State: | _____ |
| 11.22 | Components | State: | _____ |

Other Warranties

- | | | | |
|-------|------------------|---------------|-------|
| 11.23 | Joystick Control | State: | _____ |
|-------|------------------|---------------|-------|

12.0 **DELIVERY**

- | | | |
|------|---|-------|
| 12.1 | Delivery Point: The complete unit shall be serviced, ready for operation and delivered F.O.B. with the freight prepaid, including invoice and N.I.V.S. (if applicable) to the WFMA 185 Tecumseh Street, Winnipeg MB. The successful bidder shall be notified by the Contractor Administrator the delivery address prior to issuance of the purchase order | _____ |
| 12.2 | Delivery Time: Equipment shall be delivered between 8:00 am and 2:00 pm on Business Days
State: Delivery Date | _____ |
| 12.3 | Delivery Contact: The Contractor shall contact the Contract Administrator prior to delivery of the equipment. | _____ |
| 12.4 | P.D.I: A pre-delivery inspection shall be performed by the Contractor on the equipment. Proof upon inspection including completed check list | _____ |

13.0 **MANUALS**

- | | | |
|------|---|-------|
| 13.1 | Manuals supplied under this Contract shall cover the complete equipment including all components thereof, CD or USB flash drive is preferred where available. | _____ |
| 13.2 | The following manuals shall be supplied with the units when delivered: | |
| | a) Operator's manual – Two (2) per unit (one operator manual shall be sent to the Equipment Operator Training Branch | _____ |
| | b) Parts and service manuals – One (1) complete set including preventative maintenance schedules. CDs or USB flash drive are preferred. | _____ |

14.0 **PARTS/LABOUR DISCOUNT**

14.1 Bidder to provide City of Winnipeg Parts Discount % Pricing from retail parts pricing. **State: percentage discount** _____%

14.2 Bidder to provide City of Winnipeg Labor Discount % Pricing from Retail shop labor rate. **State: percentage discount** _____%

15.0 **FIRST SERVICE PREVENTATIVE MAINTENANCE KIT**

15.1 In order to assure minimum downtime of the equipment in future service, the Contractor shall provide one (1) complete replacement set of new OEM filters for each unit purchased. The set of required filters shall include (if applicable to the equipment type) air, fuel, oil, cab and hydraulic, or otherwise all known necessary common replacement filters required for the first preventative maintenance servicing. _____

15.2 The Contractor shall provide a list of factory recommended lubricants to be used with the equipment, as well as a complete cross reference guide for all warranty approved lubricants and filters that can be used during preventative maintenance servicing. _____

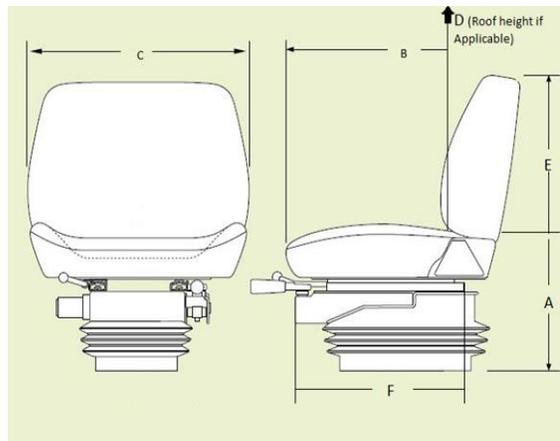
16.0 **ERGONOMIC SPECIFICATIONS**

Entry/ Exit

- | | | | |
|------|------------------------------|---|-------|
| 16.1 | First step entry height | State: height of first step in inches | _____ |
| 16.2 | First handhold entry height | State: first handhold entry height in inches | _____ |
| 16.3 | Access to equipment | State: door opening height in inches | _____ |
| 16.4 | Access to equipment | State: door opening width in inches | _____ |
| 16.5 | Designed to prevent slipping | Anti-slip steps/handholds (Y or N)? | _____ |

Seat

16.6 Use diagram to answer questions.



- | | | | |
|-------|---|---|-------|
| 16.7 | Sitting Height Range (from floor (where feet rest) (A)) | State: seat height range in inches | _____ |
| 16.8 | Seat Length/Depth (B) | State: seat length/depth in inches | _____ |
| 16.9 | Seat Width (C) | State: seat width in inches | _____ |
| 16.10 | Cab Height (from seat to roof (if applicable) (D)) | State: cab height range in inches | _____ |
| 16.11 | Back Rest Height (E) | State: back rest height in inches | _____ |
| 16.12 | Seat Travel Range (F) | State: seat travel in inches | _____ |
| 16.13 | Lumbar Support | Is lumbar support provided (Y or N)? | _____ |
| 16.14 | Head Rest | Is head rest provided (Y or N)? | _____ |
| 16.15 | Seat is made of breathable material | State: type of seat material | _____ |

Operation

- | | | | |
|-------|---|--|-------|
| 16.16 | Reaching Distance
(to usual work) | State: reaching distance in inches | _____ |
| 16.17 | Maximum Reaching
Distance | State: maximum reach distance in inches | _____ |
| 16.18 | Adjustable Pedals
(accelerator/brake/clutch) | Are pedals adjustable (Y or N)? | _____ |
| 16.19 | Adjustable Steering
Wheel | Is steering wheel adjustable (Y or N)? | _____ |
| 16.20 | Adjustable Shoulder Belt | Is belt adjustable and anchored (Y or N)? | _____ |

Cargo Area

- | | | | |
|-------|--|--|-------|
| 16.21 | Lid opens to provide
adequate space | Adequate space provided (Y or N)? | _____ |
| 16.22 | Loading Height | State: trunk height in inches | _____ |

Environment

- | | | | |
|-------|--|---|-------|
| 16.23 | Operator compartment is
insulated from equipment
noise (while operating) | State: dB inside cab while operating | _____ |
| 16.24 | Operator insulated from
equipment vibration | Is operator insulated from vibration (Y or N)? | _____ |
| 16.25 | Heating/Cooling Systems | State: cab temperature range | _____ |
| 16.26 | Cab Lighting | State: lumens inside cab | _____ |

Maintenance/ Inspection

- | | | | |
|-------|--|--|-------|
| 16.27 | Lift Assistance
(when necessary) | Is lift assistance provided (Y or N)? | _____ |
| 16.28 | Easy Access
(to compartment doors) | Is easy access provided (Y or N)? | _____ |
| 16.29 | Include any other relevant ergonomic specifications and applicable range of adjustment | | _____ |

FORM N: DETAILED SPECIFICATIONS 17013

SINGLE AXLE CHASSIS WITH A 13' X 8' PARKS DUMP BODY

1.0 DESCRIPTION OF EQUIPMENT/APPLICATION

- 1.1 These specifications describe **Single Axle Chassis with a 13' x 8' Parks Dump Body** and other equipment and features as specified herein. These units are an integral portion of the City of Winnipeg Parks/Cemeteries Maintenance equipment fleet as they are utilized year round during all seasons. The Trucks will be used for hauling water tanks, soil, sand, wood chips, snow etc. The utilization of the trucks is 80% Hauling and 20% snow. The trucks will be used with up to two (2) operators.



- 1.2 The **Single Axle Chassis with a 13' x 8' Parks Dump Body** shall be new 2017 model year or newer.
- 1.3 The **Single Axle Chassis with a 13' x 8' Parks Dump Body** and all other items/components shall be the manufacturer's latest model. The equipment shall be furnished complete and ready for operation. Any parts or accessories not specifically mentioned, but which are required to complete and place the equipment and associated attachments in successful operation shall be furnished as though specifically mentioned in these specifications. The equipment and associated and attachments, and all parts thereof, shall conform in strength and quality of material and workmanship, to the best standards and engineering practice of the industry.

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 **Single Axle Chassis with a 13' x 8' Parks Dump Body** shall comply with the applicable regulations:
- Highway Traffic Act
 - Manitoba Motor Vehicle 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

- City of Winnipeg Lighting Visibility
Standard=<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.

2.3 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 units.

2.4 The manufacturer/installer shall be a certified vehicle completer and must affix their National Safety Mark (NSM) certification sticker on each unit.

State NSM number: _____

3.0 SERVICE FACILITY

3.1 For the purpose of warranty repairs, the supplier shall have an authorized service facility located within 10 kilometres 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 B11, 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.

4.0 REFERENCES

4.1 If available, please provide five (5) references where this equipment is used in a working environment where climatic conditions are similar to the City of Winnipeg.

5.0 MAKE & MODEL

5.1 **State** make and model of the **Single Axle Chassis with a 13' x 8' Parks Dump Body** body being bid: _____

6.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS-

6.1 Each bid will be evaluated based on adherence to all terms, conditions and requirements outlined in the Bid Opportunity package.

6.2 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.

6.3 **EACH BIDDER IS REQUIRED TO FILL IN EVERY BLANK. FAILURE TO DO SO MAY BE USED AS A BASIS FOR REJECTION OF BID**

7.0 PERFORMANCE RELIABILITY

7.1 The responsibility for the design of the **Single Axle Chassis with a 13' x 8' Parks Dump Body**, its performance and reliability shall rest upon the Contractor.

- 7.2 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, of 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 schedule.
- 7.3 Where the **Single Axle Chassis with a 13' x 8' Parks Dump Body** develops “repeated failures” in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.
- 7.4 The equipment shall be capable of consistent top performance in City of Winnipeg Environment. **Note: The City of Winnipeg has four seasons with ambient temperatures ranging from approximately 90°F (32°C) to -40°F (-40°C)**

8.0 **FUEL**

- 8.1 The **Single Axle Chassis with a 13' x 8' Parks Dump Body** must be fully fuelled upon delivery (no exceptions).

9.0 **QUALIFICATIONS OF MANUFACTURER & CONTRACTOR**

- 9.1 The manufacturer of the **Single Axle Chassis with a 13' x 8' Parks Dump Body** shall have five (5) years continuous experience manufacturing **Single Axle Chassis with a 13' x 8' Parks Dump Body**
- 9.2 The manufacturer shall have in effect a documented quality control program ensuring that the quality of materials and workmanship, including welding, conforms to the best standards and engineering practice of the industry.
- 9.3 The Contractor shall have five (5) years continuous experience servicing, repairing and maintaining **Single Axle Chassis with a 13' x 8' Parks Dump Body** of the type being offered.

10.0 **SPECIFICATIONS-**

When used in this Specification 17013:

“**Dump Body**” shall be used to describe Single Axle Chassis with a 13' x 8' Parks Dump Body

“**Dump Body/Water Tank**” shall be used to describe Single Axle Chassis with a 13' x 8' Parks Dump Body with Water Tank

“**Dump Body/Water Tank/Watering Arm**” shall be used to describe Single Axle Chassis with a 13' x 8' Parks Dump Body with Water Tank and Watering Arm

CHASSIS:

10.1 Weights: _____

The Trucks shall not exceed the City of Winnipeg's limit for gross vehicle weight, axle and tire loads

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 (tandem axle) – 9100 kg (20,056 lbs.)
- Tire load – 9 kilograms for each millimeter width of tire (approximately 500 lbs. per inch of tire width).

10.2 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, all attachments and full of fuel.

10.3 GVWR _____

- GVWR Total 33,000 lbs.
- GVWR Front 12,000 lbs.
- GVWR Rear 21,000 lbs.

10.4 Cab _____

Conventional with corrosion inhibitor

10.5 Cab to Axle _____

As required for 13' x 8' Dump Body

10.6 Wheelbase _____

As required for 13' x 8' Dump Body

10.7 After-Frame _____

As required for 13' x 8' Dump Body

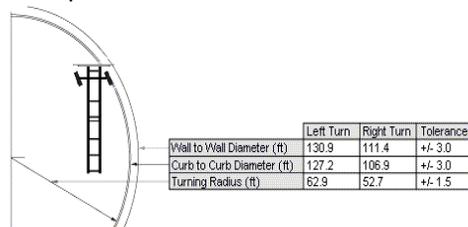
10.8 Bumper to Back of Cab _____

BBC Approximately 106-110 in.
State:

10.9 Turning Radius _____

Turning Radius
State: vehicle turning radius

Example:



- a) **Wall to Wall (ft.)**
- b) **Curb to Curb(ft.)**
- c) **Turning Radius (ft.)**

ENGINE:

10.10 Type _____

Tier IV Final Diesel, inline 6-cylinder

10.11 Horsepower _____

Approximately 300 HP gross

10.12 Torque _____

Approximately 800 lb-ft

10.13	Engine Shut Down	Low oil pressure / high water temperature	_____
10.14	Air Intake Warmer	Required:	_____
10.15	Fuel Shut-Off	Electric solenoid type	_____
10.16	Air Intake	Side of hood air intake	_____
10.17	Air Cleaner	Dry type, suitable as for a 13' x 8' Dump Body	_____
10.18	Air Intake Restriction	Dash mounted restriction indicator	_____
10.19	Oil Drain Plug	Magnetic type	_____
10.20	Oil Filter	Full flow, spin-on type	_____
10.21	Fuel Filter	Spin-on type	_____
10.22	Fuel/Water Separator	Heated, drainable under hood	_____
10.23	Fuel Line Primer Pump	Required:	_____
10.24	Block Heater	Immersion type, Approximately 1000 Watt with covered recessed male plug, located under driver's side door	_____
10.25	Radiator	Aluminum 1000 - 1200 square inch State: size	_____
10.26	Coolant	Extended Life coolant, antifreeze to -35°F (-37°C)	_____
10.27	Coolant Filter	Required:	_____
10.28	Coolant Hoses	Silicone type or Gates Blue Stripe	_____
10.29	Fan Drive	Thermostatically controlled, automatic type with dash switch	_____
10.30	Air Compressor	Water cooled, pressure lubricated, 15-18 cfm	_____
10.31	Diesel Exhaust Fluid (DEF) Tank	Approximately 19 – 36 Litres or largest size per application. Located Driver's side State: size and location	_____

ELECTRICAL SYSTEM:

10.32	Electrical Connector's	Plug-in, sealed type	_____
10.33	Anti-Corrosion Electrical Package	Controllers and sensitive electrical components (PCM, Harnesses etc.) mounted in cab State: locations	_____



10.34	Alternator	Delco Remy 36SI Heavy Duty, Brushless type 160 -180 Amp Pad Mount Remote Sense State: make and model	_____
10.35	Starter	Delco Remy 41MT Heavy Duty Over-Crank Protection State: make and model	_____
10.36	Circuit Breakers	Auto-reset, readily accessible	_____
10.37	Batteries/Battery Location	Three (3) batteries, 12-volt, group 31, approximately 2700-2850 CCA combined Batteries not to impede with the installation of the body State: location	_____
10.38	Battery Disconnect	In-cab mounted outboard of driver's seat State: location	_____
10.39	Battery Boost Terminal	Remote battery boosts terminal(s), protected from road spray. State: location Exact location to be determined at pre- production meeting	_____
10.40	Cab Marker Lights	LED Cab or LED Sun Visor	_____
10.41	2-Way Radio Circuit	Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled	_____
10.42	Accessory Switches	Six (6) required. All switches complete and wired for body installation, labeled and backlit	_____
10.43	Mega Fuse Box	Located in-cab or under-cab and shall be sealed. State: location and method of sealing	_____
<u>EXHAUST SYSTEM:</u>			
10.44	Exhaust	Required: Horizontal exhaust cylinder and vertical right hand tail pipe. Exhaust not to impede in the installation of the body. State: type and location	_____
10.45	Overall Exhaust Height	To clear dump body cab shield	_____

10.46 Exhaust Heat Shield

Required:



TRANSMISSION:

10.47 Transmission

- Allison 3000 RDS with 6-speed programming,
- Ratio shall be as per inter-city dump body application.
- Transmission shall come with load base Management Programming.
- Transmission to PTO to operate the dump body.

10.48 Allison SCAAN

The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator, the Allison SCAAN

10.49 Transmission Fluids

Synthetic

10.50 Shift Selector

Digital push-button type, dash mounted

10.51 Cooling Capacity

Water to oil transmission cooler, as per manufacturer's recommendation for severe duty cycle

10.52 Oil Level Dipstick

Bayonet type with high and low level markings

10.53 Transmission Drain Plug

Magnetic type

FRONT AXLE:

10.54 Front Axle

Set back axle, Meritor 12,000 lbs. capacity, with synthetic fluid.

REAR AXLE:

10.55 Rear Axle

Meritor 21,000 lbs. capacity, with synthetic fluid.

10.56 Ratio

For 110 km/hr, as recommended for dump body application,
State: ratio

10.57 Inter-Axle Lock

Required: with dash mounted switch

10.58	Differential Lock	Required: for drive axle with dash mounted Switch	_____
10.59	Hub Seals	Oil lubricated front and rear type	_____
	<u>FRONT SUSPENSION:</u>		
10.60	Front Suspension	Multi-leaf spring suspension, 12,000 lbs. capacity	_____
	<u>REAR SUSPENSION:</u>		
10.61	Rear Suspension	Air ride suspension, 21,000 lbs. capacity, axle, shall be as recommended for dump body application	_____
10.62	Suspension Control Valve	Manual dump valve for air suspension complete with dash mounted switch, indicator light, gauge and buzzer	_____
10.63	Auto Refill	Required: at 5 km/hr Exact speed will be determined at a pre-production meeting	_____
	<u>RIMS, WHEELS AND HUBS:</u>		
10.64	Front Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.65	Rear Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.66	Hubs	Aluminum material	_____
10.67	Wheel Nut Indicators	Required: on all wheel nuts	_____
	<u>TIRES:</u>		
10.68	Front Tires	11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application	_____
10.69	Rear Tires	11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application	_____

FRAME:

10.70 Frame Single rail as recommended for dump body application _____

10.71 Rust Inhibitor (Frame/Cross Member) ARMOUR-SEAL™
FRAME & CHASSIS COMPONENT PROTECTIVE UNDERCOATING: (or equivalent) _____

Sodium, magnesium and calcium chloride resistant.

Semi-permanent, high strength rubberized polymer blended.



RHOMAR Industries, Inc.

Tricia McKnelly-Anderson
Account Manager
2107 E Rockhurst
Springfield, MO 65802
1.800.688.6221
417.866.5593 (fax)
www.rhomar.com
www.rhomar.com/products/armour-seal.

10.72 Chassis Fasteners Grade-8 threaded hex headed frame fasteners _____

10.73 Rear Frame Towing Provisions Towing provisions with 7-way pin receptacle to end of frame with two (2) extra feet of wiring to for ease of body installation. _____

STEERING:

10.74 Steering Tilt and telescopic, power, rated for front GVWR rating. Reservoir approximately 2 quart with see through tank. _____

BRAKES:

10.75 Brakes Hydraulic, ABS brakes for Class 5 Driver _____

10.76 Parking Brake **Required:** _____

10.77 Dust Shields **Required:** front and rear _____

10.78	Air Tanks	Shall be aluminum tanks with aluminum or stainless steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion	_____
10.79	Moisture Ejector	Required: Wabco, heated, in all air tanks	_____
10.80	Drain Valves	Required: Manual, chain or cable operated, on each air tank	_____
10.81	Air Dryer	Wabco Heated System Saver 1200 or equivalent State:	_____
<u>FUEL TANK:</u>			
10.82	Fuel Tank	Dual 40-45 gallon fuel tanks. Shall not impede in the installation of a 13' x 8' Dump Body. State: fuel capacity	_____
10.83	Fuel Water Separator	Required: heated	_____
10.84	Tank Straps	Aluminum or Stainless Steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion State:	_____
<u>CAB:</u>			
10.85	Cab	Conventional with corrosion inhibitor	_____
10.86	Cab Construction	Aluminum or Galvanized steel State:	_____
10.87	Cab Mounts	Air suspension	_____
10.88	Hood	High visibility hood	_____
10.89	Hood Fender Extensions	2-3 in. front fender extensions	_____
10.90	Front Grille	Stationary mounted to hood	_____
10.91	Cab Interior / Trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
10.92	Cab Silencer Package	Required: for minimal decibel level	_____
10.93	Hood/Firewall/Engine Insulations	Insulated hood liner, engine cover and firewall	_____
10.94	Floor Covering	Rubber mat with under-padding	_____
10.95	Floor Mats	Two (2), rubber	_____
10.96	Driver's Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____

10.97 Passenger Seat High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal _____

10.98 Dashboard Ergonomic (Wing) Design _____



10.99 Sun Visors Dual flip-up type _____

10.100 Steering Wheel Tilt and telescopic type _____

10.101 12-Volt Power Outlet **Required:** Two (2) with independent circuit _____

10.102 Radio Factory installed AM/FM/ with "hand free" Blue Tooth capability _____

10.103 Starter Switch Key operated complete with three (3) sets of keys _____

10.104 Interior Light Dome light with driver and passenger door switches _____

10.105 Heater / Defroster High output, capable of keeping all windows clear at an outside temperature of (-40°C) _____

10.106 Air Conditioning **Required:** _____

10.107 Brake, Accelerator, Pedals Floor or hanging type brake and accelerator pedal **State:** _____

10.108 Horn Dual electric _____

10.109 Exterior Mirrors Mirrors heated, lighted, 4-way motorized adjustment (with convex mirrors), suitable for 102 in. equipment width _____

10.110 Down-View Mirror **Required:** over passenger door, Approximately 5 in. x 4 in. _____

10.111 Windows and Windshield Tinted _____

10.112 Power Windows Power driver and passenger side _____

10.113 Doors Power door locks _____

10.114 Windshield Wipers Electric intermittent _____

10.115 Wiper Blades Heavy duty with winter type boot _____

10.116 Windshield Washers Electric, required with spray nozzles on wiper Blades _____

10.117	Grab Handles	Dual exterior State: locations	_____
10.118	Grab Handles	Dual Interior	_____
10.119	Entrance Steps	Dual each side, open grate / grip type	_____
10.120	Winter Front	Heavy-duty vinyl with twist lock or snap type fasteners	_____
10.121	Exterior Sun Visor	Required:	_____

10.122 Strobe LED Lights (Beacons)

Qty two (2) Amber/Blue LED Beacons,
Class 1 High Dome Strobe Lights
complete with switch and labels.
Mounted with aluminum or stainless
steel brackets to B-Pillar

Note: Beacons and Mini Light Bar to be
controlled by a single 3-Way switch with
the following functions:
Amber – Off – Amber/Blue



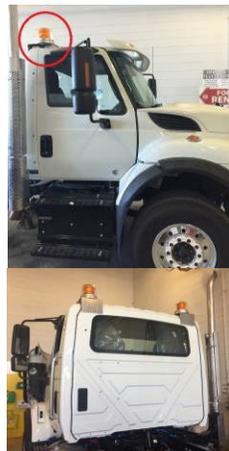
Note: Need to be forward enough as not
to interfere with the cab shield if
equipped with one.



Whelen L31HMF

OR

SWS 22609



**Location to be determined at a pre-
production meeting**

INSTRUMENTATION:

- | | |
|------------------------|--|
| 10.123 Instrumentation | <ul style="list-style-type: none">• Oil Pressure Gauge _____• Coolant Temperature Gauge• Transmission Oil Temperature Gauge• Voltmeter Gauge• Air Reservoir Pressure Gauge with LAP Warning Light And Buzzer• Low Oil Pressure Warning Light and Buzzer• High Water Temperature Warning Light and Buzzer• Non-Resettable Type Engine Hour-Meter |
|------------------------|--|

TOW HOOKS:

- | | |
|----------------------------|---|
| 10.124 Tow Hooks | Front mounted and Rear mounted _____ |
| 10.125 Weigh Scale Systems | Required: Model Air Weigh scale system for front and rear axles. _____ |

System must be tested and calibrated prior to delivery.

COLOURS:

- | | |
|------------------------|-------------|
| 10.126 Exterior Colour | White _____ |
| 10.127 Interior Colour | Grey _____ |

ACCESSORIES:

- | | |
|--------------------------|--|
| 10.128 Flare Kit | Three (3) triangular reflectors, CVSA approved. Kit must be mounted or secured. _____ |
| 10.129 Fire Extinguisher | 5 lbs. Fire Extinguisher ABC type installed and secured
State: location _____ |
| 10.130 Back-Up Camera | Required: Quantity two (2)
Location # 1 - back of vehicle
Location # 2 - top of cab shield complete with protective guard _____ |



Locations to be determined at pre-production meeting

10.131 Back-Up Camera Screen

In-Dash (Ergonomic (Wing) Dashboard)

OR

Dash mounted if standard dashboard is specified.



Back-Up Camera Screen location to be determined at a pre-production meeting.

DUMP BODY SPECIFICATIONS:

10.132 Type

Double Wall Dump Body

The Dump Body shall be designed to accommodate a 1350 gallon water tank per below photo. This shall include all necessary anchor points.



10.133 Outside Length

Nominal 13 ft.

10.134 Inside Length

Approximately 12 ft. 6 in.

10.135 Outside Width

To match chassis track width
 Nominal 8 ft. 6 in.

10.136 Inside Width

Approximately 7 ft. 3in.

To accommodate seasonal water tank installation

10.137 Front Height

To match chassis cab height.

10.138	Construction Material (Inside)	All material that touches the material (internal walls, floor, gate, front wall, dog house) used in construction to be 3/16 in. Hardox 450 with exception of the cab shield.	_____
10.139	Construction Material (Outside)	10 Gauge 44W Structural Steel	_____
	<u>FLOOR:</u>		
10.140	Material	3/16 in. Hardox 450	_____
10.141	Floor	1-Piece or 2-Piece maximum and pieces shall be continuously welded	
10.142	Width	Nominal 86 in. State:	_____
10.143	Long Sill Material	3/16 in. formed steel, tapered hat section design, 8 in. – 10 in. height, continuously welded to the floor	_____
10.144	Floor Slope	Approximately 60 degree slope along the joint to the side wall. Slope shall extend upwards approximately 4 - 8 in. If required design and installation to be determined at a pre-production meeting.	_____
	<u>FRONT:</u>		
10.145	Front Construction	3/16 in. Hardox 450 continuously welded to sides and floor.	_____
10.146	Front Section	Shall be constructed to incorporate a nominal 12 in. L x 12 in. W x 60 in. H provision (Well Front) to contain the installed hoist	_____
10.147	Cab Shield	Formed from single sheet of mild steel, 24 in. deep, sloped @ 10° or to match cab contour complete with reinforced ends.	_____
10.148	Cab Shield Clearance	Cab shield sides to provide adequate headroom and clearance for entry and egress of vehicle cab.	_____

SIDES:

10.149	Construction and Material	Construction – double wall Outside Material 10 Gauge 44W Inside Material 3/16 in. Hardox 450	_____
		Clean side style formed sides without vertical reinforcements, welded into a 1-piece design, including self-cleaning bottom rail and formed, self-cleaning centre horizontal rib and sloped top rail	
10.150	Side Height	Approximately 30 in. measured from the floor without plank gussets	_____
10.151	Rear Side Post	3/16 in. Hardox 450, one (1) per side.	_____
10.152	Top Side Rail Material	Heavy Duty Rectangular tubing with 3/16 in. wall State: size Or Fabricated from 3/16 in. Hardox 450	_____
		State: method of construction	
10.153	Plank Gussets	2 in. x 6 in. planks with ½ in. diameter bolt holes.	_____ _____
10.154	Planks	2 in. x 6 in. planks painted black on all sides, installed and bolted in gussets	_____

TIE DOWNS AND LADDERS:

10.155	Tie Downs Eyes	Required: Four (4), Located on inside of dump body. <ul style="list-style-type: none">• Two (2) near top/rear of each side• Two (2) near top/front of each side Tie downs shall be D-Rings. Tie downs eyes to have a lifting capacity rated for full box weight for lifting box during installation	_____
		Exact locations to be determined at a pre-production meeting	
10.156	Inside Steps	One (1) per side, located at rear of body Approximately 12 in. L x 5 in. W, located approximately 20 in. from floor.	_____

10.157	Access Ladders	Required: Two (2) <ul style="list-style-type: none">• Bolt-on installation• Fold-Down (Retractable) Design• one (1) located curb-side corner• one (1) located driver's side corner Design and installation to be determined at a pre-production meeting Refer to Appendix A	_____
10.158	Ladder Rungs	Traction type rungs <ul style="list-style-type: none">• 13-gauge steel, 2¼ in. width• 4-hole design• Traction Tread Products or equal. Refer to Appendix A	_____
10.159	Ladder Rungs Location	First rung to be 18-22 in. from ground level, approximately 14 in. rung spacing to top of body. Design and location to be determined at a pre-production meeting Refer to Appendix A	_____
10.160	Grab Handles	Located for ergonomic access to top of box. Design and location to be determined at a pre-production meeting Refer to Appendix A	_____
<u>TAILGATE:</u>			
10.161	Style	Shall be a top hinge with greaseable fittings	_____
10.162	Tailgate Height	Approximately 38 in.	_____
10.163	Tailgate Operation	Tailgate shall not protrude above floor in horizontal or full down position.	_____
10.164	Standard	There shall be no gap between tailgate and the floor and sides when tailgate is in the closed or horizontal position.	_____
10.165	Tailgate Construction	Formed construction with one or two equally spaced horizontal or vertical ribs, and a self-cleaning bottom rail. Inside liner with 3/16 in. Hardox 450	_____
10.166	Tailgate Reinforcement	Required: Tailgate shall be reinforced with either heavy duty ¾ in. end plates, or ¼ in. steel tubing.	_____

- 10.167 Anchor Pins _____
Top tailgate anchor pins 1¼ in. diameter min., self-locking/storing to top of side posts.

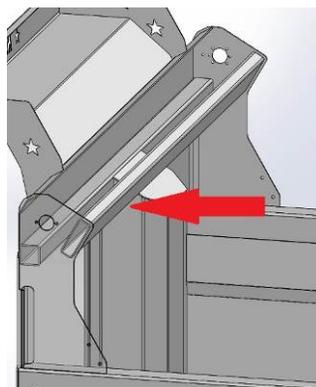
If retainer pin is used to lock top tailgate anchor pins, a small steel check chain is required, permanently fastened to the retainer pin. _____
- 10.168 Support and Spreader Chains _____
¾ in. transport Grade 70, adequately fastened complete with chain storage and two (2) removable links per chain.

Support and spreader chains shall be equipped with a protective cover. _____
- 10.169 Tailgate Locking Mechanism _____
In-cab control, air operated with air brake pot or air cylinder operated trip.

State: method

The locking mechanism shall be adjustable to ensure adequate lock-up with tailgate closed. _____
- TARPAULIN:**
- 10.170 Tarpaulin Type _____
Electric flip tarp, operable in-cab from driver's seat with aluminum arms. Elbow to ensure arms recess as low as possible along box sides and not in the way of loading.

State: make, model and type of material
- 10.171 Tarp System _____
Tarp system shall stow on the cab shield, i.e., shall not protrude into the box area.
- 10.172 Tarp Protection System _____
Required: to protect the roll from shifting material in the body



Design and location to be determined at a pre-production meeting

10.173 Tarp Operation Tarpaulin shall not block the visibility of the mini light bar when tarpaulin is in the stowed position. _____

HOIST:

10.174 Requirements: _____

3-Stage, front mounted telescopic hoist, nitrided, quenched and polished cylinder stages, protected against corrosion, Mailhot G3 Series

Hoist to be sold, installed and serviced by an authorized dealer

10.175 Make and Model **State:** _____

10.176 Bore Approximately 5 in. _____
State:

10.177 Hoist Capacity Approximately 20 – 30 tons _____
State: capacity

10.178 Hoist Dump Angle 45° from horizontal, cylinder must lower under its own weight with empty load in low ambient temperatures. _____

10.179 Hoist Connection **Required:** live swivel _____

10.180 Hoist Grease Fittings **Required:** on all pivot pins. _____

IN-CAB CONTROLS:

10.181	Cab Controls	Programmed through OEM dash mounted switches	_____
10.182	Switches	All switches shall be back-lit for night time use and clearly identified with engraved style, permanent type labels.	_____
		Supply corresponding valve and solenoid necessary for operation	_____

Switches:

- PTO Engagement
- Dump Box Up/Down
- Tailgate Open/Close
- Amber Lighting
- Blue Lighting
- Tarp Open/Close



HYDRAULICS:

10.183	PTO	<u>Muncie</u> or <u>Chelsea</u> electric/hydraulic power shift State: make and model	_____
10.184	Hydraulic Pump	Required: Transmission mounted PTO Pump to operate the dump body. <u>Parker</u> Dump Pump or equivalent in accordance with B6 Substitutes State: make and model	_____
10.185	Requirements	Shall be a 3-Line system	_____
10.186	Suction Line Valve	Required: easily accessible, lockable with bolts.	_____
10.187	Hydraulic Oil Reservoir	Passenger side, chassis frame mounted, Aluminum or Stainless Steel construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge. State: material	_____

10.188	Hydraulic Oil	Univis N15 or equivalent State: type	_____
10.189	Capacity	Approximately 25 – 30 gallon State: size	_____
10.190	Drain Plug	¾ in. diameter.	_____
10.191	Fittings	NO: black steel or cast fittings State: type	_____
10.192	Labelling	Reservoir shall be clearly labelled "Hydraulic Oil" with a permanent type, engraved style label.	_____

HYDRAULIC FILTERS:

10.193	Return Filter	Serviceable without oil loss, tank mounted, complete with clogging indicator.	_____
10.194	Filter Standard	Filters shall contain a corrosion resistant coating, beta rating of 200, 10 micron particle size, and shall be ergonomically located for servicing.	_____
10.195	External Hydraulic Filter Pan	External Hydraulic filter shall have a stainless steel or aluminium pan located directly under the filter in case of a potential hydraulic leak and to avoid hydraulic fluid falling to the road. Design shall not impede the servicing of the filter.	_____



10.196	Shut-Off Valve	Ball type, located between reservoir and pump, secured in open position with a bracket and bolt.	_____
10.197	Hydraulic Hoses	Wire braid reinforced, rated for system operating pressure with 4 to 1 safety factor for burst pressure.	_____
10.198	Protection	Hydraulic hoses to be protected at wear and scuff location.	_____
10.199	Hose Fittings	Hydraulic full flow, crimp-on (non- reusable) type.	_____

ELECTRICAL & LIGHTING:

10.200 Conformance All lighting to conform to: _____
• C.M.V.S.S.
• Manitoba Highway Traffic Act.
• City of Winnipeg Lighting Visibility
Standard
<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.

10.201 Lighting Supplier installed shall be **high count** LED lighting and shall be Truck-Lite, Whelen **or equivalent** _____

10.202 Connection System Weather Pack Sealed Connection System _____



10.203 Grommets Rubber grommets unless otherwise specified _____

10.204 Combination Turn/Stop And Taillights One (1) per side _____
P/N Truck-Lite 44302R with P/N 44710 mounting grommets



10.205 Back-Up Lights One (1) per side _____
P/N Truck-Lite 44206C with P/N 44710 mounting grommets



10.206 3-Light Cluster Three (3) _____
P/N Truck-Lite 10250R with P/N 10403 mounting grommets



10.207 Clearance Lights

High count LED
P/N Truck-Lite 10250R or 10250Y with P/N
10403 mounting grommets.



10.208 Blue Strobe Lights

One (1) per side with mounting grommets
P/N Whelen 5GA00FBR

10.209 Amber Strobe Lights

One (1) per side with mounting grommets
P/N Whelen 5GA00FAR



10.210 License Plate Light

Complete with license plate bracket.
P/N Truck-Lite 36140 (Light)
P/N Truck-Lite 36710 (Bracket)

Installed on Hitch Plate – Upper Right
Corner



10.211 Traffic Arrow

SWS 50943 Traffic Arrow

- Mounted to Tailgate
- Bottom edge of the Traffic Arrow shall be 1.5 m (5 ft.) from ground level

Refer to Appendix A



10.212	Rear Light Mounting Location (Rear Sill)	_____
	<ul style="list-style-type: none">• Combination Turn/Stop and Taillights, qty two (2), one per side• Back-Up Lights, qty two (2), one per side• 3-Light Cluster, qty three (3)• Rear-Corner Clearance Lights, qty two (2), one per side	
	<p>The lights shall be situated so that no debris contacts the lights while dumping.</p>	
	<p>Refer to Appendix A</p>	
10.213	Rear Light Mounting Location (Rear Posts)	_____
	<ul style="list-style-type: none">• Amber Strobe Lights, qty two (2), one per side• Blue Strobe Lights, qty two (2), one per side• Rear-Corner Clearance Lights, qty two (2), one per side	
	<p>Refer to Appendix A</p>	
10.214	Clearance Light Mounting Locations:	_____
	<ul style="list-style-type: none">• Front – qty two (2), located one on each bottom corner• Sides – qty two (2) per side, located on front and rear bottom corners.	
10.215	Standard	_____
	No clearance light shall protrude beyond the dump body.	
10.216	Standard	_____
	Taillights and back-up lights shall be fully visible when tailgate is lowered to horizontal position.	
10.217	Harnesses	_____
	Harness system, properly routed and secured. All harnesses shall be internally grounded, no exceptions.	
10.218	Junction Box	_____
	Junction box complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame.	
10.219	All Plug-In Connectors	_____
	All plug-in connectors shall be coated with NYK compound prior to assembly.	
10.220	Back-Up Alarm	_____
	97 dB(A), installed near rear of dump body, located to be protected from damage.	

10.221 Mini Light Bar

- Whelen RDLPPAB Amber/Blue LED Mini Light Bar or equivalent in accordance with B6 Substitutes
- Mounted to top of cab guard
- Protected by Branch Guard
- 360° visibility when tarpaulin is in stowed position.
- Mini Light Bar shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Light Bar Amber/Blue" with a permanent type, engraved style label.

Note: Beacons and Mini Light Bar to be controlled by a single 3-Way switch with the following functions:
Amber – Off – Amber/Blue



10.222 Branch Guard

Heavy duty branch guard constructed by 3/8 in. round bar or equivalent.



10.223	Wiring	All LED strobe lights shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Strobes" with a permanent type, engraved style label. All wiring for back-up alarm, warning lights, strobes and trailer connector shall be colour coded, loomed and properly secured.	_____
10.224	Trailer Connector	6-Way Round or SAE J560 7-Way Flat trailer receptacle. Type to be determined at pre-production meeting .	_____
10.225	Electrical Connectors	All electrical connectors shall be crimped, soldered and then sealed using heat shrink tubing	_____
10.226	Joining Of Wires	All joining of wires shall be soldered and sealed using heat shrink tubing or approved OEM weather tight connections (crimp on electrical connectors for joining wires are not acceptable)	_____
10.227	Wiring Routing	Any holes required to run wires through shall be drilled (not punched), grommeted and sealed	_____
<u>WELDING:</u>			
10.228	Standard	All welds shall be continuous welds. All welding performed shall conform to CSA Standard W47.1-03 and W59-03.	_____
<u>INSTALLATION:</u>			
10.229	Drilling	Any holes required in the chassis frame web must be drilled and reamed to fit bolts.	_____
10.230	Standard	Drilling on chassis frame flanges is not permitted. Welding on the chassis frame is not permitted, with the exception of installation of dump body pivot support.	_____
10.231	Tire Clearance	Three (3) inches with rear suspension air bags lowered.	_____
10.232	Clearance	Clearance between dump body and back of truck cab shall be 3 in.	_____

MISCELLANEOUS:

10.233 Rear Hitch Plate

¾ in. thick solid steel, (laminated plates not acceptable) installed to chassis frame. _____



Design (including overhang) and installation to be determined at pre-production meeting.

10.234 Pintle Hitch and Receiver

Premier 240 or approved equal, installed on hitch plate at a 24 in. height. _____

Receiver – 2 in. x 6 in. Length
State: size



Design and installation to be determined at pre-production meeting

10.235 D-Ring with Mounting Bracket
(Required for Trailer Safety Chains)

One (1) each side of hitch
Buyers Products B48 or equal. _____



10.236 Shovel Holder

Shovel holder with handle latch to secure
shovel in place

Buyers Products P/N SH675SS



**Location to be determined at pre-
production meeting**

10.237 Rear Fenders

Heavy Duty rear poly half-moon fenders.
Shall be installed to have sufficient
clearance from body and when chassis
suspension is dumped for dump body
operation.



10.238 Mud Flaps

Required: Black rubber, no-name, front and rear of back tires complete with anti-sail bracket on each mud-flap. Rear mud flaps shall not contact the ground when the dump body is at maximum dump angle



10.239 Isolators

All interfaces between aluminium and steel shall be separated by an approximately 1/16 in. thick rubber or neoprene sheet and are to be bolted through with stainless steel bolts and non-conductive bushings

10.240 Grease Fittings

Required: on tailgate release mechanisms, pivot points and tailgate

GREASING SYSTEM:

10.241 Complete unit shall have Groeneveld CPL Systems Inc. or Lubecore Auto Greasing System.

10.242 Single Line, EP2 and automatic low level shut-off with in-cab red light indicator.

10.243 All grease fittings for the entire chassis and body (including cylinder mounts, pivot points, dump body prop, plow etc.), shall be readily accessible or shall be equipped with remote grease zerks as required.

10.244 **Grease Points:**

Approximately twenty-six (26) points on cab & chassis
Approximately eight (8) – twelve (12) points on body (depending on body configuration)

State: quantity of grease points on cab & chassis: _____

State: quantity of grease points on body: _____

10.245 Grease pump will pump Original Equipment Manufacturer specified EP2 grease from -40°C to + 50°C.

10.246 One way check valves on each line _____

10.247 Low temperature compatible 800 bar/12000 PSI grease line with a bending radius of 3/4 inch. With a 5 year line breakage guarantee for on road trucks. _____

10.248 One piece flow dividers with manual over ride. _____

10.249 **Warranty:** three (3) years parts and labour. _____

TOOLBOXES:

10.250 Tool Boxes Aluminum Tool Boxes _____

- Mounted on driver or passenger side frame
- Approximately 24 in. x 24 in. x 48 in.
- Barn Door style doors

State: quantity, dimensions, material, and recommended location as set by the manufacturer



SAFETY:

10.251 Dump Body Prop **Double Prop Design** _____

- Steel tubing construction, to support dump body in raised position and permit servicing of hoist
- Operable by a single person
- Designed so as not to interfere with hoist cylinder or surroundings
- Operating Handle to be positioned outside of chassis frame rails for operator safety (Driver's Side)
- Dump body prop to be complete with receiving bracket.
- Safety Lock Pin and Chain required to hold arms in the "Up" position (Driver Side)
- Refer to below pictures for sample designs

Design and installation to be confirmed at a pre-production meeting.



Driver Side - Up



Driver Side - Down



Driver Side - Down



Driver Side - Up



Passenger Side - Down



Safety Lock Pin and Chain

10.252 Dump Body Prop Colours

All components (prop, handle and receiving bracket) shall be painted with **Safety Orange** for ease of identification

10.253	Dump Body Stowage Warning System	Required: Warning light and buzz system shall be installed on the dash and shall be actuated when dump body is not in the fully stowed position. State:	_____
10.254	PTO	Programmed: To disengage the PTO when 5 kph is reached to prevent the driver from driving off when the body is up. Exact speed to be determine at pre-production meeting	_____
10.255	Pre-Trip Exterior Light Inspection	Programmed: When activated, the vehicle lights repeatedly flash in a specific sequence to allow the operator to verify that the exterior lights are functioning. The light test sequence tests: <ul style="list-style-type: none">• Park Lights• Headlights (low and high beams)• Right/left front/rear turn lights• Brakes Lights• Mini Light Bar• Beacon(s)• Strobe Lights• Clearance Lights	_____
10.256	Warning Light Over Ride	Programmed: Rear strobe lights to be programmed to allow for an over-ride for turn signals and brake lights when strobe lights are on. Other drivers will be able to determine if the truck is stopping or turning when strobe lights are on.	_____
	<u>FINISH:</u>		
10.257	Preparation	Complete dump body and all ladders, hitch plates, reservoirs, steel brackets, etc. shall be sandblasted, properly cleaned, primed and finished with the Endura or DuPont paint process as follows:	_____
10.258	Primer	Required: Epoxy or Polyurethane primer Endura EP321 Intermix Epoxy Primer or DuPont polyurethane. Two (2) coats – Dry Film Thickness 3.0 – 4.0 mils	_____

10.259 Paint

Required: Polyurethane
 Colour: Black

Endura EX-2C or DuPont Polyurethane

Two (2) coats:
 3 - 5 mils Wet Film Thickness with a total
 combined overall average Dry Film
 Thickness of 4 – 6 mils

Note: Complete body (inside and outside)
 shall be painted

OPTIONS:

Four (4) Units to have the following:

WATER TANK

Note: Configuration to be priced only as indicated on Form B: Prices

Water Tank and Accessories to be purchased from:

**Polywest Ltd.
 3700B McGillivray Blvd
 Winnipeg, Manitoba**

**Horizontal Leg Tank HD Item No. 40133
 Horizontal Steel Support Band Item No. 60079
 Liquid Surge Stabilizer: 15-3/4 inch Item No. 69004-LSS15**



10.260 Capacity

6142 L (1350 Imperial Gallon)

10.261 Type

Poly construction, semi-transparent

Horizontal Leg Tank HD Item No. 40133

10.262 Configuration

Round or oval, complete with molded-in
 legs

10.263 Diameter

Approximately 63 in.
State:

10.264 Length

Approximately 134 in.
State:

10.265 Lid Size

Approximately 16 in.
State:

10.266 Outlet Fitting **Required:** at bottom of front of tank, round _____

10.267 Support Bands **Required:**
Rated for full-load tank capacity
Four (4) per Tank _____

**Horizontal Steel Support Band
Item No. 60079**

10.268 Liquid Surge Stabilizers **Required:** 162 per Tank _____

**Liquid Surge Stabilizer: 15-3/4 inch
Item No. 69004-LSS15**

TAILGATE AND FALL ARREST SYSTEM

10.269 Tailgate Fabricated and Installed per attached drawings. _____
All dimensions are approximate

**Final design and installation to be
determined at pre-production meeting.**

Refer to Appendix A

10.270 Fall Protection System with Ladder and Grab Rails Fabricated and Installed per attached drawings. _____
All dimensions are approximate

**Final design and installation to be
determined at pre-production meeting.**

Refer to Appendix A

10.271 One (1) Unit to have the following:

WATERING ARM

Note: Configuration to be priced only as indicated on Form B: Prices

The multi-purpose equipment will be completely hydraulically operated and will serve as a high-pressure sidewalk washing and a low pressure watering of flowers either on the ground or suspended in the air.

MODEL: TENCO PCL- 500 WATERING ARM



10.272 Directional

The arm and its support to be mounted on a vertical pivot and entered on the bumper so as to be able to swing from left to right at a 0 degree to 180 degree angle.

10.273 Extendable

Extendable arm to permit watering in any direction at a distance from 1000 mm to 4318 mm (39 in. to 170 in.) and to an approximate height of 500 mm (20 in.)

10.274 Lifting

The lifting of the arm shall permit the sprinkler head to be placed at a minimum height of 5000 mm (197 in.) from the ground and at a horizontal distance from its pivot equal to 2438 mm (96 in.)

10.275 Mechanism

Directional mechanism for the spray of water must possess a double joint at the end of the arm to permit rotation of the spray up to 360 degrees angle from its axis and 180 degrees from its transporting position.

10.276	Obstruction	Once the arm is in a retracted position for transport, the arm shall occupy a space on either the left or right side of the bumper and it should not be wider than the width of the vehicle and not interfere with the headlights.	_____
10.277	Safety	A hydraulic safety lock shall hold the handle in a folded position on the right side.	_____
10.278	Dimensions	The height of the arm in a transport position should not to exceed approximate 3400 mm (134 in.)	_____
10.279	Transport Position	Minimum play while in a transport position must exceed 350 mm (14 in.) measured from the ground.	_____
10.280	Installation	Installation of the arm shall not affect the opening of the truck hood. A manual hydraulic pump shall do the movement and repositioning of the arm.	_____
		Installation of the directional sidewalk washer/sprinkler shall be mounted on fastening plates bolted onto the frame of the truck and will be easily removed and transferred to another vehicle.	_____
10.281	Construction	The Watering Arm shall be constructed of shaped tubular steel in order to obtain a maximum of rigidness and weight relation. Tubular steel shall be approximate (2 ½ in. X 2 ½ in. X ¼ in.)	_____
10.282	Cylinders	Two (2) hydraulic cylinders join the mechanism of the arm	_____
10.283	Arm	The watering arm shall move up and down by means of a hydraulic cylinder, motor, rolling chain and gears	_____
10.284	Hydraulics	Hydraulic system shall serve six (6) functions of which are controlled electro-hydraulically from the cab of the truck.	_____

10.285	Control Functions	Functions are: <ul style="list-style-type: none">• Positioning and /or adjusting the arm• Extending the arm• Raising the arm• Directing the spray of water• Rotating the spray of water• Pivoting of the security pin	_____
10.286	Control Panel	Shall be equipped with identification labels of all different operational functions that are either engraved or in raised characters. All controls are shall be reachable for the operator.	_____ _____
10.287	Joystick	Shall permit smooth control without jerking	_____
10.288	Pressure Control	The hydraulic system shall be equipped with pressure regulators that will limited the speed of the lifting movements and the extending, and directional arm.	_____
10.289	Hoses and Valves	Hoses and hydraulic valves will be located outside of the cab	_____
10.290	Sidewalk Watering	Sidewalk watering device shall be high-pressure with the capacity to direct the spray of water at its angle of attack.	_____
10.291	Watering of Plants	Shall have a brass shower head for watering plants. Approximately 2 in. mounted on a ¾ in. hose that is 700 mm in length. Must be able to control the volume and water pressure for the purpose of watering plants	_____
10.292	Hose	Shall have a hose approximately 5 cm (2 in.) in order to feed the sidewalk washer/sprinkler from a reservoir.	_____

11.0 **WARRANTY**

11.1 The body warranty on the complete vehicle (excluding the chassis) 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 one (1) year from the date the equipment is put into service by the City of Winnipeg. _____

11.2 All warranty information shall be detailed and include all exclusions. The successful bidder shall provide all published warranty information upon delivery of the equipment. Bidder shall State: all warranty information _____

BODY WARRANTY

11.3 Main Frame - Structural **State:** _____

11.4 Frame – Non-Structural **State:** _____

11.5 Components e.g. Pumps **State:** _____

11.6 Hydraulics **State:** _____

11.7 Hoist and Cylinder **State:** _____

11.8 Electrical One (1) year
State: _____

11.9 LED Lighting **State:** _____

11.10 Paint **State:** _____

CAB & CHASSIS WARRANTY

11.11 Basic Vehicle - Chassis One (1) year, unlimited km,
State: _____

11.12 Electrical One (1) year
State: _____

11.13 LED Lighting **State:** _____

11.14 Batteries One (1) year, unlimited km
State: _____

11.15 Drivetrain Two (2) years, unlimited km
State: _____

11.16 Cab Structure/Corrosion Five (5) years, unlimited km
State: _____

11.17 Frame & Cross-Members Five (5) years, unlimited km
State: _____

11.18 Cab Paint One (1) year or 160,000 km
State: _____

11.19 Engine Three (3) years or 240 000 km
State: _____

11.20 Transmission Two (2) years, unlimited km
State: _____

11.21 Axles - Front & Rear Two (2) years or 161 000 km
State: _____

11.22 Components **State:** _____

Other Warranties

11.23 Water Tank **State:** _____

11.24 Watering Arm **State:** _____

12.0 **DELIVERY**

12.1 Delivery Point: The complete unit shall be serviced, ready for operation and delivered F.O.B. with the freight prepaid, including invoice and N.I.V.S. (if applicable) to the WFMA 185 Tecumseh Street, Winnipeg MB. The successful bidder shall be notified by the Contractor Administrator the delivery address prior to issuance of the purchase order _____

12.2 Delivery Time: Equipment shall be delivered between 8:00 am and 2:00 pm on Business Days
State: Delivery Date _____

12.3 Delivery Contact: The Contractor shall contact the Contract Administrator prior to delivery of the equipment. _____

12.4 P.D.I: A pre-delivery inspection shall be performed by the Contractor on the equipment. Proof upon inspection including completed check list _____

13.0 **MANUALS**

13.1 Manuals supplied under this Contract shall cover the complete equipment including all components thereof, CD or USB flash drive is preferred where available. _____

13.2 The following manuals shall be supplied with the units when delivered:

a) Operator's manual – Two (2) per unit (one operator manual shall be sent to the Equipment Operator Training Branch _____

b) Parts and service manuals – One (1) complete set including preventative maintenance schedules. CDs or USB flash drive are preferred. _____

14.0 **PARTS/LABOUR DISCOUNT**

14.1 Bidder to provide City of Winnipeg Parts Discount % Pricing from retail parts pricing. **State: percentage discount** _____%

14.2 Bidder to provide City of Winnipeg Labor Discount % Pricing from Retail shop labor rate. **State: percentage discount** _____%

15.0 **FIRST SERVICE PREVENTATIVE MAINTENANCE KIT**

15.1 In order to assure minimum downtime of the equipment in future service, the Contractor shall provide one (1) complete replacement set of new OEM filters for each unit purchased. The set of required filters shall include (if applicable to the equipment type) air, fuel, oil, cab and hydraulic, or otherwise all known necessary common replacement filters required for the first preventative maintenance servicing. _____

15.2 The Contractor shall provide a list of factory recommended lubricants to be used with the equipment, as well as a complete cross reference guide for all warranty approved lubricants and filters that can be used during preventative maintenance servicing. _____

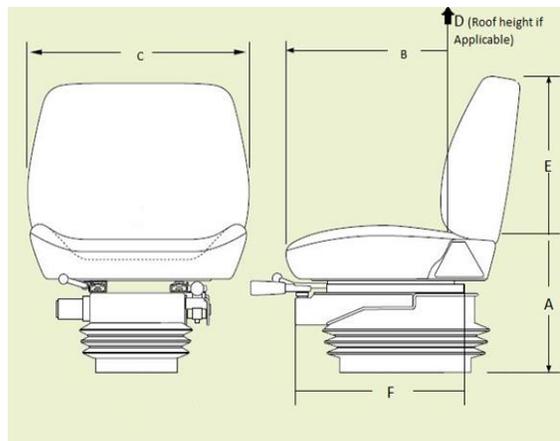
16.0 **ERGONOMIC SPECIFICATIONS**

Entry/ Exit

- | | | | |
|------|------------------------------|---|-------|
| 16.1 | First step entry height | State: height of first step in inches | _____ |
| 16.2 | First handhold entry height | State: first handhold entry height in inches | _____ |
| 16.3 | Access to equipment | State: door opening height in inches | _____ |
| 16.4 | Access to equipment | State: door opening width in inches | _____ |
| 16.5 | Designed to prevent slipping | Anti-slip steps/handholds (Y or N)? | _____ |

Seat

16.6 Use diagram to answer questions.



- | | | | |
|-------|---|---|-------|
| 16.7 | Sitting Height Range (from floor (where feet rest) (A)) | State: seat height range in inches | _____ |
| 16.8 | Seat Length/Depth (B) | State: seat length/depth in inches | _____ |
| 16.9 | Seat Width (C) | State: seat width in inches | _____ |
| 16.10 | Cab Height (from seat to roof (if applicable) (D)) | State: cab height range in inches | _____ |
| 16.11 | Back Rest Height (E) | State: back rest height in inches | _____ |
| 16.12 | Seat Travel Range (F) | State: seat travel in inches | _____ |
| 16.13 | Lumbar Support | Is lumbar support provided (Y or N)? | _____ |
| 16.14 | Head Rest | Is head rest provided (Y or N)? | _____ |
| 16.15 | Seat is made of breathable material | State: type of seat material | _____ |

Operation

- | | | | |
|-------|---|--|-------|
| 16.16 | Reaching Distance
(to usual work) | State: reaching distance in inches | _____ |
| 16.17 | Maximum Reaching
Distance | State: maximum reach distance in inches | _____ |
| 16.18 | Adjustable Pedals
(accelerator/brake/clutch) | Are pedals adjustable (Y or N)? | _____ |
| 16.19 | Adjustable Steering
Wheel | Is steering wheel adjustable (Y or N)? | _____ |
| 16.20 | Adjustable Shoulder Belt | Is belt adjustable and anchored (Y or N)? | _____ |

Cargo Area

- | | | | |
|-------|--|--|-------|
| 16.21 | Lid opens to provide
adequate space | Adequate space provided (Y or N)? | _____ |
| 16.22 | Loading Height | State: trunk height in inches | _____ |

Environment

- | | | | |
|-------|--|---|-------|
| 16.23 | Operator compartment is
insulated from equipment
noise (while operating) | State: dB inside cab while operating | _____ |
| 16.24 | Operator insulated from
equipment vibration | Is operator insulated from vibration (Y or N)? | _____ |
| 16.25 | Heating/Cooling Systems | State: cab temperature range | _____ |
| 16.26 | Cab Lighting | State: lumens inside cab | _____ |

Maintenance/ Inspection

- | | | | |
|-------|--|--|-------|
| 16.27 | Lift Assistance
(when necessary) | Is lift assistance provided (Y or N)? | _____ |
| 16.28 | Easy Access
(to compartment doors) | Is easy access provided (Y or N)? | _____ |
| 16.29 | Include any other relevant ergonomic specifications and applicable range of adjustment | | _____ |

FORM N: DETAILED SPECIFICATIONS 17014

SINGLE AXLE CHASSIS WITH A 13' X 8' LANDSCAPE DEVELOPMENT DUMP BODY



1.0 DESCRIPTION OF EQUIPMENT/APPLICATION

- 1.1 These specifications describe **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** and other equipment and features as specified herein. These units are an integral portion of the City of Winnipeg Parks Maintenance equipment fleet as they are utilized year round during all seasons. The Trucks will be used for hauling soil, sand, wood chips, snow etc. The utilization of the trucks is 80% Hauling and 20% snow. The trucks will be used by only two (2) operators.
- 1.2 The **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** shall be new 2017 model year or newer.
- 1.3 The **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** and all other items/components shall be the manufacturer's latest model. The equipment shall be furnished complete and ready for operation. Any parts or accessories not specifically mentioned, but which are required to complete and place the equipment and associated attachments in successful operation shall be furnished as though specifically mentioned in these specifications. The equipment and associated and attachments, and all parts thereof, shall conform in strength and quality of material and workmanship, to the best standards and engineering practice of the industry.

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 **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** shall comply with the applicable regulations:
- Highway Traffic Act
 - Manitoba Motor Vehicle 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
 - City of Winnipeg Lighting Visibility Standard=<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.

2.3 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 units.

2.4 The manufacturer/installer shall be a certified vehicle completer and must affix their National Safety Mark (NSM) certification sticker on each unit.

State NSM number: _____

3.0 SERVICE FACILITY

3.1 For the purpose of warranty repairs, the supplier shall have an authorized service facility located within 10 kilometres 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 B11, 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.

4.0 REFERENCES

4.1 If available, please provide five (5) references where this equipment is used in a working environment where climatic conditions are similar to the City of Winnipeg.

5.0 MAKE & MODEL

5.1 **State** make and model of the **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** body being bid: _____

6.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS

6.1 Each bid will be evaluated based on adherence to all terms, conditions and requirements outlined in the Bid Opportunity package.

6.2 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.

6.3 **EACH BIDDER IS REQUIRED TO FILL IN EVERY BLANK. FAILURE TO DO SO MAY BE USED AS A BASIS FOR REJECTION OF BID**

7.0 PERFORMANCE RELIABILITY

7.1 The responsibility for the design of the **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body**, its performance and reliability shall rest upon the Contractor.

7.2 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, of 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 schedule.

7.3 Where the **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** develops “repeated failures” in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.

7.4 The equipment shall be capable of consistent top performance in City of Winnipeg Environment.
Note: The City of Winnipeg has four seasons with ambient temperatures ranging from approximately 90°F (32°C) to -40°F (-40°C)

8.0 FUEL

8.1 The **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** must be fully fuelled upon delivery (no exceptions).

9.0 QUALIFICATIONS OF MANUFACTURER & CONTRACTOR

9.1 The manufacturer of the **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** shall have five (5) years continuous experience manufacturing **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body**

9.2 The manufacturer shall have in effect a documented quality control program ensuring that the quality of materials and workmanship, including welding, conforms to the best standards and engineering practice of the industry.

9.3 The Contractor shall have five (5) years continuous experience servicing, repairing and maintaining **Single Axle Chassis with a 13' x 8' Landscape Development Dump Body** of the type being offered.

10.0 **SPECIFICATIONS-** (CHASSIS MUST BE SUPPLIED FROM A LOCAL WINNIPEG DEALER CHASSIS PROVIDER) _____

CHASSIS:

10.1 Weights: _____

The Trucks shall not exceed the City of Winnipeg’s limit for gross vehicle weight, axle and tire loads

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 (tandem axle) – 9100 kg (20,056 lbs.)
- Tire load – 9 kilograms for each millimeter width of tire (approximately 500 lbs. per inch of tire width).

10.2 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, all attachments and full of fuel.

10.3 GVWR _____

- GVWR Total 33,000 lbs.
- GVWR Front 12,000 lbs.
- GVWR Rear 21,000 lbs.

10.4 Cab _____ Conventional with corrosion inhibitor

10.5 Cab to Axle _____ As required for 13' x 8' Dump Body

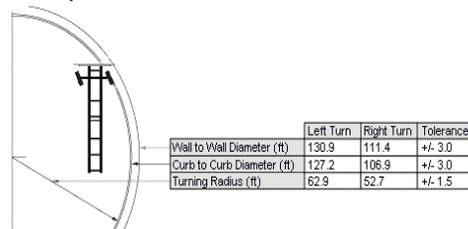
10.6 Wheelbase _____ As required for 13' x 8' Dump Body

10.7 After-Frame _____ As required for 13' x 8' Dump Body

10.8 Bumper To Back Of Cab _____ BBC Approximately 106-110 in.
State:

10.9 Turning Radius _____ Turning Radius
State: vehicle turning radius

Example:



- a) **Wall to Wall (ft.)**
- b) **Curb to Curb(ft.)**
- c) **Turning Radius (ft.)**

ENGINE:

10.10 Type _____ Tier IV Final Diesel, inline 6-cylinder

10.11 Horsepower _____ Approximately 300 HP gross

10.12 Torque _____ Approximately 800 lb-ft

10.13 Engine Shut Down _____ Low oil pressure / high water temperature

10.14 Air Intake Warmer _____ **Required:**

10.15 Fuel Shut-Off _____ Electric solenoid type

10.16 Air Intake _____ Side of hood air intake

10.17 Air Cleaner _____ Dry type, suitable as for a 13' x 8' Dump Body

10.18 Air Intake Restriction _____ Dash mounted restriction indicator

10.19 Oil Drain Plug _____ Magnetic type

10.20	Oil Filter	Full flow, spin-on type	_____
10.21	Fuel Filter	Spin-on type	_____
10.22	Fuel/Water Separator	Heated, drainable under hood	_____
10.23	Fuel Line Primer Pump	Required:	_____
10.24	Block Heater	Immersion type, Approximately 1000 Watt with covered recessed male plug, located under driver's side door	_____
10.25	Radiator	Aluminum 1000 - 1200 square inch State: size	_____
10.26	Coolant	Extended Life coolant, antifreeze to -35°F (-37°C)	_____
10.27	Coolant Filter	Required:	_____
10.28	Coolant Hoses	Silicone type or Gates Blue Stripe	_____
10.29	Fan Drive	Thermostatically controlled, automatic type with dash switch	_____
10.30	Air Compressor	Water cooled, pressure lubricated, 15-18 cfm	_____
10.31	Diesel Exhaust Fluid (DEF) Tank	Approximately 19 – 36 Litres or largest size per application. Located Driver's side State: size and location	_____
 <u>ELECTRICAL SYSTEM:</u>			
10.32	Electrical Connector's	Plug-in, sealed type	_____
10.33	Anti-Corrosion Electrical Package	Controllers and sensitive electrical components (PCM, Harnesses etc.) mounted in cab State: locations	_____
			
10.34	Alternator	Delco Remy 36SI Heavy Duty, Brushless type 160 -180 Amp Pad Mount Remote Sense State: make and model	_____
10.35	Starter	Delco Remy 41MT Heavy Duty Over-Crank Protection State: make and model	_____
10.36	Circuit Breakers	Auto-reset, readily accessible	_____

10.37	Batteries/Battery Location	Three (3) batteries, 12-volt, group 31, approximately 2700-2850 CCA combined Batteries not to impede with the installation of the body State: location	_____
10.38	Battery Disconnect	In-cab mounted outboard of driver's seat State: location	_____
10.39	Battery Boost Terminal	Remote battery boosts terminal(s), protected from road spray. State: location Exact location to be determined at pre- production meeting	_____
10.40	Cab Marker Lights	LED Cab or LED Sun Visor	_____
10.41	2-Way Radio Circuit	Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled	_____
10.42	Accessory Switches	Required: Six (6). All switches complete and wired for body installation, labeled and backlit	_____
10.43	Mega Fuse Box	Located in-cab or under-cab and shall be sealed. State: location and method of sealing	_____
<u>EXHAUST SYSTEM:</u>			
10.44	Exhaust	Horizontal exhaust cylinder and vertical right hand tail pipe. Exhaust not to impede in the installation of the body. State: type and location	_____
10.45	Overall Exhaust Height	To clear dump body cab shield	_____
10.46	Exhaust Heat Shield	Required:	_____



TRANSMISSION:

10.47 Transmission

- Allison 3000 RDS with 6-speed programming,
- Ratio shall be as per inter-city dump body application.
- Transmission shall come with load base Management Programming.
- Transmission to PTO to operate the dump body.

10.48 Allison SCAAN

The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator, the Allison SCAAN

10.49 Transmission Fluids

Synthetic

10.50 Shift Selector

Digital push-button type, dash mounted

10.51 Cooling Capacity

Water to oil transmission cooler, as per manufacturer's recommendation for severe duty cycle

10.52 Oil Level Dipstick

Bayonet type with high and low level markings

10.53 Transmission Drain Plug

Magnetic type

FRONT AXLE:

10.54 Front Axle

Set back axle, Meritor 12,000 lbs. capacity, with synthetic fluid.

REAR AXLE:

10.55 Rear Axle

Meritor 21,000 lbs. capacity, with synthetic fluid.

10.56 Ratio

For 110 km/hr, as recommended for dump body application
State: ratio

10.57 Inter-Axle Lock

Required: with dash mounted switch

10.58 Differential Lock

Required: for drive axle with dash mounted Switch

10.59 Hub Seals

Oil lubricated front and rear type

FRONT SUSPENSION:

10.60 Front Suspension

Multi-leaf spring suspension, 12,000 lbs. capacity

REAR SUSPENSION:

10.61	Rear Suspension	Air ride suspension, 21,000 lbs. capacity, axle, shall be as recommended for dump body application	_____
10.62	Suspension Control Valve	Manual dump valve for air suspension complete with dash mounted switch, indicator light, gauge and buzzer	_____
10.63	Auto Refill	Required: at 5 km/hr Exact speed will be determined at a pre-production meeting	_____

RIMS, WHEELS AND HUBS:

10.64	Front Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.65	Rear Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.66	Hubs	Aluminum material	_____
10.67	Wheel Nut Indicators	Required: on all wheel nuts	_____

TIRES:

10.68	Front Tires	11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application	_____
10.69	Rear Tires	11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application	_____

FRAME:

10.70	Frame	Single rail as recommended for dump body application	_____
-------	-------	--	-------

10.71 Rust Inhibitor
(Frame/Cross Member)

ARMOUR-SEAL™
FRAME & CHASSIS COMPONENT
PROTECTIVE UNDERCOATING: (or
equivalent)

Sodium, magnesium and calcium
chloride resistant.

Semi-permanent, high strength
rubberized polymer blended.



RHOMAR Industries, Inc.

Tricia McKnelly-Anderson
Account Manager
2107 E Rockhurst
Springfield, MO 65802
1.800.688.6221
417.866.5593 (fax)
www.rhomar.com
www.rhomar.com/products/armour-seal

10.72 Chassis Fasteners

Grade-8 threaded hex headed frame
fasteners

10.73 Rear Frame Towing Provisions

Towing provisions with 7-way pin
receptacle to end of frame with two (2)
extra feet of wiring to for ease of body
installation.

STEERING:

10.74 Steering

Tilt and telescopic, power, rated for front
GVWR rating. Reservoir approximately 2
quart with see through tank.

BRAKES:

10.75 Brakes

Hydraulic, ABS brakes for Class 5 Driver

10.76 Parking Brake

Required:

10.77 Dust Shields

Required: front and rear

10.78	Air Tanks	Shall be aluminum tanks with aluminum or stainless steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion	_____
10.79	Moisture Ejector	Required: Wabco, heated, in all air tanks	_____
10.80	Drain Valves	Required: Manual, chain or cable operated, on each air tank	_____
10.81	Air Dryer	Wabco Heated System Saver 1200 or equivalent State:	_____
<u>FUEL TANK:</u>			
10.82	Fuel Tank	Dual 40-45 gallon fuel tanks. Shall not impede in the installation of a 13' x 8' Dump Body. State: fuel capacity	_____
10.83	Fuel Water Separator	Required: heated	_____
10.84	Tank Straps	Aluminum or Stainless Steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion State:	_____
<u>CAB:</u>			
10.85	Cab	Conventional with corrosion inhibitor	_____
10.86	Cab Construction	Aluminum or Galvanized steel State:	_____
10.87	Cab Mounts	Air suspension	_____
10.88	Hood	High visibility hood	_____
10.89	Hood Fender Extensions	2-3 in. front fender extensions	_____
10.90	Front Grille	Stationary mounted to hood	_____
10.91	Cab Interior / Trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
10.92	Cab Silencer Package	Required: for minimal decibel level	_____
10.93	Hood/Firewall/Engine Insulations	Insulated hood liner, engine cover and firewall	_____
10.94	Floor Covering	Rubber mat with under-padding	_____
10.95	Floor Mats	Two (2), rubber	_____
10.96	Driver's Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____

10.97	Passenger Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.98	Dashboard	Ergonomic (Wing) Design	_____
			
10.99	Sun Visors	Dual flip-up type	_____
10.100	Steering Wheel	Tilt and telescopic type	_____
10.101	12-Volt Power Outlet	Required : Two (2) with independent circuit	_____
10.102	Radio	Factory installed AM/FM/ with "hand free" Blue Tooth capability	_____
10.103	Starter Switch	Key operated complete with three (3) sets of keys	_____
10.104	Interior Light	Dome light with driver and passenger door switches	_____
10.105	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of (-40°C)	_____
10.106	Air Conditioning	Required:	_____
10.107	Brake, Accelerator, Pedals	Floor or hanging type brake and accelerator pedal State:	_____
10.108	Horn	Dual electric	_____
10.109	Exterior Mirrors	Mirrors heated, lighted, 4-way motorized adjustment (with convex mirrors), suitable for 102 in. equipment width	_____
10.110	Down-View Mirror	Required: over passenger door Approximately 5 in. x 4 in.	_____
10.111	Windows and Windshield	Tinted	_____
10.112	Power Windows	Power driver and passenger side	_____
10.113	Doors	Power door locks	_____
10.114	Windshield Wipers	Electric intermittent	_____
10.115	Wiper Blades	Heavy duty with winter type boot	_____
10.116	Windshield Washers	Required: Electric, with spray nozzles on wiper blades	_____

10.117	Grab Handles	Dual exterior State: locations	_____
10.118	Grab Handles	Dual Interior	_____
10.119	Entrance Steps	Dual each side, open grate / grip type	_____
10.120	Winter Front	Heavy-duty vinyl with twist lock or snap type fasteners	_____
10.121	Exterior Sun Visor	Required:	_____

10.122 Strobe LED Lights (Beacons)

Qty two (2) Amber/Blue LED Beacons,
Class 1 High Dome Strobe Lights
complete with switch and labels.
Mounted with aluminum or stainless
steel brackets to B-Pillar

Note: Beacons and Mini Light Bar to be
controlled by a single 3-Way switch with
the following functions:
Amber – Off – Amber/Blue



Note: Need to be forward enough as not
to interfere with the cab shield if
equipped with one.



Whelen L31HMF

OR

SWS 22609



**Location to be determined at a pre-
production meeting**

INSTRUMENTATION:

10.123 Instrumentation

- Oil Pressure Gauge _____
- Coolant Temperature Gauge
- Transmission Oil Temperature Gauge
- Voltmeter Gauge
- Air Reservoir Pressure Gauge with LAP Warning Light And Buzzer
- Low Oil Pressure Warning Light and Buzzer
- High Water Temperature Warning Light and Buzzer
- Non-Resettable Type Engine Hour-Meter

TOW HOOKS:

10.124 Tow Hooks

Front mounted and Rear mounted _____

10.125 Weigh Scale Systems

Required: Model Air Weigh scale system for front and rear axles. _____

System must be tested and calibrated prior to delivery

COLOURS:

10.126 Exterior Colour

White _____

10.127 Interior Colour

Grey _____

ACCESSORIES:

10.128 Flare Kit

Three (3) triangular reflectors, CVSA approved. Kit must be mounted or secured. _____

10.129 Fire Extinguisher

5 lbs. Fire Extinguisher ABC type installed and secured
State: location _____

10.130 Back-Up Camera

Required: Quantity two (2)
Location # 1 - back of vehicle
Location # 2 - top of cab shield complete with protective guard _____



Locations to be determined at pre-production meeting

10.131 Back-Up Camera Screen

In-Dash (Ergonomic (Wing) Dashboard)

OR

Dash mounted if standard dashboard is specified.



Back-Up Camera Screen location to be determined at a pre-production meeting.

DUMP BODY SPECIFICATIONS:

Landscape Development Branch

10.132 Type

Double Wall Dump Body

10.133 Outside Length

Nominal 13 ft.

10.134 Inside Length

Approximately 12 ft. 6 in.

10.135 Outside Width

To match chassis track width
 Nominal 8 ft. 6 in.

10.136 Inside Width

Approximately 8 ft.

10.137 Front Height

To match chassis cab height.

10.138 Construction Material (Inside)

All material that touches the material (internal walls, floor, gate, front wall, dog house) used in construction to be 3/16 in. Hardox 450 with **exception of the cab shield.**

10.139 Construction Material (Outside)

10 Gauge 44W Structural Steel

FLOOR:

10.140 Material

3/16 in. Hardox 450

10.141 Floor

1-Piece or 2-Piece maximum and pieces shall be continuously welded

10.142 Width

Nominal 86 in.

State:

10.143 Long Sill Material

3/16 in. formed steel, tapered hat section design, 8 in. – 10 in. height, continuously welded to the floor

10.144	Floor Slope	Approximately 60 degree slope along the joint to the side wall. Slope shall extend upwards approximately 4 - 8 in.	_____
		If required design and installation to be determined at a pre-production meeting.	
		<u>FRONT:</u>	
10.145	Front Construction	3/16 in. Hardox 450 continuously welded to sides and floor.	_____
10.146	Front Section	Shall be constructed to incorporate a nominal 12 in. L x 12 in. W x 60 in. H provision (Well Front) to contain the installed hoist	_____
10.147	Cab Shield	Formed from single sheet of mild steel, 24 in. deep, sloped @ 10° or to match cab contour complete with reinforced ends.	_____
10.148	Cab Shield Clearance	Cab shield sides to provide adequate headroom and clearance for entry and egress of vehicle cab.	_____
		<u>SIDES:</u>	
10.149	Construction and Material	Construction – double wall Outside Material 10 Gauge 44W Inside Material 3/16 in. Hardox 450 Clean side style formed sides without vertical reinforcements, welded into a 1-piece design, including self-cleaning bottom rail and formed, self-cleaning centre horizontal rib and sloped top rail	_____
10.150	Side Height	Approximately 42 in. measured from the floor without plank gussets	_____
10.151	Rear Side Post	3/16 in. Hardox 450, one (1) per side.	_____
10.152	Top Side Rail Material	Heavy Duty Rectangular tubing with 3/16 in. wall State: size Or Fabricated from 3/16 in. Hardox 450 State: method of construction	_____
10.153	Plank Gussets	2 in. x 8 in. planks with ½ in. diameter bolt holes.	_____
10.154	Planks	2 in. x 8 in. planks painted black on all sides, installed and bolted in gussets	_____

TIE DOWNS AND LADDERS:

10.155	Tie Downs Eyes	<p>Required: Four (4), Located on inside of dump body.</p> <ul style="list-style-type: none">• Two (2) near top/rear of each side• Two (2) near top/front of each side <p>Tie downs shall be D-Rings.</p> <p>Tie downs eyes to have a lifting capacity rated for full box weight for lifting box during installation</p> <p>Exact locations to be determined at a pre-production meeting</p>	_____
10.156	Inside Steps	<p>One (1) per side, located at rear of body Approximately 12 in. L x 5 in. W, located approximately 20 in. from floor.</p>	_____
10.157	Access Ladders	<p>Required: Two (2)</p> <ul style="list-style-type: none">• Bolt-on installation• Fold-Down (Retractable) Design• one (1) located curb-side corner• one (1) located driver's side corner <p>Design and installation to be determined at a pre-production meeting</p> <p>Refer to Appendix A</p>	_____
10.158	Ladder Rungs	<p>Traction type rungs</p> <ul style="list-style-type: none">• 13-gauge steel, 2¼ in. width• 4-hole design• Traction Tread Products or equal. <p>Refer to Appendix A</p>	_____
10.159	Ladder Rungs Location	<p>First rung to be 18-22 in. from ground level, approximately 14 in. rung spacing to top of body.</p> <p>Design and location to be determined at a pre-production meeting</p> <p>Refer to Appendix A</p>	_____
10.160	Grab Handles	<p>Located for ergonomic access to top of box.</p> <p>Design and location to be determined at a pre-production meeting</p> <p>Refer to Appendix A</p>	_____

TAILGATE:

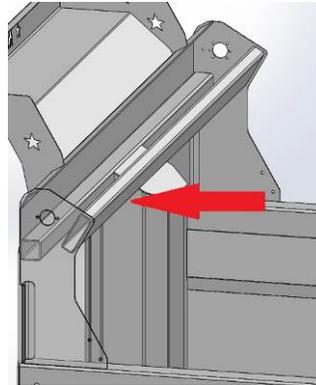
10.161	Style	Shall be a top hinge with grease-able hinge.	_____
10.162	Tailgate Height	Approximately 54 in.	_____
10.163	Tailgate Operation	Tailgate shall not protrude above floor in horizontal or full down position.	_____
10.164	Standard	There shall be no gap between tailgate and the floor and sides when tailgate is in the closed or horizontal position.	_____
10.165	Tailgate Construction	Formed construction with one or two equally spaced horizontal or vertical ribs, and a self-cleaning bottom rail. Inside liner with 3/16 in. Hardox 450	_____
10.166	Tailgate Reinforcement	Required: Tailgate shall be reinforced with either heavy duty ($\frac{3}{8}$ in.) end plates, or $\frac{1}{4}$ in. steel tubing.	_____
10.167	Anchor Pins	Top tailgate anchor pins $1\frac{1}{4}$ in. diameter, self-locking/storing to top of side posts. Greaseable or composite; top hinge pivot system	_____
		If retainer pins are used to lock top tailgate anchor pins, then a small steel check chain is required, permanently fastened to the retainer pin.	_____
10.168	Support and Spreader Chains	$\frac{3}{8}$ in. transport Grade 70, adequately fastened complete with chain storage and two (2) removable links per chain.	_____
		Support and spreader chains shall be equipped with a protective cover.	_____
10.169	Tailgate Locking Mechanism	In-cab control, air operated with air brake pot or air cylinder operated trip.	_____
		State: method	_____
		The locking mechanism shall be adjustable to ensure adequate lock-up with tailgate closed.	_____

TARPAULIN:

10.170	Tarpaulin Type	Electric flip tarp, operable in-cab from driver's seat with aluminum arms. Elbow to ensure arms recess as low as possible along box sides and not in the way of loading.	_____
		State: make, model and type of material	_____

10.171 Tarp System Tarp system shall stow on the cab shield, i.e., shall not protrude into the box area. _____

10.172 Tarp Protection System **Required:** to protect the roll from shifting material in the body _____



Design and location to be determined at a pre-production meeting

10.173 Tarp Operation Tarpaulin shall not block the visibility of the mini light bar when tarpaulin is in the stowed position. _____

HOIST:

10.174 Requirements: _____

3-Stage, front mounted telescopic hoist, nitrided, quenched and polished cylinder stages, protected against corrosion, Mailhot G3 Series

Hoist to be sold, installed and serviced by an authorized dealer

10.175 Make and Model **State:** _____

10.176 Bore Approximately 5 in. **State:** _____

10.177 Hoist Capacity Approximately 20 – 30 tons **State:** capacity _____

10.178 Hoist Dump Angle 45° from horizontal, cylinder must lower under its own weight with empty load in low ambient temperatures. _____

10.179 Hoist Connection **Required:** live swivel _____

10.180 Hoist Grease Fittings **Required:** on all pivot pins. _____

IN-CAB CONTROLS:

10.181	Cab Controls	Programmed through OEM dash mounted switches	_____
10.182	Switches	All switches shall be back-lit for night time use and clearly identified with engraved style, permanent type labels.	_____
		Supply corresponding valve and solenoid necessary for operation	_____

Switches:

- PTO Engagement
- Dump Box Up/Down
- Tailgate Open/Close
- Amber Lighting
- Blue Lighting
- Tarp Open/Close



HYDRAULICS:

10.183	PTO	<u>Muncie</u> or <u>Chelsea</u> electric/hydraulic power shift State: make and model	_____
10.184	Hydraulic Pump	Required: Transmission mounted PTO Pump to operate the dump body. <u>Parker</u> Dump Pump or equivalent in accordance with B6 Substitutes State: make and model	_____
10.185	Requirements	Shall be a 3-Line system	_____
10.186	Suction Line Valve	Required: easily accessible, lockable with bolts.	_____
10.187	Hydraulic Oil Reservoir	Passenger side, chassis frame mounted, Aluminum or Stainless Steel construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge. State: material	_____

- 10.188 Capacity Approximately 25 – 30 gallon
State: size _____
- 10.189 Drain Plug ¾ in. diameter. _____
- 10.190 Fittings **NO:** black steel or cast fittings
State: type _____
- 10.191 Labelling Reservoir shall be clearly labelled
"Hydraulic Oil" with a permanent type,
engraved style label. _____

HYDRAULIC FILTERS:

- 10.192 Return Filter Serviceable without oil loss, tank
mounted, complete with clogging
indicator. _____
- 10.193 Filter Standard Filters shall contain a corrosion resistant
coating, beta rating of 200, 10 micron
particle size, and shall be ergonomically
located for servicing. _____
- 10.194 External Hydraulic Filter Pan External Hydraulic filter shall have a
stainless steel or aluminium pan located
directly under the filter in case of a
potential hydraulic leak and to avoid
hydraulic fluid falling to the road. Design
shall not impede the servicing of the filter. _____



- 10.195 Shut-Off Valve Ball type, located between reservoir and
pump, secured in open position with a
bracket and bolt. _____
- 10.196 Hydraulic Hoses Wire braid reinforced, rated for system
operating pressure with 4 to 1 safety
factor for burst pressure. _____
- 10.197 Protection Hydraulic hoses to be protected at wear
and scuff location. _____
- 10.198 Hose Fittings Hydraulic full flow, crimp-on (non-
reusable) type. _____

ELECTRICAL & LIGHTING:

10.199 Conformance All lighting to conform to: _____
• C.M.V.S.S.
• Manitoba Highway Traffic Act.
• City of Winnipeg Lighting Visibility
Standard
<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.

10.200 Lighting Supplier installed shall be **high count** LED lighting and shall be Truck-Lite, Whelen **or equivalent** _____

10.201 Connection System Weather Pack Sealed Connection System _____



10.202 Grommets Rubber grommets unless otherwise specified _____

10.203 Combination Turn/Stop And Taillights One (1) per side _____
P/N Truck-Lite 44302R with P/N 44710 mounting grommets



10.204 Back-Up Lights One (1) per side _____
P/N Truck-Lite 44206C with P/N 44710 mounting grommets



10.205 3-Light Cluster Three (3) _____
P/N Truck-Lite 10250R with P/N 10403 mounting grommets



10.206 Clearance Lights _____
High count LED
P/N Truck-Lite 10250R or 10250Y with P/N
10403 mounting grommets.



10.207 Blue Strobe Lights _____
One (1) per side with mounting grommets
P/N Whelen 5GA00FBR

10.208 Amber Strobe Lights _____
One (1) per side with mounting grommets
P/N Whelen 5GA00FAR



10.209 License Plate Light _____
Complete with license plate bracket.
P/N Truck-Lite 36140 (Light)
P/N Truck-Lite 36710 (Bracket)

Installed on Hitch Plate – Upper Right
Corner



10.210 Rear Light Mounting Location (Rear Sill) _____

- Combination Turn/Stop and Taillights, qty two (2), one per side
- Back-Up Lights, qty two (2), one per side
- 3-Light Cluster, qty three (3)
- Rear-Corner Clearance Lights, qty two (2), one per side

The lights shall be situated so that no debris contacts the lights while dumping.

Refer to Appendix A

10.211 Rear Light Mounting Location (Rear Posts) _____

- Amber Strobe Lights, qty two (2), one per side
- Blue Strobe Lights, qty two (2), one per side
- Rear-Corner Clearance Lights, qty two (2), one per side

Refer to Appendix A

10.212 Clearance Light Mounting Locations: _____

- Front – qty two (2), located one on each bottom corner
- Sides – qty two (2) per side, located on front and rear bottom corners.

10.213	Standard	No clearance light shall protrude beyond the dump body.	_____
10.214	Standard	Taillights and back-up lights shall be fully visible when tailgate is lowered to horizontal position.	_____
10.215	Harnesses	Harness system, properly routed and secured. All harnesses shall be internally grounded, no exceptions.	_____
10.216	Junction box	Junction box complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame.	_____
10.217	All Plug-In Connectors	All plug-in connectors shall be coated with NYK compound prior to assembly.	_____
10.218	Back-Up Alarm	97 dB (A), installed near rear of dump body, located to be protected from damage.	_____

10.219 Mini Light Bar

- Whelen RDLPPAB Amber/Blue LED Mini Light Bar or equivalent in accordance with B6 Substitutes
- Mounted to top of cab guard
- Protected by Branch Guard
- 360° visibility when tarpaulin is in stowed position.
- Mini Light Bar shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Light Bar Amber/Blue" with a permanent type, engraved style label.

Note: Beacons and Mini Light Bar to be controlled by a single 3-Way switch with the following functions:
Amber – Off – Amber/Blue



10.220 Branch Guard

Heavy duty branch guard constructed by 3/8 in. round bar or equivalent.



10.221	Wiring	All LED strobe lights shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Strobes" with a permanent type, engraved style label. All wiring for back-up alarm, warning lights, strobes and trailer connector shall be colour coded, loomed and properly secured.	_____
10.222	Trailer Connector	6-Way Round or SAE J560 7-Way Flat trailer receptacle. Type to be determined at pre-production meeting	_____
10.223	Electrical Connectors	All electrical connectors shall be crimped and soldered, and then sealed using heat shrink tubing.	_____
10.224	Joining Of Wires	All joining of wires shall be soldered and sealed using heat shrink tubing or approved OEM weather tight connections (crimp on electrical connectors for joining wires are not acceptable).	_____
10.225	Wiring Routing	Required: Any holes to run wires through shall be drilled (not punched), grommeted and sealed	_____
<u>WELDING:</u>			
10.226	Standard	All welds shall be continuous welds. All welding performed shall conform to CSA Standard W47.1-03 and W59-03.	_____
<u>INSTALLATION:</u>			
10.227	Drilling	Any holes required in the chassis frame web must be drilled and reamed to fit bolts.	_____
10.228	Standard	Drilling on chassis frame flanges is not permitted. Welding on the chassis frame is not permitted, with the exception of installation of dump body pivot support.	_____
10.229	Tire Clearance	Three inches (3 in.) with rear suspension air bags lowered.	_____
10.230	Clearance	Clearance between dump body and back of truck cab shall be 3 in.	_____

MISCELLANEOUS:

10.231 Rear Hitch Plate

3/4 in. thick solid steel, (laminated plates not acceptable) installed to chassis frame.

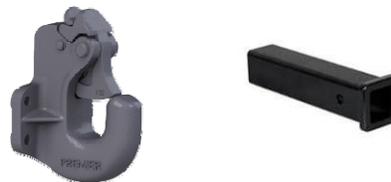


Design (including overhang) and installation to be determined at pre-production meeting.

10.232 Pintle Hitch and Receiver

Premier 240 or approved equal, installed on hitch plate at a 24 in. height.

Receiver – 2 in. x 6 in. Length
State: size



Design and installation to be determined at pre-production meeting

10.233 D-Ring with Mounting Bracket
(Required for Trailer Safety Chains)

One (1) each side of hitch
Buyers Products B48 or equal.



10.234 Shovel Holder

Shovel holder with handle latch to secure shovel in place _____

Buyers Products P/N SH675SS



Location to be determined at pre-production meeting

10.235 Rear Fenders

Heavy Duty rear poly half-moon fenders. Shall be installed to have sufficient clearance from body and when chassis suspension is dumped for dump body operation. _____



10.236 Mud Flaps

Required: Black rubber, no-name, front and rear of back tires complete with anti-sail bracket on each mud-flap. Rear mud flaps shall not contact the ground when the dump body is at maximum dump angle



10.237 Isolators

All interfaces between aluminium and steel shall be separated by an approximately 1/16 in. thick rubber or neoprene sheet and are to be bolted through with stainless steel bolts and non-conductive bushings

10.238 Grease Fittings

Required: on tailgate release mechanisms, pivot points and tailgate

GREASING SYSTEM:

10.239 Complete unit shall have Groeneveld CPL Systems Inc. or Lubecore Auto Greasing System.

10.240 Single Line, EP2 and automatic low level shut-off with in-cab red light indicator.

10.241 All grease fittings for the entire chassis and body (including cylinder mounts, pivot points, dump body prop, plow etc.), shall be readily accessible or shall be equipped with remote grease zerks as required.

10.242 **Grease Points:**

Approximately twenty-six (26) points on cab & chassis
Approximately eight (8) – twelve (12) points on body (depending on body configuration)

State: quantity of grease points on cab & chassis: _____

State: quantity of grease points on body: _____

10.243 Grease pump will pump Original Equipment Manufacturer specified EP2 grease from -40°C to + 50°C.

10.244 One way check valves on each line _____

10.245 Low temperature compatible 800 bar/12000 PSI grease line with a bending radius of 3/4 inch. With a 5 year line breakage guarantee for on road trucks. _____

10.246 One piece flow dividers with manual over ride. _____

10.247 **Warranty:** three (3) years parts and labour. _____

TOOLBOXES:

10.248 Tool Boxes Aluminum Tool Boxes _____

- Mounted on driver or passenger side frame
- Approximately 24 in. x 24 in. x 48 in.
- Barn Door style doors

State: quantity, dimensions, material, and recommended location as set by the manufacturer



SAFETY:

10.249 Dump Body Prop **Double Prop Design** _____

- Steel tubing construction, to support dump body in raised position and permit servicing of hoist
- Operable by a single person
- Designed so as not to interfere with hoist cylinder or surroundings
- Operating Handle to be positioned outside of chassis frame rails for operator safety (Driver's Side)
- Dump body prop to be complete with receiving bracket.
- Safety Lock Pin and Chain required to hold arms in the "Up" position (Driver Side)
- Refer to below pictures for sample designs

Design and installation to be confirmed at a pre-production meeting.



Driver Side - Up



Driver Side - Down



Driver Side - Down



Driver Side - Up



Passenger Side - Down



Safety Lock Pin and Chain

10.250 Dump Body Prop Colours

All components (prop, handle and receiving bracket) shall be painted with **Safety Orange** for ease of identification

10.251	Dump Body Stowage Warning System	Required: Warning light and buzz system shall be installed on the dash and shall be actuated when dump body is not in the fully stowed position. State:	_____
10.252	PTO	Programmed: To disengage the PTO when 5 kph is reached to prevent the driver from driving off when the body is up. Exact speed to be determine at pre-production meeting	_____
10.253	Pre-Trip Exterior Light Inspection	Programmed: When activated, the vehicle lights repeatedly flash in a specific sequence to allow the operator to verify that the exterior lights are functioning. The light test sequence tests: <ul style="list-style-type: none">• Park Lights• Headlights (low and high beams)• Right/left front/rear turn lights• Brakes Lights• Mini Light Bar• Beacon(s)• Strobe Lights• Clearance Lights	_____
10.254	Warning Light Over Ride	Programmed: Rear strobe lights to be programmed to allow for an over-ride for turn signals and brake lights when strobe lights are on. Other drivers will be able to determine if the truck is stopping or turning when strobe lights are on.	_____
<u>FINISH:</u>			
10.255	Preparation	Complete dump body and all ladders, hitch plates, reservoirs, steel brackets, etc. shall be sandblasted, properly cleaned, primed and finished with the Endura or DuPont paint process as follows:	_____
10.256	Primer	Required: Epoxy or Polyurethane primer Endura EP321 Intermix Epoxy Primer or DuPont polyurethane. Two (2) coats – Dry Film Thickness 3.0 – 4.0 mils	_____

10.257 Paint Required: Polyurethane _____
Colour: Black

Endura EX-2C or DuPont Polyurethane

Two (2) coats:
3 - 5 mils Wet Film Thickness with a total
combined overall average Dry Film
Thickness of 4 – 6 mils

Note: Complete body (inside and outside)
shall be painted

11.0 **WARRANTY**

11.1 The body warranty on the complete vehicle (excluding the chassis) 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 one (1) year from the date the equipment is put into service by the City of Winnipeg. _____

11.2 All warranty information shall be detailed and include all exclusions. The successful bidder shall provide all published warranty information upon delivery of the equipment. Bidder shall State: all warranty information _____

BODY WARRANTY

11.3 Main Frame - Structural **State:** _____

11.4 Frame – Non-Structural **State:** _____

11.5 Components e.g. Pumps **State:** _____

11.6 Hydraulics **State:** _____

11.7 Hoist and Cylinder **State:** _____

11.8 Electrical One (1) year
State: _____

11.9 LED Lighting **State:** _____

11.10 Paint **State:** _____

CAB & CHASSIS WARRANTY

11.11 Basic Vehicle - Chassis One (1) year, unlimited km,
State: _____

11.12 Electrical One (1) year
State: _____

11.13 LED Lighting **State:** _____

11.14 Batteries One (1) year, unlimited km
State: _____

- | | | | |
|-------|-------------------------|--|-------|
| 11.15 | Drivetrain | Two (2) years, unlimited km
State: | _____ |
| 11.16 | Cab Structure/Corrosion | Five (5) years, unlimited km
State: | _____ |
| 11.17 | Frame & Cross-Members | Five (5) years, unlimited km
State: | _____ |
| 11.18 | Cab Paint | One (1) year or 160,000 km
State: | _____ |
| 11.19 | Engine | Three (3) years or 240 000 km
State: | _____ |
| 11.20 | Transmission | Two (2) years, unlimited km
State: | _____ |
| 11.21 | Axles - Front & Rear | Two (2) years or 161 000 km
State: | _____ |
| 11.22 | Components | State: | _____ |

12.0 **DELIVERY**

- 12.1 Delivery Point: The complete unit shall be serviced, ready for operation and delivered F.O.B. with the freight prepaid, including invoice and N.I.V.S. (if applicable) to the WFMA 185 Tecumseh Street, Winnipeg MB. The successful bidder shall be notified by the Contractor Administrator the delivery address prior to issuance of the purchase order _____
- 12.2 Delivery Time: Equipment shall be delivered between 8:00 am and 2:00 pm on Business Days
State: Delivery Date _____
- 12.3 Delivery Contact: The Contractor shall contact the Contract Administrator prior to delivery of the equipment. _____
- 12.4 P.D.I: A pre-delivery inspection shall be performed by the Contractor on the equipment. Proof upon inspection including completed check list _____

13.0 **MANUALS**

- 13.1 Manuals supplied under this Contract shall cover the complete equipment including all components thereof, CD or USB flash drive is preferred where available. _____
- 13.2 The following manuals shall be supplied with the units when delivered:
- a) Operator's manual – Two (2) per unit (one operator manual shall be sent to the Equipment Operator Training Branch) _____
 - b) Parts and Service Manuals – One (1) complete set including preventative maintenance schedules. CDs or USB flash drive are preferred. _____

14.0 **PARTS/LABOUR DISCOUNT**

14.1 Bidder to provide City of Winnipeg Parts Discount % Pricing from retail parts pricing. **State: percentage discount** _____%

14.2 Bidder to provide City of Winnipeg Labor Discount % Pricing from Retail shop labor rate. **State: percentage discount** _____%

15.0 **FIRST SERVICE PREVENTATIVE MAINTENANCE KIT**

15.1 In order to assure minimum downtime of the equipment in future service, the Contractor shall provide one (1) complete replacement set of new OEM filters for each unit purchased. The set of required filters shall include (if applicable to the equipment type) air, fuel, oil, cab and hydraulic, or otherwise all known necessary common replacement filters required for the first preventative maintenance servicing. _____

15.2 The Contractor shall provide a list of factory recommended lubricants to be used with the equipment, as well as a complete cross reference guide for all warranty approved lubricants and filters that can be used during preventative maintenance servicing. _____

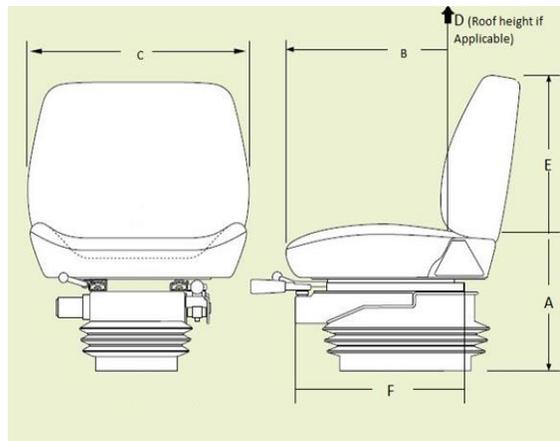
16.0 **ERGONOMIC SPECIFICATIONS**

Entry/ Exit

- | | | | |
|------|------------------------------|---|-------|
| 16.1 | First step entry height | State: height of first step in inches | _____ |
| 16.2 | First handhold entry height | State: first handhold entry height in inches | _____ |
| 16.3 | Access to equipment | State: door opening height in inches | _____ |
| 16.4 | Access to equipment | State: door opening width in inches | _____ |
| 16.5 | Designed to prevent slipping | Anti-slip steps/handholds (Y or N)? | _____ |

Seat

16.6 Use diagram to answer questions.



- | | | | |
|-------|---|---|-------|
| 16.7 | Sitting Height Range (from floor (where feet rest) (A)) | State: seat height range in inches | _____ |
| 16.8 | Seat Length/Depth (B) | State: seat length/depth in inches | _____ |
| 16.9 | Seat Width (C) | State: seat width in inches | _____ |
| 16.10 | Cab Height (from seat to roof (if applicable) (D)) | State: cab height range in inches | _____ |
| 16.11 | Back Rest Height (E) | State: back rest height in inches | _____ |
| 16.12 | Seat Travel Range (F) | State: seat travel in inches | _____ |
| 16.13 | Lumbar Support | Is lumbar support provided (Y or N)? | _____ |
| 16.14 | Head Rest | Is head rest provided (Y or N)? | _____ |
| 16.15 | Seat Material | Breathable
State: type of seat material | _____ |

Operation

- | | | | |
|-------|---|--|-------|
| 16.16 | Reaching Distance
(to usual work) | State: reaching distance in inches | _____ |
| 16.17 | Maximum Reaching
Distance | State: maximum reach distance in inches | _____ |
| 16.18 | Adjustable Pedals
(accelerator/brake/clutch) | Are pedals adjustable (Y or N)? | _____ |
| 16.19 | Adjustable Steering
Wheel | Is steering wheel adjustable (Y or N)? | _____ |
| 16.20 | Adjustable Shoulder Belt | Is belt adjustable and anchored (Y or N)? | _____ |

Cargo Area

- | | | | |
|-------|--|--|-------|
| 16.21 | Lid opens to provide
adequate space | Adequate space provided (Y or N)? | _____ |
| 16.22 | Loading Height | State: trunk height in inches | _____ |

Environment

- | | | | |
|-------|--|---|-------|
| 16.23 | Operator compartment is
insulated from equipment
noise (while operating) | State: dB inside cab while operating | _____ |
| 16.24 | Operator insulated from
equipment vibration | Is operator insulated from vibration (Y or N)? | _____ |
| 16.25 | Heating/Cooling Systems | State: cab temperature range | _____ |
| 16.26 | Cab Lighting | State: lumens inside cab | _____ |

Maintenance/ Inspection

- | | | | |
|-------|--|--|-------|
| 16.27 | Lift Assistance
(when necessary) | Is lift assistance provided (Y or N)? | _____ |
| 16.28 | Easy Access
(to compartment doors) | Is easy access provided (Y or N)? | _____ |
| 16.29 | Include any other relevant ergonomic specifications and applicable range of adjustment | | _____ |

FORM N: DETAILED SPECIFICATIONS 17015

SINGLE AXLE CHASSIS WITH A 14' FORESTRY CHIPPER DUMP BODY

1.0 DESCRIPTION OF EQUIPMENT/APPLICATION

- 1.1 These specifications describe **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** and other equipment and features as specified herein. These units are an integral portion of the City of Winnipeg Forestry Maintenance Equipment Fleet as they are utilized year round during all seasons. The Trucks will be used for hauling wood chips. The trucks will be used with up to two (2) operators.



- 1.2 The **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** shall be new 2017 model year or newer.
- 1.3 The **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** and all other items/components shall be the manufacturer's latest model. The equipment shall be furnished complete and ready for operation. Any parts or accessories not specifically mentioned, but which are required to complete and place the equipment and associated attachments in successful operation shall be furnished as though specifically mentioned in these specifications. The equipment and associated and attachments, and all parts thereof, shall conform in strength and quality of material and workmanship, to the best standards and engineering practice of the industry.

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 **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** shall comply with the applicable regulations:
- Highway Traffic Act
 - Manitoba Motor Vehicle 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

- City of Winnipeg Lighting Visibility
Standard=<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.

2.3 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 units.

2.4 The manufacturer/installer shall be a certified vehicle completer and must affix their National Safety Mark (NSM) certification sticker on each unit.

State NSM number: _____

3.0 SERVICE FACILITY

3.1 For the purpose of warranty repairs, the supplier shall have an authorized service facility located within 10 kilometres 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 B11, 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.

4.0 REFERENCES

4.1 If available, please provide five (5) references where this equipment is used in a working environment where climatic conditions are similar to the City of Winnipeg.

5.0 MAKE & MODEL

5.1 **State** make and model of the **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** being bid: _____

6.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS

6.1 Each bid will be evaluated based on adherence to all terms, conditions and requirements outlined in the Bid Opportunity package.

6.2 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.

6.3 **EACH BIDDER IS REQUIRED TO FILL IN EVERY BLANK. FAILURE TO DO SO MAY BE USED AS A BASIS FOR REJECTION OF BID**

7.0 PERFORMANCE RELIABILITY

7.1 The responsibility for the design of the **Single Axle Chassis with a 14' x 8' Forestry Chipper Body**, its performance and reliability shall rest upon the Contractor.

7.2 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, of 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 schedule.

7.3 Where the **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** develops “repeated failures” in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.

7.4 The equipment shall be capable of consistent top performance in City of Winnipeg Environment.
Note: The City of Winnipeg has four seasons with ambient temperatures ranging from approximately 90°F (32°C) to -40°F (-40°C)

8.0 FUEL

8.1 The **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** must be fully fuelled upon delivery (**no exceptions**).

9.0 QUALIFICATIONS OF MANUFACTURER & CONTRACTOR

9.1 The manufacturer of the **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** shall have five (5) years continuous experience manufacturing **Single Axle Chassis with a 14' x 8' Forestry Chipper Bodies**

9.2 The manufacturer shall have in effect a documented quality control program ensuring that the quality of materials and workmanship, including welding, conforms to the best standards and engineering practice of the industry.

9.3 The Contractor shall have five (5) years continuous experience servicing, repairing and maintaining **Single Axle Chassis with a 14' x 8' Forestry Chipper Body** of the type being offered.

10.0 SPECIFICATIONS

**(CHASSIS MUST BE SUPPLIED FROM
A LOCAL WINNIPEG DEALER
CHASSIS PROVIDER)**

CHASSIS

10.1 Weights

The Trucks shall not exceed the City of Winnipeg’s limit for gross vehicle weight, axle and tire loads

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 (tandem axle) – 9100 kg (20,056 lbs.)
- Tire load – 9 kilograms for each millimeter width of tire (approximately 500 lbs. per inch of tire width).

10.2 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, all attachments and full of fuel.

10.3 GVWR _____
 • GVWR Total 33,000 lbs.
 • GVWR Front 12,000 lbs.
 • GVWR Rear 21,000 lbs.

10.4 Cab **Conventional** with corrosion inhibitor _____

10.5 Cab to Axle As required for **a 14' x 8' Forestry Chipper Body** _____
State:

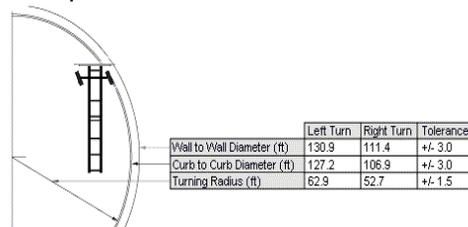
10.6 Wheelbase As required for **a 14' x 8' Forestry Chipper Body** _____
State:

10.7 After-Frame As required for **a 14' x 8' Forestry Chipper Body** _____
State:

10.8 Bumper To Back Of Cab BBC Approximately 106 - 110 in. _____
State:

10.9 Turning Radius Turning Radius _____
State: vehicle turning radius

Example:



- a) **Wall to Wall (ft.)**
- b) **Curb to Curb(ft.)**
- c) **Turning Radius (ft.)**

ENGINE:

10.10 Engine Tier IV Final Diesel, inline 6-cylinder _____

10.11 Horsepower Approximately 275 HP gross _____

10.12 Torque Approximately 660 lb-ft _____

10.13 Engine Shut Down Low oil pressure / high water temperature _____

10.14 Air Intake Warmer **Required:** _____

10.15 Fuel Shut-Off Electric solenoid type _____

10.16 Air Intake Side of hood air intake _____

10.17	Air Cleaner	Dry type, suitable as for a <u>Single Axle Chassis with a 14' x 8' Forestry Chipper Body.</u>	_____
		<u>IMPORTANT</u> Air cleaner shall be suitable for high dust environment due to brush chipper work site.	
		State:	
10.18	Air Intake Restriction	Dash mounted restriction indicator	_____
10.19	Oil Drain Plug	Magnetic type	_____
10.20	Oil Filter	Full flow, spin-on type	_____
10.21	Fuel Filter	Spin-on type	_____
10.22	Fuel/Water Separator	Heated, drainable under hood	_____
10.23	Fuel Line Primer Pump	Manual or Electric	_____
		State:	
10.24	Block Heater	Immersion type, 1000 Watt with covered recessed male plug, located under driver's side door	_____
10.25	Radiator	Aluminum 1000 - 1200 square inch	_____
		State: size	
10.26	Coolant	Extended Life coolant, antifreeze to -35°F (-37°C)	_____
10.27	Coolant Filter	Required:	_____
10.28	Coolant Hoses	Silicone type or Gates Blue Stripe	_____
10.29	Fan Drive	Thermostatically controlled, automatic type with dash switch	_____
10.30	Air Compressor	Water cooled, pressure lubricated, 15-18 cfm	_____
10.31	Diesel Exhaust Fluid (DEF) Tank	Approximately 19 – 36 Litres or largest size per application. Located Driver's side	_____
		State: size and location	

ELECTRICAL SYSTEM:

10.32	Electrical Connector's	Plug-in, sealed type	_____
10.33	Anti-Corrosion Electrical Package	<p>Controllers and sensitive electrical components (PCM, Harnesses etc.) mounted in cab. State: locations</p>	_____
			
10.34	Alternator	<p>Delco Remy 36SI Heavy Duty, Brushless type 160 -180 Amp Pad Mount Remote Sense State: make and model</p>	_____
10.35	Starter	<p>Delco Remy 41MT Heavy Duty Over-Crank Protection State: make and model</p>	_____
10.36	Circuit Breakers	Auto-reset, readily accessible	_____
10.37	Batteries/Battery Location	<p>Three (3) batteries, 12-volt, group 31, approximately 2700-2850 CCA combined</p> <p>Batteries not to impede with the installation of the body State: location</p>	_____
10.38	Battery Disconnect	<p>Required: In-cab mounted outboard of driver's seat on the floor. State: location</p>	_____
10.39	Battery Boost Terminal(s)	<p>Remote battery boosts terminal(s), Located to protect from road spray. State: location</p> <p>Exact location to be determined at pre- production meeting</p>	_____
10.40	Cab Marker Lights	LED Cab or LED Sun Visor Marker lights	_____
10.41	2-Way Radio Circuit	Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled	_____
10.42	Accessory Switches	<p>Required: Six (6) All switches complete and wired for body installation, labeled and backlit</p>	_____
10.43	Mega Fuse Box	<p>Located in-cab or under-cab and shall be sealed. State: location and method of sealing</p>	_____

EXHAUST SYSTEM:

10.44 Exhaust Horizontal exhaust cylinder and vertical right hand tail pipe. Exhaust not to impede in the installation of the body.
State: type and location _____

10.45 DPF 3-Way Inhibit Switch - **Required:** _____
Automatic Active Regeneration Enabled
 The switch remains in the standard mid-position during normal operations. This means DPF active regeneration is enabled and allows the DPF to clear any build-up of soot in the filter by initiating an active regeneration

Start Manual Active Regen
 Pressing the switch into the top position starts a manual (parked) active regeneration. This is required on rare occasions due to very unusual duty cycle conditions

Inhibit ON (Stop Active Regen) Function
 Pressing the switch into the Bottom Position prevents active regeneration from occurring. Stopping the active regeneration function is required only for safety reasons to avoid higher than normal exhaust temperatures

10.46 Overall Exhaust Height To clear **14' x 8' Forestry Chipper Body** _____

10.47 Exhaust Heat Shield **Required:** _____



TRANSMISSION:

10.48 Transmission _____

- Allison 2500 RDS with 6-speed programming
- Ratio shall be as per inter-city chipper body application.
- Transmission shall come with load base Management Programming.
- Transmission to PTO to operate the dump body.

10.49 Allison SCAAN _____
 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator, the Allison SCAAN

10.50 Transmission Fluids Synthetic _____

10.51	Shift Selector	Digital push-button type, dash mounted	_____
10.52	Cooling Capacity	Water to oil transmission cooler, as per manufacturer's recommendation for severe duty cycle	_____
10.53	Oil Level Dipstick	Bayonet type with high and low level markings	_____
10.54	Transmission Drain Plug	Magnetic type	_____
	<u>FRONT AXLE:</u>		
10.55	Front Axle	Set back axle , Meritor 12,000 lbs. capacity, with synthetic fluid.	_____
	<u>REAR AXLE:</u>		
10.56	Rear Axle	Meritor 21,000 lbs. capacity, with synthetic fluid.	_____
10.57	Ratio	For 110 km/hr State: ratio	_____
10.58	Inter-Axle Lock	Required: with dash mounted switch	_____
10.59	Differential Lock	Required: for drive axle with dash mounted Switch	_____
10.60	Hub Seals	Oil lubricated front and rear type	_____
	<u>FRONT SUSPENSION:</u>		
10.61	Front Suspension	Multi-leaf spring suspension, 12,000 lbs. capacity	_____
	<u>REAR SUSPENSION:</u>		
10.62	Rear Suspension	Air ride suspension, 21,000 lbs. capacity, axle, shall be as recommended for dump body application	_____
10.63	Suspension Control Valve	Manual dump valve for air suspension complete with dash mounted switch, indicator light, gauge and buzzer	_____
10.64	Auto Refill	Required: at 5 km/hr	_____
		Exact speed will be determined at a pre-production meeting	
	<u>RIMS, WHEELS AND HUBS:</u>		
10.65	Front Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.66	Rear Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.67	Hubs	Aluminum material	_____

10.68 Wheel Nut Indicators **Required:** on all wheel nuts _____

TIRES:

10.69 Front Tires 11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application _____

10.70 Rear Tires 11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application _____

FRAME:

10.71 Frame Single rail as recommended for **14' x 8' Forestry Chipper Body** _____

10.72 Rust Inhibitor (Frame/Cross Member) ARMOUR-SEAL™ FRAME & CHASSIS COMPONENT PROTECTIVE UNDERCOATING: (or equivalent) _____

Sodium, magnesium and calcium chloride resistant.

Semi-permanent, high strength rubberized polymer blended.



RHOMAR Industries, Inc.

Tricia McKnelly-Anderson
Account Manager
2107 E Rockhurst
Springfield, MO 65802
1.800.688.6221
417.866.5593 (fax)
www.rhomar.com
www.rhomar.com/products/armour-seal

10.73 Chassis Fasteners Grade-8 threaded hex headed frame fasteners _____

10.74 Rear Frame Towing Provisions Towing provisions with 7-way pin receptacle to end of frame with two (2) extra feet of wiring to for ease of body installation. _____

STEERING:

10.75 Type Tilt and telescopic, power, rated for front GVWR rating. Reservoir approximately 2 quart with see through tank. _____

BRAKES:

10.76 Brakes Air, ABS, S-cam drum brakes, front & rear _____

10.77 Slack Adjusters (Clearance sensing), automatic type _____

10.78 Parking Brake **Required:** _____

10.79 Brake Pots Vented type _____

10.80 Dust Shields **Required:** front and rear _____

10.81 Air Tank Shall be aluminum tanks with aluminum or stainless steel straps with minimum 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion _____

10.82 Moisture Ejector **Required:** Wabco, heated, in all air tanks _____

10.83 Drain Valves **Required:** Manual, chain or cable operated, on each air tank _____

10.84 Air Dryer Wabco Heated System Saver 1200 or equivalent
State: _____

FUEL TANK:

10.85 Fuel Tank Single 50 US gallon (190 L) fuel tank
Shall not impede in the installation of a 14' x 8' Forestry Chipper Body
State: fuel capacity _____

10.86 Tank Straps Aluminum or Stainless Steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion
State: _____

CAB:

10.87 Cab Construction Aluminum or Galvanized steel
State: _____

10.88 Cab Mounts Air suspension _____

10.89 Hood High visibility hood _____

10.90 Hood Fender Extensions 2 – 3 in. front fender extensions _____

10.91 Front Grille Stationary mounted to hood _____

10.92	Cab Interior / Trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
10.93	Cab Silencer Package	Required: for minimal decibel level	_____
10.94	Hood/Firewall/Engine Insulations	Insulated hood liner, engine cover and firewall	_____
10.95	Floor Covering	Rubber mat with under-padding	_____
10.96	Floor Mats	Two (2), rubber	_____
10.97	Driver's Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.98	Passenger Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.99	Dashboard	Ergonomic (Wing) Design	_____
			
10.100	Sun Visors	Dual flip-up type	_____
10.101	12-Volt Power Outlet	Required: Two (2) with independent circuit	_____
10.102	Radio	Factory installed AM/FM/ with "hand free" Blue Tooth capability	_____
10.103	Starter Switch	Key operated complete with three (3) sets of keys	_____
10.104	Interior Light	Dome light with driver and passenger door switches	_____
10.105	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of (-40°C)	_____
10.106	Air Conditioning	Required:	_____
10.107	Brake, Accelerator, Pedals	Floor or hanging type brake and accelerator pedal State:	_____
10.108	Horn	Dual electric	_____
10.109	Exterior Mirrors	Mirrors heated, lighted, 4-way motorized adjustment (with convex mirrors), suitable for 102 in. equipment width	_____

10.110	Down-View Mirror	Required: over passenger door Approximately 5 in. x 4 in.	_____
10.111	Windows & Windshield	Tinted	_____
10.112	Power Windows	Power driver and passenger side	_____
10.113	Doors	Power door locks	_____
10.114	Windshield Wipers	Electric intermittent	_____
10.115	Wiper Blades	Heavy duty with winter type boot	_____
10.116	Windshield Washers	Required: Electric, with spray nozzles on wiper blades	_____
10.117	Grab Handles	Dual exterior State: locations	_____
10.118	Grab Handles	Dual Interior	_____
10.119	Entrance Steps	Dual each side, open grate / grip type	_____
10.120	Winter Front	Heavy-duty vinyl with twist lock or snap type fasteners	_____
10.121	Exterior Sun Visor	Required:	_____
10.122	Strobe LED Lights (Beacons)	Qty two (2) Amber LED Beacon, Class 1 High Dome Strobe Lights with aluminum or stainless steel brackets mounted to B- Pillar	_____

Note: Need to be forward enough as not
to interfere with the cab shield if
equipped with one.



Whelen L31HAF



**Location to be determined at a pre-
production meeting**

INSTRUMENTATION:

10.123 Instrumentation

- Oil Pressure Gauge
- Coolant Temperature Gauge
- Transmission Oil Temperature Gauge
- Voltmeter Gauge
- Air Reservoir Pressure Gauge with LAP Warning Light And Buzzer
- Low Oil Pressure Warning Light and Buzzer
- High Water Temperature Warning Light and Buzzer
- Non-Resettable Type Engine Hour-Meter

TOW HOOKS:

10.124 Tow Hooks

Front and Rear mounted

COLOURS:

10.125 Exterior Colour

White

10.126 Interior Colour

Grey

ACCESSORIES:

10.127 Flare kit

Three (3) triangular reflectors, CVSA approved.
Kit must be mounted or secured.

10.128 Fire Extinguisher

5 lbs. Fire Extinguisher ABC type installed and secured
State: location

10.129 Back-Up Camera

Required:

10.130 Back-Up Camera Screen

In-Dash (Ergonomic (Wing) Dashboard)

OR

Dash mounted if standard dashboard is specified.



Back-Up Camera Screen location to be determined at a pre-production meeting.

14 x 8' FORESTRY CHIPPER BODY SPECIFICATIONS

BODY:

10.131	Outside Length	Nominal 13 ft. 6 in.	_____
10.132	Inside Length	Approximately 13 ft.	_____
10.133	Outside Width	To match chassis track width Nominal 8 ft. 6 in.	_____
10.134	Inside Width	Approximately 8 ft.	_____

MATERIAL:

10.135	Construction Material	All material used in construction to be 3/16 in. Marine Quality Aluminum Grade 5083-H321 except where otherwise noted.	_____
		5083-H321 Provides Superior: <ul style="list-style-type: none">• Strength• Corrosion resistance• Weight savings	

FRONT:

10.136	Front Construction	3/16 in. Aluminum 5083-H321 with formed vertical or horizontal reinforcements as required	_____
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SIDES:

10.137	Material	3/16 in Aluminum 5083-H321 complete with formed or structural reinforcement ribs.	_____
10.138	Side Height	Approximately 72 in.	_____

FLOOR:

10.139	Material	1/4 in. Aluminum 5083-H321 with formed vertical or horizontal reinforcements as required.	_____
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TAILGATE:

10.140	Style	3/16 in. Aluminum 5083-H321 single door design with a formed reinforced frame.	_____
10.141	Tailgate Height	Approximately 30 in.	_____
10.142	Swing	270° minimum. Complete with latch system to hold door fully open while dumping	_____
10.143	Hinges	Required: Minimum two (2) right hand side mounted hinges, reinforced for heavy duty, long term use complete with grease fittings.	_____

10.144 Latch Heavy duty, single lever latch. _____

TOP:

10.145 Material Full length x full width, 3/16 in. complete with minimum six (6) reinforcement ribs. _____

10.146 Air Exhaust Vents Seven (7) per side, equally spaced, top mounted
Approximately 6 in. L x 2 in. H each _____

TOOL BOXES AND COMPARTMENTS:

10.147 Under Body Tool Boxes **Required:** Two (2) _____
• 3/16 in. Aluminum construction
• Barn Door Style
• Driver's Side:
Approximately 48 in. W x 20 in. H x 20 in. Deep
• Passenger Side:
Approximately 72 in. W x 20 in. H x 20 in. D or two (2) 36 in. W x 20 in. H x 20 in. D
• Boxes shall be equipped with lockable doors, drain holes, vents and lined with dry deck material or equivalent.

10.148 Inside Ladder/Pruner Compartment • 3/16 in. Aluminum construction _____
• Approximately 168 in. L x 17 in. W x 12 in. H
• Lockable door
•

10.149 Side Door Access to Inside Ladder/Pruner Compartment **Required:** _____

10.150 Tool Box Keys All tool boxes and compartments shall be keyed alike complete with three (3) sets of keys. _____

10.151 Tool Box Gaskets All tool boxes and compartment door openings shall be sealed using automotive, bulb type rubber gaskets. _____

10.152 Door stays or hold-open devices. Under body tool box doors shall be complete with heavy duty door stays or hold-open devices. _____

HOIST:

10.153 Requirements: _____
3-Stage, front mounted telescopic hoist, nitrided, quenched and polished cylinder stages, protected against corrosion, Mailhot G3 Series

Hoist to be sold, installed and serviced by an authorized dealer

10.154 Make and Model **State:** _____

10.155 Bore Approximately 5 in. _____
State:

10.156	Hoist Capacity	Approximately 20 – 30 tons State: capacity	_____
10.157	Hoist Dump Angle	45° from horizontal, cylinder must lower under its own weight with empty load in low ambient temperatures	_____
10.158	Hoist Connection	Required: live swivel	_____
10.159	Hoist Grease Fittings	Required: Grease fittings – on all pivot pins	_____

IN-CAB SWITCHES:

10.160	Cab Controls	Programmed through OEM dash mounted switches	_____
10.161	Switches	All switches shall be back-lit for night time use and clearly identified with engraved style, permanent type labels. Supply corresponding valve and solenoid necessary for operation	_____ _____

Switches:

- PTO Engagement
- Chipper Dump Box Up/Down
- Amber Lighting
- Blue Lighting



HYDRAULICS:

10.162	PTO	<u>Muncie or Chelsea</u> electric/hydraulic power shift State: make and model	_____
10.163	Hydraulic Pump	Required: Transmission mounted PTO Pump to operate the dump body. <u>Parker Dump Pump</u> or equivalent in accordance with B6 Substitutes State: make and model	_____
10.164	Requirements	Shall be a 3-Line system	_____

- 10.165 Suction Line Valve **Required:** Easily accessible, lockable with bolts. _____
- 10.166 Hydraulic Oil Reservoir Passenger side, chassis frame mounted, **Aluminum** or **Stainless Steel** construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge. _____
State: material
- 10.167 Hydraulic Oil Univis N15 or equivalent _____
State: type
- 10.168 Capacity Approximately 25 – 30 gallon _____
State: size
- 10.169 Drain Plug $\frac{3}{4}$ in. diameter. _____
- 10.170 Fittings **NO:** black steel or cast fittings _____
State: type
- 10.171 Labelling Reservoir shall be clearly labelled "Hydraulic Oil" with a permanent type, engraved style label. _____

HYDRAULIC FILTERS:

- 10.172 Return Filter Serviceable without oil loss, tank mounted, complete with clogging indicator. _____
- 10.173 Filter Standard Filters shall contain a corrosion resistant coating, beta rating of 200, 10 micron particle size, and shall be ergonomically located for servicing. _____
- 10.174 External Hydraulic Filter Pan External Hydraulic filter shall have a stainless steel or aluminium pan located directly under the filter in case of a potential hydraulic leak and to avoid hydraulic fluid falling to the road. Design shall not impede the servicing of the filter. _____



10.175	Shut-Off Valve	Ball type, located between reservoir and pump, secured in open position with a bracket and bolt.	_____
10.176	Hydraulic Hoses	Wire braid reinforced, rated for system operating pressure with 4 to 1 safety factor for burst pressure.	_____
10.177	Protection	Hydraulic hoses to be protected at wear and scuff location.	_____
10.178	Hose fittings	Hydraulic full flow, crimp-on (non-reusable) type.	_____

ELECTRICAL & LIGHTING:

10.179	Conformance	All lighting to conform to: <ul style="list-style-type: none">• C.M.V.S.S.• Manitoba Highway Traffic Act.• City of Winnipeg Lighting Visibility Standard http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf	_____
10.180	Lighting	Supplier installed shall be high count LED lighting and shall be Truck-Lite, Whelen or equivalent	_____
10.181	Connection System	Weather Pack Sealed Connection System	_____

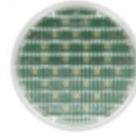


10.182	Grommets	Rubber grommets unless otherwise specified	_____
10.183	Combination Turn/Stop And Taillights	Top Mounted - One (1) per side Bottom Mounted - One (1) per side P/N Truck-Lite 44302R with P/N 44710 mounting grommets	_____



10.184 Back-Up Lights

One (1) per side
P/N Truck-Lite 44206C with P/N 44710
mounting grommets



10.185 3-Light Cluster

Three (3)
P/N Truck-Lite 10250R with P/N 10403
mounting grommets



10.186 Clearance Lights

High count LED
P/N Truck-Lite 10250R or 10250Y with P/N
10403 mounting grommets.



10.187 Amber Strobe Lights

One (1) per side with mounting grommets
P/N Whelen 5GA00FAR



10.188 License Plate Light

Complete with license plate bracket.
P/N Truck-Lite 36140 (Light)
P/N Truck-Lite 36710 (Bracket)

Installed on Top-Rear of Body

Refer to Appendix A



10.189	Rear Light Mounting Location (Rear Sill)	_____
	<ul style="list-style-type: none">• Rear-Corner Clearance Lights, qty two (2), one per side• Combination Turn/Stop and Taillights, qty two (2), one per side• Back-Up Lights, qty two (2), one per side	
	The lights shall be situated so that no debris contacts the lights while dumping.	
	Refer to Appendix A	
10.190	Rear Light Mounting Location (Top-Rear of Body)	_____
	<ul style="list-style-type: none">• Combination Turn/Stop and Taillights, qty two (2), one per side• Amber Strobe Lights, qty two (2), one per side• 3-Light Cluster, qty three (3)	
	Refer to Appendix A	
10.191	Clearance Light Mounting Locations:	_____
	<ul style="list-style-type: none">• Front – qty two (2), located one on each top corner of body• Sides – qty four (4) per side, located on front and rear bottom and top corners	
	Refer to Appendix A	
10.192	Standard	No clearance light shall protrude beyond the dump body. _____
10.193	Harnesses	Harness system, properly routed and secured. All harnesses shall be internally grounded, no exceptions. _____
10.194	Junction Box	Junction box complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame. _____
10.195	All Plug-In Connectors	All plug-in connectors shall be coated with NYK compound prior to assembly. _____
10.196	Back-Up Alarm	97 dB(A), installed near rear of body, located to be protected from damage. _____

10.197 Mini Light Bar

- Whelen R2LPPA Series Amber LED Mini Light Bar or equivalent in accordance with B6 Substitutes
- Mounted to top of cab
- Protected by Branch Guard
- Mini Light Bar shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Light Bar" with a permanent type, engraved style label.
- Switch shall be capable of high/low mode.



10.198 Branch Guard

Heavy duty branch guard constructed by 3/8 in. round bar or equivalent.



10.199 Wiring

All LED strobe lights shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Strobes" with a permanent type, engraved style label.

All wiring for back-up alarm, warning lights, strobes and trailer connector shall be colour coded, loomed and properly secured.

10.200 Trailer Connector

6-Way Round or SAE J560 7-Way Flat trailer receptacle.

Type to be determined at pre-production meeting

10.201 Electric Trailer Brake Controller

Required:

10.202	Electrical Connectors	All electrical connectors shall be <u>crimped and soldered</u> , and then sealed using heat shrink tubing.	_____
10.203	Joining of Wires	All joining of wires shall be <u>soldered</u> and sealed using heat shrink tubing or approved OEM weather tight connections (crimp on electrical connectors for joining wires are not acceptable).	_____
10.204	Wiring Routing	Required: Any holes to run wires through shall be drilled (not punched), grommeted and sealed	_____
WELDING:			
10.205	Standard	All welds shall be continuous welds. All welding performed shall conform to CSA Standard W47.1-03 and W59-03.	_____
INSTALLATION:			
10.206	Drilling	Required: Any holes in the chassis frame web must be drilled and reamed to fit bolts.	_____
10.207	Standard	Drilling on chassis frame flanges is not permitted. Welding on the chassis frame is not permitted, with the exception of installation of dump body pivot support.	_____
10.208	Tire Clearance	Three inches (3 in.) with rear suspension air bags lowered.	_____
10.209	Clearance	Clearance between dump body and back of truck cab shall be 3 in..	_____

MISCELLANEOUS:

10.210 Rear Hitch Plate

3/4 in. thick solid steel, (laminated plates not acceptable) installed to chassis frame.



Design (including overhang) and installation to be determined at pre-production meeting.

10.211 Pintle Hitch and Receiver

Premier 240 or approved equal, installed on hitch plate at a 24 in. height.

Receiver – 2 in. x 6 in. Length
State: size



Design and installation to be determined at pre-production meeting

10.212 D-Ring with Mounting Bracket
(Required for Trailer Safety Chains)

One (1) each side of hitch
Buyers Products B48 or equal.



10.213 Rear Fenders

Heavy Duty rear poly half-moon fenders. Shall be installed to have sufficient clearance from body and when chassis suspension is dumped for dump body operation.



10.214 Mud Flaps

Required: Black rubber, no-name, front and rear of back tires complete with anti-sail bracket on each mud-flap. Rear mud flaps shall not contact the ground when the dump body is at maximum dump angle



10.215 Isolators

All interfaces between aluminium and steel shall be separated by an approximately 1/16 in. thick rubber or neoprene sheet and are to be bolted through with stainless steel bolts and non-conductive bushings

10.216 Grease Fittings

Required: on tailgate release mechanisms, pivot points and tailgate

GREASING SYSTEM:

- 10.217 Complete unit shall have Groeneveld CPL Systems Inc. or Lubecore Auto Greasing System. _____
- 10.218 Single Line, EP2 and automatic low level shut-off with in-cab red light indicator. _____
- 10.219 All grease fittings for the entire chassis and body (including cylinder mounts, pivot points, dump body prop, plow etc.), shall be readily accessible or shall be equipped with remote grease zerks as required. _____
- 10.220 **Grease Points:**
Approximately twenty-six (26) points on cab & chassis
Approximately eight (8) – twelve (12) points on body (depending on body configuration) _____
- State:** quantity of grease points on cab & chassis: _____
- State:** quantity of grease points on body: _____
- 10.221 Grease pump will pump Original Equipment Manufacturer specified EP2 grease from -40°C to + 50°C. _____
- 10.222 One way check valves on each line _____
- 10.223 Low temperature compatible 800 bar/12000 PSI grease line with a bending radius of ¾ inch. With a 5 year line breakage guarantee for on road trucks. _____
- 10.224 One piece flow dividers with manual over ride. _____
- 10.225 **Warranty:** three (3) years parts and labour. _____

SAFETY:

- 10.226 Dump Body Prop _____
- Double Prop Design**
- Steel tubing construction, to support dump body in raised position and permit servicing of hoist
 - Operable by a single person
 - Designed so as not to interfere with hoist cylinder or surroundings
 - Operating Handle to be positioned outside of chassis frame rails for operator safety (Driver's Side)
 - Dump body prop to be complete with receiving bracket.
 - Safety Lock Pin and Chain required to hold arms in the "Up" position (Driver Side)
 - Refer to below pictures for sample designs

Design and installation to be confirmed at a pre-production meeting.



Driver Side - Up



Driver Side - Down



Driver Side - Down



Driver Side - Up



Passenger Side - Down



Safety Lock Pin and Chain

10.227 Dump Body Prop Colours

All components (prop, handle and receiving bracket) shall be painted with **Safety Orange** for ease of identification

10.228 Dump Body Stowage Warning System	Required: Warning light and buzz system shall be installed on the dash and shall be actuated when dump body is not in the fully stowed position. State:	_____
10.229 PTO	Programmed: To disengage the PTO when 5 kph is reached to prevent the driver from driving off when the body is up. Exact speed to be determine at pre-production meeting	_____
10.230 Pre-Trip Exterior Light Inspection	Programmed: When activated, the vehicle lights repeatedly flash in a specific sequence to allow the operator to verify that the exterior lights are functioning. The light test sequence tests: <ul style="list-style-type: none">• Park Lights• Headlights (low and high beams)• Right/left front/rear turn lights• Brakes Lights• Mini Light Bar• Strobe Lights• Clearance Lights	_____
10.231 Warning Light Over Ride	Programmed: Rear strobe lights to be programmed to allow for an over-ride for turn signals and brake lights when strobe lights are on. Other drivers will be able to determine if the truck is stopping or turning when strobe lights are on.	_____
10.232 Conspicuity Tape	Truck-Lite 98127 or equal, affixed 360° around unit. Refer to Appendix A	_____

FINISH:

- | | | | |
|--------|-------------|--|-------|
| 10.233 | Preparation | All ladders, hitch plates, reservoirs, steel brackets, etc. shall be sandblasted, properly cleaned, primed and finished with the Endura or DuPont paint process as follows:

Note: Aluminum components are exempt from finish | _____ |
| 10.234 | Primer | Required: Epoxy or Polyurethane primer

Endura EP321 Intermix Epoxy Primer or DuPont polyurethane.

Two (2) coats – Dry Film Thickness 3.0 – 4.0 mils | _____ |
| 10.235 | Paint | Required: Polyurethane
Colour: Black

Endura EX-2C or DuPont Polyurethane

Two (2) coats:
3 - 5 mils Wet Film Thickness with a total combined overall average Dry Film Thickness of 4 – 6 mils | _____ |

OPTIONAL EQUIPMENT

OPTIONAL: AUXILIARY POWER UNIT

- 10.236 The intent of the **APU** is to provide vehicle heat and electrical power with reducing chassis idling by turning the chassis engine off. _____
The APU shall be located at exterior incorporated into the body design.

Thermo King TriPac Evolution Part Number 902485M or equivalent

Programming start-up and shut-off time shall be determined at a pre-production meeting

State: Make and Model: _____

State: Location and required dimensions for the APU: _____

State: Optional Price for A.P.U. \$ _____



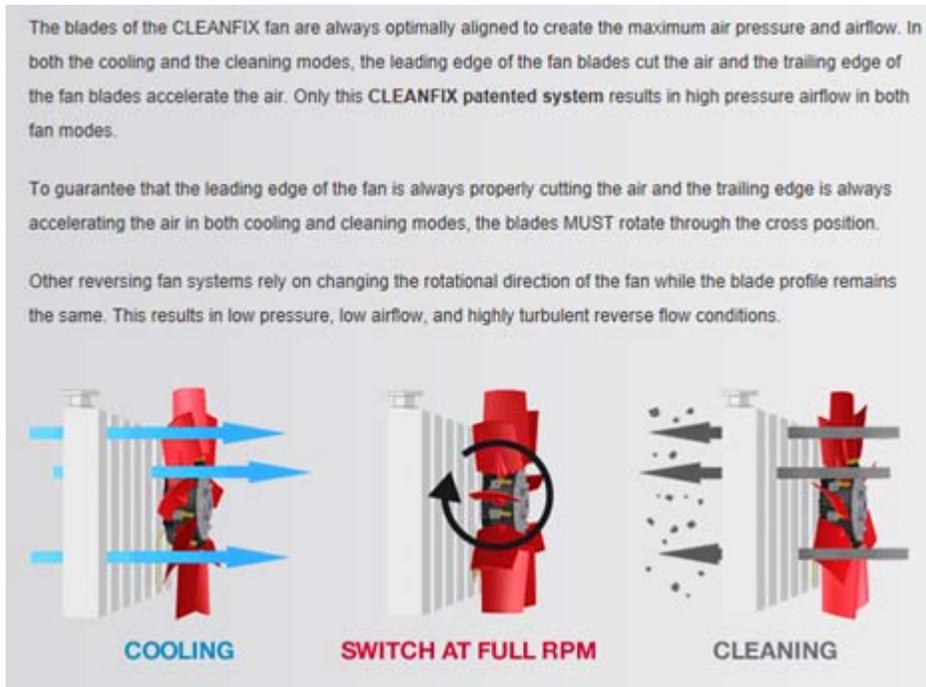
APU to be sold, installed and serviced by an authorized dealer

OPTIONAL: REVERSING FAN

- 10.237 The intent of the **Reversing Fan** is to provide radiator clean-out by automating the cleaning process which will then take place at selected intervals. The process also allows the operator to initiate the cleaning process with an in-cab button. _____

State: Make and Model: _____

State: Optional Price for Reversing Fan \$ _____



<http://www.cleanfix.org/home>

<http://www.equipmentworld.com/aftermarket-options-cooling-fans/>

High-Lights of the Process

The Cleanfix reversible fan, however, changes airflow direction not by reversing rotation, but by rotating each of its nine blades 180 degrees, thus changing the pitch of the blades and reversing airflow. According to Cleanfix, changing blade pitch, instead of reversing direction of rotation, ensures that the reverse airflow stream is as powerful as the cooling blast, thus optimizing both cooling and cleaning performance.

Cleanfix fans use a patented pneumatic cylinder, working through eccentric linkage within the fan's hub, to rotate each blade on its individual axis. A small 12/24-volt air compressor supplies the required actuating air, and the blades return to their cooling position via spring force. Blade pitch can be changed at any engine speed.

An optional electronic control module allows automating the cleaning process, which will then take place at selected intervals. The standard system requires the machine operator to initiate the cleaning process with an in-cab button, but in either instance, the operator can cancel the process with the touch of a button.

The kit includes a Standard reversing fan, adaptor flange and spacer, a valve/timer control set for 15 minute intervals. Also included is a cab mounted push button which can be used to override the timer if desired.

If the truck will be spending any amount of time on the road we recommend connecting the power supply to the PTO so that the reversing cycles only happen when the PTO is engaged and not while roading.

Another option is to use just a push button control to activate a cleanout cycle instead of the quoted timer control.

The VP (Variable Pitch) option will change the operating pitch of the blades based on the temperature of the air flowing through them. When the engine is not requiring all that air flow to remain cool, the blade pitch decreases. As the air temperature increases, the blade pitch then increases, which increases cooling. This is accomplished with the use of a Thermo Cell installed on the fan hub at each blade. There is no electronics required to accomplish this function. The radiator clean-out mode continues to operate exactly as with the Standard reversing fan, independent of the Variable Pitch function. The advantage of this option is when operating at cooler temperatures, there is increased horsepower available, less fuel consumption and reduced fan noise.

11.0 WARRANTY

11.1 The Chipper body warranty on the complete vehicle (excluding the chassis) 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 one (1) years from the date the equipment is put into service by the City of Winnipeg. _____

11.2 All warranty information shall be detailed and include all exclusions. The successful bidder shall provide all published warranty information upon delivery of the equipment. Bidder shall state all warranty information _____

BODY WARRANTY

11.3 Main Frame - Structural **State:** _____

11.4 Frame – Non-Structural **State:** _____

11.5 Components e.g. Pumps **State:** _____

11.6 Hydraulics **State:** _____

11.7 Hoist and Cylinder **State:** _____

11.8 Electrical One (1) year **State:** _____

11.9 LED Lighting **State:** _____

11.10 Paint **State:** _____

CAB & CHASSIS WARRANTY

11.11 Basic Vehicle - Chassis One (1) year, unlimited km, **State:** _____

11.12 Electrical One (1) year **State:** _____

11.13 LED Lighting **State:** _____

11.14	Batteries	One (1) year, unlimited km State:	_____
11.15	Drivetrain	Two (2) years, unlimited km State:	_____
11.16	Cab Structure/Corrosion	Five (5) years, unlimited km State:	_____
11.17	Frame & Cross-Members	Five (5) years, unlimited km State:	_____
11.18	Cab Paint	One (1) year or 160,000 km State:	_____
11.19	Engine	Three (3) years or 240 000 km State:	_____
11.20	Transmission	Two (2) years, unlimited km State:	_____
11.21	Axles - Front & Rear	Two (2) years or 161 000 km State:	_____
11.22	Components	State:	_____
<u>OTHER WARRANTIES</u>			
11.23	APU	State:	_____
11.24	Reversing Fan	State:	_____

12.0 **DELIVERY**

12.1	Delivery Point: The complete unit shall be serviced, ready for operation and delivered F.O.B. with the freight prepaid, including invoice and N.I.V.S. (if applicable) to the WFMA 185 Tecumseh Street, Winnipeg MB. The successful bidder shall be notified by the Contractor Administrator the delivery address prior to issuance of the purchase order	_____
12.2	Delivery Time: Equipment shall be delivered between 8:00 am and 2:00 pm on Business Days State: Delivery Date	_____
12.3	Delivery Contact: The Contractor shall contact the Contract Administrator prior to delivery of the equipment.	_____
12.4	P.D.I: A pre-delivery inspection shall be performed by the Contractor on the equipment. Proof upon inspection including completed check list	_____

13.0 **MANUALS**

13.1 Manuals supplied under this Contract shall cover the complete equipment including all components thereof, CD or USB flash drive is preferred where available. _____

13.2 The following manuals shall be supplied with the units when delivered:

a) Operator's manual – Two (2) per unit (one operator manual shall be sent to the Equipment Operator Training Branch _____

b) Parts and service manuals – One (1) complete set including preventative maintenance schedules. CDs or USB flash drive are preferred. _____

14.0 **PARTS/LABOUR DISCOUNT**

14.1 Bidder to provide City of Winnipeg Parts Discount % Pricing from retail parts pricing. **State: percentage discount** _____%

14.2 Bidder to provide City of Winnipeg Labor Discount % Pricing from Retail shop labor rate. **State: percentage discount** _____%

15.0 **FIRST SERVICE PREVENTATIVE MAINTENANCE KIT**

15.1 In order to assure minimum downtime of the equipment in future service, the Contractor shall provide one (1) complete replacement set of new OEM filters for each unit purchased. The set of required filters shall include (if applicable to the equipment type) air, fuel, oil, cab and hydraulic, or otherwise all known necessary common replacement filters required for the first preventative maintenance servicing. _____

15.2 The Contractor shall provide a list of factory recommended lubricants to be used with the equipment, as well as a complete cross reference guide for all warranty approved lubricants and filters that can be used during preventative maintenance servicing. _____

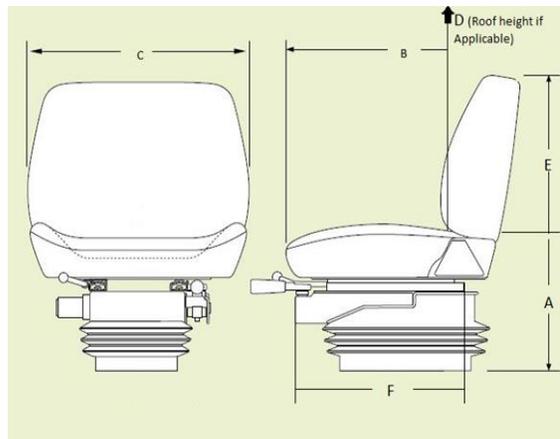
16.0 **ERGONOMIC SPECIFICATIONS**

Entry/ Exit

- | | | | |
|------|------------------------------|---|-------|
| 16.1 | First step entry height | State: height of first step in inches | _____ |
| 16.2 | First handhold entry height | State: first handhold entry height in inches | _____ |
| 16.3 | Access to equipment | State: door opening height in inches | _____ |
| 16.4 | Access to equipment | State: door opening width in inches | _____ |
| 16.5 | Designed to prevent slipping | Anti-slip steps/handholds (Y or N)? | _____ |

Seat

16.6 Use diagram to answer questions.



- | | | | |
|-------|---|---|-------|
| 16.7 | Sitting Height Range (from floor (where feet rest) (A)) | State: seat height range in inches | _____ |
| 16.8 | Seat Length/Depth (B) | State: seat length/depth in inches | _____ |
| 16.9 | Seat Width (C) | State: seat width in inches | _____ |
| 16.10 | Cab Height (from seat to roof (if applicable) (D)) | State: cab height range in inches | _____ |
| 16.11 | Back Rest Height (E) | State: back rest height in inches | _____ |
| 16.12 | Seat Travel Range (F) | State: seat travel in inches | _____ |
| 16.13 | Lumbar Support | Is lumbar support provided (Y or N)? | _____ |
| 16.14 | Head Rest | Is head rest provided (Y or N)? | _____ |
| 16.15 | Seat Material | Breathable
State: type of seat material | _____ |

Operation

- | | | | |
|-------|---|--|-------|
| 16.16 | Reaching Distance
(to usual work) | State: reaching distance in inches | _____ |
| 16.17 | Maximum Reaching
Distance | State: maximum reach distance in inches | _____ |
| 16.18 | Adjustable Pedals
(accelerator/brake/clutch) | Are pedals adjustable (Y or N)? | _____ |
| 16.19 | Adjustable Steering
Wheel | Is steering wheel adjustable (Y or N)? | _____ |
| 16.20 | Adjustable Shoulder Belt | Is belt adjustable and anchored (Y or N)? | _____ |

Cargo Area

- | | | | |
|-------|--|--|-------|
| 16.21 | Lid opens to provide
adequate space | Adequate space provided (Y or N)? | _____ |
| 16.22 | Loading Height | State: trunk height in inches | _____ |

Environment

- | | | | |
|-------|--|---|-------|
| 16.23 | Operator compartment is
insulated from equipment
noise (while operating) | State: dB inside cab while operating | _____ |
| 16.24 | Operator insulated from
equipment vibration | Is operator insulated from vibration (Y or N)? | _____ |
| 16.25 | Heating/Cooling Systems | State: cab temperature range | _____ |
| 16.26 | Cab Lighting | State: lumens inside cab | _____ |

Maintenance/ Inspection

- | | | | |
|-------|--|--|-------|
| 16.27 | Lift Assistance
(when necessary) | Is lift assistance provided (Y or N)? | _____ |
| 16.28 | Easy Access
(to compartment doors) | Is easy access provided (Y or N)? | _____ |
| 16.29 | Include any other relevant ergonomic specifications and applicable range of adjustment | | _____ |

FORM N: DETAILED SPECIFICATIONS 17016

SINGLE AXLE CHASSIS WITH A SEWER JET BODY

1.0 DESCRIPTION OF EQUIPMENT/APPLICATION

- 1.1 These specifications describe **Single Axle Chassis with a Sewer Jet Body** and other equipment and features as specified herein. These units are an integral portion of the City of Winnipeg Water and Waste equipment fleet as they are utilized year round during all seasons. The Trucks will be used for the removal of sand, dirt, grease, detergents, and materials normally found in storm drain and sanitary pipes. The equipment described will be designed to deliver high performance capabilities and provide maximum operator safety and convenience.



- 1.2 The **Single Axle Chassis with a Sewer Jet Body** shall be new 2017 model year or newer.
- 1.3 The **Single Axle Chassis with a Sewer Jet Body** and all other items/components shall be the manufacturer's latest model. The equipment shall be furnished complete and ready for operation. Any parts or accessories not specifically mentioned, but which are required to complete and place the equipment and associated attachments in successful operation shall be furnished as though specifically mentioned in these specifications. The equipment and associated and attachments, and all parts thereof, shall conform in strength and quality of material and workmanship, to the best standards and engineering practice of the industry.

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 **Single Axle Chassis with a Sewer Jet Body** shall comply with the applicable regulations:
- Highway Traffic Act
 - Manitoba Motor Vehicle 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
 - City of Winnipeg Lighting Visibility Standard=<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.
- 2.3 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 units.

- 2.4 The manufacturer/installer shall be a certified vehicle completer and must affix their National Safety Mark (NSM) certification sticker on each unit.

State NSM number: _____

3.0 SERVICE FACILITY

- 3.1 For the purpose of warranty repairs, the supplier shall have an authorized service facility located within 10 kilometres 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 B11, 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.

4.0 REFERENCES

- 4.1 If available, please provide five (5) references where this equipment is used in a working environment where climatic conditions are similar to the City of Winnipeg.

5.0 MAKE & MODEL

- 5.1 Eligible models are: **SECA 800-HPR Series III** or **Vector RamJet 850**, or equivalent in accordance with B6 Substitutes.

5.2 **State** make and model of equipment being bid: _____

6.0 INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS

- 6.1 Each bid will be evaluated based on adherence to all terms, conditions and requirements outlined in the Bid Opportunity package.

6.2 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.

6.3 **EACH BIDDER IS REQUIRED TO FILL IN EVERY BLANK. FAILURE TO DO SO MAY BE USED AS A BASIS FOR REJECTION OF BID**

7.0 PERFORMANCE RELIABILITY

- 7.1 The responsibility for the design of the **Single Axle Chassis with a Sewer Jet Body**, its performance and reliability shall rest upon the Contractor.

- 7.2 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, of

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 schedule.

7.3 Where the **Single Axle Chassis with a Sewer Jet Body** develops "repeated failures" in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.

7.4 The equipment shall be capable of consistent top performance in City of Winnipeg Environment.
Note: The City of Winnipeg has four seasons with ambient temperatures ranging from approximately 90°F (32°C) to -40°F (-40°C)

8.0 **FUEL**

8.1 The **Single Axle Chassis with a Sewer Jet Body** must be fully fuelled upon delivery (**no exceptions**).

9.0 **QUALIFICATIONS OF MANUFACTURER & CONTRACTOR**

9.1 The manufacturer of the **Single Axle Chassis with a Sewer Jet Body** shall have five (5) years continuous experience manufacturing **Single Axle Chassis with a Sewer Jet Body**.

9.2 The manufacturer shall have in effect a documented quality control program ensuring that the quality of materials and workmanship, including welding, conforms to the best standards and engineering practice of the industry.

9.3 The Contractor shall have five (5) years continuous experience servicing, repairing and maintaining **Single Axle Chassis with a Sewer Jet Body** of the type being offered.

10.0 **SPECIFICATIONS-**

CHASSIS:

10.1 Weights:

The Trucks shall not exceed the City of Winnipeg's limit for gross vehicle weight, axle and tire loads

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 (tandem axle) – 9100 kg (20,056 lbs.)
- Tire load – 9 kilograms for each millimeter width of tire (approximately 500 lbs. per inch of tire width).

10.2 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, all attachments and full of fuel.

10.3 GVWR

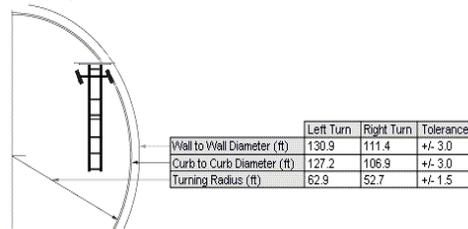
- GVWR Total 33,000 lbs.
- GVWR Front 12,000 lbs.
- GVWR Rear 21,000 lbs.

10.4 Cab

Conventional with corrosion inhibitor

- 10.5 Cab to Axle As required for Sewer Jet Body _____
- 10.6 Wheelbase As required for Sewer Jet Body _____
- 10.7 After-Frame As required for Sewer Jet Body _____
- 10.8 Turning Radius Turning Radius _____
State: vehicle turning radius

Example:



- a) **Wall to Wall (ft.)**
- b) **Curb to Curb(ft.)**
- c) **Turning Radius (ft.)**

ENGINE:

- 10.9 Type Tier IV Final Diesel, inline 6-cylinder _____
- 10.10 Horsepower Approximately 300 HP gross _____
- 10.11 Torque Approximately 800 lb-ft. _____
- 10.12 Engine Shut Down Low oil pressure / high water temperature _____
- 10.13 Air Intake Warmer **Required:** _____
- 10.14 Fuel Shut-Off Electric solenoid type _____
- 10.15 Air Intake Side of hood air intake _____
- 10.16 Air Cleaner Dry type _____
- 10.17 Air Intake Restriction Dash mounted restriction indicator _____
- 10.18 Oil Drain Plug Magnetic type _____
- 10.19 Oil Filter Full flow, spin-on type _____
- 10.20 Fuel Filter Spin-on type _____
- 10.21 Fuel/Water Separator Heated, drainable under hood _____
- 10.22 Fuel Line Primer Pump **Required:** _____
- 10.23 Block Heater Immersion type, Approximately 1000 Watt with covered recessed male plug, located under driver's side door _____
- 10.24 Radiator Aluminum 1000 - 1200 square inch _____
State: size
- 10.25 Coolant **Extended Life** coolant, antifreeze to -35°F (-37°C) _____

10.26	Coolant Filter	Required:	_____
10.27	Coolant Hoses	Silicone type or Gates Blue Stripe	_____
10.28	Fan Drive	Thermostatically controlled, automatic type with dash switch	_____
10.29	Air Compressor	Water cooled, pressure lubricated, 15-18 cfm	_____
10.30	Diesel Exhaust Fluid (DEF) Tank	Approximately 19 – 36 Litres or largest size per application. Located Driver's side State: size and location	_____

ELECTRICAL SYSTEM:

10.31	Electrical Connector's	Plug-in, sealed type	_____
10.32	Anti-Corrosion Electrical Package	Controllers and sensitive electrical components (PCM, Harnesses etc.) mounted in cab State: locations	_____



10.33	Alternator	Delco Remy 36SI Heavy Duty, Brushless type 160 -180 Amp Pad Mount Remote Sense State: make and model	_____
10.34	Starter	Delco Remy 41MT Heavy Duty Over-Crank Protection State: make and model	_____
10.35	Circuit Breakers	Auto-reset, readily accessible	_____
10.36	Batteries/Battery Location	Three (3) batteries, 12-volt, group 31, approximately 2700-2850 CCA combined Batteries not to impede with the installation of the body State: location	_____
10.37	Battery Disconnect	In-cab mounted outboard of driver's seat State: location	_____
10.38	Battery Boost Terminal	Remote battery boosts terminal(s), protected from road spray. State: location	_____

Exact location to be determined at pre- production meeting

10.39	Cab Marker Lights	LED Cab or LED Sun Visor	_____
10.40	2-Way Radio Circuit	Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled	_____
10.41	Accessory Switches	Required: Six (6). All switches complete and wired for body installation, labeled and backlit	_____
10.42	Mega Fuse Box	Located in-cab or under-cab and shall be sealed. State: location and method of sealing	_____

EXHAUST SYSTEM:

10.43	Exhaust	Horizontal exhaust cylinder and vertical right hand tail pipe. Exhaust not to impede in the installation of the body. State: type and location	_____
10.44	Overall Exhaust Height	To clear dump body cab shield	_____
10.45	Exhaust Heat Shield	Required:	_____



TRANSMISSION:

10.46	Transmission	<ul style="list-style-type: none">• Allison 3000 RDS with 6-speed programming,• Ratio shall be as per inter-city application.• Transmission shall come with load base Management Programming.	_____
10.47	Allison SCAAN	The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator, the Allison SCAAN	_____
10.48	Transmission Fluids	Synthetic	_____
10.49	Shift Selector	Digital push-button type, dash mounted	_____
10.50	Cooling Capacity	Water to oil transmission cooler, as per manufacturer's recommendation for severe duty cycle	_____

10.51	Oil Level Dipstick	Bayonet type with high and low level markings	_____
10.52	Transmission Drain Plug	Magnetic type	_____
	<u>FRONT AXLE:</u>		
10.53	Front Axle	Set back axle , Meritor 12,000 lbs. capacity, with synthetic fluid.	_____
	<u>REAR AXLE:</u>		
10.54	Rear Axle	Meritor 21,000 lbs. capacity, with synthetic fluid.	_____
10.55	Ratio	For 110 km/hr State: ratio	_____
10.56	Inter-Axle Lock	Required: with dash mounted switch	_____
10.57	Differential Lock	Required: for drive axle with dash mounted switch	_____
10.58	Hub Seals	Oil lubricated front and rear type	_____
	<u>FRONT SUSPENSION:</u>		
10.59	Front Suspension	Multi-leaf spring suspension, 12,000 lbs. capacity	_____
	<u>REAR SUSPENSION:</u>		
10.60	Rear Suspension	Air ride suspension, 21,000 lbs. capacity, axle, shall be as recommended for Sewer Body application	_____
10.61	Suspension Control Valve	Manual dump valve for air suspension complete with dash mounted switch, indicator light, gauge and buzzer	_____
10.62	Auto Refill	Required: at 5 km/hr Exact speed will be determined at a pre-production meeting	_____
	<u>RIMS, WHEELS AND HUBS:</u>		
10.63	Front Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.64	Rear Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.65	Hubs	Aluminum material	_____
10.66	Wheel Nut Indicators	Required: on all wheel nuts	_____

TIRES:

- | | | | |
|-------|-------------|---|-------|
| 10.67 | Front Tires | 11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application | _____ |
| 10.68 | Rear Tires | 11R 22.5 16 ply, snow, mud and ice rated for requested GVWR and application | _____ |

FRAME:

- | | | | |
|-------|--|--|-------|
| 10.69 | Frame | Single rail as recommended for dump body application | _____ |
| 10.70 | Rust Inhibitor
(Frame/Cross Member) | ARMOUR-SEAL™
FRAME & CHASSIS COMPONENT
PROTECTIVE UNDERCOATING: (or
equivalent)

Sodium, magnesium and calcium
chloride resistant.

Semi-permanent, high strength
rubberized polymer blended. | _____ |



RHOMAR Industries, Inc.

Tricia McKnelly-Anderson
Account Manager
2107 E Rockhurst
Springfield, MO 65802
1.800.688.6221
417.866.5593 (fax)
www.rhomar.com
www.rhomar.com/products/armour-seal

- | | | | |
|-------|------------------------------|---|-------|
| 10.71 | Chassis Fasteners | Grade-8 threaded hex headed frame fasteners | _____ |
| 10.72 | Rear Frame Towing Provisions | Towing provisions with 7-way pin receptacle to end of frame with two (2) extra feet of wiring to for ease of body installation. | _____ |

STEERING:

10.73	Steering	Tilt and telescopic, power, rated for front GVWR rating. Reservoir approximately 2 quart with see through tank.	_____
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BRAKES:

10.74	Brakes	Air, ABS, S-cam drum brakes, front & rear	_____
-------	--------	---	-------

10.75	Slack Adjusters	(Clearance sensing), automatic type	_____
-------	-----------------	-------------------------------------	-------

10.76	Parking Brake	Required:	_____
-------	---------------	------------------	-------

10.77	Brake Pots	Vented type	_____
-------	------------	-------------	-------

10.78	Dust Shields	Required: front and rear	_____
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10.79	Air Tanks	Shall be aluminum tanks with aluminum or stainless steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion	_____
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10.80	Moisture Ejector	Required: Wabco, heated, in all air tanks	_____
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10.81	Drain Valves	Required: Manual, chain or cable operated, on each air tank	_____
-------	--------------	--	-------

10.82	Air Dryer	Wabco Heated System Saver 1200 or equivalent State:	_____
-------	-----------	---	-------

FUEL TANK:

10.83	Fuel Tank	Dual 40-45 gallon fuel tanks. Shall not impede in the installation of a Sewer Body. State: fuel capacity	_____
-------	-----------	--	-------

10.84	Fuel Water Separator	Required: heated	_____
-------	----------------------	-------------------------	-------

10.85	Tank Straps	Aluminum or Stainless Steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion State:	_____
-------	-------------	--	-------

CAB:

10.86	Cab	Conventional with corrosion inhibitor	_____
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10.87	Cab Construction	Aluminum or Galvanized steel State:	_____
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10.88	Bumper To Back Of Cab	BBC Approximately 106-110 in. State:	_____
-------	-----------------------	--	-------

10.89	Cab Mounts	Air suspension	_____
-------	------------	----------------	-------

10.90	Hood	High visibility hood	_____
10.91	Front Grille	Stationary mounted to hood	_____
10.92	Cab Interior / Trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
10.93	Cab Silencer Package	Required: for minimal decibel level	_____
10.94	Hood/Firewall/Engine Insulations	Insulated hood liner, engine cover and firewall	_____
10.95	Floor Covering	Rubber mat with under-padding	_____
10.96	Floor Mats	Two (2), rubber	_____
10.97	Driver's Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.98	Passenger Seat	High back, air suspension with foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.99	Dashboard	Ergonomic (Wing) Design	_____
			
10.100	Sun Visors	Dual flip-up type	_____
10.101	Steering Wheel	Tilt and telescopic type	_____
10.102	12-Volt Power Outlet	Required : Two (2) with independent circuit	_____
10.103	Radio	Factory installed AM/FM/ with "hand free" Blue Tooth capability	_____
10.104	Starter Switch	Key operated complete with three (3) sets of keys	_____
10.105	Interior Light	Dome light with driver and passenger door switches	_____
10.106	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of (-40°C)	_____
10.107	Air Conditioning	Required:	_____
10.108	Brake, Accelerator, Pedals	Floor or hanging type brake and accelerator pedal State:	_____
10.109	Horn	Dual electric	_____

10.110	Exterior Mirrors	Mirrors heated, lighted, 4-way motorized adjustment (with convex mirrors), suitable for 102 in. equipment width	_____
10.111	Down-View Mirror	Required: over passenger door Approximately 5 in. x 4 in.	_____
10.112	Windows and Windshield	Tinted	_____
10.113	Power Windows	Power driver and passenger side	_____
10.114	Doors	Power door locks	_____
10.115	Windshield Wipers	Electric intermittent	_____
10.116	Wiper Blades	Heavy duty with winter type boot	_____
10.117	Windshield Washers	Required: Electric, with spray nozzles on wiper blades	_____
10.118	Grab Handles	Dual exterior State: locations	_____
10.119	Grab Handles	Dual Interior	_____
10.120	Entrance Steps	Dual each side, open grate / grip type	_____
10.121	Winter Front	Heavy-duty vinyl with twist lock or snap type fasteners	_____
10.122	Exterior Sun Visor	Required:	_____
10.123	Strobe LED Lights (Beacons)	Qty two (2) Amber LED Beacon, Class 1 High Dome Strobe Lights with aluminum or stainless steel brackets mounted to B-Pillar	_____

Note: Need to be forward enough as not to interfere with the cab shield if equipped with one.



Whelen L31HAF



Location to be determined at a pre-production meeting

INSTRUMENTATION:

10.124 Instrumentation

- Oil Pressure Gauge _____
- Coolant Temperature Gauge
- Transmission Oil Temperature Gauge
- Voltmeter Gauge
- Air Reservoir Pressure Gauge with
LAP Warning Light And Buzzer
- Low Oil Pressure Warning Light and
Buzzer
- High Water Temperature Warning Light
and Buzzer
- Non-Resettable Type Engine Hour-
Meter

TOW HOOKS:

10.125 Tow Hooks

Front mounted and Rear mounted _____

10.126 Weigh Scale Systems

Not Required for these Vehicles: _____

COLOURS:

10.127 Exterior Colour

White _____

10.128 Interior Colour

Grey _____

ACCESSORIES:

10.129 Flare Kit

Three (3) triangular reflectors, CVSA
approved. Kit must be mounted or
secured. _____

10.130 Fire Extinguisher

5 lbs. Fire Extinguisher ABC type
installed and secured
State: location _____

10.131 Back-Up Camera

Required: _____

10.132 Back-Up Camera Screen

In-Dash (Ergonomic (Wing) Dashboard) _____

OR _____

Dash mounted if standard dashboard is
specified. _____



**Back-Up Camera Screen location to be
determined at a pre-production
meeting.**

SEWER JET BODY SPECIFICATIONS:

Sewer Jet Bodies to have similar Specifications and Capabilities as current City of Winnipeg Equipment. These specifications were developed using the SECA 800-HPR Series III Truck Mounted Sewer Jetter and Vactor RamJet 850 Truck Series Jetters. Use these as a reference in developing and submitting your bid submission.

WATER TANK:

10.133 Capacity Approximately 1500 Gallons _____

10.134 Construction Welded/repairable approximately .750 in. U.V. stabilized Duraprolene _____

OR

Stainless Steel ;Type 304 _____

10.135 Baffles Approximately .750 in. Duraprolene _____

OR

Stainless Steel ;Type 304 _____

These baffles_will reduce sloshing and distortion

10.136 Ladder Access to top of tank _____

10.137 Tank Bottom Flat bottom type
State: _____

10.138 Tank Top Shall be completely removable for safe access of personnel entry during maintenance _____

OR

Sixteen (16) in. manway for safe access of personnel entry _____

10.139 Pump Intake Located to allow sediment to settle at tank bottom rather than entering and damaging pump _____

OR

Sumps in bottom of water tank to completely drain tank of water and sediment. _____

Note:

Water is filtered before it enters the water pump to prevent sediment from entering the pump.

10.140	Strainer	Located at tank top for elimination of foreign objects into tank	_____
		<u>OR</u>	
		<i>Located within the water fill system</i>	_____
10.141	Drain Valves	Two (2) in. drain valves located at both curb side and street side	_____
		<u>OR</u>	
		<i>Two (2) in. drain valves located inside water pump cabinet</i>	_____
		<u>FILL SYSTEM:</u>	
10.142	Tank Filling	Ability to fill from both curb side and street side	_____
10.143	Tank Filling and Fill Hose	Located between the cab and water tank of the unit with a fill point on both sides of the truck	_____
		<u>OR</u>	
		<i>Located at the rear of unit next to rear operator work station</i>	_____
10.144	Tank Fill System	Incorporate a quick disconnect cam lock fitting for 2-1/2" fill hose	_____
10.145	Water Level Indicator	Shall have a LED Level Indicator that uses pressure transducers. <u>Note:</u> Water Level Indicators that use float sensors will not be acceptable.	_____
10.146	Features	Required: Low water indicator and alarm	_____
10.147	Protection	The Indicator case shall be waterproof, manufactured of aluminum or stainless, and have a distinctive label	_____
10.148	Programming	Shall be programmable from the display and shall support self-diagnostics capabilities, self-calibration, and a data-link to connect remote indicators State: method of programming	_____
10.149	Water Level Sight Gauge	Located on both curb side and street side	_____
10.150	Air Gap	A four-inch (4") air gap will be utilized between fill pipe and tank fill opening	_____
10.151	Material	Integral stainless steel ball float/seating system to eliminate water discharge due to movement of the vehicle	_____

10.152	Float System	Rust proof and provides the needed space between the inlet and the tank to protect from siphoning and back flow during hard stops by the vehicle	_____
10.153	Fill Hose Storage Rack	Required:	_____
	<u>WATER PIPING SYSTEM:</u>		
10.154	Piping Systems	All piping systems subjected to high pressure shall use zinc chromate plated steel fittings with minimum burst pressure of 4 times the system pressure.	_____
10.155	Hoses	Working pressure ratings shall exceed the maximum system pressure	_____
10.156	Strainer	Approximate range of 40 to 80 mesh screen shall be installed in the suction line at a location accessible for cleaning State: mesh screen size	_____
10.157	Piping	To be installed to drain by gravity through suitable openings equipped with plugs, drain cocks, or ball valves	_____
10.158	Pressure to the Cleaning Nozzle	Regulated by an overload relief valve	_____
10.159	Water Supply for Jetting	Directly controlled by the water pump No water diverter or directional valves are allowed due to significant wear issues at said valves.	_____
10.160	Recirculation System	Include a recirculation system that controls a proportional pump control with the ability to circulate a minimum of 10 gallons per minute of water This system allows for use of unit in sub-freezing temperatures	_____
10.161	Control for the Recirculation System	Shall be located in the cab	_____
10.162	Water Delivery to Hose Reel	Shall pass through one (1) or two (2) repairable/greaseable swivel rotary coupling State:	_____

WATER PUMP (SINGLE PISTON):

10.163 Single Piston Pump:

- The single piston pump will be rated for 106 GPM at 2840 PSI and powered to produce **80 GPM at 2500 PSI**.
- It shall be a double action pump that is hydraulically driven to provide specific pressures and flows.
- The pump is to operate with an oil to water ratio of 1:1. This cycle will provide jack hammer pulsation action to assist in clearing obstructions.
- The water end blocks as well as the oil end blocks shall be manufactured from an anodized high tensile alloy for reduced wear as well as reducing corrosion implications found on single piston pumps utilizing steel end block material.
- The water head and the oil channels shall have big bore channels to reduce back pressure and guarantee a high efficiency operation.
- The design of the pump shall allow the pump to run dry for long periods without damage.
- There shall be a hydraulic oil temperature sensor with auto stop to protect hydraulic components.
- The pump must have a LED light indicating pump status for easy trouble shooting and an hour meter for service intervals.
- The pump will have two access covers for easy inspection of the water valves and two drains to facilitate draining the water end(s).
- In addition the pump shifting action shall be controlled via non-contacting sensors.
- Pumps utilizing any type of mechanical switch to accomplish this shifting action are not acceptable.

OR

10.164 *Single Piston Pump:*

- *The high pressure dual acting single piston water pump shall be hydraulically driven that directly converts hydraulic oil pressure into water pressure*
- *The hydraulic pump(s) used to power the water pump shall be engaged / disengaged independently from the water pump eliminating unnecessary high pressure ball valve bypass and to help reduce water pump wear.*
- *The hydraulic system shall contain a direct acting relief valve. For added safety protection, the high pressure water system shall also contain a direct acting relief valve.*
- *The high pressure water pump shall have a maximum rated flow capacity of 100 GPM and a maximum rated output pressure of 2500 PSI.*
- *The high pressure water pump system shall be certified to deliver 0 to 80 GPM at a variable pressure up to 2500 PSI at the hose reel. Full flow and pressure ranges shall be achieved without diverting high pressure water back to the water tank.*
- *The water system shall be power demand matched to chassis to optimize performance and fuel economy. The high pressure water system shall have hose reel mounted controls for operation of two modes: (1) Low flow range of 0 to 40 GPM at variable pressure up to 2500 PSI at the hose reel, (2) High flow range of 20 to 80 GPM up to 2500 PSI at the hose reel.*
- *An oil filled water pressure gauge shall be provided at the primary work station on the rear hose reel.*
- *The water pump and associated water suction plumbing shall be located below the water storage tank.*
- *The water pump shall perform one complete cycle approximately every 4.5 seconds (80 GPM) or longer depending on flow output. This water pump cycle shall provide a pulsation action to assist the nozzle in navigating difficult lines or breaking through obstructions/blockages. Pulsation surge wave shall allow nozzle to punch forward 2" to 18" depending on flow dynamics and length of hose in sewer pipe. There shall be no interruption in the system water flow at the nozzle when this event occurs.*
- *The water pump shall use a single water piston that provides a relatively slow pump stroke that provides minimal wear and allows the pump to run at normal operating conditions or speed without water for thirty minutes.*
- *In order to maintain an optimized oil temperature for the hydraulic oil system, an oil to water shell and tube type oil cooler shall be provided in the water pump suction plumbing.*
- *A three inch "Y" strainer with 80 mesh stainless steel filter screen shall be located in the water pump suction between the water tank and water pump. A three inch gate valve shall be provide in the water pump suction to isolate the water tank and provide the ability to inspect/clean the 80 mesh stainless steel filter screen with water in the water tank.*
- *A compliment of drain valves and drain plugs shall be provided that allows the water pump and water tank system to be easily drained at ground level.*
- *A mid-ship quick disconnect with shut off valve shall be provided.*

- 10.165 Accumulator (Pump Pulsation Reducer) for Single Piston Pump: _____
- This device will be a nitrogen charged 200 Liter accumulator and be mounted directly to the pump for optimum performance.
 - This system will also incorporate a ball valve which will allow the operator to turn this device on or off.

OR

- *A 2.5 gallon capacity, nitrogen charged bladder type accumulator shall be supplied to eliminate the cycle pulsation action and provide smooth operation at the nozzle when desired.* _____
- *The accumulator system shall have a 1" ball valve shut off to allow the water pump system to operate with pulsation action or smooth flow operation at the nozzle.*

- 10.166 Location Located in the rear / side compartment, which is shrouded and heated to protect the pump from the dangers of any damage caused by freezing. _____

- 10.167 Servicing The water pump must be located to allow servicing of the pump at ground level. _____

- 10.168 Drain Valves Pump to be fitted with drain valves for complete draining of water pump. _____

10.169 **HYDROSTATIC OR HYDRAULIC DRIVE SYSTEM:**

- 10.170 Engine Speed The chassis engine speed will operate in a range of 1400 to 2000 RPMs depending on pump configuration to power the hydrostatic transmission. _____

- 10.171 Hydraulic Oil Reserve Capacity:
- The hydraulic oil reserve capacity seventy-five (75) to eighty (80) U.S. gallons with oil temperature indicator.
 - This unit will also be equipped with low hydraulic oil indicator light located at the operator's station to signal loss of hydraulic oil.
 - The return in line filters will not be in the reservoir.

- 10.172 Cooling The hydraulic oil shall be cooled by a high efficiency shell and tube heat exchange system. _____
- Note:**
Any oil cooling system that employs devices with moving parts shall not be acceptable.

- 10.173 Shut-Off Valves Shut-off valves will be installed on the suction lines of facilitate servicing of the hydraulic pump without the need of draining. _____

10.174 Emergency Shut-Down:

- The hydraulic system shall have an emergency shut-down that automatically reduces the engine speed to idle eliminating the potential for damaging the PTO.
- When the shut-down switch is disengaged, the PTO will re-engage and operator can ramp back up to operating speed.

10.175 Location

The water pump and rear hydraulic motor are to be mounted above the chassis frame rails in the enclosed, heated pump compartment(s) located at the rear or side of the water tank.

State: location of:

Water Pump

Rear Hydraulic Motor

10.176 Location of Hydraulic Reservoir

Mounted under the body frame

OR

Mounted to street side of chassis frame rail

10.177 Hydraulic Oil

Non-toxic and biodegradable

State:

HIGH PRESSURE HAND GUN SYSTEM:

10.178 Standard

The High-Pressure Hand Gun piping shall be provided with quick-disconnect fitting located at curb side and 25' of 1/2" HP hose with fittings.

10.179 Relief Valve Capabilities

High-pressure handgun circuit shall utilize an adjustable relief valve capable of 500 PSI capacity.

10.180 Operation

The high-pressure handgun will be adjustable and repairable.

ROTATING SAFETY HOSE REEL AND CONTROLS:

10.181 Capacity

700' x 1" high pressure sewer hose.

10.182 Self-Levelling

The narrow designed reels shall be self-levelling type for operator safety

10.183 Construction

The hose reel will be constructed of 1/4" steel, designed to withstand maximum working pressure without distortion.

10.184 Reel Flanges

Reel flanges shall be 1-1/2" and shall be designed to prevent hose damage from contact during all normal working conditions.

State: if reel flanges are tapered

10.185 Reel Design	State: Reel Design _____ _____
10.186 Hoses	<ul style="list-style-type: none">• All hoses used to supply the hose reel or its hydraulic system shall be flexible and shall be fully enclosed in a shroud and routed underneath the reel structure below the reel drum.• The hoses shall be fully secured and protected against chafing and rubbing.• Protected from outside elements for winter operation <p><u>OR</u></p> <ul style="list-style-type: none">• <i>Run hoses through heated cabinet system and over top of hose reel in heated compartment</i>• <i>The hoses shall be fully secured and protected against chafing and rubbing</i>
10.187 Baffles	The center of the reel shall include structures that reinforce the center of the drum. _____
10.188 Loads	The reel shall be specially designed to handle all the loads that have been measured during cleaning operations, including the pull force from the operation of the nozzle, and the compressive forces from the pressurization of the hose. _____
10.189 Hydraulic Drive	The reel shall be driven with hydraulic power for pay out and retrieve, either with or without the water pump in operation. The hydraulic drive shall have sufficient power to retract the hose when fully extended into the pipe with the cleaning nozzle in operation. _____
10.190 Location	The hose reel assembly shall be mounted in the rear center of the rear compartment. _____

10.191 Extension of Hose Reel

The hose reel shall have the ability to extend out from the rear compartment via a hydraulically powered cylinder. The cylinder shall extend the hose reels 48" from the fully retracted position in the heated rear compartment after the rear roll-up door has been completely opened.

OR

The hose reel shall be located in a heated enclosure protected from the elements that rotates with the hose reel.

10.192 Safety Reels

The safety reel will rotate a full 180 to 190 degrees providing direct alignment to manholes.

The rotation will enable the operator to position the machine operator out of the traffic pattern and provide protection while operating the machine. The rotating ability of the hose reel allows the operator to manipulate the hose reel into various positions depending on location of manhole. This allows for proper positioning of the hose reel without backing up or repositioning sewer machine.

The hose reel is mounted on an industrial greaseable swivel bearing that is sealed and eliminates contamination from dirt. The industrial swivel bearing shall have an approximate load bearing weight of 5,000 Ft.-lbs.

The bearing design shall have no wear points except the greaseable ball bearings and the races, which are constructed of hardened steel to minimize wear.

The rotating hose reel will lock into position using a spring-loaded safety pin

10.193 Rotating Reels Material

Not Acceptable:

Using plastic material and/or sliding contact or other wear surfaces for swivel action will not be accepted.

10.194 Control Panel

A single, right hand side control panel mounted on the rotating hose reel shall provide access to all necessary operating controls.

The control panel shall rotate with the reel.

10.195	Controls	Controls mounted on the rotating hose reel control panel will consist of: <ul style="list-style-type: none">• Engine throttle control• Water pressure gauge• Tachometer• Hour meter• 12-volt plug for spotlight• Light switches• Low water warning light.• Digital Water Flow Gauge in GPM	_____
10.196	Hydraulic Controls	The hydraulic controls for the rotating hose reel will consist of: <ul style="list-style-type: none">• variable speed control• forward-neutral-reverse directional control.	_____
10.197	Automatic Level Wind: <ul style="list-style-type: none">• The Sewer Hose Reel shall be equipped with an Automatic Level Wind, which allows for “hands-free” winding of sewer hose onto the hose reel without operator touching sewer hose.		_____
10.198	Footage Meter	Required: Ability to read in meters State: location	_____
10.199	Digital Distance Counter: <ul style="list-style-type: none">• The unit will be supplied with a Digital Distance Counter that includes a digital screen with LCD display.• The Digital Distance Counter measures the rotation of the hose reel and takes into account the diameter of the hose, the length of the hose, and the diameter of the hose reel drum.• The Digital Distance Counter should be capable of displaying in either feet or meters.		_____
<u>HOSE REEL DRIVE SYSTEM:</u>			
10.200	System	The hose reels shall be chain driven by hydraulic power in both directions, either with or without the water pump in operation. The hydraulic drive shall have sufficient power to retract the hose when fully extended into the sewer with the cleaning nozzles in operation.	_____

SEWER HOSE:

10.201 Size Hose will be 1" ID by 600' with an operating pressure of 2500 PSI and a minimum burst pressure of 7500 PSI. _____

10.202 Material The unit will be supplied with an abrasion resistant plastic (**Armor Belt**) cleaner hose capable of cleaning sanitary service lines, storm lines, culverts, drainage tiles and other open conducts. The hose outer cover will contain an integral belting of high tensile polymer reinforcement for cut and abrasion resistance. _____

PENDANT CONTROL:

10.203 CORDLESS Remote Control: _____

- The unit will be supplied with a CORDLESS remote control.
- The wireless remote RF unit will operate in the frequency range of 902-928 MHz.
- The wireless remote will have a range of approximately 300' with an obstructed view and approximately 1,000' with an unobstructed view.
- The wireless remote will have an operating time of 130 hours of continuous use and will have a temperature range of -40° to 70°C (-40° to 160° F).
- The remote control will come supplied with a lanyard to allow the operator to wear remote around his neck and have free use of both hands.
- The pendant control will include controls for the hose reel pay out and retrieve, throttle up/down, water on/off, and kill switch.

REAR COMPARTMENT(S):

10.204 Rear Compartment Rear compartment shall be designed for total enclosure of major components including the water pump, hydrostatic motor, hose reel and associated plumbing and sewer hose. _____

OR

The rear hose reel enclosure shall consist of a rotating cylindrical enclosure with fixed top cover for the hose reel, an enclosure for the water pump and a storage cabinet that connects the two. _____

10.205 Construction

Rear compartment(s) will be constructed of **aluminum** for corrosion resistance and to protect all components located at the rear of the tank.

Rear compartment(s) must be of a one-piece construction including sides and top to allow for easy removal for service

OR

*The rear hose reel enclosure shall be constructed of **aluminum** for corrosion resistance.*

The cylindrical enclosure shall have two access panels on either side for easy access for service.

The water pump enclosure shall have aluminum doors with stainless steel hinges that provide access to the water pump and plumbing

10.206 Insulation - **Required:**

All rear compartments housing major components shall be insulated with P2000 Insulation (nominal thickness TBD)

FTC Fact Sheet:

- Expanded polystyrene (EPS) core with reflective plastic facers
- Semi-rigid board with self-adhesive overlap flaps on front & back
- Functions as an air, moisture, and thermal barrier
- Class A fire rating
- Addresses all three types of heat transfer: conduction, convection, & radiation
- Available with reflective and/or durable white facers
- Commercial, institutional, agricultural and residential applications



<http://p2000insulation.com/>

P2000 Insulation System to be sold, installed and serviced by an authorized dealer

State: method of insulation

Application of insulation to be determined at a pre-production meeting

10.207	Floor Decking	Floor decking of rear body will be constructed of 11-gauge steel or aluminum Flooring shall also be treated with a non-skid coating for maximum protection from slipping. For winter time operation, floor decking to be completely enclosed and insulated	_____
10.208	Compartment Doors:	<ul style="list-style-type: none">• Rear compartment shall utilize three (3) "upward acting" compartment doors which incorporate a header/counter balance design.• Made of anodized aluminum panels, which maximize manoeuvrability, minimize vehicle width and eliminate the safety hazard of open-hinged doors.• Panels will have no rollers or cables, will resist rust and will be virtually maintenance free.• Doors will include stainless steel, lockable and keyed alike heavy duty handles.• Top and side seals will prevent dust, dirt and moisture from entry compartment.• Hinged doors that protrude into work area, invite accident or personal injury, and could result in severe structural damage if vehicle is moved with hinged doors open, cannot be accepted. <p><u>OR</u></p> <ul style="list-style-type: none">• <i>All compartment doors shall be easy to operate from ground level, provide access to all sewer jetting components (hose reel, controls, and water pump) and be made of aluminum or stainless steel to provide corrosion protection.</i>• <i>Doors shall be lockable and keyed alike with heavy duty handles.</i>• <i>Doors to include seals that will prevent dust, dirt and moisture from entry to the compartments.</i>	_____
10.209	Roll-Up Doors - Sides	The rear compartment will utilize two deluxe roll-up doors on either side. These doors will measure 48" W x 52" H. These doors allow for complete access to rear compartment.	_____
10.210	Roll-Up Doors - Rear	The rear compartment will utilize a deluxe roll-up door on the rear of unit that will measure 91" W x 70" H. This door will protect components when closed and allow telescoping extension of hose reel when opened.	_____
10.211	Automatic Safety Switch	The rear roll-up door will be equipped with an automatic safety switch, which will not allow hydraulic extension of hose reel unless roll-up door is opened completely.	_____
10.212	Bumper - Rear	Heavy-Duty rear bumper	_____

10.213 Mud Flaps

Required: Black rubber, no-name, front and rear of back tires complete with anti-sail bracket on each mud-flap. Rear mud flaps shall not contact the ground when the dump body is at maximum dump angle



TOOL STORAGE:

10.214 Toolboxes

Aluminum toolboxes

The toolboxes will be protected from the effects of water and road dust by a thick, automotive "bulb type" neoprene door seal.

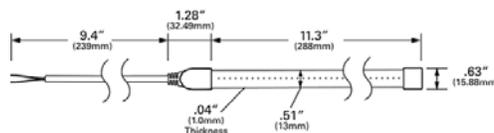
A heavy duty handle (locking style) will be provided on toolboxes.

Toolbox Lights:

LED continuous "strip" style lighting, properly secured to prevent damage, wired through chassis manufacturers OEM dash mounted switch labelled "Bin Lights".

Grote LED Light Strips

<http://www.grote.com/products/l1116200-1-xtl-led-technology-extreme-white-led-light-strip-288-mm/>



State: qty and dimensions

10.215 Storage Tubes / Trays Two (2) 4" PVC storage tubes for long handled tool storage. _____

OR

Driver's side tool tray _____

ALL WEATHER SAFETY SYSTEM:

10.216 Enclosure(s) The rear compartment(s) shall be totally enclosed and heated with an **80,000 BTU heater**. _____

The heating of the compartment(s) will prevent accidents and mechanical damage caused by ice build-up in hose (which can lead to hose bursts) and freezing of the high-pressure piping and/or water pump and will enhance overall ease of operations.

10.217 Retraction When not in the extended position, the hose reels shall be able to be retracted and housed within the heated rear compartment. _____

10.218 Recirculation A recirculation fitting will be installed at the Operator's Station to allow for recirculation of water. _____
Recirculation will be possible at all times, including instances when truck is in motion.

10.219 Air Purge System A self-contained air purge system powered by the truck chassis will be installed which allows high-pressure air to force water from applicable systems. _____
The air purge system consists of an isolation valve and purge valve with a pressure gauge to monitor the air pressure in the auxiliary air reservoir.

COLD WEATHER OPERATING PACKAGE

10.220 Water Lines Insulated, including, but not limited to, pump suction line, pressure line to hose reel, and hand-held gun line. _____

10.221 Cold Water Re-Circulation System 20 gpm, designed to prevent freeze-up while driving to and from work sights, operable at all vehicle road speeds. _____

10.222 Circulation Cold Water to circulate through entire system including hose reel and pump (Not through boiler) _____

10.223 Air Purge System **Required:** _____
To remove water from pump and water lines

10.232 Sequence All components of the unit whether purchased or manufactured shall be BOTH primed and painted prior to assembly in order to assure maximum resistance to corrosion. _____

Note:

Painting after the assembly process is NOT acceptable.

10.233 Colour Specification The unit to have the frame painted black and the hose reel and shroud assemblies to be painted standard white. _____

State: any deviations to colour specification _____

ACCESSORIES:

10.234 Additional Accessories _____

- (25') Fill Hose
- Leader Hose
- BB Hose Guide
- Finned Nozzle Extension
- Penetrator Nozzle with Replaceable Inserts
- General Purpose Nozzle with Replaceable inserts
- Nozzle Rack
- Upstream Pulley Guide
- Wash down gun with 25' x 1/2" hose with quick disconnect and retractable hose reel.

OPTIONAL EQUIPMENT:

TRIPLEX PUMP CONFIGURATION:

State: Optional Price for **Triplex Pump Configuration.** \$ _____

TRIPLEX POSITIVE DISPLACEMENT PUMP

WATER PUMP (TRIPLEX):

10.235 Pump Triplex positive displacement pump rated at and powered to produce 75 GPM at 2500 PSI. _____

10.236 Location Located in the rear compartment, which is shrouded and heated to protect the pump from the dangers of any damage caused by freezing. _____

The water pump and associated water suction plumbing to be located below the water storage tank

10.237 Servicing The water pump must be located with liquid end facing out. This prevents the mechanic from getting in unit to do pump service work. This allows servicing the pump at ground level. _____

10.238 Drain Valves Pump to be fitted with drain valves for complete draining of water pump. _____

10.239 Coupling Method The water pump shall be direct coupled to a hydraulic motor. _____
Note:
Drive systems incorporating any type of flexible coupling or belt drive system are not deemed acceptable due to maintenance related issues.

HYDROSTATIC DRIVE SYSTEM (TRIPLEX PUMP):

10.240 Operation: _____

- The water pump will be driven by a Hydrostatic system, which is powered by the truck engine via a PTO mounted to the transmission.
- The PTO drives a shaft, which powers a hydrostatic transmission pump.
- This hydrostatic transmission pump is responsible for driving a hydraulic motor, which drives the water pump.
- Mounted to the hydrostatic pump is a hydraulic pump, which is responsible for supplying power to all hydraulic functions including the hydraulic motor that drives the hose reel.

10.241 Control: _____

- The hydrostatic pump control must use a proportional spool type control. Proportional pump control must be electronically controlled by two separate signals.
- One signal to be used to stroke hydrostat to full capacity.
- The second signal to be used for recirculation mode.
- Cable or manual pump controls are not allowed.

10.242 Engine Speed The chassis engine speed will operate in a range of 1400 to 2000 RPMs depending on pump configuration to power the hydrostatic transmission. _____

10.243 Hydraulic Oil Reserve Capacity: _____

- The hydraulic oil reserve capacity will be at least thirty (30) U.S. gallons with oil temperature indicator.
- This unit will also be equipped with low hydraulic oil indicator light located at the operator's station to signal loss of hydraulic oil.
- The return line hydraulic filter shall be cartridge style and integral to the reservoir.

10.244 Cooling The hydraulic oil shall be cooled by a high efficiency shell and tube heat exchange system. _____
Note:
Any oil cooling system that employs devices with moving parts shall not be acceptable.

10.245 Shut-Off Valves	Shut-off valves will be installed on the suction lines of facilitate servicing of the hydraulic pump without the need of draining.	_____
10.246 Emergency Shut-Down:	<ul style="list-style-type: none">• The hydraulic system shall have an emergency shut-down that automatically reduces the engine speed to idle eliminating the potential for damaging the PTO.• When the shut-down switch is disengaged, the PTO will re-engage and operator can ramp back up to operating speed.	_____
10.247 Location	The hydraulic oil reservoir, water pump, and rear hydraulic motor are to be mounted above the chassis frame rails in the enclosed, heated pump compartment located at the rear of the water tank.	_____
10.248 Hydraulic Oil	Non-toxic and biodegradable	_____

10.249 **F.O.G. System:**

- Fats, oil and grease, also known as FOG, causes sewer blockages, leading to spills and overflows that are hazardous to the health of the community, homes, local waterways and ground water.
- The F.O.G. System is an effective way to break through fat, oil and grease clogs, and is less costly and more efficient than conventional mechanical methods to eliminating these clogs.
- Using the F.O.G. solution actually cleans the pipe wall surface, emulsifies the grease so it flows downstream, and slows future build-up.
- The degreasing solution is blended with water and dispensed during jetting operations

The system consists of:

- Metering unit
- Solution tank
- Water line
- Sight Gauge
- Shut-Off valve
- Misc. hardware to ensure operation of the unit

Operation

- A toggle switch on the metering unit activates the system when needed and a sight gauge indicates the mixing ratio.
- The metering unit blends solution and water for the jetting hose, before being dispensed into the sewer line where the build-up has occurred.
- The solution penetrates, softens and emulsifies fat, oil and grease clogs.
- The dis-solved build-up does not re-solidify, flowing with wastewater as it travels through the sewer.
- The metering unit is only switched on when cleaning grease-clogged pipes. It does not need to be running during normal sewer cleaning operations.
- The operator determines actual application after camera inspection, work-order instructions or knowledge of local conditions.

Design and function shall be determined at a pre-production meeting

State: Optional Price for **F.O.G. System**

\$ _____

10.250 **Anti-Bacterial Disinfectant System:**

System Sprays Anti-Viral and Anti-Bacterial agents formulated to reduce sewage contaminates from equipment that is handled by workers.

Vanguard Systems: <http://www.vanguard-systems.us/home>

Video: <https://www.youtube.com/watch?v=KF3gKL3doPQ>

The system consists of:

- Main control unit
- Hose reel
- Hose reel swivel
- Five (5) gallon ant-bacterial tank
- Collar
- Spray gun with changeable nozzles
- All required misc. hardware to ensure proper operation



Design and function shall be determined at a pre-production meeting

State: Optional Price for Anti-Bacterial Disinfectant System.

\$ _____

10.251 **Lateral Line Cleaning Cart:**

Designed to be a one man operation and work with the truck jet when cleaning smaller lines (2" – 4" pipe) and lines which have difficult turns and bends or are difficult to access with the vehicle.

Storage provisions to be included in the design where unit can be safely attached to the vehicle during transport.



Components:

- Heavy duty 2-wheel or 4-wheel cart
- 150' x ½" jet hose
- ½ in. hose reel swivel
- Hose reel with hand crank handle
- Cleaning nozzle
- On/Off ball valve

Suggested Design:



Design and function shall be determined at a pre-production meeting

State: Optional Price for Lateral Line Cleaning Cart.

\$ _____

IN-CAB CONTROLS:

10.252 Cab Controls Programmed through OEM dash mounted switches _____

10.253 Switches All switches shall be back-lit for night time use and clearly identified with engraved style, permanent type labels. _____

Supply corresponding valve and solenoid necessary for operation _____

Switches:

- PTO Engagement
- Amber Lighting

Additional switches to be determined at a pre-production meeting



HYDRAULIC SYSYEM:

10.254 System Design: Briefly describe the operation of the hydraulic system. _____

10.255 Components:
List major components of the hydraulic system

ELECTRICAL & LIGHTING:

10.256 Conformance

All lighting to conform to:

- C.M.V.S.S.
- Manitoba Highway Traffic Act.
- City of Winnipeg Lighting Visibility Standard

<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>

10.257 Lighting

Supplier installed shall be **high count** LED lighting and shall be Truck-Lite, Whelen **or equivalent**

10.258 Connection System

Weather Pack Sealed Connection System



10.259 Grommets

Rubber grommets unless otherwise specified

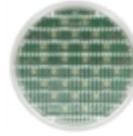
10.260 Combination Turn/Stop And Taillights

One (1) per side
P/N Truck-Lite 44302R with P/N 44710 mounting grommets



10.261 Back-Up Lights

One (1) per side
P/N Truck-Lite 44206C with P/N 44710
mounting grommets



10.262 3-Light Cluster

Three (3)
P/N Truck-Lite 10250R with P/N 10403
mounting grommets



10.263 Clearance Lights

High count LED
P/N Truck-Lite 10250R or 10250Y with P/N
10403 mounting grommets.



10.264 Amber Strobe Lights

One (1) per side with mounting grommets
P/N Whelen 5GA00FAR



10.265 License Plate Light

Complete with license plate bracket.
P/N Truck-Lite 36140 (Light)
P/N Truck-Lite 36710 (Bracket)

Refer to Appendix A



10.266 Traffic Arrow

SWS 58084 Traffic Arrow
Bottom edge of the Traffic Arrow shall be
1.5 m (5 ft.) from ground level

Refer to Appendix A



10.267 Floodlights

Qty two (2)

7 In. Round LED Flood Light
Truck-Lite P/N 81704 or equal



Or

4x6 inch Rectangular Halogen Work Light
Truck-Lite P/N 80394 or equal



Mounted at rear of vehicle to provide
optimum visibility at Operator's station

**Type and location to be determined at
pre-production meeting**

10.268 Handheld LED Spotlight

Nova Tech Lighting

<http://www.novatechlighting.com/product/series-2000I-led-nitehawk-patrol-light/>

Specifications

Dimensions	8.5 x 4.5 x 4.5 in
Housing	Single piece unibody UV treated black neoprene.
Switch	Momentary rocker switch, Heavy-duty ON/OFF switch
Lamp	1,040 Lumens, 18.5 Watts, 12 +/- 1.2 Volts, 1.54 Amps, GaN-on-GaN 4000K Color Temp, 9° Beam Angle, 35,000 hour lamp life
Cord	36" retracted – 12' extended, 54" retracted – 24' extended
Plug	Additional outlet at Operator work station



10.269 Compartment Light

Mounted inside

State: location, make and model number

10.270 Rear Light Mounting Location (Rear Bumper)

- Combination Turn/Stop and Taillights, qty two (2), one per side
- Back-Up Lights, qty two (2), one per side
- Rear-Corner Clearance Lights, qty two (2), one per side
- License Plate Light and Bracket

Refer to Appendix A

10.271	Rear Light Mounting Location (Rear Compartment)		_____
	<ul style="list-style-type: none">• Amber Strobe Lights, qty two (2), one per side• 3-Light Cluster, qty three (3)• Rear-Corner Clearance Lights, qty two (2), one per side (top corners)• Traffic Arrow, Qty one (1)		
	Refer to Appendix A		
10.272	Clearance Light Mounting Locations:		_____
	<ul style="list-style-type: none">• Sides – qty two (2) per side, located on front and rear top corners• Sides – qty two (2) per side, located on front and rear bottom corners.		
10.273	Standard	No clearance light shall protrude beyond the body.	_____
10.274	Standard	Taillights and back-up lights shall be fully visible when/if hose reel is extended.	_____
10.275	Harnesses	Harness system, properly routed and secured. All harnesses shall be internally grounded, no exceptions.	_____
10.276	Junction box	Junction box complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame.	_____
10.277	All Plug-In Connectors	All plug-in connectors shall be coated with NYK compound prior to assembly.	_____
10.278	Back-Up Alarm	97 dB (A), installed near rear of body, located to be protected from damage.	_____

10.279 Mini Light Bar

- Whelen R2LPPA Series Amber LED Mini Light Bar or equivalent in accordance with B6 Substitutes
- Mounted to top of cab
- Protected by Branch Guard
- Mini Light Bar shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Light Bar" with a permanent type, engraved style label.
- Switch shall be capable of high/low mode.



10.280 Branch Guard

Heavy duty branch guard constructed by 3/8 in. round bar or equivalent.



10.281 Wiring

All LED strobe lights shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Strobes" with a permanent type, engraved style label.

All wiring for back-up alarm, warning lights, strobes and trailer connector shall be colour coded, loomed and properly secured.

10.282 Trailer Connector

6-Way Round or SAE J560 7-Way Flat trailer receptacle.

Type to be determined at pre-production meeting

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

10.284 Joining Of Wires All joining of wires shall be soldered and sealed using heat shrink tubing or approved OEM weather tight connections (crimp on electrical connectors for joining wires are not acceptable). _____

10.285 Wiring Routing **Required:** Any holes to run wires through shall be drilled (not punched), grommeted and sealed _____

WELDING:

10.286 Standard All welds shall be continuous welds. All welding performed shall conform to CSA Standard W47.1-03 and W59-03. _____

INSTALLATION:

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

10.288 Standard Drilling on chassis frame flanges is not permitted. Welding on the chassis frame is not permitted, with the exception of installation of dump body pivot support. _____

10.289 Tire Clearance Three inches (3 in.) with rear suspension air bags lowered. _____

10.290 Clearance Clearance between dump body and back of truck cab shall be 3 in. _____

MISCELLANEOUS:

10.291 Rear Fenders Heavy Duty rear poly half-moon fenders. Shall be installed to have sufficient clearance from body and when chassis suspension is dumped for dump body operation. _____



10.292 Mud Flaps

Required: Black rubber, no-name, front and rear of back tires complete with anti-sail bracket on each mud-flap. Rear mud flaps shall not contact the ground when the dump body is at maximum dump angle



10.293 Isolators

All interfaces between aluminium and steel shall be separated by an approximately 1/16 in. thick rubber or neoprene sheet and are to be bolted through with stainless steel bolts and non-conductive bushings

GREASING SYSTEM:

10.294 Complete unit shall have Groeneveld CPL Systems Inc. or Lubecore Auto Greasing System.

10.295 Single Line, EP2 and automatic low level shut-off with in-cab red light indicator.

10.296 All grease fittings for the entire chassis and body (including cylinder mounts, pivot points, dump body prop, plow etc.), shall be readily accessible or shall be equipped with remote grease zerks as required.

10.297 **Grease Points:**
Approximately twenty-six (26) points on cab & chassis
Approximately eight (8) – twelve (12) points on body (depending on body configuration)

State: quantity of grease points on cab & chassis: _____

State: quantity of grease points on body: _____

10.298 Grease pump will pump Original Equipment Manufacturer specified EP2 grease from -40°C to + 50°C.

10.299 One way check valves on each line

10.300 Low temperature compatible 800 bar/12000 PSI grease line with a bending radius of 3/4 inch. With a 5 year line breakage guarantee for on road trucks. _____

10.301 One piece flow dividers with manual over ride. _____

10.302 **Warranty:** three (3) years parts and labour. _____

SAFETY:

10.303 Pre-Trip Exterior Light Inspection **Programmed:** _____
When activated, the vehicle lights repeatedly flash in a specific sequence to allow the operator to verify that the exterior lights are functioning.

The light test sequence tests:

- Park Lights
- Headlights (low and high beams)
- Right/left front/rear turn lights
- Brakes Lights
- Mini Light Bar
- Beacon(s)
- Strobe Lights
- Clearance Lights

10.304 Warning Light Over Ride **Programmed:** _____
Rear strobe lights to be programmed to allow for an over-ride for turn signals and brake lights when strobe lights are on.

Other drivers will be able to determine if the truck is stopping or turning when strobe lights are on.

FINISH:

10.305 Preparation All ladders, hitch plates, reservoirs, steel brackets, etc. shall be sandblasted, properly cleaned, primed and finished with the Endura or DuPont paint process as follows: _____

Note: Aluminum components are exempt from finish

10.306 Primer **Required:** Epoxy or Polyurethane primer _____

Endura EP321 Intermix Epoxy Primer or DuPont polyurethane.

Two (2) coats – Dry Film Thickness 3.0 – 4.0 mils

10.307 Paint Required: Polyurethane _____
Colour: Black

Endura EX-2C or DuPont Polyurethane

Two (2) coats:
3 - 5 mils Wet Film Thickness with a total
combined overall average Dry Film
Thickness of 4 – 6 mils

Note: Complete body (inside and outside)
shall be painted where applicable.

11.0 **WARRANTY**

11.1 The body warranty on the complete vehicle (excluding the chassis) 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 one (1) year from the date the equipment is put into service by the City of Winnipeg. _____

11.2 All warranty information shall be detailed and include all exclusions. The successful bidder shall provide all published warranty information upon delivery of the equipment. Bidder shall State: all warranty information _____

BODY WARRANTY

11.3 Main Frame - Structural **State:** _____

11.4 Frame – Non-Structural **State:** _____

11.5 Components e.g. Pumps **State:** _____

11.6 Hydraulics **State:** _____

11.7 Electrical One (1) year
State: _____

11.8 LED Lighting **State:** _____

11.9 Paint **State:** _____

CAB & CHASSIS WARRANTY

State: _____

11.10 Basic Vehicle - Chassis One (1) year, unlimited km,
State: _____

11.11 Electrical One (1) year
State: _____

11.12 LED Lighting **State:** _____

11.13 Batteries One (1) year, unlimited km
State: _____

11.14 Drivetrain Two (2) years, unlimited km
State: _____

11.15	Cab Structure/Corrosion	Five (5) years, unlimited km State:	_____
11.16	Frame & Cross-Members	Five (5) years, unlimited km State:	_____
11.17	Cab Paint	One (1) year or 160,000 km State:	_____
11.18	Engine	Three (3) years or 240 000 km State:	_____
11.19	Transmission	Two (2) years, unlimited km State:	_____
11.20	Axles - Front & Rear	Two (2) years or 161 000 km State:	_____
11.21	Components	State:	_____

OTHER WARRANTIES

11.22	Water Tank	Ten (10) years	_____
11.23	F.O.G. System:	State:	_____
11.24	Anti-Bacterial Disinfectant System:	State:	_____
11.25	Lateral Line Cleaning Cart:	State:	_____

12.0 DELIVERY

12.1	Delivery Point: The complete unit shall be serviced, ready for operation and delivered F.O.B. with the freight prepaid, including invoice and N.I.V.S. (if applicable) to the WFMA 185 Tecumseh Street, Winnipeg MB. The successful bidder shall be notified by the Contractor Administrator the delivery address prior to issuance of the purchase order	_____
12.2	Delivery Time: Equipment shall be delivered between 8:00 am and 2:00 pm on Business Days State: Delivery Date	_____
12.3	Delivery Contact: The Contractor shall contact the Contract Administrator prior to delivery of the equipment.	_____
12.4	P.D.I: A pre-delivery inspection shall be performed by the Contractor on the equipment. Proof upon inspection including completed check list	_____

13.0 **MANUALS**

13.1 Manuals supplied under this Contract shall cover the complete equipment including all components thereof, CD or USB flash drive is preferred where available. _____

13.2 The following manuals shall be supplied with the units when delivered:

a) Operator's Manual – Two (2) per unit (one (1) Operator's Manual shall be sent to the Equipment Operator Training Branch _____

b) Parts and Service Manuals – One (1) complete set including preventative maintenance schedules. _____

Paper Copy for the department plus CDs or USB flash drive for others.

14.0 **PARTS/LABOUR DISCOUNT**

14.1 Bidder to provide City of Winnipeg Parts Discount % Pricing from retail parts pricing. **State: percentage discount** _____%

14.2 Bidder to provide City of Winnipeg Labor Discount % Pricing from Retail shop labor rate. **State: percentage discount** _____%

15.0 **FIRST SERVICE PREVENTATIVE MAINTENANCE KIT**

15.1 In order to assure minimum downtime of the equipment in future service, the Contractor shall provide one (1) complete replacement set of new OEM filters for each unit purchased. The set of required filters shall include (if applicable to the equipment type) air, fuel, oil, cab and hydraulic, or otherwise all known necessary common replacement filters required for the first preventative maintenance servicing. _____

15.2 The Contractor shall provide a list of factory recommended lubricants to be used with the equipment, as well as a complete cross reference guide for all warranty approved lubricants and filters that can be used during preventative maintenance servicing. _____

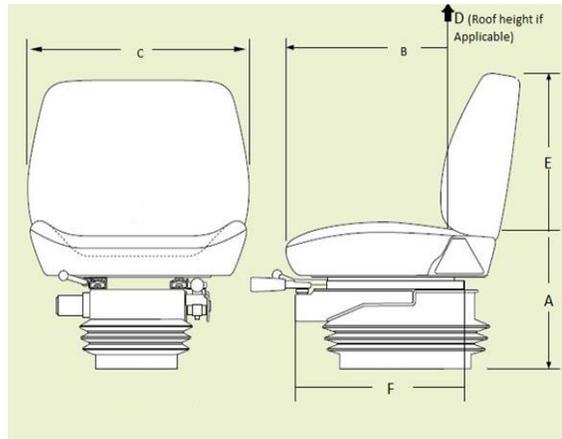
16.0 **ERGONOMIC SPECIFICATIONS**

Entry/ Exit

- | | | | |
|------|------------------------------|---|-------|
| 16.1 | First step entry height | State: height of first step in inches | _____ |
| 16.2 | First handhold entry height | State: first handhold entry height in inches | _____ |
| 16.3 | Access to equipment | State: door opening height in inches | _____ |
| 16.4 | Access to equipment | State: door opening width in inches | _____ |
| 16.5 | Designed to prevent slipping | Anti-slip steps/handholds (Y or N)? | _____ |

Seat

16.6 Use diagram to answer questions.



- | | | | |
|-------|---|---|-------|
| 16.7 | Sitting Height Range (from floor (where feet rest) (A)) | State: seat height range in inches | _____ |
| 16.8 | Seat Length/Depth (B) | State: seat length/depth in inches | _____ |
| 16.9 | Seat Width (C) | State: seat width in inches | _____ |
| 16.10 | Cab Height (from seat to roof (if applicable) (D)) | State: cab height range in inches | _____ |
| 16.11 | Back Rest Height (E) | State: back rest height in inches | _____ |
| 16.12 | Seat Travel Range (F) | State: seat travel in inches | _____ |
| 16.13 | Lumbar Support | Is lumbar support provided (Y or N)? | _____ |
| 16.14 | Head Rest | Is head rest provided (Y or N)? | _____ |
| 16.15 | Seat Material | Breathable
State: type of seat material | _____ |

Operation

- | | | | |
|-------|---|--|-------|
| 16.16 | Reaching Distance
(to usual work) | State: reaching distance in inches | _____ |
| 16.17 | Maximum Reaching
Distance | State: maximum reach distance in inches | _____ |
| 16.18 | Adjustable Pedals
(accelerator/brake/clutch) | Are pedals adjustable (Y or N)? | _____ |
| 16.19 | Adjustable Steering
Wheel | Is steering wheel adjustable (Y or N)? | _____ |
| 16.20 | Adjustable Shoulder Belt | Is belt adjustable and anchored (Y or N)? | _____ |

Cargo Area

- | | | | |
|-------|--|--|-------|
| 16.21 | Lid opens to provide
adequate space | Adequate space provided (Y or N)? | _____ |
| 16.22 | Loading Height | State: trunk height in inches | _____ |

Environment

- | | | | |
|-------|--|---|-------|
| 16.23 | Operator compartment is
insulated from equipment
noise (while operating) | State: dB inside cab while operating | _____ |
| 16.24 | Operator insulated from
equipment vibration | Is operator insulated from vibration (Y or N)? | _____ |
| 16.25 | Heating/Cooling Systems | State: cab temperature range | _____ |
| 16.26 | Cab Lighting | State: lumens inside cab | _____ |

Maintenance/ Inspection

- | | | | |
|-------|--|--|-------|
| 16.27 | Lift Assistance
(when necessary) | Is lift assistance provided (Y or N)? | _____ |
| 16.28 | Easy Access
(to compartment doors) | Is easy access provided (Y or N)? | _____ |
| 16.29 | Include any other relevant ergonomic specifications and applicable range of adjustment | | _____ |

FORM N: DETAILED SPECIFICATIONS 17017

SINGLE AXLE CHASSIS WITH CREW CAB, 13' X 8' SEWER DUMP BODY AND ARTICULATING CRANE

1.0 DESCRIPTION OF EQUIPMENT/APPLICATION

- 1.1 These specifications describe a **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane**. This unit is an integral portion of the City of Winnipeg's Water and Waste Department. This vehicle is will be tasked with responsibilities of transporting, hauling and lifting of equipment, pump motors, shafts, pipes, gates and valves, within the City of Winnipeg.



- 1.2 The **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane** and all other items/components shall be new 2017 model year or newer.

- 1.3 The **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane** and all other items/components shall be the manufacturer's latest model. The equipment shall be furnished complete and ready for operation. Any parts or accessories not specifically mentioned, but which are required to complete and place the equipment and associated attachments in successful operation shall be furnished as though specifically mentioned in these specifications. The equipment and associated and attachments, and all parts thereof, shall conform in strength and quality of material and workmanship, to the best standards and engineering practice of the industry.

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 **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane** shall comply with the applicable regulations:

- Highway Traffic Act
- Manitoba Motor Vehicle 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

- City of Winnipeg Lighting Visibility
Standard=<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>.

2.3 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 units.

2.4 The manufacturer/installer shall be a certified vehicle completer and must affix their National Safety Mark (NSM) certification sticker on each unit.

State: NSM number: _____

3.0 **SERVICE FACILITY**

3.1 For the purpose of warranty repairs, the supplier shall have an authorized service facility located within 10 kilometres 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 B11, 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.

4.0 **REFERENCES**

4.1 If available, please provide five (5) references where this equipment is used in a working environment where climatic conditions are similar to the City of Winnipeg.

5.0 **MAKE & MODEL**

5.1 **State** make and model of the **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane** being bid: _____

6.0 **INSTRUCTIONS FOR COMPLETION OF SPECIFICATIONS**

6.1 Each bid will be evaluated based on adherence to all terms, conditions and requirements outlined in the Bid Opportunity package.

6.2 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.

6.3 **EACH BIDDER IS REQUIRED TO FILL IN EVERY BLANK. FAILURE TO DO SO MAY BE USED AS A BASIS FOR REJECTION OF BID**

7.0 **PERFORMANCE RELIABILITY**

7.1 The responsibility for the design of the **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane**, its performance and reliability shall rest upon the Contractor.

7.2 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, of 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 schedule.

7.3 Where the **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane** develops "repeated failures" in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.

7.4 The equipment shall be capable of consistent top performance in City of Winnipeg Environment. **Note: The City of Winnipeg has four seasons with ambient temperatures ranging from approximately 90°F (32°C) to -40°F (-40°C)**

8.0 **FUEL**

8.1 The **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane** must be fully fuelled upon delivery (**no exceptions**).

9.0 **QUALIFICATIONS OF MANUFACTURER & CONTRACTOR**

9.1 The manufacturer shall have five (5) years continuous experience manufacturing **Trucks** of the type being offered.

9.2 The manufacturer shall have in effect a documented quality control program ensuring that the quality of materials and workmanship, including welding, conforms to the best standards and engineering practice of the industry.

9.3 The Contractor shall have five (5) years continuous experience servicing, repairing and maintaining **Single Axle Chassis with Crew Cab, 13' x 8 Sewer Dump Body and Articulating Crane** of the type being offered.

10.0 **SPECIFICATIONS:**

CHASSIS:

10.1 Weights: _____

The Trucks shall not exceed the City of Winnipeg's limit for gross vehicle weight, axle and tire loads

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 (tandem axle) – 9100 kg (20,056 lbs.)
- Tire load – 9 kilograms for each millimeter width of tire (approximately 500 lbs. per inch of tire width).

10.2 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 all attachments and full of fuel.

- 10.3 GVWR _____
 - GVWR Total 33,000 lbs.
 - GVWR Front 12,000 lbs.
 - GVWR Rear 21,000 lbs.

- 10.4 Cab _____ **Crew Cab** w/corrosion inhibitor

- 10.5 Cab to Axle _____

Approximately 144 in.
 As required for a 13' x 8' Dump Body and
 a HIAB 055 CLX crane
State:

- 10.6 Wheelbase. _____

Approximately 265 in.
 As required for a 13' x 8' Dump Body and
 a HIAB 055 CLX crane
State:

- 10.7 After-Frame _____

As required for a 13' x 8' Dump Body and
 a HIAB 055 CLX crane
State:

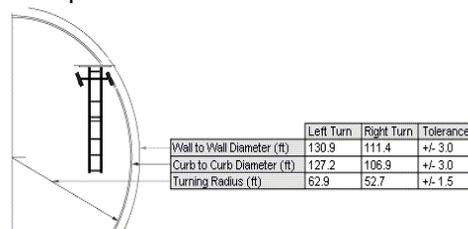
- 10.8 Bumper to Back of Cab _____

BBC: Approximately 150 in.
State:

- 10.9 Turning Radius _____

Turning Radius.
State: vehicle turning radius

Example:



- a) **Wall to Wall (ft.)**
- b) **Curb to Curb(ft.)-**
- c) **Turning Radius (ft.)-**

ENGINE:

- 10.10 Type _____ Tier IV Final Diesel, inline 6-cylinder
- 10.11 Horsepower _____ Approximately 300 HP gross
- 10.12 Torque _____ Approximately 860 lb-ft
- 10.13 Engine Shut Down _____ Low oil pressure / high water temperature
- 10.14 Air Intake Warmer / Glow Plugs _____ **Required:**
- 10.15 Fuel Shut-off _____ Electric solenoid type
- 10.16 Air Intake _____ Dual Stage type
- 10.17 Air Cleaner _____ Dual stage air cleaner
- 10.18 Air Intake Restriction _____ Dash mounted restriction indicator
- 10.19 Oil Drain Plug _____ Magnetic type

10.20	Oil Filter	Full flow, spin-on type	_____
10.21	Fuel Filter	Spin-on type	_____
10.22	Fuel/Water Separator	Heated, drainable under hood located to be protected from road spray	_____
10.23	Fuel Line Primer Pump	Required:	_____
10.24	Block Heater	Immersion type, 1000 Watt with covered recessed male plug, located under driver's side door	_____
10.25	Radiator	Aluminum 1000 - 1200 square inch State: size	_____
10.26	Coolant	Extended Life coolant, antifreeze to -35°F (-37°C)	_____
10.27	Coolant Filter	Required:	_____
10.28	Coolant Hoses	Silicone type or Gates Blue Stripe	_____
10.29	Fan Drive	Thermostatically controlled, automatic type with dash switch	_____
10.30	Air Compressor	Water cooled, pressure lubricated, 15-18 cfm	_____
10.31	Diesel Exhaust Fluid (DEF) Tank	Approximately 19 – 36 Litres or largest size per application. Located Driver's side State: size and location	_____

ELECTRICAL SYSTEM:

10.32	Electrical Connectors	Plug-in, sealed type	_____
10.33	Anti-Corrosion Electrical Package	Controllers and sensitive electrical components (PCM, Harnesses etc.) mounted in cab State: locations	_____



10.34	Alternator	Delco Remy 36SI Heavy Duty, Brushless type 160 -180 Amp Pad Mount Remote Sense State: make and model	_____
10.35	Starter	Delco Remy 41MT Heavy Duty Over-Crank Protection State: make and model	_____

10.36	Circuit Breakers	Auto-reset, readily accessible	_____
10.37	Batteries/Battery Location	Three (3) batteries, 12-volt, group 31, approx. 2700-2850 CCA combined	_____
		Batteries not to impede with the installation of the body and crane State: location	
10.38	Battery Disconnect	In-cab mounted outboard of driver's seat State: location	_____
10.39	Battery Boost Terminal	Remote battery boosts terminal(s) Protected from road spray. State: location	_____
		Exact location to be determined at pre- production meeting	
10.40	Cab Marker Lights	LED Cab or Sun Visor Marker Lights	_____
10.41	2-Way Radio Circuit	Independent 20 Amp circuit, ignition powered, wired under dash loose, labelled	_____
10.42	Accessory Switches	Required: Six (6) All switches complete and wired for body installation, labeled and backlit	_____
10.43	Mega Fuse Box	Located in-cab or under-cab and shall be sealed. State: location and method of sealing	_____
		<u>EXHAUST SYSTEM:</u>	
10.44	Configuration	Required: <ul style="list-style-type: none">• Single horizontal muffler with chrome vertical discharge on passenger side, under frame routing.• Vertical portion shall be rubber mounted, attached to cab.• Vertical portion shall not protrude past rear of the cab• Not to impede with the HIAB functionality• Configuration as required for a 13' x 8' Dump Body and a HIAB 055 CLX Crane. State: type and location	_____
10.45	Discharge Tip	Chrome backlash type end	_____
10.46	Overall Exhaust Height	Approximately 16 in. higher than cab roof	_____
10.47	Heat Shield	Chrome, covering vertical portion of exhaust complete with grab handle	_____

TRANSMISSION:

10.48	Transmission	<ul style="list-style-type: none">• Allison 3500 RDS with 6-speed programming• Ratio shall be as per inter-city transport application.• Transmission shall come with load base Management Programming.• Transmission to PTO to operate the dump body.	_____
10.49	Allison SCAAN	The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator, the Allison SCAAN	_____
10.50	Transmission Fluids	Synthetic	_____
10.51	Shift Selector	Digital push-button type, dash mounted	_____
10.52	Cooling Capacity	Water to oil transmission cooler, as per manufacturer's recommendation for severe duty cycle	_____
10.53	PTO Provision	Required: With maximum clearance from exhaust	_____
10.54	Oil Level Dipstick	Bayonet type with high and low level markings	_____
10.55	Transmission Drain Plug	Magnetic type	_____

FRONT AXLE:

10.56	Front Axle	Set back axle , Meritor 12,000 lbs. capacity, with synthetic fluid.	_____
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REAR AXLE:

10.57	Rear Axle	Meritor 21,000 lbs. capacity, with synthetic fluid.	_____
10.58	Ratio	For 110 km/hr State: ratio	_____
10.59	Inter-Axle Lock	Required with dash mounted switch	_____
10.60	Differential Lock	Required for drive axle with dash mounted switch	_____
10.61	Hub Seals	Oil lubricated front and rear type	_____

FRONT SUSPENSION:

10.62	Front Suspension	Multi-leaf spring suspension, 12,000 lbs. capacity	_____
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REAR SUSPENSION:

10.63	Rear Suspension	Air ride suspension, 21,000 lbs. capacity, axle, shall be as recommended for a 13' x 8' Dump Body and HIAB 055 CLX crane application	_____
10.64	Suspension Control Valve	Manual dump valve for air suspension complete with dash mounted switch, indicator light, gauge and buzzer	_____
10.65	Auto Refill	Required: at 5 km/hr Exact speed will be determined at a pre-production meeting	_____

RIMS, WHEELS AND HUBS:

10.66	Front Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.67	Rear Wheels	Aluminum, hub piloted, rated for requested GVWR	_____
10.68	Hubs	Aluminum material	_____
10.69	Wheel Nut Indicators	Required: on all wheel nuts	_____

TIRES:

10.70	Front Tires	Low Profile 295/75 22.5 Michelin or Goodyear For requested GVWR and application State: make, model and size	_____
10.71	Rear Tires	Low Profile 295/75 22.5 Michelin or Goodyear For requested GVWR and application State: make, model and size	_____

FRAME:

10.72	Frame	Single rail	_____
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10.73 Rust Inhibitor
 (Frame/Cross Member)

ARMOUR-SEAL™
 FRAME & CHASSIS COMPONENT
 PROTECTIVE UNDERCOATING: (or
 equivalent)

Sodium, magnesium and calcium
 chloride resistant.

Semi-permanent, high strength
 rubberized polymer blended.



RHOMAR Industries, Inc.

Tricia McKnelly-Anderson
 Account Manager
 2107 E Rockhurst
 Springfield, MO 65802
 1.800.688.6221
 417.866.5593 (fax)
www.rhomar.com
www.rhomar.com/products/armour-seal

10.74 Chassis Fasteners

Grade-8 threaded hex headed frame
 fasteners

10.75 Rear Frame Towing Provisions

Towing provisions with 7-way pin
 receptacle to end of frame with two (2)
 extra feet of wiring to for ease of body
 installation.

STEERING:

10.76 Type

Tilt and telescopic, power, rated for front
 GVWR rating. Reservoir approx. 2 quart
 with see through tank.

BRAKES:

10.77 Brakes

Hydraulic, ABS brakes for Class 5 Driver

10.78 Slack Adjusters

(Clearance sensing), automatic type

10.79 Parking Brake

Required:

10.80 Brake Pots

Vented type

10.81 Dust Shields

Required: front and rear

10.82	Air Tanks	Shall be aluminum tanks with aluminum or stainless steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion	_____
10.83	Moisture Ejector	Required: Wabco, heated in all air tanks	_____
10.84	Drain Valves	Required : Manual, chain or cable operated, on each air tank	_____
10.85	Air Dryer	Wabco Heated System Saver 1200 or equivalent State:	_____
<u>FUEL TANK:</u>			
10.86	Fuel Tank	Single 50 US gallon (190 L) fuel tank. Shall not impede in the installation of a 13' x 8' Dump Body and a HIAB 055 CLX crane State: fuel capacity	_____
10.87	Fuel Water Separator	Required: heated	_____
10.88	Tank Straps	Aluminum or Stainless Steel straps with approximately 1/16 in. rubber or neoprene isolators to prevent galvanic corrosion State:	_____
<u>CAB:</u>			
10.89	Type	4-Door Crew Cab with corrosion inhibitor	_____
10.90	Cab Construction	Aluminum or Galvanized steel State:	_____
10.91	Cab Mounts	Air suspension	_____
10.92	Hood	High visibility hood	_____
10.93	Hood Fender Extensions	2 – 3 in. front fender extensions	_____
10.94	Front Grille	Stationary mounted to hood	_____
10.95	Cab Interior / Trim	Extreme climate insulation including cloth or vinyl headliner on roof, door panels and rear interior of cab	_____
10.96	Cab Silencer Package	Required: for minimal decibel level	_____
10.97	Hood/Firewall/Engine Insulations	Insulated hood liner, engine cover and firewall	_____
10.98	Floor Covering	Rubber mat with under-padding	_____
10.99	Floor Mats	Winter, heavy duty floor mats for front and back seats	_____

10.100	Driver's Seat	High back, air suspension w/foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.101	Passenger Seat	High back, air suspension w/foldable armrests, heavy-duty cloth upholstery, Cordura or equal	_____
10.102	Dashboard	Ergonomic (Wing) Design	_____
			
10.103	Rear Seat	Bench	_____
10.104	Sun Visors	Dual flip-up type	_____
10.105	12-Volt Power Outlet	Required: Two (2) with independent circuit	_____
10.106	Radio	Factory installed AM/FM/ with "hand free" Blue Tooth capability	_____
10.107	Starter Switch	Key operated complete with three (3) sets of keys	_____
10.108	Interior Light	Dome light with driver and passenger door switches	_____
10.109	Heater / Defroster	High output, capable of keeping all windows clear at an outside temperature of (-40°C)	_____
10.110	Air Conditioning	Required:	_____
10.111	Brake, Accelerator, Pedals	Floor or hanging type brake and accelerator pedal. State:	_____
10.112	Horn	Dual electric	_____
10.113	Exterior Mirrors	Mirrors heated, lighted, 4-way motorized adjustment (with convex mirrors), suitable for 102 in. equipment width	_____
10.114	Down-View Mirror	Required: over passenger door Approximately 5 in. x 4 in.	_____
10.115	Windows & Windshield	Tinted	_____
10.116	Power Windows	Power driver and passenger side	_____
10.117	Doors	Power door locks	_____
10.118	Windshield Wipers	Electric intermittent	_____

10.119	Wiper Blades	Heavy duty with winter type boot	_____
10.120	Windshield Washers	Required: Electric, with spray nozzles on wiper blades	_____
10.121	Grab Handles	Dual exterior State: locations	_____
10.122	Grab Handles	Dual Interior	_____
10.123	Entrance Steps	Dual each side, open grate / grip type	_____
10.124	Winter Front	Heavy-duty vinyl with twist lock or snap type fasteners	_____
10.125	Exterior Sun Visor	Required:	_____
10.126	Strobe LED Lights (Beacons)	Qty two (2) Amber LED Beacon, Class 1 High Dome Strobe Lights with aluminum or stainless steel brackets mounted to B-Pillar	_____

Note: Need to be forward enough as not to interfere with the cab shield if equipped with one.



Whelen L31HAF



Location to be determined at a pre-production meeting

INSTRUMENTATION:

10.127	Instrumentation	<ul style="list-style-type: none"> • Oil Pressure Gauge • Coolant Temperature Gauge • Transmission Oil Temperature Gauge • Voltmeter Gauge • Air Reservoir Pressure Gauge with LAP Warning Light And Buzzer • Low Oil Pressure Warning Light and Buzzer • High Water Temperature Warning Light and Buzzer • Non-Resettable Type Engine Hour-Meter 	_____
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TOW HOOKS:

10.128 Tow Hooks Front and Rear mounted _____

10.129 Weigh Scale Systems **Required:** Model Air Weigh scale system for front and rear axles. _____

System must be tested and calibrated prior to delivery

10.130 **COLOURS:**

10.131 Exterior Colour White _____

10.132 Interior Colour Grey _____

10.133 **ACCESSORIES:**

10.134 Flare Kit Three (3) triangular reflectors, CVSA approved. Kit must be mounted or secured. _____

10.135 Fire Extinguisher 5 lbs. Fire Extinguisher ABC type installed and secured. **State:** location _____

10.136 Back-Up Camera **Required:** Quantity two (2)
Location # 1 - back of vehicle
Location # 2 - top of cab shield complete with protective guard _____



Locations to be determined at pre-production meeting

10.137 Back-Up Camera Screen

In-Dash (Ergonomic (Wing) Dashboard)

OR

Dash mounted if standard dashboard is specified.



Back-Up Camera Screen location to be determined at a pre-production meeting.

DUMP BODY SPECIFICATIONS

10.138 Outside Length

Nominal 13 ft.

10.139 Inside Length

Approximately 12 ft. 6 in.

10.140 Outside Width

To match chassis track width
 Nominal 8 ft. 6 in.

10.141 Inside Width

Approximately 8 ft.

10.142 Front Height

To match chassis cab height.
 Approximately 42 in. measured from the frame

State:

10.143 Construction Material (Inside)

All material that touches the material (internal walls, floor, gate, front wall, dog house) used in construction to be 3/16 in. Hardox 450 with **exception of the cab shield.**

10.144 Construction Material (Outside)

10 Gauge 44W Structural Steel

FLOOR:

10.145 Standard:

7 in. structural channel on long sills
 4 in. I-Beam Cross-members on approximately 12 in. - 16 in. centres
 3/16 in. Smooth Steel Floor

10.146 Front and Side Rails

5 in. x 3 in. x 1/4 in. Angle Iron

10.147 Rear Rail

7 in. C-Channel inverted to protect lights

10.148 Mounting Beams

8 in. C-Channel

10.149 Rear Corner Posts

Formed 10 Gauge

10.150 Floor Slope Approximately 60 degree slope along the joint to the side wall. Slope shall extend upwards approximately 4 - 8 in. _____

If required design and installation to be determined at a pre-production meeting.

FRONT:

10.151 Construction Heavy duty steel front with angled corners with 3/16 in. sheeting on 3 in x 3 in x .150 tubular frames. _____

10.152 Front Section Constructed without a cab shield and shall have vertical and/or horizontal reinforcement ribs _____

10.153 Top Rail Structural or formed top reinforcement rail _____

10.154 Front Wall Height Approximately 106 cm (42 in.) measured from the frame
Not to impede with crane operation.
State: _____

SIDES:

10.155 Type Two (2) fold-down sides per side, 12 gauge steel c/w front, middle and rear heavy duty corner pillars

10.156 Sides Fold-down for ease of access to payload from the side of the body operated by a single lever per section

10.157 Construction and Material Sides shall have vertical or horizontal formed reinforcement ribs _____

10.158 Side Height Approximately 18 in. measured from the floor without plank gussets _____

10.159 Rear Side Post 3/16 in. Hardox 450, one (1) per side. _____

10.160 Top Side Rail Material **Heavy Duty**
Approximately 4 in. x 6 in. x 3/16 in _____

10.161 Bottom Rail Self-cleaning _____

10.162 Corner Pillars Approximately 15 cm x 10 cm (6 in. x 4 in.) min., heavy duty formed or structural steel _____

10.163 Latches Each side section shall have a double latch design, latching on each side of the section _____

10.164 Plank Gussets 2 in. x 6 in. planks with ½ in. diameter bolt holes. _____

10.165 Planks 2 in. x 6 in. planks painted black on all sides, installed and bolted in gussets _____

TIE DOWNS AND LADDERS:

10.166 Tie Downs Eyes **Required:** Four (4), Located on inside of dump body. _____

- Two (2) near top/rear of each side
- Two (2) near top/front of each side

Tie downs shall be D-Rings.

Tie downs eyes to have a lifting capacity rated for full box weight for lifting box during installation

Exact locations to be determined at a pre-production meeting

10.167 Inside Steps One (1) per side, located at rear of body _____
(
i
:
|

10.168 Access Ladders **Required:** Two (2) _____

- Bolt-on installation
- Fold-Down (Retractable) Design
- one (1) located curb-side corner
- one (1) located driver's side corner

Design and installation to be determined at a pre-production meeting

Refer to Appendix A

10.169 Ladder Rungs Traction type rungs _____

- 13-gauge steel, 2¼ in. width
- 4-hole design
- Traction Tread Products or equal.

Refer to Appendix A

10.170 Ladder Rungs Location First rung to be 18-22 in. from ground level, approximately 14 in. rung spacing to top of body. _____

Design and location to be determined at a pre-production meeting

Refer to Appendix A

10.171 Grab Handles Located for ergonomic access to top of box. _____

Design and location to be determined at a pre-production meeting

Refer to Appendix A

TAILGATE:

10.172 Style Shall be a top hinge with grease-able hinge. _____

10.173 Tailgate Height Approximately 24 in. _____

10.174 Tailgate Operation Tailgate shall not protrude above floor in horizontal or full down position. _____

10.175 Standard There shall be no gap between tailgate and the floor and sides when tailgate is in the closed or horizontal position. _____

10.176 Tailgate Construction Formed construction with one or two equally spaced horizontal or vertical ribs, and a self-cleaning bottom rail. Inside liner with 3/16 in. Hardox 450 _____

10.177 Tailgate Reinforcement **Required:** Tailgate shall be reinforced with either heavy duty ($\frac{3}{8}$ in.) end plates, or $\frac{1}{4}$ in. steel tubing. _____

10.178 Anchor Pins Top tailgate anchor pins $1\frac{1}{4}$ in. diameter, self-locking/storing to top of side posts. Greaseable or composite; top hinge pivot system _____
If retainer pins are used to lock top tailgate anchor pins, then a small steel check chain is required, permanently fastened to the retainer pin.

10.179 Top Tailgate Anchor Pin Release One (1) manually actuated release lever releasing both upper pins _____

10.180 Support and Spreader Chains $\frac{3}{8}$ in. transport Grade 70, adequately fastened complete with chain storage and two (2) removable links per chain. _____
Support and spreader chains shall be equipped with a protective cover. _____

10.181 Tailgate Locking Mechanism In-cab control, air operated with air brake pot or air cylinder operated trip. _____

State: method

The locking mechanism shall be adjustable to ensure adequate lock-up with tailgate closed. _____

HOIST:

10.182 Requirements: _____

Double acting, hydraulic scissor lift hoist, capable of dumping a payload of approximately 9100 kg (20,000 lbs.)

Hoist to be sold, installed and serviced by an authorized dealer

10.183 Make and Model **State:** _____

10.184 Hoist Dump Angle 45° from horizontal _____

10.185 Hoist Grease Fittings **Required:** on all pivot pins. _____

CRANE

10.186 Requirements: _____

HIAB 055 CLX

All Dimensions are approximate

Lifting capacities

- 8'2" – 4280 lbs.
- 12'10" – 2780 lbs.
- 17'9" - 1940 lbs.
- 23'7" - 1460 lbs.

Hydraulic outreach – 23'11"

Working pressure – 3480 psi

Slewing speed – 15 degrees / second

Lift speed at hydraulic outreach – 4'3" ft. / second

Height in folded position – 75"

Width in folded position – 79"

Crane to be sold, installed and serviced by an authorized dealer

10.187 Make and Model **State:** _____

10.188 Crane Rating **State:** _____

10.189 Mounting Space Approximately 86 cm (34 in)
State: _____

10.190 Overall Width **State:** _____
Outriggers Retracted

10.191 Overall Width **State:** _____
Outriggers Extended

10.192 Installed Weight **State:** _____

10.193 Stowed Height Above Truck Frame **State:** _____

10.194	Horizontal Reach – From Centreline of Rotation	Hydraulically extendable to approximately 7.0 m (23 ft.) State:	_____
10.195	Vertical Lift Above Ground	State:	_____
10.196	Rotation	Power, 360 degrees	_____
10.197	Outriggers	Hydraulically controlled extendable out and down	_____
10.198	Outrigger Controls	Required: outrigger control station on each side of vehicle	_____
10.199	Crane Controls	Complete control station on driver's side of vehicle with wireless remote including the cable attachment for the remote	_____
10.200	Overload Protection System	Required: To monitor and control the electronic functions of the crane, preventing any movement which increases load moments on the crane and prevents loads from dropping.	_____
10.201	Crane Control Labels	All crane controls to be labelled with permanent labels	_____
10.202	Control Levers	Horizontally positioned, self-centering, mounted at truck frame height	_____
10.203	Boom Hook	Required at boom tip Capacity to meet or exceed maximum lifting capacity of crane, complete with safety latch	_____
10.204	Crane Hydraulic Cylinders	Equipped with holding and/or counterbalance valves	_____
10.205	The crane shall be installed with frame spacers and additional cross members as required		_____

IN-CAB CONTROLS:

10.206	Cab Controls	Programmed through OEM dash mounted switches	_____
10.207	Switches	All switches shall be back-lit for night time use and clearly identified with engraved style, permanent type labels.	_____
		Supply corresponding valve and solenoid necessary for operation	_____

Switches:

- PTO Engagement
- Dump Box Up/Down
- Tailgate Open/Close
- Amber Lighting



HYDRAULICS

10.208	Hydraulic System	Shall be designed to accommodate the crane, dump body and auxiliary tool circuit	_____
10.209	PTO	Chelsea or Muncie electric/hydraulic power shift	_____
10.210	Electric/Hydraulic Power Shift	Operable from a normal driving position	_____
10.211	Warning Light	Shall show PTO engaged	_____
10.212	Hydraulic Pump	Sufficient capacity to operate all crane functions, dump body hoist and the auxiliary tool circuit (not simultaneously)	_____
10.213	Hydraulic Pump	State: Make and Model	_____
10.214	Hydraulic Pump	State: GPM and Pressure Rating	_____
10.215	Pump Drive	Close coupled or drive shaft driven State:	_____
10.216	Hoist Control Valve	4-way, 3-position, spring centred	_____
10.217	Dump Body/Crane Selector Valve	Required: to divert oil from crane to dump body	_____

10.218	Selector Valve Control	Located adjacent to driver's side crane controls, labelled for crane and dump with permanent type, engraved style labels	_____
10.219	Circuit Return Line	Dump body and crane circuit return line to be connected with a high pressure T-fitting, ahead of return line filter	_____
10.220	Hydraulic Oil Reservoir	Passenger side, chassis frame mounted, Aluminum or Stainless Steel construction, baffled as required, complete with breather type filler cap with filter, filler strainer and sight gauge. State: material	_____
10.221	Location	Chassis frame mounted, State: Location	_____
10.222	Capacity	Approximately 20 Gallon or sufficient capacity to operate all crane functions, dump body hoist and the auxiliary tool circuit (not simultaneously) State:	_____
10.223	Sight (Level) Gauge	Glass sight type, mounted in readily visible location	_____
10.224	Suction Strainer	100 micron, replaceable, in tank mounted	_____
10.225	Oil Filler	Top mounted with steel strainer and snapping retainer	_____
10.226	Filler Cap	Breather type with filter	_____
10.227	Drain Plug	13 mm (½ in.) diameter min	_____
10.228	Labelling	Reservoir shall be clearly labelled "Hydraulic Oil" with a permanent type, engraved style label	_____
10.229	Relief Valve	State: Pressure setting	_____
	<u>HYDRAULIC FILTERS:</u>		
10.230	Return Oil Filter	10 micron, spin-on type return line filter, serviceable without oil loss, sized to match hydraulic requirements of crane and dump body	_____
10.231	Filter Standard	Filters shall contain a corrosion resistant coating, beta rating of 200, 10 micron particle size, and shall be ergonomically located for servicing.	_____

10.232 External Hydraulic Filter Pan

External Hydraulic filter shall have a stainless steel or aluminium pan located directly under the filter in case of a potential hydraulic leak and to avoid hydraulic fluid falling to the road. Design shall not impede the servicing of the filter.



10.233 Shut-Off Valve

Ball type, located between reservoir and pump, secured in open position with a bracket and bolt

10.234 Hydraulic Hoses

Wire braid reinforced, rated for system operating pressure with 4 to 1 safety factor for burst pressure

10.235 Protection

To be protected at wear and scuff location

10.236 Hose Fittings

Hydraulic full flow, crimp-on (non-reusable) type

10.237 Hydraulic Oil

Supplied in accordance with crane and hoist manufacturer's recommendations and requirements

AUXILIARY TOOL CIRCUIT

10.238 Hydraulic Flow Range

Approximately 7 – 9 gpm

10.239 Operating Pressure

Approximately 1500 – 2000 psi

10.240 Outlets

Required:
Two (2), one (1) each side of the body

10.241 Location

Directly underneath floor at centre posts

10.242 Hydraulic Lines

Required: steel

10.243 Connections

Quick couplers

ELECTRICAL & LIGHTING

10.244 Conformance All lighting to conform to: _____
• C.M.V.S.S.
• Manitoba Highway Traffic Act.
• City of Winnipeg Lighting Visibility Standard
<http://winnipeg.ca/matmgt/pdfs/PublicWorksEquipLightingVisibility.pdf>

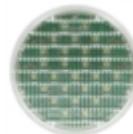
10.245 Lighting Supplier installed shall be **high count** LED lighting and shall be Truck-Lite, Whelen **or equivalent** _____

10.246 Grommets Rubber grommets unless otherwise specified _____

10.247 Combination Turn/Stop And Taillights One (1) per side _____
P/N Truck-Lite 44302R with P/N 44710 mounting grommets



10.248 Back-Up Lights One (1) per side _____
P/N Truck-Lite 44206C with P/N 44710 mounting grommets



10.249 3-Light Cluster Three (3) _____
P/N Truck-Lite 10250R with P/N 10403 mounting grommets



10.250 Clearance Lights High count LED _____
P/N Truck-Lite 10250R or 10250Y with P/N 10403 mounting grommets.



10.251 Amber Strobe Lights One (1) per side with mounting grommets _____
P/N Whelen 5GA00FAR



10.252 License Plate Light Complete with license plate bracket. _____
P/N Truck-Lite 36140 (Light)
P/N Truck-Lite 36710 (Bracket)

Installed on Hitch Plate – Upper Right
Corner



10.253 Rear Light Mounting Location (Rear Sill) _____

- Combination Turn/Stop and Taillights, qty two (2), one per side
- Back-Up Lights, qty two (2), one per side
- 3-Light Cluster, qty three (3)
- Rear-Corner Clearance Lights, qty two (2), one per side

The lights shall be situated so that no debris contacts the lights while dumping.

Refer to Appendix A

10.254 Rear Light Mounting Location (Rear Posts) _____

- Amber Strobe Lights, qty two (2), one per side
- Rear-Corner Clearance Lights, qty two (2), one per side

Refer to Appendix A

10.255 Clearance Light Mounting Locations: _____

- Front – qty two (2), located one on each bottom corner
- Sides – qty two (2) per side, located on front and rear bottom corners.

10.256 Standard No clearance light shall protrude beyond _____
the body.

10.257 Standard Taillights and back-up lights shall be fully _____
visible when tailgate is lowered to
horizontal position.

10.258 Harnesses Harness system, properly routed and _____
secured. All harnesses shall be internally
grounded, no exceptions.

10.259 Junction box _____
Junction box complete with necessary compression fittings, required for all vehicle lighting harness connections, located inside rear of truck frame.

10.260 All Plug-In Connectors _____
All plug-in connectors shall be coated with NYK compound prior to assembly.

10.261 Back-Up Alarm _____
97 dB (A) installed near rear of dump body, located to be protected from damage.

10.262 Mini Light Bar _____

- Whelen R2LPPA Series Amber LED Mini Light Bar or equivalent in accordance with B6 Substitutes
- Mounted to top of cab
- Protected by Branch Guard
- Mini Light Bar shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Light Bar" with a permanent type, engraved style label.
- Switch shall be capable of high/low mode.



10.263 Branch Guard _____
Heavy duty branch guard constructed by 3/8 in. round bar or equivalent.



10.264	Wiring	All LED strobe lights shall be wired through the ignition, wired through a single OEM dash mounted switch or on the control panel enclosure, labelled "Strobes" with a permanent type, engraved style label. All wiring for back-up alarm, warning lights, strobes and trailer connector shall be colour coded, loomed and properly secured.	_____
10.265	Trailer Connector	6-Way Round or SAE J560 7-Way Flat trailer receptacle. Type to be determined at pre-production meeting	_____
10.266	Electrical Connectors	All electrical connectors shall be <u>crimped and soldered</u> , and then sealed using heat shrink tubing.	_____
10.267	Joining of Wires	All joining of wires shall be <u>soldered</u> and sealed using heat shrink tubing or approved OEM weather tight connections (crimp on electrical connectors for joining wires are not acceptable).	_____
10.268	Wiring Routing	Required: Any holes required to run wires through shall be drilled (not punched), grommeted and sealed as required.	_____
<u>WELDING</u>			
10.269	Standard	All welds shall be continuous welds. All welding performed shall conform to CSA Standard W47.1-03 and W59-03.	_____
<u>INSTALLATION</u>			
10.270	Drilling	Any holes required in the chassis frame web must be drilled and reamed to fit bolts.	_____
10.271	Standard	Drilling on chassis frame flanges is not permitted. Welding on the chassis frame is not permitted, with the exception of installation of dump body pivot support.	_____ _____
10.272	Tire Clearance	Three (3) inches with rear suspension air bags lowered.	_____
10.273	Clearance	Clearance between back of cab to crane and crane to front of dump body shall be 3 in.	_____

MISCELLANEOUS

10.274 Rear Hitch Plate

3/4 in. thick solid steel, (laminated plates not acceptable) installed to chassis frame.



Design (including overhang) and installation to be determined at pre-production meeting.

10.275 Pintle Hitch and Receiver

Premier 240 or approved equal, installed on hitch plate at a 24 in. height.

Receiver – 2 in. x 6 in. Length
State: size



Design and installation to be determined at pre-production meeting

10.276 D-Ring with Mounting Bracket
(Required for Trailer Safety Chains)

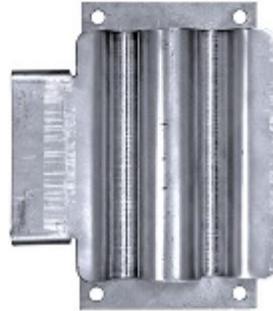
One (1) each side of hitch
Buyers Products B48 or equal.



10.277 Shovel Holder

Shovel holder with handle latch to secure shovel in place _____

Buyers Products P/N SH675SS



Location to be determined at pre-production meeting

10.278 Rear Fenders

Heavy Duty rear poly half-moon fenders. Shall be installed to have sufficient clearance from body and when chassis suspension is dumped for dump body operation. _____



10.279 Mud Flaps

Required: Black rubber, no-name, front and rear of back tires complete with anti-sail bracket on each mud-flap. Rear mud flaps shall not contact the ground when the dump body is at maximum dump angle



10.280 Isolators

All interfaces between aluminium and steel shall be separated by an approximately 1/16 in. thick rubber or neoprene sheet and are to be bolted through with stainless steel bolts and non-conductive bushings

10.281 Grease Fittings

Required on side and tailgate hinge pins, side and tailgate release mechanisms and pivot points

GREASING SYSTEM:

10.282 Complete unit shall have Groeneveld CPL Systems Inc. or Lubecore Auto Greasing System.

10.283 Single Line, EP2 and automatic low level shut-off with in-cab red light indicator.

10.284 All grease fittings for the entire chassis and body (including cylinder mounts, pivot points, dump body prop, plow etc.), shall be readily accessible or shall be equipped with remote grease zerks as required.

10.285 **Grease Points:**

Approximately twenty-six (26) points on cab & chassis
Approximately eight (8) – twelve (12) points on body (depending on body configuration)

State: quantity of grease points on cab & chassis: _____

State: quantity of grease points on body: _____

- 10.286 Grease pump will pump Original Equipment Manufacturer specified EP2 grease from -40°C to + 50°C. _____
- 10.287 One way check valves on each line _____
- 10.288 Low temperature compatible 800 bar/12000 PSI grease line with a bending radius of ¾ inch. With a 5 year line breakage guarantee for on road trucks. _____
- 10.289 One piece flow dividers with manual over ride. _____
- 10.290 **Warranty:** three (3) years parts and labour. _____

TOOLBOXES

- 10.291 Tool Boxes _____
- Aluminum Tool Boxes – qty two (2)
- Mounted on driver and passenger side frame
 - Approximately 60 in. W x 20 in. H x 20 in. D
 - Barn Door style doors
- State:** quantity, dimensions, material, and recommended location as set by the manufacturer



SAFETY:

- 10.292 Dump Body Prop _____
- Double Prop Design**
- Steel tubing construction, to support dump body in raised position and permit servicing of hoist
 - Operable by a single person
 - Designed so as not to interfere with hoist cylinder or surroundings
 - Operating Handle to be positioned outside of chassis frame rails for operator safety (Driver's Side)
 - Dump body prop to be complete with receiving bracket.
 - Safety Lock Pin and Chain required to hold arms in the "Up" position (Driver Side)
 - Refer to below pictures for sample designs

Design and installation to be confirmed at a pre-production meeting.



Driver Side - Up



Driver Side - Down



Driver Side - Down



Driver Side - Up



Passenger Side - Down



Safety Lock Pin and Chain

10.293 Dump Body Prop Colours

All components (prop, handle and receiving bracket) shall be painted with **Safety Orange** for ease of identification

10.294	Dump Body Stowage Warning System	Required: Warning light and buzz system shall be installed on the dash and shall be actuated when dump body is not in the fully stowed position. State:	_____
10.295	PTO	Programmed: To disengage the PTO when 5 kph is reached to prevent the driver from driving off when the body is up. Exact speed to be determine at pre-production meeting	_____
10.296	Pre-Trip Exterior Light Inspection	Programmed: When activated, the vehicle lights repeatedly flash in a specific sequence to allow the operator to verify that the exterior lights are functioning. The light test sequence tests: <ul style="list-style-type: none">• Park Lights• Headlights (low and high beams)• Right/left front/rear turn lights• Brakes Lights• Mini Light Bar• Beacon(s)• Strobe Lights• Clearance Lights	_____
10.297	Warning Light Over Ride	Programmed: Rear strobe lights to be programmed to allow for an over-ride for turn signals and brake lights when strobe lights are on. Other drivers will be able to determine if the truck is stopping or turning when strobe lights are on.	_____
	FINISH:		
10.298	Preparation	Complete dump body and all ladders, hitch plates, reservoirs, steel brackets, etc. shall be sandblasted, properly cleaned, primed and finished with the Endura or DuPont paint process as follows:	_____
10.299	Primer	Required: Epoxy or Polyurethane primer Endura EP321 Intermix Epoxy Primer or DuPont polyurethane. Two (2) coats – Dry Film Thickness 3.0 – 4.0 mils	_____

10.300 Paint Required: Polyurethane _____
Colour: Black

Endura EX-2C or DuPont Polyurethane

Two (2) coats:
3 - 5 mils Wet Film Thickness with a total
combined overall average Dry Film
Thickness of 4 – 6 mils

Note: Complete body (inside and outside)
shall be painted

11.0 **WARRANTY**

11.1 The body warranty on the complete vehicle (excluding the chassis) 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 one (1) year from the date the equipment is put into service by the City of Winnipeg. _____

11.2 All warranty information shall be detailed and include all exclusions. The successful bidder shall provide all published warranty information upon delivery of the equipment. Bidder shall State: all warranty information _____

BODY WARRANTY

11.3 Main Frame - Structural **State:** _____

11.4 Frame – Non-Structural **State:** _____

11.5 Components e.g. Pumps **State:** _____

11.6 Hydraulics **State:** _____

11.7 Hoist and Cylinder **State:** _____

11.8 Electrical One (1) year
State: _____

11.9 LED Lighting **State:** _____

11.10 Paint **State:** _____

CAB & CHASSIS WARRANTY

11.11 Basic Vehicle - Chassis One (1) year, unlimited km,
State: _____

11.12 Electrical One (1) year
State: _____

11.13 LED Lighting **State:** _____

11.14 Batteries One (1) year, unlimited km
State: _____

- | | | | |
|-------|-------------------------|--|-------|
| 11.15 | Drivetrain | Two (2) years, unlimited km
State: | _____ |
| 11.16 | Cab Structure/Corrosion | Five (5) years, unlimited km
State: | _____ |
| 11.17 | Frame & Cross-Members | Five (5) years, unlimited km
State: | _____ |
| 11.18 | Cab Paint | One (1) year or 160,000 km
State: | _____ |
| 11.19 | Engine | Three (3) years or 240 000 km
State: | _____ |
| 11.20 | Transmission | Two (2) years, unlimited km
State: | _____ |
| 11.21 | Axles - Front & Rear | Two (2) years or 161 000 km
State: | _____ |
| 11.22 | Components | State: | _____ |

OTHER WARRANTIES

- | | | | |
|-------|------------------------|---------------|-------|
| 11.23 | Auxiliary Tool Circuit | State: | _____ |
|-------|------------------------|---------------|-------|

12.0 DELIVERY

- | | | |
|------|---|-------|
| 12.1 | Delivery Point: The complete unit shall be serviced, ready for operation and delivered F.O.B. with the freight prepaid, including invoice and N.I.V.S. (if applicable) to the WFMA 185 Tecumseh Street, Winnipeg MB. The successful bidder shall be notified by the Contractor Administrator the delivery address prior to issuance of the purchase order | _____ |
| 12.2 | Delivery Time: Equipment shall be delivered between 8:00 am and 2:00 pm on Business Days
State: Delivery Date | _____ |
| 12.3 | Delivery Contact: The Contractor shall contact the Contract Administrator prior to delivery of the equipment. | _____ |
| 12.4 | P.D.I: A pre-delivery inspection shall be performed by the Contractor on the equipment. Proof upon inspection including completed check list | _____ |

13.0 **MANUALS**

13.1 Manuals supplied under this Contract shall cover the complete equipment including all components thereof, CD or USB flash drive is preferred where available. _____

13.2 The following manuals shall be supplied with the units when delivered:

a) Operator's Manual – Two (2) per unit (one operator manual shall be sent to the Equipment Operator Training Branch _____

b) Parts and Service Manuals – One (1) complete set including preventative maintenance schedules. CDs or USB flash drive are preferred. _____

14.0 **PARTS/LABOUR DISCOUNT**

14.1 Bidder to provide City of Winnipeg Parts Discount % Pricing from retail parts pricing. **State: percentage discount** _____%

14.2 Bidder to provide City of Winnipeg Labor Discount % Pricing from Retail shop labor rate. **State: percentage discount** _____%

15.0 **FIRST SERVICE PREVENTATIVE MAINTENANCE KIT**

15.1 In order to assure minimum downtime of the equipment in future service, the Contractor shall provide for **the chassis only** one (1) complete replacement set of new OEM filters for each unit purchased. The set of required filters shall include (if applicable to the equipment type) air, fuel, oil, cab and hydraulic, or otherwise all known necessary common replacement filters required for the first preventative maintenance servicing. _____

15.2 The Contractor shall provide a list of factory recommended lubricants to be used with the equipment, as well as a complete cross reference guide for all warranty approved lubricants and filters that can be used during preventative maintenance servicing. _____

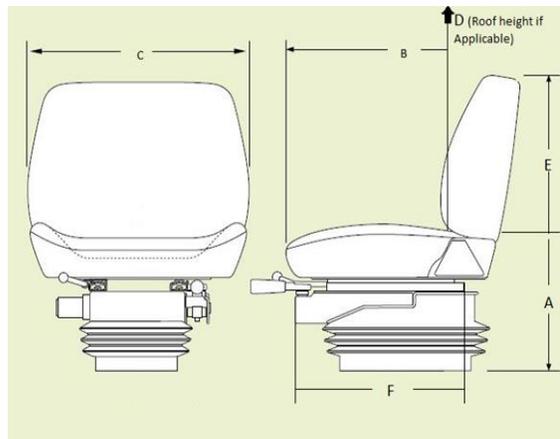
16.0 **ERGONOMIC SPECIFICATIONS**

Entry/ Exit

- | | | | |
|------|------------------------------|---|-------|
| 16.1 | First step entry height | State: height of first step in inches | _____ |
| 16.2 | First handhold entry height | State: first handhold entry height in inches | _____ |
| 16.3 | Access to equipment | State: door opening height in inches | _____ |
| 16.4 | Access to equipment | State: door opening width in inches | _____ |
| 16.5 | Designed to prevent slipping | Anti-slip steps/handholds (Y or N)? | _____ |

Seat

16.6 Use diagram to answer questions.



- | | | | |
|-------|---|---|-------|
| 16.7 | Sitting Height Range (from floor (where feet rest) (A)) | State: seat height range in inches | _____ |
| 16.8 | Seat Length/Depth (B) | State: seat length/depth in inches | _____ |
| 16.9 | Seat Width (C) | State: seat width in inches | _____ |
| 16.10 | Cab Height (from seat to roof (if applicable) (D)) | State: cab height range in inches | _____ |
| 16.11 | Back Rest Height (E) | State: back rest height in inches | _____ |
| 16.12 | Seat Travel Range (F) | State: seat travel in inches | _____ |
| 16.13 | Lumbar Support | Is lumbar support provided (Y or N)? | _____ |
| 16.14 | Head Rest | Is head rest provided (Y or N)? | _____ |
| 16.15 | Seat is made of breathable material | State: type of seat material | _____ |

Operation

- | | | | |
|-------|---|--|-------|
| 16.16 | Reaching Distance
(to usual work) | State: reaching distance in inches | _____ |
| 16.17 | Maximum Reaching
Distance | State: maximum reach distance in inches | _____ |
| 16.18 | Adjustable Pedals
(accelerator/brake/clutch) | Are pedals adjustable (Y or N)? | _____ |
| 16.19 | Adjustable Steering
Wheel | Is steering wheel adjustable (Y or N)? | _____ |
| 16.20 | Adjustable Shoulder Belt | Is belt adjustable and anchored (Y or N)? | _____ |

Cargo Area

- | | | | |
|-------|--|--|-------|
| 16.21 | Lid opens to provide
adequate space | Adequate space provided (Y or N)? | _____ |
| 16.22 | Loading Height | State: trunk height in inches | _____ |

Environment

- | | | | |
|-------|--|---|-------|
| 16.23 | Operator compartment is
insulated from equipment
noise (while operating) | State: dB inside cab while operating | _____ |
| 16.24 | Operator insulated from
equipment vibration | Is operator insulated from vibration (Y or N)? | _____ |
| 16.25 | Heating/Cooling Systems | State: cab temperature range | _____ |
| 16.26 | Cab Lighting | State: lumens inside cab | _____ |

Maintenance/ Inspection

- | | | | |
|-------|--|--|-------|
| 16.27 | Lift Assistance
(when necessary) | Is lift assistance provided (Y or N)? | _____ |
| 16.28 | Easy Access
(to compartment doors) | Is easy access provided (Y or N)? | _____ |
| 16.29 | Include any other relevant ergonomic specifications and applicable range of adjustment | | _____ |