Environmental Services
MONTANA DEPARTMENT OF TRANSPORTATION
Helena, Montana 59620

Memorandum

To: Lisa Hurley, Supervisor
Fiscal Programming Section

From: Heidy Bruner, P.E.
Engineering Section Supervisor
Environmental Services Bureau

Date: October 29, 2013

Subject: Categorical Exclusion
2014 Air Quality Equipment – MSLA
CM STWD (250)
Control Number: 6019 010

Environmental Services Bureau has reviewed the proposed project and concluded that it will not involve unusual circumstances as described under 23 CFR 771.117(b). As a result, the project qualifies as a Categorical Exclusion under the provisions of 23 CFR 771.117(c), part (17), which describes the purchase of vehicles by the applicant where the use of these vehicles can be accommodated by existing facilities. The proposed action also qualifies as a Categorical Exclusion under the provisions of ARM 18.2.261 (Sections 75-1-103 and 75-1-201, MCA).

In accordance with the Federal Highway Administration (FHWA) letter of March 29, 1999, please notify FHWA that the proposed action is being processed in accordance with 23 CFR 771.117(c). If you have questions or concerns, please contact me at 444.7203.

copies: Ed Toavs, Missoula District Administrator
Sheila Ludlow, Statewide and Urban Planning
Tom Martin, P.E., Environmental Services Bureau Chief
Susan Kilcrease, Environmental Services Project Development Engineer
Brian Hasselbach, P.E., FHWA Operations Engineer
Environmental Services Bureau File
Montana Legislative Branch Environmental Quality Council

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ENVIRONMENTAL

Montana Department of Transportation
Helena, Montana 59620-1001

Memorandum

To: Tom Martin, Bureau Chief
Environmental Services

From: Carol Strizich CS
Statewide & Urban Planning Section

Date: October 21, 2013

Subject: 2014 Air Quality Equip-MSLA
CM STWD(250) UP# 6019010

The Rail, Transit & Planning Division is initiating the development of the subject project to fund the purchase of equipment for the City of Missoula. Equipment purchased will be limited to two sweepers. Total project cost is estimated at $440,000. The City of Missoula will be required to provide matching funds at the rate of 13.42%. Please refer to this project as "2014 AIR QUAL EQUIP-MSLA(CITY)".

The attached equipment list has been developed by the local agency and reviewed by the MDT – Equipment Bureau.

Please initiate the process to complete the necessary environmental documentation for the above project. Similar projects implemented in the past have qualified as Categorical Exclusion under federal and state regulations/rules. The funding source for this project will be CMAQ, fiscal year 2014. As in the past, a PE program will not be opened to charge time toward this project.

If you have any questions or need additional information please contact Sheila Ludlow at 444-9193.

Attachment

Copy: Ed Toavs
Nicole Pallister
Jeff Gleason
Project file
RF

Environmental Services

Act	Info	Champ	Date 11/7 Routing	Attach	Initial
			Bureau Chief		
			Engineering Supervisor		
			Resources Supervisor		
			Haz-Waste Supervisor		
			ECCP Supervisor		
✓		✓	Susan		
✓			Pat		
✓			Jon		
✓			Cora		
			File		

SCOPE

Provide and deliver, F.O.B. vacuum sweeper unit as noted below.

1.0 BASIC REQUIREMENTS

1.1 All required lubricants shall be available from Montana lubrication suppliers other than OEM dealers.

1.2 Only standard (SAE) or metric bolts, nuts, etc., will be allowed (i.e., Whitworth is unacceptable).

1.3 Prototype units are unacceptable. All units bid must be standard production models and must have been in production and available on the open market for a period of twelve months prior to the bid opening date.

1.4 To ensure that the warranty provisions of Section 7.0 can be met with the exception of Section 1.5, bids will only be accepted from vendors meeting the following requirements:

a) The vendor must be factory authorized to sell and service the specific units bid, including all attachments, components, and/or accessories.

b) The vendor may be required to provide written proof that he has operated a franchise selling and servicing this type of equipment, not necessarily brand/model bid, for a minimum of twelve (12) months prior to the bid opening date.

c) The vendor must have an in-state sales/service facility that:

i. has a minimum of 2,400 square feet of shop space.

ii. employs a minimum of two (2) full-time mechanics factory-qualified to work on the type of equipment provided, not necessarily the brand/model bid. Factory qualification must be complete prior to delivery of units.

iii. has a demonstrated service record on the type of equipment provided, not necessarily the brand/model bid, for a minimum of twelve (12) months prior to the bid opening date.

It is the intent of these provisions that the successful vendor be able to respond to required warranty work in a timely manner, from an in-state location, with parts, special tools and trained personnel.

1.5 If the vendor cannot comply with the provisions detailed in Section 1.4, the following requirements will apply:

a) The vendor must be capable of shipping all repair parts within twenty-four (24) hours of the placement of an order via fax. Parts must be shipped by the quickest method, excluding air freight or next-day UPS unless the **City of Missoula** requests such shipment, in which case the **City of Missoula** will pay the additional freight expense.

b) **The City of Missoula may elect to perform required warranty repairs if it is in the best interest of the City of Missoula, and be reimbursed in the same manner as in Section 7.4. It is not the intent of the City of Missoula to perform warranty work that is serious in nature or that renders the units inoperable.**

2.0 APPLICABLE STANDARDS (All standards referenced shall be of the most current revisions.)

2.1 Government

a) Occupational Safety and Health Administration
b) State of Montana Motor Vehicle Code
c) Federal Motor Vehicle Safety Standards (FMVSS)

3.0 Bid Ambiguity - DELETED

4.0 QUALITY ASSURANCE

4.1 These specifications, supported by the allowed manufacturer's literature, represent levels of performance that constitute a unit that will operate satisfactorily. Failure of the unit to operate satisfactorily within the warranty period will be considered a "breach of warranty" and will allow the Department to return all units that operate unsatisfactorily to the vendor for full reimbursement of the purchase price.

4.2 Silence of Specification. The apparent silence of this specification and supplemental specifications as to any detail, or the apparent omission from it of a detailed description concerning any point, shall be regarded as meaning that only best commercial practice is to prevail and that only materials and workmanship of first quality are to be used.

4.3 Adherence to the Specification. Any and all deviations to any of the below requirements shall be so stated on the returned bid. The State of Montana shall hold the vendor to each part of the specifications that the vendor has not specifically included in its deviations submitted with its bid.

4.4 Heavy Duty. This term, as applied to these specifications, means that the item to which the term is applied shall be the heaviest duty available.

4.5 All units shall be new (unused) current model year, produced from current production components, and shall be delivered ready to be used. No components may be used that are not offered in the current parts catalog for the unit.

4.6 Conflict with Other Requirements. In the event of a conflict between these specifications and other requirements, these specifications shall prevail.

5.0 DELIVERY

5.1 Units delivered must meet or exceed all specifications.

5.2 All "make ready" services shall be performed prior to delivery and each unit shall be delivered free of defects. Units shall be delivered ready to use unless stipulated otherwise.

5.3 Delivery shall be F.O.B.:

City of Missoula
Central Maintenance
1305 B. Scott Street
Missoula, MT 59804

5.4 **Delivery shall be between 7:30 a.m. and 3:00 p.m., Monday through Friday, except holidays observed by the State of Montana.**

5.5 If applicable, manufacturer's statement of origin (MSO) must accompany each unit at the time of delivery.

5.6 The vendor and/or manufacturer will not be held liable for delivery delays caused by strikes, Acts of God, illegal acts by public disturbances, or demands placed by U.S. government action in national emergencies.

6.0 PAYMENT

6.1 Units delivered to the Department will be visually inspected for specification compliance. Units visually meeting specification requirements will be paid in full. Units not meeting specification requirements may receive partial payment on a unit-by-unit basis or may be rejected entirely.

7.0 WARRANTY

7.1 A warranty shall be provided on all units purchased which is current to the industry, but not less than one year in duration from the point in time the units are put into service. The vendor will be notified in writing by the Department of the "in-service date," which will not exceed six months from date of delivery.

7.2 The vendor agrees that it will respond within 72 hours after receiving a written "notice of required warranty work." The Department reserves the right to assess liquidated damages in the amount of **$20.00** per unit, per calendar day, for failure to comply with this provision. If the required warranty work has not been accomplished at the end of thirty calendar days from receipt of the written notice, the Department may declare the units unsatisfactory in operation and return them to the vendor for full reimbursement of the purchase price as per Section 4.1.

The intent of this provision is to allow the Department specific recourse should the vendor refuse or fail to respond to required warranty work that is serious in nature or that renders the unit inoperable. The provision is not intended to cover occasional minor repair unless such repair becomes reoccurring and is not addressed by the vendor, nor is it intended to cover situations beyond the vendor's control.

7.3 Any failures that occur beyond the required warranty period, which are reasonably attributed to a manufacturer's defect, will be subject to corrective action on a cost-sharing basis at an agreed percent of sharing.

7.4 In emergency situations, the Department may elect to perform warranty work. Damaged parts will be held for the vendor's inspection, together with sufficient documentation to verify all expenses. Unless covered by separate agreement, the vendor agrees to reimburse the Department for all warranty work performed at the rate of twenty-four dollars ($24) per hour for all labor (including travel time) plus travel expenses and the actual cost of all parts and materials, plus freight.

SPECIFICATIONS

7.5-8.5 Cubic yard, dual gutter brooms, vacuum street sweeper, truck mounted on a "Cab Over" chassis. This specification describes an environmentally controlled and silenced street sweeper.

INSTRUCTIONS FOR COMPLETING BID

The sweeper to be furnished under this proposal shall be a truck chassis mounted type, 7.5-8.5 cubic yard capacity vacuum street sweeper, with dual gutter brooms and a center broom. It shall be the manufacturer's latest model and design. These specifications shall be regarded as **minimum.** Vendors must furnish all descriptive literature, manufacturer's compliance certificates and all other data on the equipment proposed as required in this specification. Vendor must answer **YES** or **NO** to each specification line item except where asked to state specific data. Failure to answer correctly, or failure to respond, will deem your bid as non-responsive.

All line items with a **"NO"** response, shall be explained in detail on the "Exceptions to Bid Specifications" page provided at the end of this document. This spec consists of 32 clauses.

GENERAL REQUIREMENTS **YES / NO**

1. Sound Control (Vendors MUST furnish compliance certificate)

1.1 The external sound pressure level shall be 79 dB(A) average at 16 meters per noise test code ISO 3746:1996 while the impeller fan is rotating at 3,400 RPM. _____

1.2 The In-Cab sound level shall not exceed 68 dB(A) max per noise test code ISO 3746:1996 while the impeller fan is rotating at 3,400 RPM in sweeping mode. _____

2. Truck Cab and Chassis

State:

Chassis Make: _____

Chassis Model: _____

Sweeper Make: _____

Sweeper Model: _____

3. Vehicle Weight

3.1 GVWR: 33,000 lbs. minimum. _____

3.2 Wheel Base maximum 165". _____

3.3 Cab shall be "Over Engine" type (conventional cabs are not acceptable). _____

3.4 **State:** G.V.W.R of chassis bid. _____

3.5 **State:** empty weight of chassis bid. _____

3.6 **State:** empty weight of sweep equipment. _____

3.7 Turning radius shall not exceed 24 ft. _____

4. Axles

4.1 Front axle shall be 12,000 lbs. minimum. _____

4.2 Rear axle shall be 21,000 lbs. capacity, with a gear ratio that will enable the machine to go slow enough to sweep heavy debris without the operator having to ride the brake. This may or may not require a two speed axle. _____

4.3 Rear oil seals shall be provided. _____

5. Suspension

5.1 Front suspension shall be 12,000 lbs. minimum at ground load rating. _____

5.2 Front shock absorbers shall be supplied. _____

5.3 Rear suspension shall be 21,000 lbs. minimum with multi-leaf springs. _____

6. Brakes – ABS

6.1 Front service brakes shall be "full air" "S" cam type with linings. _____

6.2 Rear service brakes shall be "full air" "S" cam type with brake linings. _____

6.3 Automatic slack adjusters shall be supplied on front and rear brakes. _____

6.4 Parking brake shall be spring set on rear axle and cab controlled. _____

6.5 Low air warning indicator shall be supplied. _____

6.6 A Bendix AD-IS air dryer with automatic air moisture ejector and heater shall be supplied. _____

6.7 A minimum 12.9 cu. Ft. / minute air compressor with dry type air filter shall be supplied. _____

7. Steering

7.1 Complete OEM, dual power steering system must be provided to permit operation from either the right or left side of the cab. This can be dual steering gears or a cross shaft style steering system. _____

7.2 The following controls and gauges shall be operation and visible from both operator stations: oil pressure gauge, water temperature gauge, voltmeter, speedometer, odometer, dual air pressure gauges, transmission oil temperature gauge and ignition switch. _____

7.3 To accommodate different operator needs, the steering column shall incorporate a tilt adjustment. _____

8. Engine

8.1 Engine shall be a diesel, turbo-charged and after cooled. _____

8.2 Engine shall be rated a minimum of 200 H.P. at 2,200 RPM. _____

8.3 Engine shall have a minimum torque rating of 520 ft. lbs. at 1,600 RPM. _____

8.4 Engine shall be water cooled with antifreeze protection to –34 degrees Fahrenheit. _____

8.5 Engine shall have a vertical muffler and exhaust pipe, and meet current EPA standards and tier requirements. _____

8.6 Engine displacement shall be 6.7 liters minimally. _____

9. Transmission

9.1 Transmission shall be automatic with return line filtration. _____

9.2 Transmission shall come installed with synthetic transmission fluid. _____

9.3 A transmission cooler must be provided. _____

10. Engine Equipment

10.1 Alternator shall have a minimum of 100 amp output rating. _____

10.2 Two batteries shall be maintenance free and each rated at 750 CCA (1500 total). _____

10.3 A heavy duty dry type air cleaner with restriction indicator shall be supplied. _____

10.4 A viscous clutch fan shall be supplied. _____

10.5 A full flow oil filter shall be supplied. _____

10.6 A heated fuel / water separator, with dash warning light shall be supplied. _____

11. Cab

11.1 Cab shall have two air suspension fully adjustable bucket seats with approved seat belts. _____

11.2 Seats shall be heavy duty dark grey cloth upholstery over foam rubber seat cushion. _____

11.3 Sun visors shall be supplied on both sides. _____

11.4 Armrests shall be supplied on both sides. _____

11.5 Electric power windows shall be supplied on both sides. _____

11.6 Heater with full width defrosters, fresh air ducts and two-speed fan shall be supplied. _____

11.7 Wipers with washers, operable from either side, shall be supplied. _____

11.8 Two 7" x 16" stainless steel, West Coast type, electric heated mirrors shall be supplied. _____

11.9 A six inch rear view camera must be included that will provide the operator a clear view of all of the activities behind the truck. This view must remain clear under both low (night) and direct (bright) sunlight conditions. _____

11.10 Two 8" convex mirrors shall also be supplied to allow operator full view of sweeping equipment. _____

11.11 Factory air conditioner shall be supplied and mounted in cab. _____

11.12 An AM/FM radio shall be supplied. _____

11.13 Two independent accelerator pedals shall be installed in cab to facilitate operation from either side. _____

11.14 A full 'cross-over' system to change steering control, throttle and all gauges, from left to right hand side and vice versa shall be supplied. _____

11.15 All cross-over functions shall be controlled by a single switch on the shifter console. This circuit shall be inter-locked to the parking brake and shall only be capable of being activated with the parking brake applied. _____

12. Fuel Tank

12.1 Minimum 50 gallon fuel tank shall supply sweeper and chassis engines. Tank shall be manufactured from stainless steel. _____

12.2 A minimum 5 gallon DEF tank shall be supplied for the chassis. _____

13. Lights

13.1 All lamps and reflectors shall comply with federal regulations. _____

13.2 Four-way hazard warning lights shall be supplied. _____

13.3 Back up lights shall be fitted. _____

14. Frame

14.1 Heavy Duty frame with a minimum RBM of 1,000,000 lb/in. _____

14.2 Frame Section Modulus of 12.69 minimum. _____

14.3 Frame shall be tensile steel, 80,000 psi, minimum. _____

14.4 Front tow hooks shall be supplied. _____

14.5 Steel front and rear bumpers shall be supplied (front may be covered by plastic fascia). _____

14.6 A weight load indicator shall be installed on frame. _____

15. Wheels and Tires

15.1 All wheel rims shall be disc type 22.5 X 8.25. _____

15.2 Tires:
Two front and four rear Goodyear or preapproved equivalent premium tires, type 11.00R 22.5-14 ply rated. _____

15.3 Rear tire sets to be protected minimally by H.D. replaceable plastic fenders. _____

16. Warranty

16.1 The basic truck chassis & drive train shall be warranted by the manufacturer for two years, unlimited miles, unless otherwise specified. _____

SWEEPER

17. Power Pack

17.1 Power shall be supplied by a heavy-duty turbo charged industrial diesel engine. _____

17.2 Engine shall be four cylinder, four cycle, water cooled and antifreeze protected to -40 degrees Fahrenheit. _____

17.3 Engine shall be 4.5 liter (275 Cu. in.) displ. 100hp, minimum; John Deere 4045T or equal. _____

17.4 The engine must conform to EPA Tier 3 or 4 regulations. No exception to this environmental legislation will be permitted. _____

17.5 The unit shall be capable of operating within a temperature range of -40 degrees Fahrenheit to +126 degrees Fahrenheit with the manufacturer's full warranty approval. _____

17.6 Heavy duty, dry, dual element air filtration with

restriction indicator and Turbo III precleaner to be provided. _____

17.7 Fuel system will have a factory water fuel separator. _____

17.8 A 50 gallon (190 liter) stainless steel fuel tank with a fuel gauge shall be furnished. _____

17.9 A minimum 12 volt 55 amp alternator shall be furnished. _____

17.10 High coolant temperature and low oil pressure shutdown system shall be supplied as standard equipment. _____

17.11 The engine compartment shall be completely sealed to protect against sound and dust contaminants. _____

17.12 Engine access shall enable the operator to have three points of contact at all times. One hand and two feet or one foot and two hands at all stages of egress. _____

17.13 For greater corrosion protection, the engine muffler and exhaust pipe must be stainless steel. _____

17.14 Auxiliary engine fuel consumption shall not exceed 5.4 G.P.H (gallons per hour) at sweeping engine speeds. _____

17.16 A tachometer and hour meter shall be supplied. _____

17.17 Radiator shall have a sealed and dedicated air intake duct. To ensure the air is the cleanest possible, the air intake duct shall be located in the roof of the sweeper engine. _____

17.18 Integral cold weather start aid feature shall be furnished. _____

17.19 All sweeping controls shall be easily accessible to the operator from either side driving position. _____

17.20 'Three position' switches shall be supplied for gutter brooms, nozzles and main broom. Positions one and two shall be for raising and lowering, while position three shall activate the water system for sweep gear. _____

17.21 Warning lights shall be furnished for low oil pressure, high water temperature, low voltage, body weight limit, low hydraulic oil level and low sweeper water tank level. _____

17.22 All of the above controls, in addition to the chassis engine ignition, parking brake control, and gutter broom speed control, shall be centrally mounted in cab. _____

17.23 An anti-crank device shall be provided to prevent re-engagement of starter while engine is running. _____

17.24 In-cab switches shall be supplied for gutter brooms, nozzles and main broom. _____

17.25 Warning lights shall be furnished for low oil pressure, high water temperature, low voltage, body weight limit, low hydraulic oil level and low sweeper water tank level. _____

18. <u>Sweeper Hopper Body</u>

18.1 Hopper body shall be fabricated from high chromium content stainless steel, coated to prevent corrosion or lifetime warranty on hopper. All seams shall be continuously welded. To permit longer life and lower the cost of operation, the entire debris hopper, excluding inlet wear plate and exhaust screens, shall carry a lifetime warranty as long as the customer owns the sweeper. The warranty shall include, but not be limited to, the floor, sides, roof and rear door. The warranty shall cover rust, corrosion and abrasion perforation, including normal wear and tear. Vendors will be financially responsible for all repairs, parts and labor, including protective coatings for the life of the sweeper; 100% parts and labor with no pro-rating or hour limitations. **With their bids, Vendors shall supply warranty statements from the manufacturer in complete compliance with the published warranty specifications**. Failure to do so, will deem your bid as non responsive. _____

18.2 Body volume capacity shall not be less than 7 cubic yards. _____

18.3 A hydraulically operated, fully sealed, full width, top hinged rear door. _____

18.4 The door shall be opened, closed and latched hydraulically. _____

18.5 To prevent damage to the door and door seal when dumping, the door must open a minimum of 90 degrees. _____

18.6 The door cylinder shall incorporate a counterbalance valve to prevent accidental closing in the event of a hydraulic hose or cylinder failure. _____

18.7 For maximum abrasion resistance, the body intake tube shall be constructed of steel. _____

18.8 To prevent the body from being stuck in the raised position, the raise/lower cylinder shall be power up and power down. _____

18.9 To ensure complete emptying of the debris hopper, the hopper discharge angle must be 50 degrees minimum. _____

18.10 To permit cleaning of the rear screens and placement of large objects in the hopper, inspection doors shall be provided on each side of the hopper. _____

18.11 Body shall have full width filter screens. _____

18.12 The screens shall be removable from ground level without entering the hopper and without the use of tools. _____

18.13 The rear door shall have drain hoses to enable water to be drained off. The hoses will be stowed on its own stowage bracket when not in use. _____

19. Vacuum Impeller Fan

19.1 Shall be single stage centrifugal type, direct driven or belt driven factory balanced, and capable of producing 59" of negative water column in the hopper. _____

19.2 Impeller shall be 30 diameter, 3" wide and of stainless or Hardox 500 steel construction. _____

19.3 Impeller shall incorporate hardened steel vanes with built-in "wear safe" characteristics to prevent separation should it be subjected to excessive abrasion. _____

19.4 Impeller housing shall have ports for inspection and shall be constructed of anti-abrasion steel. _____

19.5 Safe and convenient access shall be provided to the rear impeller and impeller housing exhaust port. Safe and convenient access shall be provide while the hopper is raised and the rear engine is running. _____

19.6 The connection of impeller to drive system and engine shall permit the impeller to freely spin within its housing. _____

20. Intake System

20.1 The intake system shall be a minimum of 10" in diameter. _____

20.2 To permit cleaning and removal of blockages, the intake system shall separate when the debris hopper is raised. _____

21. Gutter broom - Right and Left Side

21.1 Gutter brooms shall be two piece, of steel tine construction, and 28" in diameter. _____

21.2 Gutter brooms shall be direct hydraulic drive type and relief valve protected. _____

21.3 Gutter brooms shall have variable speed from within the cab, with a rotational speed from 0 -130 RPM. _____

21.4 Gutter brooms shall pneumatically raise/lower. _____

21.5 Gutter brooms shall incorporate a lock for transport activated automatically from within the cab. _____

21.6 Gutter brooms and components shall be free floating, of trailing arm configuration with adjustable "kick back" feature to avoid damage if contact is made with street furniture, high curbs or other immovable objects. _____

21.7 Two water spray jets shall be provided at each gutter broom. _____

21.8 Two additional water spray jets shall be mounted on the corner of the front bumper. These jets shall be separately wired and activated from within the cab when additional water is required. _____

21.9 Gutter brooms shall be capable of being operated independently of other sweep gear. _____

22. <u>Wide Sweep Center Broom</u>

22.1. Polypropylene under-body broom shall be supplied. _____

22.2. Broom shall be 16" diameter minimum. _____

22.3. Broom length shall be 50" minimum. _____

22.4. To reduce the potential for damage, the wide sweep broom shall be towed and not pushed when operating. _____

22.5. Wide sweep broom shall be enclosed within its own hood to prevent debris from being ejected. _____

22.6. Broom shall be hydraulically driven at a constant speed with an adjustable pressure and flotation system. _____

22.7. Wide sweep broom shall have a minimum of four water sprays for dust control. _____

22.8 The wide sweep brush position shall swivel from side to side automatically from within the cab based on right or left gutter broom selection. _____

22.9 Wide sweep broom shall have a road crown compensation pivot with remote greasing provision to provide simple, easy lubrication. _____

23. Suction Nozzles- Right and Left Side

23.1 Shall be metal alloy construction with replaceable rubber lining, rubber skirts, and curb guards _____

23.2 Nozzles shall raise/lower pneumatically. _____

23.3 Nozzles shall have water jets to provide dust suppression and lubrication for debris conveying tubes and sweeper internal components. _____

23.4 Nozzle carriages shall each be provided with two adjustable rubber tired, 10" diameter wheels. _____

23.5 Nozzle wheels shall be capable of being independently adjusted. _____

23.6 An in-cab control shall permit the operator to accommodate the ingestion of large items. _____

23.7 The nozzles shall be capable of tracking independently from the chassis. _____

23.8 Nozzle assemblies are to be attached to the sweep gear framework via a tool free, detachable, self-aligning draw bar. _____

23.9 Nozzles shall be capable of being operated independently of other sweeping gear. _____

24. Hydraulic System

24.1 The hydraulic system shall operate the following: wide sweep broom rotation and gutter broom rotation. Wide sweep broom swiveling and lateral positioning shall be controlled hydraulically or pneumatically. _____

24.2 To ensure adequate cooling, reservoir capacity to pump output shall be minimum of 2:1 ratio. State pump output at recommended auxiliary engine operating speed. _____

24.3 Hydraulic oil reservoir capacity shall be 20 gallons minimum and capable of maintaining continuous operation without overheating. _____

24.4 All hydraulic circuits shall be protected by relief valves. _____

24.5 Hydraulic reservoir shall have a fluid level sight glass. _____

24.6 A spin-on sump filter with pressure bypass shall be provided on the return circuit. _____

24.7 The body raise/lower shall be powered off the auxiliary engine. An electric over hydraulic back up system shall be furnished in the event the auxiliary engine does not start. _____

24.8 All sweeping gear functions shall be powered by a gear driven hydraulic pump off the auxiliary engine timing gears. _____

24.9 The hydraulic system shall have a quick disconnect test port. _____

25. <u>Water System</u>

25.1 Water tank capacity shall be 300 gallons minimum and tank must be baffled to minimize stress related movement. _____

25.2 Water pump drive and related systems shall have a protection system against freeze-up. _____

25.3 Water pump shall be self priming and not subject to damage when operated dry. _____

25.4 A 25' hydrant hose with NST 2.5" quick connect coupling shall be furnished. A storage compartment shall be provided for the hose when not in use. _____

25.5 Machine shall be equipped with a 25' washdown hose. _____

25.6 All water valves shall have manual drain provisions. _____

25.7 The water tank shall have drain and flush out ports. _____

25.8 Provision shall be made to enable water tank filling to be accomplished by hydrant. _____

25.9 All water system rigid lines shall be constructed of non ferrous materials. _____

25.10 An external water filter shall be provided. The filter must be accessible with body lowered. A shut off (isolation) valve must be provided to facilitate servicing. _____

25.11 Water manifold shall be constructed of stainless steel or aluminum. _____

25.12 Water tanks shall have a minimum 10 year full replacement warranty. Successful vendor shall provide warranty documentation for water tanks at the time of delivery. _____

25.13 The water system shall have a quick connect test port. _____

25.14 The water system shall have an adjustable relief valve. _____

26. <u>Air System</u>

26.1 The sweeper air system shall incorporate a safety device which will ensure that in the event of a pneumatic failure, the chassis braking system will be automatically protected and air brake pressure will be maintained. _____

26.2 A self purging air dryer shall be provided with a built in timer to expel condensation once every five minutes. _____

26.3 The air system shall have a water trap to eliminate moisture. _____

26.4 The regulator shall have a shut off valve to purge only the sweeper system while maintaining chassis air pressure. _____

26.5 The pneumatic system shall have a quick connect test port. _____

26.6 All pneumatic hose connectors shall be "tool free" push-in type to facilitate easy servicing, removal or replacement. _____

26.7 Nozzle and WSB pneumatic cylinders shall have a common seal repair kit to defray parts stocking cost. _____

26.8 Pneumatic system air lines shall be color-coded for easy recognition of "live supply," "switched supply" and "exhaust." _____

26.9 The pneumatic system shall operate the following functions:

Wide sweep raise/lower/road pressure. _____

Nozzle raise/lower/tilt for large debris. _____

Gutter broom raise, lower and latch. _____

27. Component Consistency

27.1 Test ports shall be provided for each system. _____

27.2 All electrical wiring shall be contained within flame retardant conduit. _____

27.3 Wires shall be color-coded & numbered for ease of troubleshooting. _____

27.4 All internal wiring shall conform to IP65 standard. _____

27.5 All external wiring shall conform to IP67 standard. _____

28. Safety

28.1 Two rear amber beacons with limb guards shall be supplied. _____

28.2 A back up alarm of not less than 107 dB(A) shall be installed and shall sound when reverse gear is selected. _____

28.3 Safe and convenient access must be provided to the rear engine and rear engine compartment. _____

28.4 Automatic pickup in reverse gear of all sweeping equipment shall be supplied. _____

28.5 A pre-programmed single master override sweep switch shall control all sweep gear. The sweeping gear shall raise and the water shall shut off when switch is moved out of "work" position. All functions shall resume their previously programmed settings when the switch is returned to "work" position. _____

29. Paint

29.1 Cab and sweeper shall be furnished with two coats or single application of powder coat of standard white. _____

29.2 All sweep gear and bracketry shall be powder coated for maximum protection in a sweeping environment. _____

30. Warranty

30.1 The sweeper auxiliary engine shall carry a two-year warranty, 100% parts and labor minimum. Include warranty statement with your bids. _____

30.2 Warranty repairs to be made at customer's premises

including all parts and labor, 100% coverage, no pro-rating. _____

30.3 Sweeper components, other than wearing items, shall carry a standard one-year warranty. _____

30.4 Hopper warranty shall be for life as per section 18.1 of bid specifications. _____

30.5 Blower drive warranty shall be five years as per section 19.9 of bid specifications. _____

30.6 Water tank warranty shall be for 10 years. _____

31. Manuals

The following documentation shall be supplied upon delivery of unit:

31.1 Sweeper:
21-Driver/Operator Guide, 1 parts list, 1 service/ maintenance manual and 1 troubleshooting manual. _____

31.2 Truck Chassis:
1-Owner/Operator's Guide/Service Manual. _____

31.3 Transmission:
1-Driver's Handbook and 1-Service Manual. _____

31.4 Sweeper Engine:
1-User's Handbook and 1-Service Manual. _____

Hydraulic , water, and electrical schematics. _____

32. Training

32.1 Operator/mechanic training will be conducted at the customer's premises at no charge to the customer. _____

32.2 Engine and Chassis diagnostic software for laptop application must be included. _____