



**CITY OF SPRINGFIELD, MISSOURI
DIVISION OF PURCHASES
INVITATION FOR BID #036-2012**

THIS IS NOT AN ORDER

RETURN

TO: Mike Bell, Buyer
City of Springfield
Division of Purchases
218 E. Central
Springfield, MO 65802

Date Issued: September 15, 2011
Buyer's Email: mbell@springfieldmo.gov
Telephone Number: 417-864-1594
Fax Number: 417-864-1927
DUE DATE: October 6, 2011
PRE-BID: September 22, 2011

SEALED BIDS MUST BE PHYSICALLY RECEIVED IN THE DIVISION OF PURCHASES PRIOR TO 3:00 P.M. ON THURSDAY, OCTOBER 6, 2011. Bids will be opened by the buyer at the location listed above.

- Bids shall be submitted on the forms provided and must be manually signed by the individual authorized to legally bind the company.
- Bids shall be submitted with the IFB number clearly indicated on the outside of the mailing envelope.
- Bids received after the opening date and time will be rejected.
- The attached Terms and Conditions shall become part of any purchase order resulting from this bid.
- **FAXED/EMAILED BIDS WILL NOT BE ACCEPTED.**

You are invited to submit your bid to furnish the materials and/or services described herein. Please submit your prices/fees net of all discounts.

DESCRIPTION

2012 TANDEM AXLE DUMP TRUCK

See attached General Conditions, Specifications, and Bid Form for detailed information.

DELIVERY: F.O.B. DESTINATION

The articles to be furnished hereunder shall be delivered all transportation charges paid by the bidder to destination.

It is the intent of the City that this Invitation for Bid promotes competitive bidding. It shall be the Vendor's responsibility to advise the Division of Purchases if any language, requirements, etc. any combination thereof, inadvertently restricts or limits the requirements stated in this Invitation for Bid to a single source. Such notification must be submitted in writing and must be received by the Division of Purchases not later than three (3) days prior to the bid opening date.

**CITY OF SPRINGFIELD
INSTRUCTION TO BIDDERS**

01. Opening Location

The Bids will be opened at the City of Springfield, Division of Purchases, 218 E. Central, Springfield, MO 65802 in the presence of Purchasing officials at the due date and time indicated on the IFB. All bidders or their representatives are invited to attend the opening of the IFB.

02. IFB Delivery Requirements

Any Bids received after the above stated time and date will not be considered. It shall be the sole responsibility of the bidder to have their Bid delivered to the Division of Purchases for receipt on or before the due date and time indicated. If a Bid is sent by U.S. Mail, the bidder shall be responsible for its timely delivery to the Division of Purchases office. Bids delayed by mail shall not be considered, shall not be opened, and shall be rejected. Arrangements may be made for their return at the bidder's request and expense. Bids may be mailed to the Division of Purchases and accepted if the signed bid form and required information was mailed and received prior to the due date and time. Bids sent by email will not be accepted.

03. Sealed and Marked

If sent by mail, one original signed Bid shall be submitted in one sealed package, clearly marked on the outside of the package with the Invitation for Bid number and addressed to:

City of Springfield
Division of Purchases
218 E. Central
Springfield, MO 65802

04. Legal Name and Signature

Bids shall clearly indicate the legal name, address, and telephone number of the bidder (company, firm, corporation, partnership, or individual). Bids shall be manually signed above the printed name and title of signer on the Affidavit of Compliance page. The signer shall have the authority to bind the company to the submitted Bid. Failure to properly sign the Bid form shall invalidate same, and it shall not be considered for award.

05. Corrections

No erasures are permitted. If a correction is necessary, draw a single line through the entered figure and enter the corrected figure above it. Corrections must be initialed by the person signing the Bid.

06. Clarification and Addenda

Each bidder shall examine all Invitation for Bid documents and shall judge all matters relating to the adequacy and accuracy of such documents. Any inquiries or suggestions, concerning interpretation, clarification, or additional information pertaining to the Invitation for Bid shall be made through the Division of Purchases in writing or through email. The Division of Purchases shall not be responsible for oral interpretations given by any City employee, representative, or others. The issuance of written addenda is the official method whereby interpretation, clarification, or additional information can be given.

It shall be the responsibility of each bidder, prior to submitting their Bid, to contact the Division of Purchases at phone number 417-864-1620, or to check the Purchasing website to determine if addenda were issued and to make such addenda a part of their Bid at:

www.springfieldmo.gov/egov/finance/bid_center.html

07. IFB Expenses

All expenses for making Bids to the City are to be borne by the bidder.

08. Irrevocable Offer

Any Bid may be withdrawn up until the due date and time set for opening of the IFB. Any Bid not so withdrawn shall, upon opening, constitute an irrevocable offer for a minimum period of 90 days to sell to the City the goods or services set forth in the IFB, until one or more of the Bids have been duly accepted by the City.

09. Responsive and Responsible Bidder

To be responsive, a bidder shall submit a Bid which conforms in all material respects to the requirements set forth in the Invitation for Bid. To be a responsible bidder, the bidder shall have the capability in all respects to perform fully the contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment and credit which will ensure good faith performance. The lowest responsible bidder shall mean the bidder who makes the lowest Bid to sell goods or services of a quality which conforms closest to the quality of goods or services set forth in the specifications or otherwise required by the City and who is known to be fit and capable to perform the Bid as made.

10. Reserved Rights

The City reserves the right to make such investigations as it deems necessary to make the determination of the bidder's responsiveness and responsibility. Such information may include, but shall not be limited to: current financial statement, verification of availability of equipment and personnel, and past performance records.

11. The Right to Audit

The bidder agrees to furnish supporting detail as may be required by the City to support charges or invoices, to make available for audit purposes all records covering charges pertinent to the purchase, and to make appropriate adjustments in the event discrepancies are found. The cost of any audit will be paid by the City. The City shall have the right to audit the bidder's records pertaining to the work/product for a period of three (3) years after final payment.

12. Applicable Law

All applicable laws and regulations of the State of Missouri and the City including the City Procurement Regulations and Procedures will apply to any resulting agreement, contract, or purchase order. Any involvement with the City Procurement shall be in accordance with the Procurement Regulations and Procedures.

13. Right to Protest

Appeals and remedies are provided for in the City Procurement Regulations. Protestors shall seek resolution of their complaints initially with the City Purchasing Agent.

Any protest shall state the basis upon which the solicitation or award is contested and shall be submitted within ten (10) calendar days after such aggrieved person knew or could have reasonably been expected to know of the facts giving rise thereto.

14. Ethical Standards

With respect to this IFB, if any bidder violates or is a party to a violation of the general ethical standards of the City Procurement Code or the State of Missouri Statutes, such bidder may be disqualified from furnishing the goods or services for which the Bid is submitted and shall be further disqualified from submitting any future Bids. A copy of the City's General Ethical Standards is available at the Division of Purchases.

15. Collusion

By offering a submission to this Invitation for Bid, the bidder certifies the bidder has not divulged, discussed, or compared the Bid with other bidders and has not colluded with any other bidder or parties to this IFB whatsoever. Also, the bidder certifies, and in the case of a joint Bid, each party thereto certifies as to their own organization, that in connection with this IFB:

- a. Any prices and/or cost data submitted have been arrived at independently, without consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such prices and/or cost data, with any other bidder or with any competitor.
- b. Any prices and/or cost data for this Bid have not knowingly been disclosed by the bidder and will not knowingly be disclosed by the bidder prior to the scheduled opening directly or indirectly to any other bidder or to any competitor.
- c. No attempt has been made or will be made by the bidder to induce any other person or firm to submit or not to submit a Bid for the purpose of restricting competition.
- d. The only person or persons interested in this Bid, principal or principals are named therein and that no person other than therein mentioned has any interest in this Bid or in the contract to be entered into.
- e. No person or agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee exempting bona fide employees or established commercial agencies maintained by the Purchaser for the purpose of doing business.

16. Contract Forms

Any agreement, contract, or purchase order resulting from the acceptance of a Bid shall be on forms either supplied by or approved by the City.

17. Liability and Indemnity

- a. In no event shall the City be liable to the Contractor for special, indirect, or consequential damages, except those caused by the City's gross negligence or willful or wanton misconduct arising out of or in any way connected with a breach of this contract. The maximum liability of the City shall be limited to the amount of money to be paid or received by the City under this contract.
- b. The Contractor shall defend, indemnify and save harmless the City, its elected or appointed officials, agents and employees from and against any and all liability, suits, damages, costs (including attorney fees), losses, outlays and expenses from claims in any manner caused by, or allegedly caused by, or arising out of, or connected with, this contract, or the work or any subcontract thereunder (the Contractor hereby assuming full responsibility for relations with subcontractors), including, but not limited to, claims for personal injuries, death, property damage, or for damages from the award of this contract to Contractor.
- c. The Contractor shall indemnify and hold the City harmless from all wages or overtime compensation due any employees in rendering services pursuant to this agreement or any subcontract, including payment of reasonable attorneys' fees and costs in the defense of any claim made under the Fair Labor Standards Act, the Missouri Prevailing Wage Law or any other federal or state law.

18. IFB Forms, Variances, Alternates

Bids must be submitted on attached City IFB forms, although additional information may be attached. Bidders must indicate any variances from the City requested specifications and/or terms and conditions, on the IFB Affidavit of Compliance. Otherwise, bidders must fully comply with the City requested specifications and terms and conditions. Alternate Bids may or may not be considered at the sole discretion of the City Purchasing Agent.

19. Bid Form

All blank spaces must be completed with the appropriate response. The bidder must state the price, written in ink, for what is proposed to complete each item of the project. Bidders shall insert the words "no bid" in the space provided for an item for which no Bid is made. The bidder shall submit an executed Bid form, affidavit of compliance with other requested documents.

20. Modifications or Withdrawal of Bid

A modification for a Bid already received will be considered only if the modification is received prior to the time announced for opening of Bids. All modifications shall be made in writing, executed, and submitted on the same form and manner as the original Bid. Modifications submitted by telephone, fax, or email will not be considered.

21. No Bid

If not submitting a Bid, respond by returning the "Statement of No Bid" no later than the stated Bid opening time and date, and explain the reason in the space provided.

22. Errors in Bids

Bidders or their authorized representatives are expected to fully inform themselves as to the conditions, requirements, and specifications before submitting Bids; failure to do so will be at the bidder's own risk. Neither law nor regulations make allowance for errors either of omission or commission on the part of bidders. In case of error of extension of prices in the Bid, the unit price shall govern.

23. Prices Bid

Give both unit price and extended total. Price must be stated in units of quantity specified in the bidding specifications. In case of discrepancy in computing the amount of the Bid, the unit price of the Bid will govern. All prices shall be F.O.B. destination, freight prepaid (unless otherwise stated in special conditions). Each item must be bid separately and no attempt is to be made to tie any item or items in with any other item or items. If a bidder offers a discount on payment terms, the discount time will be computed from the date of satisfactory delivery at place of acceptance and receipt of correct invoice at the office specified. Payment terms shall be Net 30 if not otherwise specified. Pre-payment terms are not acceptable.

24. Discounts

Any and all discounts except cash discounts for prompt payments must be incorporated as a reduction in the Bid price and not shown separately. The price as shown on the Bid shall be the price used in determining award(s).

25. Descriptive Information

All equipment, materials, and articles incorporated in the product/work covered by this IFB are to be new and of suitable grade for the purpose intended. Brand or trade names referenced in specifications are for comparison purposes only. Bidders may submit Bids on items manufactured by other than the manufacturer specified when an "or equal" is stated.

26. Deviations to Specifications and Requirements

When bidding on an "or equal," Bids must be accompanied with all descriptive information necessary for an evaluation of the proposed material or equipment such as the detailed drawings and specifications, certified operation and test data, and experience records. Failure of any bidder to furnish the data necessary to determine whether the product is equivalent, may be cause for rejection of the specific item(s) to which it pertains. All deviations from the specifications must be noted in detail by the bidder on the Affidavit of Compliance form, at the time of submittal of Bid. The absence of listed deviations at the time of submittal of the Bid will hold the bidder strictly accountable to the specifications as written. Any deviation from the specifications as written and accepted by the City may be grounds for rejection of the material and/or equipment when delivered.

27. Samples (if required)

For certain types of procurements, samples may be required. If samples are required, it will be stated in the IFB. The following conditions and requirements apply to all samples submitted.

- a. The samples submitted by bidders on items for which they have received an award may be retained by the City until the delivery of contracted items is completed and accepted. Bidders whose samples are retained may remove them after delivery is accepted.
- b. Samples not retained must be removed as soon as possible after award has been made on the item or items for which the samples have been submitted. The City will not be responsible for such samples not removed by the bidder within 30 days after the award has been made. The City reserves the right to consume any or all samples for testing purposes.
- c. Bidders shall make all arrangements for delivery of samples to place designated as well as the removal of samples. Cost of delivery and removal of samples shall be borne by the bidder.
- d. All samples packages shall be marked "Sample for Division of Purchases" and each sample shall bear the name of the bidder, item number, Bid number, and shall be carefully tagged or marked in a substantial manner. Failure of the bidder to clearly identify samples as indicated may be considered sufficient reason for rejection of Bid.

28. Quality Guaranty

If any product delivered does not meet applicable specifications or if the product will not produce the effect that the bidder represents to the City, the bidder shall pick up the product from the City at no expense. Also, the bidder shall refund to the City any money which has been paid for same. The bidder will be responsible for attorney fees in the event the bidder defaults and court action is required.

29. Quality Terms

The City reserves the right to reject any or all materials if, in its judgment, the item reflects unsatisfactory workmanship, manufacturing, or shipping damages.

30. Tax-Exempt

The City is exempt from sales taxes and Federal Excise Taxes: Missouri Tax ID Number 12493651.

31. Awards

- a. Unless otherwise stated in the Invitation for Bid, cash discounts for prompt payment of invoices will not be considered in the evaluation of prices. However, such discounts are encouraged to motivate prompt payment.

- b. *As the best interest of the City may require, the right is reserved to make awards by item, group of items, all or none, or a combination thereof; to reject any and all Bids or waive any minor irregularity or technicality in Bids received.*
- c. *Awards will be made to the Bidder whose Bid (1) meets the specifications and all other requirements of the Invitation for Bid and (2) is the lowest and best Bid, considering price, delivery, responsibility of the bidder, and all other relevant factors.*

32. Authorized Product Representation

The successful bidder(s) by virtue of submitting the name and specifications of a manufacturer's product will be required to furnish the named manufacturer's product. By virtue of submission of the stated documents, it will be presumed by the City that the bidder(s) is legally authorized to submit and the successful bidder(s) will be legally bound to perform according to the documents.

33. Regulations

It shall be the responsibility of each bidder to assure compliance with OSHA, EPA, Federal, State of Missouri, and City rules, regulations, or other requirements, as each may apply.

34. Termination of Award

Any failure of the bidder to satisfy the requirements of the City shall be reason for termination of the award. Any Bid may be rejected in whole or in part for good cause when in the best interest of the City.

35. Royalties and Patents

The successful bidder(s) shall pay all royalties and license fees for equipment or processes in conjunction with the equipment being furnished. Bidder shall defend all suits or claims for infringement of any patent right and shall hold the City harmless from loss on account or cost and attorney's fees incurred.

36. Equal Employment Opportunity Clause

The City of Springfield, in accordance with the provision of Title VI of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Department of Commerce (15 CFR, Part 8) issued pursuant to such Act, hereby notifies all bidders that affirmatively ensure that in any contract entered into pursuant to this advertisement that minority businesses will be afforded full opportunity to submit Bids in response to this advertisement and will not be discriminated against on the grounds of race, color, or national origin in consideration for award.

37. Bid Tabulation

Bidders may request a copy of the bid tabulation of the Invitation for Bid.

38. Budgetary Constraints

The City reserves the right to reduce or increase the quantity, retract any item from the Bid, or upon notification, terminate entire agreement without any obligations or penalty based upon availability of funds.

39. Additional Purchases by Other Public Agencies

The bidder by submitting a Bid authorizes other public agencies to "Piggy-Back" or purchase equipment and services being proposed in this Invitation for Bid unless otherwise noted on the Affidavit of Compliance Form.

40. Order of Precedence

Any and all Special/General Conditions and Specifications attached hereto, which varies from the instruction to bidders, shall take precedence.

41. Affidavit for Service Contracts

The Bidder represents, in accordance with RSMO 285.530.2 that they have not employed, or subcontracted with, unauthorized aliens in connection with the scope of work to be done under the IFB and agrees to provide an affidavit to the City of Springfield affirming that they have not, and will not in connection with the IFB, knowingly employ, or subcontract with, any person who is an unauthorized alien.

42. Inspection and Acceptance

No item(s) received by the City pursuant to this contract shall be deemed accepted until the City has had reasonable opportunity to inspect the item(s). Any item(s) which are discovered to be defective or which do not conform to any warranty of the Seller upon inspection may be returned at the seller's expense for full credit or replacement. If at a later time, the defects were not ascertainable upon the initial inspection may also be returned at the Seller's expense for full credit or replacement. The City's return of defective items shall not exclude any other legal, equitable or contractual remedies the City may have.

**CITY OF SPRINGFIELD
INVITATION FOR BID #036-2012
GENERAL TERMS AND CONDITIONS**

1. **PRE-BID MEETING:** A pre-bid conference will be held at **10:00 am, on Thursday, September 22, 2011** at the Division of Purchases, 218 East Central, Springfield MO. This is an opportunity for potential bidders to review and discuss equipment specifications. This meeting is **not mandatory**, however, It is highly recommended that this opportunity be utilized.
2. **Payment Terms:** The Bidder shall clearly state their prompt payment discount and/or net payment terms in the space provided on the City's Bid Form or Proposal page. If this section is not completed, the City will assume terms are Net 30 days.
3. **Exceptions to Specification:** Bidders taking exception to any part or section of the specifications shall indicate such exceptions on the Affidavit of Compliance Form. Failure to indicate exceptions shall be interpreted as the bidder's intent to fully comply with the specifications as written.
4. **Bidding an "equal" Product:** Bidders must include with their bid, specification sheets or information sufficient for thorough evaluation. Failure to do so may be cause for rejection as non-compliant. See clause number 26 above, entitled "**Deviations to Specifications and Requirements**" for additional details.
5. **Additional Purchases by Other Public Agencies:** The vendor, by submitting a bid, authorizes other Public Agencies to "Piggy-Back" or purchase equipment and services being proposed in this Invitation for Bid unless otherwise noted on the Affidavit of Compliance form. Prices bid shall remain in full force for 120 days from date of award.
6. **Evaluation Criteria:** The award will be made to the lowest, most responsive and responsible bidder judged on the basis of price, fulfillment of specifications, warranty (initial and extended), delivery time, and support services.

NOTICE: The City reserves the right to consider cooperative contracts, federal, state, municipal, etc., during the evaluation process. The City may utilize a cooperative contract in lieu of making an award, if in the City's best interest.

**CITY OF SPRINGFIELD
INVITATION FOR BID #036-2012
SPECIFICATIONS**

1. **GENERAL:** The City of Springfield, Public Works Department has a requirement for Trucks equipped with Western Style Dump Body, Skid Mount Material Spreader, and Front Mounted Power Reverse Snow Plow. The successful bidder will be responsible to supply and deliver a complete unit ready for service.

The equipment shall be new and manufacturer's standard model in current production; shall comply with all performance specifications; include all standard functions, features and accessories as advertised or otherwise represented by the Bidder and/or manufacturer. The equipment shall meet or exceed the minimum specifications and requirements listed below.

NOTICE: The chassis dimension specifications are based on the body specified in the bid document. It may be necessary for bidder to alter these dimensions, taking exception, in order to conform to a body other than that specified.

2. **Base Chassis:**

- 2.1 6X4, 58,000 GVWR, with 203" Wheelbase, 128" CA, 65" Axle to Frame
- 2.2 Tow Hooks: 2 Front, 2 Rear
- 2.3 Frame Rails: Heat Treated Alloy Steel (120,000 PSI Yield); 10.85" x 3.6" x 0.43"; 456" Maximum OAL
- 2.4 Frame Extension, Front Integral; 20" in front of grill, in lieu of front bumper
- 2.5 Axle, Front Non-Driving: Wide Track, I-Beam Type, 18,000 lb Capacity
- 2.6 Wheelbase Range: 177" through 226"
- 2.7 Suspension, Front, Spring: Parabolic, Taper Leaf; 18,000 lb Capacity; With Shock Absorbers
- 2.8 Brake System: Air Dual System for Straight Truck Applications
- 2.9 Drain Valve: Manual; with Pull Chain, for Air Tank
- 2.10 Air Brake ABS: Full Vehicle Wheel Control System (4-channel)
- 2.11 Air Dryer: with heater
- 2.12 Brakes, Front: Air Cam S-Cam; 16.5" x 6.0"; Includes 24 sq in Long Stroke Brake Chambers
- 2.13 Brakes, Rear: Air Cam S-Cam; 16.5" x 7.0"; Includes 30/30 sq in Long Stroke Brake Chambers and Spring Actuated Parking Brake
- 2.14 Slack Adjusters, Front and Rear: Automatic
- 2.15 Air Compressor: 13.2 CFM Capacity
- 2.16 Steering Column: Tilting and Telescoping
- 2.17 Steering Gear: Dual Power
- 2.18 Exhaust System: Single, Horizontal, After-treatment Device, Frame Mounted Outside Right Rail Under Cab; Includes Vertical Tail Pipe and Guard
- 2.19 Exhaust Height: 10' (Nominal), Based on Empty Chassis
- 2.20 Muffler/Tail Pipe Guard: Bright Stainless Steel

- 2.21 Electrical System: 12 Volt
- 2.22 Horn: 2 Electric
- 2.23 Alternator: Brushless, 12 Volt, 185 Amp Capacity, Pad Mounted, with Remote Voltage Sensor
- 2.24 Electric Trailer Brake/Lights: Accommodation Package to Rear of Frame for Combined Trailer Stop, Tail, Turn, Marker Light Circuits; Includes Electric Trailer Brake Accommodation Package with Cab Connections for Mounting Electric Brake Unit, Less Trailer Socket
- 2.25 Battery System: Maintenance Free, (3) 12-Volt 1950CCA Total with Jump Start Stud on Outermost Battery
- 2.26 2-Way Radio Wiring Effects: Wiring with 20 Amp Fuse Protection, including ignition wire with 5 Amp Fuse, Wire Ends, Heat Shrink and Routed to Center of Header Console in Cab
- 2.27 Radio: AM/FM Stereo with Weatherband, Clock, Auxiliary Input, Including multiple Speakers
- 2.28 Back-Up Alarm: Electric, 102 dBA
- 2.29 Auxiliary Harness: 3' for Auxiliary Front Head Lights and Turn Signals for Front Plow Applications
- 2.30 Trailer Auxiliary Feed Circuit: for Electric Trailer Brake Accommodation/Air Trailer ABS; with 30 Amp Fuse and Relay, Controlled by Ignition Switch
- 2.31 Horn: Air Black, Single Trumpet, Air Solenoid Operated
- 2.32 Air Solenoid: Provides 4 Normally Closed Pilot Air Source, Approximately 4 CFM, Includes Latched Switch in Cab; Air Available Only With Key in Ignition or Accessory Position; Air Will Exhaust with Key in Off Position (used as Pilot Air and Not as Air Supply)
- 2.33 Windshield Wiper Speed Control: Force Wipers to Slowest Intermittent Speed When Park Brake Set and Wipers Left on for a Predetermined Time
- 2.34 Front Turn Signals: Dual Face, Amber/Red, Mounted on Top of Fender
- 2.35 Clearance/Marker Lights: 5 Amber LED Lights, Flush Mounted on Cab
- 2.36 Test Exterior Lights: Pre-Trip Inspection will Cycle all Exterior Lamps (Except Back-up Lights)
- 2.37 Headlights On W/Wipers: Headlights Automatically Turn on if Wipers are Turned on
- 2.38 Alarm, Parking Brake: Electric Horn Sounds in Repetitive Manner When Vehicle Park Brake is NOT Set, With Ignition OFF and any Door Opened
- 2.39 Grille: Stationary, Chrome
- 2.40 Bug Screen: Mounted Behind Grille
- 2.41 Paint Class: Premium Color; 4017 Dark Safety Yellow

3. **Engine and Transmission:**

- 3.1 Diesel, Federal Emissions for 2010
- 3.2 PTO Effects, Engine Front (less PTO Unit) Includes Adapter Plate on Engine Front Mounted
- 3.3 Minimum 310 HP @ 2000 RPM, 1050 lb-ft Torque @ 1200 RPM, 2200 RPM Governed Speed
- 3.4 Engine Block Heater: 120 Volt, 1250 Watt
- 3.5 Cruise Control: Electronic; Controls Integral to Steering Wheel
- 3.6 Fan Drive: Direct Drive Type, Two Speed with Residual Torque Device for Disengaged Fan Speed
- 3.7 Radiator: Aluminum, Front to Back Cross Flow Series System; 1663 sq in Core and 885 sq in Charge Air Cooler and 470 sq in Low Temperature Radiator Down Flow
- 3.8 Air Cleaner: Dual Element
- 3.9 Transmission: Automatic (Allison 3000_RDS_P) 4th Generation Controls; Close Ratio, 6-Speed, with Double Overdrive; On-Off Hwy; Includes Oil Level Sensor, with PTO Provision, Less Retarder, with 80,000-lb GVW & GCW Max
- 3.10 Transmission Oil: Synthetic
- 3.11 Transmission TCM Location: Located Inside Cab
- 3.12 Axle, Rear, Tandem: Single Reduction, .43" Wall Housing Thickness, 40,000-lb Capacity, R Wheel Ends, Gear Ratio: 5.86
- 3.13 Suspension, Rear Tandem: Walking Beam Type 54" Axle Spacing; 40,000-lb Capacity with Rubber End Bushings, Transverse Torque Rods, Less shock Absorbers
- 3.14 Crossmember, Suspension: Stamped Steel Double Dogbone
- 3.15 Fuel/Water Separator: With Thermostatic Fuel Temperature Controlled Electric Heater, and Filter Restriction/Change Indicator and includes Water-in-Fuel Sensor

- 3.16 Fuel Tank: Top Draw; D Style, Non Polished Aluminum, 70 Gal Capacity With Quick Connect, Mounted Left Side, Under Cab
- 4. **Cab:**
 - 4.1 Gauge Cluster: To include Engine Oil Pressure, Water Temperature, Fuel, Tachometer, Voltmeter, and Washer Fluid Level
 - 4.2 Odometer Display: Miles, Trip Miles, Engine Hours, Trip Hours, Fault Code Readout
 - 4.3 Warning System: Low Fuel, Low Oil Pressure, High Engine Coolant Temp, and Battery voltage (Visual and Audible)
 - 4.4 Additional Gauges: Transmission Oil Temperature, Air Cleaner Restriction
 - 4.5 Seat, Driver: Air Suspension, High Back with Integral Headrest, Vinyl, Isolated, 1 Chamber Lumbar, 2 Position Front Cushion Adjustment, -3° to +14° Back Adjust, Seat Belt, 3-Point, Lap and Shoulder
 - 4.6 Seat Passenger: Non Suspension, High Back with Integral Headrest, Vinyl, with Fixed Back, and underseat Storage, Seat Belt, 3-Point, Lap and Shoulder
 - 4.7 Arm Rest: Right, Driver Seat
 - 4.8 Mirrors: Two Rectangular (Approximately) 7" x 15.75" Integral Convex Both Sides, 102" Inside Spacing, Breakaway Type, Heated Heads Thermostatically Controlled, Power Both Sides, Clearance Lights LED, Bright Finish Heads & Brackets
 - 4.9 Air Conditioner: With Integral Heater & Defroster and Fresh Air Filter
 - 4.10 Left and Right Doors: Power Windows with Express Down Feature and Power Door Locks
 - 4.11 Cab Rear Suspension: Air Bag Type
 - 4.12 Body Integrated, Remote Power Module: Mounted Inside Cab behind Driver Seat; Up to 6 Outputs and 6 Inputs, Max 20 amp per channel, Max 80 amp Total (to include 1 Switch Pack with Latched Switches)
 - 4.13 Accessory Wiring: Wire Coiled Under Instrument Panel for future use
- 5. **Wheels and Tires:**
 - 5.1 Wheels, Front Disc: 22.5" Painted Steel, 5 Hand Hole, 10 Stud Hub Piloted, Flanged Nut, Metric Mount, 9.00 DC Rims; With .5" Thick Disc, Not-Standard Offset and Steel Hubs
 - 5.2 Wheels, Dual Rear: 22.5" Painted Steel, 2 Hand Hole, 10 Stud Hub Piloted, Flanged Nut, Metric Mount, 8.25 DC Rims; with steel Hubs
 - 5.3 Paint Identity: Front and Rear Wheels
 - 5.4 Wheel Guards, Front and Rear
 - 5.5 Tires, Front: 315/80R22.5, Load Range L, 20 Ply
 - 5.6 Tires, Rear: 11R22.5, Load Range G, 14 Ply
- 6. **Warranty:**
 - 6.1 All Inclusive: No-deductable warranty for a minimum of 1 year/12,000 miles, whichever comes first (less normal wear and maintenance), from date of delivery and acceptance by the City.
 - 6.2 Drive Train: No-deductable warranty, for a minimum of 2 years/24,000 miles, whichever comes first (less normal wear and maintenance), from date of delivery and acceptance by the City.
 - 6.3 Engine, Engine Electronics, Fuel System including Injectors and Emission System Components: No-deductable warranty, for a minimum of 5 years/80,000 miles/3600 hours, whichever comes first (less normal wear and maintenance), from date of delivery and acceptance by the City.
 - 6.4 Air Conditioner: No-deductable warranty, for a minimum of 5 years/80,000 miles, whichever comes first (less normal wear and maintenance), from date of delivery and acceptance by the City.
- 7. **Body Builder Installed Components:**
 - 7.1 Electrical and Illumination Installation:
 - 7.1.1 All wiring must be uninterrupted, and complete with no splices.
 - 7.1.2 All wiring must be color-coded.
 - 7.1.3 All wire terminal ends (spade, ring, etc.) shall be: crimped, soldered to the wires and heat shrink,

or weatherproof connectors. Scotch-Loc fasteners and/or crimp butt connectors are not acceptable for any connections.

- 7.1.4 All electrical connections shall be protected with dielectric silicone grease.
- 7.1.5 All wiring shall be enclosed in a protective wiring loom, conduit, or wrapped harness.
- 7.1.6 High current circuits, such as the tarp motor circuit, shall be powered directly from the battery, and protected by a master re-settable breaker, or a fusible link.
- 7.1.7 Body Builder installed wiring going to the rear of the frame and dump body shall be grouped together and bound. This bound harness shall then be secured to a painted metal strap, approximately 1 ¼" X ¼" in size. This strap shall be secured to the top of the frame cross members away from the side rails.
- 7.1.8 All wiring to lamps shall be stress relived within 6 inches of the lamp.
- 7.1.9 Wiring routed through the hydraulic enclosure sides shall be routed through a sealed compression Type strain relief, or a molded bulkhead fitting.

7.2 Accessory Operation Provision/Parameters:

- 7.2.1 Electric Accessories Power Supply: Factory-installed power supply system to control Body Builder-installed electric accessories. This shall consist of factory-installed; dedicated power supply, dash-mounted switches with indicator lights, circuit protection, single point location for Body Builder connections, and self-diagnostic capabilities. Larger indicator lights may be required for certain accessories. System must be programmable to allow for certain parameters that may be required for operating accessories in a particular manner. Module and body-builder connection point must be located inside the cab.
- 7.2.2 Air Accessories Power Supply: Factory-installed power supply system to control Body Builder-installed air accessories. This shall consist of factory-installed regulated air supply, dash-mounted switches with indicator lights, single point location for Body Builder connections, and self-diagnostic capabilities. System must be programmable to allow for certain parameters that may be required for operating accessories in a particular manner.
- 7.2.3 Accessory Operation Parameters:
 - 7.2.3.1 **Tailgate:** The tailgate shall not unlock or lock if the truck is traveling 26 mph or faster. The tailgate shall be operated by a two-position, bi-stable switch.
 - 7.2.3.2 **Spreader light:** The spreader light shall turn on and off with a two-position, bi-stable switch.
 - 7.2.3.3 **Tarp:** The tarp shall not deploy or retract if the truck is traveling 11 mph or faster. Tarp shall be operated by a three-position, center-stable, momentary-on switch.
 - 7.2.3.4 **Raised Body Indicator:** A red, dash mounted raised body indicator light shall flash to indicate a raised dump body condition.
 - 7.2.3.5 **LED Warning Lights:** The LED warning lights shall operate with the key switch in the on and off position. The LED warning lights shall automatically shut off after 12 hours of operation with the key switch in the off position. A green, dash mounted LED warning light indicator light shall illuminate when the warning lights are operating. LED warning lights shall be operated by a two-position, bi-stable switch.

7.3 Paint: All Equipment shall be thoroughly cleaned and completely painted with a high quality corrosion resistant finish. Finish shall be smooth, shiny, and free of runs, overspray, and/or other defects.

- 7.3.1 All manufactured ferrous equipment attached to the chassis shall be sand or media blasted to remove all mill scale, oils, dirt, rust, shipping primer and/or other contaminants from the steel surfaces, then thoroughly cleaned. This shall include at a minimum the front plow hitch; dump

body, any wing plow or underbody scraper, valve enclosures, reservoir, and any other components that are subject to corrosion.

- 7.3.2 Paints and primers used shall be 100% lead and chromate free. MSDS on products used shall be made immediately available upon request.
- 7.3.3 All components shall be painted with premium quality polyurethane or powder coated finish, consisting of minimum 2 mils dry film build corrosion resistant epoxy primer top coated with 2-3 mils dry film build paint. Minimum finished application thickness, 4 mils dry film build.
- 7.3.4 All visible finishes shall be smooth, shiny, and free of runs, overspray, and/or other defects.
- 7.3.5 Body accessories that are required to be welded on, i.e., ladders, steps, tarp brackets, warning light brackets, cab shield, etc., are to be installed by the Body Builder prior to priming.
- 7.3.6 Upon completion of component installation, the Body Builder shall touch-up factory chassis paint damaged during component installation.
- 7.3.7 Colors:
 - 7.3.7.1 All components used in the fabrication of a truck that are required to be painted yellow shall be painted the same color as the cab with premium polyurethane grade paint. These components include, but are not limited to, dump body, attachments to the dump body, and hydraulic oil reservoir.
 - 7.3.7.2 All components used in the fabrication of the truck that are required to be painted black. These components include, but are not limited to, the front bumper, front snowplow hitch and lift assembly, valve enclosure, rear hitch plate, all frame modification work, fabricated frame components, and the underneath side of the dump body.

7.4 Auxiliary Snowplow Headlights:

- 7.4.1 Front auxiliary headlights shall be halogen.
- 7.4.2 Auxiliary headlights shall not obstruct the driver's vision, and be mounted approximately 64" from ground level, and at approximately the same width apart as truck's headlamps.
- 7.4.3 Light shall be secured to a fender mounted, 3-point assembly bracket. Bracket shall be made from A-go Aluminum.
- 7.4.4 All fasteners attaching the bracket to the fender shall be stainless, and be secured using locknuts.
- 7.4.5 Reinforced rubber washers or grommets shall insulate the bracket from the hood. Fasteners attaching the bracket to the hood shall be insulated from the hood by a 2-inch minimum diameter rubber washer or grommet and 2-inch minimum diameter plated washer.
- 7.4.6 Auxiliary headlights shall be grounded back to chassis ground; minimum 14-gauge wire shall be used. Drill holes to accommodate wire size.

7.5 Hydraulic Installation:

- 7.5.1 All hoses shall be routed in a manner to minimize rub points and bends. Critical rub points shall be wrapped for protection.
- 7.5.2 Teflon tape shall not be used in the hydraulic system.
- 7.5.3 Hydraulic hoses shall be bundled together and routed by themselves.
- 7.5.6 All pressure and return hoses shall be rated for at least 3000 PSI working pressure. Hydraulic hoses running to the rear of the truck shall be secured to a painted metal strap, approximately 1-1/4-inch x 1/4-inch in size. This strap shall be secured to the top of the frame cross members away from the side rails.
- 7.5.7 Each hose going to the dump body shall have 90° bulkhead mounted JIC elbows installed at the rear of the truck frame near the dump body hinge. These elbows shall split each hose going to the dump body into two hoses, allowing for easier routing and replacement.
- 7.5.8 Hydraulic ports shall be "o-ring" type unless otherwise specified.

- 7.6 Air Powered Accessory Installation:
- 7.6.1 All lines shall be routed in a manner to minimize rub points and bends. Critical rub points shall be wrapped for protection.
 - 7.6.2 Body Builder installed accessory air lines going to the rear of the frame, and dump body, shall be grouped together and bound with the Body Builder installed wiring going to the rear of the frame and dump body. This bound harness shall then be secured to a painted metal strap, approximately 1 ¼" X ¼" in size. This strap shall be secured to the top of the frame cross members away from the side rails.
 - 7.6.3 All air-powered accessories shall be controlled by the chassis air accessory power supply.
- 7.7 Bumper, Front Snowplow Hitch and Lift Assembly:
- 7.7.1 Type— Lo Profile, Front Frame mounted Universal plow hitch with fold down and adjustable lift arm, capable of self storing lift cylinder.
 - 7.7.2 Lift cylinder is to be a 2 ½"X 10 S/A cylinder.
 - 7.7.3 Lift arm mounting frame is to be constructed using ½-inch X 3-inches angle, welded to a 10" Structural Channel which forms the lift frame.
 - 7.7.4 Hitch frame is to be welded to ½-inch X 12-inches tapered cheek plates, and securely bolted to the truck frame on each side frame rail.
 - 7.7.5 The hitch must be capable of carrying plows from 10-feet to 14-feet in length. Hitches using braces running from the lift frame to the front axle of the vehicle are not acceptable.
 - 7.7.6 Fasteners are to be Grade 8 flange bolts, with top lock nuts. The hitch cheek plates are to be bolted to the frame by a minimum of five (5) 5/8-inch diameter bolts, and four (4) 7/16-inch diameter bolts per side.
 - 7.7.7 Rocker angles and plates are to be utilized above and below the truck frame to keep the hitch from loosening and moving forward. The rocker plates are to be welded to the cheek plates, and must be installed squarely to the truck frame surfaces.
 - 7.7.8 Lift arm bracket, and lower drop bar retaining/connecting lugs are to be fabricated from ¾-inch thick plate.
 - 7.7.9 The hitch uses drop bar weldments to attach the plow push frame to the truck hitch.
 - 7.7.10 Drop bars are fabricated from 1-inch thick bars, with lower end plates which will allow the attachment of a snow plow with 36 3/8" inch push frame centers.
 - 7.7.11 Lower holes for plow attachment are to allow for 1 ¼-inches mounting pins.
 - 7.7.12 Two bumper wings (right side and left side) are to be provided as an integral portion of the plow hitch. Each bumper wing is to be constructed using 10-inch H.D. structural channel. The wings are to be approximately the same height as the truck manufacturer's standard front bumper and are to be swept back to conform to the vehicle front hood and fenders. The bumper wing sections are to be bolted to the vehicle thru the hitch cheek plates and the truck frame.
- 7.8 Rear Hitch Plate and Pintle Hitch:
- 7.8.1 A 3/4-inch thick steel rear hitch plate shall be securely welded and gusseted to rear of frame rails. Rear hitch plate shall include the following items:
 - 7.8.1.1 Service and emergency trailer glad-hands shall be mounted to a bulkhead fitting installed in the plate and have tethered removable covers.

- 7.8.1.2 The 7-pin trailer connection furnished with the chassis and a 6-pin trailer connection will be furnished and shall be mounted through the rear hitch plate in a suitable location.
 - 7.8.1.3 Two "D" rings with 20-ton capacity each shall be securely welded to the rear hitch plate.
 - 7.8.1.4 A 20 Ton rigid pintle hitch (Buyers PH-20 preferred) shall be installed on the rear hitch plate using grade eight hardware torqued to specifications. Hitch shall be 24" centerline height above the ground, plus or minus 1".
- 7.9 Tool Box:
- 7.9.1 A steel 24" x 18" x 18" toolbox with weather proof door seal must be included and mounted on the right hand outside frame rail. Toolbox must have stainless steel lockable latch and powder coated black finish.
- 7.10 Grease Zerks:
- 7.10.1 All Grease Zerks shall be threaded. Drive in Zerks are not acceptable.
- 7.11 Back-Up Alarm:
- 7.11.1 A back-up alarm, meeting OSHA specifications, shall be installed at the rear of the frame. Alarm shall be installed in a protected area.
- 7.12 Hydraulic Hoses:
- 7.12.1 Suction hose from the reservoir to the pump shall be SAE 100R4 of adequate size for the displacement of the pump. Hose shall be connected to the pump barbed fitting, and double clamped with T-bolt style stainless steel super clamps. Hose shall be connected to the reservoir ball valve with a king nipple, double clamped with T-bolt style stainless steel super clamps.
 - 7.12.2 All hoses, with the exception of the suction hose, shall be rated for a working pressure of 3000 psi.
 - 7.12.3 All hose ends, with the exception of the suction hose, shall be swivel or swivel adapters.
 - 7.12.4 Hose ends connecting to valve assembly shall be 90° female JIC swivel.
 - 7.12.5 Pressure hose shall be of adequate size for the displacement of the pump, with female JIC swivels at both ends.
 - 7.12.6 Return hose shall be of adequate size with female JIC swivels at both ends.
 - 7.12.7 Hoist hoses shall be ¾" ID with female JIC swivels at both ends.
 - 7.12.8 Snowplow hoses shall be 3/8" ID with female JIC swivels at both ends.
 - 7.12.9 Auxiliary hydraulic hoses to the right rear corner of the dump body dump body shall be 3/8" ID with female JIC swivels at each end. The auxiliary hydraulic hoses shall be "teed" at the control valve enclosure with the front snowplow lift, and left/right circuits.
 - 7.12.10 Auger hose to the left rear corner of the dump body shall be 3/4-inch ID with female JIC swivels at both ends. The auger circuit shall have a capped 'tee' installed at the valve enclosure, enabling later installation of another hose routed to the front of the truck.
 - 7.12.11 Spinner hose to the left rear corner of the dump body shall be 1/2-inch ID with female JIC swivels at both ends.
 - 7.12.12 Spreader return hose to the left rear corner of the dump body shall be 1-inch ID with female JIC swivels at both ends. The spreader return circuit shall have a capped 'tee' installed at the return filter assembly, enabling later installation of another hose routed to the front of the truck.
 - 7.12.13 Pump case drain shall be 3/4-inch ID minimum with female JIC swivels at both ends, and also have a 3/4-inch NPT ball valve installed at the reservoir.
 - 7.12.14 Load sense line shall be 3/8-inch ID with female JIC swivels at both ends.
- 7.13 Hydraulic Quick-Disconnect Couplings:
- 7.13.1 All hydraulic couplers shall be full flow (Aeroquip FD45, Parker 60 series preferred). A dust cap or plug shall be furnished with every male and female quick coupler.
 - 7.13.2 The front snowplow lift circuit shall be equipped with a male 3/8" coupler installed in the front bumper.
 - 7.13.3 A 34" X 3/8" ID hose with a female 3/8" coupler shall be installed on the hydraulic lift cylinder.

- 7.13.4 The auxiliary hydraulics at the right rear corner of the dump body shall be equipped with three male 3/8" FD45-1002-6-6 couplers.
 - 7.13.5 The snowplow cushion valve shall be equipped with a 34" X 3/8" ID hose with a female 3/8" coupler.
 - 7.13.6 The spinner circuit shall have a 1/2" male coupler at the left rear corner of the dump body.
 - 7.13.7 The auger circuit shall have a 3/4-inch male coupler at the left rear corner of the dump body.
 - 7.13.8 The spreader return circuit shall have a 1-inch male coupler at the left rear corner of the dump body.
- 7.14 Hydraulic Reservoir:
- 7.14.1 Reservoir shall be 30-gallon minimum capacity with the breather cap mounted to an inspection lid. Inspection lid shall also provide for an in tank mounted return line filter.
 - 7.14.2 Breather cap fill neck must be screened and mounted on a riser.
 - 7.14.3 Reservoir shall have a full baffle to prevent sloshing.
 - 7.14.4 Reservoir and baffle shall be constructed of 10 gauge pickled and oiled steel.
 - 7.14.5 A sight/temperature gauge shall be mounted on the drivers' side of the reservoir, and be easily visible. Sight/temperature gauge housing shall be all aluminum.
 - 7.14.6 Reservoir bottom shall have a 2" NPT port for suction.
 - 7.14.7 Suction strainer shall be 2" NPT with a 3-5 psi built in bypass, and have a full flow 2" ball valve installed at the reservoir suction fitting. A heavy plastic wire tie shall be installed to insure the ball valve remains in the open position unless it is intentionally closed.
 - 7.14.8 Reservoir shall have a 3/4" NPT port with a magnetic plug for draining the reservoir.
 - 7.14.9 Reservoir shall have a 3/4" NPT port for the pump case drain.
 - 7.14.10 Reservoir back shall have a 3/8" NPT port for the solenoid drain.
 - 7.14.11 Reservoir back shall have a 1/2" NPT port for the low oil sensor.
 - 7.14.12 Reservoir top shall come with provision for a tank-mounted filter on the passenger side.
 - 7.14.13 As an integral part of the reservoir, there shall be an area for mounting of the hydraulic stack valve. Reservoir must be of template style for bulkhead "through" mounting of the valve and be completely free from internal tubing or hoses from the work ports and inlet of the valve.
 - 7.14.14 Valve must be removable as a unit with template through the top of the reservoir for service and accessibility.
 - 7.14.15 All Electrical connections must be made via IP68 rated connectors on the front (cab) side of the reservoir.
 - 7.14.16 The enclosure must have a fully potted output module installed in it for all electrical connections for the complete system. This module must be the master for the complete controlling system that operates on a CAN open platform.
 - 7.14.17 The hydraulic fittings must come out the bottom of the enclosure and must be male JIC bulkheads.
 - 7.14.18 Access to the enclosure must be by a removable top lid that is held in place with 2 rubber tie downs.
 - 7.14.19 The reservoir filter and fill cap must be accessible without removing a lid or cover.
 - 7.14.20 Hydraulic reservoir must be mounted on the driver's side of the vehicle.
- 7.15 Hydraulic Return Filter Assembly:
- 7.15.1 Filter assembly shall be mounted on the top of the hydraulic reservoir.
 - 7.15.2 Filter assembly shall have a 10-micron replaceable cartridge element.
 - 7.15.3 Filter assembly shall be capable of 80 GPM flow capacity.
 - 7.15.4 Filter assembly shall have one 1 1/4" NPT port.
 - 7.15.5 Filter assembly shall have a built in by-pass and a bypass condition indicator.

7.16 Hydraulic Pump:

- 7.16.1 The pump shall be axial piston, load-sensing type, and be driven off the engine crankshaft by means of a drive shaft.
- 7.16.2 The pump shall a minimum 4.58 cubic inch (75 cubic centimeter) displacement, and capable of 48GPM (theoretical) at 2500 RPM and 4000 PSI.
- 7.16.3 The pump case drain must be positioned as high as possible and directed back to the reservoir without passing through the return line filter.
- 7.16.4 The pump must have an internal bleed down compensator as a option.
- 7.16.5 The pump must have a keyed shaft with an SAE 4-bolt mounting flange.
- 7.16.6 The pump must have side ports. Rear ports are not acceptable.
- 7.16.7 Ports must be of the split flange design, sized accordingly for the displacement of the pump.
- 7.16.8 Suction fitting shall be a flanged, 2" formed elbow hose barb.
- 7.16.9 Fitting shall be of adequate size for the displacement of the pump.
- 7.16.10 Discharge fitting shall be a 1" o-ring thread flange block. Fitting shall be of adequate size for the displacement of the pump.
- 7.16.11 A 1" o-ring high pressure ball valve shall be mounted to pump pressure port.
- 7.16.12 System shall be performance checked. System standby pressure shall be set at 350 psi. System main pressure shall be set at 2000 psi.
- 7.16.13 A pressure test port shall be a integral port in the pump port plate.
- 7.16.14 Sauer-Danfoss JRL075 is acceptable model.
- 7.16.15 A pressure test port shall be provided at the pump by installing a 3/8" male Aeroquip FD45-1002-6-6.

7.17 Hydraulic Pump Drive:

- 7.17.1 The driveline must be 1280/1310 series solid shaft style.
- 7.17.2 Driveline must be installed according to manufacturer's instructions to assure proper alignment.
- 7.17.3 The pump shall be driven off the engine crankshaft with a flange yoke.
- 7.17.4 Pump shaft shall have a flange yoke installed to allow shaft to be un-bolted from pump.
- 7.17.5 Universal joints used in the shaft must have grease zerks in the center of the bearing caps.
- 7.17.6 Hardware used for installation of the pump driveshaft shall be to driveline manufacturer's specification. All drive shaft installation hardware shall be torqued to specifications.

7.18 Hydraulic Function Control Valves:

- 7.18.1 Hydraulic function control valves shall be bulkhead fitting mounted in a weather-tight enclosure with the fittings on the bottom of the enclosure. Valves shall be mobile hydraulic, cast iron, stackable, load sensing type. All spreader valves shall be operated with proportional electric coils. Proportional coils shall be compatible with the control system valve driver module PWM outputs. All valves within the valve assembly shall have parallel inlets. Valve assembly inlet and outlet ports shall be 1-inch o-ring. Work ports shall be 3/4" and 5/8" o-ring.

7.19 Standard Hydraulic Function Control Valve Arrangement:

- 7.19.1 Double acting cylinder spool for hoist, 12 VDC proportional controlled with spring return to neutral pressure compensated with a 32 GPM main spool, and a down side relief set at 500 PSI.
- 7.19.2 Double acting cylinder spool for plow lift, 12 VDC proportional controlled with spring return to neutral pressure compensated with a 17 GPM main spool.
- 7.19.3 Double acting cylinder spool for plow angle, 12 VDC proportional controlled with spring return to neutral pressure compensated with a 17 GPM main spool,

- 7.19.4 For the spreader functions there shall be a manifold assembly that is an integral part of the stack valves that will have a cartridge valve for the auger with a manual override 12VDC proportional controlled 0-15 GPM. The spinner will be 0-7 GPM 12vdc proportional controlled also with a manual override. The manifold assembly shall have the ability to have 2 more cartridges added at a later date for a pre-wet system or anti-ice system without valve disassembly.
- 7.19.5 Spreader Auger 15 GPM
- 7.19.6 Spreader Spinner 8 GPM
- 7.19.7 Pre-wet Pump 7 GPM (cavity plugged if not used for accessory circuit)
- 7.19.8 Anti-Ice Pump 15 GPM (cavity plugged if not used for accessory circuit)
- 7.19.9 Sauer-Danfoss PVG32 is acceptable model.
- 7.20 Snowplow Cushion Valve:
 - 7.20.1 A double-relief cushion valve must be installed for front snowplow angle.
 - 7.20.2 The valve shall be set at 2000 PSI.
 - 7.20.3 The valve shall be constructed of a high-tensile cast iron body with ball and spring style relief that has hardened seats.
 - 7.20.4 The valve shall be installed at the front bumper/snowplow hitch.
 - 7.20.5 Valve shall have o-ring thread ports.
- 7.21 Hydraulic Spreader Control System:
 - 7.21.1 The hydraulic/spreader control system shall be a complete control system that operates on a CAN BUS, using CAN OPEN protocol, J1939. The system shall consist of modules that reside on the BUS, and allow flexibility in mounting configurations. The system shall be completely expandable and allow for additional modules to be added to the BUS, such as a joystick control for an optional underbody scraper. The system controller, or valve driver module, shall control all standard hydraulic functions; dump body hoist, snowplow lift, snowplow left/right, auger, spinner, hydraulic driven pre-wet. The control system shall be capable of providing ground speed sensing, closed loop spreader and granular pre-wet system operation. The control system shall be capable of applying 200-400 lbs. of granular material per lane mile at speeds up to 45 mph. The actual application rate shall be +/- 5% of the selected application rate. The spreader control system shall work equally well whether the truck is driven forward or in reverse.
 - 7.21.2 All modules of the system shall be software upgradeable using a laptop and interface cable. The system shall have an Ethernet port for accessing a built in Web server. The Web server may be used to configure or troubleshoot a system by connecting to a PC. Interface shall utilize Internet Explorer and not require any proprietary software to connect to the system. No external components shall be required to calibrate the system.
 - 7.21.3 The system shall incorporate three levels of security and access that are password protected and defined by the user. The three levels of access shall provide access to the system setup, data, configuration fields, and parameters based upon access given.
 - 7.21.4 The system shall have a built in diagnostic feature allowing technicians to view all input signals in real time. The system shall also provide error logging and system status change logging for reviewing operator inputs.
 - 7.21.5 The system shall be capable of both automatic and manual modes, and provide a lock out of manual mode.
 - 7.21.6 The system shall provide 'blast' and 'pause' functions, and be capable of calibration at multiple gate settings.
 - 7.21.7 The system shall be capable of operating at least four different programmed materials.

- 7.21.8 The system software shall incorporate a “test speed” mode for use in testing the system safely without requiring the truck to be moving or the drive axles engaged.
 - 7.21.9 The system shall provide monitoring, and audible and visual operator warning, for low hydraulic oil level and hydraulic oil overheat conditions.
 - 7.21.10 The system shall suspend operation of the spreader and all hydraulic accessory functions in the event Of a low hydraulic oil level and/or hydraulic oil overheat condition. The system shall have an override feature to allow function use in an emergency situation.
 - 7.21.11 Auger feedback sensor shall be mounted to a hydraulic flow meter. Flow meter shall be mounted inside the hydraulic control valve enclosure. Feedback sensor shall be hard wired to the valve driver module. Feedback sensor shall be replaceable independent of the flow meter.
 - 7.21.12 The system shall provide open loop operation in the event of a feedback sensor failure.
 - 7.21.13 The system shall use input from a float switch in the pre-wet nurse tank to prevent pre-wet pump run-dry. This shutdown feature shall incorporate a buffer to prevent liquid pump shutdown due to an intermittent signal caused by sloshing material in the supply tanks.
 - 7.21.14 The system shall provide stand-alone operation of the feeder circuit, and spinner circuit, for powering hydraulic accessories other than a slip-in spreader.
 - 7.21.15 The system shall provide stand-alone operation of the pre-wet system, allowing it to be used for other operations.
- 7.22 Valve Driver Module:
- 7.22.1 The valve driver module shall be mounted inside the hydraulic control valve enclosure. No portion of the valve driver module may be outside of the hydraulic valve enclosure.
 - 7.22.2 The valve driver module shall accept closed loop feedback signals, and digital inputs.
 - 7.22.3 The valve driver module shall have a minimum of 14 PWM output channels.
 - 7.22.4 All PWM outputs shall be software configurable, and controlled by closed loop operation, proportional input devices, or digital input devices.
 - 7.22.5 The valve driver module shall have internal over temperature shutdown, over current shutdown, and low voltage shutdown.
 - 7.22.6 All electrical connections shall be IP68 sealed when mated utilizing threaded connections for positive retention.
 - 7.22.7 The valve driver module will reside on the BUS as the “master”, and all truck values and configurations shall be saved in this module.
- 7.23 Operator Controls and Display Modules:
- 7.23.1 System controls and display shall be resistant to salt and other chemicals used during the snow removal process.
 - 7.23.2 System controls shall utilize detented rotary encoders for setting material application rates.
 - 7.23.3 System controls shall utilize snap action push buttons for navigation through the system program, and function selection.
 - 7.23.4 System controls shall be backlit for nighttime operation.
 - 7.23.5 System display screen shall be a minimum of 20 square inches.
 - 7.23.6 System controls and display shall be mounted in a factory made, painted or powder coated bracket. System display shall be operator adjustable for proper viewing angle.
 - 7.23.7 System display shall automatically adjust brightness level for nighttime operation.
 - 7.23.8 System display shall show; auto/manual mode, current material, granular rate, pre-wet rate, lane width, system status, error messages, plow float activated, system hydraulic pressure, and road temperature sensor information if optioned.
 - 7.23.9 Certified Power Freedom ACS no exceptions

7.24 Hydraulic Function Control Lever Modules:

- 7.24.1 Hydraulic function control levers shall be proportional CAN BUS controls. Controls shall be mounted to the right of the driver and be within easy reach. Control levers to be labeled with decals for operation.
- 7.24.2 Truck shall be equipped with a single axis control lever with center position dead man lock for the dump body up/down. Control lever shall be spring returned to neutral.
- 7.24.3 Truck shall be equipped with a dual axis control lever for the snowplow lift, and snowplow left/right. Control lever shall be spring returned to neutral from all directions. Control lever shall be capable of placing the snowplow lift valve in float when moved to the extreme forward position.
- 7.24.4 Controls shall be mounted in a factory style control console that has joysticks, operator panel and display, spaced for full axis control.
- 7.24.5 Certified Power Freedom ACS system no exceptions.

7.25 Control System Cable:

- 7.25.1 System cables shall meet ISO rating IP68 and NEMA 6.
- 7.25.2 The connectors shall be O-ring sealed.
- 7.25.3 The cable jacket should be TPE (thermoplastic elastomer), and molded to the connectors.
- 7.25.4 Connectors and harness should be rated and tested for a temperature range from -30C to + 70C.
- 7.25.5 Connectors should be tested to be water tight when submerged in 6' of water for 24 hours, in 275' of water for 1 hour, and when subjected to a 1000-psi pressure wash.
- 7.25.6 The connectors should be designed to have no corrosion after 5000 hours in 35C salt spray.
- 7.25.7 Cabling should be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, sunlight, ozone, abrasion, electrical priorities, flame, gasoline, degreaser solvents, alcohol, and weld slag.

7.26 Granular Pre-Wet System:

- 7.26.1 The hydraulic driven pre-wet system enclosure shall be mounted outboard of the truck frame ahead of the rear axle. The suction and discharge hoses shall be routed to the rear of the truck frame and secured with bulkhead mounted cam-lock couplers. Mounting location must be approved by the Fleet Manager at the pilot review before the trucks are built. The pre-wet system shall come complete with mounting hardware. Pump and hydraulic motor shall be mounted in a weather tight enclosure.
- 7.26.2 The pre-wet system shall be hard-wired to, and completely controlled, by the spreader control system.
- 7.26.3 The pre-wet system shall be hard-plumbed to, and supplied by the four-circuit motor manifold in the hydraulic valve assembly.
- 7.26.4 Liquid pump shall be a corrosion resistant bronze design.
- 7.26.5 Pump shall be self-priming, positive displacement design.
- 7.26.6 A manual bleed valve shall be installed in the suction hose at the enclosure to facilitate easier pump priming.
- 7.26.7 Unit shall come with a precision-machined stainless steel shaft.
- 7.26.8 Pump shall have oil-less carbon graphite bushings.
- 7.26.9 Pump shall have long wearing, mechanical shaft seal.
- 7.26.10 Pump shall have bronze gears.
- 7.26.11 The pre-wet system shall have a relief valve to protect against over-pressurization.
- 7.26.12 Pump shall have a maximum pressure rating of 100 psi.
- 7.26.13 Pump shall be plumbed through a 0-15 GPM flow meter, made of a non-corrosive material.
- 7.26.14 Pump shall be capable of producing 9 GPM at 40 PSI, with 4.5 GPM maximum oil flow to the motor.
- 7.26.15 Hydraulic connections shall be bulkhead mounted in the enclosure.
- 7.26.16 All hydraulics inside enclosure shall be hard plumbed.
- 7.26.17 The pre-wet system shall have a 2.5 gallon frame mounted polyethylene reservoir completely sealed.

The tank will be in the suction line and be used for the low liquid float switch to prevent damage to the pump from running dry.

- 7.26.18 Flow meter sensor wiring and tank float switch wiring shall be combined in one single bulkhead mounted connector in the pre-wet enclosure, allowing for one cable between the pre-wet enclosure and hydraulic function control valve enclosure.
- 7.26.19 The pre-wet system shall include a ¼ turn valve and strainer-filter assembly for installation on the storage tanks on the material spreader.
- 7.26.20 The pre-wet system shall include spray nozzles and plumbing for installation on the material spreader. Nozzles should be of sufficient size and type for the capacity of the pre-wet system.

8. Body:

- 8.1 General: The dump body provided shall be a Western style. No underbody cross-members for support will be allowed. The floor, sides, and main long sill are to be full length with no cross-splices. All boxed areas of the dump body shall be sealed. No wiring or hoses shall be run through any boxed area. All welds shall be continuous. All hinge pins shall be removable.
 - 8.1.1 Dump body capacity shall be twelve cubic yards water level.
 - 8.1.2 15-foot maximum inside length.
 - 8.1.3 95-inch minimum outside width.
 - 8.1.4 86-inch minimum inside width.
 - 8.1.5 36-inch minimum side height with raised ends.
- 8.2 Material:
 - 8.2.1 Long sills, sides, front, corner post, rear apron **and all braces, 3/16" Corten Steel**
 - 8.2.2 Floor and tailgate shall be made of **1/4 " AR-450 Hardox**
- 8.3 Dump Body Mounting:
 - 8.3.1 Body shall be mounted as close as practical to back of cab with the center of the hinge pin in line with the plane of the rear tire tread and approximately 12" ahead of the rear edge of the floor.
 - 8.3.2 A 4-gauge battery cable ground strap shall be installed from the dump body to the truck frame by means of a 5/16-inch cadmium plated bolt. Star washers shall be installed on both sides of the strap eye to insure a good ground.
- 8.4 Hoist:
 - 8.4.1 Hoist shall be a trunnion mount, head lift, double-acting cylinder.
 - 8.4.2 The cylinder sleeves shall be nitride coated. Sub-frame hoists are not acceptable.
 - 8.4.3 A flared body bracket will be attached to either the hoist frame or body understructure to align body in position and keep from moving side to side.
- 8.5 Dump Body Pivots: Dump body pivots shall facilitate thorough greasing. Bushings shall have an internal radial groove in line with the grease fitting. Pivot pins shall be drilled and cross-drilled.
- 8.6 Body Props:
 - 8.6.1 A storable body prop shall be provided on each side of the dump body.
 - 8.6.2 Pivots for the body props shall be greaseable.
 - 8.6.3 Body props shall be constructed to withstand the down-pressure of the hoist without damaging the dump body, chassis, or any related components.
- 8.7 Cab Protector:
 - 8.7.1 The half (1/2) cab protector shall not interfere with the cab-mounted vertical exhaust pipe.
 - 8.7.2 The cab protector shall be mounted, welded, and gusseted to prevent flexing or vibration.
- 8.8 Sides:
 - 8.8.1 Sides shall have a formed, debris-shedding top rail.
 - 8.8.2 External supports for sides shall be horizontal.
 - 8.8.3 Sides shall have front and rear provisions for extension boards plus one intermediate board brace.
- 8.9 Tailgate:
 - 8.9.1 The 44" tailgate shall be double-acting, and vertically straight with off-set hinges for positive closure.
 - 8.9.2 The tailgate shall have boxed upper, lower, side, and intermediate horizontal rib supports.

- 8.9.3 A hinged "D" ring shall be mounted top and center of the tailgate to provide a lifting hook for removing the tailgate.
- 8.9.4 Two 3/8-inch grade 70 spreader/holder chains shall be provided
- 8.9.5 The top hinge pin shall be minimum 1 inch diameter and pivot through a greasable bushing. These pins shall have one end tapered approximately 30 degrees for ease of alignment. 30 degree taper shall be 1/4- to 3/8-inch in length.
- 8.9.6 The tailgate lower pins shall be a minimum 1 1/8-inch diameter. A license plate bracket shall be welded on the left-hand side of the tailgate, at approximately half the height of the tailgate.
- 8.9.7 When tailgate is lowered parallel to body floor, the inside surface of the tailgate shall provide a smooth level joint between the tailgate and the body floor.
- 8.10 Tailgate Latch:
 - 8.10.1 An over-center locking device on each side of the dump body shall hold the tailgate securely closed. Latching arms shall be forged steel.
 - 8.10.2 The tailgate latch cross shaft assembly shall be supported on each end by bushings.
 - 8.10.3 This locking device shall be operated by an air cylinder, which shall be mounted between the long sills. Air cylinder shall be controlled by the chassis air accessory power supply.
 - 8.10.4 Locking device shall be adjustable at each side of the dump body.
 - 8.10.5 A manual over-ride shall be provided on the outside of the dump body, allowing the operator to lock or unlock the tailgate using a simple adjustable wrench and without removing components.
 - 8.10.6 Lubrication points on the tailgate latch cross-shaft shall facilitate easier greasing by means of grooved bushings and/or shaft.
 - 8.10.7 Grease zerks at each end of the tailgate cross-shaft shall be visible and accessible from the outside face of the dump body.
- 8.11 Ladder:
 - 8.11.1 A pull out style two-rung ladder shall be installed on each side of the dump body. Location of the ladder shall be such that operator does not have to climb over the tarp bow when the tarp is retracted.
 - 8.11.2 Grab handles shall be installed on the outside of the dump body and provide for three points of contact while using the ladder.
- 8.12 Wiring and Hose Routing:
 - 8.12.1 Wiring and hoses going to the front of the dump body shall be secured to a 1/2-inch diameter painted steel rod which shall be attached to the inside of the long sill by means of 1/2-inch X 1-inch tall stand-offs. Stand-offs shall be placed no farther than 24 inches apart, and be securely welded to the long sill.
 - 8.12.2 Wiring inside the rear corner posts shall be secured to 1/4-inch vertical painted steel rods attached inside the rear corner posts by means of 1/4-inch X 1-inch stand-offs, securely welded. Height of stand-off to be sufficient to support all of the wiring inside the corner post. Stand-offs shall be positioned to allow wires to be secured away from the tailgate latch mechanism, and within 6 inches of all lamps. A sufficient amount of wire shall be left between the last point of securement and lamp to allow for the removal of the lamp for replacement.
- 8.13 Brake, Turn and Tail Lights: Lighting shall meet all Federal and State DOT specifications, which includes and requires an independent running light on the rear corners.
 - 8.13.1 All lights shall be mounted in shockproof rubber grommets.
 - 8.13.2 All lights including the backup light shall be LED.
 - 8.13.3 All lights shall be connected to a one piece wiring harness with molded connectors.
 - 8.13.4 Each rear corner post shall have a built in, recessed 3 x 5 rectangular LED tail light.
 - 8.13.5 Each rear corner post shall have a built in, recessed 3 x 5 rectangular LED back up light.
 - 8.13.6 A one and one-half (1-1/2) inch pipe shall extend through long sills at the rear for routing of electric wiring. Pipes are to be fully welded, sealing the joint at the long sill.
- 8.14 Raised Body Indicator: A sealed proximity switch shall be mounted near the hoist assembly to control a raised body indicator light. The light shall be powered by the chassis electric accessory power supply. A dash mounted indicator light shall be provided, be plainly visible to the seated operator, be red in color, and flash when the dump body is raised.

- 8.15 Spreader Light: One work light shall be mounted below the left rear dump body corner. The light shall be controlled by the chassis electric accessory power supply. Light will not hinder the operations of the material spreader.
- 8.16 Mud Flap Brackets: Friction type mud flap brackets to be attached to the underside of the dump body at the rear. These brackets shall allow replacement of the mud flap by removing only one fastener. Mud flaps shall be 24" wide and long enough to satisfy FMVSS. Front mud flap brackets to be attached to underside of bed. Front mud flaps shall be 24" wide, anti-sail and long enough to keep rear tires from throwing debris on the back of the cab.
- 8.17 Conspicuity: Dump body shall be outfitted with DOT-C2 11-inch red/7-inch white parabolic retro-reflective conspicuity tape (Reflexite or equal) This includes along the length of both sides and across the width of the tailgate.
- 8.18 Spreader Body Hold Downs: Four storable winches to be welded prior to priming on the bottom side of upper body rail in a fashion not to exceed the overall width of the body, 4-inch x 10-foot of nylon webbing with flat hook to be included. Body Builder must coordinate placement of winches to line up vertically with the spreader hold down brackets.
- 8.19 Tarp: A fully automatic two-arm type tarp system shall be installed. It shall be an electric system operated from the cab. The arms and tarp-protecting windshield shall be aluminum. The tarp shall be designed for hot asphalt. The width of the tarp shall be within 4" of the inside width of the dump body. The arm springs shall be adjustable and designed to mount on the underside of the dump body. The elbows of the tarp arms shall be bolted to the arms. The tarp shall be controlled by the chassis electric accessory power supply. Aero 550 series preferred.
- 8.20 Paver Lip: A 10" x 3/16" paver or asphalt lip shall be mounted on the rear dump body
 - 8.20.1 Paver lip shall be mounted with 1/2 –inch hardware. Holes in lip and dump body shall be dimensional to allow any lip to be installed on any dump body. Welded paver lips are not acceptable.
- 8.21 LED Warning Light System: Trucks are to be equipped with an LED warning light system.
 - 8.21.1 System shall emit light that is amber in color.
 - 8.21.2 System shall provide 360 degrees of visibility in a horizontal plane around the truck.
 - 8.21.3 System shall use two lights recessed into the front corners of the body's cab shield at a 45° angle and two lights recessed into the body's rear corner posts. Lights shall be mounted in rubber grommets and independently programmable.
 - 8.21.4 Wiring harness for warning lights shall be without splices.

9. Spreader:

- 9.1 General: The following specifications shall apply to a 15-foot skid-mounted, hydraulic driven materials spreader body capable of spreading uniformly all types of granular materials: salt, cinders, chemicals, abrasives, and mixtures of these up to a width of 40 feet.
 - 9.1.1 The body and conveyor box shall be manufactured into a common unit
 - 9.1.2 All stainless steel shall be welded using stainless welding wire.
 - 9.1.3 All stainless steel shall be left unpainted.
 - 9.1.4 Any carbon steel components shall be chemically cleaned and coated with a lead-free primer and painted with lead-free gray enamel.
 - 9.1.5 Unit is to be complete, assembled, and ready to operate.
- 9.2 Body: The body is to be 100% welded on the inside. Cross-member and side-support spacing deviations may be allowed if necessary for component installation.
 - 9.2.1 Spreader body shall have a minimum of 11 cubic yards struck capacity.
 - 9.2.3 Spreader shall have an inside body length of 16 feet at the top.
 - 9.2.4 Overall height shall not to exceed 56 inches to the top of the center screen support beam.
 - 9.2.5 Top inside width shall not be less than 78 inches.
 - 9.2.6 Sidewalls must be sloped at approximately a 45-degree angle.
 - 9.2.7 Body shall be constructed of a minimum 12-gauge stainless steel.

- 9.2.8 Body shall have a minimum of 8 cross-members and side supports spaced 12" from body ends on 24" centers.
- 9.2.9 Body long sill, cross-members and full-length steel channel skids shall be a minimum of 7-gauge stainless steel.
- 9.2.10 Body side supports shall be a minimum of 12-gauge stainless steel.
- 9.3 Top Grate Screens: Body is to have a top-grate screen grid, having at least 8 sections, four on each side.
- 9.4 Tie Down/Lifting Brackets: Body shall have (4) stainless steel hold down brackets designed for four-inch nylon straps with flat hooks, two on each side. A stainless steel lift hook/bracket shall be installed on the front and rear face of the body at each upper corner to allow for easy handling.
- 9.5 Conveyor: Conveyor box and floor shall be 7-gauge stainless steel.
 - 9.5.1 Conveyor chain shall be a heavy-duty pintle chain, Drives D667X or equal. Crossbars shall be 1-1/2" x 1/4" x 18" minimum welded to the chain links on 4-1/2" centers.
 - 9.5.2 Chain tensioner shall be screw type, spring loaded, on the front idler shaft.
 - 9.5.3 A rear belt type bar wiper shall be provided.
 - 9.5.4 Front idler shaft bearings shall have grease zerk lines plumbed to the rear of the body
- 9.6 Conveyor Gear Box: Conveyor drive gearbox ratio shall be 50:1. Gearbox shall have hardened input and output shafts and a bronze bull gear.
 - 9.6.1 The gearbox shall have a high torque, low speed, geroller type hydraulic motor installed.
- 9.7 Discharge Gate: An adjustable discharge gate shall be located at the rear of the body to properly adjust the flow of material to the spinner.
 - 9.7.1 Discharge gate and track shall be 7-gauge stainless steel.
 - 9.7.2 The grease zerk on the jack shall be relocated and plumbed to accommodate greasing from ground level.
- 9.8 Drop Chute and Spinner: The chute shall be fully enclosed and include operator-adjustable deflectors at the bottom to change the flow of material from the middle of the chute to one side or the other, or to the rear.
 - 9.8.1 Drop chute shall be made of a minimum of 12-gauge stainless steel.
 - 9.8.2 Drop chute shall bolt to the long sills.
 - 9.8.3 The spinner shall be securely mounted at the bottom of the chute. Spinner motor mounting brackets shall be a minimum of 7-gauge stainless steel.
 - 9.8.4 The spinner shall be operated by a high torque, low speed geroller type hydraulic motor with o-ring thread ports.
 - 9.8.5 The height of the spinner disk shall be adjustable with an ideal height of 18" above the ground.
 - 9.8.6 Spinner disk shall be 20" in diameter, stainless steel.
- 9.9 Hydraulic Hoses and Couplers: Hydraulic hoses shall be long enough to be routed from their respective connection point on the spreader to the male hydraulic couplers mounted in the left rear corner of the dump body. The return circuit for the conveyor and spinner motor shall be "teed" together on the spreader and run together in a common return hose to the truck coupler. Spreader hoses shall be size matched to coupler sizes described earlier.
- 9.10 Liquid Chemical Storage: Two (2) side-mounted, 135-gallon polyethylene reservoir tanks, one per side, shall be provided.
 - 9.10.1 A minimum of a 3-inch top fill port with splash proof vent and a 3/4-inch suction port shall be molded into each tank.
 - 9.10.2 Both tanks shall be plumbed together with a minimum 1-1/2" ID hose and a tee located at the left rear corner of the spreader.

10. Plow:

- 10.1 General: Plow shall be new and of heavy-duty design. Plow shall have a full trip moldboard, must be of integral design and hydraulically angle a minimum of 35 degrees left and right.

- 10.2 Moldboard: Top edge shall have a full length built in snow deflector, shall extend forward beyond the cutting edge a minimum of 12". Shall be 10' long and 36" high. Shall be not less than 3/16" Corten HR sheet. Must be of smooth rolled construction, not brake formed. Top moldboard angle must be 2" x 3" x 3/8" angle. Welding on entire plow must be continuous to eliminate corrosion pockets. Skip welding is not acceptable. Reinforcement to be (6) one piece ribs of 1/2" plate with 3" x 4" x 3/8" horizontal reinforcing angle full width of the moldboard.
- 10.3 Cutting Edge: Shall be of abrasion resistant steel, C-1085 or equal, shall be not less than 5/8" thick x 8" wide and 120" long. Shall be bolted to the plow for easy replacement with 5/8" x 2 1/2" Grade 5 plow bolt and lock nuts on 12" centers.
- 10.4 Cutting Edge Reinforcement: Shall be a minimum of 4" x 4" x 3/4" thick angle iron, supported with full 1/2" thick gussets spaced at 12" intervals.
- 10.5 Drive-Frame: Shall consist of one (1) truss member, a main drive-frame member, pivot frame and oscillating drive bar. The truss member shall be made from 3 1/2" x 3 1/2" x 1/2" rolled angle. Main drive member shall be made from 4" x 4" x 3/8" structural square tube. Two (2) additional pieces of 3 1/2" x 3 1/2" x 1/2" angle shall be electrically welded perpendicular to the main drive angle connecting with the truss member to form a rigid structure, and also, for mounting the trip canister. Four (4) hinge points of 1/2" plate shall be provided for pinning the moldboard to the drive-frame, spanning 84" (on center). Four (4) 1 1/4" pins shall pin the moldboard to the drive-frame.
- 10.6 Reversible A-Frame: The pivot frame shall be fabricated from two (2) pieces of extra heavy-duty four-inch ship and car channel electrically welded to form a "V". At the base or truck side of the A-frame, a one-inch pivot plate will be welded continuously to the end of the A-frame. The center of this swivel plate shall be drilled to accept a 1 1/4" oscillating bolt. The A-frame shall be attached to the 4" x 4" x 3/8" tubular pivot beam with a 1 1/4" x 7" Grade 8 bolt. This pivot point shall have a bushing and shall be drilled and tapped for a grease fitting. The oscillating drive bar shall be made from 4" channel 35" long. It shall swivel on a 1 1/4" Grade 5 bolt. The drive bar shall be cut in such a way as to allow the plow to follow the contour of the road without exceeding 20° to the left or right. The drive bar shall be equipped with two (2) drive ears made from 1" plate on 21" or 30 1/2" centers with 1 1/16" pinning holes. The power reverse cylinders must be a minimum of two 3" x 9 1/4" heavy-duty cylinders with induction hardened chromed rods. The packing for these cylinders must have a minimum 3000-PSI operating pressure. The ports for these cylinders shall have 1/2 NPT threads.
- 10.7 Trip Mechanism: Moldboard trip must be designed with a dual compression spring trip assembly. Compression springs must be a minimum of 3/4" diameter spring size with a free length of 17 7/8". Trip mechanism must provide for three spring tension adjustments providing a soft, medium and harder. The push frame will have three compression trip arm mounting locations to provide the tension adjustment. There will be three moldboard attachment positions to adjust the pitch of the moldboard to approximately 20°, 15°, or 10°. The tripping action of the plow must allow for full rotation of the moldboard to the road surface (approximately 105°), but be limited to 60° rotation by rubber bumpers.
- 10.8 Swivel: Pin swivel constructed from 4" ship & car channel with drive bars for 1 1/4" pin 36 3/8" centers.
- 10.9 Snow Shield: Minimum 12" x 1/2" rubber snow shield with clamp bar attached to plow moldboard.
- 10.10 Plow Markers: Set of (2) minimum 36" flexible plow markers shall be installed.
- 10.11 Set of (2) minimum 36" flexible plow markers shall be installed.
- 10.12 Paint: Sand blasted to remove all mill scale, rust, and contaminants, push frame to be powder coated gloss black. Moldboards to be wet coat painted, or powder coated to 4 mill thickness. Yellow color.

**CITY OF SPRINGFIELD
 BID FORM – PROPOSAL
 IFB #036-2012**

SUBMITTED BY _____
 Company Name

Pursuant to and in accordance with the above stated Invitation for Bid, the undersigned hereby declares that they have examined the IFB documents and specifications for the item(s) listed below.

The undersigned proposes and agrees, if their Bid is accepted to furnish the item(s) submitted below, including delivery to Springfield, Missouri in accordance with the delivery schedule indicated below and according to the prices products/services information submitted.

ITEM	EST. QTY	DESCRIPTION	UNIT PRICE	EXTENDED AMOUNT
1.	1 EA	<p>2012 TANDEM AXLE TRUCK, 6X4, 58,000 GVWR, COMPLETE WITH DUMP BODY, PLOW AND SPREADER READY FOR SERVICE:</p> <p>TRUCK MFG: _____ MODEL _____</p> <p>BODY MFG: _____ MODEL _____</p> <p>PLOW MFG: _____ MODEL _____</p> <p>DELIVERY: _____ DAYS AFTER RECIEPT OF ORDER.</p> <p>SHALL WARRANTY THE ABOVE EQUIPMENT FOR PARTS, LABOR, AND TRAVEL FOR _____</p> <p>ATTACH COPY OF WARRANTY</p>	<p>\$ _____</p>	<p>\$ _____</p>

DELIVERY: F.O.B. DESTINATION

Prompt Payment Discount _____% _____ Days, Net _____ Days

**CITY OF SPRINGFIELD
STATEMENT OF "NO BID"
IFB #036-2012**

**RETURN THIS PAGE ONLY IF YOUR COMPANY PROVIDES THE PRODUCTS/SERVICES BEING BID AND DECLINES
TO DO SO.**

WE, THE UNDERSIGNED, HAVE DECLINED TO BID ON YOUR **IFB #036-2012** FOR **TANDEM AXLE DUMP TRUCK** FOR THE FOLLOWING REASON(S):

_____ SPECIFICATIONS ARE TOO "TIGHT," I.E. GEARED TOWARD ONE BRAND OR MANUFACTURER ONLY
(PLEASE EXPLAIN BELOW).

_____ INSUFFICIENT TIME TO RESPOND TO INVITATION FOR BID.

_____ OUR PRODUCT SCHEDULE WOULD NOT PERMIT US TO PERFORM.

_____ UNABLE TO MEET SPECIFICATIONS.

_____ UNABLE TO MEET INSURANCE REQUIREMENTS.

_____ SPECIFICATIONS UNCLEAR (PLEASE EXPLAIN BELOW).

_____ OTHER (PLEASE SPECIFY BELOW).

REMARKS: _____

COMPANY NAME: _____

ADDRESS: _____

SIGNATURE AND TITLE: _____

TELEPHONE NUMBER: _____

DATE: _____