

STATE OF NORTH CAROLINA, DEPARTMENT OF ADMINISTRATION		
DIVISION OF PURCHASE AND CONTRACT		
116 West Jones Street, Raleigh, NC 27603-8002		
Term Contract	065C	Dump Truck Bodies
Effective Dates	June 6, 2013 through December 31, 2016	
Bid Number	201300677	
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1. General Information

This contract is for the purchase of steel dump bodies to be used in severe duty on/off road applications for the purposes of pushing snow, spreading salt and sand by the use of in-body spreaders, hauling rip-rap, stumps, debris, rock, sand, asphalt, etc. These factors are to be taken into consideration in the design and installation of the bodies, hydraulics, electrical systems and all components called for in this specification. The units offered shall be new, unused and a current model under standard production by the manufacturer

NON-STATE AGENCIES ELIGIBLE TO PARTICIPATE IN THIS CONTRACT

In accordance with North Carolina General Statutes, certain non-state entities described below, may participate in this contract on a voluntary basis. Any of the non-state entities that choose to participate in this contract must abide by the terms and conditions that are set forth in this contract.

Nonprofit corporations operating charitable hospitals, local nonprofit community sheltered workshops or centers that meet standards established by the Division of Vocational Rehabilitation of the Department of Health and Human Services, private nonprofit agencies licensed or approved by the Department of Health and Human Services as child placing agencies, residential child-care facilities, private nonprofit rural, community, and migrant health centers designated by the Office of Rural Health and Resource Development, private higher education institutions, counties, public school units, cities, towns, governmental entities, volunteer fire departments, rescue squads, and other subdivisions of the State and public agencies thereof.

2. Scope of Contract

The completed units described herein will be used in severe duty on/off road applications for the purposes of pushing snow, spreading salt and sand by the use of in-body spreaders, hauling rip-rap, stumps, debris, rock, sand, asphalt, etc. These factors are to be taken into consideration in the design and installation of the bodies, hydraulics, electrical systems and all components called for in this specification.

3. Taxes

Prices or Discounts shown herein do not include any North Carolina sales or use taxes.

4. Abnormal Quantities

Any agency requirement that exceeds 12 units must be forwarded to the Division of Purchase and Contract for processing. The Division, at its sole discretion, may process any such requirement in one of the following ways:

1. Purchase may be authorized at the current level of pricing with the current contract vendor(s)
2. Additional discounts from the current level of pricing may be negotiated with the current contract vendor(s)
3. A separate Invitation for Bids may be issued for the requirement

5. Minimum Orders

This contract will be for a minimum order of one unit for any single order.

6. Placement of Orders

Orders will be placed throughout the contract period on an as-needed basis for the quantity required at the time, and will be issued directly to the respective contractor(s) or their designated suppliers. Contract changes, if any, over the life of the contract are implemented by contract addenda released by the Contract Administrator to the contractor. If the contractor is accepting orders and/or delivering through other parties, for example a manufacturer accepting orders and delivering through a dealer network or dealers receiving orders through a network of other dealers, then it is the responsibility of the contractor to apprise such parties of all such contract addenda.

1. Placement of Orders (until such time as the items are loaded in the E-Procurement catalog, agencies using E-procurement should treat as a non-catalog item making sure that the contract number 065C is indicated in the body of the purchase order)

Orders will be placed throughout the contract period on an as-needed basis for the quantity required at the time, and will be issued directly to the respective contractor(s) or their designated suppliers.

Contract changes, if any, over the life of the contract are implemented by contract addenda released by the Contract Administrator to the contractor. If the contractor is accepting orders and/or delivering through other parties, for example a manufacturer accepting orders and delivering through a dealer network or dealers receiving orders through a network of other dealers, then it is the responsibility of the contractor to apprise such parties of all such contract addenda.

Order Placement Via E-Procurement (Catalog Items)

- a. Click on the following link: [E-Procurement Users](#)
- b. When placing an order in the e-procurement system, the very first thing to do is to go to the catalog tab and select options. After you have selected options, select contract ID. In the contract ID space type in the contract ID number, 065C.
- c. Please make sure the keywords space is blank and the contract ID is typed in the contract ID section.
- d. When the item to be ordered has been located complete the requisition and issue the purchase order.

ORDERING AGENCIES ARE STRONGLY ENCOURAGED TO CONTACT THE VENDOR BEFORE PLACING ORDER TO CONFIRM THAT THE DUMP BODY WILL WORK ON YOUR TRUCK AND CONFIRM THE SPECIFICATIONS BELOW.

. Delivery

Delivery is 75 days .

In the event the delivery is not received within the contract delivery period, the contractor may be held in default in accordance with paragraph 1, DEFAULT AND PERFORMANCE BOND in the North Carolina General Contract Terms and Conditions, and the state may procure the articles or services from other sources and hold the contractor responsible for excess cost occasioned thereby.

8. Transportation Charges

All goods shall be delivered FOB DESTINATION when the "order value" is one unit or more, when shipped to a single destination. Transportation charges invoiced for orders equal to or more than this "order value" may be cause for removal of the contractor from the contact.

NOTE: If the contractor makes partial shipments of an order equal to or more than this "order value" to one destination, all shipments of the order shall be sent FOB DESTINATION with NO additional transportation charges added.

Note! All shipments should be inspected for damage immediately upon receipt.

10. Price Lists and Catalogs

The successful contractor must furnish descriptive literature to any agency within seven (7) consecutive days after request of the agency.

11. Contractors

All known minority, women and disabled owned businesses, as well as disabled business enterprises and nonprofit work centers for the blind and severely disabled, including dealers, will be identified with "Minority owned" "Woman owned", "Disabled Owned", "DBE" or "BSD" as appropriate after the vendor number. This is being done in an effort to recognize these businesses and to encourage and promote their use to the greatest extent permitted by law.

When more than one supplier is listed for a particular item, selection should be made, whenever possible, from any of the groups identified above, consistent with agency needs and price considerations.

Contractor Name	Address / Federal ID	City, State, Zip	Contact, Phone, Email
Godwin Mfg.	17666 US Hwy 421 S., contact vendor for Federal ID number	Dunn, NC 28334	Sam Heneke, 910-591-5220 mailto:sheneke@godwinmfg.com

12. Warranty

Bidder warrants that equipment furnished on this bid will be new and of good material and workmanship. Defective parts found to be free of negligence or accident will be replaced free of charge for 12 months from respective dates the machines are put in operations. In addition, any specific provisions in the manufacturer's standard warranty that exceed the above requirement become part of the warranty for this contract.

13. Substitutions

Substitutions are not permitted without prior approval of the end user.

14 Additional Information

INSURANCE COVERAGE:

While in possession of the successful contractor, the user's truck chassis shall be fully protected against all physical damage, fire and public liability for the full value of same by insurance provided by the contractor and written by an insurance company duly authorized to do business in the contractors domicile state. Such coverage shall not be canceled or changed during the life of this contract. Such proof of coverage may be required upon request. Bidder specifically agrees to all provisions in the paragraph by execution of bid herein. Successful vendor is to provide a copy of the insurance certification within 5 consecutive state business days and any changes must also be sent within 5 consecutive business days.

FIRE EXTINGUISHERS:

Rechargeable fire extinguishers of adequate size shall be mounted on each unit in accordance with the Society of Automotive Engineers (SAE), National Fire Protection Association (NFPA) or Federal Motor Vehicle Safety Standards (FMVSS) requirements, if applicable. End users are strongly encouraged to confirm specifications before placing orders to ensure body will fit the truck

FURNISH AND DELIVER: NCDOT

MAKE:

Item 1A (1)	Dump body installed with joystick controls, on a single rear axle, conventional cab chassis. \$ 22,226.05/each
Item 1B (2)	Dump body installed with manual controls, on a single rear axle, conventional cab chassis. \$20,725.54/each
Item 1C (3)	Dump body installed with behind cab toolbox and joystick controls, on a single rear axle, crew cab chassis. \$23,756.06/each
Item 1D (4)	Dump body installed with behind cab toolbox and manual controls, on a single rear axle, crew cab chassis. \$22,318.70/each
Item 2A (5)	Dump body installed with joystick controls on a tandem rear axle chassis. \$26,217.39/each
Item 2B (6)	Dump body installed with manual controls on a tandem rear axle chassis. \$24,748.85/each
Item 2C (7)	Dump body installed with joystick controls on a tandem rear axle chassis with one additional lift axle. \$30,016.26/each
Item 2D (8)	Dump body installed with manual controls on a tandem rear axle chassis with one additional lift axle. \$27,990.84/each
Item 2E (9)	Additional costs to add the "Barn Door Tailgate" option to any one of items 2A, 2B, 2C or 2D. \$862.47/each

FURNISH AND DELIVER: NON-NCDOT

MAKE:

Item 1A (10)	Dump body installed with joystick controls, on a single rear axle, conventional cab chassis. \$22,426.05/each
Item 1B (11)	Dump body installed with manual controls, on a single rear axle, conventional cab chassis. \$20,925.54/each
Item 1C (12)	Dump body installed with behind cab toolbox and joystick controls, on a single rear axle, crew cab chassis. \$23,956.06/each
Item 1D (13)	Dump body installed with behind cab toolbox and manual controls, on a single rear axle, crew cab chassis. \$22,518.70/each
Item 2A (14)	Dump body installed with joystick controls on a tandem rear axle chassis. \$26,417.39/each
Item 2B (15)	Dump body installed with manual controls on a tandem rear axle chassis. \$24,948.85/each
Item 2C (16)	Dump body installed with joystick controls on a tandem rear axle chassis with one additional lift axle. \$30,216.26/each
Item 2D (17)	Dump body installed with manual controls on a tandem rear axle chassis with one additional lift axle. \$28,190.84/each
Item 2E (18)	Additional costs to add the "Barn Door Tailgate" option to any one of items 2A, 2B, 2C or 2D. \$862.47/each

THE FOLLOWING PAGES CONTAIN GENERAL SPECIFICATIONS, ORDERING AGENCIES ARE ENCOURAGED TO CONFIRM SPECIFICATIONS PRIOR TO PLACEMENT OF ORDER(S)

Item 1 - Section 1: Dump Body & Accessories

1. Body Construction & Accessories:

- a. Body manufacturer.
- b. Body model.
- c. blank
- d. All bolts and nuts used in the body installation and installation of the hydraulic reservoir shall be grade 8.
- e. Body shell, hoist and frame steel shall be minimum 50,000-PSI yield strength.
- f. Body frame shall be stacked type. (Interlaced not acceptable)
- g. Cross members shall be minimum 4 inch structural channel, full width and extend to rub-rail.
- h. Two (2) longitudinal members shall be minimum 6 inch full length structural channel.
- i. Overall width of body shall not exceed 96 inches.
- j. Inside width of body shall be a minimum of 84 inches.
- k. Body side height approximately 25 inches.
- l. Tailgate height approximately 31 inches.
- m. Inside length of body for conventional cab configuration approximately 10 feet.
- n. Inside length of body for crew cab configuration approximately 9 feet. (see requirement #13 for behind-the-cab tool box for crew cabs)
- o. Body capacity for conventional cab configuration.
- p. Body capacity for crew cab configuration.
- q. A stow-away access ladder mounted as far forward as possible under the right side (passenger side) of the body.
- r. A means of storing, securing and transporting a standard size shovel underneath the body.

2. Body Floor:

- a. Floor shall be constructed of single piece $\frac{1}{4}$ inch steel plate and include a 45 degree body side-to-floor cold formed slope, approximately 2 inches wide, as an integral part of the floor.

3. Body Sides:

- a. Body sides shall be one piece and constructed of a minimum 10 gauge steel.
- b. There shall be a minimum of four (4) continuously welded rectangular side support posts with drain holes, on each side of the body.
- c. Top rail shall be completely boxed and a minimum of a 3½ inches wide, integral to the side, not welded on, and except where side boards rest shall be angled to prevent build up of material.
- d. Inside surfaces of top rails and posts shall be treated with rust proofing substance.
- e. Side board pockets shall be provided on the front and rear on both body sides and accommodate up to a 2 inch thick board.
- f. Side board pockets shall be flush with the outside of the rail and approximately 6 inches high with a ½ inch hole at approximate center of outside face for securing board to pocket.
- g. Body sides shall have one (1) rolled grip-strut steel foot rail, 1 1/2 inches wide, one on each side, running from front to rear corner post, approximately 15 inches below top of side.

4. Tailgate:

- a. Tailgate shall be double wall constructed of a minimum 10 gauge steel.
- b. Hinge pins, both top and bottom, shall be minimum 1 1/4 inches in diameter allowing tailgate to be unfastened for dump-through operation or lowered to a horizontal position level with the body floor.
- c. Top hinge shall be flush type.
- d. Safety chains shall be 5/16 inch grade 70 chain and be replaceable without cutting or welding.
- e. Chain fasteners shall be of equal strength of the chain.
- f. Chains shall be covered with plastic mesh material.
- g. Two (2) fold-down D-ring lifting loops mounted just below and flush with the outside of the top box channel of the tailgate.
- h. Horizontal channels shall incorporate 45° degree slope to prevent material build up.
- i. Top of tailgate shall be inverted "V" design to prevent material build up.
- j. Shall have an air operated tailgate latch controllable from operator's seat, designed so that in the event of a loss of air the latch will remain in the locked position.
- k. 4 inch wide inverted "V" stripes shall be painted across the width of the outside of the tailgate with NC DOT highway yellow paint (NON-NCDOT, standard colors) and immersed glass beads.

5. Headboard:

- a. Headboard shall be constructed of a minimum 8 gauge steel.
- b. Headboard to be re-enforced with one (1) formed inverted "V" approximately 1 1/2 inches deep, across the full width of the headboard.
- c. Headboard shall include a ½ cab protector approximately 24 inches long.
- d. Cab protector shall be constructed of a minimum 10 gauge steel and reinforced along all edges.
- e. Blank

6. Body Prop System:

- a. Builder shall provide a safety prop system substantially sufficient to safely support the empty body while unit is being serviced.

7. Tarp System:

- a. Tarp shall be hydraulically operated with in cab control convenient to the operator.
- b. Powered by the truck hydraulic system (electrical pump powered not acceptable.)
- c. Tarp assembly shall have Zerk grease fittings for all movable parts.
- d. Tarp assembly shall have automatic tension mechanism to maintain constant tension on the tarp cover.
- e. Tarp assembly arms shall not extend more than 3 inches outside the body on either side.
- f. Tarp arms not to extend above the rear corner posts of the body when tarp is deployed.
- g. Tarp to be made of a minimum 14 oz. black vinyl, asphalt resistant material.
- h. Tarp finished width approximately 89 inches.
- i. All edges shall be doubled a minimum of 2 inches for the entire width and length of cover.
- j. All seams shall be double stitched.
- k. Cover shall be long enough to fully cover the body with a minimum of two rounds of material remaining on the roller bar.
- l. Shall have a tarp hold down assembly (idler drum) located at front of body approximately 2 inches above the sideboard pocket and 2 inches behind headboard for adequate clearance.

8. Mud Shields:

- a. Rear tire mud shields shall be fabricated from a minimum 10 gauge steel and be of appropriate size to guard against dirt and rocks from being thrown forward of the rear tires and shall not interfere with the use of snow chains.

9. Mud Flaps:

- a. Rear wheel mud flaps shall be flexible rubber, bolt on installation, no logo and be of appropriate size to guard against dirt and rocks from being thrown behind the vehicle.

10. Front Bumper:

- a. Front bumper shall be full width of truck cab.
- b. Fabricated from channel steel with sufficient strength to withstand snow plow operations.
- c. Attached directly to the truck frame with grade 8 bolts and nuts.
- d. The bumper shall include four (4) snow plow push frame attaching ears. Two (2) ears to the left of center spaced 1 ½ inches apart and two (2) ears to the right of center spaced 1 ½ inches apart.
- e. The two (2) pairs of attaching ears shall be spaced 21 inches apart from the center of one set to the center of the other set.
- f. Each of the attaching ears shall be drilled to accept a 1 inch diameter pin.
- g. The bumper shall be designed to incorporate the mounting of a crankshaft driven front pump.

11. Pintle Type Trailer Hitch & Mounting Plate:

- a. Buyers Products PH 20 hitch or equivalent.
- b. Mounting plate shall be sufficient to withstand severe use applications without failure.
- c. Mounting plate shall be welded directly to the truck chassis rails.
- d. Height from ground to load bearing surface of the hitch to be between 24 and 28 inches.
- e. Hitch to be fastened to mounting plate with grade 8 bolts and nuts.
- f. Mounting plate to incorporate two (2) trailer safety chain loops.
- g. blank

12. Swivel Pintle Type Trailer Hitch Option:

When requested, a “swivel” type pintle hitch shall be furnished in lieu of the rigid hitch

described in requirement number 11 above. Items “b” through “h” of requirement number 11 still

apply for the swivel hitch.

- a. Buyers Products BP200 swivel type pintle hitch or equivalent.

13. Tool Box:

- a. A steel constructed weather proof tool box approximately 18 inches H x 18 inches D x 36 inches W installed under the body and attached to the chassis rail. Location will be determined at pre-construction meeting to be

held at NCDOT with successful bidder.

- b. The tool box door shall be lockable with a stainless steel T handle lock and key.
- c. The door shall fold down to open, have cable or chain retainers and a piano style hinge.

14. Additional Toolbox (Required For All Crew Cab Chassis'):

- a. Shall be mounted between truck cab and dump body.
- b. Shall rest on and be attached to the truck chassis rails.
- c. Toolbox to be approximately 84 inch wide across the back of the cab, 15 inch deep from front to back and the height should be approximately to the top of the truck cab.
- d. Toolbox to have a drop extension box on driver's side that extends the box floor down approximately 20 inches for storing sign posts vertically.
- e. The dimensions of the drop extension box should be approximately 20 inches wide across the back of the cab, 15 inches deep from front to back and extend the box floor down approximately 20 inches.
- f. Toolbox to have a full length door in each end.

15. Paint:

The following specification requirements are meant to describe performance characteristics for metal preparation and finish paint of the dump body and all ancillary parts to include front bumper attachment, hoist frame, reservoir, rear hitch plate, splash guards, mud flap brackets, and any other part that is manufactured and installed by the final stage manufacturer.

Although there are two primary forms of application (liquid and powder) the intent is to have a durable long lasting finish for a snow removal/salt air environment.

- a. All oil, grease, dirt, etc. to be removed chemically or by whatever means necessary to offer a clean surface for blast preparation.
- b. All dump body surfaces (top, underneath, and outside perimeter) to be abraded by sandblasting or shot blasting to remove all surface rust and mill scale/slag so an SP-10 finish is obtained.
- c. Any blast media residue shall be removed before painting.
- d. A zinc rich epoxy primer shall be used that is certified for a minimum of 3000 hours in a 5% salt spray test.
- e. A black top coat gloss shall be applied and have a gloss rating of 80% or higher.
- f. The finish paint shall be certified for 1000 hours in a 5% salt spray test.
- g. The underneath of the dump bed shall have paintable rubberized undercoating applied that is certified for 800 hours in a 5% salt spray test.

16. Lights & Reflectors:

- a. Lights and reflectors shall conform to all applicable federal and North Carolina requirements in effect at time of purchase order.
- b. In-body lights to be LED unless otherwise specified.
- c. Two (2) Truck Lite Model 40 or equal stop, tail and turn signal lights, recess mounted, one (1) in each rear corner post mounted approximately 72 inches from ground to center of light.
- d. Two (2) Truck Lite model 40 or equal incandescent back-up lights, recess mounted, one (1) in each rear corner post below the stop, tail, turn lights described in "c" above.
- e. Two (2) Truck Lite Model 40 or equal stop, tail and turn signal lights, recess mounted in rear apron, approximately 73 inches apart.
- f. Two (2) clearances lights to be Truck Lite Model 10 or equal, recess mounted, one (1) in each rear corner post above the stop, tail, turn lights described in "c" above.
- g. Three (3) red ID cluster clearances lights to be Truck Lite Model 10 or equal, recess mounted in center of rear apron of body.
- h. Two (2) amber reflectors, one (1) each at front sides of body and two (2) red lights, recess mounted, one (1) each at rear sides of body.
- i. Pocket style, lighted license plate bracket at rear of vehicle. Location will be determined at pre-construction meeting to be held at NCDOT with successful bidder.
- j. Blank

17. Auxiliary Plow Lights:

- a. Pair of Truck Lite, Model 80800 or equal.
- b. Fender or hood mounted.
- c. Park/turn lamps to be amber.
- d. Wired to operate in unison with truck park/turn lamps.
- e. Minimum height of 66 inches from center of sealed beam to road surface.
- f. Must not operate simultaneously with headlights.
- g. Truck headlights are to be turned on and off and dimmed by original switches.
- h. Wiring to be color coded. Continuous from lamp plug to terminal block and be in convolute loom, terminated at truck firewall wiring harness.

18. Auxiliary Connector:

- a. *One (1) trailer type 4-pole connector, Cole Hersee 1257 or equal, shall be installed at the rear of the vehicle to supply current for the spreader light.*

Item 1 - Section 2: Hydraulic System

1. Hoist:

- a. Hoist shall be sub frame type.
- b. NTEA Class 50 hoist designed for "bolt on" application.
- c. Hoist assembly to provide 50 degree dump angle (plus or minus 3 degrees).
- d. Lift cylinder shall be piston type, double acting, with O ring type packing and backup washers.
- e. Shall not have internal poppet reliefs.
- f. Loaded or empty, the dump body should raise completely from the fully lowered position or lower completely from the fully raised position in 30 seconds or less.

2. Hydraulic Reservoir:

- a. Minimum 30 gallon reservoir.
- b. Reservoir shall be constructed of a minimum 10 gauge steel.
- c. Shall be breather type, with filter screen filler cap.
- d. Easily accessible drain plug.
- e. Supply line cut off at tank.
- f. Pump suction strainer minimum of 2 inches in diameter 100 mesh screen type located inside reservoir.
- g. Bolt on service plate to allow access to suction strainer.
- h. Combination oil level and temperature gauge.
- i. "HYDRAULIC OIL ONLY" decal on tank.

3. Filters & Plumbing:

- a. Internal cartridge type filter assembly in the hydraulic reservoir with a minimum rating of 45 GPM.
- b. External single element filter assembly with a 25 PSI bypass.
- c. Both filter elements shall be interchangeable with NAPA or WIX and rated at 10 micron.
- d. Pressure switch set at 23 PSI to alert the operator of a clogged element through the main system-operating console.

- e. Pressure hoses shall be SAE 100 "R2".
- f. Return hoses shall be SAE 100 "R1".
- g. Suction line shall be 2 inch SAE "R4".
- h. Hose ends shall be JIC and/or pipe thread for easy field replacement.
- i. Quick disconnects for snow plow and spreader functions shall conform to ISO 7241-1, Series B.
- j. "Plow up" shall be a 3/8 inch coupler.
- k. "Plow down" shall be a 3/8 inch nipple.
- l. "Plow right" shall be a 1/2-inch coupler.
- m. "Plow left" shall be a 1/2-inch nipple.
- n. Plow disconnects shall be mounted on the driver's side, just below or through the face of the front bumper.
- o. The following quick disconnects described in requirements "p", "q" and "r" will be grouped together at the rear of the chassis for spinner controls.
- p. The "spinner pressure" disconnect shall be a 1/2 inch coupler and be located on the group left.
- q. "Conveyor pressure" shall be a 1/2 inch nipple and located at the group center.
- r. "Common return" shall be a 1 inch coupler, located on the group right.
- s. The mating portion of spreader group quick disconnects above shall be provided with each unit.

Item 1 - Section 3: Hydraulic Controls & Operator's Console

(There are 2 configurations of controls and consoles requested to be bid.)

Control Option I: Electronic with Joy Stick Control

1. General: (For Option I: Electronic with Joy Stick Control)

- a. Shall be a load sensing type hydraulic system.
- b. Hydraulic system design shall allow all functions to operate simultaneously without stopping the action of any one or more functions.
- c. Valves shall be remote solenoid operated by joystick control and selector switches installed in the cab and be convenient to the operator.
- d. Accessory valves shall be sandwich or cartridge type.
- e. System shall hold an installed snow plow in the raised position while in the transport mode.
- f. System shall have a provision to adjust the speed of the snow plow lift and lower functions.
- g. System shall have a provision to adjust the speed of the snow plow angle functions.

2. Hydraulic Pump/Valve: (For Option I: Electronic with Joy Stick Control)

- a. Pump shall be front mounted, crankshaft driven, bi-rotational, cast iron gear pump with sufficient capacity to meet operational requirements.
- b. Driveline shall be connected to the engine by a universal splined slip-shaft with a minimum of 1 1/2 inch adjustment to facilitate engine belt changing. (Note: Adapter plate will be furnished and installed by the chassis supplier).
- c. Exposed portions of driveline shall be guarded.
- d. Pump shall be protected by a 1/2 inch x 5 inch flat bar cover bolted to bumper.
- e. A load sensing flow control valve with a low-pressure bypass valve.

3. Hydraulic Valve Enclosure: (For Option I: Electronic with Joy Stick Control)

- a. Hydraulic valve enclosure shall be fabricated of steel and designed to protect the manifold, valves and electrical parts and wiring.
- b. Electrical connections shall be through weather tight connectors.
- c. Hydraulic valve enclosure to have a removable cover that allows easy

access to the components but requires no tools to remove the cover.

- d. Valve enclosure and hydraulic plumbing shall be no lower than lowest chassis component.

4. Joystick Controls: (For Option I: Electronic with Joy Stick Control)

- a. Tarp cover/uncover.
- b. Snowplow up/down/float.
- c. Plow angle right/left.
- d. Bed hoist up/down.

5. Operator Console Switches and Indicators: (For Option I: Electronic with Joy Stick Control)

- a. Operator console switches shall be direct acting "rocker" switches rated at a minimum of 20 amps.
- b. Operator console switches shall be "back-lighted."
- c. Master on/off switch.
- d. Master switch shall be powered through an ignition source and control hydraulic functions.
- e. Master switch shall have illuminated (red) window.
- f. Strobe lights on/off switch.
- g. Strobe light switch shall have illuminated (amber) window.
- h. Spreader on/off/automatic (ground speed controlled) switch.
- i. Spreader switch shall have illuminated (green) window.
- j. In the manual mode (on position), the spreader conveyor shall operate in proportion to the conveyor control setting.
- k. In the automatic mode the spreader conveyor shall operate in proportion to the truck speed ranging from 5 MPH through 35 MPH. This shall be accomplished by sensing the vehicle speed through the existing speedometer system or by adding a second sensor to the truck.
- l. Dial adjustments for spinner and conveyor speed. The spinner shall function in proportion to the spinner control setting.
- m. Spreader light on/off switch.
- n. Replace hydraulic filter indicator light.
- o. Body elevated indicator light.
- p. Power for console lighting shall be through the "park light" switch.

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- q. Operator console to valve enclosure wiring shall be color-coded per function.
- r. All output circuits shall be protected with appropriate fuses.
- s. A red indicator light and an audible buzzer shall alert the operator in the event of a loss of hydraulic fluid significant enough to cause damage to any components of the hydraulic system.
- t. Power to the "master switch" shall be automatically cut off in the event of conditions described in requirement "s" above.
- u. There shall be a hydraulic systems function override switch located in the panel at the valve manifold as also one in the cab (requiring a two person operation) allowing the equipment to be stowed for transporting to the garage. The person in the cab operates the "stow" function while the second person at the valve manifold activates the override switch. When the override switch is released the system returns to the shutdown mode until the repairs are completed and oil is added to the system.

Item 1 - Section 3: Hydraulic Controls & Operator's Console (cont'd)

Control Option II: Manual with Lever Controls

1. **General:** (For Option II: Manual with Lever Controls)

- a. Hydraulic system shall be bank valve type.
- b. Hydraulic system design shall allow all functions to operate simultaneously without stopping the action of any one or more functions.
- c. Valves shall be controlled by levers installed in the cab convenient to the operator.

2. **Hydraulic Pump/Valve:** (For Option II: Manual with Lever Controls)

- a. Pump shall be front mounted, crankshaft driven, bi-rotational, cast iron gear pump with sufficient capacity to meet operational requirements.
- b. Driveline shall be connected to the engine by a universal splined slip-shaft with a minimum of 1 1/2 inch adjustment to facilitate engine belt changing. (Note: Adapter plate will be furnished and installed by the chassis supplier).
- c. Exposed portions of driveline shall be guarded.
- d. Pump shall be protected by a 1/2 inch x 5 inch flat bar cover bolted to bumper.
- e. There shall be an adjustable flow divider valve to supply priority to the spreader and excess flow to functions downstream when spreader is in use.
- f. The in-cab spreader control valve shall supply hydraulic oil to the conveyor (auger) and spinner in proportion to the control setting of the valve.

3. **Lever Controls:** (For Option II: Manual with Lever Controls)

- a. Tarp cover/uncover.
- b. Snowplow up/down.
- c. Plow angle right/left.
- d. Bed hoist up/down.
- e. The levers are to connect to the main valve through sealed cables and bonneted connections.
- f. The levers shall all "spring to neutral" when released.

4. Operator Console Switches and Indicators: (For Option II: Manual with Lever Controls)

- a. Strobe lights on/off switch.
- b. Spreader light on/off switch.
- c. Spreader on/off lever (with spreader control valve.)
- d. Spreader control valve located in cab within reach of operator and be mounted in a manner to protect occupants in case of hose failure.
- e. Dial adjustments for spinner and conveyor speed.
- f. A red indicator light and an audible buzzer shall alert the operator in the event of a loss of hydraulic fluid significant enough to cause damage to any components of the hydraulic system.

ITEM 2

DUMP BODIES FOR CONVENTIONAL CAB TANDEM AXLE CHASSIS' & TANDEM AXLE CHASSIS' WITH ONE LIFT AXLE

The completed units described in these specifications will be used in severe duty on/off road applications for the purposes of pushing snow, spreading salt and sand by the use of in-body spreaders, hauling rip-rap, stumps, debris, rock, sand, asphalt, etc. These factors are to be taken into consideration in the design and installation of the bodies, hydraulics, electrical systems and all components called for in this specification.

Item 2 - Section 1: Dump Body & Accessories

1. Body Construction & Accessories:

- a. Body manufacturer.
- b. Body model.
- c. blank
- d. All bolts and nuts used in the body installation and installation of the hydraulic reservoir shall be grade 8.
- e. Body shell, hoist and frame steel shall be minimum 50,000-PSI yield strength.
- f. Body frame shall be stacked type. (Interlaced not acceptable)
- g. Cross members shall be minimum 4 inch structural channel, full width and extend to rub-rail.
- h. Two (2) longitudinal members shall be minimum 7 inch full length structural channel.
- i. Overall width of body shall not exceed 96 inches.
- j. Inside width of body shall be a minimum of 84 inches.
- k. Body side height approximately 36 inches.
- l. Tailgate height approximately 44 inches.
- m. Inside length of body for tandem axle configuration approximately 15 feet.
- n. Inside length of body for tandem axle, with one lift axle configuration approximately 17 feet.
- o. Body capacity for tandem axle configuration.
- p. Body capacity for tandem axle, with one lift axle configuration.

- q. A stow-away access ladder mounted as far forward as possible under the right side (passenger side) of the body.
- r. A means of storing, securing and transporting a standard size shovel underneath the body.

2. Body Floor:

- a. Floor shall be constructed of single piece $\frac{1}{4}$ inch steel plate and include a 45 degree body side-to-floor cold formed slope, approximately 2 inches wide, as an integral part of the floor.

3. Body Sides:

- a. Body sides shall be one piece and constructed of a minimum 10 gauge steel.
- b. There shall be a minimum of 6 continuously welded rectangular side support posts with drain holes on each side of the body.
- c. Top rail shall be completely boxed and a minimum of a $4\frac{1}{2}$ inches wide, integral to the side, not welded on, and except where side boards rest shall be angled to prevent build up of material.
- d. Inside surfaces of top rails and posts shall be treated with rust proofing substance.
- e. Side board pockets shall be provided on the front and rear on both body sides and accommodate up to a 2 inch thick board.
- f. Side board pockets shall be flush with the outside of the rail and approximately 8 inches high with a $\frac{1}{2}$ inch hole at approximate center of outside face for securing board to pocket.
- g. Body sides shall have one (1) rolled grip-strut steel foot rail, 1 1/2 inches wide, one on each side, running from front to rear corner post, approximately 15 inches below top of side.
- h. An additional grip-strut steel step and two (2) grab handles shall be located above the full length grip strut rail at the location of the access ladder.

4. Tailgate:

- a. Tailgate shall be double walled constructed of a minimum 10 gauge steel.
- b. Hinge pins, both top and bottom, shall be minimum 1 1/4 inches in diameter allowing tailgate to be unfastened for dump-through operation or lowered to a horizontal position level with the body floor.
- c. Safety chains shall be 5/16 inch grade 70 chain and be replaceable without cutting or welding.
- d. Chain fasteners shall be of equal strength of the chain.
- e. Chains shall be covered with plastic mesh material.

- f. Two (2) fold-down D-ring lifting loops mounted just below and flush with the outside of the top box channel of the tailgate.
- g. Horizontal channels shall incorporate 45° degree slope to prevent material build up.
- h. Top of tailgate shall be inverted "V" design to prevent material build up.
- i. Shall have an air operated tailgate latch controllable from operator's seat, designed so that in the event of a loss of air the latch will remain in the locked position.
- j. 4 inch wide inverted "V" stripes shall be painted across the width of the outside of the tailgate with NC DOT highway yellow paint and immersed glass beads.

5. Barn Door Tailgate Option:

When requested, a "barn door" type tailgate shall be furnished in lieu of the standard tailgate described in requirement number 4 above. This tailgate shall meet all structural requirements of the standard tailgate plus the additional requirements indicated below:

- a. Shall be capable of both swinging open to the passenger side and also opening from bottom and be removable.
- b. Shall have an Intermediate latch (approximately half way up) on drive side to secure in the closed position.
- c. Shall have a positive means for securing the tailgate against passenger side of the body when in the open position.

6. Detachable Asphalt Chute:

- a. There shall be a bolt on chute fabricated of 8 gauge steel, across the full width of the dump body opening to aid in dumping asphalt into paver hopper.
- b. The chute shall be 9 inches deep.
- c. The chute is to be angled down to prevent material build up but not so far as to interfere with required lighting.

7. Headboard:

- a. Headboard shall be constructed of a minimum 10 gauge steel.
- b. Headboard to be re-enforced with two (2) formed inverted "V" approximately 1 1/2 inches deep, across the full width of the headboard.
- c. Headboard shall include a 1/2 cab protector approximately 24 inches long.

- d. Cab protector shall be constructed of a minimum 10 gauge steel and reinforced along all edges.
- e. Blank

8. Doghouse:

- a. Fabricated from ¼ inch steel, minimum.
- b. Corners to be reinforced.

9. Body Prop System:

- a. Builder shall provide a safety prop system substantially sufficient to safely support the empty body while unit is being serviced.

10. Tarp System:

- a. Tarp shall be either hydraulic or air operated with in cab control convenient to the operator.
- b. Powered by the truck hydraulic or air system (electrical pump powered not acceptable.)
- c. Tarp assembly shall have Zerk grease fittings for all movable parts.
- d. Tarp assembly shall have automatic tension mechanism to maintain constant tension on the tarp cover.
- e. Tarp assembly arms shall not extend more than 3 inches outside the body on either side.
- f. Tarp arms not to extend above the rear corner posts of the body when tarp is deployed.
- g. Tarp to be made of a minimum 14 oz. black vinyl, asphalt resistant material.
- h. Tarp finished width approximately 89 inches.
- i. All edges shall be doubled a minimum of 2 inches for the entire width and length of cover.
- j. All seams shall be double stitched.
- k. Cover shall be long enough to fully cover the body with a minimum of two rounds of material remaining on the roller bar.
- l. Shall have a tarp hold down assembly (idler drum) located at front of body approximately 2 inches above the sideboard pocket and 2 inches behind headboard for adequate clearance.

11. Mud Shields:

- a. Rear tire mud shields shall be fabricated from a minimum 10 gauge steel and be of appropriate size to guard against dirt and rocks from being thrown forward of the rear tires and shall not interfere with the use of snow chains.

12. Mud Flaps:

- a. Rear wheel mud flaps shall be flexible rubber, bolt on installation, no logo and be of appropriate size to guard against dirt and rocks from being thrown behind the vehicle.

13. Front Bumper:

- a. Front bumper shall be full width of truck cab.
- b. Fabricated from channel steel with sufficient strength to withstand snow plow operations.
- c. Attached directly to the truck frame with grade 8 bolts and nuts.
- d. The bumper shall include four (4) snow plow push frame attaching ears. Two (2) ears to the left of center spaced 1 ½ inches apart and two (2) ears to the right of center spaced 1 ½ inches apart.
- e. The two (2) pairs of attaching ears shall be spaced 21 inches apart from the center of one set to the center of the other set.
- f. Each of the attaching ears shall be drilled to accept a 1 inch diameter pin.
- g. The bumper shall be designed to incorporate the mounting of a crankshaft driven front pump.

14. Pintle Type Trailer Hitch & Mounting Plate:

- a. Buyers Products PH 20 hitch or equivalent.
- b. Mounting plate shall be sufficient to withstand severe use applications without failure.
- c. Mounting plate shall be welded directly to the truck chassis rails.
- d. Height from ground to load bearing surface of the hitch to be between 24 and 28 inches.
- e. Hitch to be fastened to mounting plate with grade 8 bolts and nuts.
- f. Mounting plate to incorporate two (2) trailer safety chain loops.
- g. blank

15. Swivel Pintle Type Trailer Hitch Option:

When requested, a "swivel" type pintle hitch shall be furnished in lieu of the rigid hitch described in requirement number 14 above. Items "b" through "h" of requirement number 14 still apply for the swivel hitch.

- a. Buyers Products BP 200 swivel type hitch or equivalent.

16. Tool Box:

- a. A steel constructed weather proof tool box approximately 18 inches H x 18 inches D x 36 inches W installed under the body and attached to the chassis rail.
- b. The tool box door shall be lockable with a stainless steel T handle lock and key.
- c. The door shall fold down to open, have cable or chain retainers and a piano style hinge.

17. Paint:

The following specification requirements are meant to describe performance characteristics for metal preparation and finish paint of the dump body and all ancillary parts to include front bumper attachment, hoist frame, reservoir, rear hitch plate, splash guards, mud flap brackets, and any other part that is manufactured and installed by the final stage manufacturer.

Although there are two primary forms of application (liquid and powder) the intent is to have a durable long lasting finish for a snow removal/salt air environment.

- a. All oil, grease, dirt, etc. to be removed chemically or by whatever means necessary to offer a clean surface for blast preparation.
- b. All dump body surfaces (top, underneath, and outside perimeter) to be abraded by sandblasting or shot blasting to remove all surface rust and mill scale/slag so an SP-10 finish is obtained.
- c. Any blast media residue shall be removed before painting.
- d. A zinc rich epoxy primer shall be used that is certified for a minimum of 3000 hours in a 5% salt spray test.
- e. A black top coat gloss shall be applied and have a gloss rating of 80% or higher.
- f. The finish paint shall be certified for 1000 hours in a 5% salt spray test.
- g. The underneath of the dump bed shall have paintable rubberized undercoating applied that is certified for 800 hours in a 5% salt spray test.

18. Lights & Reflectors:

- a. Lights and reflectors shall conform to all applicable federal and North Carolina requirements in effect at time of purchase order.
- b. In-body lights to be LED unless otherwise specified.
- c. Two (2) Truck Lite Model 40 or equal stop, tail and turn signal lights, recess mounted, one (1) in each rear corner post mounted approximately 72 inches from ground to center of light.
- d. Two (2) Truck Lite model 40 or equal incandescent back-up lights, recess mounted, one (1) in each rear corner post below the stop, tail, turn lights described in "c" above.
- e. Two (2) Truck Lite Model 40 or equal stop, tail and turn signal lights, recess mounted in rear apron, approximately 73 inches apart.
- f. Two (2) clearances lights to be Truck Lite Model 10 or equal, recess mounted, one (1) in each rear corner post above the stop, tail, turn lights described in "c" above.
- g. Three (3) red ID cluster clearances lights to be Truck Lite Model 10 or equal, recess mounted in center of rear apron of body.
- h. Two (2) amber reflectors, one (1) each at front sides of body and two (2) red lights, recess mounted, one (1) each at rear sides of body.
- i. Pocket style, lighted license plate bracket at rear of vehicle.).
- j. Blank

19. Auxiliary Plow Lights:

- a. Pair of Truck Lite, Model 80800 or equal.
- b. Fender or hood mounted.
- c. Park/turn lamp to be amber.
- d. Wired to operate in unison with truck park/turn lamps.
- e. Minimum height of 66 inches from center of sealed beam to road surface.
- f. Must not operate simultaneously with headlights.
- g. Truck headlights are to be turned on and off and dimmed by original switches.
- h. Wiring to be color coded. Continuous from lamp plug to terminal block and be in convolute loom, terminated at truck firewall wiring harness.

20. Auxiliary Connector:

- a. One (1) trailer type 4-pole connector, Cole Hersee 1257 or equal, shall be

installed at the rear of the vehicle to supply current for the spreader light.

Item 2 - Section 2: Hydraulic System

1. Hoist:

- a. NTEA Class 110 hoist for tandem axle chassis and NTEA Class 120 hoist for tri-axle chassis.
- b. Hoist assembly to provide 50 degree dump angle (plus or minus 3 degrees).
- c. Lift cylinder shall be telescopic type, single acting, with "V" type packing and backup washers.
- d. Loaded or empty, the dump body shall raise completely from the fully lowered position or lower completely from the fully raised position in 45 seconds or less.

2. Hydraulic Reservoir:

- a. Minimum 40 gallon reservoir.
- b. Reservoir shall be constructed of a minimum 10 gauge steel.
- c. Shall be breather type, with filter screen filler cap.
- d. Easily accessible drain plug.
- e. Supply line cut off at tank.
- f. Pump suction strainer minimum of 2 inches in diameter 100 mesh screen type located inside reservoir.
- g. Bolt on service plate to allow access to suction strainer.
- h. Combination oil level and temperature gauge.
- i. "HYDRAULIC OIL ONLY" decal on tank.

3. Filters & Plumbing:

- a. Internal cartridge type filter assembly in the hydraulic reservoir with a minimum rating of 100 GPM.
- b. External single element filter assembly with a 25 PSI bypass.
- c. Both filter elements shall be interchangeable with NAPA or WIX and rated at 10 micron.
- d. Pressure switch set at 23 PSI to alert the operator of a clogged element

through the main system-operating console.

- e. Pressure hoses shall be SAE 100 "R2".
- f. Return hoses shall be SAE 100 "R1".
- g. Suction line shall be 2 inch SAE "R4".
- h. Hose ends shall be JIC and/or pipe thread for easy field replacement.
- i. Quick disconnects for snow plow and spreader functions shall conform to ISO 7241-1, Series B.
- j. "Plow up" shall be a 3/8 inch coupler.
- k. "Plow down" shall be a 3/8 inch nipple.
- l. "Plow right" shall be a 1/2-inch coupler.
- m. "Plow left" shall be a 1/2-inch nipple.
- n. Plow disconnects shall be mounted on the driver's side, just below or through the face of the front bumper.
- o. The following quick disconnects described in requirements "p", "q" and "r" will be grouped together at the rear of the chassis for spinner controls.
- p. The "spinner pressure" disconnect shall be a 1/2 inch coupler and be located on the group left.
- q. "Conveyor pressure" shall be a 1/2 inch nipple and located at the group center.
- r. "Common return" shall be a 1 inch coupler, located on the group right.
- s. The mating portion of spreader group quick disconnects above shall be provided with each unit.

Item 2 - Section 3: Hydraulic Controls & Operator's Console

(There are 2 configurations of controls and consoles requested to be bid.)

Option I: Electronic with Joy Stick Control

1. General: (For Option I: Electronic with Joy Stick Control)

- a. Shall be a load sensing type hydraulic system.
- b. Hydraulic system design shall allow all functions to operate simultaneously without stopping the action of any one or more functions.
- c. Valves shall be remote solenoid operated by joystick control and selector switches installed in the cab and be convenient to the operator.
- d. Accessory valves must be sandwich or cartridge type.
- e. System shall hold an installed snow plow in the raised position while in the transport mode.
- f. System shall have a provision to adjust the speed of the snow plow lift and lower functions.
- g. System shall have a provision to adjust the speed of the snow plow angle functions.

2. Hydraulic Pump/Valve: (For Option I: Electronic with Joy Stick Control)

- a. Pump shall be front mounted, crankshaft driven, bi-rotational, cast iron gear pump with sufficient capacity to meet operational requirements.
- b. Driveline shall be connected to the engine by a universal splined slip-shaft with a minimum of 1 1/2 inch adjustment to facilitate engine belt changing. (Note: Adapter plate will be furnished and installed by the chassis supplier).
- c. Exposed portions of driveline shall be guarded.
- d. Pump shall be protected by a 1/2 inch x 5 inch flat bar cover bolted to bumper.
- e. A load sensing flow control valve with a low-pressure bypass valve.

3. Hydraulic Valve Enclosure: (For Option I: Electronic with Joy Stick Control)

- a. Hydraulic valve enclosure shall be fabricated of steel and designed to protect the manifold, valves and electrical parts and wiring.
- b. Electrical connections shall be through weather tight connectors.

- c. Hydraulic valve enclosure to have a removable cover that allows easy access to the components but requires no tools to remove the cover.
- d. Valve enclosure, and hydraulic plumbing shall be no lower than lowest chassis component.

4. Joystick Controls: (For Option I: Electronic with Joy Stick Control)

- a. Tarp cover/uncover.
- b. Snowplow up/down/float.
- c. Plow angle right/left.
- d. Bed hoist up/down.

5. Operator Console Switches and Indicators: (For Option I: Electronic with Joy Stick Control)

- a. Operator console switches shall be direct acting "rocker" switches rated at a minimum of 20 amps.
- b. Operator console switches shall be "back-lighted."
- c. Master on/off switch.
- d. Master switch shall be powered through an ignition source and control hydraulic functions.
- e. Master switch shall have illuminated (red) window.
- f. Strobe lights on/off switch.
- g. Strobe light switch shall have illuminated (amber) window.
- h. Spreader on/off/automatic (ground speed controlled) switch.
- i. Spreader switch shall have illuminated (green) window.
- j. In the manual mode (on position), the spreader conveyor shall operate in proportion to the conveyor control setting.
- k. In the automatic mode the spreader conveyor shall operate in proportion to the truck speed ranging from 5 MPH through 35 MPH. This shall be accomplished by sensing the vehicle speed through the existing speedometer system or by adding a second sensor to the truck.
- l. Dial adjustments for spinner and conveyor speed. The spinner shall function in proportion to the spinner control setting.
- m. Spreader light on/off switch.
- n. Replace hydraulic filter indicator light.
- o. Body elevated indicator light.
- p. Power for console lighting shall be through the "park light" switch.

- q. Operator console to valve enclosure wiring shall be color-coded per function.
- r. All output circuits shall be protected with appropriate fuses.
- s. A red indicator light and an audible buzzer shall alert the operator in the event of a loss of hydraulic fluid significant enough to cause damage to any components of the hydraulic system.
- t. Power to the "master switch" shall be automatically cut off in the event of conditions described in requirement "s" above.
- u. There shall be a hydraulic systems function override switch located in the panel at the valve manifold as also one in the cab (requiring a two person operation) allowing the equipment to be stowed for transporting to the garage. The person in the cab operates the "stow" function while the second person at the valve manifold activates the override switch. When the override switch is released the system returns to the shutdown mode until the repairs are completed and oil is added to the system.

Item 2 - Section 3: Hydraulic Controls & Operator's Console (cont'd)

Option II: Manual with Lever Controls

1. General: (For Option II: Manual with Lever Controls)

- a. Hydraulic system shall be bank valve type.
- b. Hydraulic system design shall allow all functions to operate simultaneously without stopping the action of any one or more functions.
- c. Valves shall be controlled by levers installed in the cab convenient to the operator.

2. Hydraulic Pump/Valve: (For Option II: Manual with Lever Controls)

- a. Pump shall be front mounted, crankshaft driven, bi-rotational, cast iron gear pump with sufficient capacity to meet operational requirements.
- b. Driveline shall be connected to the engine by a universal splined slip-shaft with a minimum of 1 1/2 inch adjustment to facilitate engine belt changing. (Note: Adapter plate will be furnished and installed by the chassis supplier).
- c. Exposed portions of driveline shall be guarded.
- d. Pump shall be protected by a 1/2 inch x 5 inch flat bar cover bolted to bumper.
- e. There shall be an adjustable flow divider valve to supply priority to the spreader and excess flow to functions downstream when spreader is in use.

- f. The in-cab spreader control valve shall supply hydraulic oil to the conveyor (auger) and spinner in proportion to the control setting of the valve.

3. Lever Controls: (For Option II: Manual with Lever Controls)

- a. Tarp cover/uncover.
- b. Snowplow up/down.
- c. Plow angle right/left.
- d. Bed hoist up/down.
- e. The levers are to connect to the main valve through sealed cables and bonneted connections.
- f. The levers shall all “spring to neutral” when released.

4. Operator Console Switches and Indicators: (For Option II: Manual with Lever Controls)

- a. Strobe lights on/off switch.
- b. Spreader light on/off switch.
- c. Spreader on/off switch (with spreader control valve.)
- d. Spreader control valve located in cab within reach of operator and be mounted in a manner to protect occupants in case of hose failure.
- e. Dial adjustments for spinner and conveyor speed.
- f. A red indicator light and an audible buzzer shall alert the operator in the event of a loss of hydraulic fluid significant enough to cause damage to any components of the hydraulic system.

ADDENDUM

Addendum	Effective Date	Description
1.	1/17/2014	Change Administrator
2	05/13/2014	Change Administrator
3.	06/06/2016	Extended Contract
4		