



State of Delaware

Heavy Duty Trucks

Request for Proposal Contract No. GSS11617-HEAVY_TRUCKS

June 23, 2011

**- Deadline to Respond -
July 26, 2011
2:00 P.M. local time**

STATE OF DELAWARE
Office of Management and Budget
Government Support Services

Date: June 23, 2011

CONTRACT NO. GSS11617-HEAVY_TRUCKS

ALL VENDORS:

The enclosed packet contains a "REQUEST FOR PROPOSAL" for Heavy Duty Trucks. The proposal consists of the following documents:

REQUEST FOR PROPOSAL

- I. Introduction
- II. Scope of Work
- III. Format For Proposal
- IV. Proposal Evaluation Procedures
- V. Mandatory Pre-Bid Meeting
- VI. Definitions and General Provisions
- VII. Special Provisions
- VIII. Technical Specifications
- IX. Proposal Reply Section
 - a. Attachment 1 - Exceptions
 - b. Attachment 2 - Confidentiality and Proprietary Information
 - c. Attachment 3 - Subcontractor Information Form
 - d. Attachment 4 - Monthly Usage Report
 - e. Attachment 5 - Subcontracting (2nd tier spend) Report
 - f. Attachment 6 - Office of Minority and Women Business Enterprise Certification Application
 - g. Attachment 7 - No Proposal Reply Form
 - h. Attachment 8 - Bid Forms
 - i. Attachment 9 - Non-Collusion Statement

In order for your proposal to be considered, the Proposal Reply Section shall be executed completely and correctly and returned in a sealed envelope clearly displaying the contract number and vendor name by **2:00 p.m. July 26, 2011** to be considered.

Proposals must be delivered to:

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
800 BAY ROAD
DOVER, DE 19901**

Please review and follow the information and instructions contained in the General Provisions and this Request for Proposal. Should you need additional information, please contact Scott Gottfried at 302-760-2031 or email dot-ask@state.de.us.

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I. INTRODUCTION:

A. PURPOSE:

The purpose of this Request for Proposal is to obtain sealed proposals for the purchase of Heavy Duty Trucks. It is the goal of this Request for Proposal to identify vendors and execute contracts to purchase multiple types of Heavy Duty Trucks.

1. COMPETITIVE SEALED PROPOSAL:

It has been determined by Director, Government Support Services, pursuant to **Delaware Code Title 29, Chapter 6924 (a)** that this solicitation be offered as a request for competitive sealed proposals because the use of competitive sealed bidding is not practical and/or not in the best interest of the State. The use of competitive sealed proposals is necessary to:

- Use a contract other than a fixed-price type; or
- Conduct oral or written discussions with offerors concerning technical and price aspects of their proposals; or
- Afford offerors an opportunity to revise their proposals through best and final offers; or
- Compare the different price, quality and contractual factors of the proposals submitted; or
- Award a contract in which price is not the determining factor.

2. CONTRACT REQUIREMENTS:

This contract will be issued to cover the purchase of Heavy Duty Trucks described in this RFP.

3. MANDATORY USE CONTRACT:

REF: Title 29, Chapter 6911(d) Delaware Code. All Covered Agencies as defined in 29 Del. C. §6902(6) shall procure all material, equipment and nonprofessional services through the statewide contracts administered by Government Support Services, Office of Management and Budget. Delaware State University, Delaware Technical and Community College, school districts, and the Legislative Branch are specifically exempted from the requirements of this subchapter. In addition, the Delaware Transit Corporation is exempt from the entire procurement chapter. Pursuant to 29 Del. C. §6904(l) and (n) respectively, the Department of Elections and the Board of Pension Trustees have certain exemptions from the procurement chapter which may or may not apply to this Request for Proposals.

4. MULTIPLE SOURCE AWARD

The Agency reserves the right to award this contract to more than one vendor pursuant to 29 Del.C. §6926. The basis for such selection shall be as described in the Special Provisions section.

5. CONTRACT PERIOD:

Each Vendor's contract shall be valid through August 31, 2013 and any or all contracts may be renewed for three (3), one (1) year periods through negotiation between the Vendors and Government Support Services, Office of Management and Budget. Negotiation may be initiated no later than ninety (90) days prior to the termination of the current contract term.

The State reserves the right to extend this contract on a month-to-month basis for a period of up to three months after the term of the full contract has been completed.

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B. KEY RFP DATES/MILESTONES:

The following dates and milestones apply to this RFP and subsequent contract award. Vendors are advised that these dates and milestones are not absolute and may change due to unplanned events during the bid proposal and award process.

Activity	Due Date
RFP Availability to Vendors	June 23, 2011
Written Questions Due no later than	July 12, 2011
Responses to Questions posted to Web site by	July 19, 2011
Proposals Due	July 26, 2011
Public Proposal Opening	July 26, 2011
Contract Award	Will occur within 90 days of bid opening

C. INQUIRIES & QUESTIONS:

We welcome your interest in working with us, and we will be pleased to answer any questions you may have in formulating your response to this Request for Proposal.

All questions with regard to the interpretation of this solicitation or any other aspect of this RFP must be received via e-mail by the date shown in Section B above. All questions and answers will be posted on the bids.delaware.gov website. All questions must make specific reference to the section(s) and page numbers from this RFP where applicable. Oral explanations or instructions will not be binding.

D. RFP DESIGNATED CONTACT

All requests, questions, or other communications about this RFP shall be made via written request. Address all communications to the person listed below; communications made to other State of Delaware personnel or attempting to ask questions by phone or in person will not be allowed or recognized as valid and may disqualify the vendor. Vendors should rely only on written statements issued by the RFP designated contact.

Scott Gottfried
Delaware Department of Transportation
800 Bay Road, Dover, DE 19901
dot-ask@state.de.us

To ensure that written requests are received and answered in a timely manner, electronic mail (e-mail) correspondence is acceptable, but other forms of delivery, such as postal and courier services can also be used.

E. CONTACT WITH STATE EMPLOYEE

Direct contact with State of Delaware employees other than the State of Delaware Designated Contact regarding this RFP is expressly prohibited without prior consent. Vendors directly contacting State of Delaware employees risk elimination of their proposal from further consideration. Exceptions exist only for organizations currently doing business in the State who require contact in the normal course of doing that business.

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II. SCOPE OF WORK:

A. OVERVIEW:

The Vendors shall provide all equipment, materials and labor to supplement the State of Delaware's need for Heavy Duty Trucks as described herein. The contract will require the Vendors to cooperate with the ordering agency to insure the State receives the most current state-of-the-art material and/or services.

B. BACKGROUND:

These specifications are intended to cover requirements for Heavy-Duty Trucks ranging from 25,500# GVW to 64,000# GVW. It is our intent to select one or more firms to provide the vehicles listed under the referenced specifications. Competitive Sealed Proposals will be received from interested firms and negotiations concerning technical and price aspects of their proposals may be conducted with responsible offerors who submit proposals found to be reasonably likely to be selected for award. After discussion and negotiation, offerors may be provided an opportunity to revise their proposals, and submit a Best and Final Offer. One or more awards and contracts may be awarded for each of the specifications listed.

C. STATEMENT OF NEEDS:

This document contains general information relating to the procedural requirements in the preparation of proposals, performance and specification requirements, and proposer characteristics, which must be met in order for a proposal to receive consideration.

D. SUBSEQUENT NEEDS

There is the possibility of subsequent need of same or similar units by eligible covered Agencies during the contract period. Such needs will be communicated to the awarded vendor(s) for quotation with all terms and conditions of the contract being applicable.

III. FORMAT FOR PROPOSAL:

A. INTRODUCTION:

This section prescribes the mandatory format for the presentation of a proposal in response to this RFP. Each Vendor must provide every component listed in the order shown in this RFP, using the format prescribed for each component. A proposal may be rejected if it is incomplete or conditional.

B. PROPOSAL RESPONSE:

The Request for Proposal may contain pre-printed forms for use by the vendor in submitting its proposal. The forms required by this solicitation shall be considered mandatory, prevailing documents.

When preprinted forms are used, the forms shall contain basic information such as description of the item and the estimated quantities and shall have blank spaces for use by the vendor for entering information such as unit bid price, total bid price, as applicable.

The Vendor's proposal shall be written in ink or typewritten on the form provided, and any corrections or erasures MUST be initialed by vendor's representative completing the bid submission.

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If items are listed with a zero quantity, Vendor shall state unit price ONLY (intended for open end purchases where estimated requirements are not known). The proposal shall show a total bid price for each item bid and the total bid price of the proposal excluding zero quantity items.

Vendors' proposal must respond to each and every requirement outlined in the RFP criteria in order to be considered responsive. Proposals must be clear and concise.

C. NON-CONFORMING PROPOSALS

Non-conforming proposals will not be considered. Non-conforming proposals are defined as those that do not meet the requirements of this RFP. The determination of whether an RFP requirement is substantive or a mere formality shall reside solely within the State of Delaware.

D. CONCISE PROPOSALS

The State of Delaware discourages overly lengthy and costly proposals. It is the desire that proposals be prepared in a straightforward and concise manner. Unnecessarily elaborate brochures or other promotional materials beyond those sufficient to present a complete and effective proposal are not desired. The State of Delaware's interest is in the quality and responsiveness of the proposal.

E. COVER LETTER:

Each proposal will have a cover letter on the letterhead of the company or organization submitting the proposal. The cover letter must briefly summarize the Vendor's ability to provide the services specified in the RFP. The cover letter shall be signed by a representative who has the legal capacity to enter the organization into a formal contract with the Government Support Services, Office of Management and Budget

F. TABLE OF CONTENTS:

Each proposal must include a Table of Contents with page numbers for each of the required components of the proposal

DESCRIPTION OF SERVICES AND QUALIFICATIONS:

Each proposal must contain a detailed description of how the Vendor will provide the goods and services outlined in this RFP. This part of the proposal may also include descriptions of any enhancements or additional services or qualifications the Vendor will provide that are not mentioned in this RFP.

G. DISCOUNT:

Vendors are invited to offer in their proposal value added discounts (i.e. speed to pay discounts for specific payment terms). Cash or separate discounts should be computed and incorporated into unit bid price(s).

H. SAMPLES OR BROCHURES:

Samples or brochures may be required by the agency for evaluation purposes. They shall be such as to permit the Agency to compare and determine if the item offered complies with the intent of the specifications.

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I. ACKNOWLEDGEMENT OF UNDERSTANDING OF TERMS

By submitting a bid, each vendor shall be deemed to acknowledge that it has carefully read all sections of this RFP, including all forms, schedules and exhibits hereto, and has fully informed itself as to all existing conditions and limitations.

J. BID BOND REQUIREMENT:

Bid Bond Waived.

K. PERFORMANCE BOND REQUIREMENT:

Performance Bond Waived.

L. NUMBER OF COPIES WITH MAILING OF PROPOSAL:

To be considered, all proposals must be submitted in writing and respond to the items outlined in this RFP. The State reserves the right to reject any non-responsive or non-conforming proposals. Each proposal must be submitted with six (6) paper copies and one (1) electronic copies on CD or DVD media disk. One of the paper copies shall be marked "Master Copy" and must contain original signatures in all locations requiring an offeror signature. The remaining copies do not require original signatures. CD or DVD media disk must also contain the completed Appendix forms.

All properly sealed and marked proposals are to be sent to the State of Delaware and received no later than **2:00 PM Local Time on July 26, 2011**. The Proposals may be delivered by Express Delivery (e.g., FedEx, UPS, etc.), US Mail, or by hand to:

Delivery Service:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
800 BAY ROAD
DOVER, DE 19901

U.S. Mail:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
PO Box 778
DOVER, DE 19903

Any proposal submitted by US Mail shall be sent by either certified or registered mail. Proposals must be received at the above address no later than the date and time stated above. Any proposal received after this date and time shall not be considered and shall be returned unopened. The proposing vendor bears the risk of delays in delivery. The contents of any proposal shall not be disclosed as to be made available to competing entities during the negotiation process.

Upon receipt of vendor proposals, each vendor shall be presumed to be thoroughly familiar with all specifications and requirements of this RFP. The failure or omission to examine any form, instrument or document shall in no way relieve vendors from any obligation in respect to this RFP.

The State reserves the right to award the proposed contract to multiple Vendors if the Head of the Agency determines that such an award is in the best interest of the State.

M. PROPOSAL EXPIRATION DATE

Prices quoted in the proposal shall remain fixed and binding on the bidder at least through the 2012 model year.

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N. WITHDRAWAL OF PROPOSALS:

A Vendor may withdraw its proposal unopened after it has been deposited, if such a request is made prior to the time set for the opening of the proposal.

O. PROPOSAL MODIFICATIONS

Any changes, amendments or modifications to a submitted proposal requires that the original proposal be withdrawn, **prior** to the time set for the submission of the proposal, and a new proposal submitted **prior** to the deadline for submission of proposals.

Changes, amendments or modifications to proposals shall not be accepted or considered after the hour and date specified as the deadline for submission of proposals.

P. LATE PROPOSALS

Proposals received after the specified date and time will not be accepted or considered. To guard against premature opening, sealed proposals shall be submitted, plainly marked with the proposal title, vendor name, and time and date of the proposal opening. Evaluation of the proposals is expected to begin shortly after the proposal due date. To document compliance with the deadline, the proposal will be date and time stamped upon receipt.

Q. ADDENDA TO THE RFP:

If it becomes necessary to revise any part of this RFP, revisions will be posted at <http://bids.delaware.gov>. By submitting an offer to the State, vendors have acknowledged receipt, understanding and commitment to comply with all materials, revisions, and addenda related to the Request for Proposals.

R. INCURRED EXPENSES:

The State will not be responsible for any expenses incurred by the Vendor in preparing and submitting a proposal.

S. ECONOMY OF PREPARATION:

Proposals should be prepared simply and economically, providing a straight-forward, concise description of the Vendor's offer to meet the requirements of the RFP.

T. DISCREPANCIES AND OMISSIONS

Vendor is fully responsible for the completeness and accuracy of their proposal, and for examining this RFP and all addenda. Failure to do so will be at the sole risk of vendor. Should vendor find discrepancies, omissions, unclear or ambiguous intent or meaning, or should any questions arise concerning this RFP, vendor shall notify the State of Delaware's Designated Contact, in writing, of such findings at least ten (10) days before the proposal opening. This will allow issuance of any necessary addenda. It will also help prevent the opening of a defective proposal and exposure of vendor's proposal upon which award could not be made. All unresolved issues should be addressed in the proposal.

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Protests based on any omission or error, or on the content of the solicitation, will be disallowed if these faults have not been brought to the attention of the Designated Contact, in writing, no later than ten (10) calendar days prior to the time set for opening of the proposals.

U. EXCEPTIONS:

Vendors may request minor exceptions to the specifications of this RFP by sending an e-mail with the specifics to dot-ask@state.de.us. All exceptions must be requested by the closing date for questions. Government Support Services, Office of Management and Budget will evaluate each exception according to the intent of the terms and conditions contained herein, but shall reject exceptions that do not conform to State bid law and/or create inequality in the treatment of Vendors.

V. DOCUMENT(S) EXECUTION:

All vendors must complete and submit with its proposal the non-collusion statement that is enclosed with this Request for Proposal. The awarded vendor(s) will be presented with the contract form for signature and seal, if appropriate. Both of these documents shall be executed by a representative who has the legal capacity to enter the organization into a formal contract with the Government Support Services, Office of Management and Budget.

To complete the execution of the contract, the awarded vendor(s) shall submit an electronic W-9 at the following website: <http://accounting.delaware.gov>.

All questions regarding the submission of the vendor(s) W-9 should be submitted to the Delaware Division of Accounting at <http://accounting.delaware.gov/>.

W. SUBCONTRACTS:

Subcontracting is permitted under this RFP and contract. However, every subcontractor shall be identified in the Proposal using Attachment 3.

X. CONFIDENTIALITY:

All documents submitted as part of the vendor's proposal will be deemed confidential during the evaluation process. Vendor proposals will not be available for review by anyone other than the State of Delaware/Proposal Evaluation Committee or its designated agents. There shall be no disclosure of any vendor's information to a competing vendor prior to award of the contract.

The State of Delaware is a public agency as defined by state law, and as such, it is subject to the Delaware Freedom of Information Act, 29 *Del. C.* Ch. 100. Under the law, all the State of Delaware's records are public records (unless otherwise declared by law to be confidential) and are subject to inspection and copying by any person. Vendor(s) are advised that once a proposal is received by the State of Delaware and a decision on contract award is made, its contents will become public record and nothing contained in the proposal will be deemed to be confidential except proprietary information.

Vendor(s) shall not include any information in their proposal that is proprietary in nature or that they would not want to be released to the public. Proposals must contain sufficient information to be evaluated and a contract written without reference to any proprietary information. If a Vendor feels that they cannot submit their proposal without including proprietary information, they must adhere to the following procedure or their proposal may be deemed unresponsive and will not be recommended for selection. Vendor(s) must submit such information in a separate, sealed envelope labeled "Proprietary

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Information” with the RFP number. The envelope must contain Attachment 2 describing the documents in the envelope, representing in good faith that the information in each document is not “public record” as defined by 29 *Del. C.* § 10002(d), and briefly stating the reasons that each document meets the said definitions.

Upon receipt of a proposal accompanied by such a separate, sealed envelope, the State of Delaware will open the envelope to determine whether the procedure described above has been followed.

If the Vendor does not have any documents it declares confidential or proprietary, Attachment 2 should be completed by checking the appropriate box found at the top of the attachment.

IV. PROPOSAL EVALUATION PROCEDURES

A. GENERAL ADMINISTRATION

1. STATE’S RIGHT TO REJECT PROPOSALS

Office of Management and Budget, Government Support Services reserves the right to reject any or all proposals in whole or in part, to make multiple awards, partial awards, award by types, item by item, or lump sum total, whichever is determined to be the most advantageous to the State of Delaware. Vendors submitting proposals may be afforded an opportunity for discussion. Vendors may be requested to provide a best and final offer during the negotiation process. Negotiations may be conducted with responsible Vendors who submit proposals found to be reasonably likely to be selected for award. The contents of any proposal shall not be disclosed so as to be available to competing Vendors during the negotiation process.

2. STATE’S RIGHT TO CANCEL SOLICITATION

The State of Delaware reserves the right to cancel this solicitation at any time during the procurement process, for any reason or for no reason. The State of Delaware makes no commitments expressed or implied, that this process will result in a business transaction with any vendor.

This RFP does not constitute an offer by the State of Delaware. Vendor’s participation in this process may result in the State of Delaware selecting your organization to engage in further discussions and negotiations toward execution of a contract. The commencement of such negotiations does not, however, signify a commitment by the State of Delaware to execute a contract nor to continue negotiations. The State of Delaware may terminate negotiations at any time and for any reason, or for no reason.

3. FORMAL CONTRACT AND/OR PURCHASE ORDER:

No employee of the Contractor(s) is to begin any work prior to receipt of a State of Delaware Purchase Order signed by authorized representatives of the agency requesting service, properly processed through the State of Delaware Accounting Office. A purchase order, telephone call, fax or State credit card shall serve as the authorization to proceed with work in accordance with the bid specifications and the special instructions, once it is received by the Contractor(s).

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4. DELIVERY OF PROPOSALS:

Proposals shall be delivered in sealed envelopes, and shall bear on the outside the name and address of the Vendor as well as the designation of the contract. Proposals forwarded by U.S. Mail shall be sent first class to the address stated in this RFP. Proposals forwarded by delivery service other than the U.S. Mail or hand delivered must be delivered to the applicable addresses also stated in this RFP. All bids must clearly display the bid number on the envelope.

All proposals will be accepted prior to the time and place set in the RFP. Vendor bears the risk of delays in delivery. Proposals received after the time set for public opening will be returned unopened.

5. PUBLIC OPENING OF PROPOSALS:

The proposals shall be publicly opened at the time and place specified by the Agency. Vendors or their authorized representatives are invited to be present.

6. DISQUALIFICATION OF VENDORS:

Any one or more of the following causes may be considered as sufficient for the disqualification of a Vendor and the rejection of its proposal or proposals:

- a. More than one proposal for the same contract from an individual, firm, or corporation under the same or different names.
- b. Evidence of collusion among Vendors.
- c. Unsatisfactory performance record as evidenced by past experience with the State of Delaware or on a State of Delaware central contract.
- d. Any suspension or debarment of the parent company, subsidiary or individual involved with the vendor by federal, any state or any local governments within the last 10 years.
- e. If the unit prices are obviously unbalanced either in excess or below reasonable cost analysis values.
- f. If there are any unauthorized additions, interlineations, conditional or alternate bids or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
- g. Non-attendance of mandatory pre-bid meetings shall be cause of disqualification.

7. AUTHORITY OF AGENCY:

On all questions concerning the interpretation of specifications, the acceptability and quality of material furnished and/or work performed, the classification of material, the execution of the work, and the determination of payment due or to become due, the decision of the Agency shall be final and binding.

8. OR EQUAL (PRODUCTS BY NAME):

Specifications of products by name are intended to be descriptive of quality or workmanship, finish and performance. Desirable characteristics are not intended to be restrictive. Substitutions of

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products for those named will be considered provided the vendor certifies that the function, characteristics, performance and endurance qualities of the material offered is equal or superior to that specified.

B. RESPONSIVENESS AND RESPONSIBILITY OF VENDOR:

The Office of Management and Budget, Government Support Services shall award this contract to the most responsible and responsive Vendor who best meets the terms and conditions of the proposal.

1. Rejection of individual proposals. -- A proposal may be rejected for 1 or more of the following reasons:
 - a. The person responding to the solicitation is determined to be nonresponsive or non-responsible;
 - b. It is unacceptable;
 - c. The proposed price is unreasonable; or
 - d. It is otherwise not advantageous to the State.
2. Offerors whose proposals are rejected as non-responsive shall be notified in writing about the rejection.
3. Responsibility of offerors. -- It shall be determined whether a vendor is responsible before awarding a contract. Factors to be considered in determining if a vendor is responsible include:
 - a. The offeror's financial, physical, personnel or other resources, including subcontracts;
 - b. The offeror's record of performance and integrity;
 - c. Any record regarding any suspension or debarment;
 - d. Whether the offeror is qualified legally to contract with the State;
 - e. Whether the offeror supplied all necessary information concerning its responsibility.
4. If a Vendor is determined to be non-responsible, the Vendor shall be informed in writing.
5. The State reserves the right to waive minor irregularities, or request additional information before determining the responsiveness of the Vendor. All Vendors will be afforded the same or similar opportunities, as necessary, and will be treated with equal regard before such determinations are finalized.

C. PROPOSAL EVALUATION COMMITTEE:

The Proposal Evaluation Committee ("Committee") is comprised of representatives of the State of Delaware.

The Committee reserves the right to:

- Select for contract or for negotiations a proposal other than that with lowest costs.
- Reject any and all proposals or portions of proposals received in response to this RFP or to make no award or issue a new RFP.
- Waive or modify any information, irregularity, or inconsistency in proposals received.
- Request modification to proposals from any or all vendors during the contract review and negotiation.
- Negotiate any aspect of the proposal with any vendor and negotiate with more than one vendor at the same time.
- Select one or multiple vendors for each Specification pursuant to 29 Del. C. §6926. Such selection will be based on the following criteria:

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- More than one Vendor submits a price competitive proposal for a particular specification that is deemed to be in the best interests of the State; or
- Differences in vehicle design between Vendors is such that Agency needs may be better served by having design options.

D. REQUIREMENTS OF THE VENDOR:

The purpose of this section is to assist the Proposal Evaluation Committee to determine the ability of the organization to provide the materials and services described in the application. The proposal response should contain at a minimum the following information:

1. Statement that Vendor will furnish the Agency with proof of State of Delaware Business Licensure, or initiate the process of application.
2. Statement that Vendor will provide proof of insurance as required by this RFP upon award.

E. CRITERIA AND SCORING:

	EVALUATION CRITERIA	MAXIMUM POINTS
1.	Price	35
2.	Manufacturers Lead-Time ARO. The manufacturer that has the least lead-time to provide the truck will receive the highest points.	30
3.	Warranty – Longest warranty receives highest points. (Two (2) year minimum)	25
4.	Preferred component specification. There are various areas within the specification that state a preferred component piece of equipment, or equal. Points are awarded for meeting the preferred component, as this reduces cost to the state in parts inventories.	10
.	TOTAL SCORE	100

Procurement Evaluation Committee members will assign up to the maximum number of points listed for each of the criteria listed above. For items having quantitative answers, points will be proportionate to each proposal's response. Items with qualitative answers will receive the average of points assigned by Proposal Evaluation Committee members.

F. BEST AND FINAL OFFERS

Once the proposals have been evaluated and negotiations have been held with the vendor(s) determined to be likely to receive an award, the Procurement Evaluation Committee may issue a request for Best and Final Offers from the vendor(s).

G. REFERENCES

The Committee may contact any customer of the vendor, whether or not included in the vendor's reference list, and use such information in the evaluation process. Additionally, the State of Delaware may choose to visit existing installations of comparable systems, which may or may not include vendor

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personnel. If the vendor is involved in such site visits, the State of Delaware will pay travel costs only for State of Delaware personnel for these visits.

H. ORAL PRESENTATIONS

Selected vendors may be invited to make oral presentations to the Committee. The vendor representative(s) attending the oral presentation shall be technically qualified to respond to questions related to the proposed system and its components.

All of the vendor's costs associated with participation in oral discussions and system demonstrations conducted for the State of Delaware are the vendor's responsibility.

V. MANDATORY PREBID MEETING:

A mandatory pre-bid meeting has not been established for this Request for Proposal.

VI. DEFINITIONS AND GENERAL PROVISIONS

The attached Definitions and General Provisions apply to all contracts and are part of each Request for Proposal. The requirement to furnish a bid bond and performance bond is applicable unless waived. Should the General Provisions conflict with the Special Provisions, the Special Provisions shall prevail. Vendors or their authorized representatives are required to fully acquaint themselves as to State procurement laws and regulations prior to submitting bid.

A. DEFINITIONS: Whenever the following terms are used, their intent and meaning shall be interpreted as follows:

STATE: The State of Delaware

AGENCY: State Agency as noted on cover sheet.

BID INVITATION: The "invitation to bid" or "Request for Proposal" is a packet of material sent to vendors and consists of General Provisions, Special Provisions, specifications, and enclosures.

BOND: The approved form of security furnished by the Vendors and its surety as a guaranty of good faith on the part of the Vendor to execute the work in accordance with the terms of the contract.

CONTRACT: The written agreement covering the furnishing and delivery of material or work to be performed.

DESIGNATED OFFICIAL: The agent authorized to act for an Agency.

GENERAL PROVISIONS: General Provisions are instructions pertaining to contracts in general. They contain, in summary, requirements of laws of the State, policies of the Agency, and instructions to vendors.

LOCAL TIME: Eastern Standard Time/Eastern Daylight Time

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OPPORTUNITY BUY: A special offer from a supplier that is usually associated with a limited time to respond.

PROPOSAL: The offer of the Vendor submitted on the approved form and setting forth the Vendor's prices for performing the work or supplying the material or equipment described in the specifications.

SPECIAL PROVISIONS: Special Provisions are specific conditions or requirements peculiar to the contract under consideration and are supplemental to the General Provisions. Should the Special Provisions conflict with the General Provisions, the Special Provisions shall prevail.

SURETY: The corporate body which is bound with and for the contract, or which is liable, and which engages to be responsible for the Vendor's payments of all debts pertaining to and for its acceptable performance of the work for which he has contracted

VENDOR: Any individual, firm, or corporation formally submitting a proposal for the material or work contemplated, acting directly or through a duly authorized representative.

VENDOR'S DEPOSIT: The security designated in the proposal to be furnished by the Vendor as a guaranty of good faith to enter into a contract with the Agency if the work to be performed or the material or equipment to be furnished is awarded to it.

B. GENERAL PROVISIONS

1. **INTERPRETATION OF ESTIMATES/QUANTITIES:**

- a. Unless stated otherwise, the quantities given in the RFP are to be considered to be approximate only and are given as a basis for the comparison of bids. The Agency may increase or decrease the amount of any item as may be deemed necessary or expedient, during the period of the contract.
- b. An increase or decrease in the quantity for any item is not sufficient ground for an increase or decrease in the unit price.

2. **SILENCE OF SPECIFICATIONS:**

The apparent silence of the specifications as to any detail, or the apparent omission from it of detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and only material and workmanship of the first quality are to be used. Proof of specifications compliance will be the responsibility of the vendor.

3. **EXAMINATION OF SPECIFICATIONS AND PROVISIONS:**

The Vendor shall examine carefully the proposal and the contract forms for the material contemplated. The Vendor shall investigate and satisfy itself as to the conditions to be encountered, quality and quantities of the material to be furnished, and the requirements of any Special Provisions in the RFP and the contract. The submission of a proposal shall be conclusive evidence that the Vendor has made examination of the aforementioned conditions.

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4. **PRICES QUOTED:**

The prices quoted are those for which the material will be furnished F.O.B. Ordering Agency and include all charges that may be imposed during the term of the contract. All prices quoted must be in U.S. Dollars.

All vendors that maintain a core list of products under this contract shall maintain the appropriate negotiated prices on their core list. Vendors shall routinely offer to add to the core list materiel that has been identified as necessary. The Vendors are expected to routinely update any changes to the core list with the appropriate discounts listed.

Any adjustments to a core list must receive prior written approval from the State before a core list can be changed by the Vendor. Changes include but are not limited to the migration of items on and off the core list as well as any price adjustments from the original agreed upon pricing.

5. **PUBLIC INSPECTION OF PROPOSALS:**

All documents submitted as part of the vendor's proposal will be deemed confidential during the evaluation process. Vendor proposals will not be available for review by anyone other than the State of Delaware/Proposal Evaluation Committee or its designated agents. There shall be no disclosure of any vendor's information to a competing vendor prior to award of the contract.

The State of Delaware is a public agency as defined by state law, and as such, it is subject to the Delaware Freedom of Information Act, 29 Del. C. Ch. 100. Under the law, all the State of Delaware's records are public records (unless otherwise declared by law to be confidential) and are subject to inspection and copying by any person. Vendor(s) are advised that once a proposal is received by the State of Delaware and a decision on contract award is made, its contents will become public record and nothing contained in the proposal will be deemed to be confidential except proprietary information.

Vendor(s) shall not include any information in their proposal that is proprietary in nature or that they would not want to be released to the public. Proposals must contain sufficient information to be evaluated and a contract written without reference to any proprietary information. If a vendor feels that they cannot submit their proposal without including proprietary information, they must adhere to the following procedure or their proposal may be deemed unresponsive and will not be recommended for selection. Vendor(s) must submit such information in a separate, sealed envelope labeled "Proprietary Information" with the RFP number. The envelope must contain a letter from the Vendor's legal counsel describing the documents in the envelope, representing in good faith that the information in each document is not "public record" as defined by 29 Del. C. § 10002(d), and briefly stating the reasons that each document meets the said definitions.

Upon receipt of a proposal accompanied by such a separate, sealed envelope, the State of Delaware will open the envelope to determine whether the procedure described above has been followed.

6. **LAWS TO BE OBSERVED:**

The Vendor is presumed to know and shall strictly comply with all Federal, State, or County laws, and City or Town ordinances and regulations in any manner affecting the conduct of the work. The Vendor shall indemnify and save harmless the State of Delaware, the Agency, and all Officers, Agency and Servants thereof against any claim or liability arising from or based upon the violation of any such laws, ordinances, regulations, orders, or decrees whether by itself, by its employees, or its subcontractor (s).

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7. **PERMITS AND LICENSES:**

All necessary permits, licenses, insurance policies, etc. required by local, State or Federal laws, shall be provided by the Vendor at its own expense.

8. **PATENTED DEVICES, MATERIAL AND PROCESSES:**

a. The Vendor shall provide for the use of any patented design, device, material, or process to be used or furnished under this contract by suitable legal agreement with the patentee or owner, and shall file a copy of this agreement with the Agency.

b. The Vendor and the surety shall hold and save harmless the State of Delaware, the Agency, the Director, their Officers or Agents from any and all claims because of the use of such patented design, device, material, or process in connection with the work agreed to be performed under this contract.

9. **EMERGENCY TERMINATION OF CONTRACT:**

a. Due to restrictions which may be established by the United States Government on material, or work, a contract may be terminated by the cancellation of all or portions of the contract.

b. In the event the Vendor is unable to obtain the material required to complete the items of work included in the contract because of restrictions established by the United States Government and if, in the opinion of the Agency, it is impractical to substitute other available material, or the work cannot be completed within a reasonable time, the incomplete portions of the work may be cancelled, or the contract may be terminated.

10. **TAX EXEMPTION:**

a. Material covered by this proposal is exempt from all FEDERAL and STATE TAXES. Such taxes shall not be included in prices quoted.

b. Any material which is to be incorporated in the work or any equipment required for the work contemplated in the proposal may be consigned to the Agency. If the shipping papers show clearly that any such material is so consigned, the shipment will be exempt from the tax on the transportation of property under provisions of Section 3475 (b) of the Internal Revenue Code, as amended by Public Law 180 (78th Congress). All transportation charges shall be paid by the Vendor. Each Vendor shall take its exemption into account in calculating its bid for its work.

11. **INVOICING:**

After the awards are made, the agencies participating in the bid may forward their purchase orders ("P.O.") to the successful Vendor(s) in accordance with State Purchasing Procedures. The State will generate a payment voucher upon receipt of an invoice from the vendor.

12. **EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS:**

During the performance of any contract for public works financed in whole or in part by appropriation of the State of Delaware, the Vendor agrees as follows:

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- a. The Vendor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, age, or national origin. The Vendor will take affirmative action to ensure that applicants are employed and that employees are treated equally during employment without regard to their race, creed, color, sex, age, or national origin. Such action shall include, but not be limited to the following: advertising, lay-off or termination, rates of pay or other forms of compensation, and selection for training including apprenticeships. The Vendor agrees to post in conspicuous places, notices to be provided by the contracting agency setting forth the provisions of this non-discrimination clause.
- b. The Vendor will, in all solicitations or advertisements for employees placed by or on behalf of the Vendor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, age, or national origin.
- c. The term "Vendor for public works" means construction, reconstruction, demolition, alteration, and/or repair work, maintenance work, and paid for in whole or in part out of the funds of a public body except work performed under a vocational rehabilitation program. The manufacture or furnishing of materials, articles, supplies or equipment is not a public work within the meaning of this subsection unless conducted in connection with and at the site of the public work.

13. **PRICES:**

Prices and/or rates shall remain firm through the 2012 model year, unless further negotiations are deemed necessary by the State.

The pricing policy that you choose to submit must address the following concerns:

- a. The structure must be clear, accountable and auditable.
- b. It must cover the full spectrum of services required.
- c. Costs and compensation must be consistent with the rates established or negotiated as a result of this RFP or P.O. issued based on this contract.

14. **PRICE ADJUSTMENT:**

During the initial term of the contract, the Vendor is not prohibited from offering a price reduction on its services or materiel offered under the contract. The State is not prohibited from requesting a price reduction on those services or materiel during the initial term or any subsequent options that the State may agree to exercise.

15. **SHIPPING TERMS:**

FOB Destination, freight prepaid.

16. **FUNDING OUT or NON-APPROPRIATION:**

In the event the General Assembly fails to appropriate the specific funds necessary to enter into or continue the contractual agreement, in whole or part, the agreement shall be terminated as to any obligation of the State requiring the expenditure of money for which no specific appropriation is available at the end of the last fiscal year for which no appropriation is available or upon the exhaustion of funds.

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17. **MANDATORY INSURANCE REQUIREMENTS:**

Certificate of Insurance and/or copies of insurance policies for the following:

- a. As a part of the contract requirements, the Vendor shall obtain at its own cost and expense and keep in force and effect during the term of this contract, including all extensions, the minimum coverage limits specified below with a carrier satisfactory to the State. All Vendors shall carry Comprehensive General Liability and all other coverages listed below.

1. Comprehensive General Liability - \$1,000,000.00 per person/\$3,000,000 per occurrence.

And

2. Product Liability - \$1,000,000.00 per person/\$3,000,000 per occurrence.

- b. Automotive Liability Insurance covering all automotive units used in the work with limits of not less than \$100,000 each person and \$300,000 each accident as to bodily injury and \$25,000 as to property damage to others.

- c. Forty-five (45) days written notice of cancellation or material change of any policies shall be required.

- d. Before any work is done hereunder, a Certificate of Insurance referencing the name and contract number stated herein, shall be filed with the State. The certificate holder is as follows:

Contract Administrator, dot-ask@state.de.us
Contract No. GSS11617-HEAVY_TRUCKS
State of Delaware
Department Of Transportation
PO Box 778 DOVER, DE 19903
FAX: 302-739-2254

Note: The State of Delaware shall not be named as an additional insured.

18. **STATE OF DELAWARE BUSINESS LICENSE:**

Prior to receiving an award, the successful Vendor shall either furnish the Agency with proof of State of Delaware Business Licensure or initiate the process of application where required. An application may be requested in writing to: Division of Revenue, Carvel State Building, P.O. Box 8750, 820 N. French Street, Wilmington, DE 19899 or by telephone to one of the following numbers: (302) 577-8200 -- Public Service, (302) 577-8205 -- Licensing Department.
<https://onestop.delaware.gov/osbr/public/Home.jsp>

Information regarding the award of this contract will be given to the Division of Revenue. Failure to comply with the State of Delaware licensing requirements may subject your organization to applicable fines and/or interest penalties.

19. **INDEMNIFICATION:**

- a. **General Indemnification:** By submitting a proposal, the proposing vendor agrees that in the event it is awarded a contract, it will indemnify and otherwise hold harmless the State of Delaware, its agents and employees from any and all liability, suits, actions, or claims, together with all costs, expenses for attorney's fees, arising out of the vendor's its agents and employees' performance work or services in connection with the contract, regardless of whether such suits, actions, claims or liabilities are based upon acts or failures to act attributable, in whole or part, to the State, its employees or agents.

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b. **Proprietary Rights Indemnification**

Vendor shall warrant that all elements of its solution, including all equipment, software, documentation, services and deliverables, do not and will not infringe upon or violate any patent, copyright, trade secret or other proprietary rights of any third party. In the event of any claim, suit or action by any third party against the State of Delaware, the State of Delaware shall promptly notify the vendor in writing and vendor shall defend such claim, suit or action at vendor's expense, and vendor shall indemnify the State of Delaware against any loss, cost, damage, expense or liability arising out of such claim, suit or action (including, without limitation, litigation costs, lost employee time, and counsel fees) whether or not such claim, suit or action is successful.

If any equipment, software, services (including methods) products or other intellectual property used or furnished by the vendor (collectively "Products") is or in vendor's reasonable judgment is likely to be, held to constitute an infringing product, vendor shall at its expense and option either:

- 1) Procure the right for the State of Delaware to continue using the Product(s);
- 2) Replace the product with a non-infringing equivalent that satisfies all the requirements of the contract; or
- 3) Modify the Product(s) to make it or them non-infringing, provided that the modification does not materially alter the functionality or efficacy of the product or cause the Product(s) or any part of the work to fail to conform to the requirements of the Contract, or only alters the Product(s) to a degree that the State of Delaware agrees to and accepts in writing.

20. **NON-PERFORMANCE:**

In the event the Vendor does not fulfill its obligations under the terms and conditions of this contract, in addition to proceeding with termination of the contract, the ordering agency may purchase equivalent product on the open market. Any difference in cost between the contract prices herein and the price of open market product shall be the responsibility of the Vendor. Under no circumstances shall monies be due the Vendor in the event open market products can be obtained below contract cost. Any monies charged to the Vendor may be deducted from an open invoice.

21. **FORCE MAJEURE:**

Neither the vendor nor the ordering agency shall be held liable for non-performance under the terms and conditions of this contract due, but not limited to, government restriction, strike, flood, fire, or unforeseen catastrophe beyond either party's control. Each party shall notify the other in writing of any situation that may prevent performance under the terms and conditions of this contract.

22. **VENDOR NON-ENTITLEMENT:**

State of Delaware Vendors for Materiel and for Services shall not have legal entitlement to utilize any Central Contract held by the State of Delaware. The Vendors may not seek business from another Vendors' Central Contract for the purpose of preparing a bid or proposal to the State of Delaware. Additionally, they shall not utilize other Central Contracts to fulfill the requirements of their respective contract unless they are considered a "Covered Agency" as defined by Title 29 Chapter 69 of the State Procurement Code or otherwise permitted by law.

This is not a prohibition from any Vendor choosing to work with another Vendor who holds a State Central Contract for private business.

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23. **OPPORTUNITY BUYS:**

The Director for the State of Delaware, Office of Management and Budget, Government Support Section can waive use of a central contract pursuant to 29 Del. C. §6911(e). A process has been developed to permit any vendor the opportunity to submit an Opportunity Buy offer to the State for goods and/or services for consideration despite the existence of a central contract. See http://gss.omb.delaware.gov/contracting/documents/agencyboilers/opportunity_buy_flowchart.pdf.

The Director will afford any vendor on an existing central contract an opportunity to match or to beat the Opportunity Buy offer made by a non-contracted vendor prior to a waiver being granted.

24. **REQUIRED REPORTING:**

One of the primary goals in administering this contract is to keep accurate records regarding its actual value/usage. This information is essential in order to update the contents of the contract and to establish proper bonding levels if they are required. The integrity of future contracts revolves around our ability to convey accurate and realistic information to all interested Vendors.

A Usage Report (Attachment 4) shall be furnished on the 15th (or next business day after the 15th day) of each month by the successful Vendor **Electronically in Excel format** detailing the purchasing of all items on this contract. The reports (Attachment 4) shall be submitted electronically in EXCEL and sent as an attachment to dot-ask@state.de.us. It shall contain the six-digit department and organization code. Any exception to this mandatory requirement may result in cancellation of the award. Failure to provide the report with the minimum required information may also negate any contract extension clauses. Additionally, Vendors who are determined to be in default of this mandatory report requirement may have such conduct considered against them, in assessment of responsibility, in the evaluation of future proposals.

In accordance with Executive Order 14 – Increasing Supplier Diversity Initiatives within State Government, the State of Delaware is committed to supporting its diverse business industry and population. The successful Vendor will be required to report on the participation by a minority and/or women owned business (MWBE) under this awarded contract. The reported data elements shall include but not be limited to; name of state contract/project, the name of the MWBE, MWBE contact information (phone, email), type of product or service provided by MWBE and any MWBE certifications for the subcontractor (State MWBE certification, Minority Supplier Development Council, Women’s Business Enterprise Council). The format used for this 2nd Tier report is found in Attachment 5.

2nd tier reports (Attachment 5) shall be submitted to the contracting Agency’s Supplier Diversity Liaison found at http://gss.omb.delaware.gov/omwbe/docs/sdc/mwbe_liasions.xls and the OMWBE at vendorusage@state.de.us on the 15th (or next business day) of the month following each quarterly period. For consistency quarters shall be considered to end the last day of March, June, September and December of each calendar year. Contract spend during the covered periods shall result in a report even if the contract has expired by the report due date.

25. **ORDERING PROCEDURE:**

Successful Vendors are required to have either a local telephone number within the (302) area code, a toll free (800) number, or agree to accept collect calls. Depending on the nature and scope of the event, each State agency or other governmental entity shall be responsible for contacting the awarded vendor directly for all required resources. All consumables delivered by the Vendor and received by a State agency or other governmental entity, become the property of that State agency or entity. Orders may be accomplished by written purchase order, telephone, fax or computer on-line systems.

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26. **BILLING:**

The Vendor is required to "Bill as Shipped" to the respective ordering agency(s). Ordering agencies shall provide contract number, ship to and bill to address, contact name and phone number. The Vendor shall not charge a late fee that exceeds more than one percent (1%) per month, not to exceed twelve percent (12%) per annum.

Agencies will make every effort to achieve available discount opportunities under this contract. Vendors shall be required to report semi-annually opportunities to enhance the discounts achieved.

27. **METHOD OF PAYMENT:**

The agencies or school districts using this award will authorize and process for payment each invoice within thirty (30) days after the date of receipt of a correct invoice. The State of Delaware intends to maximize the use of the P-Card for payment for goods and services provided under contract. Vendors shall not charge additional fees for acceptance of this payment method and shall incorporate any costs into their proposals. Additionally there shall be no minimum or maximum limits on any P-Card transaction under the contract. While it is the State's intention to utilize the P-card payment method the State reserves, at its discretion, the right to pay by ACH/ ACI or check. Should a Vendor wish to provide a financial incentive to not process payment by P-Card in their proposal, they are to prepare their proposals to clearly outline any incentives for alternative payment methods the Vendor is willing to accept.

28. **PRODUCT SUBSTITUTION:**

All items or services delivered during the life of the contract shall be of the same type and manufacture as specified or accepted as part of the proposal unless specific approval is given by the Agency to do otherwise. Awarded vendors are highly encouraged to offer any like substitute product (s), either generic or brand name, at any time during the subsequent contract term, especially if an opportunity for cost savings to the state exists. In all cases, the state may require the submission of written specifications and/or product samples for evaluation prior to any approvals being granted.

If a substitution is granted by the state, the Vendor must update its core list and maintain said list in a timely manner.

29. **SCHEDULE FOR PERFORMANCE OF WORK:**

All work described in these specifications shall be completed with reasonable promptness. As used in this Section, the State of Delaware shall be the sole judge of the term "reasonable". If the Vendor does not begin the work in a reasonable amount of time, they will be notified that if they fail to initiate the work promptly, the contract may be terminated and the State will forthwith proceed to collect for nonperformance of work.

30. **VENDOR RESPONSIBILITY:**

The State will enter into a contract with the successful Vendor(s). The successful Vendor(s) shall be responsible for all products and services as required by this RFP whether or not the Vendor or a subcontractor provided it. Subcontractors, if any, shall be clearly identified in the Vendor's proposal by completing Attachment 3.

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31. **PERSONNEL/EQUIPMENT/SERVICES:**

- a. The Vendor represents that it has, or will secure at its own expense, all personnel required to perform the services required under this contract.
- b. All of the equipment and services required hereunder shall be provided by or performed by the Vendor or under its direct supervision, and all personnel, including subcontractors, engaged in the work shall be fully qualified and shall be authorized under State and local law to perform such services.
- c. None of the equipment and/or services covered by this contract shall be subcontracted without the prior written approval of the State. Only those identified in Attachment 3 are considered approved upon award. Changes to those subcontractor(s) listed in Attachment 3 must be approved in writing by the State.

32. **TERMINATION OF INDIVIDUAL ORDERS OR PURCHASE ORDERS:**

As a central contract, the contract resulting from this RFP shall include individual orders from state agencies and other entities authorized by law to procure from this contract. The individual orders may be terminated as follows:

- a. **Termination for Cause** If, for any reasons, or through any cause, the Vendor fails to fulfill in timely and proper manner his obligations, or if the Vendor violates any of the covenants, agreements, or stipulations of this contract, the Agency shall have the right to terminate the P.O. by giving written notice to the Vendor of such termination and specifying the effective date thereof, at least five (5) days before the effective date of such termination. In that event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports or other material prepared by the Vendor in the performance of the P.O. shall, at the option of the Agency, become its property, and the Vendor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents and other materials which is usable to the Agency.
- b. **Termination for Convenience** The Agency may terminate the P.O. at any time by giving written notice of such termination and specifying the effective date thereof, at least sixty (60) days before the effective date of such termination. In that event, all finished or unfinished documents, data, studies, surveys, drawings, models, photographs, reports, supplies, and other materials shall, at the option of the department, become its property and the Vendor shall be entitled to receive compensation for any satisfactory work completed on such documents and other materials which are usable to the Agency.
- c. **Termination for Non-Appropriations** In the event the General Assembly fails to appropriate the specific funds necessary to enter into or continue the contractual agreement, in whole or part, the agreement shall be terminated as to any obligation of the State requiring the expenditure of money for which no specific appropriation is available at the end of the last fiscal year for which no appropriation is available or upon the exhaustion of funds. This is not a termination for convenience and will not be converted to such.

33. **TERMINATION OF CONTRACT:**

As a central contract, the contract resulting from this RFP may be terminated as follows by Government Support Services:

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- a. **Termination for Cause** - If, for any reasons, or through any cause, the Vendor fails to fulfill in timely and proper manner its obligations under this Contract, or if the Vendor violates any of the covenants, agreements, or stipulations of this Contract, the State shall thereupon have the right to terminate this contract by giving written notice to the Vendor of such termination and specifying the effective date thereof, at least 30 days before the effective date of such termination. In that event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports or other material prepared by the Vendor under this Contract shall, at the option of the State, become its property, and the Vendor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents and other materials which is usable to the State.
- b. **Termination for Convenience** - The State may terminate this Contract at any time by giving written notice of such termination and specifying the effective date thereof, at least sixty (60) days before the effective date of such termination. In that event, all finished or unfinished documents, data, studies, surveys, drawings, models, photographs, reports, supplies, and other materials shall, at the option of the State, become its property and the Vendor shall be entitled to receive compensation for any satisfactory work completed on such documents and other materials, and which is usable to the State.
- c. **Termination for Non-Appropriations** In the event the General Assembly fails to appropriate the specific funds necessary to enter into or continue the contractual agreement, in whole or part, the agreement shall be terminated as to any obligation of the State requiring the expenditure of money for which no specific appropriation is available at the end of the last fiscal year for which no appropriation is available or upon the exhaustion of funds. This is not a termination for convenience and will not be converted to such.

34. **CHANGES:**

Both parties may, from time to time, require changes in the services to be provided by the Vendor under the Scope of Work. Such changes, including any increase or decrease in the amount of the Vendor's compensation, which are mutually agreed upon by and between the Agency and the Vendor shall be incorporated in written amendments to the Purchase Order or contract.

35. **INTEREST OF VENDOR:**

The Vendor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree in providing products or performing services required under this contract. The Vendor further covenants that in the performance of this contract, no person having any such interest shall be employed.

36. **PUBLICATION, REPRODUCTION AND USE OF MATERIAL:**

No material produced in whole or part under this contract shall be subject to copyright in the United States or in any other country. The State shall have unrestricted authority to publish, disclose, distribute and otherwise use, in whole or in part, any reports, data, or other materials prepared under this contract; provided, however, that the State agrees not to use any design or engineering plans prepared by the Vendor for anything other than their intended purpose under this Contract. The Vendor shall have the right to publish any and all scientific findings. Appropriate acknowledgment and credit for the State's support shall be given in the publication.

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37. **RIGHTS AND OBLIGATIONS:**

The rights and obligations of each party to this agreement shall not be effective, and no party shall be bound by the terms of this agreement, unless and until a valid executed purchase order has been approved by the Secretary of Finance, and all procedures of the Department of Finance have been complied with. A separate purchase order shall be issued for every project.

38. **ASSIGNMENT OF ANTITRUST CLAIMS:**

As consideration for the award and execution of this contract by the State, the Vendor hereby grants, conveys, sells, assigns, and transfers to the State of Delaware all of its right, title and interest in and to all known or unknown causes of action it presently has or may now or hereafter acquire under the antitrust laws of the United States and the State of Delaware, relating to the particular goods or services purchased or acquired for the State pursuant to this contract.

39. **TESTING AND INSPECTION:**

The State of Delaware reserves the right to conduct any test or inspection it may deem necessary to insure equipment, materials and services conform to contract requirements.

40. **COVENANT AGAINST CONTINGENT FEES:**

The Vendor warrants that no person or selling 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, excepting bona fide employees. For breach or violation of this warranty, the State shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fees.

41. **GRATUITIES:**

- a. If it is found, after notice and hearing, by the State that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Vendor or any agent of the State with a view toward securing a contract, or securing favorable treatment with respect to the awarding, amending, or the making of any determinations with respect to the performance of this contract, the State may, by written notice to the Vendor, terminate the right of the Vendor to proceed under this contract and/or may pursue such other rights and remedies provided by law or under this agreement; provided that the existence of the facts upon which the State makes such findings shall be in issue and may be reviewed in proceedings pursuant to the Remedies clause of this contract; and
- b. In the event this contract is terminated pursuant to subparagraph "a", the State shall be entitled (i) to pursue the same remedies against the Vendor, and (ii) to exemplary damages, as a penalty in addition to any other damages to which it may be entitled by law, in an amount which shall be not less than three, nor more than ten, times the costs incurred by the Vendor in providing any such gratuities to any such officer or employee. The amount of such exemplary damages shall be in the sole discretion of the State.

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42. **AFFIRMATION:**

The Vendor must affirm that within the past five (5) years the firm or any officer, controlling stockholder, partner, principal, or other person substantially involved in the contracting activities of the business is not currently suspended or debarred and is not a successor, subsidiary, or affiliate of a suspended or debarred business.

43. **AUDIT ACCESS TO RECORDS:**

The Vendor shall maintain books, records, documents, and other evidence pertaining to this Contract to the extent and in such detail as shall adequately reflect performance hereunder. The Vendor agrees to preserve and make available to the State, upon request, such records for a period of five (5) years from the date services were rendered by the Vendor. Records involving matters in litigation shall be retained for one (1) year following the termination of such litigation. The Vendor agrees to make such records available for inspection, audit, or reproduction to any official State representative in the performance of their duties under the Contract. Upon notice given to the Vendor, representatives of the State or other duly authorized State or Federal agency may inspect, monitor, and/or evaluate the cost and billing records or other material relative to this Contract. The cost of any Contract audit disallowances resulting from the examination of the Vendor's financial records will be borne by the Vendor. Reimbursement to the State for disallowances shall be drawn from the Vendor's own resources and not charged to Contract cost or cost pools indirectly charging Contract costs.

44. **REMEDIES:**

Except as otherwise provided in this contract, all claims, counterclaims, disputes, and other matters in question between the State and the Vendor arising out of, or relating to, this contract, or a breach of it may be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State of Delaware.

45. **AMENDMENTS:**

This contract may be amended, in writing, by mutual agreement of the successful vendor and Government Support Services.

46. **SUBCONTRACTS:**

Subcontracting is permitted under this RFP and contract. However, every subcontractor shall be identified in the Proposal (Attachment 3) and agreed to in writing by the State or as are specifically authorized in writing by the Agency during the performance of the contract. Any substitutions in or additions to such subcontractors, associates, or consultants will be subject to the prior written approval of the State.

The Vendor(s) shall be responsible for compliance by the subcontractor with all terms, conditions and requirements of the RFP and with all local, State and Federal Laws. The Vendor shall be liable for any noncompliance by any subcontractor. Further, nothing contained herein or in any subcontractor agreement shall be construed as creating any contractual relationship between the subcontractor and the State.

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47. **AGENCY'S RESPONSIBILITIES**

The Agency shall:

- a. Examine and review in detail all letters, reports, drawings and other documents presented by the Vendor to the Agency and render to the Vendor in writing, findings and decisions pertaining thereto within a reasonable time so as not to delay the services of Vendor.
- b. Give prompt written notice to the Vendor whenever the Agency observes or otherwise becomes aware of any development that affects the scope or timing of the Vendor's services.

48. **CONTRACT DOCUMENTS:**

The Definitions and General Provisions and any Special Instructions, Specifications, Request for Proposal, Proposal, Purchase Order, and Contract shall be a part of and constitute the entire Agreement entered into by the State of Delaware and any Vendor. In the event there is any discrepancy between any of these contract documents, the following order of documents governs so that the former prevails over the latter:

- Contract
- Request for Proposal
- Specifications or Scope of Work
- Definitions & General Provisions
- Proposal
- Purchase Order
- Special Instruction

49. **ASSIGNMENT:**

This contract shall not be assigned except by express prior written consent from the Agency.

50. **NOTICE**

Any notice to the State of Delaware required under the contract shall be sent by registered mail to:

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
PO Box 778
DOVER, DE 19903

51. **VENDOR EMERGENCY RESPONSE POINT OF CONTACT:**

The awarded vendor(s) shall provide the name(s), telephone, or cell phone number(s) of those individuals who can be contacted twenty four (24) hours a day, seven (7) days a week where there is a critical need for commodities or services when the Governor of the State of Delaware declares a state of emergency under the Delaware Emergency Operations Plan dated November 2009 or in the event of a local emergency or disaster where a governmental entity other than a State Agency requires the services of the vendor. Failure to provide this information could render the proposal as non-responsive.

STATE OF DELAWARE
Office of Management and Budget
Government Support Services

C. AWARD AND EXECUTION OF CONTRACT

1. **CONSIDERATION OF PROPOSALS:**

The right is reserved to waive technicalities, to reject any or all bids, or any portion thereof, to seek new proposals, to proceed to do the work otherwise, or to abandon the work, if in the judgment of the Agency or its agent, the best interest of the State will be promoted thereby.

2. **MATERIAL GUARANTY:**

Before any contract is awarded, the successful Vendor may be required to furnish a complete statement of the origin, composition and manufacture of any or all of the material to be used in the contract together with such samples as may be requested for the purpose of testing.

3. **AWARD OF CONTRACT:**

Within ninety (90) days from the date of opening proposals, the contract will be awarded or the proposals rejected.

4. **EXECUTION OF CONTRACT:**

The Vendor (s) to whom the award is made shall execute a formal contract within twenty (20) days after date of official notice of the award of the contract.

5. **WARRANTY:**

The successful Vendor(s) shall be required to extend any policy guarantee usually offered to the general public, FEDERAL, STATE, COUNTY, or MUNICIPAL governments, on material in this contract against defective material, workmanship, and performance.

6. **THE CONTRACT(S):**

The contract(s) with the successful Vendor(s) will be executed with the Government Support Services acting for all participating governmental entities.

7. **INFORMATION REQUIREMENT:**

The successful Vendor's shall be required to advise and provide the Government Support Services of the gross costs associated with this contract.

- end -

STATE OF DELAWARE
Office of Management and Budget
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VII. SPECIAL PROVISIONS

A. DELIVERY PROVISIONS:

1. **TIME:** The items / products covered by this contract shall be delivered to the ordering Agency within 240 calendar days from date of Purchase Order, unless otherwise defined in the Purchase Order.
2. **EXTENSIONS:** Extension of the delivery time specified under the terms of this contract will only be considered in cases where labor strikes, national emergencies or acts of God shall prevent the required fulfillment of the contract. Evidence of such delays must be submitted for consideration. Knowledge of existing or pending strikes will be taken into consideration when placing Purchase Orders.
3. **CERTIFICATES OF ORIGIN:** Under no circumstances shall any vehicle be delivered to the ordering Agency without a certificate of origin. Units shipped without certificates of origin will be refused by the ordering Agency and removed from state property by the vendor and no payment will be made until all proper paperwork and certificates are delivered.

B. INSPECTION:

Upon delivery, the unit(s) will be inspected by an authorized Agency representative, and if found defective or if it fails in any way to meet the specifications in this proposal, it will be rejected. Inspection will be performed within five (5) working days after delivery.

C. WARRANTY:

The successful bidder shall extend to the ordering Agency a policy guarantee on parts, equipment, and services, against defective material and workmanship for a period of two (2) years from date of unit acceptance. Any item which is normally covered by the warranty policy but is determined to have been damaged through misuse or operator neglect will be exempt from coverage. In cases where items that are excluded from coverage under this warranty policy but are covered by a manufacturer's policy, the manufacturer's policy will be provided to the Agency.

1. Warranty period shall begin after the unit(s) has been inspected by Agency personnel and found to be totally in compliance with the terms, conditions and specifications of this contract, and accepted.
2. If any part of the unit is normally covered by a warranty policy for more than two (2) years, the full period of warranty policy will be provided to the ordering Agency.
3. When warranty work is required, the ordering Agency will notify the successful bidder and/or their designated maintenance facility. All warranty work shall be performed in the ordering Agency's district facility to which the equipment is assigned, at no additional cost to the Agency, unless the nature of the work dictates the use of a specialized facility. In such cases, the vendor will provide all necessary transportation both to and from the specialized facility or bidder's location, whichever is closest.
4. The successful bidder shall comply with the manufacturer's warranty or authorize a qualified dealer in the locality in which the unit is assigned to do whatever is required to comply with the manufacturer's warranty without cost to the Agency.
5. Upon notification that warranty work is required, the successful bidder will be required to begin necessary repairs and/or adjustment within three (3) working days. The necessary work will be accomplished as expeditiously as possible, however, in no case shall it exceed the authorized time standard established by the manufacturer plus an additional three (3) working days for scheduling, unless parts are required. If parts are required, ten (10) working days, in addition to the time indicated above, will be allowed for their procurement. If the ordering Agency agrees to additional time for warranty work, it must be documented prior to the occurrence.

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D. REPAIR PARTS:

The successful bidder shall supply the ordering Agency with a complete parts list of all major components installed on equipment supplied to the Agency. Parts information shall be provided and shall include the manufacturer's name, part number, model number, description, etc. Additionally, provide a list of the suggested minimum stocked parts which should be kept on hand. The bidder will be required to provide repair parts to the ordering Agency within five (5) working days after receipt of either a verbal, telephone or mail order for a period of ten (10) years from date of delivery.

E. FAILURE TO PERFORM:

Failure by the successful bidder or manufacturer to perform warranty service and/or repair parts supply, in accordance with these provisions, may be considered in default of the contract.

F. BASIS OF PAYMENT:

Item(s) referred to in this contract will be paid for at the contract bid price which price and payment shall constitute full compensation for furnishing and delivering the item(s) F.O.B. designated delivery point. Payment will be made for delivery following receipt of billing from the supplier and certification by the ordering Agency as to approval and acceptance of the delivered item(s).

In the event that a partial delivery is made under this contract, the Agency, if requested by the vendor, may make payment for the delivered item(s) when the aforementioned conditions are met.

If the major item(s) of equipment have been delivered but unfulfilled requirements exist, payment may be initiated; however, funds equal to the value of the unfulfilled requirements, but in no case less than 10% of the total value of the contract, will be retained until all requirements have been fulfilled to the satisfaction of the Agency.

G. QUANTITIES:

The State reserves the right to increase or decrease the number of unit(s) purchased under this contract, based on fund availability and the Agencies' needs and best interest.

H. FACTORY DIRECT SHIPMENTS:

Equipment that is drop shipped from the factory directly to the ordering Agency, shall be inspected by the Contract Vendor within a maximum of five (5) working days of delivery, by appointment, with the ordering Agency staff. No payment shall be made and time charges will continue, until the Vendor and the Agency staff together have determined the equipment supplied meets all of the specified requirements of this contract. If the equipment supplied is to be attached to existing Agency owned vehicles, a sample vehicle will be on site to determine if the equipment supplied properly fits and functions as required. If a determination is made that the equipment requires modifications to meet the specification, or shipment of accessories is incomplete, the Vendor will have a maximum of five (5) working days from date of inspection, to cure the deficiencies identified. If after the five (5) day time period all problems have not been corrected, this shall be cause for termination of the purchase order with the Vendor.

- end -

STATE OF DELAWARE
Office of Management and Budget
Government Support Services

VIII. TECHNICAL SPECIFICATIONS

PROPOSAL OVERVIEW

CONTRACT GSS11617-HEAVY_TRUCKS

<u>Specification</u>	<u>Quantity</u>	<u>Description</u>
Specification A	4	Ten-Wheel Truck/Chassis
Specification B	50	Ten-Wheel Truck Cab/Chassis 64,000 GVW Dump
Specification C	75	Six-Wheel Truck Cab/Chassis 37,500 GVW
Specification D	40	Six-Wheeled 25,999 GVW 4-Door Medium Truck/Cab Chassis
Specification E	20	Six-Wheeled 25,999 GVW 2-Door Medium Truck/Cab Chassis
Specification F	50	Ten-Wheel Aluminum Dump Truck Bodies 64,000 GVW
Specification G	75	Six-Wheel Aluminum Dump Truck Bodies 37,500 GVW
Specification H	40	Six-Wheel Medium Duty Aluminum Dump Truck Bodies 25,599 GVW
Specification I	10	Flat Bed Body for Medium Duty Chassis 27,000
Specification J	2	Heavy Duty Crane/Service Body

TEN WHEEL TRUCK TRACTOR/CHASSIS

STATEWIDE

SPECIFICATION "A"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not.

1. **GENERAL:**

- 1.1 It is the intent and purpose of these specifications to describe a Cab & Chassis for a Ten Wheel Truck Tractor. Vehicle must be new current model and year. The vehicles shall be used in on/off highway operations to provide general hauling of materials, towing of equipment.
- 1.2 Vehicles must conform to all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, and USAISI.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 As part of the Vendors pre delivery inspection, the vendor shall meet with the ordering Agency to determine the Engine and Transmission computer program parameters. All of the delivered equipment shall have these parameters. This data shall be documented, using the VIN to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery of the unit.
- 1.5 The Vendor shall provide a list of common consumable parts to include at a minimum, OEM part numbers for all filters, belts, hoses, brakes and wheel seals.
- 1.6 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, serviced, and full of fuel, ready for immediate use.
- 1.7 Protected to -40 degrees (F) with permanent, long life anti-freeze.
- 1.8 Bidder must provide drawings and detailed component listing for all items described in this specification. All body materials listings must include MIL specification.
- 1.9 Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include engine and transmission model and serial numbers.

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- 1.10 Operators manual shall accompany each delivered unit
- 1.11 Performance of vehicle specified shall be capable of a sustained level road speed of 65 MPH + 1 MPH using 80% + 5% of recommended maximum governed engine RPM when operating at maximum GVWR.

2. **CHASSIS MECHANICAL:**

- 2.1 G.V.W.R.: 60,600 pounds, minimum
- 2.2 Afterframe: 54" maximum from center of tandem to the end of frame.
- 2.3 Back of cab To center trunion: 108" minimum effective
- 2.4 The straight frame rail shall be constructed of "C" channel type 110,000 PSI yield strength single frame minimum having a 26.5 in 3 section modulus. Frame strength to be 3,000,000 inch pounds (minimum) resisting bending moment.
- 2.5 Mud flaps
 - a. Rear mud flap brackets
 - b. Rear mud flaps anti-sail & anti spray, black w/o logo
- 2.6 Fuel Tank and Steps: w/stainless steel straps - anti roll material
- 2.7 Factory installed aluminum dual 50 gallon fuel tanks frame mounted. Total Capacity: 100 gallons, minimum. The first step shall be a maximum of 16 inches above ground and made of Bustin Industrial Products, aluminum material or approved equal.
- 2.8 Tank shall include provisions in the tank bottom for draining.
- 2.9 All direction, anti-slip open safety grille, Bustin Industrial Products, aluminum material, shall be provided on all treading surfaces.
- 2.10 Other entrance shall be equipped with the standard step for model quoted
- 2.11 If battery box needs to be moved to make room for fuel tank, written approval by ordering Agency personnel must be obtained.

3. **CHASSIS ELECTRICAL SYSTEM:**

- 3.1 Batteries: Three (3) heavy duty, 12 volt 700 CCA each field maintenance free, BCI Group 31, with stud-type posts and anti-corrosion treatment on each terminal. Battery box & covers to be aluminum and mounted on the left side frame rail aft of fuel tank. Molded poly battery box covers acceptable with written approval of ordering Agency. A 0.25 inch thick battery shock pad constructed of acid resistant material, not any type of wood, shall be provided under the batteries.
- 3.2 Starter Motor: With thermal over crank protection and high torque capacity.

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- 3.3 The only cables connected to the starter positive terminal shall be (1) one positive battery cable and one alternator cable. The only cable connected to the starter ground terminal shall be (1) one negative cable. All other power and ground wiring shall be connected through both a positive and negative junction block. These blocks shall be in a sealed box, with easy access for maintenance.
 - 3.4 Jump start terminals, remote mounted next to the battery box at the back of cab allowing easy access.
 - 3.5 Alternator: heavy-duty 130 amps. Capacity (minimum) Brushless Delco Remy Series 35SI or approved equal.
 - 3.6 All excess wiring and harness shall be securely fastened to frame, body or brackets.
4. **BODY:**
- 4.1 Cab: Aluminum or steel galvanized inside and out, firewall to back of cab dimension no less than 51", 83 DBA, with tilting fiberglass hood stationary grill, and fenders with a stone and gravel radiator guard to be 10 mesh stainless steel screen. When mounted, this guard shall not contact hood. Cab shall be equipped with air suspension rear mounting.
 - 4.2 Fenders: Fenders shall be half fenders covering the rear drive wheels. Fenders shall be constructed of aluminum or stainless steel.
 - 4.3 A grab handle shall be provided at each exterior doorpost to ease entry.
 - 4.4 **HEADACHE RACK:**
 - a. Headache Rack, aluminum with chain storage box and window assembly 16" back of cab to headache rack PROTECH #21306 [DRAWING I] cab guard unit or approved equal.
 - b. Frame mounted step box, diamond plate aluminum, mounted 1 on each side of truck frame, Magnum Truck and Trailer Equipment, Inc. Model #M11-230-16 [DRAWING II] or approved equal.
 - c. Frame mounted step box, diamond plate aluminum LFL Liberty linear LED light bar or approved equal to be mounted on the top center of the cab guard. [DRAWING III] for exact light assembly details. A Whelen, PCC59NP, slide style power control switch, or approved equal, shall be supplied and mounted in the overhead console of the truck cab. Power leads shall be installed by the chassis manufacturer to meet the needs of the light bar supplied.
 - d. Lighting to consist of two (2) 3" x 6" minimum halogen work lights, Hella HL-300 or approved equal, to be mounted to the top of the cab guard, facing the rear area of the truck, shall be wired into switches supplied in dash of the truck by the chassis manufacturer.
 - e. All splices shall be soldered and covered with sealant encapsulated heat shrink tubing.

5. **WHEELS/TIRES:**

- 5.1 Front: Goodyear 315 80R 22.5 or approved equal tread design.
- 5.2 Front Wheel: 22.5 x 9.0 1PC, 10 hole hub piloted steel disc, ISO, 285 MM bolt circle, minimum.
- 5.3 Rear: 12R22.5, 16 ply rating tubeless radial Goodyear G 622 MSD or approved equal tread design.
- 5.4 Rear Wheel: 22.5 x 9.0 1PC, 10 hole hub piloted steel disc, ISO, 285 MM bolt circle, minimum.

6. **PAINT:**

- 6.1 Chassis shall be painted to manufacturer's specifications with epoxy primer and poly-urethane over phosphate coated steel.
- 6.2 The chassis shall be finished in black.
- 6.3 Wheels shall be powder coat or painted gray or white in color.
- 6.4 The balance of the cab shall be finished with poly-urethane base coat/clear coat, #31 Omaha Orange or approved equal within the limits established on the Color Tolerance Chart, PR #6, U.S. Department of Transportation, Federal Highway Administration, March 1971.

7. **AXLES/DRIVELINE:**

- 7.1 Front Axle: Heavy duty, 16,000 pounds minimum capacity with manufacturer's spec heavy duty hydraulic power steering and National front oil seals or Stemco. Pins and bearing/bushings shall be furnished with 360-degree oil grooves to insure adequate lubricant penetration. The front oil hubs need to be constructed from heavy-duty aluminum.
- 7.2 Rear Axle: Heavy-duty 46,000 minimum pounds capacity, with National or equal wet wheel seals.
- 7.3 Drive Line: Spicer 1810HD and 1710 or approved equal.

8. **BRAKE SYSTEMS:**

- 8.1 Dual air system with 18.7 cubic foot (minimum capacity) compressor with Bendix DV-2 automatic drain valve on all tanks, and heated air dryer, Bendix AD/IP or equal.
- 8.2 Front Brake Size: 16.5" x 6" minimum Rear: 16.5" x 7", minimum
- 8.3 Parking Brake: Both axles shall be spring-actuated double-diaphragm
- 8.4 Brake Dust Shields on all axles.
- 8.5 Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake.

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- 8.6 Brakes shall be Bendix ABS.
 - 8.7 The wheel end shall be equipped with outboard cast brake drums.
 - 8.8 Airbrake connection behind cab shall have 15 ft. coiled airlines and 15 ft. coiled electrical cable.
9. **SUSPENSION:**
- 9.1 Front Suspension: Minimum 16,000 pounds total capacity at ground for axles and springs. Supply heavy-duty shock absorbers.
 - 9.2 Front springs shall be taper leaf springs or equal.
 - 9.3 Rear Suspension: 46,000 Pounds, manufacture's standard air ride with dump valve
 - 9.4 Center front drive axle to center rear drive axle 51" minimum/55" maximum
10. **CAB MECHANICAL:**
- 10.1 The following shall be provided:
 - 10.2 Seats and seat belts for the driver and one (1) passenger shall be provided.
 - a. Driver's Seat: Full adjustable cushioned High Back Bostrom, National or equivalent air ride bucket seat, cloth covered with arm rests or approved equal. Seat shall have 16-inch minimum dimension from bottom of steering wheel to middle seat back.
 - b. Passenger's Seat: Full adjustable cushioned High Back Bostrom National or equivalent air ride bucket seat, cloth covered with arm rests or approved equal.
 - 10.3 Cab to include padded back panel, door trims, headliner. Cab shall be provided with sound deadening and insulation quality.
 - 10.4 Two cup holders in the cab within easy reach of operator and passenger.
 - 10.5 Overhead console with storage compartments
 - 10.6 Storage pockets(s) in driver's side door.
 - 10.7 Windshield: One or two-piece construction, tinted safety glass throughout.
 - 10.8 Driver and passenger entrance steps, and/or deck/frame steps shall be steel and or aluminum, serrated in lieu of plain (over lay is not acceptable). Top of first step shall be approximate 16 inches from ground (over lay is not acceptable).
 - 10.9 Dual air horns w/snow-shield if externally mounted.
 - 10.10 Steering wheel diameter shall be 18 inch (approximate) with tilt steering column.
 - 10.11 All vehicles keyed alike.
 - 10.12 Dual Sun Visors.

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- 10.13 Fire extinguisher 5-pound capacity rechargeable with vehicle mount. Mounted between door and seat (left side) for easy and quick access on floor.
- 10.14 Dual Arm rests for operator and passengers seat.
- 10.15 Emergency triangle warning reflectors, with hold down, or equal, stowed (fastened) in the cab or in toolbox. One (1) first aid kit Zee Deluxe truck kit P/N 105 or approved equal shall be installed on back wall.
- 10.16 Door pulls on both doors (inside)
- 10.17 Passenger door shall have window in bottom front corner.
- 10.18 Tinted glass.
- 10.19 Back window or windows
- 10.20 Floor covering shall be heavy-duty rubber.
- 10.21 Brake & throttle pedals shall be suspended from under the dash.
- 10.22 Two (2) outside rear view bright heated mirrors, 16" x 6" minimum size, single head, retractable type, with bolt on or integral, 8" minimum diameter round convex mirrors mounted on both sides. Alternate mirror arrangement on written permission.
- 10.23 Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of operator or automatic on/off is acceptable. The wires shall be fitted in such a way that unplugging the two-wire leads can change the mirror. A spot mirror shall be mounted on the right front fender. The mirror shall be a BDS (dead angle spot mirror) Part # 7391 or approved equal. All arms and hardware shall be stainless steel. Fender type washers stainless or aluminum, with rubber pads to be placed on both sides of the fender shall be included. Pedestal systems shall be stainless steel. Mirrors shall be mounted in rubber or vinyl. Passenger (right) side mirror shall be Lanescan II or approved equal. Shall be push button operated to rotate mirror head and shall automatically return to its original set position when button is released. Driver (left) side mirror shall be non-powered but matching design of right side mirror. Left mirror head shall also have mounting points at bottom to accept a bracket to mount spot mirror.

11. **CAB/BODY ELECTRICAL:**

- 11.1 The 12-volt system shall include but not be limited to the following:
- 11.2 Factory installed air conditioning, heavy duty with safety shutdown.
- 11.3 Dual heavy duty, variable speed, electric intermittent arctic type windshield wipers with electric washer. Washer system shall be electric, minimum capacity of two (2) quarts washer fluid and shall be filled with windshield washer fluid.
- 11.4 Circuit Breakers and Fuses shall be located in easily accessible location, weatherproof compartment. Fuses acceptable in circuit so identified by manufacturer as safety factor. The fuse or circuit breaker compartment shall have an easily removable protective cover. All wire splices inside and outside shall be soldered and covered with sealant encapsulated heat shrink tubing.

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- 11.5 All wires shall be color coded or Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum.
 - 11.6 All wire splices inside or outside the cab and hood, shall be soldered and covered with sealant encapsulated heat shrink tubing. All wires shall be color-coded; Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum. Wiring harness shall contain at least two (2) spares of each gauge wire used in the harness. The wire ends shall be sealed.
 - 11.7 Vehicle shall be equipped with a minimum of two (2) Halogen headlights mounted in the normal position. Vehicle shall be equipped with daytime running lights.
 - 11.8 Front directional signals with integral parking lights mounted in or on top of the fenders shall be self-canceling if available with hazard flash.
 - 11.9 Cab roof lights to be LED type.
 - 11.10 Pre-wire for LED strobe, light bar.
 - 11.11 Electric horn(s).
 - 11.12 Back up alarm automatically adjusting sound level (87-112 DBA rating).
 - 11.13 Trailer light plug, Berg Model M-7 female connector 7 prong type, heavy duty, or approved equal shall be installed. Wiring is to comply with SAE trailer wiring code.
12. **CAB INSIDE ELECTRICAL:**
- 12.1 All controls and knobs shall be property identified.
 - 12.2 12-volt Power Supply Socket
 - 12.3 Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.
 - 12.4 Cab dome light opened by door and self-contained switch.
 - 12.5 Heater and defroster, heavy-duty fresh air type.
 - 12.6 AM/FM Radio with Clock
 - 12.7 Flasher - heavy duty electrical.
 - 12.8 Cruise Control
 - 12.9 Vehicle shall be equipped and wired with a minimum of six (6) extra rocker/toggle switches wired with 2-foot pigtail. Switches and extra wire shall be numbered and/or coded - three (3) switches shall be 15 amp minimum and three (3) switches shall be 20 amp minimum. Not all switches shall be used simultaneously. Wiring harness shall contain 4 spare wires. The wire ends shall be sealed.

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- 12.10 800 MHZ Wiring: The truck shall also be pre-wired for the installation of an 800 MHZ communications radio on the center top of dash. The wiring shall be as follows: One 30 amp, fused circuit on 10-gauge wire, switched from the ignition key to run the radio during operation of vehicle. One fused, direct power, 14 gauge wire to run stored radio programs during vehicle shutdown and one 12-gauge wire. All of these connections shall be marked and placed where they are readily accessible by our radio technicians to install the communications radio without removing panels from the dash or cutting into dash wiring.
- 12.11 The vehicle shall be equipped with a CB radio provisions. The radio provision shall include a feed from the accessory side of the ignition switch; including a power source and antenna with coax wiring mounted in overhead console.
- 12.12 All instruments shall be properly labeled, illuminated and dash-mounted except where specified otherwise. In-dash, integral with instrument panel be illuminated and shall be readable from the operator's seat. Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.
- 12.13 All standard instruments shall be supplied, including but not limited to the following:
- a. Odometer
 - b. Hour meter that records only when the engine is running
 - c. Speedometer
 - d. Tachometer
 - e. Air pressure gauge with low pressure warning indicator
 - f. Engine oil pressure gauge and low oil pressure warning light and audible alarm
 - g. Engine water temperature gauge and high coolant temperature warning light and audible alarm
 - h. Low coolant level warning light
 - i. Volt meter
 - j. Fuel gauge
 - k. Transmission oil temperature gauge
 - l. Rear end oil temperature gauge

13. **FIFTH WHEEL:**

- 13.1 Fifth wheel shall be an air controlled sliding fifth wheel with 24" slide travel forward over rear suspension. The measurement from ground to top of 5th wheel plate will be 50 1/2 inches. Fifth wheel shall be a minimum of eight and one half (8 1/2) inches from top of truck frame to top of fifth wheel. Fifth wheel shall be a Holland 3500 series, Fontaine 6000 series or Jost JSK37U.

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- 13.2 Fifth wheel shall be full air slide.
- 13.3 Area between frame rails forward of fifth wheel shall be covered with Bustin Industrial Products (aluminum) or equal.

14. **ENGINE:**

- 14.1 Minimum - electronic diesel engine or approved equal that conforms to current model/year EPA emissions standards.
- 14.2 400 H.P. - at 2100 R.P.M. (maximum) with 1450 lbs. of torque @ 1200 RPM maximum. Engine shall have Jacobs engine brake or approved equal.
- 14.3 Single element dry type air cleaner-Donaldson, or approved equal, with a dash-mounted restriction indicator.
- 14.4 Oil filter and fuel filters as recommended by the engine manufacturer, but including as a minimum a Davco Fuel Pro or Raycor fuel/water separator with heater temperature controlled by engine electrical system. The fuel/water separator must be installed to allow for simple replacement of the filter.
- 14.5 Vertical muffler with vertical tailpipe, 90 degree elbow section. Exhaust system shall not interfere with the operation of the body or hydraulic equipment and shall not cause modification of the body. If flexible tubing is used in the system, it must be stainless steel type. Exhaust to be right side cab or frame mounted. Muffler stack shall be no taller than 140" from top to ground. Muffler shall have muffler shield to protect personnel from burns.
- 14.6 Engine protection: High temperature and low oil protection warning light or alarm followed by de-rate, and then shut down.
- 14.7 Electric engine block heater, 120 volt, 1,500 watt. Heater shall also be connected to oil heater element in base. Receptacle for attaching the heater to outside power service shall be mounted on the driver's side cowl panel with a recessed plug.
- 14.8 Engine water filter not required if long life anti-freeze is provided.
- 14.9 Governor set at the manufacturer's recommended maximum RPM.
- 14.10 Heater hoses to have individual shut-off gate valve type, next to engine block.
- 14.11 Silicone radiator and heater hoses or gates blue stripe with constant torque spring loaded hose clamps or equivalent.
- 14.12 Electronic engine control:
 - a. Max cruise mph 68 mph
 - b. Road speed limit 70 mph
 - c. Idle shutdown timer 10 minutes
 - d. PTO RPM increments 100 rpm, minimum
- 14.13 Fan clutch - Kysor, Eaton, Borg-Warner or Horton on-off engine fan clutch (or approved equal).

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- 14.14 Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine and output under extreme temperatures and/or operating conditions. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options. Radiator shall be equipped with drain cock.
 - 14.15 Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).
 - 14.16 The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.
 - 14.17 The oil dipstick must accurately measure when full, actual engine manufacturers engine oil capacity. The oil dipstick must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground.
15. **TRANSMISSION:**
- 15.1 Transmission shall be automatic Allison Model 4500 RDS push button (dash or tower) with a 6-speed configuration with PTO provisions for a "hot shift" PTO unit. Transmission fluid shall be TranSynd synthetic oil, (Castrol fluid brand). The transmission shall be warranted for 5 years, 100 percent parts, labor and towing. The transmission shall have an audible alarm for overheating conditions.
 - 15.2 Transmission Oil Cooler: Transmission cooler to be installed per truck manufacturer if required, to meet Allison Transmission and engine specifications for municipal applications - such as heavy hauling. The transmission oil cooler shall allow for proper initial start up fluid temperature increase. The transmission cooler shall have the capacity as to not allow transmission fluid heat transfer to engine coolant, increasing engine coolant temperature to exceed proper engine operating temperature.
 - 15.3 Transmission Dipstick: The transmission oil dipstick shall be permanently marked with TranSynd, and must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground. If dipstick is over (4) four feet long the dipstick shall be relocated with written instruction from the Ordering Agency.
 - 15.4 The transmission will have an auto level check allowing operators to check the transmission oil level from inside the cab.
16. **HYDRAULICS TRIPLE FUNCTION WETLINE:**
- 16.1 **GENERAL:**
 - a. The purpose of the wetline hydraulic system is to operate a dump trailer, walking floor trailer and a hydraulic goose neck trailer from a manual central hydraulic system having a single source. All controls and components shall be of the latest design and installed to provide simple and convenient operation. A schematic as well as a parts list shall be provided with the completed unit. All hydraulic components shall be installed and serviced by an ISO 9001 manufacturer.

16.2 **Type:**

- a. A single section 4 cu. in. / rev gear pump/P.T.O. (direct mount if possible) assembly shall supply power for all trailers listed above. All components shall be sized to properly handle all demands of all three systems. Components shall include any required relief functions as well as flow controls and or speed controls, operating labels including recommended rpm, etc.

16.3 **Directional Control Valve:**

- a. The hydraulic control valve shall be capable of 35 GPM, 3500 PSI and cast from ductile iron. All valve sections shall be stack type for ease of add on functions for future hydraulic operations. Full flow pilot operated screw adjustable port relief shall be used. Where required, to protect all static conditions. These port reliefs shall be preset as required and also incorporate anti-cavitation checks. The control valve shall be designed to accept bonneted housings for sealed cable operation. All spools shall have 3 position, 4 way, spring return to center operation or detent where required. The valve shall be open center design. Valve sections shall be sized to provide correct speed of all hydraulic functions. Valve mounting shall be located inside frame rail. All porting shall be "S.A.E." code.

16.4 **Hydraulic Control Valve Operation:**

- a. All hydraulic valve operation shall be achieved from within the cab by a single operator. The controls shall be connected to the valve via zinc plated housing and steel connections with corrosion resistance finish. All cab controls shall be completely sealed via O-ring, boot and labyrinth joint. These controls shall provide bellcrank operation to allow output loads in excess of 250 pounds. The connection between the cab control and valve housing shall be via all stainless steel component, teflon and nylon wear surface linkage. The linkage shall have a minimum bend radius of 6 ft. and load capacity of 400 pounds pull and 250 pound push. All connections shall be routed to prevent failure do to heat, sharp edges or improper bends.

16.5 **Hydraulic Hose:**

- a. All hose and hose ends shall be latched and assembled on a matched hose machine to prevent hose failure. All hydraulic plumbing practices shall conform to JIC H11 standards. Pressure hoses shall be 100R2 or greater when required, return lines shall be 100R1 and suction lines must be 100R4. Velocity in pressure lines shall not exceed twenty (20) feet per second, return lines not to exceed ten (10) feet per second and not to exceed four (4) feet per second in suction lines. All hoses shall include JIC female swivel ends with the exception of the suction line. All hydraulic components shall have "SAE" porting wherever possible.

16.6 **P.T.O. Driven Pump:**

- a. A single flow volume pump shall be the sole source of power used to provide all hydraulic requirements. Pump shall be rated at proper cubic inch per revolution and have a minimum pressure rating of 3500 PSI and 3000 RPM. The pump shall match each system flow requirement via the engine speed as noted on dash mounted operating instructions. Pump shall be sized for the best operation results regardless of which trailer is being operated.

16.7 Transmission Power Take-off:

- a. When a "HD or MD series "world" Allison automatic transmission is present and includes power take-off openings, the following specification shall prevail. The transmission shall provide two (2) openings, one on either side and utilize a ten (10) bolt mounting pad. The power take-off shall be sized to exceed the maximum torque and horsepower demands required when the pump is operating at maximum. A ratio of one hundred percent (100%) shall be used with diesel engine. An S.A.E. "C" straight keyed shaft must be included on this hot shift power take-off whenever direct pump mounting is not possible. P.T.O. engage and disengage capability shall be included and provide live power whenever the engine is in operation and P.T.O. switch is activated. The ratio for this application shall be seventy five percent (75%) when a gas engine is the prime mover. Unit shall provide up to seventy-six horsepower (76) one thousand engine revolutions per minute (1000 rpm). When required, the 1310 drive line specification shall apply the same as for a front end power take-off application. The flange yoke shall be replaced with the proper end yoke to match the power take-off shaft. Power take-off shall have an integrated low oil shut down system that shall stop all oil flow when oil level is at half full or less. No oil shall be diverted through alternate returns lines in low oil mode.

16.8 Quick Couplers: (Standard):

- a. The hydraulic shall have all necessary quick couplers for easy connect and disconnect of each trailer. All quick couplers shall be located to facilitate easy connection with a gloved hand. All connections shall be identified via a metallic label attached to the hydraulic hose or to a mounting bracket at coupler location. All quick couplers shall be attached to mounting bracket via a steel bulkhead fitting which includes a one-piece body having N.P.T. male tread on one end for attaching the quick coupler and a thirty-seven (37) degree J.I.C. male thread on the other end for attaching the hydraulic hose. Pipe nipples welded to a bracket are not acceptable. All quick couplers shall be sized to provide minimum pressure drop based on flow requirements or each hydraulic circuit. Quick coupler manufacturer shall meet I.S.O. 9002 quality control standards and be interchangeable with I.S.I. 7241 - 1 "A". Material shall be steel with wear parts carbonitrided. Valves shall be tempered steel, springs C 98 and bearings 100 C6. The complete assembly shall be zined and yellow passivated. Temperature range shall be -25 degree to +125 degree Celsius. All pressure ratings shall minimum of 150 bar for size thirty-two (32) and include a 4:1 dynamic safety factor and a 2:1 static safety factor. All couplers shall include dust covers made of oil proof material to withstand temperatures of -30 degree to +150 degree Celsius. Dust covers shall also have an integral retainer strap with loop to prevent loss. All assemblies shall be mounted male/female opposing to prevent improper connection. Both halves of coupler shall be provided for each hydraulic circuit.

16.9 Oil Reservoir and Accessories:

- a. The oil reservoir shall be not less than fifty (50) gallon capacity, constructed of .1875, 5454 aluminum and cushion mounted to the chassis. An internal baffle shall be located to prevent return oil flow from venting directly to suction port. A dual fifty (50) GPM. Return line filter with a ten (10) micron spin on canister shall include an electric sending unit to activate a light mounted in the cab when filter change is required. The filter shall be connected to a drop tube,

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discharging return oil flow through the top of the tank to allow filter element to be changed with out the out of any type of shut-off valve. Drop tube tapered outlet shall be below oil level at all times to prevent air entrainment. An inlet stainless steel suction strainer of one hundred and twenty-five (125) micron shall be located within the reservoir and mounted in a manner to be submerged at all times. The strainer shall include a three (3) PSI by-pass and have a rating of not less than forty-seven (47) GPM. A ten (10) micron screw lock breather cap with basket shall be mounted on the top of the reservoir. Breather cap shall have a displacement of not less than one hundred and fourteen (114) GPM. A clean out cover with a silicone gasket shall be installed on the top of the reservoir to allow easy access to all internal tank accessories. Clean out cover shall be removable by removing a single bolt and crush washer. A five (5) inch combination level temperature sight glass shall be located in a visible but protected location. A magnetic drain plug shall be installed at the lowest point of the reservoir. A two inch (2-1/2") full flow one quarter (1/4) turn ball valve is to be located in the suction line as close to the reservoir as possible. Reservoir shall be cleaned an filled with ISO 32 hydraulic oil. Oil be filtered through a ten (10) micron filter at time of initial reservoir filling. Upon start up, hydraulic system shall be operated at maximum flow for not less than fifteen minutes and than have new filter elements replaced. Internal painting or galvanizing of reservoir is not acceptable. Reservoir shall be free all any type of contamination including weld slag. All system circuits shall be flow and pressure tested after installation. Tank shall be located on truck tractor chassis to provide the best possible service as well as trailer compatibility.

16.10 Installation Practices:

- a. All component installation shall conform to the latest recommendation, procedures and regulations of the following organizations. ASME - ASTM - AISI - API - FPS - ICC - ISO - JIC - MSS - NFPA - NEMA - OSHA - SAE - USASI. The following of any of the following items or practices shall not be accepted. Non steel fittings on hydraulic pressure lines. Excessive use of elbows or hydraulic lines. Use of thread type tape on hydraulic fittings. Use of galvanized fittings or components on hydraulic system. Improper hydraulic line size. Use of high pressure hose for hydraulic suction line. Scotchlok type wire splices. Non insulated wire splices. Improper hose or wire routing near exhaust, over sharp edges or through holes without grommets. Unfinished or sharp edges. Improperly prepared, primed and painted surfaces. Non fused electric circuits. Hydraulic circuits without pressure relief protection.
- b. All hydraulic hoses and wiring shall be securely clamped at approximately 18" intervals, shielded from exhaust and include a protective sleeve where necessary to prevent damage and or failure. All hoses shall have JIC swivel connections at each end and located in such a manner to aid in easy component replacement. All systems shall be thoroughly tested and tuned before delivery.
- c. Complete wiring and plumbing diagrams shall be included with bid proposal. An operation as well as a separate parts and maintenance manual shall be provided with each unit. A full day of training (when required) shall be provided for operators and maintenance personnel for each location specified. Training shall be supplied by an instructor with a minimum of two hundred (200) hours of certified hydraulic training.

17. **RUST PROOFING WARRANTY:**

- 17.1 These vehicles shall be used in a harsh winter environment that exposes it to corrosives such as: salts, salt brines, anti-icing and pre-wetting agents.
- 17.2 Vehicles provided under this contract shall be guaranteed not to rust through for a period of five (5) years. Guarantee shall be provided, in writing, for each vehicle by the Vendor.
- 17.3 In the event of rust through, the Vendor shall be required to repair the rust damage, refinish the area repaired and re-rust proof the area repaired. Transportation costs for the vehicle and other incidental costs incurred while providing this warranty work shall be borne by the Vendor. There shall be no mileage limitations associated with the guarantee.

18. **EQUIPMENT MANUALS:**

- 18.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 18.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy for Equipment Management Resource Center.
- 18.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy for Equipment Management Resource Center.

19. **TRAINING:**

- 19.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each Main location that has received the equipment.
 - 19.1.1 Operator/Preventative Maintenance
 - 19.1.2 Operator Adjustments
 - 19.1.3 Minor Maintenance Repairs
 - 19.1.4 How to use the full capabilities of the equipment as well as its safe and effective operation.

20. **OPTIONS:**

20.1 **GENERAL**

- a. The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than upon delivery.

20.2 **HEATED WINDSHIELD:**

- a. Heated windshield per invitation to bid form windshield shall be heated all the way around so ice shall not collect on wiper blades and windshield.

TEN WHEEL TRUCK CAB/CHASSIS 64,000 GVW DUMP

STATEWIDE

SPECIFICATION "B"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not.

1. GENERAL:

- 1.1 It is the intent and purpose of these specifications to describe a Cab & Chassis for a Ten Wheel Truck. Vehicle must be New current model and year. The vehicle shall be used in on/off highway operations to provide general hauling of materials loaded by hand or power shovel, towing of equipment, snow plowing and stockpiling.
- 1.2 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 As part of the Vendors pre delivery inspection, the vendor shall meet with the ordering Agency to determine the Engine and Transmission computer program parameters. All of the delivered equipment shall have these parameters. This data shall be documented, using the VIN to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery of the unit to the ordering Agency.
- 1.5 The Vendor shall provide a list of common consumable parts to include at a minimum, OEM part numbers for all filters, belts, hoses, brakes and wheel seals.
- 1.6 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, serviced, and full of fuel, ready for immediate use.
 - c. Protected to -40 degrees (F) with permanent, long life anti-freeze.
 - d. Bidder must provide drawings and detailed component listing for all items described in this specification.

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- e. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include engine and transmission model and serial numbers.
 - f. Operator's manual shall accompany each delivered unit
- 1.7 This cab/chassis may also be used for:
- a. Dump body
 - b. Stake body
- 1.8 Performance of vehicle specified shall be capable of a sustained level road speed of 65 MPH + 1 MPH using 80% + 5% of recommended maximum governed engine RPM when operating at maximum GVWR.
2. **CHASSIS MECHANICAL:**
- 2.1 G.V.W.R.: 64,000 pounds, minimum
 - 2.2 Back of cab to Center Trunion: 127", Center of trunion to back of frame rail shall be 53".
 - 2.3 The straight frame rail shall be constructed of "C" channel type 110,000 PSI yield strength having a 26.06 in 3 section modulus. Frame strength to be 3,000,000 inch pounds resisting bending moment minimum. Inside and outside of frame rails shall be one piece full rails with 20" frame extension integral reinforced one (1) piece.
 - 2.4 Frame rails shall have a coating of Tectyl or approved equal material or approved equal (rubberized substance) to be applied between main frame rail and inter liner prior to assembly to prevent excess corrosion.
 - 2.5 Fuel Tank and Steps: w/stainless steel straps - anti roll material
 - 2.6 Factory installed aluminum 80 gallon fuel tank on driver side frame mounted. The first step shall be a maximum of 16 inches. above ground and made of Bustin Industrial Products, aluminum material or approved equal.
 - 2.7 Tank shall include provisions in the tank bottom for draining
 - 2.8 All direction, anti-slip open safety grille, Bustin Industrial Products, aluminum material, shall be provided on all treading surfaces.
 - 2.9 Other entrance shall be equipped with the standard step for model quoted
 - 2.10 If battery box needs to be moved to make room for fuel tank, written approval by the ordering Agency personnel must be obtained.
3. **CHASSIS ELECTRICAL SYSTEM:**
- 3.1 Batteries: Three (3) heavy duty, 12 volt 700 CCA each field maintenance free, BCI Group 31, with stud-type posts and anti-corrosion treatment on each terminal. Battery box & covers to be aluminum and mounted on the left side frame rail aft of fuel tank. Molded poly battery box covers acceptable by prior approval of The ordering Agency. A 0.25 inch thick battery shock pad constructed of acid resistant material, not any type of wood, shall be provided under the batteries.

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- 3.2 Starter Motor: With thermal over crank protection and high torque capacity.
 - 3.3 The only cables connected to the starter positive terminal shall be one (1) positive battery cable and one alternator cable. The only cable connected to the starter ground terminal shall be one (1) negative cable. All other power and ground wiring shall be connected through both a positive and negative junction block. These blocks shall be in a sealed box, with easy access for maintenance.
 - 3.4 Jump start terminals, remote mounted next to the battery box at the back of cab allowing easy access.
 - 3.5 Alternator: Heavy-duty 165 amp. capacity (minimum) Brushless Delco Remy Series 36SI or approved equal.
 - 3.6 All excess wiring and harness shall be securely fastened to frame, body or brackets.
4. **BODY:**
- 4.1 Cab: Aluminum or steel galvanized inside and out, firewall to back of cab dimension no less than 51", 83 DBA, with tilting fiberglass hood, stationary grill, and fenders with a stone and gravel radiator guard to be 10 mesh stainless steel screen. When installed, this guard shall not contact hood. Cab shall be equipped with air suspension rear mounting.
 - 4.2 Front fenders shall have a rubber or poly carbon flare is required to cover the tire width.
 - 4.3 An interior and exterior grab handle shall be provided at each doorpost to ease entry.
5. **WHEELS/TIRES:**
- 5.1 Front: 385/65R22.5 18 Ply Goodyear G286 Super Single, or approved equal tread design.
 - 5.2 Front Wheel: 22.5 x 12.25 1PC, 10 hole hub piloted steel disc, ISO, 285 MM bolt circle minimum.
 - 5.3 Rear: 12R22.5, 16 ply rating tubeless radial Goodyear G 622 MSD. Or approved equal tread design.
 - 5.4 Rear Wheels: 22.5 x 9.0 1PC, 10 hole hub piloted steel disc, ISO, 285 MM bolt circle minimum.
6. **PAINT:**
- 6.1 Chassis shall be painted to manufacturer's specifications with epoxy primer and polyurethane over phosphate coated steel.
 - 6.2 The chassis shall be finished in black.
 - 6.3 The balance of the cab shall be finished with polyurethane base coat/clear coat, #31 Omaha Orange or approved equal within the limits established on the Color Tolerance Chart, PR #6, U.S. Department of Transportation, Federal Highway Administration, March 1971.
 - 6.4 Wheels shall be painted white in color.

7. **AXLES/DRIVELINE:**

- 7.1 Front Axle: Heavy duty, 18,000 pounds minimum capacity with heavy duty, Dual Power hydraulic power steering with cooler. National front oil seals or equal. Pins and bearings/bushings shall be furnished with 360 degree oil grooves to insure adequate lubricant penetration. The front oil hubs need to be constructed from heavy-duty aluminum.
- 7.2 Rear Axle: Heavy duty, 46,000 minimum pounds capacity, with National or equal wet rear wheel seals.
- 7.3 Lube Oil: Synthetic oil in rears.
- 7.4 Drive Line: Spicer, 1810HD and 1710 or approval equal.

8. **BRAKE SYSTEMS:**

- 8.1 Dual air system with 18.7 cubic foot (minimum capacity) compressor with Bendix DV-2 automatic drain valve on all tanks, and heated air dryer, Bendix AD/IP or equal.
- 8.2 Front Brake Size: 16.5" x 6" minimum Rear: 16.5" x 7", minimum
- 8.3 Parking Brake: Both axles shall be spring-actuated double-diaphragm
- 8.4 Brake Dust Shields on all axles.
- 8.5 Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake.
- 8.6 Brakes shall be Bendix ABS.
- 8.7 The wheel end shall be equipped with outboard cast brake drums.
- 8.8 Air Tanks: All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connectors.
- 8.9 Rear service brake chambers and spring brake chambers mounted to provide adequate clearance for backing into bituminous paving machines.

9. **SUSPENSION:**

- 9.1 Front Suspension: Minimum 18,000 pounds capacity at ground for axles and spring supply heavy duty shock absorbers. Spring hangers shall be heavy castings with sufficient pin and bearing surface to render trouble-free service.
- 9.2 Rear Suspension: 46,000 pound Hendrickson RT2-460 or equal, with bronze center bushing.
- 9.3 Center front drive axle to center rear axle 54" minimum.

10. **CAB MECHANICAL:**

- 10.1 The following shall be provided:
- 10.2 Seats and seat belts for the driver and one (1) passenger shall be provided.

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- a. Driver's Seat: Full adjustable cushioned High Back Bostrom or equivalent air ride bucket seat, cloth covered with arm rest or approved equal. Seat shall have 16-inch minimum dimension from bottom of steering wheel to middle seat back.
 - b. Passenger's Seat: Non-adjustable cushioned bucket seat, cloth covered, with toolbox under seat.
- 10.3 Cab to include padded back panel, door trims, headliner. Cab shall be provided with sound deadening and insulation quality.
 - 10.4 Two cup holders in the cab within easy reach of operator and passenger.
 - 10.5 Overhead console with storage compartments
 - 10.6 Storage pocket(s) in driver's side door.
 - 10.7 Windshield: One or two piece construction, tinted safety glass throughout.
 - 10.8 Driver and passenger entrance steps, and/or deck/frame steps shall be steel and or aluminum, serrated in lieu of plain (over lay is not acceptable). Top of first step shall be approximate 16 inches from ground (over lay is not acceptable).
 - 10.9 Dual air horns w/snow-shield if externally mounted.
 - 10.10 Steering wheel diameter shall be 18 inch (approximate) with tilt steering column.
 - 10.11 All vehicles keyed alike.
 - 10.12 Dual Sun Visors
 - 10.13 Fire extinguisher 5-pound capacity rechargeable with vehicle mount. Mounted between door and seat (left side) for easy and quick access on floor, handle to rear.
 - 10.14 Dual Arm rests for operator and passengers seat.
 - 10.15 Emergency triangle warning reflectors, with hold down, or equal, stowed (fastened) in the cab between seats near rear wall, bolted to floor or in toolbox. One (1) first aid kit Zee Deluxe truck kit P/N 105 or approved equal shall be installed on back wall.
 - 10.16 Door pulls on both doors (inside)
 - 10.17 Passenger door shall have window in bottom front corner.
 - 10.18 Tinted glass
 - 10.19 Back window or windows.
 - 10.20 Floor covering shall be heavy-duty rubber.
 - 10.21 Brake & throttle pedals shall be suspended from under the dash.
 - 10.22 Two (2) outside rear view bright heated mirrors, 16" x 6" minimum size, single head, retractable type, with bolt on or integral, 8" minimum diameter round convex mirrors mounted on both sides. Alternate mirror arrangement on written permission.

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10.23 Mirrors shall be heated with a lighted toggle switch mounted within accessible reach of operator, or automatic on/off is acceptable. The wires shall be fitted in such a way that unplugging the two-wire leads can change the mirror. All arms and hardware shall be stainless steel.

11. **CAB/BODY ELECTRICAL:**

11.1 The 12-volt system shall include but not be limited to the following:

11.2 Factory installed air conditioning, heavy duty with safety shutdown.

11.3 Dual heavy duty, variable speed, electric intermittent arctic type windshield wipers with electric washer. Washer system shall be electric, minimum capacity of two (2) quarts washer fluid and shall be filled with windshield washer fluid.

11.4 Circuit Breakers and Fuses shall be located in easily accessible location, weatherproof compartment. Fuses acceptable in circuit so identified by manufacturer as safety factor. The fuse or circuit breaker compartment shall have an easily removable protective cover. All wire splices inside and outside shall be soldered and covered with sealant encapsulated heat shrink tubing.

11.5 All wires shall be color coded or Laser etched every three (3) inches minimum, or numbered every three (3) inches minimum.

11.6 All wire splices inside or outside the cab and hood, shall be soldered and covered with sealant encapsulated heat shrink tubing. All wires shall be color-coded; Laser etched every three (3) inches minimum, or numbered every three (3) inches minimum. Wiring harness shall contain at least two (2) spares of each gauge wire used in the harness. The wire ends shall be sealed.

11.7 Vehicle shall be equipped with a minimum of two (2) Halogen headlights mounted in the normal position. Chassis manufacturer shall supply wire harness to pre-wire plow lights. Vehicle shall be equipped with day time running lights.

11.8 Front directional signals with integral parking lights mounted in or on top of the fenders shall be self-canceling if available with hazard flash.

11.9 Cab roof lights to be LED type.

11.10 Electric horn(s).

11.11 Pre-wire for all added accessories as per items in this contract.

11.12 All trucks shall come factory pre-wired for body lights, the wires for the body lights shall be sufficient in length to extend to the rear of the frame, marked, coiled up and tied under the cab. The body lights, to be supplied and installed by others, shall consist of 6 flush mount body strobes and required side marker lights. Amp draw, wire size and power feed location to be determined at the pre-bid meeting. Refer to body Spec section for details.

12. **CAB INSIDE ELECTRICAL:**

12.1 All controls and knobs shall be property identified.

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- 12.2 12-Volt Power Supply Socket
- 12.3 Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.
- 12.4 Cab dome light opened by door and self-contained switch.
- 12.5 Heater and defroster, heavy-duty fresh air type.
- 12.6 AM/FM Radio with Clock
- 12.7 Flasher - heavy duty electrical.
- 12.8 Plow light electrical wire circuit shall be pre-wired with dash mount on/off switch.
- 12.9 Electric Cruise Control
- 12.10 Vehicle shall be equipped and wired with a minimum of six (6) extra rocker/ toggle switches wired with 2-foot pigtail. Switches and extra wire shall be numbered and/or coded - three (3) switches shall be 15 amp minimum and three (3) switches shall be 20 amp minimum. Not all switches shall be used simultaneously. Wiring harness shall contain four (4) spare wires. The wire ends shall be sealed.
- 12.11 800 MHZ Wiring: The truck shall also be pre-wired for the installation of an 800 MHZ communications radio on the center top of dash. The wiring shall be as follows: One 30 amp, fused circuit on 10-gauge wire, switched from the ignition key to run the radio during operation of vehicle. One fused, direct power, 14-gauge wire to run stored radio programs during vehicle shutdown and one 12-gauge wire. All of these connections shall be marked and placed where they are readily accessible by our radio technicians to install the communications radio without removing panels from the dash or cutting into dash wiring.
- 12.12 The vehicle shall be equipped with a CB radio provisions. The radio provision shall include a feed from the accessory side of the ignition switch; including a power source and antenna with coax wiring mounted in overhead console.
- 12.13 All instruments shall be properly labeled, illuminated and dash-mounted except where specified otherwise. In-dash, integral with instrument panel be illuminated and shall be readable from the operator's seat. Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.
- 12.14 All standard instruments shall be supplied, including but not limited to the following:
 - a. Odometer
 - b. Hour meter that records only when the engine is running
 - c. Speedometer
 - d. Tachometer
 - e. Air pressure gauge with low pressure warning indicator, audible alarm.
 - f. Engine oil pressure gauge and low oil pressure warning light and audible alarm

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- g. Engine water temperature gauge and high coolant temperature warning light and audible alarm
- h. Low coolant level warning light
- i. Volt meter
- j. Fuel gauge
- k. Transmission oil temperature gauge

13. **ENGINE:**

- 13.1 Minimum - electronic diesel engine, or approved equal, that conforms to current model/year EPA emissions standards.
- 13.2 Minimum 380 H.P. and 1450 lb. /ft. minimum net torque at 1200 rpm. Engine shall have Jacobs engine brake or equal.
- 13.3 Dry type air cleaner, Donaldson, or approved equal, with a dash-mounted restriction indicator. If air intake is frontal or right side mounted, an alternate air system which overrides the frontal/right side shall be provided. Furnish inside and outside air control for engine and control to be dashboard mounted switch.
- 13.4 Oil filter and fuel filters as recommended by the engine manufacturer, but including as a minimum a Davco Fuel Pro or Raycor fuel/water separator with heater temperature controlled by electrical system. The fuel/water separator must be installed to allow for simple replacement of the filter.
- 13.5 Muffler with vertical tailpipe, 90 degree elbow top section and muffler shield to protect personnel from burns. Frame mounted exhaust system shall not interfere with the operation of the body or hydraulic equipment and shall not be mounted to the cab. If flexible tubing is used in the system, it must be stainless steel type.
- 13.6 Engine protection: High temperature and low oil protection warning light or alarm followed by de-rate, and then shut down.
- 13.7 Electric engine block heater, 120 volt, 1,250 watt minimum. Receptacle for attaching heater to outside power service shall be mounted on the driver's side cowl panel with "Y" cord and recessed plug. Heater shall also be connected to oil heater element.
- 13.8 Engine water filter not required if long life anti-freeze is provided.
- 13.9 Electronic engine throttle control or alternate approved by The ordering Agency. Cruise control activated is acceptable.
- 13.10 Governor set at the manufacturer's recommended maximum RPM.
- 13.11 Heater hoses to have individual shut-off gate valve type, mounted next to engine block.
- 13.12 Silicone radiator and heater hoses or gates blue stripe with constant torque spring loaded hose clamps or equivalent.

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- 13.13 Electronic engine control:
- a. Max cruise mph..... 68 mph
 - b. Road speed limit 70 mph
 - c. Idle shutdown timer 10 minutes
 - d. PTO RPM increments..... 100 rpm, minimum
- 13.14 Fan clutch - Kysor, Horton, Borg-Warner or Eaton on/off engine fan clutch (or approved equal).
- 13.15 Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine and output under extreme temperatures and/or operating conditions. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options. Radiator shall be equipped with drain cock.
- 13.16 Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).
- 13.17 The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.
- 13.18 The oil dipstick must accurately measure when full, actual engine manufacturers engine oil capacity. The oil dipstick must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground.

14. **TRANSMISSION:**

- 14.1 Transmission shall be automatic Allison Model 4500 RDS push button (dash tower) with a 6-speed configuration with PTO provisions for a "hot shift" PTO unit. Transmission fluid shall be TranSynd synthetic oil, (Castrol fluid brand). The transmission shall be warranted for 5 years, 100 percent parts, labor and towing. The transmission shall have an audible alarm for overheating conditions.
- 14.2 Transmission Oil Cooler: Transmission cooler to be installed per truck manufacturer, if required, to meet Allison Transmission and engine specifications for municipal applications - such as snow removal and heavy hauling. The transmission oil cooler shall allow from proper initial start up fluid temperature increase and not allow transmission fluid temperature to rise above normal operating temperature, under normal conditions. The transmission cooler shall have the capacity as to not allow transmission fluid heat transfer to engine coolant, increasing engine coolant temperature to exceed proper engine operating temperature.
- 14.3 Transmission Dipstick: The transmission oil dipstick shall be permanently marked with TranSynd, and must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground. If dipstick is over four feet long the dipstick shall be relocated with written instruction from the Ordering Agency.
- 14.4 Transmission shall be set up in conjunction with the PTO and the multiplex wiring to set the Third gear lock at 33MPH +/- 2MPH at 2100 RPM

15. **RUST PROOFING WARRANTY:**

- 15.1 These vehicles shall be used in a harsh winter environment that exposes it to corrosives such as: salts, salt brines, ant-icing and pre-wetting agents.
- 15.2 Vehicles provided under this contract shall be guaranteed not to rust through for a period of five (5) years. Guarantee shall be provided, in writing, for each vehicle by the Vendor.
- 15.3 In the event of rust through, the Vendor shall be required to repair the rust damage, refinish the area repaired and re-rust proof the area repaired. Transportation costs for the vehicle and other incidental costs incurred while providing this warranty work shall be borne by the Vendor. There shall be no mileage limitations associated with the guarantee.

16. **EQUIPMENT MANUALS:**

- 16.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 16.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy for Equipment Management Resource Center.
- 16.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy.

17. **TRAINING:**

- 17.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each Main location that has received the equipment.
- 17.1.1 Operator/Preventative Maintenance
- 17.1.2 Operator Adjustments
- 17.1.3 Minor Maintenance Repairs
- 17.1.4 How to use the full capabilities of the equipment as well ad its safe and effective operation.

18. **OPTIONS:**

18.1 **GENERAL**

- a. The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than when the truck is delivered.

18.2 **HEATED WINDSHIELD:**

- a. Heated windshield per invitation to bid form windshield shall be heated all the way around as so ice shall not collect on wiper blades and windshield.

19. **TUCK BACK WING PLOW:**

- 19.1 It is the intent of this specification to describe a truck chassis suitable for mounting an eight foot Tuck Back Snow Plow. This plow shall be mounted on the passenger side frame rail aft of the cab.
- 19.2 To facilitate mounting, the chassis shall require 53" clear back of cab. (Clear back of cab shall include both inboard and outboard of the frame rails and under and over the frame rails.) An additional 30" clear frame rail outboard on the passenger side is needed to mount the hydraulic oil reservoir.
- 19.3 Recommended/Required chassis alterations to Specification B are as follows:
- 19.4 Provide front mounted crankshaft driven (PTO) power take off adapter.
- 19.5 Fuel tank maximum capacity available (not less than 80 gallon) mounted under driver's side door and not to extend aft of cab +/- 2".
- 19.6 The frame mounted battery box is to be located under the passenger's side door and not to extend aft of cab +/-2". A step type battery box configuration is recommended.
- 19.7 Air tanks shall be located such that the 54" clearance back of cab is provided. Recommend: Air tank to be mounted under cab, under battery box, and/or inside frame rails at rear suspension cross-member area.

SIX-WHEEL TRUCK CAB/CHASSIS 37,500 GVW

STATEWIDE

SPECIFICATION "C"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. GENERAL:

- 1.1 It is the intent and purpose of these specifications to describe a Cab & Chassis for a Six-Wheel Truck. Vehicle must be New current model and year. The vehicle shall be used in on/off highway operations to provide general hauling of materials loaded by hand or power shovel, towing of equipment, snow plowing and stockpiling.
- 1.2 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 As part of the Vendors pre-delivery inspection, the vendor shall meet with the ordering Agency to determine the Engine and Transmission computer program parameters. All of the delivered equipment shall have these parameters. This data shall be documented, using the VIN to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery of the unit.
- 1.5 The Vendor shall provide a list of common consumable parts to include at a minimum, OEM part numbers for all filters, belts, hoses, brakes and wheel seals.
- 1.6 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, serviced, and full of fuel, ready for immediate use.
 - c. Protected to -40 degrees (F) with permanent, long life anti-freeze.
 - d. Bidder must provide drawings and detailed component listing for all items described in this specification.

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- e. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include engine and transmission model and serial numbers.
 - f. Operators manual shall accompany each delivered unit
- 1.7 This cab/chassis may also be used for:
- a. Dump body
 - b. Stake body
- 1.8 Performance of vehicle specified shall be capable of a sustained level road speed of 65 MPH + 1 MPH using 80% + 5% of recommended maximum governed engine RPM when operating at maximum GVWR.

2. **CHASSIS MECHANICAL:**

- 2.1 G.V.W.R.: 37,500 pounds, minimum
- 2.2 Back of cab to axle: 84" effective
- 2.3 The straight frame shall be constructed of 120,000 p.s.i. minimum yield steel channel with full length channel reinforcement of 120,000 p.s.i. minimum yield steel providing a combined section modulus of 16.979 in³ minimum, or needed combined section modulus, and a combined resisting bending moment of 2,040,000 inch pounds minimum.
- 2.4 The frame side rails shall be extended a minimum of 20" forward of the radiator to accommodate a front mounted snowplow push frame. Frame side rail extensions shall be cut to allow bumper to be attached to frame as close to standard as practical (bumper to cab distance) by body company. A bolt-on extension shall not be acceptable. Frame rails shall be a one-piece frame rail.
- 2.5 Towing Package: Shall be for electric brakes and shall have a 7-pin plug, also be equipped with air glad hand package routed to the end of frame. Shall be equipped with a 50,000-pound pintle hitch.
- 2.6 Fuel Tank and Steps: w/stainless steel straps - anti roll material
- 2.7 Provide single aluminum 50 gallon fuel tank frame mounted. The first step shall be a maximum of 16 inches. above ground and made of Bustin Industrial Products, aluminum material or approved equal.
- 2.8 Tank shall include provisions in the tank bottom for draining
- 2.9 All direction, anti-slip open safety grille, Bustin Industrial Products, aluminum material, shall be provided on all treading surfaces.
- 2.10 Other entrance shall be equipped with the standard step for model quoted
- 2.11 If battery box needs to be moved to make room for fuel tank, written approval by ordering Agency personnel must be obtained.

3. **CHASSIS ELECTRICAL SYSTEM:**

- 3.1 Batteries: Three (3) heavy duty, 12 volt 700 CCA each field maintenance free, BCI Group 31, with stud-type posts and anti-corrosion treatment on each terminal. Battery box & covers to be aluminum and mounted on the left side frame rail aft of fuel tank. Molded poly battery box covers acceptable by prior approval of The ordering Agency. A 0.25 inch thick battery shock pad constructed of acid resistant material, not any type of wood shall be provided under the batteries.
- 3.2 Starter Motor: With thermal over crank protection and high torque capacity.
- 3.3 The only cables connected to the starter positive terminal shall be one (1) positive battery cable and one (1) alternator cable. The only cable connected to the starter ground terminal shall be (1) one negative cable. All other power and ground wiring shall be connected through both a positive and negative junction block. These blocks shall be in a sealed box, with easy access for maintenance.
- 3.4 Jump start terminals, remote mounted next to the battery box at the back of cab allowing easy access.
- 3.5 Alternator: Heavy-duty 165 amp. Capacity (minimum) Brushless Delco Remy Series 36SI or approved equal.
- 3.6 All excess wiring and harness shall be securely fastened to frame, body or brackets.

4. **BODY:**

- 4.1 Aluminum or steel galvanized inside and out, firewall to back of cab dimension no less than 51", 83 DBA, with tilting fiberglass hood stationary grill, and fenders with a stone and gravel radiator guard to be 10 mesh stainless steel screen. When mounted, this guard shall not contact hood. Cab shall be equipped with air suspension rear mounting.
- 4.2 An interior and exterior grab handle shall be provided at each door post to ease entry.

5. **WHEELS/TIRES:**

- 5.1 Front: 315/80R x 22.5 J, 18 ply rating tubeless radial Goodyear G291. Or approved equal tread design.
- 5.2 Rear: 12R x 22.5 H, 16 ply rating tubeless radial Goodyear G 622 MSD, or approved equal tread design.
- 5.3 Wheels: 9.00 x 22.5 IPC, Front — 9.0 x 22.5 IPC, Rear, 10 hole hub piloted mounted disc wheels, ISO, 285MM bolt circle minimum.

6. **PAINT:**

- 6.1 Chassis shall be painted to manufacturer's specifications with epoxy primer and polyurethane over phosphate coated steel.
- 6.2 The chassis shall be finished in black.

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6.3 The balance of the cab shall be finished with polyurethane base coat/clear coat, #31 Omaha Orange or approved equal within the limits established on the Color Tolerance Chart, PR #6, U.S. Department of Transportation, Federal Highway Administration, March 1971.

6.4 Wheels shall be painted white in color.

7. **AXLES/DRIVELINE:**

7.1 Front Axle: Heavy duty, 16,000 pounds minimum capacity with heavy duty hydraulic power steering with cooler and National front oil seals or equal. Pins and bearings/bushings shall be furnished with 360 degree oil grooves to insure adequate lubricant penetration. The front oil hubs need to be constructed from heavy-duty aluminum.

7.2 Rear Axle: Heavy duty, 23,000 minimum pounds capacity, with National or equal wet rear wheel seals.

7.3 Lube Oil: Synthetic gear oil.

7.4 Drive Line: Spicer, 1710 HD Drive Line or approved equal.

8. **BRAKE SYSTEMS:**

8.1 Anti-lock Brake Air System with a Bendix Series 550 13.2 CFM Air Compressor or approved equal. A BW DV-2 Auto Drain Valve on all tanks and a DW AD/IP Heated Air Dryer or approved equals.

8.2 Front Brake Size: 16.5" x 5" minimum Rear: 16.5" x 7", minimum

8.3 Parking Brake: Spring-actuated double-diaphragm

8.4 Brake Dust Shields on all axles.

8.5 Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake.

8.6 Brakes shall be Bendix ABS.

8.7 The wheel end shall be equipped with outboard cast brake drums.

8.8 Air Tanks: All electrical connectors for drain valve and air dryer shall be covered with heat shrink material or have sealed connectors.

9. **SUSPENSION:**

9.1 Front Suspension: Minimum 8,000 pounds capacity at ground axle for each spring. Supply heavy duty shock absorbers. Spring hangers shall be heavy casting with sufficient pin and bearing surface to render trouble-free service.

9.2 Rear Suspension: Main Springs: 11,500 pounds capacity at ground for each side (23,000 total).

9.3 Auxiliary Rear Spring: Auxiliary Springs: 4,000 pounds minimum capacity, separate auxiliary spring for each side.

10. **CAB MECHANICAL:**

- 10.1 The following shall be provided:
- 10.2 Seats and seat belts, 3 point, for the driver and one (1) passenger shall be provided.
 - a. Driver's Seat: Full adjustable cushioned High Back Bostrom or equivalent air ride bucket seat, cloth covered with arm rest or approved equal. Seat shall have 16-inch minimum dimension from bottom of steering wheel to middle seat back.
 - b. Passenger's Seat: Non-adjustable cushioned bucket seat, cloth covered, with toolbox under seat.
- 10.3 Cab to include padded back panel, door trims, headliner. Cab shall be provided with sound deadening and insulation quality.
- 10.4 Two cup holders in the cab within easy reach of operator and passenger.
- 10.5 Overhead console with storage compartments
- 10.6 Storage pocket(s) in doors.
- 10.7 Windshield: One or two piece construction, tinted safety glass throughout.
- 10.8 Driver and passenger entrance steps, and/or deck/frame steps shall be steel and or aluminum, serrated in lieu of plain (over lay is not acceptable). Top of first step shall be approximate 16 inches from ground (over lay is not acceptable).
- 10.9 Dual air horns w/snow-shield if externally mounted.
- 10.10 Steering wheel diameter shall be 18 inch (approximate) with tilt steering column.
- 10.11 All vehicles keyed alike.
- 10.12 Dual Sun Visors.
- 10.13 Fire extinguisher 5-pound capacity rechargeable with vehicle mount. Mounted between door and seat (left side) for easy and quick access on floor, handle to rear.
- 10.14 Dual arm rests for operator and passengers seat.
- 10.15 Emergency triangle warning reflectors, with hold down, or equal, stowed (fastened) in the cab, between seats near rear wall, bolted to floor or in toolbox. One (1) first aid kit Zee Deluxe truck kit P/N 105 or approved equal shall be installed on back wall.
- 10.16 Door pulls on both doors (inside).
- 10.17 Tinted glass.
- 10.18 Back window or windows.
- 10.19 Floor covering shall be heavy-duty rubber.
- 10.20 Brake & throttle pedals shall be suspended from under the dash.

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- 10.21 Two (2) outside rear view bright heated mirrors, 16" x 6" minimum size, single head, retractable type, with bolt or integral on 8" minimum diameter round convex mirrors mounted on both sides. Alternate mirror arrangement on written permission.
- 10.22 Mirrors shall be heated with a lighted rocker/ toggle switch mounted within accessible reach of operator, or automatic on/off is acceptable. The wires shall be fitted in such a way that unplugging the two-wire leads can change the mirror. All arms and hardware shall be stainless steel.

11. **CAB/BODY ELECTRICAL:**

- 11.1 The 12-volt system shall include but not be limited to the following:
- 11.2 Factory installed air conditioning, heavy duty with safety shutdown.
- 11.3 Dual heavy duty, variable speed, electric intermittent arctic type windshield wipers with electric washer. Washer system shall be electric, minimum capacity of two (2) quarts washer fluid and shall be filled with windshield washer fluid.
- 11.4 Circuit Breakers and Fuses shall be located in easily accessible location, weatherproof compartment. Fuses acceptable in circuit so identified by manufacturer as safety factor. The fuse or circuit breaker compartment shall have an easily removable protective cover. All wire splices inside and outside shall be soldered and covered with sealant encapsulated heat shrink tubing.
- 11.5 All wires shall be color coded or Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum.
- 11.6 All wire splices inside or outside the cab and hood, shall be soldered and covered with sealant encapsulated heat shrink tubing. All wires shall be color-coded; Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum. Wiring harness shall contain at least two (2) spare of each gauge wire used in the harness. The wire ends shall be sealed.
- 11.7 Vehicle shall be equipped with a minimum of two (2) Halogen headlights mounted in the normal position. Chassis manufacturer shall supply wire harness to pre-wire plow lights. Vehicle shall be equipped with day time running lights.
- 11.8 Front directional signals with integral parking lights mounted in or on top of the fenders shall be self-canceling if available with hazard flash.
- 11.9 Cab roof lights to be LED type.
- 11.10 Electric horn(s).
- 11.11 Pre-wire for all added accessories as per items in this contract.
- 11.12 All trucks shall come factory pre-wired for body lights, the wires for the body lights shall be sufficient in length to extend to the rear of the frame, marked, coiled up and tied under the cab. The body lights, to be supplied and installed by others, shall consist of six (6) flush mount body strobes and required side marker lights. Amp draw, wire size and power feed location to be determined at the pre-bid meeting. Refer to Body Spec section for details.

12. **CAB INSIDE ELECTRICAL:**

- 12.1 All controls and knobs shall be property identified.
- 12.2 12-Volt Power Supply Socket
- 12.3 Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.
- 12.4 Cab dome light opened by door and self-contained switch.
- 12.5 Heater and defroster, heavy-duty fresh air type.
- 12.6 AM/FM Radio with Clock
- 12.7 Flasher - heavy duty electrical.
- 12.8 Plow light electrical wire circuit shall be pre-wired with dash mount on/off switch.
- 12.9 Cruise Control
- 12.10 Vehicle shall be equipped and wired with a minimum of six (6) extra rocker/ toggle switches wired with 2-foot pigtail. Switches and extra wire shall be numbered and/or coded - three (3) switches shall be 15 amp minimum and three (3) switches shall be 20 amp. Not all switches shall be used simultaneously. Wiring harness shall contain four (4) spare wires. The wire ends shall be sealed.
- 12.11 800 MHZ Wiring: The truck shall also be pre-wired for the installation of an 800 MHZ communications radio on the center top of dash. The wiring shall be as follows: One (1) 30 amp, fused circuit on 10-gauge wire, switched from the ignition key to run the radio during operation of vehicle. One fused, direct power, 14-gauge wire to run stored radio programs during vehicle shutdown and one 12-gauge wire. All of these connections shall be marked and placed where they are readily accessible by our radio technicians to install the communications radio without removing panels from the dash or cutting into dash wiring.
- 12.12 The vehicle shall be equipped with a CB radio provisions. The radio provision shall include a feed from the accessory side of the ignition switch; including a power source and antenna with coax wiring mounted in overhead console.
- 12.13 All instruments shall be properly labeled, illuminated and dash-mounted except where specified otherwise. In-dash, integral with instrument panel be illuminated and shall be readable from the operator's seat. Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.
- 12.14 All standard instruments shall be supplied, including but not limited to the following:
 - a. Odometer
 - b. Hour meter that records only when the engine is running
 - c. Speedometer
 - d. Tachometer

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- e. Air pressure gauge with low pressure warning indicator
- f. Engine oil pressure gauge and low oil pressure warning light and audible alarm
- g. Engine water temperature gauge and high coolant temperature warning light and audible alarm
- h. Low coolant level warning light
- i. Volt meter
- j. Fuel gauge
- k. Transmission oil temperature gauge

13. **ENGINE:**

- 13.1 Minimum - electronic diesel engine, or approved equal, to conform to current model/year EPA emissions standards.
- 13.2 Minimum 300 H.P. and 750 lb. /ft. minimum net torque at 1200 rpm minimum.
- 13.3 Dry type air cleaner, Donaldson, or approved equal, with a dash-mounted restriction indicator. If air intake is frontal or right side mounted, an alternate air system which overrides the frontal/right side shall be provided. Furnish inside and outside air control for engine and control to be dashboard mounted switch.
- 13.4 Oil filter and fuel filters as recommended by the engine manufacturer, but including as a minimum a Davco Fuel Pro or Raycor fuel/water separator or approved equal with heater temperature controlled by electrical system. The fuel/water separator must be installed to allow for simple replacement of the filter.
- 13.5 Muffler with vertical tailpipe, 90 degree elbow top section and shield to protect personnel from burns. Frame mounted exhaust system shall not interfere with the operation of the body or hydraulic equipment and shall not be mounted to the cab. If flexible tubing is used in the system, it must be stainless steel type.
- 13.6 Engine protection: High temperature and low oil protection warning light or alarm followed by de-rate, and then shut down.
- 13.7 Electric engine block heater, 120 volt, 1,250 watt minimum. Receptacle for attaching heater to outside power service shall be mounted on the driver's side cowl panel with recessed plug. Heater shall also be connected to oil heater element, with "Y" cord minimum.
- 13.8 Engine water filter not required if long life anti-freeze is provided.
- 13.9 Electronic engine throttle control or alternate approved by the ordering Agency. Cruise control activated is acceptable.
- 13.10 Governor set at the manufacturer's recommended maximum RPM.
- 13.11 Heater hoses to have individual shut-off gate valve type, mounted next to block.

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Technical Specifications

- 13.12 Silicone radiator and heater hoses or gates blue stripe with constant torque spring loaded hose clamps or equivalent.
 - 13.13 Electronic engine control:
 - a. Max cruise mph..... 68 mph
 - b. Road speed limit 70 mph
 - c. Idle shutdown timer 10 minutes
 - d. PTO RPM increments..... 100 rpm, minimum
 - 13.14 Fan clutch - Kysor, Horton, Borg-Warner or Eaton on-off engine fan clutch (or approved equal).
 - 13.15 Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine and output under extreme temperatures and/or operating conditions. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options. Radiator shall be equipped with drain cock.
 - 13.16 Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).
 - 13.17 The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.
 - 13.18 The oil dipstick must accurately measure when full, actual engine manufacturers engine oil capacity. The oil dipstick must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground.
14. **TRANSMISSION:**
- 14.1 Transmission shall be automatic Allison Model 3500 RDS push button (dash or tower) with a 6-speed configuration with PTO provisions for a "hot shift" PTO unit. Transmission fluid shall be TranSynd synthetic oil, (Castrol fluid brand). The transmission shall be warranted for five (5) years, 100 percent parts, labor and towing. The transmission shall have an audible alarm for overheating conditions.
 - 14.2 Transmission Oil Cooler: Transmission cooler to be installed per truck manufacturer, if required, to meet Allison Transmission and engine specifications for municipal applications - such as snow removal and heavy hauling. The transmission oil cooler shall allow from proper initial start up fluid temperature increase. The transmission cooler shall have the capacity as to not allow transmission fluid heat transfer to engine coolant, increasing engine coolant temperature to exceed proper engine operating temperature.
 - 14.3 Transmission Dipstick: The transmission oil dipstick shall be permanently marked with TranSynd, and must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground. If dipstick is over four feet long the dipstick shall be relocated with written instruction from the ordering Agency.

GSS11617-HEAVY_TRUCKS
Technical Specifications

- 14.4 The transmission will have an auto level check allowing operators to check the transmission oil level from inside the cab.
- 14.5 Transmission shall be set up in conjunction with the PTO and the multiplex wiring to set the Third gear lock at 33MPH +/- 2MPH at 2100 RPM
15. **RUST PROOFING WARRANTY:**
- 15.1 These vehicles shall be used in a harsh winter environment that exposes it to corrosives such as: salts, salt brines, ant-icing and pre-wetting agents.
- 15.2 Vehicles provided under this contract shall be guaranteed not to rust through for a period of five (5) years. Guarantee shall be provided, in writing, for each vehicle by the Vendor.
- 15.3 In the event of rust through, the Vendor shall be required to repair the rust damage, refinish the area repaired and re-rust proof the area repaired. Transportation costs for the vehicle and other incidental costs incurred while providing this warranty work shall be borne by the Vendor. There shall be no mileage limitations associated with the guarantee.
16. **EQUIPMENT MANUALS:**
- 16.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 16.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy.
- 16.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy.
17. **TRAINING:**
- 17.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each Main location that has received the equipment.
- 17.1.1 Operator/Preventative Maintenance
- 17.1.2 Operator Adjustments
- 17.1.3 Minor Maintenance Repairs
- 17.1.4 How to use the full capabilities of the equipment as well ad its safe and effective operation.
18. **OPTIONS:**
- 18.1 **GENERAL**
- a. The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than when the truck is delivered.
- 18.2 Heated windshield:
- a. Heated windshield per invitation to bid form windshield shall be heated all the way around as to ice shall not collect on wiper blades and windshield.

6-WHEELED, 25,999 GVW, 4-DOOR MEDIUM TRUCK/CAB CHASSIS

STATEWIDE

SPECIFICATION "D"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. GENERAL:

- 1.1 It is the intent and purpose of these specifications to describe a Four Door Cab/Chassis for a Six Wheel Medium Duty Truck Chassis. Vehicle must be New current model and year. The vehicle shall be used in on/off highway operations to provide general hauling of materials loaded by hand or power shovel, towing of equipment, snow plowing and stockpiling.
- 1.2 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 As part of the Vendors pre delivery inspection, the vendor shall meet with the ordering Agency to determine the Engine and Transmission computer program parameters. All of the delivered equipment shall have these parameters. This data shall be documented, using the VIN to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery of the unit.
- 1.5 The Vendor shall provide a list of common consumable parts to include at a minimum, OEM part numbers for all filters, belts, hoses, brakes and wheel seals.
- 1.6 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, serviced, and full of fuel, ready for immediate use.
 - c. Protected to -40 degrees (F) with permanent, long life anti-freeze.
 - d. Bidder must provide drawings and detailed component listing for all items described in this specification.

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- e. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include engine and transmission model and serial numbers.
 - f. Operator's manual shall accompany each delivered unit.
- 1.7 This cab/chassis may also be used for:
- a. Medium Dump body
 - b. Medium Flat Bed Body
 - c. Heavy Duty Crane/Utility Body
- 1.8 Performance of vehicle specified shall be capable of a sustained level road speed of 65 MPH + 1 MPH using 80% + 5% of recommended maximum governed engine RPM when operating at maximum GVWR.

2. **CHASSIS MECHANICAL:**

- 2.1 G.V.W.R.: 24,500 pounds, minimum - 25,999 pounds maximum
- 2.2 Back to cab to rear axle: 84" useable
- 2.3 Frame Height: Ground to top of rail 34.5" +/- 1" to 2": at rated GVW
- 2.4 Frame shall be straight at 120,000 PSI, single channel providing 15.1 section modulus and 1,200,000 RBM.
- 2.5 Trailer Towing Package: Vehicle shall be set-up for Electric Brakes and have an Air Glad Hand Package, routed to the end of frame and capped off to include a seven pin electrical plug. Vehicle shall be equipped with a 35,000 pound pintle hitch.
- 2.6 Fuel Tank and Steps:
- 2.7 Factory installed step fuel tank. Total capacity of 50 gallons minimum. The first step on each side shall be 16" above the ground and made of Bustin Products, aluminum material or approved equal. The tank shall include provisions in the tank bottom for draining.
- 2.8 All-direction, anti-slip open safety grille, Bustin Steel Products, aluminum material or approved equal, shall be provided on all treading surfaces.
- 2.9 Other entrance shall be equipped with the standard step for model quoted.
- 2.10 If battery box needs to be moved to make room for fuel tank, written approval by ordering Agency personnel must be obtained.

3. **CHASSIS ELECTRICAL SYSTEM:**

- 3.1 Batteries: Three (3) heavy duty, 12 volt 700 CCA each field maintenance free, BCI Group 31, with stud-type posts and anti-corrosion treatment on each terminal. Battery box & covers to be aluminum and mounted on the side frame rail aft of fuel tank. Molded poly battery box covers acceptable by prior approval of The ordering Agency. A 0.25 inch thick battery shock pad constructed of acid resistant material, not any type of wood, shall be provided to line all areas of the box and cover.

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- 3.2 Starter Motor: With thermal over crank protection and high torque capacity.
 - 3.3 The only cables connected to the starter positive terminal shall be (1) one positive battery cable and one alternator cable. The only cable connected to the starter ground terminal shall be (1) one negative cable. All other power and ground wiring shall be connected through both a positive and negative junction block. These blocks shall be in a sealed box, with easy access for maintenance.
 - 3.4 Jump start terminals, remote mounted next to the battery box at the back of cab allowing easy access.
 - 3.5 Alternator: heavy-duty 165 amps. Capacity (minimum) Brushless Delco Remy Series 36SI or approved equal.
 - 3.6 All excess wiring and harness shall be securely fastened to frame, body or brackets.
4. **BODY:**
- 4.1 Aluminum or steel galvanized inside and out, standard conventional 83 DBA, with tilting fiberglass hood stationary grill, and fenders with a stone and gravel radiator guard to be 10 mesh stainless steel screen. This guard shall not contact hood. Cab shall be equipped with air suspension rear mounting.
 - 4.2 An interior and exterior grab handle shall be provided at each front doorpost to ease entry.
5. **WHEELS/TIRES:**
- 5.1 Front: 245/70R 19.5, load range G (14 ply) tubeless radial Goodyear G 670, or approved equal tread design.
 - 5.2 Rear: 245/70R 19.5, load range G (14 ply) tubeless radial Goodyear G 622 RSD, or approved equal tread design.
 - 5.3 Wheels: 7.50 x 19.5 IPC, 10 hole piloted hub mounted disc wheels, ISO, 285MM bolt circle minimum.
6. **PAINT:**
- 6.1 Chassis and Step Tank shall be painted to manufacturer's specifications with epoxy primer and polyurethane over phosphate coated steel.
 - 6.2 The chassis shall be finished in black.
 - 6.3 The balance of the cab shall be finished with polyurethane base coat/clear coat, #31 Omaha Orange or approved equal within the limits established on the Color Tolerance Chart, PR #6, U.S. Department of Transportation, Federal Highway Administration, March 1971.
 - 6.4 Wheels shall be painted white in color.

7. **AXLES/DRIVELINE:**

- 7.1 Front Axle: Heavy duty, 12,000 pounds minimum capacity with Ross TAS65 heavy duty hydraulic power steering and National front oil seals, or approved equals. Seven inch minimum road to axle clearance. Pins and bearings/bushings shall be furnished with 360 degree oil grooves to insure adequate lubricant penetration. The front oil hubs need to be constructed from heavy-duty aluminum.
- 7.2 Rear Axle: Heavy duty, 15000 pounds minimum capacity, National rear wheel seals, or approved equal. To include shocks.
- 7.3 Lube Oil: Synthetic oil in rear.
- 7.4 Drive Line: Shall be limited slip or limited slip provided by Bendix ABS traction control.

8. **BRAKE SYSTEMS:**

- 8.1 Anti-lock Brake System with a Bendix Series 550 13.2 CFM Air Compressor or approved equal. A Bendix AD-IP heated air dryer or approved equal.
- 8.2 Front Brake Size: 15" x 4" minimum Rear: 16.5" x 7", minimum
- 8.3 Parking Brake: Spring-actuated double-diaphragm
- 8.4 Brake Dust Shields on all axles.
- 8.5 Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake.
- 8.6 Brakes shall be Bendix ABS.
- 8.7 The wheel end shall be equipped with outboard cast brake drums.
- 8.8 Air tanks: Automatic drain valve, with heater on wet (first) tank. All electrical connectors for drain valve and air dryer shall be soldered and covered with sealant encapsulated heat shrink tubing or have sealed connectors.

9. **SUSPENSION:**

- 9.1 Front Suspension: Minimum 6,000 pounds capacity at ground for each spring with heavy-duty shock absorbers. Spring hangers shall be heavy casting with sufficient pin and bearing surface to render trouble free service.
- 9.2 Rear Suspension: Main Springs: minimum 8,750 pounds capacity spring for each side.
- 9.3 Auxiliary Rear Spring: 2,250 pounds capacity, separate auxiliary spring for each side.

10. **CAB MECHANICAL:**

- 10.1 The following shall be provided:
- 10.2 Seats and seat belts 3 point for the driver and one (1) passenger shall be provided.
 - a. Driver's Seat: Full adjustable cushioned High Back Bostrom or equivalent air ride bucket seat, cloth covered with arm rest or approved equal. Seat shall have 16-inch minimum dimension from bottom of steering wheel to middle seat back.
 - b. Passenger's Seat: Non-adjustable cushioned bucket seat, cloth covered, with toolbox under seat.
- 10.3 Rear Seat: Standard Bench Seat with seat belts.
- 10.4 Upgraded interior package to include insulated headliner and back panels, door sheet metal fully trimmed below window opening. Cab shall be provided with sound deadening and insulation quality.
- 10.5 Two cup holders in the cab within easy reach of operator and passenger.
- 10.6 Overhead console with storage compartments
- 10.7 Storage pocket(s) in front doors.
- 10.8 Windshield: One or two piece construction, tinted safety glass throughout.
- 10.9 Driver and passenger entrance steps, and/or deck/frame steps shall be steel and or aluminum, serrated in lieu of plain (over lay is not acceptable). Top of first step shall be approximate 16 inches from ground (over lay is not acceptable).
- 10.10 Air horn single trumpet with snow shield if mounted outside.
- 10.11 Steering wheel diameter shall be 18 inch (approximate) with tilt steering column.
- 10.12 All vehicles keyed alike.
- 10.13 Dual Sun Visors
- 10.14 Fire extinguisher 5-pound capacity rechargeable with vehicle mount. Mounted between door and seat (left side) for easy and quick access on floor, handle to rear.
- 10.15 Emergency triangle warning reflectors, with hold down, or equal, stowed (fastened) in the cab, between seats near rear wall, bolted to floor or in toolbox. One (1) first aid kit Zee Deluxe truck kit P/N 105 or approved equal shall be installed on back wall.
- 10.16 Door pulls on both doors (inside)
- 10.17 Tinted glass
- 10.18 Back window or windows.
- 10.19 Floor covering shall be heavy-duty rubber.

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- 10.20 Brake & throttle pedals shall be suspended from under the dash if available.
- 10.21 Two (2) outside rear view breakaway, heated mirrors, 14" x 6" minimum size, single head, retractable type, with bolt-on or integral 8" diameter round convex mirrors mounted on both sides.
- 10.22 Mirrors shall be heated with a lighted rocker/ toggle switch mounted within accessible reach of operator, or automatic on/off is acceptable. The wires shall be fitted in such a way that unplugging the two-wire leads can change the mirror. All arms and hardware shall be stainless steel.
- 10.23 There shall be a sealed compartment in the cab to house the engine and transmission computers. This compartment shall provide easy access for maintenance.

11. **CAB/BODY ELECTRICAL:**

- 11.1 The 12-volt system shall include but not be limited to the following:
- 11.2 Factory installed air conditioning, heavy duty with safety shutdown.
- 11.3 Auxiliary heating cooler for rear seating area in cab.
- 11.4 Dual heavy duty, variable speed, electric intermittent arctic type windshield wipers with electric washer. Washer system shall be electric, minimum capacity of two (2) quarts washer fluid and shall be filled with windshield washer fluid.
- 11.5 Circuit Breakers and Fuses shall be located in easily accessible location, weatherproof compartment. Fuses acceptable in circuit so identified by manufacturer as safety factor. The fuse or circuit breaker compartment shall have an easily removable protective cover. All wire splices inside and outside shall be soldered and covered with sealant encapsulated heat shrink tubing.
- 11.6 All wires shall be color coded or Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum.
- 11.7 All wire splices inside or outside the cab and hood, shall be soldered and covered with sealant encapsulated heat shrink tubing. All wires shall be color-coded; Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum. Wiring harness shall contain four (4) spare wires. The wire ends shall be sealed.
- 11.8 Vehicle shall be equipped with a minimum of two (2) Halogen headlights mounted in the normal position. Chassis manufacturer shall supply wire harness to pre-wire plow lights, dash switch controlled. Vehicle shall be equipped with day time running lights.
- 11.9 Front directional signals with integral parking lights mounted in or on top of the fenders shall be self-canceling if available with hazard flash.
- 11.10 Cab roof lights to be LED type.
- 11.11 Electric horn(s).
- 11.12 Pre-wire for all added accessories as per items in this contract.

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- 11.13 All trucks shall come factory pre-wired for body lights, the wires for the body lights shall be sufficient in length to extend to the rear of the frame, marked, coiled up and tied under the cab. The body lights, to be supplied and installed by others, shall consist of six (6) flush mount body strobes and required side marker lights. Refer to body spec section for detail.
- 11.14 Wiring shall be installed in a central location to provide easy access for body vendor to install connections. Central location must be provided inside of the cab.

12. **CAB INSIDE ELECTRICAL:**

- 12.1 All controls and knobs shall be property identified.
- 12.2 12 Volt Power Supply Socket
- 12.3 Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.
- 12.4 Cab dome light opened by door and self-contained switch.
- 12.5 Heater and defroster, heavy-duty fresh air type.
- 12.6 AM/FM Radio with Clock
- 12.7 Flasher - heavy duty electrical.
- 12.8 Plow light electrical wire circuit shall be pre-wired with dash mount on/off switch.
- 12.9 Cruise Control
- 12.10 Vehicle shall be equipped and wired with a minimum of six (6) extra rocker/ toggle switches wired with 2-foot pigtail. Switches and extra wire shall be numbered and/or coded - three (3) switches shall be 15 amp minimum and three (3) switches shall be 20 amp minimum. Not all switches shall be used simultaneously. Wiring harness shall contain four (4) spare wires. The wire ends shall be sealed. (If multiplex, dump body manufacturer must be "Program Certified").
- 12.11 800 MHZ Wiring: The truck shall also be pre-wired for the installation of an 800 MHZ communications radio on center top of dash. The wiring shall be as follows: One 30 amp, fused circuit on 10-gauge wire, switched from the ignition key to run the radio during operation of vehicle. One fused, direct power, 14 gauge wire to run stored radio programs during vehicle shutdown and one 12-gauge wire. All of these connections shall be marked and placed where they are readily accessible by our radio technicians to install the communications radio without removing panels from the dash or cutting into dash wiring.
- 12.12 The vehicle shall be equipped with a CB radio provisions. The radio provision shall include a feed from the accessory side of the ignition switch; including a power source and antenna with coax wiring mounted in overhead console.
- 12.13 All instruments shall be properly labeled, illuminated and dash-mounted except where specified otherwise. In-dash, integral with instrument panel be illuminated and shall be readable from the operator's seat. Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.

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- 12.14 All standard instruments shall be supplied, including but not limited to the following:
- a. Odometer
 - b. Hour meter that records only when the engine is running
 - c. Speedometer
 - d. Tachometer
 - e. Air pressure gauge with low pressure warning indicator
 - f. Engine oil pressure gauge and low oil pressure warning light and audible alarm
 - g. Engine water temperature gauge and high coolant temperature warning light and audible alarm
 - h. Low coolant level warning light
 - i. Volt meter
 - j. Fuel gauge
 - k. Transmission oil temperature gauge

13. **ENGINE:**

- 13.1 Minimum 7.6 liter electronic diesel engine, or approved equal, to conform to current model/year EPA emissions standards.
- 13.2 Minimum 245 H.P. and 660 lb./ft. minimum net torque at rated rpm
- 13.3 Dry type air cleaner, Donaldson, or approved equal, with a dash-mounted restriction indicator. If air intake is frontal or right side mounted, an alternate air system which overrides the frontal/right side shall be provided. Furnish inside and outside air control for engine and control to be dashboard mounted switch.
- 13.4 Oil filter and fuel filters as recommended by the engine manufacturer, but including as a minimum a Davco Fuel Pro or Raycor fuel/water separator with heater temperature controlled by electrical system. The fuel/water separator shall be installed to allow for simple replacement of the filter.
- 13.5 Engine protection: High temperature and low oil protection warning light or alarm followed by de-rate, and then shut down.
- 13.6 Electric engine block heater, 120 volt, 1,250 watt minimum. Receptacle for attaching the heater to outside power service shall be mounted on the driver's side cowl panel with a "Y" cord and recessed plug. Heater shall also be connected to an oil heater element.
- 13.7 Engine water filter not required if long life anti-freeze is provided.
- 13.8 Electronic engine throttle control or approved alternate. Cruise control activated is acceptable.
- 13.9 Fan clutch - Kysor, Horton, Borg-Warner or Eaton on-off engine fan clutch (or approved equal).
- 13.10 Governor set at the manufacturer's recommended maximum RPM.
- 13.11 Heater hoses to have individual shut-off gate valve type, mounted next to engine block.

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- 13.12 Silicone radiator and heater hoses or gates blue stripe with constant torque spring loaded hose clamps or equivalent.
- 13.13 Electronic engine control:
- a. Max cruise mph..... 68 mph
 - b. Road speed limit 70 mph
 - c. Idle shutdown timer 10 minutes
 - d. PTO RPM increments..... 100 rpm, minimum
- 13.14 Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine and output under extreme temperatures and/or operating conditions. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options. Radiator shall be equipped with drain cock.
- 13.15 Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).
- 13.16 The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.
- 13.17 The oil dipstick must accurately measure when full, actual engine manufacturers engine oil capacity. The oil dipstick must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground.
- 13.18 Horizontal muffler with vertical tailpipe, 90 degree elbow top section and shield to protect personnel from burns. Frame mounted exhaust system shall not interfere with the operation of the body or hydraulic equipment and shall not be mounted to the cab. If flexible tubing is used in the system, it must be stainless steel type.
14. **TRANSMISSION:**
- 14.1 Transmission shall be automatic Allison Model 3500 RDS push button (dash or tower) with a 6-speed configuration with PTO provisions for a "hot shift" PTO unit. Transmission fluid shall be TranSynd synthetic oil, (Castrol fluid brand). The transmission shall be warranted for 5 years, 100 percent parts, labor and towing. The transmission shall have an audible alarm for overheating conditions.
- 14.2 Transmission Oil Cooler: Transmission cooler to be installed per truck manufacturer, if required, to meet Allison Transmission and engine specifications for municipal applications - such as snow removal and heavy hauling. The transmission oil cooler shall allow from proper initial start up fluid temperature increase. The transmission cooler shall have the capacity as to not allow transmission fluid heat transfer to engine coolant, increasing engine coolant temperature to exceed proper engine operating temperature.
- 14.3 Transmission Dipstick: The transmission oil dipstick shall be permanently marked with TranSynd, and must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground. If dipstick is over (4) four feet long the dipstick shall be relocated with written approval.

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- 14.4 The transmission will have an auto level check allowing operators to check the transmission oil level inside the cab.
- 14.5 Transmission shall be set up in conjunction with the PTO and the multiplex wiring to set the Third gear lock at 33MPH +/- 2MPH at 2100 RPM
15. **RUST PROOFING WARRANTY:**
- 15.1 These vehicles shall be used in a harsh winter environment that exposes it to corrosives such as: salts, salt brines, anti-icing and pre-wetting agents.
- 15.2 Vehicles provided under this contract shall be guaranteed not to rust through for a period of five (5) years. Guarantee shall be provided, in writing, for each vehicle by the Vendor.
- 15.3 In the event of rust through, the Vendor shall be required to repair the rust damage, refinish the area repaired and re-rust proof the area repaired. Transportation costs for the vehicle and other incidental costs incurred while providing this warranty work shall be borne by the Vendor. There shall be no mileage limitations associated with the guarantee.
16. **EQUIPMENT MANUALS:**
- 16.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 16.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy.
- 16.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy.
17. **TRAINING:**
- 17.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each main location that has received the equipment.
- 17.1.1 Operator/Preventative Maintenance
- 17.1.2 Operator Adjustments
- 17.1.3 Minor Maintenance Repairs
- 17.1.4 How to use the full capabilities of the equipment as well ad its safe and effective operation.
18. **OPTIONS:**
- 18.1 **GENERAL**
- a. The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than when the truck is delivered.
- 18.2 Heated windshield:
- a. Heated windshield per invitation to bid form windshield shall be heated all the way around as to ice shall not collect on wiper blades and windshield.

6-WHEELED, 25,999 GVW, 2-DOOR MEDIUM TRUCK/CAB CHASSIS

STATEWIDE

SPECIFICATION "E"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. **GENERAL:**

- 1.1 It is the intent and purpose of these specifications to describe a Two Door Cab/Chassis for a Six Wheel Medium Duty Truck Chassis. Vehicle must be New current model and year. The vehicle shall be used in on/off highway operations to provide general hauling of materials loaded by hand or power shovel, towing of equipment, snow plowing and stockpiling.
- 1.2 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 As part of the Vendors pre delivery inspection, the vendor shall meet with the ordering Agency to determine the Engine and Transmission computer program parameters. All of the delivered equipment shall have these parameters. This data shall be documented, using the VIN to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery of the unit.
- 1.5 The Vendor shall provide a list of common consumable parts to include at a minimum, OEM part numbers for all filters, belts, hoses, brakes and wheel seals.
- 1.6 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, serviced, and full of fuel, ready for immediate use.
 - c. Protected to -40 degrees (F) with permanent, long life anti-freeze.
 - d. Bidder must provide drawings and detailed component listing for all items described in this specification.

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- e. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include engine and transmission model and serial numbers.
 - f. Operators manual shall accompany each delivered unit
- 1.7 This cab/chassis may also be used for:
- a. Medium Dump body
 - b. Medium Flat Bed Body
 - c. Heavy Duty Crane/Utility Body
- 1.8 Performance of vehicle specified shall be capable of a sustained level road speed of 65 MPH + 1 MPH using 80% + 5% of recommended maximum governed engine RPM when operating at maximum GVWR.

2. **CHASSIS MECHANICAL:**

- 2.1 G.V.W.R.: 24,500 pounds, minimum - 25,999 pounds maximum
- 2.2 Back of Cab to Rear Axle: 84" useable
- 2.3 Frame Height: Ground to top of rail 34.5" +/- 1" to 2": at rated GVW
- 2.4 Frame shall be straight at 120,000 PSI, single channel providing 15.1 section modulus and 1,200,000 RBM.
- 2.5 Trailer Towing Package: Vehicle shall be equipped for electric brakes and shall have an Air Glad Hand Package, routed to the end of frame and capped off to include a seven (7) pin electrical plug. Shall be equipped with a 35,000 pound pintle hitch.
- 2.6 Fuel Tank and Steps:
- 2.7 Factory installed step fuel tank. Total capacity of 50 gallons minimum. The first step on each side shall be 16" above the ground and made of Bustin Products, aluminum material or approved equal. The tank shall include provisions in the tank bottom for draining.
- 2.8 All-direction, anti-slip open safety grille, Bustin Steel Products, aluminum material or approved equal, shall be provided on all treading surfaces.
- 2.9 Other entrance shall be equipped with the standard step for model quoted.
- 2.10 If battery box needs to be moved to make room for fuel tank, written approval by the ordering Agency personnel must be obtained.

3. **CHASSIS ELECTRICAL SYSTEM:**

- 3.1 Batteries: Three (3) heavy duty, 12 volt 700 CCA each field maintenance free, BCI Group 31, with stud-type posts and anti-corrosion treatment on each terminal. Battery box & covers to be aluminum and mounted on the side frame rail aft of fuel tank. Molded poly battery box covers acceptable by prior approval of The ordering Agency. A 0.25 inch thick battery shock pad constructed of acid resistant material, not any type of wood, shall be provided to line all areas of the box and cover.

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- 3.2 Starter Motor: With thermal over crank protection and high torque capacity.
 - 3.3 The only cables connected to the starter positive terminal shall be (1) one positive battery cable and one alternator cable. The only cable connected to the starter ground terminal shall be (1) one negative cable. All other power and ground wiring shall be connected through both a positive and negative junction block. These blocks shall be in a sealed box, with easy access for maintenance.
 - 3.4 Jump start terminals, remote mounted next to the battery box at the back of cab allowing easy access.
 - 3.5 Alternator: heavy-duty 165 amps. Capacity (minimum) Brushless Delco Remy Series 36SI or approved equal.
 - 3.6 All excess wiring and harness shall be securely fastened to frame, body or brackets.
4. **BODY:**
- 4.1 Cab: Aluminum or steel galvanized inside and out, firewall to back of cab dimension no less than 51", 83 DBA, with tilting fiberglass hood, stationary grill and fenders with a stone and gravel radiator guard to be 10 mesh stainless steel screen. This guard shall not contact hood or grill. Cab shall be equipped with air suspension rear mounting.
 - 4.2 An interior and exterior grab handle shall be provided at each door post to ease entry.
5. **WHEELS/TIRES:**
- 5.1 Front: 245/70R19.5 load range G (14 ply) tubeless radial Goodyear G 670, or approved equal tread design.
 - 5.2 Rear: 245/70R19.5 load range G (14 ply) tubeless radial Goodyear G 622 RSD, or approved equal tread design.
 - 5.3 Wheels: 7.50 x 19.5 IPC, 10 hole piloted hub mounted disc wheels, ISO, 285MM bolt circle minimum.
6. **PAINT:**
- 6.1 Chassis and Step Tank shall be painted to manufacturer's specifications with epoxy primer and polyurethane over phosphate coated steel.
 - 6.2 The chassis shall be finished in black.
 - 6.3 The balance of the cab shall be finished with polyurethane base coat/clear coat, #31 Omaha Orange or approved equal within the limits established on the Color Tolerance Chart, PR #6, U.S. Department of Transportation, Federal Highway Administration, March 1971.
 - 6.4 Wheels shall be painted white in color.

7. **AXLES/DRIVELINE:**

- 7.1 Front Axle: Heavy duty, 12,000 pounds minimum capacity with Ross TAS65 heavy duty hydraulic power steering and National front oil seals, or approved equals. Seven inch minimum road to axle clearance. Pins and bearings/bushings shall be furnished with 360 degree oil grooves to insure adequate lubricant penetration. The front oil hubs need to be constructed from heavy-duty aluminum.
- 7.2 Rear Axle: Heavy duty, 15000 pounds minimum capacity, National rear wheel seals, or approved equal. To include shocks.
- 7.3 Lube Oil: Synthetic oil in rear.
- 7.4 Drive Line: Shall be limited slip or limited slip provided by Bendix ABS traction control.

8. **BRAKE SYSTEMS:**

- 8.1 Anti-lock Brake Air System with a Bendix Series 550 13.2 CFM Air Compressor, or approved equal. A Bendix AD/IP heated air dryer or approved equal.
- 8.2 Front Brake Size: 15" x 4" minimum Rear: 16.5" x 7", minimum
- 8.3 Parking Brake: Spring-actuated double-diaphragm
- 8.4 Brake Dust Shields on all axles.
- 8.5 Drum brakes shall have automatic slack adjusters and they shall be clearance-sensing type only, with adjustment on application of the brake.
- 8.6 Brakes shall be Bendix ABS.
- 8.7 The wheel end shall be equipped with outboard cast brake drums.
- 8.8 Air tanks: Automatic drain valve, with heater on wet (first) tank. All electrical connectors for drain valve and air dryer shall be soldered and covered with sealant encapsulated heat shrink tubing or have sealed connectors.

9. **SUSPENSION:**

- 9.1 Front Suspension: Minimum 6,000 pounds capacity at ground for each spring with heavy-duty shock absorbers. Spring hangers shall be heavy casting with sufficient pin and bearing surface to render trouble free service.
- 9.2 Rear Suspension: Main Springs: minimum 8,750 pounds capacity spring for each side.
- 9.3 Auxiliary Rear Spring: 2,250 pounds capacity, separate auxiliary spring for each side.

10. **CAB MECHANICAL:**

- 10.1 The following shall be provided:
- 10.2 Seats and seat belts 3 point for the driver and one (1) passenger shall be provided.
 - a. Driver's Seat: Full adjustable cushioned High Back Bostrom or equivalent air ride bucket seat, cloth covered with arm rest or approved equal. Seat shall have 16-inch minimum dimension from bottom of steering wheel to middle seat back.
 - b. Passenger's Seat: Non-adjustable cushioned bucket seat, cloth covered, with toolbox under seat.
- 10.3 Upgraded interior package to include insulated headliner and back panels, door sheet metal fully trimmed below window opening. Cab shall be provided with sound deadening and insulation quality.
- 10.4 Two cup holders in the cab within easy reach of operator and passenger.
- 10.5 Overhead console with storage compartments
- 10.6 Storage pockets(s) in doors.
- 10.7 Windshield: One or two piece construction, tinted safety glass throughout.
- 10.8 Driver and passenger entrance steps, and/or deck/frame steps shall be steel and or aluminum, serrated in lieu of plain (over lay is not acceptable). Top of first step shall be approximate 16 inches from ground (over lay is not acceptable).
- 10.9 Air horn single trumpet with snow shield.
- 10.10 Steering wheel diameter shall be 18 inch (approximate) with tilt steering column.
- 10.11 All vehicles keyed alike.
- 10.12 Dual Sun Visors
- 10.13 Fire extinguisher 5-pound capacity rechargeable with vehicle mount. Mounted between door and seat (left side) handle to rear for easy and quick access on floor.
- 10.14 Emergency triangle warning reflectors, with hold down, or equal, stowed (fastened) in the cab, between seats near rear wall, bolted to floor or in toolbox. One (1) first aid kit Zee Deluxe truck kit P/N 105 or approved equal shall be installed on back wall.
- 10.15 Door pulls on both doors (inside)
- 10.16 Tinted glass
- 10.17 Back window or windows.
- 10.18 Floor covering shall be heavy-duty rubber.
- 10.19 Brake & throttle pedals shall be suspended from under the dash.

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- 10.20 Two (2) outside rear view breakaway, heated mirrors, 14" x 6" minimum size, single head, retractable type, with bolt-on or integral 8" diameter round convex mirrors mounted on both sides. Alternate mirror arrangement on written permission.
- 10.21 Mirrors shall be heated with a lighted rocker/ toggle switch mounted within accessible reach of operator, or automatic on/off is acceptable. The wires shall be fitted in such a way that unplugging the two-wire leads can change the mirror. All arms and hardware shall be stainless steel.
- 10.22 There shall be a sealed compartment in the cab to house the engine and transmission computers. This compartment shall provide easy access for maintenance.

11. **CAB/BODY ELECTRICAL:**

- 11.1 The 12-volt system shall include but not be limited to the following:
- 11.2 Factory installed air conditioning, heavy duty, with safety shutdown.
- 11.3 Dual heavy duty, variable speed, electric intermittent arctic type windshield wipers with electric washer. Washer system shall be electric, minimum capacity of two (2) quarts washer fluid and shall be filled with windshield washer fluid.
- 11.4 Circuit Breakers and Fuses shall be located in easily accessible location, weatherproof compartment. Fuses acceptable in circuit so identified by manufacturer as safety factor. The fuse or circuit breaker compartment shall have an easily removable protective cover. All wire splices inside and outside shall be soldered and covered with sealant encapsulated heat shrink tubing.
- 11.5 All wires shall be color coded or Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum
- 11.6 All wire splices inside or outside the cab and hood, shall be soldered and covered with sealant encapsulated heat shrink tubing. All wires shall be color-coded; Lazer etched every three (3) inches minimum, or numbered every three (3) inches minimum. Wiring harness shall contain four (4) spare wires. The wire ends shall be sealed.
- 11.7 Vehicle shall be equipped with a minimum of two (2) Halogen headlights mounted in the normal position. Chassis manufacturer shall supply wire harness to pre-wire plow lights, dash switch controlled. Vehicle shall be equipped with day time running lights.
- 11.8 Front directional signals with integral parking lights mounted in or on top of the fenders shall be self-canceling if available with hazard flash.
- 11.9 Cab roof lights to be LED type.
- 11.10 Electric horn(s).
- 11.11 Pre-wire for all added accessories as per items in this contract.
- 11.12 All trucks shall come factory pre-wired for body lights, the wires for the body lights shall be sufficient in length to extend to the rear of the frame, marked, coiled up and tied under the cab. The body lights, to be supplied and installed by others, shall consist of six (6) flush mount body strobes and required side marker lights. Amp draw, wire size and power feed location to be determined at the pre-bid meeting. Refer to Body Spec section for details.

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11.13 Wiring shall be installed in a central location to provide easy access for body vendor to install connections. Central location must be provided inside of the cab.

12. **CAB INSIDE ELECTRICAL:**

12.1 All controls and knobs shall be property identified.

12.2 12 Volt Power Supply Socket

12.3 Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.

12.4 Cab dome light opened by door and self-contained switch.

12.5 Heater and defroster, heavy-duty fresh air type.

12.6 AM/FM Radio with Clock

12.7 Flasher - heavy duty electrical.

12.8 Plow light electrical wire circuit shall be pre-wired with dash mount on/off switch.

12.9 Cruise Control

12.10 Vehicle shall be equipped and wired with a minimum of six (6) extra toggle switches wired with 2-foot pigtail. Switches and extra wire shall be numbered and/or coded - three (3) switches shall be 15 amp minimum and three (3) switches shall be 20 amp minimum. Not all switches shall be used simultaneously. Wiring harness shall contain four (4) spare wires. The wire ends shall be sealed. (If multiplex, dump body manufacturer must be "Program Certified").

12.11 800 MHZ Wiring: The truck shall also be pre-wired for the installation of an 800 MHZ communications radio on the center of dash. The wiring shall be as follows: One 30 amp, fused circuit on 10-gauge wire, switched from the ignition key to run the radio during operation of vehicle. One fused, direct power, 14 gauge wire to run stored radio programs during vehicle shutdown and one 12-gauge wire. All of these connections shall be marked and placed where they are readily accessible by our radio technicians to install the communications radio without removing panels from the dash or cutting into dash wiring.

12.12 The vehicle shall be equipped with a CB radio provisions. The radio provision shall include a feed from the accessory side of the ignition switch; including a power source and antenna with coax wiring mounted in overhead console.

12.13 All instruments shall be properly labeled, illuminated and dash-mounted except where specified otherwise. In-dash, integral with instrument panel be illuminated and shall be readable from the operator's seat. Analog or multiplex gauge type instrumentation with numeric indications shall be used throughout if it is available from manufacturer.

12.14 All standard instruments shall be supplied, including but not limited to the following:

a. Odometer

b. Hour meter that records only when the engine is running

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- c. Speedometer
- d. Tachometer
- e. Air pressure gauge with low pressure warning indicator
- f. Engine oil pressure gauge and low oil pressure warning light and audible alarm
- g. Engine water temperature gauge and high coolant temperature warning light and audible alarm
- h. Low coolant level warning light
- i. Volt meter
- j. Fuel gauge
- k. Transmission oil temperature gauge

13. **ENGINE:**

- 13.1 Minimum 7.6 liter electronic diesel engine, or approved equal, to conform to current model/year EPA emissions standards.
- 13.2 Minimum 245 H.P. and 660 lb./ft. minimum net torque at rated rpm
- 13.3 Dry type air cleaner, Donaldson, or approved equal, with a dash-mounted restriction indicator. If air intake is frontal or right side mounted, an alternate air system which overrides the frontal/right side shall be provided. Furnish inside and outside air control for engine and control to be dashboard mounted switch.
- 13.4 Oil filter and fuel filters as recommended by the engine manufacturer, but including as a minimum a Davco Fuel Pro or Raycor fuel/water separator with heater temperature controlled by electrical system. The fuel/water separator must be installed to allow for simple replacement of the filter.
- 13.5 Engine protection: High temperature and low oil protection warning light or alarm followed by de-rate, and then shut down.
- 13.6 Electric engine block heater, 120 volt, 1,250 watt minimum. Receptacle for attaching the heater to outside power service shall be mounted on the driver's side cowl panel with a "Y" cord and recessed plug. Heater shall also be connected to an oil heater element.
- 13.7 Engine water filter not required if long life anti-freeze is provided.
- 13.8 Electronic engine throttle control or alternate approved by The ordering Agency. Cruise control activated is acceptable.
- 13.9 Fan clutch - Kysor, Horton, Borg-Warner or Eaton on-off engine fan clutch (or approved equal).
- 13.10 Governor set at the manufacturer's recommended maximum RPM.
- 13.11 Heater hoses to have individual shut-off gate valve type, mounted next to engine block.

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13.12 Silicone radiator and heater hoses or gates blue stripe with constant torque spring loaded hose clamps or equivalent.

13.13 Electronic engine control:

- a. Max cruise mph..... 68 mph
- b. Road speed limit 70 mph
- c. Idle shutdown timer 10 minutes
- d. PTO RPM increments..... 100 rpm, minimum

13.14 Cooling System: The largest factory available engine cooling capacity compatible with engines and transmissions referenced and for continuous high engine and output under extreme temperatures and/or operating conditions. The water pump shall be adequately sized to provide proper cooling and be of sufficient size to accommodate the larger pulley to adequately handle the specified options. Radiator shall be equipped with drain cock.

13.15 Shall be fitted with provisions for visually monitoring coolant without necessitating removal of the cap from the radiator or expansion tank (e.g. sight glass, transparent expansion tank).

13.16 The engine components facing wheel areas, on both sides, and the areas to the rear of wheels shall be shielded. The shield shall protect the engine, fan, radiator and areas behind tires from the stones and debris.

13.17 The oil dipstick must accurately measure when full, actual engine manufacturers engine oil capacity. The oil dipstick must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground.

13.18 Horizontal muffler with vertical tailpipe, 90 degree elbow top section and shield to protect personnel from burns. Frame mounted exhaust system shall not interfere with the operation of the body or hydraulic equipment and shall not be mounted to the cab. If flexible tubing is used in the system, it must be stainless steel type.

14. **TRANSMISSION:**

14.1 Transmission shall be automatic Allison Model 3500 RDS push button (dash or tower) with a 6-speed configuration with PTO provisions for a "hot shift" PTO unit. Transmission fluid shall be TranSynd synthetic oil, (Castrol fluid brand). The transmission shall be warranted for 5 years, 100 percent parts, labor and towing. The transmission shall have an audible alarm for overheating conditions.

14.2 Transmission Oil Cooler: Transmission cooler to be installed per truck manufacturer, if required, to meet Allison Transmission and engine specifications for municipal applications - such as snow removal and heavy hauling. The transmission oil cooler shall allow from proper initial start up fluid temperature increase. The transmission cooler shall have the capacity as to not allow transmission fluid heat transfer to engine coolant, increasing engine coolant temperature to exceed proper engine operating temperature.

14.3 Transmission Dipstick: The transmission oil dipstick shall be permanently marked with TranSynd, and must have tubing and dipstick with sufficient length to provide accessibility for the operator to check the oil level from standing on the ground. If dipstick is over four feet long the dipstick shall be relocated with written instruction from the Ordering Agency.

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- 14.4 The transmission will have an auto level check allowing operators to check the transmission oil level from inside the cab.
- 14.5 Transmission shall be set up in conjunction with the PTO and the multiplex wiring to set the Third gear lock at 33MPH +/- 2MPH at 2100 RPM

15. **RUST PROOFING WARRANTY:**

- 15.1 These vehicles shall be used in a harsh winter environment that exposes it to corrosives such as: salts, salt brines, anti-icing and pre-wetting agents.
- 15.2 Vehicles provided under this contract shall be guaranteed not to rust through for a period of five (5) years. Guarantee shall be provided, in writing, for each vehicle by the Vendor.
- 15.3 In the event of rust through, the Vendor shall be required to repair the rust damage, refinish the area repaired and re-rust proof the area repaired. Transportation costs for the vehicle and other incidental costs incurred while providing this warranty work shall be borne by the Vendor. There shall be no mileage limitations associated with the guarantee.

16. **EQUIPMENT MANUALS:**

- 16.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 16.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy.
- 16.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy.

17. **TRAINING:**

- 17.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each main location that has received the equipment.
 - 17.1.1 Operator/Preventative Maintenance
 - 17.1.2 Operator Adjustments
 - 17.1.3 Minor Maintenance Repairs
 - 17.1.4 How to use the full capabilities of the equipment as well as its safe and effective operation.

18. **OPTIONS:**

18.1 **GENERAL**

- a. The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than when the truck is delivered.
- 18.2 Heated windshield:
- a. Heated windshield per invitation to bid form windshield shall be heated all the way around as to ice shall not collect on wiper blades and windshield.

TEN WHEEL ALUMINUM DUMP TRUCK BODIES 64,000 GVW

STATEWIDE

SPECIFICATION "F"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. **GENERAL:**

It is the intent and purpose of these specifications to describe a New Aluminum Dump Truck Body complete with an underbody hoist and complete hydraulic system ground speed control, modular 2-stick control console, and snowplow frame. These components shall be mounted by the Vendor on a new 64,000 GVW cab/chassis supplied elsewhere in this contract, with mounting location pre-approved by the ordering Agency.

- 1.1 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.2 Body installer shall test the hydraulic capacity for all hydraulic circuits. This data shall be documented, using the chassis VIN, body model and body serial number, to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery. The data shall contain at a minimum, component manufacturer's minimums, maximums and actual readings on these components mounted on the unit.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, and ready for immediate use.
 - c. Bidder must provide drawings and detailed component listing for all items described in this specification.
 - d. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include body model and serial numbers.
 - e. Operators manual shall accompany each delivered unit

2. **DUMP BODY:**

- 2.1 Dump Body shall be 11 cubic yard capacity, water level measure, with 35" high sides and 41" tailgate. The body shall be 15' long at the deck and 14' long at the top of the gate. The tailgate shall slope forward 12". The inside width shall be 84"/86" and the outside width shall be 8 feet wide. The distance from the end of rear tire to the end of the deck shall be 22". Body sides shall be equipped with pockets for 2" x 6" rough cut oak extension side boards. The oak boards shall be provided, painted black, and installed. The body shall be constructed of 5454 H34 aluminum alloy, thickness as specified, except where otherwise noted. No body part shall be cast unless approved in writing by the ordering Agency.. Certification shall be provided for all materials.
- 2.2 The front head shall be fabricated from a single sheet of .250" (5052-H32) aluminum this sheet extend from the deck to the cab shield and be high enough to allow adequate clearance between the cab shield and truck cab. The front head shall be reinforced at the top with a formed horizontal brace full width of the inside of the body. There shall be two additional vertical braces, equally spaced, extending from the deck to the underside of the top horizontal brace. These braces shall be formed with a 5" face and be approximately 4" deep and be skip welded to the front sheet. A 1/2 cab shield shall be installed on top of the front head. The cab shield shall be full width of the front sheet and installed with a 2" slope to allow drainage. The cab shield shall have a 4" front and a 2" return flange. Side gussets shall extend from the front of the cab shield to the front sheet. They shall taper on the bottom to a width of approximately 14" and have a 2" minimum return flange top and bottom. Three formed stiffeners are to be welded to the cab shield tray for added strength. Stand up gussets shall be fabricated from 1/4" aluminum and shall extend from the top of the cab shield to the top rail on the body. The floor of the body shall be one piece .375" aluminum (5454-H34). The floor sheet shall lock into the extruded 6061 T6 bottom rub rail. The rub rail shall incorporate a 3" radius in the corner from the floor to the side.
- 2.3 The tailgate shall be fabricated using a single sheet of .250" (5454-H34) thick aluminum. This sheet shall lock into the extruded tailgate bracing. The bracing shall be 6061 T6 alloy and be installed around the entire perimeter of the tailgate. There shall be two additional horizontal and two additional vertical braces forming a nine panel tailgate. The horizontal braces shall be of a material shedding design. The vertical braces shall have an additional web in the center for severe service. The top hardware shall be of an upward acting design. The hinges shall be flame cut from 1" minimum thick aluminum plate. The hardware shall be attached to the tailgate using 1 1/4" minimum steel pins. The top pins shall be 1 1/4" diameter minimum and be of a captive design. There shall be replaceable hardened split bushings in the top hardware. The lower hardware shall be of the overshot design with 1" thick fingers and 1/2" thick receivers. The lower pins shall be 1-1/2" diameter minimum and inserted into the bottom tailgate extrusion for ease of replacement and long wear. There shall be 3/8" minimum coil proof chains bolted to the tailgate and severe duty banjo plates welded to the rear corner posts to control tailgate opening during spreading operations. Hooks shall be provided for chain storage when not in use. The lower hinge and hook assembly shall be reinforced with 1/4" backing plate to provide extra strength to the corner post where it joins the rear apron. The rods which operate the hinges shall have tubing turn buckles or an approved equal method of adjustment without disassembly. (assembled with anti-seize compound).

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- 2.4 The sides shall be fabricated from a single sheet of .250"(5454-H34) aluminum and extend from the top of the top rail to the flat top surface of the bottom rub rail. The lower rail shall be extruded from 6061 T6 aluminum and be of a design which locks the side sheet and the deck sheet into place as well as cover the ends of the body x-members. This extrusion shall be designed for severe service of 3/8" x 10", 6061-T6 The rear post shall extend from the top of the tailgate to the bottom of the body long beam. The top of the rear post shall taper to the rear to prevent material build up in this area. There shall be a 10" wide front post extending from the underside of the top rail to the top of the bottom rail. There shall be five additional vertical side braces, minimum 3.16# per ft. 6061-T6 installed in this same manner. Material shedding 3/16" kick plates shall be welded between the vertical bracing on a 45 degree angle. All welding shall be continuous. All vertical posts and side braces will have bottom drain holes under the body.
- 2.5 The body understructure shall consist of 4" I beam fully welded 6061-T6 material 2.70 #/ft. Cross members shall be installed on not more than 12" spacing. The cross members shall be extruded from 6061 T6 alloy and are to be designed for severe service. The rear most body bolster shall be .375" thick x 10", 6061-T6. The body shall have longitudinal members extruded from 6061 T6 aluminum alloy. The long beams shall be an "I" beam design and weigh no less than 6.1 pounds per foot. The long beams shall be doubled from the lift area to the rear of the body. Cross members shall extend full width of the body and be welded to the lower rub rail. Modifications at the lift plate of the hoist is (NOT) acceptable. A secondary set of long sills shall be located outside of main rails and extend from rear of body to 120" forward. Body mounted on 2" rubber cushion.
- 2.6 The tailgate-operating device shall be air operated. A push-pull release control shall be located in the dash. The cross shaft shall be 1" in diameter. Air tailgate system shall be double acting design to remain latched in case of air loss in system. Gate shall have a manual system to open gate in case of air loss. The lower hinge and hook assembly shall be reinforced with 1/4" backing plate to provide extra strength to the corner post where it joins the rear apron. The rod, which operates the hinges, shall have tubing turnbuckles or an approved equal method of adjustment without disassembly. All assembly shall be treated with an anti-seize compound.
- 2.7 The hide-away type ladder with 18 degree slope on ladder shall have anti-slip open safety grille treads, Bustin Aluminum Products, aluminum material (a minimum of 3" wide and 18" long), shall be provided on the left forward side of the body. Lowest step on the ladder shall be in line with the bottom of the truck frame. Including bottom step, ladder has a minimum of three (3) steps with one (1) step approximately 20" below top of the body side when 6" sideboards are installed. Body shall have two (2) steps inside body driver's side.
- 2.8 Continuous welded construction shall be used in all areas of the dump body except on front sheet reinforcements and where cross members are welded to the deck. In areas where both sides of a seam are exposed, both sides of the seam shall be welded. Vertical and horizontal braces shall be welded on top, sides and bottom to completely seal these members.
- 2.9 Mud flaps shall be installed sub-framed mounted forward and body mounted aft of the rear tires. Forward flaps shall be fabricated of .190" aluminum. The aft flaps shall be full length, body mounted, heavy duty anti-spray & anti-sail.

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- 2.10 The unit shall be installed with a stone spreaders tow bar, which shall be a minimum of 19" from the ground and 17" wide. The bracket shall be made of 3/4" plate steel and the tow bar shall be 1-1/4" steel shaft material. The stone bar shall be 24" from center of bar to rear of body.
- 2.11 The dump body shall have a stainless steel, spring loaded holder for one long handle shovel located at left front of body area.
- 2.12 The dump body shall not have any bolt heads extending from the rear bottom side of the dump body.

3. **HOIST:**

- 3.1 A double cylinder, double-acting underbody type hoist, Class 90, with double lift arms or a double cylinder double-acting underbody roller and truck type hoist shall be provided. Hoist shall be power up and power down with a minimum net payload capacity of 27 tons, when used with a 15-foot body mounted with a 12" overhang and mounted in the sub frame independent of the chassis frame. All bearing points shall be capable of being lubricated by means of grease fittings. (See Item 6, Lube Points). Hoist shall be a J&J908825DA or approved equal.
- 3.2 The dumping angle range shall be 0-55 degrees with a positive backstop. Hoist shall be capable of handling all loads intended for chassis size and G.V.W.R. rating in the specification.
- 3.3 The hoist sub frame shall be constructed to withstand deflection under full load.
- 3.4 The hoist cylinder shall be a Custom Cylinder Model No. DA8-1/2-3--25 cylinder or approved equal. Any approved equal shall have to be an exact replacement for the above-mentioned cylinder with no modifications. The lift would also have to be NTEA rated with the "approved equal" replacement cylinder.
- 3.5 Two body props providing a positive means of support for each side of the dump body, permanently attached to the bottom of the dump body and capable of preventing accidental lowering of the empty body while maintenance or inspection work is being done shall be provided. The prop shall swing down and stop in the proper position so the dump body shall lower to the proper maintenance height using a one-man operation. The prop shall be able to lock the body position at one (1) level to hold body at the height of (12) twelve feet measured from the road surface to highest point of the dump body and attachments.

4. **BUMPER:**

- 4.1 A 12" x 2" lip top and bottom steel channel 50,000 p.s.i. yield bumper shall have access holes for frame-mounted tow hooks and steps bolted under each end to assist the operator in climbing onto the bumper to make service checks. Frame side rail extensions shall be cut to allow bumper to be attached to frame as close to standard as practical (bumper to cab distance).
- 4.2 The bumper shall be 1/2" bumper wrap and sufficient strength to carry the components and perform snow plowing operations or equal. The bumper attachment points shall be reinforced as necessary to accept the additional stress of plowing operations.
- 4.3 Stirrup steps shall be bolted to both sides of the bottom of the front bumper.

5. **TOW HOOKS:**

5.1 Chassis to be equipped with four (4) 45,000# frame-mounted tow hooks two (2) on the front and two (2) on the rear appropriate for the GVW of vehicle. Placement shall be determined by the ordering Agency at time of build.

6. **PAINT:**

6.1 The snowplow attachments, bumper, dump body sub frame, and aprons shall be finished in black. All steel components shall be painted with epoxy primer and a polyurethane black topcoat. Powder coat paint is acceptable.

7. **LUBE POINTS:**

7.1 Vehicle shall have a centralized manual on board chassis grease lubrication system for components from the rear of the cab to the rear of the chassis - poly tubing, shall be utilized. Brake S cam tube, pintle hook and brake slack adjusters, shall not be included in the central lubrication system. Each lube point shall be individually marked with location and remotely lube one lube fitting only. All lube fittings shall have tethered dust covers and be centralized on driver's side of truck frame providing easy access to perform lube maintenance. Ref: Grease Jockey by Lubriquip, Inc., Groeneveld Lube System; Lincoln Lube System; Vogel Lubrication, Inc., J & J or Godwin systems. Type of system/process to be used shall be rendered and approved by the The ordering Agency prior to pilot inspection. All fittings shall have non-rusting metallic identity tags.

8. **ELECTRICAL SYSTEM:**

8.1 Two (2) plow lights shall be mounted on aluminum tri-point brackets on the fenders over the turn signals, approximately 12" above the fender. Plow lights shall be Grote 01-6429-14 or approved equal.

8.2 The plow lights shall be controlled by using the standard headlight circuit through the dimmer switch. After the dimmer switch, a two (2) position factory installed selector switch shall be inserted into the circuit from which the upper and lower headlight system shall be wired. The dash mounted selector switch shall allow the headlight system with the high or low beam selection controlled by the standard dimmer switch. The parking, clearance and tail light circuits shall use the standard light switch to control their operation regardless of headlight system selected. The high beam indicator shall be wired to show high beam use in either headlight system. All connection or splices made shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connection.

8.3 Two (2) sealed multi-functional, LED stop/turn/tail/backup light, three (3) ICC clearance lights shall be L.E.D. and all flushing mounted in an aluminum plate bolted between the frame rails at the rear of the vehicle, and all side clearance lights shall be provided. An illuminated light plate bracket shall also be required. All wiring from the junction block in the cab of the truck to all lights shall be included Grote Package #01-6653-98 or approved equal. No splice boxes are to be used anywhere outside of the truck cab interior. Any splice connections not wiring harness manufacturer supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connection.

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- 8.4 Two (2) 2" x 6" amber lens, high-intensity L.E.D. strobe lights, shall be mounted in the rear posts of the body. Additionally, two (2) 2" x 6" amber lens, high-intensity flush mount L.E.D. strobe lights shall be mounted on each side of cab protector so that each is visible from the side. Two (2) 2" x 6" amber lens high-intensity flush mounted L.E.D. strobe lights shall be mounted one in each side of the front of the cab protector and shall be visible from the front of the truck. The six (6) L.E.D. strobes shall be attached to universal power supplies mounted in the cab. Any splice connections not wiring harness manufacturer supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connection.
- 8.5 Back up alarm automatically adjusting sound level (87-112 DBA rating).
- 8.6 Roadwatch one system with digital display on left mirror bracket shall be installed. The display must be integrated to hydraulic control system display.
- 8.7 Supply and install in cab attenuator control, extra lighting control, cables, plugs, to rear of vehicle along with attenuator mounting lugs attached to rear of chassis. System shall include a full length body lock pin with D-handle, a micro switch to prevent unwanted body raise integrated into hydraulic controls and a storage pocket when not in use.

9. HYDRAULIC SYSTEM AND CONTROL SYSTEM:

9.1 General:

- a. The hydraulic system described herein is to supply power to operate the dump body hoist cylinder, snow plow lifting cylinder, snow plow reversing motor and material spreader spinner and auger functions. The system shall permit completely independent yet simultaneous operation of the dump body hoist and spreader. The hydraulic system shall return to low pressure standby when no functions are active.

9.2 Hydraulic Pump:

- a. Pump shall be of the variable displacement piston type. Pump shall be sized to allow for operation of all hydraulic functions. Pump shall be minimum 80cc displacement. If fit issues arise, pump size may change, but flow requirements remain the same. PTO ratio shall be used to maintain requested flow. Any pump change shall be approved by the ordering Agency. Hydraulic pump shall be driven by transmission PTO. PTO will stop pump if hydraulic fluid temperature becomes too hot or hydraulic fluid level in the tank is low.

9.3 Hydraulic Reservoir:

- a. The hydraulic reservoir shall have the capacity 40 gallons. It shall be a frame mounted, constructed of 10 gauge steel. It shall be a frame mounted, constructed of 10 gauge steel. It shall be mounted to truck frame with a minimum of four (4) 1/2" grade 8 bolts. The inside of the reservoir shall have a 2 1/2" in-tank 100 mesh suction strainer with 5 p.s.i. bypass. Strainer to be rated at 75 gpm minimum. The 2 1/2" suction port shall exit the reservoir under the truck frame to allow space for other frame mounted components. It is to have a 2 1/2" ball valve wired in the opened position. There shall be two (2) 1" plugged return ports above and to the sides of the suction port. The return ports shall have diffusers inside to prevent aeration of hydraulic oil. There shall be a baffle inside to prevent oil sloshing.

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- b. The top of the reservoir shall have a 10" diameter cleanout access with aluminum cover. This cover shall have a reusable neoprene gasket to seal the reservoir. The cover shall have an in-tank filter incorporated into it. The filter is to be a 10 micron cartridge type rated at 75 gpm and have a 25 p.s.i. bypass. It shall have a serviceable air filter incorporated to vent the tank. The filter assembly shall have a locking screw-on cap to aid in filling. It shall have a gauge port and a minimum of a 1" return port.
- c. There shall be a combination fluid level/temperature gauge visible standing beside the truck. The attaching nuts inside the tank for the fluid level/temperature gauge shall be tack welded in place to ease replacement.
- d. The reservoir bottom shall have a 3/4" magnetic drain plug. There shall be two (2) sensor ports (one each side) for float and temperature switches.

9.4 Hydraulic Test Point:

- a. One (1) hydraulic test point must be installed permanently, in the pump discharge line at a convenient point. This unit must be capable of reading flow, pressure and temperature without opening any hydraulic lines in the hydraulic system. All connections between the test point and the tester shall be of quick disconnect type UCC (UC-STS-5237-210). All flow, pressure and temperature of simultaneous or individual functions of the entire hydraulic system must be measured from one point.

9.5 Suction Line: The suction line shall enter the front side of the tank a few inches off the tank bottom. The line shall be a minimum of 2 1/2" I.D. and be connected to the tank through a 2 1/2" full flow ball valve. The full flow ball valve shall be directly connected to the tank and union shall be placed between the full flow ball valve and suction hose. The suction line shall be equipped with a replaceable strainer.

9.6 Return Line: The return line shall enter the tank above oil level, extend to near the tank bottom and be cut on a 45 degree angle with flow tank entrance and be equipped with replaceable automotive type 10 micron oil filter having a minimum filter area of 1,250 square inches. Filter shall have condition indicator gauge, readily visible with body lowered and have the critical pressure clearly marked on the gauge. A 25 p.s.i. bypass valve shall be incorporated in the filter.

9.7 Liquid Level Switch: A 12-volt liquid level switch shall be provided in the tank which shall activate a red warning light in the cab when tank level drops to 1/2 capacity. The light shall be dash-mounted and light, to be clearly labeled.

9.8 Sight Gauge: Wabco Model J-700153 kit or approved equal.

9.9 Hydraulic Lines shall include Hycon or equal clamps every 24" maximum.

- a. System shall be piped with high pressure hose long enough and pliable enough to insure easy removal and installation. All hoses shall be equipped with JIC swivels on each end of the hose for easy removal. Lines equipped with Snap-Tite 72 Series or approved equal quick couplers and dust caps shall extend to the vehicle rear for spreader operation and to the front bumper for the plow lift cylinder and plow reversing motor. The couplers on these lines shall be reversed, male-female, to prevent incorrect hook-up and mounted in collector manifolds. All couplers shall be furnished as a complete set. In cases where the

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lines are not connected to equipment, the mating part of each coupler shall be furnished as on-vehicle equipment. All lines shall be clearly and permanently labeled at the collector manifolds with non rusting metallic tags.

9.10 Swivel Couplings:

- a. All fittings shall be steel permanently attached on hoses with swivel joints located at ends of each hose assembly.

9.11 Main Pressure Hose (minimum):

- a. Hoist:

Size and Type:	3/4" I.D. double braided
Recommended Working Pressure:	2,250 p.s.i.
Minimum Burst Pressure:	9,000 p.s.i.

- b. Plow Lift and Lower:

Size and Type:	3/8" I.D. double braided
Recommended Working Pressure:	4,000 p.s.i.
Minimum Burst Pressure:	16,000 p.s.i.

- c. Spreader:

Size and Type:	1/2" I.D. double braided
Recommended Working Pressure:	3,500 p.s.i.
Minimum Burst Pressure:	14,000 p.s.i.

- d. Return Hose (minimum):

Size and Type:	1" I.D. double braided
Recommended Working Pressure:	2,000 p.s.i.
Minimum Burst Pressure:	8,000 p.s.i.

- e. Suction Hose (minimum):

Size and Type:	2 1/2" I.D. (SAE 100 R4)
Recommended Working Pressure:	100 p.s.i.
Minimum Burst Pressure:	400 p.s.i.
Inches Mercury Vacuum:	25

- f. Main Pressure Line:

Size and Type:	1" I.D.
Recommended Working Pressure:	2000 p.s.i.
Minimum Burst Pressure:	4000 p.s.i.

- 9.12 NOTE: High pressure hydraulic hose shall not be acceptable as suction hose.

10. **SNOWPLOW ATTACHMENT AND LIFTING MEMBERS:**

- a. Plow push frame shall be furnished and installed. The plow push frame shall be frame mounted and quickly removable. The push frame four-inch square tubing walls shall be 3/8 inch thick. Ordering Agency personnel shall approve the plow push frame during pilot model inspection. A swivel block shall be included on plow hitch.
- b. Hydraulic Lift Cylinder: Double acting, 4" bore x 10" stroke with nitrated or triple chrome plated rod and minimum working pressure of 2,500 p.s.i.
- c. Plow will rotate left and right using cylinders.
- d. Plow push frame quick disconnect fitting shall be 1/2 inch stainless steel. Both male and female fittings shall be provided with dust covers.
- e. All bolts to be corrosion proof, multiple heat treated chrome nickel alloy furnace steel. Nuts to be corrosion proof, double heat treated high carbon steel. Lock washers to be corrosion proof.

11. **TARPS:**

11.1 Material and Construction:

- a. The tarp shall be made of high quality 18 ounce, minimum, solid vinyl material. All stitching shall be accomplished by the use of bonded polyester thread.
- b. Any heat sealed areas of the tarp shall also be stitched for use in asphalt applications.
- c. Tarp system shall be designed to evenly roll the tarp onto the tarp spool.
- d. Tension shall be applied to provide constant pressure on the tarp bow or an additional automatic support bar over the tarp to keep the tarp from rolling up or "sailing" during transport of materials.
- e. Tarps shall not need drop sides in this Fleet.
- f. Tarp bows shall be designed as not to encroach the side loading area of the body.
- g. Tarp bows shall have UHMW mechanical stops mounted on the dump body as to not allow bow horizontal member to contact dump body.

11.2 Arms and Springs:

- a. The tarp bow framework shall be made from aluminum.
- b. The springs to control the tarp arms shall be underbody mounted. Spring assembly shall be constructed so that replacement of the spring is simple without replacement of the arm assembly.
- c. Mylar tape shall be applied between the steel and aluminum components to prevent oxidation from dissimilar metals.

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11.3 Tarp Drive, Hydraulic:

- a. The hydraulic system controls shall be located inside of the truck cab within easy reach of the vehicle operator.
- b. There shall be no chain drives in the construction of the tarp motor.
- c. All wiring shall be protected as it passes through any portion of the body and truck cab to prevent chafing of the wire.
- d. All wiring connections shall be soldered and covered with sealant encapsulated heat shrink tubing applied over the soldered connection. Crimped connectors of any kind shall not be accepted. System shall have circuit breaker protection at power source.

11.4 Tarp Shield/Wind Deflector:

- a. Tarp system shall incorporate a wind deflector to prevent tarp from unfolding during unloaded transport.
- b. Wind deflector shall be constructed of aluminum or stainless steel.
- c. Tarp shield shall be designed as to not trap material in the cab shield area and allow for easy cleaning of the cab shield area.

12. **CONTROL SYSTEM:**

- a. The hoist shall be controlled by a multiple axis proportional control with a safety or "dead-man" switch integrated in the control.
- b. The plow functions shall be controlled by a dual axis, proportional joystick (a single control for all functions is optional) with an on/off switch integrated in the plow stick for optional remote blast or pass. If a single control is provided, it must be of a three axis design. Mode switches shall be used to determine active hydraulic functions. For the single stick system, a remote mounted display shall be provided for easy operation of the system.
- c. The front bay shall be modular for expansion to a third or fourth electronic joystick control for additional hydraulic functions such as wing plow or underbody scraper. All joysticks shall be operated through the CAN control network. Hard wired joysticks are unacceptable.
- d. Controls shall have integrated float circuit(s) for plow, blade and wings by either auxiliary input from proximity, pressure or timing logic.
- e. The control console shall be between the seats on a pedestal bolted to the cab floor with height and swivel adjustments to provide easy operation for the driver. Seat mounted controls are not acceptable. All extra harness shall be in the cab. Three-feet of harness slack is allowed. All extra properly secured according to the harness manufacture's requirements.

13. **ACCESSORY SWITCH CONTROLS:**

- a. The switch bays shall be compatible with either standard rocker switches or the TouchGuard switch system. The console may be configured with both types of switches depending on the configuration desired.
- b. If the TouchGuard switch system is chosen, switches shall be field programmable with dipswitches to allow selection from momentary to on/off. The switch legends shall also be easily replace and changed in the field.
- c. The switches, when specified TouchGuard, shall have visible green LED backlighting when in the off position and changed to red LED when depressed by the operator.
- d. The switch pads should be easily serviceable by a detachable cable and four (4) mounting screws for field replacement. There shall be integral connections with the accessory switch circuits to the logic control center to allow for self-diagnostic system monitoring. Upon any switch circuit failure, the switch console shall have an audible alarm and with flashing red L.E.D.'s. Depressing the switch to the "off" position shall disable the switch function. The console shall allow for integration with the TouchGuard switch control system or standard Sprague rocker switch and indicators.

14. **HYDRAULIC VALVE:**

- a. Valve to be of the closed cast iron sectional type.
- b. The valve shall be pre-compensated for flow and pressure to allow simultaneous operation of functions.
- c. The valve shall be provided with load sense type inlet to allow use of a closed center valve, and be attached as part of the main valve assembly. An optional unloader type inlet shall be available to facilitate use of a fixed displacement gear pump if desired. This option shall be available without changing the valve manufacturer or type.
- d. Separate sections shall be provided for plow raise/lower, plow angle, dump body hoist, auger/conveyor, spinner and hydraulic tarp. Flows on plow raise/lower to be controlled with a stroke limiter integral to the valve. The flow control shall allow adjustment of speed of the plow functions to be regulated. Dump body hoist section shall be designed so as to have integral work port relief valves installed on both sides. A side relief shall be set to 500 PSI. B-Side relief shall be set to 2000 PSI. Spreader circuit valve sections to be provided with proportional coil actuators to interface with the specified hydraulic control system. Auger/conveyor section shall have an on-off, momentary reverse feature to allow a material jam to be cleared. Pre-wet and anti-icing systems run from dedicated hydraulic circuits located in the integrated spreader valve manifold. Individual valve spools shall be sized to properly control the specified functions taking into account the current available pump flow. Power beyond feature to be provided as part of the valve assembly. Sauer Danfoss PVG32/100or approved equal.

15. **HYDRAULIC SYSTEM CONTROL:**

- a. The controller shall provide for accurate spreading of granular, pre-wet liquid and direct liquid such as anti-icing materials. The controller shall have expansion capability or accommodate a second liquid function that shall provide simultaneous operation of two liquid systems if desired as well as granular. Controller must be supplied completely integrated with the above specified control console. All wiring shall be completely

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interfaces with the appropriate system module. Joystick controls shall be interfaced with the system to operate all cylinder functions. These joysticks must communicate through the CAN network. Hard wired joysticks are unacceptable.

- b. The operator interface shall be traditional knobs and buttons to control spreader functions. The use of a touch screen is unacceptable. The controller shall have a touch switch to activate the liquid function(s). This switch shall enable the liquid system determined in the operating mode. There shall be up to three operating modes to select with the single liquid systems and four modes with the dual liquid systems. The ability of the operator to select granular only, liquid only, granular and pre-wet, and a combination of granular, pre-wet and anti-icing with be available in the operating mode depending on equipment selected.
- c. And granular and liquid systems shall stop when the vehicle stops. Upon vehicle movement all systems active shall resume dispensing. The controller must be capable of operating most current pulse width modulated valves. Valve electrical characteristics shall be adjustable in the programming mode to allow for monitoring of the valve circuit.
- d. The controller shall be backlit and have a 4" x 6" TFT LCD graphic display with auto dimming back light. LED, color or vacuum fluorescent display is unacceptable.
- e. The display shall show the current material type being spread, miles per hour and the desired application rate. The display shall have application totals information available through the use of a soft key input. This information must be available to the equipment operator without the use of a password. The display shall also show your liquid rate in gallons per ton of granular, gallons per mile for anti ice. Total gallons dispensed must be part of the available data set for down load
- f. The control shall have the ability to adjust automatically for gate height changes if selected in equipment and eliminate the need for re-calibration of the vehicle if gate height is changed. The display shall show the operator via a graphic icon gate height changes and gate opening in inches.
- g. The controller shall have the ability to accommodate a spinner sensor for closed loop spinner. The number of lanes being spread during closed loop spinner shall be shown graphically in the operating mode. The granular rates shall automatically be adjusted to maintain the desired rate selected by the operator eliminating the need to manually increase the rate if the number of lanes spread is changed.
- h. All the above shall be visible during normal operation. The display shall also alert the operator to any errors in the input signals detected by the microprocessor self-diagnostic system. The use of numeric error codes is not acceptable.
- i. The controller shall have "on-screen" menu based programming using the panel controls for setup and calibration. Access to setup and calibration shall be gained by use of a programmable access code. The system shall have 3 levels of security - an operator level that allows operation of the system, technician level to allow system calibration and administrator level for top level system settings. The need for additional inputs or screens for setup and calibration is unacceptable.
- j. The controller shall be capable of both automatic and manual modes. The ability to lock out manual mode shall be available in the programming mode. The use of detented lane width and spread rate switches in not acceptable. The rate and spinner speed controls shall be through the use of 16 position magnetic encoder. A covered communication

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port shall be located on the rear panel of the display. The communication port shall supply serial data and provide real time data used for AVL/GPS integration via the use of the Freedom ATS telemetry device. Information such as truck ID, recent and annual information including: pounds total, miles total, pounds per mile average, gallons of liquid material, miles traveled with liquid on, percent miles in auto mode, average mile per hour and maximum miles per hour. Other stored calibration information shall be available such as all equipment settings, all calibration settings, and all material information as well as equipment options information.

- k. The controller shall provide for six material types. Information such as material name, blast duration, blast mode and maximum application rate, increment rate and ground speed required for blast shall be stored with each material type.
- l. The controller shall have the ability to operate in either open loop or closed loop feeder operation. The feeder shall stop when the vehicle stops. Upon vehicle movement the feeder shall start to spreader automatically and shall incorporate and adjustment valve trim "start percentage" to assist in performance with low-resolution speedometer signals. In the even to a feeder sensor failure, the control shall revert to open loop operation. This shall be done automatically during operation and the error announced to the operator via audible and vision means. This shall allow for temporary open loop ground speed control until the feeder (auger) sensor circuit is corrected.
- m. The controller shall be mounted in a way to provide the best operator usability and safe vehicle operation. All sensors and cables shall be provided to make the system complete and usable.
- n. Software to download shall be Microsoft Internet Explorer 6 or 7. Use of proprietary software to allow download to a Windows based laptop computer is unacceptable. The use of proprietary hand held devices is not acceptable. Data obtained from the spreader control shall contain all calibration settings, as well as material usage totals as described above.
- o. Component Technology Storm Guard Freedom ACS SG219 or approved equal.
- p. The system shall maintain between 100 to 800 pounds of spreader material per single lane mile, at any legal road speed.

16. **WIRING:**

- a. Wiring and harness system shall meet ISO rating IP68 and NEMA 6.
- b. The connectors shall be zinc die cast E-coated, similar to a MIL spec connector. Each should have three sealing points - the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the whole connector.
- c. The cable jacket shall be TPE - thermoplastic elastomer, and molded to the connectors.
- d. Connectors and harness shall be rated and tested for a temperature range from -30 degree C to + 70 degree C. Connectors shall be tested to be water tight when submerged in 6 feet of water for 24 hours, in 275 feet of water for 1 hour, and when subjected to a 1000-psi pressure wash. The connectors to be designed to have NO corrosion after 500 hours in a 35 degree C salt spray.

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- e. Cabling shall be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld sag.
- f. The body electrical plug, which connects to the auger motor harness, shall be mounted under the right rear bottom corner of the dump body, adjacent to the hydraulic quick disconnects.

17. **SYSTEM DOCUMENTATION:**

- a. System documentation shall be provided to the ordering Agency. Documentation shall include operation instructions for supplied spreader control, hydraulic system schematics, installation instructions, and troubleshooting information. Documentation shall be provided in CD-ROM format.

18. **PRE-WET SYSTEM FOR V BOX SPREADERS:**

- a. Two equal size tanks shall be provided each with a minimum capacity of 90 gallons and constructed of polyethylene of clear translucent color with UV protection designed to hold pre-wet liquids with specific weight of up to 16 lbs./gallon. These frame surrounding these tanks shall be stainless steel.
- b. The tanks shall be mounted on both sides of the V-Box spreader. The tank shall have one side angled for mounting to the V-Box spreader and a minimum of three (3) gussets molded into the back side (vertical side) for extra strength. Ordering Agency to supply spreaders for spreader mounting and tank mounting.
- c. The tanks shall have two (2) 4" minimum top threaded fill wells with screw-down lid and one (1) 1-inch quick disconnect bottom fill. The tanks shall have a top splash proof vent. The liquid filling hose has a Banjo 100F male coupling. The pre-wet tank to be installed on the truck requires a Banjo 100B or compatible female coupling.
- d. An electric pressure switch shall be installed in the bottom end of the tank connected to the cab control for automatic system shutdown when the tank is empty.
- e. Mounting hardware includes all necessary stainless steel channels, tank pans, tank stops, all bolts and fasteners, strap rods, rub pad and nylon tie-down straps.
- f. Pre-wet system shall run off the dedicated hydraulic circuit from the main hydraulic valve.
- g. Pumping shall be continuous from both tanks.
- h. The liquid pump shall be a self-priming, cast bronze rotary gear pump with pulse free positive displacement design. An aluminum bodied geroller style hydraulic motor drive the liquid pump. The hydraulic motor shall have side ports of the O-ring design. Pipe thread is not acceptable. A pressure compensated 12 VDC proportional flow control valve shall control the hydraulic flow going to the hydraulic motor. Pump shall have a continuous duty rating of 125 PSI and be capable of 9 GPM at 45 PSI. A built-in relief valve set at 45 PSI shall be included to protect against over-pressurization. The liquid pump and hydraulic motor shall be directly connected. A lovejoy coupler is not acceptable.

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- i. Pumps shall be mounted in a stainless steel or NEMA 4x style weather tight enclosure that is resistant to UV light, chemicals and corrosion. Polyethylene plastic is not acceptable. All hydraulic inside enclosure shall be hard plumbed. Hydraulic connections shall be bulkhead style mounted in bottom of enclosure. Pump shall be plumbed through a 0-15 GPM flow meter, made of a non-corrosive material. The flow meter shall be a seametrics SPX-075-13. No substitutions shall be accepted.
- j. Flow control shall be 3 ported bypass design cartridge valve. Valve shall come with a screw adjustable manual override that allows continuation of operation in case of electrical failure.
- k. Pump shall come with flush port for pre-fill or flush of mechanical seal chamber.
- l. The spray system shall interface with and be completely controlled by the ground speed spreader control, with the ability to turn it off at any time. A separate cab console is not acceptable.
- m. Wiring and harness system should meet ISO rating IP68 and NEMA 6. The connectors shall be zinc die cast E-coated, similar to a MIL spec connector. Each should have three sealing points - the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the whole connector. The cable jacket should be TPE - thermoplastic elastomer, and molded to the connectors. Connectors and harness should be rated and tested for a temperature range from -30 degree C to + 70 degree C. Connectors should be tested to be water tight when submerged in 6 feet of water for 24 hours, in 275 feet of water for 1 hour, and when subjected to a 1000-PSI pressure wash. The connectors should be designed to have NO corrosion after 5000 hours in a 35 degree C salt spray. Cabling should be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld slag.
- n. A minimum of two (2) brass spray nozzles, hose and quick disconnect that connects to the body brine quick disconnect fitting, shall be provided with mounting hardware. The nozzles shall maintain a 120 degree fan spray throughout the system's chemical flow rate. A check valve shall be installed in the pressure line to prevent back flow or siphoning when the pump is off.
- o. The pre-wet shall maintain (10) ten gallons per ton of spreader material at any legal vehicle speed.
- p. Stainless steel male and female quick disconnect fittings shall be provided for V-Box brine connection.

19. **HYDRAULIC FITTINGS, SENSOR CONNECTIONS FOR V-BOX SPREADERS:**

- a. The two auger hydraulic quick disconnect fittings and auger sensor harness connection shall be mounted under the passenger's side rear corner of the dump body. The hydraulic quick disconnect fittings shall be (3/4) three-quarter inch stainless steel.
- b. The two spinner hydraulic quick disconnect fittings shall be mounted under the driver's side, rear corner of the dump body. The hydraulic quick disconnect fittings shall be one-half inch stainless steel.

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- c. Stainless steel male and female quick disconnect fittings shall be provided for V-Box conveyor motor, spinner motor and plow rotate.
- d. Bolt heads shall not protrude from the bottom of the dump body.

20. **PLOW BALANCE VALVE:**

- a. System to be supplied with a plow balance valve. Valve to be designed to offset a specific (adjustable) plow weight when activated. Valve to be of cartridge and manifold design, and electrically activated. In the case of a load sense hydraulic system, the valve shall be activated by a single solenoid. In the case of an open center system, the valve is to be activated by two solenoids - one for the plow offset and one for an integral unloader.
- b. The plow balance system must not alter the operation of any other hydraulic function the vehicle or have an adverse effect on the performance of other hydraulically operated equipment including wing plow, body hoist, plow hoist or angle, or spreader functions. All normal operations of the plowlift/lower function must be maintained without additional tasks. Operation of any electrical switches beyond the normal up/down command to raise or lower the plow is not acceptable.
- c. The plow balance system shall remain electrically activated when lighting the plow from the road surface. Plow lift must be immediate. It is not necessary to turn off the system for plow lift. Plow lowering and return to balance mode must be done by activating the plow lever or switch to the lower mode.
- d. The plow balance system must be able to hold the plow in the up position indefinitely.
- e. The plow balance manifold shall be of cartridge style valving utilizing "floating" style cartridge valves. The valve body must be constructed of aluminum and have minimum construction hole plugs. All solenoid valve coils shall have manual override capabilities. Manifold must include a pressure test point for use when checking balance pressure. The pressure test point must be capable of tapping into the system at pressures of up to 5000 PSI.

21. **HYDRAULIC TESTING EQUIPMENT:**

- a. If special electronic hydraulic testing equipment is needed to perform trouble shooting and maintenance of the hydraulic equipment, the supplier shall provide one (1) monitoring device for test hydraulic flow valves and pressure valves for the hydraulic system.
- b. A separate unit price shall be quoted for additional testing units.

22. **TRUCKS WITHOUT WING PLOWS - FURNISH & INSTALL:**

- a. Hydraulic valve to contain sections for hoist, plow hoist, plow angle, power tarp, spinner and auger/conveyor. Hoist section shall contain an integral work port relief on the down side set at 500 PSI. Plow angle section shall be of the "motor spool" type for use with existing ordering Agency plows. For medium duty trucks, a dual counter balance valve shall be provided for use with existing cylinder type plows.

23.. **EQUIPMENT MANUALS:**

- 23.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 23.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy.
- 23.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy.

24. **TRAINING:**

- 24.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each main location that has received the equipment.
 - 24.1.1 Operator/Preventative Maintenance
 - 24.1.2 Operator Adjustments
 - 24.1.3 Minor Maintenance Repairs
 - 24.1.4 How to use the full capabilities of the equipment as well ad its safe and effective operation.

25. **OPTIONS:**

- 25.1 General: The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than when the truck is delivered.
- 25.2 Hydraulic tester for test point listed above in 9.4.
- 25.3 One (1) additional plow frame.
- 25.4 Furnish and install a Hood Reflector. This reflector minimizes the snow from collecting directly on the windshield from the snow plow.
- 25.5 TRUCKS WITH WING PLOWS (furnish & install):
 - a. Hydraulic valve to contain sections for hoist, plow hoist, plow angle, power tarp, spinner, auger/conveyor and three (3) individual sections for the specified wing plow. Configuration of the valve to be the same as for trucks without wing plow, with the three (3) additional sections added to meet the requirements of the supplied wing plow.
 - b. Separate sections shall be provided for plow raise/lower, plow angle, dump body hoist, auger/conveyor, spinner and hydraulic tarp. Flows on plow raise/lower to be controlled with a flow control integral to the valve.
 - . Furnish and install a Hood Reflector. This reflector minimizes the snow from collecting directly on the windshield from the snow plow.

SIX WHEEL ALUMINUM DUMP TRUCK BODIES 37,500 GVW

STATEWIDE

SPECIFICATION "G"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. **GENERAL:**

It is the intent and purpose of these specifications to describe a New Aluminum Dump Truck Body complete with an underbody hoist and complete hydraulic system ground speed control, modular 2-stick control console, and snowplow frame. These components shall be mounted by the Vendor on a new 37,500 GVW cab/chassis supplied elsewhere in this contract, with mounting location pre-approved by the ordering Agency.

- 1.1 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.2 Body installer shall test the hydraulic capacity for all hydraulic circuits. This data shall be documented, using the chassis VIN, body model and body serial number, to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery of the unit. The data shall contain at a minimum, component manufacturer's minimums, maximums and actual readings on these components mounted on the unit.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, and ready for immediate use.
 - c. Bidder must provide drawings and detailed component listing for all items described in this specification.
 - d. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include body model and serial numbers.
 - e. Operators manual shall accompany each delivered unit

2. **DUMP BODY:**

- 2.1 Dump Body shall be 6 cubic yard capacity, water level measure, with 28" high sides and 34" front head and tailgate, and be 10 feet long minimum and 8 feet wide. Body sides shall be equipped with pockets for 2" x 6" wooden extension sideboards. The oak boards shall be provided, painted black, and installed. Standard aluminum grade 5454H34 shall be used for all plate aluminum and grade 6061T6 for structural members except where noted. No body part shall be cast unless approved in writing by the ordering Agency.
- 2.2 The front head shall be a one-piece, 0.250 in. thick aluminum 5052-H32 with a three-bend top 3" wide, 2" deep. Head shall be reinforced at mid height with a dual integral press V's (minimum). A 1/2 size cab shield shall be provided on the front head (0.1.875 in. thick). Cab protector heights shall be 2" above the cab.
- 2.3 The floor shall be 1-piece with a thickness of .375 in. and be 5454-H34 aluminum.
- 2.4 The tailgate shall be constructed of aluminum with a full width boxed top horizontal brace and vertical end braces which extend from under the top horizontal brace to the lower flange on the tailgate. Self-cleaning center and bottom horizontal braces and two vertical braces in addition to the vertical end braces shall be provided. Heavy duty flame cut aluminum plate hardware, 1" minimum thickness for top hinges and 1" minimum thickness for offset top hardware, or approved equal, lower hinges and overshot type hinge closing device. Upper pins shall be 1-1/4" diameter minimum with split bushing insert. Lower cross member of tailgate shall be a 4" channel/bushing with a 1 1/2" hole to accept 1 1/2" cold rolled steel bar which shall act as the lower pin. Spreader chains shall be 3/8" proof coil (minimum or approved equal). Tailgate shall be .25" thick aluminum sheeting.
- 2.5 The sides shall be from aluminum sheet 0.250 inches thick forming and 4" box tubing for the top rail. Top rail extrusion shall be 3.011# per ft. 4" extruded rub rail at the bottom with integral inside radius, 4.199# per ft. The sides shall be reinforced with at least three (3) vertical box section side braces, 7" wide with a centerline spacing of not more than 30". Side braces shall be completely sealed at both the top and bottom. The rear corner posts shall be full depth from the top of tailgate to the bottom of the rear apron and formed from one (1) sheet to a box section of 4" x 10" (minimum). All vertical posts and side braces will have bottom drain holes under the body.
- 2.6 The long members shall be 6" I beam, 6061-T6 material, 6.10 #/ft. and must match chassis mounted hoist frame width. Cross members shall be 4 " I Beam, -6061 T6 material, 2.70 #/ft. and shall not exceed 12" on center. Cross members shall be stitch welded to floor and cross welded to long members and incorporate a minimum 3/8" x 3", 6061-T6 gusset. The rear bolster shall be 3/8" x 10" deep, 6061-T6 full width of body and welded to the full depth corner posts.
- 2.7 The tailgate operating device shall be air operated. A push/pull release control shall be located in dash. Air tailgate system shall be designed to remained latched in case of air loss in system. Gate shall have a system to open gate in case of air loss manually. The cross shaft shall be 1" in diameter. The lower hinge and hook assembly shall be reinforced with 1/4" backing plate to provide extra strength to the corner post where it joins the rear apron. The rod which operate the hinges shall have tubing turn buckles or an approved equal method of adjustment without disassembly. (assembled with anti-seize compound). Air tailgate system shall be designed to remain latched in case of air loss in system. Gate must have a manual system to open gate in case of air loss manually.

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- 2.8 A ladder hide-away type with 18 degree slope on ladder shall have anti-slip open safety grille treads, Bustin Products, aluminum material or approved equal, (a minimum of 3" wide and 18" long), shall be provided on the left forward side of the body. Lowest step on the ladder shall be in line with the bottom of the truck frame. Including bottom step, ladder shall have a minimum of two (2) steps with one (1) step approximately 20" below top of the body side when 6" side boards are installed. A 2" minimum anti-slip step down outside center of body welded between body support beams shall be provided. Step is to be entire length of body on both sides.
- 2.9 Continuously welded construction shall be used on the dump body. All seams shall be fully welded. In areas where both sides of a seam are exposed, such as the front corners, both sides shall be fully welded. Vertical and horizontal braces shall be fully welded on top, sides and bottom in order to completely seal these members.
- 2.10 Mud flaps shall be installed sub-frame mounted forward and body mounted aft of the rear tires. Forward flaps shall be fabricated of .190" aluminum. The aft flaps shall be full length body mounted, heavy duty anti-spray & anti-sail.
- 2.11 The dump body shall have a holder for one long handle shovel located at left front of body area.
- 2.12 The dump body shall not have any bolt heads extending from the rear bottom side of the dump body. This interferes with tailgate sander installation.

3. **HOIST:**

- 3.1 Hoist shall be a double acting underbody sub-frame type using a single rod-type cylinder type V, Class 60 hoist. The hoist shall be low-mount hoist with a 2" rubber cushion the full length of the long member of the body. Maximum mounting height shall be 13" from the top of frame to bottom of body floor. Hoist must be NTEA rated and approved. All bearing points shall be capable of being lubricated by means of grease fittings (see Section 12 Lube Points). All bolts must be Grade 8 with nylon lock nuts. Hoist shall be a JJ685DALM or approved equal.
- 3.2 The hoist cylinder shall be a Custom DA8-1/2-3-25 or approved equal. Any approved equal shall have to be an exact replacement for the above mentioned cylinder with no modifications. The lift would also have to be NTEA rated with the "approved equal" replacement cylinder.
- 3.3 Two body props providing a positive means of support for each side of the dump body, permanently attached to the bottom of the dump body and capable of preventing accidental lowering of the empty body while maintenance or inspection work is being done shall be provided. The prop shall swing down and stop in the proper position so the dump body shall lower to the proper maintenance height using a one-man operation. The prop shall be able to lock the body position at one (1) level to hold body at the height of (12) twelve feet measured from the road surface to highest point of the dump body and attachments.

4. **BUMPER:**

- 4.1 A 12' X 2" lip top and bottom steel channel 50,000 p.s.i. yield bumper shall have access holes for frame-mounted tow hooks and steps bolted under each end to assist the operator in climbing onto the bumper to make service checks. Frame side rail extensions shall be cut to allow bumper to be attached to frame as close to standard as practical (bumper to cab distance).

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- 4.2 The bumper shall be 1/2 inch bumper wrap and be of sufficient strength to carry the components and perform snow plowing operations. The bumper attachment points shall be reinforced as necessary to accept the additional stress of plowing operations.
 - 4.3 The area between the bumper and hood, also top of plow frame shall have Bustin Steel Products aluminum step grating installed.
 - 4.4 Stirrup steps shall be bolted to both sides of the bottom of the front bumper.
5. **TOW HOOKS:** (picture of rear plate)
- 5.1 Chassis to be equipped with four (4) 45,000# frame-mounted tow hooks (two (2) on the front and two (2) on the rear) appropriate for vehicle placement to be determined by the ordering Agency at time of build, and one (1) rear-mounted Hollard Model 760, 49,000 M.G.T. weight, or approved equal, swivel pintle hook braced to the frame side rails. Pintle hook shall be installed with a working height of 20" from the ground. The lower rear plate for the pintle hook and the upper rear plate for lighting and tags shall be flush with each other.
6. **PAINT:**
- 6.1 The snow plow attachments, bumper, dump body sub frame, and aprons shall be finished in black. All steel components shall be painted with Insl-x activated epoxy primer EP-5065/EP-55BP primer and a polyurethane black top coat. Power coat paint is acceptable.
7. **LUBE POINTS:**
- 7.1 Vehicle shall have a centralized manual on board chassis grease lubrication system for components from the rear of the cab to the rear of the chassis - poly tubing, hard pipe shall be utilized. Brake S cam tube, pintle hook and brake slack adjusters, shall not be included in the central lubrication system. Each lube point shall be individually marked with location and remotely lube one lube fitting only. All lube fittings shall be centralized on driver's side of truck frame providing easy access to perform lube maintenance. Ref: Grease Jockey by Lubriquip, Inc., Groeneveld Lube System; Lincoln Lube System; Vogel Lubrication, Inc., J&J or Godwin Systems. Type of system/process to be used shall be rendered and approved by the Ordering Agency prior to the pilot inspection. All fittings shall have non-rusting metallic identity tags.
8. **ELECTRICAL SYSTEM:**
- 8.1 Two (2) plow lights shall be mounted on aluminum tri-point brackets on the fenders over the turn signals, approximately 12" above the fender. Plow lights shall be Grote 01-6429-14 or approved equal.
 - a. The plow lights shall be controlled by using the standard headlight circuit through the dimmer switch. After the dimmer switch, a two (2) position selector switch shall be inserted into the circuit from which the upper and lower headlight system shall be wired. The dash mounted selector switch shall allow the headlight system with the high or low beam selection controlled by the standard dimmer switch. The parking, clearance and tail light circuits shall use the standard light switch to control their operation regardless of headlight system selected. The high beam indicator shall be wired to show high beam use in either headlight system. Any splice connection not wiring harness manufactured supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connections.

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- 8.2 Two (2) sealed multi-functional, L.E.D. stop/turn/tail/backup light, three ICC clearance lights shall be LED and all flush-mounted in an aluminum plate bolted between the frame rails at the rear of the vehicle, and all side clearance lights shall be provide. An illuminated light plate bracket shall also be required. [DRAWING 1] All wiring from the junction block in the cab of the truck to all lights shall be include Grote Package # 01-6653-98 or approved equal. Any splice connection not wiring harness manufacturing supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connections.
- 8.3 Two (2) 2" x 6" amber lens, high-intensity L.E.D. strobe lights, shall be mounted in the rear posts of the body. Additionally, two (2) 2" x 6" amber lens, high-intensity flush mount L.E.D. strobe lights shall be mounted on each side of cab protector so that each is visible from the side. Two (2) 2" x 6" amber lens high-intensity flush mounted L.E.D. strobe lights shall be mounted one in each side of the front of the cab protector and shall be visible from the front of the truck. The six L.E.D. strobes shall be attached to universal power supplies mounted in the cab. Any splice connections not wiring harness manufacturer supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connection.
- 8.4 Audio back-up warning device, automatically adjusting sound level (87-112 DBA rating).
- 8.5 Towing Package: Shall be for electric brakes and shall have a six-pin and 7-pin plug, also be equipped with air glad hand package routed to the end of frame.
- 8.6 Roadwatch one system with digital display on left mirror bracket shall be installed. The display must be integrated to hydraulic control system display.
- 8.7 Supply and install in cab attenuator control, extra lighting control, cables, plugs, to rear of vehicle along with attenuator mounting lugs attached to rear of chassis. System shall include a full length body pin with D-handle. A micro switch to prevent unwanted body raise integrated into hydraulic controls and a storage pocket when not in use.
9. **HYDRAULIC SYSTEM AND CONTROL SYSTEM:**
- 9.1 General:
- 9.2 The hydraulic system described herein is to supply power to operate the dump body hoist cylinder, snow plow lifting cylinder, snow plow reversing motor and material spreader spinner and auger functions. The system shall permit completely independent yet simultaneous operation of the dump body and spreader. The hydraulic system shall return to low pressure standby when no functions are active.
- 9.3 Hydraulic Pump:
- a. Pump shall be of the variable displacement piston type. Pump shall be minimum 80cc displacement. If fit issues arise, pump size may change, but flow requirements remain the same. PTO ratio shall be used to maintain requested flow. Any pump change shall be approved by the ordering Agency. Hydraulic pump shall be driven by transmission PTO. PTO will stop pump if hydraulic fluid temperature becomes too hot or hydraulic fluid level in the tank is low.

9.4 Hydraulic Reservoir:

- a. The hydraulic reservoir shall have a 40 gallon capacity to provide oil flow required to all installed hydraulic components. The reservoir shall have enough capacity, to allow the hydraulic oil to properly cool and expand. It shall be frame mounted and constructed of 10 gauge steel. It shall be mounted to truck frame with a minimum of four (4) 1/2 inch grade 8 bolts. The inside of the reservoir shall have a 2 1/2" in-tank 100 mesh suction strainer with 5 p.s.i. bypass. Strainer to be rated at 100 gpm minimum. The 2 1/2" suction port shall exit the reservoir under the truck frame to allow space for other frame mounted components. It is to have a 2 1/2" ball valve wired in the opened position. There shall be two (2) 1-inch plugged return ports above and to the sides of the suction port. The return ports shall have diffusers inside to prevent aeration of hydraulic oil. There shall be a baffle inside to prevent oil sloshing.
- b. The top of the reservoir shall have a 10" diameter cleanout access with aluminum cover. This cover shall have reusable neoprene gasket to seal the reservoir. The cover shall have an in-tank filter incorporated into it. The filter is to be a 10 micron cartridge type rated at 100 gpm and have a 25 p.s.i. bypass. It shall have a serviceable air filter incorporated to vent the tank. The filter assembly shall have a locking screw-on cap to aid in filling. It shall have a gauge port and a minimum of a 1" return port.
- c. There shall be a combination fluid level/temperature gauge visible standing beside the truck. The attaching nuts inside the tank for the fluid level/temperature gauge shall be tack welded in place to ease replacement. The reservoir bottom shall a 3/4" magnetic drain plug. There shall be two (2) sensor ports (one each side) for float (level) and temperature senders.

9.5 Hydraulic Test Point:

- a. One (1) hydraulic test point must be installed permanently, in the pump discharge line at a convenient point. This unit must be capable of reading flow, pressure and temperature without opening any hydraulic lines in the hydraulic system. All connections between the test point and the tester shall be of quick disconnect type UCC (UC-STS-5237-210). All flow, pressure and temperature of simultaneous or individual functions of the entire hydraulic system must be measured from one (1) point.
- b. Suction Line: The suction line shall enter the front side of the tank a few inches off the tank bottom. The line shall be a minimum of 2" I.D. and be connected to the tank through a 2" full flow ball valve. The full flow ball valve shall be directly connected to the tank and union shall be placed between the full flow ball valve and suction hose. The suction line shall be equipped with a replaceable strainer.
- c. Return Line: The return line shall enter the tank above oil level, extend to near the tank bottom and be cut on a 45 degree angle with flow tank entrance and be equipped with replaceable automotive type 10 micron oil filter having a minimum filter area of 1,250 square inches. Filter shall have condition indicator gauge, readily visible with body lowered and have the critical pressure clearly marked on the gauge. A 25 p.s.i. bypass valve shall be incorporated in the filter.

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- d. Liquid Level Switch: A 12-volt liquid level switch shall be provided in the tank which shall activate a red warning light in the cab when tank level drops to 1/2 capacity. Dash-mounted light to be clearly labeled.
- e. Sight Gauge: Wabco Model J-700153 kit or approved equal.
- f. Emergency Shut Down:

The hydraulic system must totally shut down all pump flow to the system when a system hose failure occurs. A drop in oil reservoir level sufficient to cause possible pump damage must be sensed and electrically shut down the PTO through the "MODE" programming on the World Transmission.

9.6 Hydraulic Lines shall include Hycon or equal clamps every 24" maximum.

- a. System shall be piped with high pressure hose long enough and pliable enough to insure easy removal and installation. All hoses shall be equipped with JIC swivels on each end of the hose for easy removal. Lines equipped with Aeroquip 5600 Series or approved equal quick couplers and dust caps shall extend to the vehicle rear for spreader operation and to the front bumper for the plow lift cylinder and plow reversing motor. The couplers on these lines shall be reversed, male-female, to prevent incorrect hook-up and mounted under rear of body. (refer to pictures). All couplers shall be furnished as a complete set. In cases where the lines are not connected to equipment, the mating part of each coupler shall be furnished as on-vehicle equipment. All lines shall be clearly and permanently labeled at the collector manifolds with non rusting metallic tags.

9.7 Swivel Couplings:

- a. All fittings shall be steel permanently attached on hoses with swivel joints located at ends of each hose assembly.

9.8 Main Pressure Hose (minimum):

- a. Hoist:

Size and Type:	3/4" I.D. double braided
Recommended Working Pressure:	2,250 p.s.i.
Minimum Burst Pressure:	9,000 p.s.i.

- b. Plow Lift and Lower:

Size and Type:	3/8" I.D. double braided
Recommended Working Pressure:	4,000 p.s.i.
Minimum Burst Pressure:	16,000 p.s.i.

- c. Spreader:

Size and Type:	1/2" I.D. double braided
Recommended Working Pressure:	3,500 p.s.i.
Minimum Burst Pressure:	14,000 p.s.i.

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- d. Return Hose (minimum):
- | | |
|-------------------------------|------------------------|
| Size and Type: | 1" I.D. double braided |
| Recommended Working Pressure: | 2,000 p.s.i. |
| Minimum Burst Pressure: | 8,000 p.s.i. |
- e. Suction Hose (minimum):
- | | |
|-------------------------------|--------------------------|
| Size and Type: | 2-1/2" I.D. (SAE 100 R4) |
| Recommended Working Pressure: | 100 p.s.i. |
| Minimum Burst Pressure: | 400 p.s.i. |
| Inches Mercury Vacuum: | 25 |
- f. Main Pressure Line:
- | | |
|-------------------------------|-------------|
| Size and Type: | 1" I.D. |
| Recommended Working Pressure: | 2000 p.s.i. |
| Minimum Burst Pressure: | 4000 p.s.i. |

NOTE: High pressure hydraulic hose shall not be acceptable as suction hose.

10. **SNOWPLOW ATTACHMENT AND LIFTING MEMBERS:**

- 10.1 Plow push frame shall be furnished and installed, J&J custom frame to frame or approved equal. The plow push frame shall be frame mounted permanent. The push frame 4" square tubing walls shall be 3/8 inch thick. Ordering Agency shall approve the plow push frame during pilot model inspection. A Valk swivel block #PA-544-PRCB or approved equal shall be included on plow hitch.
- 10.2 Hydraulic Lift Cylinder: Double acting, 4" bore x 10" stroke with nitrated or triple chrome plated rod and minimum working pressure of 2,500 p.s.i.
- 10.3 Plow will rotate left and right using cylinders.
- 10.4 Plow push frame quick disconnect fitting shall be 1/2 inch stainless steel. Both male and female fittings shall be provided with dust cover.
- 10.5 All bolts to be corrosion proof, multiple heat treated chrome nickel alloy furnace steel. Nuts to be corrosion proof, double heat treated high carbon steel. Lock washers to be corrosion proof.

11. **TARPS:**

- 11.1 Material and Construction:
- The tarp shall be made of high quality 18 ounce, minimum, solid vinyl material. All stitching shall be accomplished by the use of bonded polyester thread.
 - Any heat sealed areas of the tarp shall also be stitched for use in asphalt applications.
 - Tarp system shall be designed to evenly roll the tarp onto the tarp spool.

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- d. Tension shall be applied to provide constant pressure on the tarp bow or an additional automatic support bar over the tarp to keep the tarp from rolling up or "sailing" during transport of materials.
- e. Tarps shall not need drop sides in this Fleet.
- f. Tarp bows shall be designed as not to encroach the side loading area of the body.
- g. Tarp bows shall have UHMW mechanical stops mounted on the dump body as to not allow bow horizontal member to contact dump body.

11.2 Arms and Springs:

- a. The tarp bow framework shall be made from aluminum.
- b. The springs to control the tarp arms shall be underbody mounted. Spring assembly shall be constructed so that replacement of the spring is simple without replacement of the arm assembly.
- c. Mylar tape shall be applied between the steel and aluminum components to prevent oxidation from dissimilar metals.

11.3 Tarp Drive, Hydraulic:

- a. The hydraulic system controls shall be located inside of the truck cab within easy reach of the vehicle operator.
- b. There shall be no chain drives in the construction of the tarp motor.
- c. All wiring shall be protected as it passes through any portion of the body and truck cab to prevent chafing of the wire.
- d. All wiring connections shall be soldered and covered with sealant encapsulated heat shrink tubing applied over the soldered connection. Crimped connectors of any kind shall not be accepted. System shall have circuit breaker protection at power source.

11.4 Tarp Shield/Wind Deflector:

- a. Tarp system shall incorporate a wind deflector to prevent tarp from unfolding during unloaded transport.
- b. Wind deflector shall be constructed of aluminum or stainless steel.
- c. Tarp shield shall be designed as to not trap material in the cab shield area and allow for easy cleaning of the cab shield area.

12. **CONTROL SYSTEM:**

- a. The hoist shall be controlled by a single axis proportional control with a safety or "dead-man" switch integrated in the control.

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- b. The plow functions shall be controlled by a dual axis, proportional mutiple joystick (a single control for all functions is optional) with an on/off switch integrated in the plow stick for optional remote blast or pass. If a single control is provided, it must be of a three axis design. Mode switches shall be used to determine active hydraulic functions. For the single stick system, a remote mounted display shall be provided for easy operation of the system.
- c. The front bay shall be modular for expansion to a third or fourth electronic joystick control for additional hydraulic functions such as wing plow or underbody scraper. All joysticks shall be operated through the CAN control network. Hard wire joysticks are unacceptable.
- d. Controls shall have integrated float circuit(s) for plow, blade and wings by either auxiliary input from proximity, pressure or timing logic.
- e. The control console shall be between the seats on a pedestal bolted to the cab floor with height and swivel adjustments to provide easy operation for the driver. Seat mounted controls are not acceptable. All extra harness shall be in the cab. Three feet of harness slack is allowed. All extra shall be properly secured according to the harness manufacturer's requirements.

13. **ACCESSORY SWITCH CONTROLS:**

- a. The switch bays shall be compatible with either standard rocker switches or the TouchGuard switch system. The console may be configured with both types of switches depending on the configuration desired.
- b. If the TouchGuard switch system is chosen, switches shall be field programmable with dipswitches to allow selection from momentary to on/off. The switch legends shall also be easily replace and changed in the field.
- c. The switches, when specified TouchGuard, shall have visible green LED backlighting when in the off position and changed to red LED when depressed by the operator.
- d. The switch pads should be easily serviceable by a detachable cable and four (4) mounting screws for field replacement. There shall be integral connections with the accessory switch circuits to the logic control center to allow for self-diagnostic system monitoring. Upon any switch circuit failure, the switch console shall have an audible alarm and with flashing red L.E.D.'s. Depressing the switch to the "off" position shall disable the switch function. The console shall allow for integration with the TouchGuard switch control system or standard Sprague rocker switch and indicators.

14. **HYDRAULIC VALVE:**

- a. Valve to be of the closed cast iron sectional type.
- b. The valve shall be pre-compensated for flow and pressure to allow simultaneous operation of functions.
- c. The valve shall be provided with an load sense type inlet to allow use of a closed center valve, and be attached as part of the main valve assembly. An optional unloader type inlet shall be available to facilitate use of a fixed displacement gear pump if desired. This option shall be available without changing the valve manufacturer or type.

- d. Separate sections shall be provided for plow raise/lower, plow angle, dump body hoist, auger/conveyor, spinner and hydraulic tarp. Flows on plow raise/lower to be controlled with a stroke limiter integral to the valve. The flow control shall allow adjustment of speed of the plow functions to be regulated. Dump body hoist section shall be designed so as to have integral work port relief valves installed on both sides. A side relief shall be set to 500 PSI, B side relief shall be set to 2000 PSI. Spreader circuit valve sections to be provided with proportional coil actuators to interface with the specified spreader hydraulic control system. Auger/conveyor section shall have an on-off, momentary reverse feature to allow a material jam to be cleared. Pre-wet and anti-icing systems run from dedicated hydraulic circuits located in the integrated spreader valve manifold. Individual valve spools shall be sized to properly control the specified functions taking into account the current available pump flow. Power beyond feature to be provided as part of the valve assembly. Sauer Danfoss PVG32/100 or approved equal.

15. **HYDRAULIC SYSTEM CONTROL:**

- a. The controller shall provide for accurate spreading of granular, pre-wet liquid and direct liquid such as anti-icing materials. The controller shall have expansion capability or accommodate a second liquid function that shall provide simultaneous operation of two liquid systems if desired as well as granular. Controller must be supplied completely integrated with the above specified control console. All wiring shall be interfaced with the appropriate system module. Joystick controls shall be interfaced with the system to operate all cylinder functions. These joysticks must communicate through the CAN network. Hard wired joysticks are unacceptable.
- b. The operator interface shall be traditional knobs and buttons to control spreader functions. The use of a touch screen unacceptable. The controller shall have a touch switch to activate the liquid function(s). This switch shall enable the liquid system determined in the operating mode. There shall be up to three operating modes to select with the single liquid systems and four modes with the dual liquid systems. The ability of the operator to select granular only, liquid only, granular and pre-wet, and a combination of granular, pre-wet and anti-icing will be available in the operating mode depending on equipment selected.
- c. And granular and liquid systems shall stop when the vehicle stops. Upon vehicle movement all systems active shall resume dispensing. The controller must be capable of operating most current pulse width modulated valves. Valve electrical characteristics shall be adjustable in the programming mode to allow for monitoring of the valve circuit.
- d. The controller shall be backlit and have a 4" x 6" TFT LCD graphic display with auto dimming back light. LED, color or vacuum fluorescent display is unacceptable.
- e. The display shall show the current material type being spread, miles per hour and the desired application rate. The display shall have application totals information available through the use of a soft input. This information must be available to the equipment operator without the use of a soft key input. This information must be available to the equipment operator without the use of a password. The display shall also show your liquid rate in gallons per ton of granular, gallons per mile for anti ice. Total gallons dispensed must be part of the available data set for download.
- f. The control shall have the ability to adjust automatically for gate height changes if selected in equipment and eliminate the need for re-calibration of the vehicle if gate height is changed. The display shall show the operator via a graphic icon gate height changes and gate opening in inches.

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- g. The controller shall have the ability to accommodate a spinner sensor for closed loop spinner. The number of lanes being spread during closed loop spinner shall be shown graphically in the operating mode. The granular rates shall automatically be adjusted to maintain the desired rate selected by the operator eliminating the need to manually increase the rate if the number of lanes spread is changed.
- h. All the above shall be visible during normal operation. The display shall also alert the operator to any errors in the input signals detected by the microprocessor self-diagnostic system. The use of numeric error codes is not acceptable.
- i. The controller shall have "on-screen" menu based programming using the panel controls for setup and calibration. Access to setup and calibration shall be gained by use of a programmable access code. The system shall have 3 levels of security - an operator level that allows operation of the system, technician level to allow system calibration and administrator level for top level system settings. The need for additional inputs or screens for setup and calibration is unacceptable.
- j. The controller shall be capable of both automatic and manual modes. The ability to lock out manual mode shall be available in the programming mode. The use of detented lane width and spread rate switches is not acceptable. The rate and spinner speed controls shall be through the use of 16 position magnetic encoder. A communication port shall be located on the rear panel of the display. The communication port shall supply serial data and provide real time data used for AVL/GPS integration, via the use of the Freedom ATS telemetry device. Information such as truck ID, recent and annual information including: pounds total, miles total, pounds per mile average, gallons of liquid material, miles traveled with liquid on, percent miles in auto mode, average mile per hour and maximum miles per hour. Other stored calibration information shall be available such as all equipment settings, all calibration settings, and all material information as well as equipment options information.
- k. The controller shall provide for six Material types. Information such as material name, blast duration, blast duration, blast mode and maximum application rate, increment rate and ground speed required for blast shall be stored with each material type.
- l. The controller shall have the ability to operate in either open loop or closed loop feeder operation. The feeder shall stop when the vehicle stops. Upon vehicle movement the feeder shall start to spreader automatically and shall incorporate an adjustment valve trim "start percentage" to assist in performance with low-resolution speedometer signals. In the event of a feeder sensor failure, the control shall revert to open loop operation. This shall be done automatically during operation and the error announced to the operator via audible and vision means. This shall allow for temporary open loop ground speed control until the feeder (auger) sensor circuit is corrected.
- m. The controller shall be mounted in a way to provide the best operator usability and safe vehicle operation. All sensors and cables shall be provided to make the system complete and usable.
- n. Software to download shall be Microsoft Internet Explorer 6 or 7. Use of proprietary software to allow download to a Windows based laptop computer is unacceptable. The use of proprietary hand held devices is not acceptable. Data obtained from the spreader control shall contain all calibration settings, as well as material usage totals as described above.
- o. Component Technology Storm Guard Freedom ACS SG219 or approved equal.

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- p. The system shall maintain between 100 to 800 pounds of spreader material per single lane mile, at any legal road speed.

16. **WIRING:**

- a. Wiring and harness system shall meet ISO rating IP68 and NEMA 6.
- b. The connectors shall be zinc die cast E-coated, similar to a MIL spec connector. Each should have three sealing points - the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the whole connector.
- c. The cable jacket shall be TPE - thermoplastic elastomer, and molded to the connectors.
- d. Connectors and harness shall be rated and tested for a temperature range from -30 degree C to + 70 degree C. Connectors shall be tested to be water tight when submerged in 6 feet of water for 24 hours, in 275 feet of water for 1 hour, and when subjected to a 1000-psi pressure wash. The connectors to be designed to have NO corrosion after 500 hours in a 35 degree C salt spray.
- e. Cabling shall be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld sag.
- f. The body electrical plug, which connects to the auger motor harness, shall be mounted under the right rear bottom corner of the dump body, adjacent to the hydraulic quick disconnects.

17. **SYSTEM DOCUMENTATION:**

System documentation shall be provided to the ordering Agency. Documentation shall include operation instructions for supplied spreader control, hydraulic system schematics, installation instructions, and troubleshooting information. Documentation shall be provided in CD-ROM format.

18. **PRE-WET SYSTEM FOR SINGLE AXLE TRUCKS:**

- a. The tank shall be a minimum capacity of 95 gallons and constructed of stainless steel of hold pre-wet liquids with specific weight of up to 16 lbs./gallon. Any stainless steel areas to be welded shall be properly cleaned and welded with the proper stainless wire and trimix, He, CO2 and Argon. The type of stainless steel is to be determined by the Vendor to meet the 16 lbs./gallon criteria. The tank shall be mounted to the truck frame between the cab and dump body using a flexible connection. Upon installation the stainless steel tank shall be reinforced and shall be the support for the vertical muffler if required.
- b. The tanks shall have at least one (1) 4-inch minimum top threaded fillwell with screw down lid and one 1-inch quick disconnect bottom fill. The liquid filling hose has a Banjo 100F male coupling. The pre-wet tank to be installed on the truck requires a Banjo 100B or compatible female coupling. The tanks shall have a top splash proof vent.
- c. An float switch shall be installed in the bottom end of the tank connected to the cab control for automatic system shutdown when the tank is empty.

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- d. Mounting hardware includes all necessary stainless steel channels, tank pans, tank stops, all bolts and fasteners, strap rods, rub pad and nylon tie-down straps.
- e. Pre-wet system shall run off the dedicated hydraulic circuit from the main hydraulic valve.
- f. The liquid pump shall a self-priming, cast bronze rotary gear pump with pulse free positive displacement design. An aluminum bodied geroller style hydraulic motor drive the liquid pump. The hydraulic motor shall have side ports of the O-ring design. Pipe thread is not acceptable. A pressure compensated 12 VDC proportional flow control valve shall control the hydraulic flow going to the hydraulic motor. Pump shall have a continuous duty rating of 125 PSI and be capable of 9 GPM at 45 PSI. A built-in relief valve set at 45 PSI shall be included to protect against over-pressurization. The liquid pump and hydraulic motor shall be directly connected. A lovejoy coupler is not acceptable.
- g. Pumps shall be mounted in a stainless steel or NEMA 4x style weather tight enclosure that is resistant to UV light, chemicals and corrosion. Polyethylene plastic is not acceptable. All hydraulics inside enclosure shall be hard plumbed. Hydraulic connections shall be bulkhead style mounted in bottom of enclosure. Pump shall be plumbed through a 0-15 GPM flow meter, made of a non-corrosive material. The flow meter shall be a seametrics SPX-075-13. No substitutions shall be accepted.
- h. Flow control shall be 3 ported bypass design cartridge valve. Valve shall come with a screw adjustable manual override that allows continuation of operation in case of electrical failure.
- i. Pump shall come with flush port for pre-fill or flush of mechanical seal chamber.
- j. The spray system shall interface with and be completely controlled by the ground speed spreader control, with the ability to turn it off at any time. A separate cab console is not acceptable.
- k. The pre-wet shall maintain (10) ten gallons per ton of spreader material at any vehicle speed.
- l. Wiring and harness system should meet ISO rating IP68 and NEMA 6. The connectors should be zinc die cast E-coated, similar to a MIL spec connector. Each should have three sealing points - the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the whole connector. The cable jacket should be TPE - thermoplastic elastomer, and molded to the connectors. Connectors and harness should be rated and tested for a temperature range from - 30 degree C to + 70 degree C. Connectors should be tested to be water tight when submerged in 6 feet of water for 24 hours, in 275 feet of water for 1 hour, and when subjected to a 1000-psi pressure wash. The connectors should be designed to have NO corrosion after 5000 hours in a 35 degree salt spray. Cabling should be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld slag.

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- m. A minimum of two (2) brass spray nozzles, hose and quick disconnect that connects to the body brine quick disconnect fitting, shall be provided with mounting hardware. The body brine quick disconnect shall be mounted to the driver's side rear of the dump body. Bolt heads shall not be visible at the rear bottom of the dump body. The nozzles shall maintain a 120 degree fan spray throughout the system's chemical flow rate. A check valve shall be installed in the pressure line to prevent back flow or siphoning when the pump is off.
- n. Stainless steel male and female quick disconnect fittings shall be provided for tailgate brine connection.

19. **HYDRAULIC FITTINGS, SENSOR CONNECTIONS FOR SINGLE AXLE TRUCK:**

- a. The two auger hydraulic quick disconnect fittings and auger sensor harness connection shall be mounted under the passenger's side rear corner of the dump body. The hydraulic quick disconnect fittings shall be one-half inch stainless steel.
- b. The two spinner hydraulic quick disconnect fittings shall be mounted under the driver's side, rear corner of the dump body. The hydraulic quick disconnect fittings shall be one-half inch stainless steel.
- c. Stainless steel male and female quick disconnect fittings shall be provided for tailgate sander auger motor, spinner motor, and plow rotate.
- d. Bolt heads shall not protrude from the bottom rear of the dump body. This affect proper mounting of a tailgate sander.

20. **PLOW BALANCE VALVE:**

- a. System to be supplied with a plow balance valve. Valve to be designed to offset a specific (adjustable) plow weight when activated. Valve to be of cartridge and manifold design, and electrically activated. In the case of a load sense hydraulic system, the valve shall be activated by a single solenoid. In the case of an open center system, the valve is to be activated by two solenoids - one for the plow offset and one for an integral unloader.
- b. The plow balance system must not alter the operation of any other hydraulic function the vehicle or have an adverse effect on the performance of other hydraulically operated equipment including wing plow, body hoist, plow hoist or angle, or spreader functions. All normal operations of the plowlift/lower function must be maintained without additional tasks. Operation of any electrical switches beyond the normal up/down command to raise or lower the plow is not acceptable.
- c. The plow balance system shall remain electrically activated when lighting the plow from the road surface. Plow lift must be immediate. It is not necessary to turn off the system for plow lift. Plow lowering and return to balance mode must be done by activating the plow lever or switch to the lower mode.
- d. The plow balance system must be able to hold the plow in the up position indefinitely.
- e. The plow balance manifold shall be of cartridge style valving utilizing "floating" style cartridge valves. The valve body must be constructed of aluminum and have minimum construction hole plugs. All solenoid valve coils shall have manual override capabilities. Manifold must include a pressure test point for use when checking balance pressure. The pressure test point must be capable of tapping into the system at pressures of up to 5000 PSI.

21. **HYDRAULIC TESTING EQUIPMENT:**

- a. If special electronic hydraulic testing equipment is needed to perform trouble shooting and maintenance to perform trouble shooting and maintenance operation of the hydraulic equipment is needed. The supplier shall provide one (1) monitoring device for test hydraulic flow valves and pressure valves for the hydraulic system.
- b. A separate unit price shall be quoted for additional testing units.

22. **EQUIPMENT MANUALS:**

- 22.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 22.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy.
- 22.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy.

23. **TRAINING:**

- 23.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each main location that has received the equipment.
 - 23.1.1 Operator/Preventative Maintenance
 - 23.1.2 Operator Adjustments
 - 23.1.3 Minor Maintenance Repairs
 - 23.1.4 How to use the full capabilities of the equipment as well ad its safe and effective operation.

22. **OPTIONS:**

23.1 General:

- a. The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than when the truck is delivered.
- b. Hydraulic tester for test point listed above in 9.4.
- c. Furnish and install a Hood Reflector. This reflector minimizes the snow from collecting directly on the windshield from the snow plow.

SIX-WHEEL MEDIUM DUTY ALUMINUM DUMP TRUCK BODIES 25,599 GVW

STATEWIDE

SPECIFICATION "H"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. **GENERAL:**

It is the intent and purpose of these specifications to describe a new aluminum dump truck body complete with an underbody hoist, complete hydraulic system, snow plow frame, pre-wet system, modular 2-stick control console and ground speed control. These components shall be mounted by the Vendor on a new 25,599 GVW cab/chassis supplied elsewhere in this contract.

- 1.1 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.2 Body installer shall test the hydraulic capacity for all hydraulic circuits. This data shall be documented, using the chassis VIN, body model and body serial number, to differentiate between units. This data shall be given to the ordering Agency no later than upon delivery of the unit to the Ordering Agency. The data shall contain at a minimum, component manufacturer's minimums, maximums and actual readings on these components mounted on the unit.
- 1.3 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.4 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, and ready for immediate use.
 - c. Bidder must provide drawings and detailed component listing for all items described in this specification.
 - d. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include body model and serial numbers.
 - e. Operators manual shall accompany each delivered unit

2. **DUMP BODY:**

2.1 Description:

- a. The following specification shall describe a new and unused aluminum dump body. The body shall be designed for severe duty and be manufactured of aluminum as specified in the following. The body shall conform to all state and federal safety standards and shall include all components required to make an operational unit. The body shall be of the latest design. The following specifications are to be considered minimum. Continuously welded construction shall be used on the dump body except where noted.. All seams shall be fully welded. In areas where both sides of a seam are exposed, such as the front corners, both sides shall be fully welded. Vertical and horizontal braces shall be fully welded on top, sides and bottom in order to completely seal these members. All vertical posts and side braces will have bottom drain holes under the body.
- b. Exceptions to these standards shall be noted and completely described in writing with adequate supporting data to allow the ordering Agency to determine if the exceptions are acceptable. The ordering Agency has the final say regarding the acceptance of any exceptions to this specification.

2.2 Dimensions:

- a. Dump body shall be 10', 2.6 cubic yard capacity. The body shall have an inside length of not less than 120 inches. The inside width shall be 86 inches minimum. The sides shall measure 12 inches and the tailgate shall measure 18 inches. There shall be no slope on the gate. The outside width shall not exceed 96 inches. The sides shall have board extension pockets at the front and rear to accept 2" x 8" oak wood board. The front of the body shall be one piece and be of a height sufficient to allow proper clearance between the top of the cab and the cab shield. The cab shield shall extend no less than 12 inches forward of the front of the body. No body part shall be cast unless approved in writing by the ordering Agency. Design and other information follows:

2.3 The floor of the dump body shall be fabricated of a single sheet of .1875" aluminum. The materials shall be 5454-H34 alloy. The floor shall be flat full width, a distance no less than 78", and shall lock into the lower rub rail.

2.4 The lower rub rail shall be designed to provide strength and rigidity to the body and shall be formed of 5052H32. There shall be a 1" return flange under the cross members.

2.5 The sides of the body shall be fabricated from a single sheet of 180" 5052-H32 minimum aluminum alloy and include a single press vee. The side sheets shall be one piece with bottom rail. The side sheet shall extend from the flat surface on top of the lower rail to the top of the heavy duty top rail There shall be a 10" wide full height front post extending from the bottom rail to the top of the cab shield. The top rail shall be designed for severe duty and shall extend from the front post to the rear post with a triple top reinforcement.

2.6 The rear post shall be fabricated from a single sheet of .250" 5454-H34 aluminum and form a box section no less than 10" wide. The rear post shall be full depth extending from the top of the tailgate to the bottom of the full width rear bolster. The rear bolster shall be formed from .250" 6061 T6 alloy and tie the rear posts together for strength. The top of the rear post shall be flat. The rear post shall be sufficient depth to allow

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installation of recessed rubber mounted lighting. There shall be material shedding aluminum kick plates welded between the vertical side braces on an angle to prevent material build up in this area and produce a heavy-duty lower corner of the body to dissipate forces in this area. In addition, there shall be aluminum hideaway 18 degree slope ladder with grip strut steps bolted to the body understructure between the front and 1st post on left side of the body to allow access into and out of the body. All welding shall be 100%.

- 2.7 The front of the body shall be fabricated from a single sheet of .180", 5052 H32 minimum aluminum alloy and extend from 1/4" below the deck to a point high enough to allow proper clearance between the cab and cab shield. The inside of the front sheet shall be reinforced using integral formed channel members. The top formed member shall extend full width of the inside of the body.
- 2.8 The body shall be equipped with a cab shield extending a minimum of 12" forward of the front of the body. The cab shield shall be formed from a single sheet of .180" 5052 H32 minimum aluminum and be fabricated with a 2" slope to allow drainage, a 4" front and a 2" return flange. Side gussets shall extend from the front of the cab shield to the front sheet of the body. There shall be a 1" flange on the top and bottom of the side gussets. The side gussets shall taper from 4" wide at the front to a width of not less than 8" wide at the bulkhead. Cab shield designs, which are attached entirely to the front of the body, are not acceptable.
- 2.9 The tailgate shall be fabricated from a single sheet of .250" 5052 H32 minimum aluminum. The top hardware shall be aluminum and upward acting design. The receivers shall be aluminum and welded to the top of the rear post. The top pin assembly shall be held captive in the receivers. There shall be full perimeter bracing as well as two (2) additional vertical braces to make a 3-panel design. All bracing shall be extruded 6061-T6 aluminum alloy. All vertical bracing shall be of design for severe duty and strength. The lower tailgate pins shall be 1 1/4" diameter minimum and be into the lower tailgate extrusion. The lower hardware shall be of the overshot design. The latch fingers and backing plate shall be aluminum and welded to the rear post. Grease zerks shall be installed to allow lubrication of the hardware. There shall be 3/8" minimum coil proof chains attached to the top of the gate and be of sufficient length to hold the gate in the horizontal position. There shall be extruded "no jump" banjo plates attached to the rear post near the top and bottom. There shall be angles installed in the lower outside panels of the tailgate to hold the chains for spreader operations. Hooks shall be installed on the gate to hold the chains when not in use.
- 2.10 The tailgate operating devise shall be mechanical and operated from a manual handle located at the front corner of the body. The cross shaft shall be no less than 1" diameter and shall be located near the front of the body. There shall be a minimum of 3 greasable aluminum pillow blocks supporting the cross shaft. The steel connecting rod between the rear cross shaft and the front handle shall be no less than 5/8" diameter. The rod shall be adjustable at the rear shaft using an adjustable clevis. The latching mechanism shall be of the over center design. There shall be adjustable linkage rods connecting the rear cross shaft to the lower hardware. The tailgate shall be level with the floor in the horizontal position.
- 2.11 The understructure shall be of the stacked design, constructed of 6061-T6 extrusions and consisting of 4" I-beam longitudinales weighing no less than 1.85 pounds per foot and C shaped aluminum cross members on not more than 12" centers. The extruded cross members shall be 3". Each cross members shall be gusseted to the long member. The rear most cross member shall be designed with .250". The cross members shall weigh no

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less than 1.73 pounds per foot. Body cross members shall be full width. Welds shall be alternated front and rear of each cross member in accordance with approved welding practices.

- 2.12 There shall be lighting provisions in compliance with FMVSS108 as well as oval lights in the rear post for stop, tail, turn lights, and oval holes in the face and side of the cab shield for strobe lights. An additional aluminum bracket shall be attached to the outside of each rear post for installation of additional rear facing oval strobe lights. Provisions for all light wiring shall be included. All lighting shall be L.E.D.
- 2.13 Mud flaps shall be installed sub frame mounted forward and body mounted aft of the rear tires.
- 2.14 Forward mud guards shall be .190 aluminum 29 inches x 24 inches permanently truck frame attached. The aft flaps shall be full length body mounted heavy duty sta-put or anti-sail and anti-spray.
- 2.15 The dump body shall have a stainless, spring loaded holder for one long handle shovel.
- 2.16 The dump body shall not have any bolt heads extending from the rear bottom of the dump body. This interferes with tailgate sander installation.

3. **HOIST:**

- 3.1 Hoist shall be a double acting custom DAT5384-171-84 maximum 198 pound with a minimum lifting capacity of ten (10) tons when used with a ten (10) foot dump body minimum. The hoist shall be low-mount hoist with a 1-1/4" rubber cushion the full length of the long member of the body. A single, double acting cylinder must be the sole source of power. Lift capacities shall be calculated based on a maximum hydraulic working pressure of 2000 p.s.i. The hinge pin assembly shall be integral with the chassis frame rail and securely welded to the body. Hinge pins must be easily removable within special tools. Hoist must be painted with Epoxy primer and a polyurethane black paint.
- 3.2 Two body props providing a positive means of support for each both side of the dump body, permanently attached to the bottom of the dump body and capable of preventing accidental lowering of the empty body while maintenance or inspection work is being done shall be provided. The prop shall swing down and stop in the proper position so the dump body shall lower to the proper maintenance height using a one-man operation. The prop shall be able to lock the body position at one (1) level to hold body at the height of (12) twelve feet measured from the road surface to highest point of the dump body and attachments.

4. **BUMPER:**

- 4.1 A 3/8" x 3" x 5" angle shall be bolted to the factory bumper as an overlay with 1/2" ears on the angle to attach the bumper/axle plow hitch.
- 4.2 The bumper assembly shall be of sufficient strength to carry the components and perform snow plowing operations. The bumper attachment points shall be reinforced as necessary to accept the additional stress of plowing operations.

5. **TOW HOOKS & PINTLE HOOK:**

5.1 Chassis to be equipped with four (4) frame-mounted tow hooks two (2) on the front and two (2) on the rear placement to be determined by the ordering Agency at time of build and one (1) rear-mounted Hollard Model PH-T-60-A0L-8, 30,000 M.G.T. weight, or approved equal, swivel pintle hook braced to the frame side rails. Pintle hook shall be installed with a working height of 20" from the ground.

6. **PAINT:**

6.1 The snow plow attachments, bumper, dump body subframe, and aprons shall be finished in black. All steel components shall be painted with Insl-x activated epoxy primer EP-5065/EP-55BP primer and a polyurethane black top coat.

7. **LUBE POINTS:**

7.1 Vehicle shall have a centralized manual on board chassis grease lubrication system for components from the rear of the cab to the rear of the chassis - poly tubing, hard pipe shall be utilized. Brake S cam tube, pintle hook and brake slack adjusters, shall not be included in the central lubrication system. Each lube point shall be individually marked with location and remotely lube one lube fitting only. All lube fittings shall be centralized on driver's side of truck frame providing easy access to perform lube maintenance. Ref: Grease Jockey by Lubriquip, Inc., Groeneveld Lube System; Lincoln Lube System; Vogel Lubrication, Inc., J & J or Godwin Systems Type of system/process to be used shall be rendered and approved by the ordering Agency prior to the pilot inspection.

8. **ELECTRICAL SYSTEM:**

8.1 Two (2) plow lights shall be mounted on aluminum brackets on the fenders over the turn signals, approximately 12" above the fender. Plow lights shall be Grote 01-6429-14 or approved equal.

a. The plow lights shall be controlled by using the standard headlight circuit through the dimmer switch. After the dimmer switch, a two-position selector switch shall be inserted into the circuit from which the upper and lower headlight system shall be wired. The dash mounted selector switch shall allow the headlight system with the high or low beam selection controlled by the standard mounted dimmer switch. The parking, clearance and tail light circuits shall use the standard light switch to control their operation regardless of headlight system selected. The high beam indicator shall be wired to show high beam use in either headlight system. Any splice connection not wiring harness manufactured supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connections.

8.2 Two (2) sealed multi-functional, L.E.D. stop/turn/tail/backup light, three ICC clearance lights shall be LED and all flush-mounted in a plate bolted between the frame rails at the rear of the vehicle, and all side clearance lights shall be provide. An illuminated light plate bracket shall also be required. [DRAWING 1] All wiring from the junction block in the cab of the truck to all lights shall be include Grote Package # 01-6653-98 or approved equal. Any splice connection not wiring harness manufacturing supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connections.

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- 8.3 Two (2) 2" x 6" amber lens, high-intensity L.E.D. strobe lights, shall be mounted in the rear posts of the body. Additionally, two (2) 2" x 6" amber lens, high-intensity flush mount L.E.D. strobe lights shall be mounted on each side of cab protector so that each is visible from the side. Two (2) 2" x 6" amber lens high-intensity flush mounted L.E.D. strobe lights shall be mounted one in each side of the front of the cab protector and shall be visible from the front of the truck. The six L.E.D. strobes shall be attached to universal power supplies mounted in the cab. Any splice connections not wiring harness manufacturer supplied, shall be soldered and covered with sealant encapsulated heat shrink tubing to seal the connection.
- 8.4 Audio back-up warning device, automatically adjusting sound level (87-112 DBA rating).
- 8.5 Trailer light plug, Berg Model No. female connector 7-prong type heavy duty, or approved equal shall be installed. Wiring is to comply with SAE trailer wiring code (SAE J560B).

9. **HYDRAULIC SYSTEM AND CONTROL SYSTEM:**

9.1 General:

- a. The hydraulic system described herein is to supply power to operate the dump body hoist cylinder, snow plow lifting cylinder, snow plow reversing motor and material spreader spinner and auger functions. The system shall permit completely independent yet simultaneous operation of the dump body hoist and spreader. The hydraulic system shall return to low pressure standby when no functions are active..

9.2 Hydraulic Pump:

- a. Pump shall be of the variable displacement piston type. Pump shall be sized to allow for operation of all hydraulic functions. Pump shall be minimum 80cc displacement. If fit issues arise, pump size may change, but flow requirements remain the same. PTO ratio shall be used to maintain requested flow. Any pump change shall be approved by The ordering Agency. Hydraulic pump shall be driven by transmission PTO. PTO will stop pump if hydraulic fluid temperature becomes too hot or hydraulic fluid level in the tank is low.

9.3 Hydraulic Reservoir:

- a. The hydraulic reservoir shall have the capacity 40 gallons. It shall be frame mounted, constructed of 10-gauge steel. It shall be mounted to truck frame with a minimum of four (4) 1/2" grade 8 bolts. The inside of the reservoir shall have a 2" in-tank 100 mesh suction strainer with 5 p.s.i. bypass. Strainer to be rated at 75 gpm minimum. The 2 1/2" suction port shall exit the reservoir under the truck frame to allow space for other frame mounted components. It is to have a 2 1/2" ball valve wired in the opened position. There shall be two (2) 1" plugged return ports above and to the sides of the suction port. The return ports shall have diffusers inside to prevent aeration of hydraulic oil. There shall be a baffle inside to prevent oil sloshing.
- b. The top of the reservoir shall have a 10" diameter cleanout access with aluminum cover. This cover shall have a reusable neoprene gasket to seal the reservoir. The cover shall have an in-tank filter incorporated into it. The filter is

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to be a 10 micron cartridge type rated at 75 gpm and have a 25 p.s.i. bypass. It shall have a serviceable air filter incorporated to vent the tank. The filter assembly shall have a screw-on cap to aid in filling. It shall have a gauge port and a minimum of a 1" return port.

- c. There shall be a combination fluid level/temperature gauge visible standing besides the truck. The attaching nuts inside the tank for the fluid level/temperature gauge be tack welded in place to ease replacement.
- d. The reservoir bottom shall have a 3/4" magnetic drain plug. There shall be two (2) sensor ports (one each side) for float and temperature switches.

9.4 Hydraulic Test Point:

- a. One (1) hydraulic test point must be installed permanently, in the pump discharge line at a convenient point. This unit must be capable of reading flow, pressure and temperature without opening any hydraulic lines in the hydraulic system. All connections between the test point and the tester shall be of quick disconnect type UCC (US-STS-5237-210). All flow, pressure and temperature of simultaneous or individual functions of the entire hydraulic system must be measured from one point.

9.5 Suction Line: The suction line shall enter the front side of the tank a few inches off the tank bottom. The line shall be a minimum of 2 1/2" I.D. and be connected to the tank through a 2 1/2" full flow ball valve. The full flow ball valve shall be directly connected to the tank and union shall be placed between the full flow ball valve and suction hose. The suction line shall be equipped with a replaceable strainer.

9.6 Return Line: The return line shall enter the tank above oil level, extend to near the tank bottom and be cut on a 45 degree angle with flow tank entrance and be equipped with replaceable automotive type 10 micron oil filter having a minimum filter area of 1,250 square inches. Filter shall have condition indicator gauge, readily visible with body lowered and have the critical pressure clearly marked on the gauge. A 25 p.s.i. bypass valve shall be incorporated in the filter.

9.7 Liquid Level Switch: A 12-volt liquid level switch shall be provided in the tank which shall activate a read warning light in the cab when tank level drops to 1/2 capacity. Dash-mounted light shall be clearly labeled.

9.8 Sight Gauge: Wabco Model J-700153 kit or approved equal.

9.9 Hydraulic Lines:

- a. System shall be piped with high pressure hose long enough and pliable enough to insure easy removal and installation. All hoses shall be equipped with JIC swivels on each end of the hose for easy removal. Lines equipped with Aeroquip 5600 Series or approval equal quick couplers and dust caps shall extend to the vehicle rear for spreader operation and to the front bumper for the plow lift cylinder and plow reserving motor. The couplers on these lines shall be reversed, male-female, to prevent incorrect hook-up and mounted in collector manifolds. All couplers shall be furnished as a complete set. In cases where the lines are not connected to equipment, the mating part of each coupler shall be furnished as on-vehicle equipment. All lines shall be clearly and permanently labeled as the collector manifolds.

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9.10 Swivel Couplings:

- a. All fittings shall stainless steel permanently attached on hoses with swivel joints located at ends of each hose assembly.

9.11 Main Pressure Hose (minimum):

a. Hoist:

Size and Type:	3/4" I.D. double braided
Recommended Working Pressure:	2,250 p.s.i.
Minimum Burst Pressure:	9,000 p.s.i.

b. Plow Lift and Lower:

Size and Type:	3/8" I.D. double braided
Recommended Working Pressure:	4,000 p.s.i.
Minimum Burst Pressure:	16,000 p.s.i.

c. Spreader:

Size and Type:	1/2" I.D. double braided
Recommended Working Pressure:	3,500 p.s.i.
Minimum Burst Pressure:	14,000 p.s.i.

d. Return Hose (minimum):

Size and Type:	1" I.D. double braided
Recommended Working Pressure:	2,000 p.s.i.
Minimum Burst Pressure:	8,000 p.s.i.

e. Suction Hose (minimum):

Size and Type:	2" I.D. (SAE 100 R4)
Recommended Working Pressure:	100 p.s.i.
Minimum Burst Pressure:	400 p.s.i.
Inches Mercury Vacuum:	25

f. Main Pressure Line:

Size and Type:	1" I.D.
Recommended Working Pressure:	2000 p.s.i.
Minimum Burst Pressure:	4000 p.s.i.

NOTE: High pressure hydraulic hose shall not be acceptable as suction hose.

10. **SNOWPLOW ATTACHMENT AND LIFTING MEMBERS:**

- 10.1 Plow push frame shall be furnished and installed. The plow push frame shall be permanent frame mounted. The push frame 4" square tubing walls shall be 3/8 inch thick. Personnel from the ordering Agency shall approve the plow push frame during pilot model inspection.

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- 10.2 Hydraulic Lift Cylinder: Double acting, 4" bore x 10" stroke with nitrated or triple chrome plated rod and minimum working pressure of 2,000 p.s.i.
 - 10.3 Plow push frame quick disconnect fitting shall be 1/2 inch stainless steel. Both male and female fittings shall be provided.
 - 10.4 Plow will rotate left and right using cylinders.
 - 10.5 All bolts to be corrosion proof, multiple heat treated chrome nickel alloy furnace steel. Nuts to be corrosion proof, double heat treated high carbon steel. Lock washers to be corrosion proof.
11. **TARPS:**
- 11.1 Material and Construction:
 - a. The tarp shall be made of high quality 18 ounce, minimum, solid vinyl material. All stitching shall be accomplished by the use of bonded polyester thread.
 - b. Any heat sealed areas of the tarp shall also be stitched for use in asphalt applications.
 - c. Tarp system shall be designed to evenly roll the tarp onto the tarp spool.
 - d. Tension shall be applied to provide constant pressure on the tarp bow or an additional automatic support bar over the tarp to keep the tarp from rolling up or "sailing" during transport of materials.
 - e. Tarps shall not need drop sides in the Fleet.
 - f. Tarp bows shall be designed as not to encroach the side loading area of the body.
 - g. Tarp bows shall have mechanical stops mounted on the dump body as to not allow bow horizontal member to contact dump body.
 - 11.2 Arms and Springs:
 - a. The tarp bow framework shall be made from aluminum.
 - b. The springs to control to tarp arms shall be underbody mounted. Spring assembly shall be constructed so that replacement of the spring is simple without replacement of the arm assembly.
 - c. Mylar tape shall be applied between the steel and aluminum components to prevent oxidation from asimilar metals.

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- 11.3 Tarp Drive, Hydraulic:
- a. The hydraulic system controls shall be located inside of the truck cab within easy reach of the vehicle operator.
 - b. There shall be no chain drives in the construction of the tarp motor.
- 11.4 All wiring shall be protected as it passes through any portion of the body and truck cab to prevent chafing of the wire.
- 11.5 All wiring connections shall be soldered and covered with sealant encapsulated heat shrink tubing applied over the soldered connection. Crimped connectors of any kind shall not be accepted.
- 11.6 Tarp Shield/Wind Deflector:
- a. Tarp system shall incorporate a wind deflector to prevent tarp from unfolding during unloaded transport.
 - b. Wind deflector shall be constructed of aluminum or stainless steel.
 - c. Tarp shield shall be designed as to not trap material in the cab shield area and allow for easy cleaning to the cab shield area.

12. **CONTROL SYSTEM: (6 Wheeler)**

- a. The hoist shall be controlled by a single axis proportional control with a safety or "dead-man" switch integrated in the control.
- b. The plow functions shall be controlled by a dual axis, multiple proportional joystick (a single control for all functions is optional) with an on/off switch integrated in the plow stick for optional remote blast or pass. If a single control is provided, it must be of a three axis design. Mode switches shall be used to determine active hydraulic functions. For the single stick system, a remote mounted display shall be provided for easy operation of the system.
- c. The front bay shall be modular for expansion to a third or fourth electronic joystick control for additional hydraulic functions such as wing plow or underbody scraper. All joysticks shall be operated through the CAN control network. Hardwired joysticks are unacceptable.
- d. Controls shall have integrated float circuit(s) for plow, blade and wings by either auxiliary input from proximity, pressure or timing logic.
- e. The control console shall be between the seats on a pedestal bolted to the cab floor with height and swivel adjustments to provide easy operation for the driver. Seat mounted controls are not acceptable. All extra harness shall be in the cab. Three feet of harness slack is allowed. All extra shall be properly secured according to the harness manufacturer's requirements.

13. **ACCESSORY SWITCH CONTROLS:**

- a. The switch bays shall be compatible with either standard rocker switches or the TouchGuard switch system. The console may be configured with both types of switches depending on the configuration desired.
- b. If the TouchGuard switch system is chosen, switches shall be field programmable with dipswitches to allow selection from momentary to on/off. The switch legends shall also be easily replace and changed in the field.
- c. The switches, when specified TouchGuard, shall have visible green LED backlighting when in the off position and changed to red LED when depressed by the operator.
- d. The switch pads should be easily serviceable by a detachable cable and four (4) mounting screws for field replacement. There shall be integral connections with the accessory switch circuits to the logic control center to allow for self-diagnostic system monitoring. Upon any switch circuit failure, the switch console shall have an audible alarm and with flashing red L.E.D.'s. Depressing the switch to the "off" position shall disable the switch function. The console shall allow for integration with the TouchGuard switch control system or standard Sprague rocker switch and indicators.

14. **HYDRAULIC VALVE:**

- a. Valve to be of the closed cast iron sectional type.
- b. The valve shall be pre-compensated for flow and pressure to allow simultaneous operation of functions.
- c. The valve shall be provided with load sense type inlet to allow use of a closed center valve and be attached as part of the main valve assembly. An optional unloader type inlet shall be available to facilitate use of a fixed displacement gear pump if desired. This option shall be available without changing the valve manufacturer or type.
- d. Separate sections shall be provided for plow raise/lower, plow angle, dump body hoist, auger/conveyor, spinner and hydraulic tarp. Flows on plow raise/lower to be controlled with a stroke limiter integral to the valve. The flow control shall allow adjustment of speed of the plow functions to be regulated. Dump body hoist section shall be designed so as to have integral work port relief valves installed on both sides. A side relief shall be set to 500 PSI, B side relief shall be set to 2000 PSI. Spreader circuit valve sections to be provided with proportional coil actuators to interface with the specified hydraulic control system. Auger/conveyor section shall have an on-off, momentary reverse feature to allow a material jam to be cleared. Pre-wet and anti-icing systems run from dedicated hydraulic circuits located in the integrated spreader valve manifold. Individual valve spools shall be sized to properly control the specified functions taking into account the current available pump flow. Power beyond feature to be provided as part of the valve assembly. Sauer Danfoss PVG32/100 or approved equal.

15. **HYDRAULIC SYSTEM CONTROL:**

- a. The controller shall provide for accurate spreading of granular, pre-wet liquid and direct liquid such as anti-icing materials. The controller shall have expansion capability or accommodate a second liquid function that shall provide simultaneous operation of two liquid systems if desired as well as granular. Controller must be supplied completely integrated with the above specified control console. All wiring shall be completely interfaces with the appropriate module. Joystick controls shall be interfaced with the system to operate all cylinder functions. These joysticks must communicate through the CAN network. Hard wired joysticks are unacceptable.
- b. The operator interface shall be traditional knobs and buttons to control spreader functions. The use of a touch screen unacceptable. The controller shall have a touch switch to activate the liquid function(s). This switch shall enable the liquid system determined in the operating mode. There shall be up to three operating modes to select with the single liquid systems and four modes with the dual liquid systems. The ability of the operator to select granular only, liquid only, granular and pre-wet, and a combination of granular, pre-wet and anti-icing with be available in the operating mode depending on equipment selected.
- c. And granular and liquid systems shall stop when the vehicle stops. Upon vehicle movement all systems active shall resume dispensing. The controller must be capable of operating most current pulse width modulated valves. Valve electrical characteristics shall be adjustable in the programming mode to allow for monitoring of the valve circuit.
- d. The controller shall be backlit and have a 4" x 6" TFT LCD graphic display with auto dimming back light. LED, color or vacuum florescent display is unacceptable.
- e. The display shall show the current material type being spread, miles per hour and the desired application rate. The display shall have application totals information available through the use of a soft key input. This information must be available to the equipment operator without the use of a password. The display shall also show your liquid rate in gallons per ton of granular, gallons per mile for anti ice. Total gallons dispensed must be part of the available data set for download.
- f. The control shall have the ability to adjust automatically for gate height changes if selected in equipment and eliminate the need for re-calibration of the vehicle if gate height is changed. The display shall show the operator via a graphic icon gate height changes and gate opening in inches.
- g. The controller shall have the ability to accommodate a spinner sensor for closed loop spinner. The number of lanes being spread during closed loop spinner shall be shown graphically in the operating mode. The granular rates shall automatically be adjusted to maintain the desired rate selected by the operator eliminating the need to manually increase the rate if the number of lanes spread is changed.

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- h. All the above shall be visible during normal operation. The display shall also alert the operator to any errors in the input signals detected by the microprocessor self-diagnostic system. The use of numeric error codes is not acceptable.
- i. The controller shall have "on-screen" menu based programming using the panel controls for setup and calibration. Access to setup and calibration shall be gained by use of a programmable access code. The system shall have 3 levels of security - an operator level that allows operation of the system, technician level to allow system calibration and administrate level for top level system settings. The need for additional inputs or screens for setup and calibration is unacceptable.
- j. The controller shall be capable of both automatic and manual modes. The ability to lock out manual mode shall be available in the programming mode. The use of detented lane width and spread rate switches in not acceptable. The rate and spinner speed shall be through the use of 16 position magnetic encoder. The communication port shall supply serial data and provide real time data used for AVL/GPS integration via the use of the Freedom ATS telemetry device. Information such as truck ID, recent and annual information including: pounds total, miles total, pounds per mile average, gallons of liquid material, miles traveled with liquid on, percent miles in auto mode, average mile per hour and maximum miles per hour. Other stored calibration information shall be available such as all equipment settings, all calibration settings, and all material information as well as equipment options information.
- k. The controller shall provide for six Material types. Information such as material name, blast duration, blast mode and maximum application rate, increment rate and ground speed required for blast shall be stored with each material type.
- l. The controller shall have the ability to operate in either open loop or closed loop feeder operation. The feeder shall stop when the vehicle stops. Upon vehicle movement the feeder shall start to spreader automatically and shall incorporate and adjustment valve trim "start percentage" to assist in performance with low-resolution speedometer signals. In the even to a feeder sensor failure, the control shall revert to open loop operation. This shall be done from automatically during operation and the error announced to the operator via audible and visual means. This shall allow for temporary open loop ground speed control until the feeder (auger) sensor circuit is corrected.
- m. The controller shall be mounted in a way to provide the best operator usability and safe vehicle operation. All sensors and cables shall be provided to make the system complete and usable.
- n. Software to download shall be Microsoft Internet Explorer 6 or 7. Use of proprietary software to allow download to a Windows based laptop computer is unacceptable. The use of proprietary hand held devices is not acceptable. Data obtained from the spreader control shall contain all calibration settings, as well as material usage totals as described above.
- o. Component Technology Storm Guard Freedom ACS Model SG219 or approved equal.

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- p. The system shall maintain between 100 to 800 pounds of spreader material per single lane mile, at any legal road speed.

16. **WIRING:**

- a. Wiring and harness system shall meet ISO rating IP68 and NEMA 6.
- b. The connectors shall be zinc die cast E-coated, similar to a MIL spec connector. Each should have three sealing points - the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the whole connector.
- c. The cable jacket shall be TPE - thermoplastic elastomer, and molded to the connectors.
- d. Connectors and harness shall be rated and tested for a temperature range from - 30 degree C to + 70 degree C. Connectors shall be tested to be water tight when submerged in 6 feet of water for 24 hours, in 275 feet of water for 1 hour, and when subjected to a 1000-psi pressure wash. The connectors to be designed to have NO corrosion after 500 hours in a 35 degree C salt spray.
- e. Cabling shall be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld sag.
- f. The body electrical plug, which connects to the auger motor harness, shall be mounted under the right rear bottom corner of the dump body, adjacent to the hydraulic quick disconnects.

17. **SYSTEM DOCUMENTATION:**

- a. System documentation shall be provided to the ordering Agency. Documentation shall include operation instructions for supplied spreader control, hydraulic system schematics, installation instructions, and troubleshooting information. Documentation shall be provided in CD-ROM format.

18. **PRE-WET SYSTEM FOR SINGLE AXLE TRUCKS:**

- a. The tank shall be a minimum capacity of 45 gallons and constructed of poly to hold pre-wet liquids with specific weight of up to 16 lbs./gallon. The type of poly is to be determined by the Vendor to meet the 16 lbs./gallon criteria. The tank shall be mounted to the truck frame just ahead of rear wheel using a flexible connection. All mounting brackets and hardware shall be stainless steel.
- b. The tanks shall have at least one (1) 4-inch minimum top threaded fillwell with screw down lid and one 1-inch quick disconnect bottom fill.
- c. An electric float switch shall be installed in the bottom end of the tank connected to the cab control for automatic system shutdown when the tank is empty.
- d. Mounting hardware includes all necessary stainless steel channels, tank pans, tank stops, all bolts and fasteners, strap rods, rub pad and nylon tie-down straps.

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- e. Pre-wet system shall run off the dedicated hydraulic circuit from the main hydraulic valve.
- f. The liquid pump shall a self-priming, cast bronze rotary gear pump with pulse free positive displacement design. An aluminum bodied geroller style hydraulic motor drive the liquid pump. The hydraulic motor shall have side ports of the O-ring design. Pipe thread is not acceptable. A pressure compensated 12 VDC proportional flow control valve shall control the hydraulic flow going to the hydraulic motor. Pump shall have a continuous duty rating of 125 PSI and be capable of 9 GPM at 45 PSI. A built-in relief valve set at 45 PSI shall be included to protect against over-pressurization. The liquid pump and hydraulic motor shall be directly connected. A lovejoy coupler is not acceptable.
- g. Pumps shall be mounted in a stainless steel or NEMA 4x style weather tight enclosure that is resistant to UV light, chemicals and corrosion. Polyethylene plastic is not acceptable. All hydraulics inside enclosure shall be hard plumbed. Hydraulic connections shall be bulkhead style mounted in bottom of enclosure. Pump shall be plumbed through a 0-15 GPM flow meter, made of a non-corrosive material. The flow meter shall be a seametrics SPX-075-13. No substitutions shall be accepted.
- h. Flow control shall be 3 ported bypass design cartridge valve. Valve shall come with a screw adjustable manual override that allows continuation of operation in case of electrical failure.
- i. Pump shall come with flush port for pre-fill or flush of mechanical seal chamber.
- j. The spray system shall interface with and be completely controlled by the ground speed spreader control, with the ability to turn it off at any time. A separate cab console is not acceptable.
- k. The pre-wet shall maintain ten gallons per ton of spreader material at any vehicle speed.
- l. Wiring and harness system should meet ISO rating IP68 and NEMA 6. The connectors should be zinc die cast E-coated, similar to a MIL spec connector. Each should have three sealing points - the lock ring itself, a raised portion of the molded plastic around each pin, and a viton O-ring that seals the whole connector. The cable jacket should be TPE - thermoplastic elastomer, and molded to the connectors. Connectors and harness should be rated and tested for a temperature range from - 30 degree C to + 70 degree C. Connectors should be tested to be water tight when submerged in 6 feet of water for 24 hours, in 275 feet of water for 1 hour, and when subjected to a 1000-psi pressure wash. The connectors should be designed to have NO corrosion after 5000 hours in a 35 degree salt spray. Cabling should be rated excellent in low temperature flexibility and in its resistance to oxidation, heat, oil, weather, sun, ozone, abrasion, electrical priorities, flame, water, water, acid, alkali, gasoline, benzol, toluol, degreaser solvents, alcohol, and weld slag.

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- m. A minimum of two (2) brass spray nozzles, hose and quick disconnect that connects to the body brine quick disconnect fitting, shall be provided with mounting hardware. The body brine quick disconnect shall be mounted to the driver's side rear of the dump body. Bolt heads shall not be visible at the rear bottom of the dump body. The nozzles shall maintain a 120 degree fan spray throughout the system's chemical flow rate. A check valve shall be installed in the pressure line to prevent back flow or siphoning when the pump is off.
- n. Stainless steel male and female quick disconnect fittings shall be provided for V-Box brine connection.

19. **HYDRAULIC FITTINGS, SENSOR CONNECTIONS FOR SINGLE AXLE TRUCK:**

- a. The two auger hydraulic quick disconnect fittings and auger sensor harness connection shall be mounted under the passenger's side rear corner of the dump body. The hydraulic quick disconnect fittings shall be one-half inch stainless steel.
- b. The two spinner hydraulic quick disconnect fittings shall be mounted under the driver's side, rear corner of the dump body. The hydraulic quick disconnect fittings shall be one-half inch stainless steel.
- c. Stainless steel male and female quick disconnect fittings shall be provided for tailgate auger motor and spinner motor and plow rotate.
- d. Bolt heads shall not protrude the bottom rear of the dump body. This affects proper mounting of a tailgate sander.

20. **PLOW BALANCE VALVE:**

- a. System to be supplied with a plow balance valve. Valve to be designed to offset a specific (adjustable) plow weight when activated. Valve to be of cartridge and manifold design, and electrically activated. In the case of a load sense hydraulic system, the valve shall be activated by a single solenoid. In the case of an open center system, the valve is to be activated by two solenoids - one for the plow offset and one for an integral unloader.
- b. The plow balance system must not alter the operation of any other hydraulic function the vehicle or have an adverse effect on the performance of other hydraulically operated equipment including wing plow, body hoist, plow hoist or angle, or spreader functions. All normal operations of the plowlift/lower function must be maintained without additional tasks. Operation of any electrical switches beyond the normal up/down command to raise or lower the plow is not acceptable.
- c. The plow balance system shall remain electrically activated when lighting the plow from the road surface. Plow lift must be immediate. It is not necessary to turn off the system for plow lift. Plow lowering and return to balance mode must be done by activating the plow lever or switch to the lower mode.
- d. The plow balance system must be able to hold the plow in the up position indefinitely.

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- e. The plow balance manifold shall be of cartridge style valving utilizing "floating" style cartridge valves. The valve body must be constructed of aluminum and have minimum construction hole plugs. All solenoid valve coils shall have manual override capabilities. Manifold must include a pressure test point for use when checking balance pressure. The pressure test point must be capable of tapping into the system at pressures of up to 5000 PSI.

21. **HYDRAULIC TESTING EQUIPMENT:**

- a. If special electronic hydraulic testing equipment is needed to perform trouble shooting and maintenance to perform trouble shooting and maintenance operation of the hydraulic equipment is needed. The supplier shall provide one (1) monitoring device for test hydraulic flow valves and pressure valves for the hydraulic system.
- b. A separate unit price shall be quoted for additional testing units.

22. **EQUIPMENT MANUALS:**

- 22.1 The successful vendor shall furnish a complete **Operating Manual**, written or on CD. There should be a manual or CD for each unit purchased.
- 22.2 The successful vendor shall furnish a complete set of **Shop Repair** manuals, written or on CD. There should be manuals for each unit purchased with an extra copy.
- 22.3 The successful vendor shall furnish a complete set of **Parts Manuals** written or on CD. There shall be manuals for each unit purchased with an extra copy.

23. **TRAINING:**

- 23.1 The successful vendor shall arrange with the chassis manufacture to conduct, at a minimum of four (4) hours the following training classes at each main location that has received the equipment.
 - 23.1.1 Operator/Preventative Maintenance
 - 23.1.2 Operator Adjustments
 - 23.1.3 Minor Maintenance Repairs
 - 23.1.4 How to use the full capabilities of the equipment as well ad its safe and effective operation.

22. **OPTIONS:**

- 22.1 General:
 - a. The unit price for each of the options listed below shall be calculated into the final total bid price and shall be used in determining low-bidder. All ordered options shall be delivered no later than when the truck is delivered.
 - b. Hydraulic tester for test point listed above in 9.4.
 - c. One (1) additional plow frame
 - d. Furnish and install a Hood Reflector. This reflector minimizes the snow from collecting directly on the windshield from the snow plow.

STEEL FLAT BED TRUCK BODY

STATEWIDE

SPECIFICATION "I"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. **GENERAL:**

It is the intent and purpose of these specifications to describe a **Steel Flat Bed Truck Body complete with step bumper**. These components shall be mounted by the vendor on new vehicles supplied elsewhere in this contract.

- 1.1 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.2 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.3 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, and ready for immediate use.
 - c. Bidder must provide drawings and detailed component listing for all items described in this specification. All body materials listings must include MIL specification.
 - d. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include body model and serial numbers.
 - e. Operators manual shall accompany each delivered unit

2. **BODY CONSTRUCTION:**

- 2.1 The body deck length shall be 12' nominal and 96" nominal in width.
- 2.2 The deck shall be constructed with 3/16 inch Tread Plate Steel (36,000 psi yield).
- 2.3 Long sills shall be structural 5-inch steel channel. (12.25 # per ft.)
- 2.4 An oak runner 2" x 3" shall be mounted between chassis frame and long sill.
- 2.5 Cross members shall be installed on 12" centers constructed of 4" structural steel channel. (5.4 # per ft.)
- 2.6 Minimum of six (6) 5/8" U-bolt tie downs shall be installed to secure body to chassis. Minimum, 1/2" steel shear plate both sides from chassis frame to body long members to prevent forward body movement in case of rear impact.
- 2.7 Headboard shall be 48 inches high by 96 inches wide, flush mount with a minimum of four (4) vertical structural steel 3" channel (4.1 # per ft.) uprights that are integral welded to the longsills and side rail. Headboard shall have a screen window to match the chassis rear window. Headboard material shall be 3/16 inch smooth steel.
- 2.8 Rub rails shall be one-piece each side six inch minimum width with stake pockets built into rub rail placed every two feet along the body sides. There shall be no stake pockets across the rear of the body. Six inch channel fill parameter with tie rub down both sides. Stake decked on 24 inch center.

3. **UNDERBODY STORAGE:**

- 3.1 Mounted under the right and left front of the body shall be one (1) Bawer TU 822505 all stainless steel underbody tool box., 18"H X 18"D X 30"L. Includes full length drop down door, gas shock door retainer, full perimeter door seal, stainless steel door hinges and locking latch. Includes aluminum mounting brackets with all grade 8 mount hardware. Box features full body polished stainless steel finish.

4. **REAR STEP BUMPER:**

- 4.1 The bumper shall be installed 24 inches from the top of the flatbed body to the top of the bumper. The bumper shall be made from 10-inch load bearing channel (20# per ft.) steel providing a 10 inch wide step with 5-inches of bumper exposed beyond the back edge of the truck bed. The bumper shall be 90 inches wide with the outside edges rounded, boxed and ground smooth. It shall have two (2) upright supports mounted to the body with support braces mounted to the frame of the truck. (See attached Diagram)
- 4.2 A step shall be installed from the body down to the bumper with one (1) skid-proof rung welded in place. The step uprights shall be constructed of 1 1/2" box steel or approved equal. The step shall be placed half way between the body top and the top of the bumper.

5. **ELECTRICAL, LIGHTING AND REFLECTORS:**

- 5.1 All lighting, markers, turn signals and brake lights on the truck body shall be Grote, Pederson L.E.D. lighting systems. All lighting shall be recessed in body mounted in rubber grommets. All splices made outside of the truck cab shall be soldered and shrink wrapped. No butt-splice crimped and tape wrapped connections shall be accepted. No splice boxes shall be installed anywhere outside of the truck cab.
- 5.2 D.O.T. approved high intensity red/white reflective tape shall be installed along the rub rails and across the back of the body edge.
- 5.3 Audio back-up warning device, automatically adjusting sound level (87-112 DBA rating).

6. **PAINT:**

- 6.1 All components shall be painted black. All steel components shall be painted with activated Epoxy Primer and a polyurethane black top coat. Powder coat paint is acceptable.

7. **EQUIPMENT MANUALS:**

- a. Service, Troubleshooting, Shop Repair and Parts Manuals or CD ROMS shall be provided for all components in the following quantities:
- b. One (1) set of shop service, repair, troubleshooting and parts manuals, CD ROM, or username and password for manufacture's web site covering all installed components.

HEAVY DUTY CRANE/SERVICE BODY

STATEWIDE

SPECIFICATION "J"

INTENT AND PURPOSE:

The following shall indicate minimum requirements, including all components, accessories and safety features considered standard, necessary to make a complete operating unit, whether identified herein or not. No components normally offered as standard items may be deleted without written ordering Agency approval.

1. **GENERAL:**

It is the intent and purpose of these specifications to describe a Steel Heavy-Duty Corner Mount Crane Utility Body complete with Step Bumper and Trailer Hitch. These components shall be mounted by the vendor on new vehicles supplied elsewhere in this contract.

- 1.1 Vehicles must conform with all Federal and Delaware Motor Vehicle Laws. In addition the units shall as a minimum, comply with all applicable Federal Safety Standards, including, but not limited to the provisions of D.O.T. FMCSA Regulation Part 393 and Subpart O, Paragraph 1926.601, O.S.H.A. Safety and Health Regulations for Construction. All component installers shall also conform to the latest recommendations, procedures, and regulations of the following: ASME, ASTM, API, AWS, FPS, ICC, ISO, JIC, MSS, NFPA, NEMA, NTEA, SAE, TIMA, AND USAISI.
- 1.2 Once the pilot model is inspected, the rest of the assembled units shall be assembled consistently according to the pilot.
- 1.3 Prior to delivery, the units shall be:
 - a. Complete with accessories, equipment and options properly installed and operable.
 - b. Clean, lubricated, and ready for immediate use.
 - c. Bidder must provide drawings and detailed component listing for all items described in this specification. All body materials listings must include MIL specification.
 - d. Provide a copy of the manufacturer's service and warranty policy with all warranty verification vouchers, certificates or coupons and line-setting tickets to include body model and serial numbers.
 - e. Operators manual shall accompany each delivered unit

2. **CAPACITY:**

- 2.1 Capable of handling up to 38,400 ft-lbs of crane moment load in all positions of rotation.

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- 2.2 Be stable with full-load crane with rear outriggers fully deployed when mounted on adequate chassis as specified below.
- 2.3 No front corner outriggers are required for stability

3. **STRUCTURAL BODY REQUIREMENTS:**

- 3.1 Body understructure shall be constructed with cross sills full width of the body. Longitudinal reinforcements shall be structural 6" X 2" X .38" wall and tubing.
- 3.2 The body shall be a minimum of heavy-duty double wall construction fully seam welded 3/8" tread plate over 14 ga galvaneal compartment tops, back, bulkhead, tailgate, end panels, partitions, doors, shelves, fenderskirts and lower panels.
- 3.3. The curb side rear compartment shall have crane mounting and reinforcements. The crane shall be supported at a minimum of 1/2" thick mounting plate tied into chassis frame. Mounting and reinforcements shall be capable of crane capacities of up to 25,000 foot pounds minimum rotated 360 degrees around the body. The rear manual stabilizers shall be supplied to adequately support a 20,-000 foot pound minimum rated crane.

4. **COMPARTMENT CONFIGURATION:**

- 4.1 The body compartment clear door openings shall be configured for a 11 foot body.

Minimums are:

A. Front Vertical:	29-1/2" X 43-1/2"
B. Second Front Vertical:	15-1/2" X 43-1/2"
C. Horizontal:	17-1/2" X 51-1/2"
D. Rear Vertical:	19-1/2" X 43-1/2"

- 4.2 The door locks shall be stainless steel rotary latch individually keyed the same.
- 4.3 Each compartment shall have interior lighting with guards and shall be controlled by the vehicles lighting in the chassis.
- 4.4 Six (6) 2,000 lb capacity cargo tie-down rings shall be installed in the body side wall.

5. **REAR STEP BUMPER:**

- 5.1 The rear step bumper shall contain manual outriggers to stabilize the truck when using the crane. The bumper shall also have a vise bracket with a 6" vise mounted so as not to interfere with the outriggers.
- 5.2 The rear bumper shall have a 201/2" pintel hitch receiver.

6. **ELECTRICAL, LIGHTING AND REFLECTORS:**

- 6.1 All lighting shall be L.E.D.
- 6.2 Two (2) red L.E.D strobe lights shall be flush mounted in the rear on each side of the body.

7. **PAINT:**

7.1 The body shall be primed with multiple coats of gray epoxy chemically linked and then oven cured to provide superior corrosion resistance. The body shall be completely undercoated. Interior is to be painted with a light gray finish. The exterior shall be finished with a minimum of 4mils of highway orange polyurethane DuPont Centari 31AH or approved equal.

8. **RUST PROOFING WARRANTY:**

8.1 All vehicles provided under this contract shall be guaranteed not to rust through in the body structure for a period of five (5) years. Guarantee shall be provided in writing for each unit provided. In the event of rust-through the vendor shall be required to repair the damage and refinish the area repaired using the same specification above. The transportation cost to and from the repair facility shall be borne by the vendor.

9. **EQUIPMENT MANUALS:**

- a. Service, Troubleshooting, Shop Repair and Parts Manuals or CD ROMS shall be provided for all components in the following quantities:
- b. One (1) set of shop service, repair, troubleshooting and parts manuals, CD ROM, or username and password for manufacture's web site covering all installed components.

STATE OF DELAWARE
Office of Management and Budget
Government Support Services

IX. PROPOSAL REPLY SECTION for CONTRACT NO. GSS11617-HEAVY TRUCKS

Heavy Duty Trucks

- A. Please fill out the attached forms fully and completely and return with your proposal in a sealed envelope clearly displaying the contract number to the State of Delaware, Government Support Services by 2:00 p.m. July 26, 2011 at which time bids will be opened.

NO MANDATORY PRE-BID MEETING

Proposals must be delivered to:

Delivery Service:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
800 BAY ROAD
DOVER, DE 19901

U.S. Mail:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
PO Box 778
DOVER, DE 19903

PUBLIC PROPOSAL OPENINGS

- B. The public proposal opening insures the citizens of Delaware that contracts are being proposed fairly on a competitive basis and comply with Delaware procurement laws. The agency conducting the opening is required by law to publicly open the proposals at the time and place specified and the contract shall be awarded within ninety (90) days thereafter. The main purpose of the proposal opening is to reveal the name(s) of the Vendor(s), not to serve as a forum for determining the apparent low Vendors. The disclosure of additional information, including prices, shall be at the discretion of the contracting agency until such time that the responsiveness of each proposal has been determined.

After receipt of a fully executed contract(s), the Delaware public and all Vendors are invited to make an appointment with the agency in order to review pricing and other non-confidential information.

NOTE: ONLY THE VENDOR'S NAME AND ADDRESS MAY BE READ AT THE OPENING

C. Proposal Preparation

To be considered, all proposals must be submitted in writing and respond to the items outlined in this CSP using the requested forms and format. Emphasis should be on completeness and clarity of contents. Facsimile responses to this Request for Proposal are not acceptable. Proposal responses will be expected to address the following areas, and the submission should be stapled or bound, tabbed and collated in the following order:

1. Cover Letter – Two pages maximum -Each proposal shall have a cover letter on the letterhead of the Vendor submitting the proposal. At the top of the first page, list the Technical Representative's Name, Telephone Number and e-mail address. This will be the main contact representing the proposer. The cover letter shall list the primary location of the vendor and any additional locations. Summarize the vendor's affiliation with the manufacturers of the proposed articles for bid, the number of years of affiliation, and the vendor's service and parts availability. Also, state the number of service department employees at each location.

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2. Warranty – Two pages maximum -The vendor shall submit a statement that their warranty for all items bid meets the requirements of section VII C. The vendor shall also state if their proposal exceeds the minimum warranty requirements and give an explanation for all coverage in excess of section VII C. The vendor shall explain experience in the processing of warranty claims, their average turnaround time for heavy-duty truck warranty work, and locations warranty work is provided.
3. Company Facilities - Proposers will be required, if requested by the Agency, to furnish satisfactory evidence that they are qualified as a heavy-duty equipment vendor, having a regularly established place of business. An inspection by the Agency of any proposer's place of business may be made to determine whether satisfactory physical facilities are available to fulfill the requirements of the detailed specifications, which may be considered to be pre-qualifying.
4. Bid Pages -All vendors who wish to be considered for this contract shall specify unit bid amounts on the forms provided. The unit bid amounts shall be inclusive of all services, materials, equipment and incidentals necessary for delivery and acceptance, as per the specifications.
5. Bid Forms -Vendors are not required to submit bids for each Specification, however, if not submitting a bid for a particular specification, the bid form page must be submitted with the words 'NO BID' entered upon it. If not bidding "Option" items, write in 'NO BID'.
6. Order Specifications -The bidder must furnish an itemized order acknowledgment form showing how the unit proposed will be equipped. Brochures or shop drawings should also be provided. Award of the contract to a bidder will not be made until the Agency is able to compare and determine if the unit(s) offered complies with the intent of the attached specifications. The Agency shall be the sole judge in this determination. A blanket statement that proposed equipment meets all specified requirements is not acceptable to establish equivalence.

- end -

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ATTACHMENT 6

OMWBE Certification Application found here:

<http://gss.omb.delaware.gov/omwbe/certify.shtml>

State of Delaware

Office of Minority and Women Business Enterprise Certification Information



Complete application and send via email, fax or mail to:

Office of Minority and Women Business Enterprise (OMWBE)
100 Enterprise Place Suite # 4 Dover, DE 19904-8202 Telephone: (302) 857-4554 Fax: (302) 677-7086
Email: deomwbe@state.de.us

Web site: <http://gss.omb.delaware.gov/omwbe/index.shtml>

Link to Certification Application: <http://gss.omb.delaware.gov/omwbe/certify.shtml>

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Attachment 7

NO PROPOSAL REPLY FORM

CONTRACT # GSS11617-HEAVY_TRUCKS

CONTRACT TITLE: Heavy Duty Trucks

To assist us in obtaining good competition on our Request for Proposals, we ask that each firm that has received a proposal, but does not wish to bid, state their reason(s) below and return in a clearly marked envelope displaying the contract number. This information will not preclude receipt of future invitations unless you request removal from the Vendor's List by so indicating below, or do not return this form or bona fide proposal.

Unfortunately, we must offer a "No Proposal" at this time because:

- _____ 1. We do not wish to participate in the proposal process.
- _____ 2. We do not wish to bid under the terms and conditions of the Request for Proposal document. Our objections are:

- _____ 3. We do not feel we can be competitive.
- _____ 4. We cannot submit a Proposal because of the marketing or franchising policies of the manufacturing company.
- _____ 5. We do not wish to sell to the State. Our objections are:

- _____ 6. We do not sell the items/services on which Proposals are requested.
- _____ 7. Other: _____

FIRM NAME

SIGNATURE

_____ We wish to remain on the Vendor's List **for these goods or services.**

_____ We wish to be deleted from the Vendor's List **for these goods or services.**

BID PROPOSAL FORMS

CONTRACT GSS11617-HEAVY_TRUCKS

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "A"
TEN WHEEL TRUCK TRACTOR/CHASSIS

PAGE 01

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	4	SPECIFICATION "A" 10 WHEEL TRUCK TRACTOR/CHASSIS _____ UNIT - EACH	_____
2	4	Option Item Heated Windshield _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

**GSS11617-HEAVY_TRUCKS
Bid Proposal Form**

SPECIFICATION "B"

PAGE 02

TEN WHEEL TRUCK CAB/CHASSIS 64,000 GVW WITHOUT WING PLOW CONFIGURATION OR PLOW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	50	SPECIFICATION "B" 10 WHEEL TRUCK CAB/CHASSIS 64,000 GVW WITHOUT WING PLOW CONFIGURATION OR PLOW _____ UNIT - EACH	_____
2	50	Option Item Heated Windshield _____ UNIT - EACH	
3	10	Option Item Wing Plow Configuration Only for Chassis (no wing plow included) _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "C"

PAGE 03

SIX WHEEL TRUCK CAB/CHASSIS 37,500 GVW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	75	SPECIFICATION "C" SIX WHEEL TRUCK CAB/CHASSIS 37,500 GVW _____ UNIT - EACH	_____
2	1	Option Item Heated Windshield _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "D"

PAGE 04

SIX WHEEL 4-DOOR MEDIUM TRUCK CAB/CHASSIS 25,999 GVW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	40	SPECIFICATION "D" SIX WHEEL 4-DOOR MEDIUM TRUCK CAB/CHASSIS 25,999 GVW _____ UNIT - EACH	_____
2	1	Option Item Heated Windshield _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "E"

PAGE 05

SIX WHEEL 2-DOOR MEDIUM TRUCK CAB/CHASSIS 25,999 GVW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	20	SPECIFICATION "E" SIX WHEEL 2-DOOR MEDIUM TRUCK CAB/CHASSIS 25,999 GVW _____ UNIT - EACH	_____
2	1	Option Item Heated Windshield _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "F"

PAGE 06

TEN WHEEL DUMP TRUCK BODIES 64,000 GVW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	50	SPECIFICATION "F" TEN WHEEL DUMP TRUCK BODIES 64,000 GVW _____ UNIT - EACH	_____
2	1	Hydraulic Tester For Test Point Listed In Above Specification Para 9.4 _____ UNIT - EACH	
3	1	Option Item One (1) Additional Plow Frame _____ UNIT - EACH	
4	10	Tuck Back Wing Plow _____ UNIT - EACH	
5	50	Hood Reflectors _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "G"

PAGE 07

SIX WHEEL ALUMINUM DUMP TRUCK BODIES 37,500 GVW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	75	SPECIFICATION "G" SIX WHEEL ALUMINUM DUMP TRUCK BODIES 37,500 GVW _____ UNIT - EACH	_____
2	1	Hydraulic Tester as described in Paragraph 9.4 _____ UNIT - EACH	
3	1	Option Item Additional Plow Frame _____ UNIT - EACH	
4	1	Option Item Hood Reflector _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "H"

PAGE 08

SIX WHEEL MEDIUM DUTY ALUMINUM DUMP TRUCK BODIES 25,999 GVW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	40	SPECIFICATION "H" SIX WHEEL MEDIUM DUTY ALUMINUM DUMP TRUCK BODIES 25,999 GVW _____ UNIT - EACH	_____
2	1	Hydraulic Tester as described in 9.4 _____ UNIT - EACH	
3	1	Option Item Additional Plow Frame _____ UNIT - EACH	
4	1	Hood Reflector _____ UNIT - EACH	

If not bidding "Option" items, write in 'NO BID'.

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "I"

PAGE 09

FLAT BED BODY FOR MEDIUM DUTY TRUCK CHASSIS/CAB

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	10	SPECIFICATION "I" FLAT BED BODY FOR MEDIUM DUTY TRUCK CHASSIS/CAB _____ UNIT - EACH	_____

GSS11617-HEAVY_TRUCKS
Bid Proposal Form

SPECIFICATION "J"

HEAVY DUTY CRANE SERVICE BODY FOR A MEDIUM TRUCK CHASSIS 25,999 GVW

** ALL COLUMNS MUST BE COMPLETED AS INDICATED **

ITEM NO.	QUANTITY	UNIT PRICE DOLLARS AND CENTS	Manufacturers Lead Time In Total Days:
1	2	<p style="text-align: center;">SPECIFICATION "J" HEAVY DUTY CRANE SERVICE BODY FOR A MEDIUM TRUCK CHASSIS 25,999 GVW</p> <hr style="width: 20%; margin: auto;"/> <p style="text-align: center;">UNIT - EACH</p>	<hr style="width: 20%; margin: auto;"/>

STATE OF DELAWARE
Government Support Services
Office of Management and Budget

CONTRACT NO.: GSS11617-HEAVY_TRUCKS
OPENING DATE: July 26, 2011

TITLE: Heavy Duty Trucks

Attachment 9

NON-COLLUSION STATEMENT

This is to certify that the undersigned Vendor has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal, **and further certifies that it is not a sub-contractor to another Vendor who also submitted a proposal as a primary Vendor in response to this solicitation** submitted this date to the State of Delaware, Government Support Services.

It is agreed by the undersigned Vendor that the signed delivery of this bid represents the Vendor's acceptance of the terms and conditions of this Request for Proposal including all specifications and special provisions.

NOTE: Signature of the authorized representative **MUST** be of an individual who legally may enter his/her organization into a formal contract with the State of Delaware, Government Support Services.

COMPANY NAME _____ Check one)

<input type="checkbox"/>	Corporation
<input type="checkbox"/>	Partnership
<input type="checkbox"/>	Individual

NAME OF AUTHORIZED REPRESENTATIVE
(Please type or print) _____

SIGNATURE _____ TITLE _____

COMPANY ADDRESS _____

PHONE NUMBER _____ FAX NUMBER _____

EMAIL ADDRESS _____

FEDERAL E.I. NUMBER _____ STATE OF DELAWARE
LICENSE NUMBER _____

COMPANY CLASSIFICATIONS: CERT. NO. _____	(circle one)		(circle one)		(circle one)	
	<u>Women Business Enterprise (WBE)</u>	Yes No	<u>Minority Business Enterprise (MBE)</u>	Yes No	<u>Disadvantaged Business Enterprise (DBE)</u>	Yes No

[The above table is for information and statistical use only.]

PURCHASE ORDERS SHOULD BE SENT TO:
(COMPANY NAME) _____

ADDRESS _____

CONTACT _____

PHONE NUMBER _____ FAX NUMBER _____

EMAIL ADDRESS _____

AFFIRMATION: Within the past five years, has your firm, any affiliate, any predecessor company or entity, owner, Director, officer, partner or proprietor been the subject of a Federal, State, Local government suspension or debarment?

YES _____ NO _____ if yes, please explain _____

THIS PAGE SHALL BE SIGNED, NOTARIZED AND RETURNED WITH YOUR PROPOSAL TO BE CONSIDERED

SWORN TO AND SUBSCRIBED BEFORE ME this _____ day of _____, 20 _____

Notary Public _____ My commission expires _____

City of _____ County of _____ State of _____