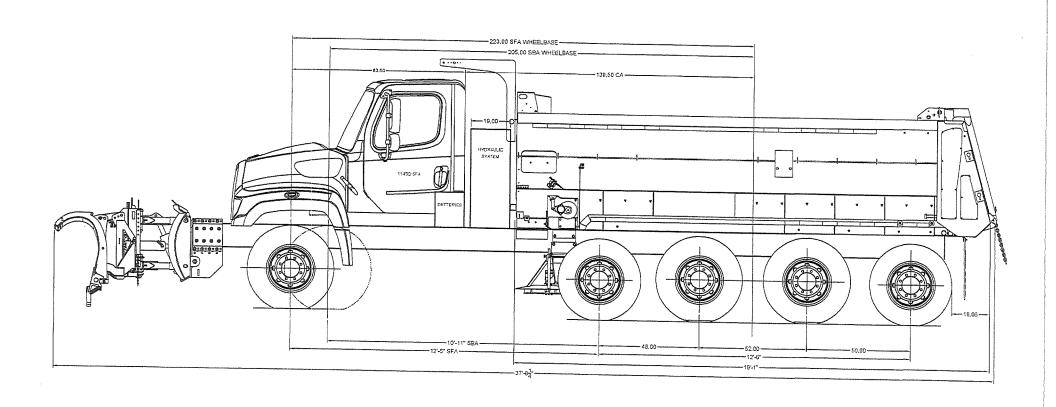
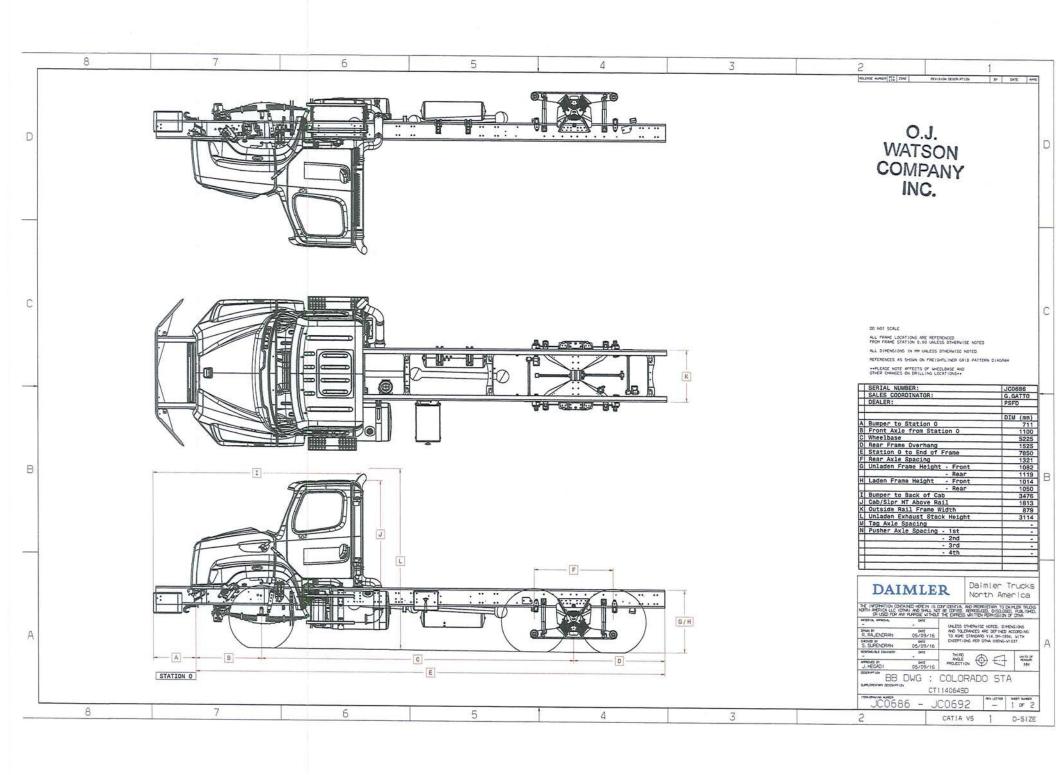
# CCD\_PO\_PWOPS\_12528 EXHIBIT

O.J. WATSON COMPANY INC.





Reference Nos.: (2016: 16-062, 16-063, 16-064, 16-065)

# CITY AND COUNTY OF DENVER Technical Specifications and Request for Proposal Items For a Multi-Purpose Live Floor Dump Body with Options

ADDENDA 1 REVISION 1 (Cancels and supersedes original)

#### 1.0 **General Description**

A new current model year with 16.6 cubic-yard (with 6" sideboards) multi-purpose front center discharging live bottom dump body to be installed on a City provided Class 8, 66,000 GVWR (plate certified) business class tandem axle truck.

The 16.6 cubic-vard multi-purpose front center discharging live bottom dump body is intended to be installed on City provided cab and chassis The 16.6 cubic-yard multi-purpose front center discharging live bottom dump body shall be compatible and suitable for installation on the Class 8, 66,000 GVWR (plate certified) business class tandem axle truck listed in the attached documents without modifications to the provided cab and chassis.

The Class 8, 66,000 GVWR business class tandem axle truck with the 16.6-yard multi-purpose front discharging live bottom dump body shall be fully suitable for 1) snow plowing and salt/sand spreading. 2) hauling materials from dirt and debris to asphalt for paving operations. Front mounted plow, plow hitch, dump body is to be manufactured and installed by the same company.

The installation of the one pusher axle and one tag axle to be installed by the same company that manufactures and installs the front plow, plow hitch, and dump body.

Equipment installer must work with the chassis manufacturer/dealer to ensure that all chassis measurements will accommodate the equipment, to include chassis loading requirements.

Vendor is to provide (with their bid) drawings for the dump body, plow, and a layout drawing showing how all equipment would be installed on the chassis.

- a. Furnish & install -1- Hendrickson Composilite SCT13 13,500# rated steerable air lift pusher suspension, with lock-straight feature on both axles (or approved equal). Lock-straight option is required for when axles are in down position and reverse. Axles must be hub piloted, include disc brakes, and a 31 degree wheel cut. Must have 10'1" inside bridge. Tires: 295/60 R22.5 Michelin on pusher axle with steel white wheels. Compliant tie-rods with greaseless connection points.
- b. Furnish & install -1- Hendrickson ToughLift FMT20 rated axle, air lift tag suspension, non-steerable. Axle must be hub piloted. disc brakes. Tires: 425/65 R22.5 Michelin with steel white wheels.

#### 1.1 Standard Factory Equipment

All standard factory equipment shall be included with the vehicle/equipment; no deletions of standard factory equipment will be permitted unless specifically superseded in these specifications. Accessories not specifically mentioned herein but necessary to furnish a complete unit ready for use shall also be included.

#### 1.2 Government Requirements (where applicable)

The vehicle/equipment shall be built to, and perform in accordance with, all the requirements of the latest edition of the following standards and specifications:

- FHWA. Federal Highway Administration
- SAE, Society of Automotive Engineers Specifications

FMVSS.

Federal Motor Vehicle Safety Standards

DOT,

Department of Transportation Regulations

AWS.

American Welding Society Standards

· PUC.

Public Utilities Commission (Colorado)

1.3 Workmanship and Durability

Workmanship throughout the vehicle/equipment shall conform to the highest standards. Durability shall be sufficient to allow safe and efficient operation of the equipment/vehicle.

1.4 Completion of Bid Items and Alternates

Vendor shall complete each line item in "Offered Equipment" and "Cost" columns in the following manner:

A. Provide vehicle/equipment technical information: in "Offered Equipment" provide technical information as requested and provide cost of item in "Cost" column.

B. Included Standard Equipment: in "Offered Equipment" column provide technical information as requested for standard equipment in, "Cost" column write NC for "No Charge".

C. Differences: in "RED" ink in "Offered Equipment" column adjacent to Description of Equipment provide information on the item being offered, in "Cost" column provide cost if there is a bid item cost.

D. Vendors shall break out and list costs for each specification section. <u>Failure to break out proposed costs may cause proposal to be non-responsive.</u> Breakout costs will be used for comparisons clarifying cost issues and if deletions to the specifications need to be made.

E. Vendor is to provide (with their bid) drawings for the dump body, plow, and a layout drawing showing how all equipment would be installed on the chassis.

1.5 Major Areas of Concern

-01	Description of Concern
A.	Operator Cab Area to include:
	Ergonomic layout of vehicle and all body controls.
	2. Ease and speed of operation of all functions.
B.	Dual Function Ability:
	Primary functions are to efficiently and safely:
	a Plow City streets of snow and ice during and after snow storms.
	b Distribute granular de-icing agents onto the City streets in prescribed tons/mile and record dispensed amounts.
	2. Secondary function is to efficiently and safely transport hot asphalt to City paving projects and discharge the asphalt into the City paving machines efficiently and at proper temperature for efficient mat lay down of the asphalt.
	Ability to easily and quickly switch between primary and secondary functions.
C.	Warranty:
	Ability and cost to obtain an extended warranty on the 16.6-yard multi-purpose front discharging live bottom dump body, hoist, snowplow/spreader controls and hydraulic system.
	2. Location of warranty providers.
D.	Service Ability:

Description	of Concern
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1. Ability to easily service the 16.6-yard multi-purpose front discharging live bottom dump body, snowplow, hydraulic system and spreader body components/items that require regular (yearly or less) servicing and maintenance.

# 2.0 Build Status of Vehicles:

# 2.1 Contractor and all sub vendors after receipt of the City's purchase order shall:

The primary Contractor (prime vendor) shall be responsible for providing within 15 business days to the City a "Preliminary Build Status Plan" to include but not limited to:

- 1. The "Build Status Plan" shall include sufficient detail to assure that the ordered units will meet specifications and be built to the highest quality standards and be delivered on time.
- 2. Placement date of initial order for the live bottom dump body, hoist, snowplow and snowplow control system manufactures.
- 3. Live bottom dump body, hoist, snowplow and snowplow control system manufacturer's date of order acceptance. Written order confirmation is required.

## 2.2 The Contractor shall contact all sub vendors:

The cab and chassis and body component contractors shall contact all sub-contractors providing accessories and equipment for the vehicle (s) and provide all the contractors with the list of all accessories and equipment, manufacturer's order confirmation, order number, vehicle specifications, build date and delivery date to local dealer from the vehicle manufacturer on the ordered vehicle. It is the cab and chassis selling dealer's responsibility to notify Fleet Management, Purchasing and the body contractor so the body contractor can timely order required components, the accessories, and equipment and has the items in stock and is prepared to install the body, accessories and equipment items when the vehicle arrives at their facility.

O.J. WATSON COMPANY INC. 3.0 Basic Requirements or Approved Equal.

When a brand/model is referenced in the specifications unless it is stated as "No Approved Equal" it is only a statement of expected quality, information on alternative products shall be provided with the bid so a full technical comparison can be made of the product submitted as an "approved equal".

3.1 16.6-Yard Stainless Steel Multi-Purpose Dump Body or approved equal

	Description of Equipment	Offered Equipment	Cost
A.	General Description:		0001
	The multi-purpose front discharging live-bottom body shall perform multiple purposes efficiently. They are:	Make: MONROE Model: QDS 19	\$58,20
	<ol> <li>In the paving season the body shall transport and off load hot asphalt into the City's paving machines.</li> </ol>	Yes No	
	<ol> <li>During snow occurrences the body shall efficiently dispense either salt or sand materials onto City streets with spreading rates as low as 10-lbs per lane mile to a maximum of 150-lbs per lane mile with 1 inch gate opening.</li> </ol>	Low Spread Rate: lbs/lane mile High Spread Rate: lbs/lane mile	
) h	3. The body shall also transport sweeper tailings to dump sites.	Yes No	
	<ol> <li>The body shall also be capable of transporting and efficiently off- loading dirt, gravel, cobble and other general construction materials.</li> </ol>	Yes No	

В.		inless Steel Multi-Purpose Live-Bottom Body Construction	Trought a	
	1.	Length: 19-feet.	Body Length: 19'	\$
	2.	Interior Width: 88-inches.	Body Width: \$8"	\$
	3.	Interior wall height: 44-inch.	Wall Height: 44"	\$
	4.	Volume without sideboards: 14.1-cu. yds.	Volume without side boards: /4./ yds³	Ψ
	5.	Volume with 6 inch sideboards: 16.6-cu yds.	Yes No	
	6.	Volume with 12 inch sideboards: 19 cubic yards	Width of Flat section: 24 in	· ·
		The side walls shall radius slope from the vertical sidewall to the flat	Body is self cleaning/clearing with intended materials	Ψ
		floor at the conveyor. The radius/slope shall provide for self	to be hauled in the body: Yes No	
		cleaning and feeding of materials on to the conveyor. No large	to be madica in the body. Tes	
- 1		"flat" floor/side sections due to poor cleanout of materials	Dog House Yes No	œ.
- 1	8.	The dump body shall have a flat front head sheet or a small/partial	Dog House Size: <u>/S"</u> W x <u>\$2</u> " T x <u>/6</u> D	Ф
		dog house to allow for hoist clearance.	Dog House Gize W X T X D	
	9.	Tailgate:	Height: 60 in	
		a. Height 50" or 6" higher than sidewalls	Height: 60 in Tailgate Type: ASPhalt Type	\$
		b. Tailgate shall be "asphalt type" sloped rearward for efficient	rangate Type. Traphari Type	Ф
		dump/discharging asphalt into the City's asphalt pavers.	Yes No	
	10.	Side walls, head sheet, longsills, top rail and tailgate shall be	Tes	<b>\$</b>
	10000	constructed of 1-piece no splicing of material and be fully welded.	Discharge Location: EPaul Ocutes	
	11.	Discharge, front of body.	Discharge Location: FRONT CENTER	
1	12	Spinner to be installed forward of front pusher axle, between		
		pusher axle and truck cab. To accommodate a 9' material spread.	YES "SEE PRINT"	
C.	Ma	terial:	TES SEE PILINT	
		Sides, 1-piece, 7-gauge/ 3/16" minimum, 304 stainless steel.	Material Size & Type: 7 . A. 2	
	2.	Head sheet 1-piece, 7-gauge/ 3/16" 304 stainless steel and	Material Size & Type: 2-94.304  Material Size & Type: 7-94.304	ф
	ACTOR I	conform to the body contour. Fully welded inside and outside.	Waterial Size & Type	
	3.	Top rail shall be a box formed 7-gauge/ 3/16" 304 stainless steel	Material Size & Type: 1-01 1-04	
		self-cleaning design (sloped to inside the body) with the top rail	Material Size & Type: 7-94.304  Quantity: 2-0NE PER SIDE	
		over lapping the side wall for additional stiffness.	Quantity. Dez Side	
	4.	Rear corner posts shall be full depth from top of the tailgate to the	Material Size & Type:	
		bottom of the longsills, 7-gauge/ 3/16", 304 stainless steel.	Waterial Size & Type.	
	5.	Side supports mid body extending from the top rail to the lower	Material Size & Type:	
	07,50	cross tube. Material 7-gauge/ 3/16" x 4" x 4' formed 304 stainless	Waterial Size & Type.	
		steel.	g.	
	6.	Longsills shall be fully boxed 1/4", 304 stainless steel, 14" deep.	Material Size & Type:	
	7.	Lower cross members shall be 7-gauge/ 3/16" x 3" x 2" channel	Material Size & Type: 7 - 94 364	
		welded to the base of the longsills on 2' centers	waterial olze a Type. 7 - 34 369	
	8.	Top cross members shall be 7-gauge/ 3/16" x 3' x 3" structural	Material Size & Type: 7- 54 304	
		angle welded to the top of the longsills on 12" centers.	waterial Size & Type:	
		de la		0 1

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37	<ol> <li>Cross members 4" boxed beam ¼' 304 stainless steel on 12" centers gusseted to longitudinal beams at each beam.</li> <li>Longitudinal beams maximum height 14" boxed-beam ¼" 304 stainless steel.</li> </ol>	Material Size & Type:  Material Size & Type: Height: /4.5 in Yes No No	\$
	Conveyor Floor:  1. The floor shall be minimum ¼" AR 400 steel  2. The floor shall be easily replaceable (bolt-in).  3. The floor shall have 7-gauge/ 3/16" 304 stainless steel conveyor chain guards.  4. The chain guards shall be easily replaceable (bolt-in).	Material Size & Type: //4" A R 400 Yes No No No No	\$ \$ \$
F.	<ol> <li>Conveyor Floor Cover:</li> <li>The conveyor shall have a ¼" steel slide-in conveyor cover for use when not using the conveyor for dispensing salt/sand.</li> <li>The covers shall have 2 D-hooks for lifting</li> <li>The conveyor cover shall be secured to the body so that it cannot come loose or come out during dumping of loads</li> <li>How is the floor cover installed and removed (explain)</li> </ol>	Material Size & Type: 1/4" STEE!  Yes No How Secured to Body: Two bolts At REAR.	\$ \$ \$
G.	<ol> <li>Conveyor:</li> <li>Conveyor shall be forward discharging</li> <li>Conveyor chain width: 23" measured outside edge of chain to outside edge.</li> <li>Conveyor chain: pintle D667X type with 21,700-lb tensile strength per stand carbon steel with stainless steel pins and cotter pins.</li> <li>Cross bars: 1-1/2" x 3/8" spaced on every chain link approximately 2-1/4" spacing (tight spacing).</li> <li>Drive sprockets: 8 tooth, carbon steel keyed to 2" dia. Shaft minimum.</li> <li>Conveyor motor: 9-hp @ 1,500 psi/15 gpm high-torque, low speed hydraulic motor direct drive to a reduction gearbox. Motor shall have built-in speed sensor with "Brad Harrison" connector.</li> <li>Conveyor bearings: self-aligning, shielded ball flange bearings easily lubricated from central location at rear of unit.</li> <li>Chain wiper: provided at front of conveyor unit.</li> <li>Chain adjustment: spring loaded idler shaft with 3" minimum adjustment. Chain shall be easy to adjust from rear of spreader.</li> </ol>	Discharge Direction: Followard Chain Width: 24"  Pin Material: Stainless 21,700 TS  Cross Bar Spacing: 2'/4"  Shaft Size: 2 in  Motor Specs: 9H.D. 1500 PS: Connector Type: Self Aligning Yes No Yes No No Spains Front AAJJST	\$ \$ \$ \$ \$

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H.	M. C. S. E. LO.	STATE OF THE STATE	
	<ol> <li>Material Feed Gate:         <ol> <li>Material feed gate shall be set for 3 openings:</li></ol></li></ol>	Yes No Yes No Opening Size: /3"#. x/7. 25" W Yes No	\$ \$ \$ \$ \$
1.	<ol> <li>Spinner Deflector Shields:         <ol> <li>Spinner Shields:</li> <li>Sides, 2 shields, pin adjusted. Constructed of stainless steel.</li> <li>Rear, 1 shield, pin adjusted. Constructed of 10 ga. X 8" x 16" stainless steel channel and welded to spinner pedestal.</li> <li>One (1) easily removable covering of 2-ply reinforced rubber ¼" x 16" x 12" to be attached to forward deflector to prevent salt/sand materials from being thrown forward into the transmission/driveline area of the truck</li> </ol> </li> <li>One (1) rear easily removable for driveline maintenance and repair covering of ¼", 2-ply reinforced rubber shall be installed between the conveyor and around the driveline to prevent salt/sand materials from contacting any parts of the driveline."</li> <li>Driveline protection, easily removable for maintenance and repair.         <ol> <li>Protective covering shall be ¼" thick, 2-ply, reinforced rubber</li> <li>Installed in and below the truck frame in front of the front drive axle to prevent salt/sand materials from contacting the vehicle axles, suspension, brakes and other components located in the axle area of the truck.</li> <li>The rubber skirting shall extend down to within 6" of the pavement</li> <li>The rubber skirting shall be easily removable for maintenance and repair, 15 minutes maximum.</li> </ol> </li> </ol>	Yes No Yes No Yes No Yes No Yes No Location: Front of Dalue Ax 18  Height Above Pavement: in Removal/Reinstall Time: minutes	

1. Rear tailgate shall be "high lift" forward hinged 12" on top with dump-thru capabilities. The "high lift" is desired for easier dumping of snow and leafs.  2. Tailgate construction: a. 50" high x 88" wide, 6-panel, 7-gauge/ 3/16" 304 stainless steel with a 10-gauge perimeter boxed reinforcement. b. Offset top hardware. c. Fully welded construction with reinforced hinge and latch points. d. Tailgate chains shall be covered to prevent body damage. 3. Hinge pins shall nitrate steel. The pins shall also be drilled for a safety hairpin cotter pin. 4. Safety hairpin cotter pins shall be 302 stainless steel and attached to the body with attachment chain to prevent loss. A safety pin storage hole shall be provided at each location.  K. Banjo Plates: 1. Banjo plates, 304 stainless steel, added for support/safety chains at rear corner posts and tail gate as required. 2. Tailgate shall be able to operate in partial to full open position.  L. Cab Protector: 1. Center section of cab protector shall be constructed of 10 gauge material and end plates of cab protector shall be constructed of 7 gauge 304 stainless steel to cover hydraulic system, load bearing type 38" in length. 2. Cab protector shall have provisions for safety strobe lights, Whelen Model 500 series surface mount with branch protection.  M. Horizontal and Vertical Members: 1. All horizontal and vertical members shall be self-cleaning to prevent  Yes No  \$	J.	Heavy-Duty Tailgate:		
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4. Safety hairpin cotter pins shall be 302 stainless steel and attached to the body with attachment chain to prevent loss. A safety pin storage hole shall be provided at each location.  K. Banjo Plates:  1. Banjo plates, 304 stainless steel, added for support/safety chains at rear corner posts and tail gate as required.  2. Tailgate shall be able to operate in partial to full open position.  L. Cab Protector:  1. Center section of cab protector shall be constructed of 10 gauge material and end plates of cab protector shall be constructed of 7 gauge 304 stainless steel to cover hydraulic system, load bearing type 36" in length.  2. Cab protector shall be inset 10" per side to provide 6" minimum clearance to the exhaust pipe and be symmetrical.  3. Cab protector shall have provisions for safety strobe lights, Whelen Model 500 series surface mount with branch protection.  M. Horizontal and Vertical Members:  1. All horizontal and vertical members shall be self-cleaning to prevent  Yes No  \$		Alinge pins shall hitrate steel. The pins shall also be drilled for a safety hairpin coffer pin.	Pin Type: 304 SS	\$
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1. Banjo plates, 304 stainless steel, added for support/safety chains at rear corner posts and tail gate as required.  2. Tailgate shall be able to operate in partial to full open position.  L. Cab Protector:  1. Center section of cab protector shall be constructed of 10 gauge material and end plates of cab protector shall be constructed of 7 gauge 304 stainless steel to cover hydraulic system, load bearing type 36" in length.  2. Cab protector shall be inset 10" per side to provide 6" minimum clearance to the exhaust pipe and be symmetrical.  3. Cab protector shall have provisions for safety strobe lights, Whelen Model 500 series surface mount with branch protection.  M. Horizontal and Vertical Members:  1. All horizontal and vertical members shall be self-cleaning to prevent  Yes No  Size: 10 9 4 30 4 36"  Size: 10 9 4 30 4 30 4 36"  Size: 10 9 4 30 4 30 4 30"  Size: 10 9 4 30 4 30 4 30 4 30 4  Size: 10 9 4 30 4  Size: 1		storage hole shall be provided at each location.		
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3. Cab protector shall have provisions for safety strobe lights, Whelen Model 500 series surface mount with branch protection.  M. Horizontal and Vertical Members:  1. All horizontal and vertical members shall be self-cleaning to prevent  Yes No		clearance to the exhaust nine and he symmetrical	(Vos.) No.	
Model 500 series surface mount with branch protection.  M. Horizontal and Vertical Members:  1. All horizontal and vertical members shall be self-cleaning to prevent  Yes No		Cab protector shall have provisions for safety strobe lights. Whelen	Tes No	,
M. Horizontal and Vertical Members:  1. All horizontal and vertical members shall be self-cleaning to prevent  Yes No		Model 500 series surface mount with branch protection		
1. All horizontal and vertical members shall be self-cleaning to prevent Yes No	M.	Horizontal and Vertical Members:		
		1. All horizontal and vertical members shall be self-cleaning to prevent	Yes No	\$
material build up.		material build up.		

N.	Side Board Holders:	A CONTRACTOR OF	
IV.	<ol> <li>Height at top of the side boards shall not exceed 9' load height.</li> <li>Side board holders shall be bolt thru design for with a 4" width.</li> <li>Sideboards 3" x 6" stainless steel C-Channel with a 3" wide x 3" high, P/N CACD830 Acme Rubber Company (1.800.222.2263).</li> <li>The dock bumper shall be bolt attached thru a continuous strip of 3/16" stainless steel, bolted on 8" centers, to the top of the stainless steel C-channel.</li> <li>Bidder is to offer 12" X 19' sideboards with rubber top as an option.</li> </ol>	Height @ Top of Side Boards:	\$
Ο.	Tie Down Rail:		
	<ol> <li>Tarp tie-down rail or 5 evenly spaced hooks on side of body and on tailgate.</li> <li>Tie-down rail and hooks shall be 3/8" dia. 304 stainless steel minimum.</li> </ol>	Tie Down Rail Yes Hooks Quantity: Yes No	\$
P.	Rear Fenders:		
	<ol> <li>Fenders shall be full body length with 3" formed outer lips.</li> <li>Fenders shall be constructed from 7-gauge/ 3/16", 304 stainless steel</li> </ol>	Yes No No	\$
	<ol> <li>Fenders shall be reinforced to the body at the front and rear of the body minimum</li> </ol>	Yes No	
Q.	Suspension Protection:		
	Rear rubber skirting to 10" above the pavement shall output approach to record a pavement and left for the state of t		
	extend across the rear to prevent asphalt from getting onto the rear suspension and causing damage.	Yes No Height Above Pavement:/o inch	
	Front rubber skirting to 10" above the pavement shall	Treight Above Pavernent/b inch	\$
	extend across the front of the suspension to prevent	Yes No	
	salt/sand from getting onto the rear suspension and causing damage.	Height Above Pavement: inch	\$
	3. The rubber skirting shall be easily removable for	Removal Time:/ minutes	
	maintenance and repair, 15 minutes maximum.		\$
R.	Shovel Bracket:		
	Shovel hook bracket (2 required): one located on the street side	Yes No	\$
	wheel cover of the dump body and one located on the curbside wheel cover of the dump body.	Yes No	
	2. The bracket shall be 304 Stainless Steel with a spring-loaded snap-	140	
	close clamp to secure the shovel handle to the body with a		
	retention bracket for the top end of the shovel to slide into. The shove blade shall face forward.		
-			



S.	Toolbox:		
eass.	<ol> <li>A toolbox shall be installed on the top of the street side fender, mounted forward.</li> </ol>	Location: LEFT REAL FRANKE	\$
	2. The toolbox shall fit the body contour on the back side.	Yes No	
	3. The toolbox shall be 66" L x Fender Width x 16" T.	Toolbox Size: 66 x 16 x 24	
	<ol><li>The toolbox door shall be top hinged with gas props.</li></ol>	Yes No	
	5. The toolbox shall be constructed of 304 Stainless Steel with steel	110	
	key lockable.	Yes No	
T.	Mudguards:	1.0	
	<ol> <li>Mudguards to be constructed of 304 stainless steel and installed</li> </ol>	Yes No	\$
	ahead of forward pusher axle and act as an extension of the frame	Yes No	\$
	mounted fenders. To protect cab and body from debris.		Ψ
	2. Rear of tandem heavy-duty rubber anti-sail type. The mud flaps		
	shall be easy to swing forward and hook above the rear tire. The	one or	
	latch system shall have a reinforced hole on the mud flap and a	Hinge Type: CHAIN	
	hook on the body to retain the mud flap.		
	<ol><li>The rear mud flap hinge joint shall be chain type (no axle type</li></ol>	Yes No	
	allowed)		
	<ol> <li>The mud flaps shall not come unhooked when the dump body is</li> </ol>		
	raised for dumping into the paving machines.		
U.	Ladder		
	<ol> <li>Mounted left and right rear side of body centered above the rear</li> </ol>	Location: LH + RH ABOUR TIMES	\$
	tire.	The state of the s	-
	<ol><li>Ladder rungs shall be open grip strut non-slip type.</li></ol>	Rung Material: ODEN STAINIESS	
	<ol><li>Ladder portion below the body shall be a bolt-on type.</li></ol>		
	Rungs shall be evenly spaced	2" - C74"48"	
	<ol><li>Left side 1st rungs no more than 22" above the ground.</li></ol>	1st Rung Height: inches	
	<ol><li>Right side 1st rungs no more than 22" above the ground.</li></ol>	1st Rung Height: 22 inches	



V.	Vik	rator,			
	1.	Vibrator, 2 required, shall be a Cougar DC-1100 12-vDC or approved equal:	Make: Yes	No Model: De-1100	\$
	2.	Dump body shall have a 12-vDC electric vibrator securely attached to the each lower side of the dump body structure.			
	3.	프프라스 시간을 하고 있는데 있다면 사용하다면 있는데 이렇게 및 이 시간을 모르면 하지만 하지만 되었다면 하지만 하고 있어 있다면 하지만 하지만 하지만 하지만 하고 있다. 그 모르는 그 모든 그 모르는 그 모르는 그 모르는 그 모든 그 모	Force:	1100 185.	\$
	4.	Mounting bolts shall not protrude through the floor.	Yes	No	
	5.	A stainless steel safety cable shall secure the vibrator to the body with a minimum of two attachment points located on opposite sides on the vibrator to prevent the vibrator from falling off if the bolts come loose.			\$
	6.		Yes	No	
	7.	The electrical system shall include			
		<ul> <li>Operator abuse automatic timer shutdown. The timer shall be mounted in a location/manner to prevent operator adjustment.</li> </ul>	Yes	No	\$
		b. Automatic overload protection.	Yes	No 4	
		c. Copper #4 welding cable minimum.	Cable Size:	<u> </u>	\$
		<ul> <li>d. Cab mounted momentary operator button wired through a constant-duty solenoid.</li> </ul>	Yes	No	
	8.	The vibrator shall be fully sealed against high-pressure wash water,	Yes	No	\$
		corrosion, and road dirt.			×
	9.	The vibrator shall be maintenance free not requiring lubrication or other routine maintenance functions except checking mounting bolts.	Yes	No	\$

W.	Vel	hicle Rear Lights: (No Approved Equals)				·
		All lights shall be Truck-Lite "Lifetime Warranty" 12vDC, LED type, flush mount, sealed lexan body, grommet insulted with Fit' N Forget	Make:	Ruck	Lite	\$
		multi-pin plugs where possible.				
	2.	Integral Stop/Turn/Tail/ lights mounted in the rear corner post of the dump body model Super 44 P/N 44302R or model 60 P/N 60250R.	Yes	No		\$
	3.	Back up lights Truck-Lite LED, flush mount, sealed lexan body, grommet insulted, multi-pin units model 44 P/N 44206C.	Yes	No		\$
	4.	Marker lights Truck-Lite LED 3 per side model 33 P/N 33050R or 33050Y.	Yes	No		\$
	5.	Rear ID bar Truck-Lite LED model 33 P/N 33050R.	Yes	No		\$
	6.	License plate light, Truck-Lite LED model 15 P/N 15040	Yes	No		\$
	7.	Wiring shall be sealed and homerun.	Yes	No		\$
	8.	Salt/sand spreader illumination light Ecco PN E92007 500 lumens. The light shall be installed to provide night vision at the spreader for the operator but shall not blind on-coming traffic. Location shall be	Make:	ecco	Model: <u>₹ 92∞ 7</u>	\$
	22.00	mutually determined at installation				
	9.	Dielectric grease shall be applied to all plug connections and terminals to prevent corrosion.	Yes	No		\$



X.	Strobe Light System:		\$
	Rear Corner Posts:	19	Ψ
	1. Whelen 500 series rubber grommet flush mount system "Ultra	Make: WHELEN Model: 500	
	Bright" LED strobe/flasher.	Wodel.	
	2. Strobe lights shall be located as follows:		•
	a. Rear corner posts top, (1) required per side Whelen 500 Series		φ
	<ol> <li>Installed above the integral Stop/Turn/Tail/ lights.</li> </ol>		
	<ol><li>"Amber", grommet mounted top left side.</li></ol>		•
	<ol><li>"Blue", grommet mounted top right side.</li></ol>		<u>\$</u>
	Cab Protector:		φ
	3. Whelen Model 500 series surface mount with branch protection		
	LED strobe, (2) required per side one front facing and one side		
	facing on front outer corners of the cab protector.		
	a. "Amber", mounted left side P/N 50A03ZAR. (2 required)		
	b. "Blue", mounted right side P/N 50B03ZBR. (2 required)		
	c. Brush Guard P/N 5-BRUSH (4 required)	Make: WHA FW Model: 500	
	4. The warning lights shall operate off of a switch package in the cab.	marte: wholes:	Φ
	Spec Section 3.6.E, with 1 switch for amber strobes and 1 switch	1179-41	e
	for blue strobes, with light to indicate the strobe is on shall be	Yes No	φ
	provided.	110	φ
	5. Dielectric grease shall be applied to all plug connections and		Ψ
	terminals to prevent corrosion.	(Yes) No	Ψ
	,,	110	2

16.6-Yard Live Floor Dump Body Equipment SUB TOTAL COST \$58,200.00

3.2 Body Hoist or approved equal:

	Description of Equipment	Offered Equipment	Cost
A.	Body Hoist:		0031
	<ol> <li>Hoist, Mail Hot Double Acting 27.5-ton hoist or approved equal.         This 27.5 ton hoist number comes from the NTEA web site for this model, when used on a 19' body with 12" of overhang. This number can be more or less depending on the body length and overhang. Vendor shall load test and verify that the hoist is     </li> </ol>	Make: Mai hot Model: CS 170 NTEA Type: TEI Class: 110 Ton Rating: 45. 4 tons	\$9,700.00
	<ul><li>appropriate for its intended use.</li><li>The hoist capacity and design shall be appropriate to lift a fully</li></ul>		
	heaped load of asphalt, wet sand or design water load.	Heist Times Noncet 13++	
	Hoist material medium-tensile steel meeting NTEA Class 110	Hoist Type: DiRECT LitT	
	requirements. The cylinder tubing shall be D.O.M. tubing, drawn		
	over a mandrel and shall have tensile strength of 75,000 psi. The		
	tube shall have a surface hardness of 80 Rockwell "B".	Yes No	S
	4. Hoist shall be "Direct Lift" type design with the initial cylinder force		<u> </u>
	directed upward for sufficient breakaway force and cylinder force to	Capacity: 65.4 tons at 2000 psig	
	lift the loads outlined in Sec 3.7.A.2.		
	5. Hoist pivot point bearings shall be greaseless composite bearing	11.1.0.1.	
	material "Never Require Lubrication".  6. Hoist capacity: 79,800 lbs on 1st stage @ 2,000 psi.	Hoist Cycle Time: 30-45 seconds	
	7. Hydraulic system pressure 2,000-psig maximum with 27.5-ton	Yes No	
	capacity rated at 70% or less of system capacity.		
	Vendor shall demonstrate with load lift test that the hoist is proper for the application and the City's intended use.	Yes No	
	9. Hoist cycle time: 30 to 45 seconds.	Yes No	c
	10. Powered up and powered down.	140	Φ
	11. Rear Hinge:	Steel Type: MilD + Staisize: 5 1"+	
	a. Rear hinge assembly is to be fabricated in such a way as to include the rear tow plate. This assembly is to be fabricated from 1" steel plate, with a ½" x 4" full width rear brace bar.	Material Size & Type: /" Alus 416 Ste	MIESS
	b. Hinge pins shall be 2-3/8" 416 stainless steel	Yes No	
	c. The body hinges and bearings shall be composite greaseless	140	
	not requiring-lubrication.	Dump Angle: 48"	
	<ul> <li>d. Hinge plate shall be fully welded to the dump body and to the truck frame.</li> </ul>	Yes No	
	12. Dump angle 48°.	Yes No	
	13. Lift cylinder: Nitrated cylinder rod all stages.	Yes No	_

Dump Body Safety Legs:			
Dump body anti-lowering safety legs shall be provided.	Yes	No	\$
<ol><li>The safety legs shall lock the dump body in the raised position preventing lowering of the dump body.</li></ol>	Yes	No	\$
3. Pin storage (if applicable) in a sleeve, that the pin cannot fall/vibrate etc. out of shall be provided.	Yes	No	\$
<ol> <li>The pin shall be attached to the safety arm/dump body/chassis with chain/cable to prevent loss.</li> </ol>	Yes	No	\$
5. Safety legs shall rest in a saddle to prevent bouncing around.	Yes	No	•
Body/Safety Props shall be powder coated ORANGE for greater visibility	Yes	No	Ψ

Body Hoist SUB TOTAL COST \$9,700.00

NATS PAY

3.3 Hydraulic System and Controls:

	Description of Equipment	Offered Equipment	Cost
A.	Hydraulic System Parameters and Drive Method:		
	Hydraulic system shall operate off of the truck's system at low	Engine Operating RPM: rpm	\$50,200.
	engine idle (750 rpm) and remain functional at all engine speeds not gaining increased performance above low engine idle speed.  2. FEPTO mounted load-sensing hydraulic pump, driven off of crank shaft. Minimum 1350 drive shaft with slip yoke. Hydraulic pump is to be mounted as close as possible to the front of the chassis.	PTO Direct Mount: Yes No Make: Spicer Model: 1350	\$
В.	Hydraulic System Design:		
	Hydraulic System shall be closed center, pressure compensated,  load consing type to provide by devile provide all provides type to provide by devile provides the provides type to provide by devile provides type to provide by devile provides type to provide type to provide by devile provides type to provide type type to provide type type to provide type type type to provide type type to provide type type type type type type type typ	System Type: Danfoss closed center, piston pump	\$
	load sensing type to provide hydraulic power to all accessories. All hydraulic components shall operate effectively and efficiently at 2,500 psi.	Pressure compensated, load sensing	
	<ol><li>Pressure gauge for hydraulic circuits shall be glycerin filled.</li></ol>	Yes No	s
	Hydraulic Pump shall be cast iron variable displacement load		\$
	sensing piston type,	Make: Danfoss Model: ERL100B LS	
	<ol> <li>Hydraulic pump size sufficient to operate the dump body snowplow and sand spreader, (approximate size 6.1 cid [cubic inch</li> </ol>		\$
	displacement] for FEPTO), pump shall not interfere with the drive shaft or other items that require periodic service or repair.	Pump Size: 100cc cid 6.1	\$
	<ol><li>SAE side ports, SAE type mounting flange. Pump shall be rated for pressures up to 5,000 psi.</li></ol>	Operating Pressure: 5800 Max. psig	
	6. Hydraulic system shall operate at 2,000-psig maximum operational	Pump Make: Danfoss Model: ERL 100B LS	
	pressure and 40 gpm minimum at 1,700 rpm.	Flow: 45 gpm @ 2000 psi @ 1700 rpm	\$
	7. The hydraulic system shall be proper for intended use.	PTO Make: Spicer Model: 1350	-
		Yes	\$
		103	•



G.	Hydraulic Reservoir and Valve Enclosure System:		
	1. A frame mounted reservoir will be provided between the back of the	Reservoir Volume: 40 gallons	
	truck cab and the front of the dump body. Construction will be of 10	reservoir volunte.	\$
	gauge stainless steel. Oil reservoir shall be sized appropriately to		
	accommodate all hydraulic functions. Reservoir shall include a tin-	Oil Type: ISO Grade 32	
	out shelf for the mounting of valving system.	5 1) 55:	\$
	2. Hydraulic oil shall be ISO Grade 32 multi-viscosity with a -40°F	Ves No	
	pour point.	Yes No	\$
	Valve assembly to be attached to the tank structure.	(Yes) No	\$
	4. Magnetic drain plug, //	Yes No	\$
	5. Oil level and temperature sight gauge cage protected. The oil level	(Ves) No	_
	indicator line shall be permanent (No Decals/Stickers)	Yes) No	\$
	6. Internal baffle	Yes No	\$
	7. Filler breather assembly w/mesh basket and chain.	Size: 2"	\$
	8. Raised formed flange for breather		\$
	9. Suction port 2" NPT.	Size: 3/4" NPT Mesh Size: 100	\$
	10. Suction strainer two inch NPT 100 mesh	Yes No	\$
	11. Drain port 3/4 inch NPT on bottom	Yes No	\$
	12. Provisions for in-tank hydraulic oil filter.	, res	\$
	13. Valve 2" full flow brass ball valve shall be plumbed at the suction (	Yes No	_
	port of the tariff	No	\$
	14. Valve compartment shall have an easily removable, no tools		
	required, sealed access for servicing valves.		
	15. A hydraulic oil recirculation filter system connection system shall	. 11	\$
	be provided with the following:	Tubing Size: inches	
	a. The suction and return tubes shall be 1" ID and be installed on	Distance of Tank Bottom: 1/4 inches	
	the tank top side on each tank end (cross flow) approximately	Distance of Fank Bottom. 721 Inches	
	4" Inside the end caps and extending to within 1/4" off the		
	tank bottom at the lowest point.	Make: PARKER Type: FF	
	b. The hydraulic connections shall be 1" Parker FF male (flat face)	Type, 1	
	fittings and orientated so they face to the inside (each other). (	Yes No	
	c. The suction and return lines shall be 1" ID with a 60° cut on the	Tes No	
	bottom to assure adequate hydraulic oil flow.	Yes No	
	d. The suction and return lines shall be interchangeable in use so	INU INU	
	it does not matter which hydraulic tank fitting the filter system		
	suction and return lines are connected to.		

WATSONY WATSONY CONPANY

D.	Hydraulic Filtration:		
٦.	In-tank hydraulic filter.		1000
	a. Rated for no less than 80 gpm	Yes No	\$
	a. Nateu for no less than ou gpm	Rating: 80 gpm	
	b. Filter Schroeder CPI SG03020010 with KZ 10 Synthetic 10	Make: Schroeder CPI Model: SG03020010	\$
	micro-glass element with visual condition indicator gage	Filter Rating: 10 microns	
	2. High Pressure, Pressure line Parker model (World Pressure Filter)	Make: Parker Model: WFP3xxxx	\$
	WPF 7,000 psig rated with 7-micron absolute tandem type (1 per	Filter Size: 7 microns	
E.	pump).		1
	Hydraulic Control Valve Section:	Make: Danfoss Model: PVG32/100	
	<ol> <li>The hydraulic valve section shall be a modular manifold design</li> </ol>	Yes	1 \$
	that will efficiently and effectively operate either a front		
- 1	mount salt/sand conveyor and spinner,		
	Slide-in salt/sand spreader with liquid (prewet, anti-ice @ 15		
	gal/lane mile and ice blast @ 75-gal/lane mile), dump hoist		
	and other specified hydraulically driven components.		\$
	<ol><li>Each hydraulic function shall have its own individual</li></ol>		
- 1	manifold stacked together to form the manifold base.	Yes Compliant w/	
		section 3.3.E 9	
	The manifold shall consist of:	Size: 16	1
	a. Inlet porting: SAE #16.	Size: 16	-
	b. Outlet porting: SAE #16	Size: 4	-
	c. Load sense porting: SAE #4.	Size. 4	
		Manifold Design:	\$
	2 Th. 1	Section w	
	<ol><li>The dump body manifold shall be stacked next to the inlet port.</li></ol>	spreader	
		manifold	
	<ol> <li>The hydraulic control valves shall be pulse-width modulated</li> </ol>	Valve Type: Electric PWM	-
	and proportionally controlled.	Valvo Type. Electric Tyvin	1
	C ASSOCIATION CONTRACTOR SECURITION OF CONTRACTOR OF CONTR		\$
	5. Each hydraulic valve segment shall be individually mounted to	Yes serviceable	
	the manifold base assembly and be serviceable without	w/o removing	
	removing any hydraulic hoses or other hydraulic valve	hoses or valves	\$
	segments.		
	6. Each hydraulic valve segment shall have its own individual	Yes	\$
	heavy-duty, continuous-duty solenoid coil.		900
	7. Each solenoid coil shall have an LED power indicator light for	Yes	\$
	troubleshooting and have water/magnesium proof AMP Jr.		
	Style connectors.	AND THE RESERVE OF THE PARTY OF	1
	<ol> <li>All coils shall operate on 12vDC and require a maximum of</li> </ol>	Yes	\$
	1,400 mille-amps.		
	9. Each hydraulic valve shall be equipped with a cam lever style		1
	manual override except for the conveyor and spinner sections	Yes O.J.ON WATSONY	
		WATSAM	1

10. Valve flow ratings:		
a. Dump body section shall be a Sauer Danfoss PVG1	Model: Danfoss PVG100	
rated at 39 gpm minimum.	Rating: 39 gpm	\$
11. All other sections shall be properly sized for actuated function	n. Rating: 10-25 Sized for function required	
The sand/salt spreader manifold shall have 4 valve cartridge ports for:		\$
a. Conveyor b. Spinner c. Prewet (blank/plugged for future use) d. Anti-Ice (blank/plugged for future use) 12. Control valve specifications a. Dump Body Hoist: PVG100 High Flow, 4-way double acting with 500 psi down side work port relief valve. b. Plow Lift: PVG32, 4-way double acting with adjustal	Yes ble	<u>    \$                                </u>
LSRV set at 750 psi down side. c. Plow wing Left Angling: PVG32 4-way double acting	10.0	\$
with 2000psi forward, 1100psi reverse Port RV. d. Plow wing Right Angling: PVG32 4-way double acting with 2000psi forward, 1100psi reverse Port RV.	Yes GPM: 10.6 Yes GPM: 10.6	\$
e. Spare section TBD: PVG32 4-way double acting wit 2000psi LSRVs.	th Yes GPM: 25	\$



		TEMPLATE-ADI REV	1
Plow Edge Protection System:			
The snowplow edge protection system shall function to:	Make:	Model:	\$
<ol> <li>Reduce plow weight on snowplow edge.</li> </ol>			
<ul> <li>Eliminate the requirement for castor support wheels.</li> </ul>			
<ul> <li>Add hydraulic up (lift) pressure to snowplow lift circuit to</li> </ul>	1		
reduce weight of the plow on the roadway.			
2. The cumulative weight of the plow weight and hydraulic down	Yes		
pressure shall be adjustable and balanced with up/lift hydraulic			
pressure to provide efficient snowplowing and reduce plow			
edge wear.			
<ol><li>Adjustments shall be sealed/tamperproof so only authorized</li></ol>	Yes		\$
personnel can make adjustments to plow balance settings.	How Sealed: Enclo	sure w locking nut	
4. The snowplow shall be free to follow the contour of the roadway	Yes		
and shall do so utilizing an active modulating hydraulic function	2 20		
that forces the snowplow to the road surface as well as holds			
(counters) the plow from full force down on the roadway. The net			
result shall be:			
a. Plow lift must be immediate to avoid plow or roadway	Yes		
damage.	L' Det.		
b. Plow return to plowing shall be fast to minimize under	Yes		
plowed stretches of roadway.			
5. The amount of both the down force and countering up lift shall be	Yes		
adjustable to provide proper plowing operation.	11.55		
<ol><li>The balance system shall not require being turned off to raise or</li></ol>	Yes		\$
lower the plow.			
7. When the plow balance system is turned off the full weight of the	Yes		
plow shall be applied to the roadway.	ALL PARTS		
8. The plow balance system shall be controlled via CAN integrated	Yes		
rocker switch located on the snowplow control panel. The switch	Where located: Op	erator control console	\$
shall be easy to access and lighted when the circuit is in operation.			-
<ol><li>The balance valve system shall utilize manifold mounted, solenoid</li></ol>	Yes		
activated cartridge valves.			\$
10. Each solenoid coil shall have an LED power indicator light for	Yes		-
troubleshooting and have water/magnesium chloride proof Din	1,000		\$
connectors.	Yes		-
11. Each hydraulic valve segment shall have its own individual			
heavy-duty, continuous-duty solenoid coil.	Yes		\$
12. Hydraulic test ports for field observation of control pressures			
shall be provided in a very easy to access location.			\$
The second secon	I		Ψ



1. Certifie	, Spreader and Hoist Control System or Approved Equal: ed Power "Freedom" XDS Control system with the ng characteristics or Approved Equal.	Make: Certified Model: Freedom XDS	\$
hydrau warnin	plete in-cab integral console control system shall include all ilic functions, spreader functions, auxiliary functions, g indicators and diagnostic and programming functions. DS system shall be ergonomically mounted on a center floor	Yes	
or sea	t mounted armrest design control console as follows::	500 F 100 F	\$
4. The wi	nter snowplow/snow fighting and summer systems shall:	Type System: CAN Open	
	<ul> <li>Communicate over a CAN Open system bus using CAN Open protocol and shall not be a proprietary communication protocol.</li> </ul>	Number of Modules: 4	
	The system shall consist of four primary modules that reside on the Bus and allow flexibility in mounting configurations.	Yes	
	<ul> <li>The system is completely expandable and allows for additional modules to be added to the CAN Bus.</li> </ul>	Yes	
	d. The 3 primary components of the system are firmware upgradeable using a laptop and Certified Power, Inc. interface cable(s). Display firmware is USB upgradeable.	Yes	
	e. The configuration file and calibrated system file can be saved via USB 'Thumb' Drive for transfer to other systems or as a backup providing the ability to use specific configurations for varying vehicle use or	Yes	
	operator skill level.  f. The original setup configuration shall be maintained at the factory as a secondary backup and is traceable	Yes	
	by part number. g. The system shall incorporate three levels of security and access that is password protected and defined by the user. No tools, PC or Fobs are required for System	Yes	
	Diagnostic, Calibration or Configuration.  h. There shall be three levels of access called 1)	Yes	
	"operator", 2) "technician" and 3) "administrator" shall give the user varying levels of access to the system setup, data, configuration fields and parameters based upon access given.	Yes	
	<ol> <li>Operator shall only have access for on-screen data and collection of dispersion data.</li> </ol>	Yes 0.3.0N	-

	TEMPLATE-AD1 REV 1
ii. Technician shall be capable of calibrating and diagnosis  iii. Administrator shall have full access to all	Yes
menus in the system and have the ability to make system configuration changes as well as system parameter changes.	Yes
<ul> <li>5. The in-cab control system panel shall include 6 user defined CAN based rocker switch inputs and up to 4 joystick inputs on 3 individual single acting Joysticks.</li> <li>6. The XDS Display:</li> <li>a. The display screen shall include:</li> </ul>	Yes
7 inch, 800x480 RGB WVGA 18 Bit color touchscreen enclosed within durable aluminum housing. It will utilize an ARM 9 processor and include (1) USB port and (4) Digital outputs capable to 400 mA.	Yes
The display will include a well-designed UI that allows the user to navigate within the system software easily. The UI will include a self-guided (F.I.R.S.T.) Freedom Interactive Rapid Start Tutorial for setup and calibration. Context appropriate help menus will also be available within individual setup screens.	Yes
The screen layout will be user defined to optimize functions as well as to view and interact with the system within a 4x5 grid layout.  Users may combine or separate grid location boxes in order to view system information in the combination and shape of their choosing. Users will be able to easily reconfigure the system for rapid transition between winter and summer operations with unique layouts and system configurations.	Yes
System information on the screen may include, but is not limited to: granular rates, prewet and anti-ice rates, lane indication, road/air temperature, hydraulic pressure, system status, error messages, plow float indication, auto/manual mode indication and material	Yes
currently being used. Active functions that are not in use shall show "off" and the graphic be "grayed out" for ease of operator interpretation. Tile color assignments may be customized by the user.	Yes Yes

	TEM ENTERNIE	
The display will provide a built in diagnostic feature allowing technicians to view all input signals in real time. The display will also provide error logging and system status change logging for reviewing operator inputs.	Yes	
b. When configured the display will display: i. Granular rate, in lbs./lane mile.		
ii. Prewet rates gallons/lane mile (provided but not used this application).	Yes	
iii. Anti-ice rates, gallons/lane mile (provided but not used this application). iv. Anti-ice lane indication, (not used this	Yes	
application).  v. Road/air temperature, degrees °F or °C.		
vi. Hydraulic pressure PSIG. vii. System status, error messages. viii. Plow float indication.	Yes	
ix. Auto/manual mode indication. x. Material currently being used.		
c. The unload mode shall be available when using "Auto Only" mode to allow the spreader to be emptied while the unit is stationary.	Yes	
d. Granular rates shall be infinitely adjustable and include up to 6 material types.		
<ul> <li>e. Lane spread configurable for either % of lane width or calibrated lane(s).</li> </ul>	Yes	
f. The system shall automatically adjust granular output to maintain constant lbs./lane mile output when using calibrated lane feature for up to 4 lanes for accurate ground speed application.		\$
g. Either or both pre-wet and anti-ice rates can run accurately independently or simultaneously (provided but not used this application).	Yes	
h. The anti-ice lane system shall automatically adjust liquid output to maintain constant gallons/lane mile output for up to 3 lanes when using calibrated lane	Yes	
feature (provided but not used this application).  i. The system shall have "over speed" protection for the liquid functions that will alert the operator and shut	Allowed Rate: User defined gal/lane mile	
down the liquid function when the driver has exceeded	Yes	
	0.3.0%	

a user defined sp this application).	eed (provided but not used Yes		
j. The liquid function	ns shall automatically stop due to		
low level or overs	peed conditions (provided but not Yes		
used this applicat	ion).		
k. The system shall	automatically go into "override" Yes		
mode in the even	t of sensor failure(s). The failure(s)		
shall be logged in	diagnostic error log.		
The active function	ns that are not in use shall indicate		
"off".	Yes		
7. The XDS Operator Control Pa	nel:		
a. The operator pane	I shall have a durable hard plastic		
faceplate utilizing	separate high life magnetic snap		
action switches a	nd 3 high life magnetic 16 position		
detented encoder	s used for:		
i. Rate.	Yes		
ii. Lane.	100		
iii. Liquid cor	ntrol (provided but not used		
this applic	cation).	\$	
<ul> <li>b. Panel tactile control</li> </ul>	ols shall be protected by side		
mounted 'crash' b	ars.		
c. The operator shall	be able to easily and quickly adjust		
spread rate within	allowed rates:		
i. Granular:	10 lbs/lane mile to 150 lbs/lane mile. Yes		
ii. Proviso: 8	Spreading system hardware		
incorpora	tes rate capability.		
iii. Liquid: 15	gal/lane mile to 75 gal/lane mile		
(not active	Yes		
iv. Proviso: 8	Spreading system hardware		
incorpora	tes rate capability.		
d. The detented posit	ions will be user programmable as to		
the value of each	increment in the setup menu.		
e. The operator pane	I provides input capabilities to		
support RS232, R	S422, truck speed input, and Yes		
multiple digital I/O			
f. The panel shall have	e provisions for RoadWatch or		
Visalia Surface Pa	trol road/air temperature sending unit		
input for indication	n on Operator Display.		
		<b> </b>	



g	. The panel shall have user definable and operator initiated backlighting that dims the display for night	Yes	
h	viewing.  The panel shall incorporate Blast and Pause (Interrupt) functions.	Yes	\$
I.	The panel shall incorporate mode, product and select switches integrated in the panel.	Yes	<b>9</b>
j.	The spreader and liquid functions when enabled shall include closed loop feedback valve trim feature that will set the PWM minimums and maximums during	Yes	
k	calibration process.  The software shall incorporate a "test speed" mode for use in testing the system safely without requiring the	Yes	
8. The XDS	truck to be moving or the drive axles engaged.  Joystick Valve Driver Module and Joystick Module:		
а	. Joystick Module shall Include: (14) digital Inputs and (10) Joystick Axis inputs with Float(s) provisions.	Yes Yes	1
b	. Control of snow plow and body dump hoist shall be	165	}
C.	through 3 individual electric proportional Joysticks.  The joystick functions shall have permanently and		
d	clearly labeled functions.  The snowplow functions shall be:	Yes	1
372	i. Left joystick Forward movement = Plow left wing forward     ii. Left joystick Rearward movement = Plow left	Yes	
	wing reverse  1. Top push button = Blast	Yes	
	iii. Middle joystick Forward movement = Plow right wing forward iv. Middle joystick Rearward movement = Plow	Yes	
	right wing reverse  1. Top push button = Pause	Yes	
	v. Dump body hoist and front Plow functions as follows:	Yes	\$
	<ol> <li>Right Joystick w/deadman Forward movement =Hoist Lower.</li> <li>Right Joystick w/deadman Rearward</li> </ol>	Yes	\$\$
	movement = Hoist Raise.  3. Right Joystick no deadman Forward movement = Plow down	Yes	



	4. Right Joystick no deadman Rearward	Yes	\$
	movement = Plow up.	A 400	
	lydraulic and Product Valve Driver Module:		
a.	All electrical connections shall be fully sealed threaded		
	IP68 assemblies for environmental protection	Yes	
	and wiring retention.	100	
b.	All external wiring shall be TPE fully sealed and with		
	IP68 connections between the driver module and	Yes	
	the valves.		
C.	Output Module to include:		
	i. (14) High-side PWM capable, individually		
	programmable Outputs:		
	ii. Analog 4-20 mA, 100 ohm Input (1)	Yes	
	iii. Configurable Switch Inputs (NPN or PNP) (8)	103	
	required.		
	iv. Digital (NPN) Switch Inputs (3) required.		
	<ol> <li>Feedback Sensor Inputs (4) required.</li> </ol>		
d.	All PWM (Pulse Width Modulated) outputs are	Yes	
	software configurable and can be controlled by closed		
	loop operation, proportional input devices, or digital		
	input devices.		
e.	Field Programmable Module Ports: Minimum (4) up to		
	(14) additional ports for future system functions or	Yes	
	circuit reassignments exclusive of basic system	( and a second	
	configuration.		
f.	The module for system safety shall have over	Yes	
	temperature shutdown, over current shutdown, and		
	low voltage shutdown.		
g.	The valve driver module shall reside on the BUS as the		
	"Master" Power and activation to 'XDS' will be through	Yes	
	a relay module (provided with the 'XDS' system).	5,758	
h.	All circuits will be ignition switch "Run" activated.		
i.	A complete wiring diagram shall be provided for the	Yes	
	specific model provided to include:		
	<ol> <li>Schematic shall be part number and location</li> </ol>		
	indicated.		
	ii. Wiring schematic shall be provided in PDF	Voc	
	format.	Yes	
	iii. Installation and troubleshooting information		
		- 1 1	

40	iv. A parts breakdown for the entire 'XDS' system shall be provided.	Yes			
10	. 10. The final mounting position of all the operator controls shall be mutually agreed upon at installation.				
I. Hyd	draulic Hoses (No Approved Equals):		USAGE		
1.	All hoses must have JIC swivel connections at each end located in such a manner to aid in component replacement	Yes	No		\$
2.	High-pressure hose Parker 451ST SAE 100R17, 1" dia ID steel braided 3,000-psi working pressure.	Brand:		Type:	\$
3.	Return hose Parker 451ST SAE 100R17, 1" dia ID steel braided 3,000-psi working pressure.	Brand:		Type:	\$
4.	Suction hose Parker 811HT 1 1/2" dia ID steel reinforced 150- psi working pressure with crimped swivel ends.	Brand:		Type:	\$
5.	All hydraulic hoses shall be shielded and secured/clamped at 18" intervals to prevent chaffing or damage under the truck.	Yes	No		\$

Hydraulic System and Controls SUB TOTAL COST

\$30,200.00



Tarp System SUB TOTAL COST \$3,100.00

3.4 Tarp System or Approved Equal:

	Description of Equipment	Offered Equipment	Cost
A.	<ol> <li>Tarp:</li> <li>Pull Tarp model N9.5E, 12vdc electric tarp system with pull-arms and anti-sail arms.</li> <li>Tarp system shall be installed on cab protector with strobe light provisions.</li> <li>Tarp must be able to extend approximately 2' past dump body.</li> </ol>	Make: PullTAGE Model: N9  Yes No  Distance: MIN 2"	\$ 3,100°
	-3- Strips of 2" DOT reflective tape attached to outside surface of tarp arms on each side.	Yes No	\$
B.	<ul><li>Tarp Material:</li><li>1. Tarp Asphalt type A-2 14-oz nylon material, asphalt rated urethane coated both sides with "Super Slick Coating" rated at 400°F.</li></ul>	Tarp Material Rating: A Sphalt	\$
C.	Tarp Wind Deflector  1. A tarp wind deflector shall be provided at front of hopper.	Yes No	\$
D.	Pull Arms:  Pull arms shall accommodate tall or irregular loads.  Pull arms shall be easily and quickly replaceable with standard electrical galvanized conduit.  Anti-sail arms shall be attached to the pull arms	Yes No No No	\$



# 3.5 Pintle Tow Pull Plate:

	Description of Equipment	Offered Equipment	Cost
A.	Pintle Plate:		
	Assemble the Pintle Plate in such a manner that the plate shall not contact the paver before the truck tires touch the paver hitch arms.	Yes No	\$2,600
B.	Mounting	Plate Thickness:/ "	\$
3.5%	Steel plate 1" thick mounted and gusseted to truck frame.	Plate Thickness: /// Height: 24"	•
Э.	D-rings:		Ψ
	<ol> <li>D-rings 1"-dia 3" x 4" ID 47,000-lbs MBS</li> <li>Two required for safety chains mounted to steel mounting plate.</li> </ol>	D-Ring Spec:	\$
D.	Pull plate will have no trailer towing function.		
		Yes No	\$

Pintle Tow Hook SUB TOTAL COST	\$2,600.00



3.6 Snowplow System Monroe Snowplow, Model MPV44-52-12-TE-Power V-Plow and Equipment or Approved Equal

A.	Moldboard:		
200-200	1. Specifications shall describe a two piece power folding moldboard plow with torsion spring trip cutting edge.	Make: Mondo & Model: Power "U" Trip Edge Sections: Two	\$ 22,575
	<ol> <li>Height of the moldboard shall be 44" at center pivot point and taper to 52" at discharge on both ends with a 6" top punch cutting edge installed.</li> </ol>	Yes No Interchangeable with CH109 & CH110 Yes No	
	3. The moldboard sheeting shall be constructed of 10 gauge A569 steel with tensile strength of 55,000# to 70,000#.	Interchangeable with CITTO9 & CITTO Tes	
	4. Four vertical support ribs will be flame cut from 5/8" A36 steel with tensile strength of 58,000# to 80,000#. Ribs to be 4" at bottom and 3" at top.		
	5. Top moldboard angles shall be 3"x3"x3/8"		
	6. Two horizontal support bracings between ribs shall be formed from \( \frac{1}{4}\) plate steel located 8" and 20" above cutting edge trip pivot.		
	7. Center pivot pin will be 3" diameter cold rolled round 44" in length.		
	Eight center hinge bushings shall be 4" mechanical tubing with .468 wall thickness. All bushings shall have grease zerks.	3	
	Hinge bushings to oscillation plate will be welded to 1" plate steel and act as parallelogram lift attachment.		
	Moldboard to include two screw adjustable mushroom jack assemblies to assist and stabilize plow when detached from truck.		
	11. The provide snow plow shall be interchangeable without		



B.	Cut	ting Edges:		The common and the state of the	
	1.	rubber cutting edge punched with round holes to AASHO	Yes	No	\$
		standards on 12" centers; ends shall be punched for 3-hole curb shoe (Spec Sec. 11.7-D. The 5/8" dia. mounting holes shall be round; slotted holes are not acceptable.	Material:		
	2.	Cutting edge kit to include wrap around nose guards at center pivot point on moldboard.	Yes	No	
	3.	Cutting edge support angle shall be 3/4" x 4" x 4" with 3/4" flame cut hinge points.			
	4.	The cutting edge support angle is 2 sections pivoting on one piece of 1-1/2" schedule 80 pipe with a piece of 1-1/2" 1040 cold steel with a 1" flame cut steel end welded in to retain the pipe in place.			
	5.	There shall also be ½" thick gussets welded on each end of the inside of the cutting edge support angle and midway between all punched holes to provide extra support for the cutting edge.			
	6.	The cutting edge shall have six torsion springs that are encased between the two bottom angles.			
	7.	These springs shall be adjustable by means of a lock which can be loosened or tightened by a thread adjustment.			
	8.	The spring dimensions are to be 3/4" wire, 16.25" left hand turns, 5160H material, and have a 3-3/4" O.D.			



C.	Plow Frame:			
	<ol> <li>The plow shall have a parallelogram leveling push frame which keeps plow moldboard in the same plane to the ground at all points throughout lift travel sequence.</li> </ol>	Yes	No	\$
	<ol> <li>Lift cylinder shall be 4"x14.8" stroke, double acting with 2" nitrated rod.</li> </ol>	Yes	No No	
	<ol> <li>Lift linkage will be a nested cradle to act as a float and allow the plow to follow road contour. Cradle will have a rigid pinned position to uncouple plow from truck chassis.</li> </ol>	Yes	No	\$
	4. Drive frame to include mouse ear style reversing stops, for rollers to ride on when plow is reversed and raised or lowered.	Yes	No	\$
	<ol> <li>The parallel lift frame shall have a minimum pair of reversing cylinders, 3.5" x 20" that are dual acting and have 2" nitride cylinder rods.</li> </ol>			
	<ol><li>Reversing frame shall have set of upper and lower lift arms to achieve parallel lifting action.</li></ol>			
	<ol> <li>Plow must have oscillation plate built in for plow to react to pavement deviations, and prevent torsion to truck frame.</li> </ol>			
	<ol> <li>Oscillation kit to provide springs 3.5" OD x 6.75" OAL on each side of swivel to help center and level unit. These are to be adjustable via 1.25" x 5 Acme rod.</li> </ol>			
	<ol><li>Plow portion attaches to truck portion via quick latch system to accept two inch lock pins.</li></ol>			
D.	Deflector:			
	1. Plow to include .375" x 12" x 12' rubber snow deflector with backing strip for support.	Make: M	Model: N/A	_   \$
	<ol> <li>Plow shall have a center deflector mounted above moldboard hinge point. Deflector to be made from .375 UHMWPE poly. Deflector to be half-moon shaped 31" wide. Deflector to have a steel backing plate for support.</li> </ol>	Yes	No	



E.	Hydraulics:		•
	<ol> <li>All ports are to be O-ring fittings and to have a jam nut, so angled fittings can be accurately positioned without fluid leakage.</li> </ol>	Yes No	>
	<ol> <li>The hydraulic hoses are to be abrasion resistant, extremely flexible and have a rated working temperature range of -50 to 250 degree F.</li> </ol>	Yes No	
	3. The hoses shall be ½" I.D. and rated at 3,000 PSI working pressure and 12,000 PSI burst pressure.		
	<ol> <li>Included with the plow are two relief cushion valves set at 1,250 PSI to protect the cylinders from damage.</li> </ol>		
	<ol><li>The angle of the cylinders in relation to the moldboard have been designed to eliminate side stresses to the rod.</li></ol>		
	<ol><li>All hardware and fasteners shall be electronically plated and corrosion resistant.</li></ol>		
	7. All fasteners shall be grade 8, both cap-screw and nut.		
	All hydraulic hoses shall meet the following requirements:		
	a. The hoses shall have a .500" I.D. x .780" O.D., shall		
	have a maximum working pressure of 3,000 PSI, a		
	minimum burst pressure of 12,000 PSI.		
	b. The inner tube of the hose shall be seamless, oil		
	resistant synthetic rubber and reinforced on the outside		
	with one braid of high tensile steel wire.		
	c. The cover on the outside of the hoses shall be		
	weather/abrasion resistant black synthetic rubber.		



F.	Painting process of unit:		
	<ol> <li>In view of environmental safety, environmental sensitivity and a corrosion resistant finished product, the paint process for all steel components shall be powder coat paint, incorporating the</li> </ol>	Make: MonRole Model: NO	\$
	encasement type process.  2. The material used shall be environmentally friendly and shall consist of 95% recycle residue that emits "0" VOC's into the environment.	Yes No	\$
	<ol> <li>Following the shot blast process, all steel components shall pass through an alkaline wash with a clear water rinse immediately following.</li> </ol>		
	<ol> <li>Following the alkaline wash, all steel components shall pass through a phosphate wash with a clear water rinse immediately following.</li> </ol>		
	<ol> <li>In further preparation of the powder coat paint process, all components shall be oven dried following the wash and sealing process.</li> </ol>		
	<ol> <li>Immediately prior to the powder coat paint being applied, all steel components shall be preheated to a minimum of 100-degree Fahrenheit for uniform powder paint coating.</li> </ol>		
	<ol> <li>Instantly following the preheat stage, the powder coat paint shall be electro-statically applied in excess of three mils thick.</li> </ol>		
	<ol> <li>In view of metal thickness and steel mass present and for consistent adhesion of the powder coat paint, the minimum oven curing time shall be 25 minutes at a cure temperature of no less than 400 degrees.</li> </ol>		
	<ol><li>The powder paint used shall be TGIC Polyester orange moldboard with the push frame being coated black in color.</li></ol>		
G.	Miscellaneous:		\$
	All welding performed on the plow must be in compliance with current AWS procedures and guidelines recognized within the State	Yes No	T
	of manufacture.		
	<ol><li>Manufacturer shall provide caution labels, decals and any warnings deemed necessary.</li></ol>		
H.	Warranty:		
	<ol> <li>Manufacturer shall attach their standard warranty statement.</li> </ol>	A Harried a - Selingle	
	2. All components described herein shall carry minimum one-year	A HACHED AT DELIVERY	
	warranty.		



I.	<ol> <li>Blade Guides: (No Substitutes)</li> <li>Winter Equipment Company (800.294.6837) PN KT-PM36</li> <li>Blade guides one per side, 2 required.</li> <li>Length 36" long, color "Safety Orange" outer PVC sheeting over wire cable.</li> </ol>	Make: Winter PN: LT PM36 Yes No	\$
J.	<ol> <li>Joystick Controls:</li> <li>The snowplow and all functions shall be joystick controlled.</li> <li>The joystick shall be capable of controlling the Monroe Model MPV44-52-12-TE-Power V-Plow front snowplow or approved equal.</li> <li>The snowplow shall operate off the hydraulic system and controls contained in specification section 11.4.A thru F of this specification.</li> </ol>	Yes No Yes No	\$

MON ROE Plow \$ 22,575.00



3.7 Monroe Flat Plate Hitch or Approved Equal

Description of Equipment	Offered Equipment	Cost	
Hitch Type:  1. Flat plate quick hitch or approved equal shall interchange with existing flat plate hitches installed on City trucks CH94 through	Yes No	\$3,120.00	
<ul> <li>CH110 and easily mount/dismount/operate existing Monroe Model MPPJ39R10-ISTT-PLG-POLY snowplows.</li> <li>Truck mounted plate shall be 5/8" thick minimum with two upper steel claws mating upper portion of plow to hitch.</li> </ul>	Plate Thickness: 5/8" Material: 4RA 36	\$	
3. Lower attachments shall mate lower portion of plow to hitch. The attachment shall use male spring loaded handle operated pins on flat plate hitch mating into a female holes in plow frame.	YES No	\$	
<ol> <li>The spring loaded latching handle (painted orange) shall be top mounted on the plow hitch. The handle shall be easy to operate for various size and strength operators.</li> </ol>	Yes No	\$	
<ol><li>When plow is removed from truck only a flat plate hitch shall remain on the truck. Lifting cylinder and other associated items shall stay with the plow assembly.</li></ol>	No No	\$	
<ol> <li>Plow/hitch design shall not obstruct full forward tilt of the trucks hood assemble. Hose connections shall be in one (1) central easy to access location.</li> </ol>	Yes No	\$	
Front Snowplow Hydraulic Quick Release Coupling System:			
The snowplow hydraulic connections shall be thru a multi-hose lever-arm connector system.	Make: FASTER Model: N/A	\$	
2. The system shall be a Faster Quick Release Coupling Multi-Faster Series. (No Approved Equals)	Yes No	\$	
<ul><li>a. Female Coupler: P/N 2P608-6-12 SFC</li><li>b. Male Coupler: P/N 2P608-6-12 SMC</li></ul>	Female P/N: 29608-6-12 SFC Male P/N: 29608-6-12 SMC		
<ul> <li>All male/female fittings shall have protective cover guards to prevent dirt and damage when the hoses are disconnected</li> </ul>	Yes No	\$	



Paint:	
Paint shall be "Black" polyester powder epoxy painted, applied following recommended procedures.	Type of Paint: Pewder Cost \$\$
2. All parts painted prior to assembly.	
3. Powder epoxy paint shall be a minimum of 2-mils thick.	Paint Thickness: 2 m mils
Removal of all surface contaminations (grease, welding and surface slag).	Yes No mils
5. Steel shot blasting of all parts.	Yes No

Monroe Flat Plate Hitch UNIT SUB TOTAL COST \$3,120.00

3.8 Monroe Snowplow Miscellaneous Items

	Description of Equipment	Offered Equipment	Cost
1.	Snowplow Lights:		0001
	LED 10 Diode Pattern 7" round plow light kit Truck-Lite model     80863	Make: TRuck Lite Model: 80863	\$2,860.00
	<ol> <li>Lights shall be installed using rubber cushion pads and 3-point stainless steel brackets to prevent damage from corrosion. Ligh shall be installed on truck fenders. :</li> </ol>	's	
	Headlight wiring shall be sealed.	Yes No	
	<ol> <li>Wiring connectors shall be as "waterproof" as practical using shrink tube and dielectric grease.</li> </ol>	Yes No	
	<ol> <li>All non-factory wire connections (splices, connectors, etc.) shall soldered and shrink tube insulated with adhesive/meltable seala thick wall polyolefin shrink tubing (3M EPS-300 or equal).</li> </ol>	be Ses No nt,	
	Dielectric grease shall be applied to all electrical plug terminals and connections to reduce corrosion.	No No	

Monroe Snowplow Miscellaneous Items TOTAL COST

\$2,860.00



3.9 Sundries Equipment

	Description of Equipment	Offered Equipment	Cost
A.	Protective Skirting:  1. Rear rubber skirting to 10" above the pavement shall extend across	Yes No	\$ /250.00
	the rear to prevent asphalt from getting onto the suspension and causing damage.		\$ 1 A S 8.0
	2. Front rubber skirting to 6" above the pavement shall extend across the front of the suspension to prevent salt/sand from getting onto the suspension/air bags and causing damage.	Yes No	\$
	The rubber skirting shall be easily removable for maintenance and repair, 15 minutes maximum.	Ýes No	\$
B.	Driver Height Warning Sign  1. Installed on truck dash providing the travel height of the vehicle.	6 "	\$
	Sign shall be in 1" "white" block letters.	Yes No	
C.	Conspicuity Tape:	7 F - 2 '	
	Conspicuity tape shall be applied to both sides of the dump body, and to the tailgate; location at the lower skirt line and on the top rail	Yes No	\$
	2. DOT-C2 Standard No. 108 reflective conspicuity tape	Make: REFIEXITE Model: 18806	
	Tape shall be applied in symmetrical pattern from middle of panel outward.	Yes No	

Sundries Equipment SUB TOTAL CO	ST \$ <u>/,250.00</u>



## 3.10 Lift Axles

	Description of Equipment	Offered Equipment	Cost
A.	Furnish & install -1- Hendrickson Composilite SCT13 13,500# rated steerable air lift pusher suspension, with lock-straight feature on axle (or approved equal). Lock-straight option is required for when axles are in down position and reverse. Axles must be hub piloted, include disc brakes, and a 31 degree wheel cut. Must have 10'1" inside bridge. Tires: 295/60 R22.5 Michelin on pusher axle with steel white wheels. Compliant tie-rods with greaseless connection points.	Yes No	\$ <u>19,600.</u>
B.	Furnish & install -1- Hendrickson ToughLift FMT20 rated axle, air lift tag suspension, non-steerable. Axle must be hub piloted, disc brakes. Tires: 425/65 R22.5 Michelin with steel white wheels.	Yes No	\$

Lift Axles SUB TOTAL COST \$ 19,600.00

WATSON WATSON COMPANY

# 3.A

Optional Equipment

Do not include Optional Equipment in the total price of the vehicle; however an equipment price must be provided. The City will determine if the equipment is to be purchased.

	Description of Equipment	Offered Equipment	Cost
A.	Spare Parts:	William Control of the Control of th	
	Joystick controller quantity (1)	Make: Certified Power Model: SG07010384	\$372.00
B.	<ol> <li>Inspection Trip:</li> <li>The City and County of Denver reserves the right to inspect at the cab and chassis and body fabricating plant during the construction of the first (1st) article prior to paint and delivery.</li> </ol>	Provide information:	
	<ol> <li>When the fabricating plant is located further than 200 road-miles from the City and County of Denver, the bidder shall include in the bid price all travel expenses to the fabrication plant for the inspection.</li> </ol>	Distance to fabrication plant: miles	
		Plant Location:	-
	3. The City may select to send 4 representatives to inspect the 1st article. The provided costs shall be based on one (1) person per day and the City will determine how many representatives the inspection will require and how many days the inspection will require.		
	Inspection Trip Costs to include:		
	a. Air fare per person:	Air Fare: \$ 565.00, Airline: Frontier	\$565.00
	b. Surface transportation costs:	Surface Transportation: \$ , Mode: CAR	\$ -0
	c. Lodging per person per day:	Lodging / day: \$ /50.00, Hotel: May & 6	\$/50.00
	d. Meals per person per day:	Hotel: MoNROE Meals / day: \$ 75.00	\$ 75.00
	5. Total cost per person for 1st article inspection trip:		\$ 290.00



## 4.0 Dump Body and Other Dealer Provided Equipment (where applicable):

### 4.1 Electrical Systems:

- A. All non-factory wire connections (splices, connectors, etc.) shall be soldered and shrink tube insulated with adhesive/meltable sealant, thick wall polyolefin shrink tubing (3M EPS-300 or equal). No non-factory crimp connections allowed. No cutting or splicing into the factory wiring harnesses allowed.
- B. All accessories (strobe lights, operator controls, light bar, etc.) shall be wired through a 12-vDC constant-duty solenoid and controlled by bus bar mounted and permanently labeled auto-resetting circuit breakers. The solenoid shall be wired to the key switch.
- C. All dealer/vendor installed items, which require connecting into the vehicle's electrical system shall be done using an OEM factory modified wiring kit whenever possible.
- D. All non-factory wiring shall be encased in a totally sealed wiring harness (no plastic split loom) to prevent corrosion from magnesium chloride. The wiring harness shall be well secured to the truck with neoprene aircraft stainless steel tubing clamps. Rubber grommets shall be used at all areas where the wiring passes through areas that could damage the wiring. Unprotected wiring in any application is unacceptable.
- E. Electrical cables and wiring harnesses shall be neatly run and clamped with neoprene aircraft stainless steel tubing clamps. Clamp spacing shall not exceed 18-inches.
- F. Dielectric grease shall be applied to all electrical plug terminals and connections to reduce corrosion.

#### 4.2 Fasteners:

- A. Grade 5 (SAE or USS) or 8.8 (metric) minimum, bolts, nuts, washers minimum. Vendor shall use Grade 8 or 10.9 for all critical areas or where good engineering practice suggests.
- B. All fasteners shall be zinc plated to prevent corrosion.
- C. Anti-Seize: all fasteners shall have Fel Pro C5A Anti-Seize compound applied before assembly to prevent corrosion, rusting, galling and aid in equipment servicing and repair.
- D. All fasteners shall be of appropriate length, diameter and strength (grade) for the application,
- E. Bolts and screws shall extend a minimum of 1-1/2 threads beyond the nut and maximum of 6 threads past the nut.
- F. Flat washers shall be used under bolt heads and nuts.
- G. Lock nuts (nylon insert, metal, slotted, castle nuts) shall be used lock-washers are not acceptable.



## 4.3 Hydraulic Systems:

- A. All hydraulic circuits shall be pressure relief protected.
- B. Hydraulic hoses shall be Parker 451ST SAE 100R17 (tight bend radius) 2-wire braid hose meeting SAE-100R16 specifications where the hose meets operational criteria or approved equal.
- C. Hydraulic hoses shall have swivel fittings on both ends. Hose ends shall be located to facilitate easy component replacement.
- D. High-pressure hydraulic hose shall not be used for suction lines.
- E. Close/tight radius 90° elbow fittings shall not be used if short, medium or long drop steel stem 90° elbow fittings can be used. Over use of 90° elbows shall not be permitted.
- F. Hydraulic hoses and rigid lines shall be run parallel where possible; routing shall look neat and well planned.
- G. Rubber cushioned metal hydraulic clamps shall be used on all hydraulic ridged lines and hoses at proper intervals for supporting the line/hose 36" maximum distance. Clamps shall be securely mounted to the equipment.
- H. Hydraulic hoses and lines shall not be routed near exhaust, close to rotating components or over, around or through sharp edges. Rubber grommets shall be used at all areas where the hydraulic lines through areas that could damage the lines.
- I. Galvanized fittings and thread tape shall not be used.
- J. Hydraulic hoses shall be covered with protective spiral nylon anti-chaffing wrap or sock type protective sleeves at all areas where chafing/rubbing could cause premature wear/failure.
- K. Hydraulic oil tanks shall magnetic drain plug, oil level and temperature gauge.
- L. Hydraulic hoses over 4' long shall be labeled on both ends for easy identification.
- M. Shut off valves 1/4-turn on each side of filter.
- 4.4 All fabricated parts, brackets etc. shall have all sharp corners, edges etc. radiused or rounded for safety.

### 4.5 Welds:

- A. All welds shall meet AWS (American Welding Society) standards for the type weld, material joined and welding method.
- B. Weld joints shall have proper design and fit for the application.
- C. Welds joints shall have proper penetration and be smooth in appearance with no undercuts or overlaps at edge of weld.
- D. Weld joints shall be properly prepared with cut ends ground to remove all slag, create a smooth surface and beveled end.
- E. Welds shall be full length to prevent "rust bleed" from non-welded seams



5.0 Manuals/Equipment

Item	Description of Equipment	Offered Equipment	Cost
Training Video	One DVD or CD demonstrating and explaining the safe and proper use of the vehicle/equipment.  1. Dump Body & Equipment.	Yes No	\$ 175,00
Operators Manual Paper	One book per vehicle/equipment with "safe equipment operation" section for each component.  1. Dump Body & Equipment.		\$
Service/ Maintenance Manual Paper	<ol> <li>Two complete sets per Contract (not per vehicle); binder required,</li> <li>Manuals shall be provided for:         <ul> <li>A. Dump Body &amp; Equipment.</li> </ul> </li> <li>Manuals shall include complete and detailed information for maintenance of the equipment, including general information, specifications, troubleshooting guide, lubrication and required adjustments.</li> </ol>	Yes No No	\$
	3. The hydraulic and electrical sections of the manuals shall be provided in a separate electrical/hydraulic binder. Both the hydraulic and electrical circuits shall have separate color coded schematics for each equipment function to show the flow of both electrical current and hydraulic oil.	Yes No	



Service/	One complete set; per Contract (not per vehicle)			
Maintenance Manual on	Manuals shall be provided for:     A. Dump Body & Equipment.	Yes	No	8
CD rom or DVD	<ol> <li>Manuals shall include complete and detailed information for maintenance of the equipment, including general information, specifications, troubleshooting guide, lubrication and required adjustments.</li> </ol>	Yes	No	Φ
	3. The hydraulic and electrical sections of the manuals shall be provided in a separate electrical/hydraulic binder. Both the hydraulic and electrical circuits shall have separate color coded schematics for each equipment function to show the flow of both electrical current and hydraulic oil.	Yes	No	
	<ol> <li>New CD roms or DVDs shall be provided when information is updated, superseded or changed.</li> </ol>	Yes	No	\$
Service/ Maintenance Manual on Internet Access, or	One complete set; per Contract (not per vehicle)  1. Vendor shall provide access to the site for the length of time that the City owns the vehicle/equipment at a one-time up front cost	Yes	No	\$
Other Electronic Media	to the City.  2. Internet information shall include complete and detailed information for maintenance of the equipment, including general information, specifications, troubleshooting guide, lubrication and required adjustments.	If other Spe	No with Usudon Approx	241.
	3. The hydraulic and electrical sections of the manuals shall be provided in a separate electrical/hydraulic binder. Both the hydraulic and electrical circuits shall have separate color coded schematics for each equipment function to show the flow of both electrical current and hydraulic oil.	Yes	No	



Parts Manual Paper	Two complete sets, per Contract (not per vehicle) binders required,  1. Manuals shall be provided for:  A. Dump Body & Equipment.  2. Illustrated parts book shall be furnished containing data so that part numbers can be readily found for each system.	Yes Yes	No No	\$
Parts Manual on CD rom or DVD	One complete set, per Contract (not per vehicle) illustrated parts book shall be furnished containing data so that part numbers can be readily found for each system.  1. Information shall be provided for:  A. Dump Body & Equipment.  2. Parts manuals shall include complete and detailed information for replacement parts for the equipment, including general information,	Yes Yes	No No	\$
	specifications ordering guide lines and superseded parts information.  3. New CD roms or DVDs shall be provided when information is updated, superseded or changed.	Yes	No	

Parts Manual On	One complete subscription; per Contract (not per vehicle)		
Internet Access, or Other Electronic Media	<ol> <li>Internet information shall allow the City 24 hour 7 days/week including holidays access from its main maintenance facility and all its satellite maintenance facilities.</li> <li>Internet information shall include complete and</li> </ol>	Access Information: 7 days/week including holidays Yes No	
	detailed information for parts for the:  A. Dump Body & Equipment.  3. Internet information shall cover vehicle/equipment, shall include general parts information, parts specifications, ordering guide	Yes No No	\$ 75000
	lines and superseded parts information.  4. Vendor shall provide access to the site for the length of time that the City owns the vehicle/equipment at a one-time up front cost to the City.	Yes No If other Specify:	
	<ol> <li>Parts manuals shall include complete and detailed information for replacement parts for the equipment, including general information, specifications ordering guide lines and superseded parts information.</li> </ol>	Yes No	
New Equipment Check-in Form:	The successful vendor shall complete the City's "New Equipment Check-in Form" completely and accurately with all requested information.		\$

5.1 Operator and Mechanics Training

Item	Description of Equipment	Offered Equipment	Cost
On Site Equipment Manufacturers Training	On site the vendor shall insure that the equipment manufacturers training representative, after delivery of the equipment Contacts Fleet Maintenances training manager to coordinate equipment training.	Two TIMES ARTAL DELIVERY	\$_ <del></del>
Fleet Maintenance Training Manager	Mr. Charlie Pletcher Telephone: 720.865.3951 Contact time: 8:00 am to 3:00 pm M-F		
Training Requirements	Training shall consist of factory training materials, classroom and actual field training on the equipment for the equipment operators and supervisors.	TWO TIMBS ARTER DELIVERY	\$
On Site Mechanics Training	On site mechanics training shall be 2 classes, approximately 8 hours, 2 shifts total provided at City facilities. The training shall cover maintenance and service procedures, trouble shooting and use of manuals.  6-8 City Attendees	<i>46</i> 5	\$ <u>375.00</u>

O.J. WATSON COMPANY INC. 6.0 Repair Parts Delivery

Repair Parts delivery

A. Prime Vendor is to indicate current Master Purchase Order agreement(s) in place with the City. (Example 0667A0108):

- Moure / Centified Power

- # Pwa Dm - 2000000 434

- If no agreement(s) exists, is your company willing to enter into long-term Master Purchase Order Agreement(s) in order to supply parts and components for the equipment and manufacturers proposed herein? YES OR NO

If YES: Indicate Price and Discount Structures for the included Manufacturers in your proposal.

- Moure = List Less 10%

- Certeral = Cost + 10%

# 7.0 Warranty

7.1 General Warranty Provisions

_	WARRANTY (Table 1) Class 7 & 8 Vehicles	Complies (Y or N/A)			
Α.	Express warranty is to be a minimum of 12 months on the vehicle/equipment. The standard factory warranty plan shall be provided as an attachment to your bid proposal	V			
В.	The Warranty is to include at no cost to the City of Denver, all parts and labor, and no charge for work performed at the vendors facility				
C.	Warranty shall start when the City places the vehicle into service <b>NOT</b> on the delivery date.  Taking an exception may make bid non compliant.	y			
D.	Warranty plans shall consist of the total unit and be broken out to a separate plan for each warranty item if applicable, such as engine warranty plan, transmission warranty plan, electrical, etc.	Y			
E.	Options listed shall be bid and provided as factory installed under the terms of the full factory-backed warranty. This includes, but is not limited to: air conditioning, radios, cruise control, bumpers, towing packages etc. Dealer-installed options will not be permitted unless pre-approved by the City in writing and, where applicable, indicated on bid sheet as a "dealer installed" non-factory item.	Y			
=.	Bidder will be responsible for warranty repair of all installed options/auxiliary equipment included in the bid that has a standard warranty that is less than the standard warranty for the base vehicle/equipment	V			
G.	Bidder shall use a single, local factory authorized dealership that will accomplish or coordinate required warranty work. The dealership must have a minimum of 1-year experience as a factory authorized vendor for like equipment being bid. Warranty parts shall be available and supplied within 24 hours	У			
Н.	If applicable, bidder shall provide a plan for the City to be reimbursed if the work can be done by the City on site. The current shop rate is \$71.00/hour, not to exceed \$85.00/hour. (Enter a response of N/A if not available)	Y			
	The bidder shall respond to request for warranty assistance within twenty-four (24) hours.	V			
J.	Warranty work shall be accomplished within an appropriate length of time (generally less than 3 working days for everything other than major component repair such as a transmission rebuild) and shall be coordinated with an authorized City representative	Y			
K.	During the entire warranty period, if the unit requires transportation to a repair facility, the vendor/sub-vendors shall be responsible for all transportation at "NO COST" to the City and County of Denver. This includes transporting the unit back to the City's domicile location after repairs are complete. If an alternate is bid, charges to the City of Denver shall be listed (e.g. mileage, travel, labor, etc.). Even if an alternate is bid, in NO CIRCUMSTANCES will the City and County of Denver be responsible for transporting a unit greater than 25 miles from the center of Denver. For purposes of these warranty provisions, the center of Denver is defined as the City and County Building located on the corner of Colfax and Bannock Street.	Y			



L.	The item(s) procured by the City pursuant to this Bid Proposal shall, in addition to being subject to the express warranties referenced above, be subject to all implied warranties arising by operation of law under State of Colorado and Federal law, including but not limited to the implied warranty of merchantability and, to the extent applicable, the implied warranty of fitness for a particular purpose arising under the Colorado Uniform Commercial Code, Title 4, Colorado Revised Statutes. The bidder shall in no event attempt to limit or disclaim any of such implied warranties under this Bid Proposal, and any attempt to do so will render the bidder's bid non-responsive under this Bid Proposal.	Y
M.	This warranty in Table 1 and Table 2, is IN ADDITION to factory warranties on the vehicle and components	Y



## 7.2 Fleet Defects and Lemon Clause

WARRANTY - (Table 2) Fleet Defect Clause, Class 7 & 8 Vehicles

- A. Definition; If during the warranty period, a vehicle/unit(s) covered by this specification is out of service for 10% or 208 hours during the first 2,080 service hours of the 1st year warranty period caused by defects in Design, Testing, Material, and/or Workmanship, then this "Product Defect Clause" or "Lemon Clause" goes into effect. The Product Defect Clause/Lemon Clause shall be determined solely by the City.
  - 1. The vendor shall at the City's option:
    - a. Buy the vehicle/unit back at "Full Purchase Price" as the vehicle/unit shall be considered a "Defective Vehicle/Unit" or "Lemon".
    - b. Provide a replacement vehicle/unit that the City considers equal to the replacement vehicle/unit.
  - 2. Computation of Service Hours = 8 hrs/day use X 5 work days/week x 52 weeks/year = 2,080 work hours per year.
  - 3. Computation of Percentage = 2,080 available for work hours/year X 0.10 (10%) = 208 Out of Service Hours in the 1st year warranty period.
  - 4. A Work Day, 8 hours, shall be computed as Monday thru Friday from 7:00 am to 3:00 pm
  - 5. This clause will not apply to delays in completion of warranty repairs due to acts of God, acts of the Public Enemy, acts of the Government (in either its sovereign or contractual capacity), fires, floods, or strikes, and unusually severe weather, PROVIDED that the Vehicle/Unit Vendor shall within three (3) calendar days of any such delay notify the City of Denver's Fleet Management in writing of the causes of delay and the facts relating to the problem
  - 6. After 24 hours/3 days of consecutive "lost service" of the vehicle/unit due to warranty problems the warranty period shall be extended by the length of lost service time due to warranty problems.
  - 7. The City of Denver shall consider the information submitted and may extend the time (208 hours) for completing, if in the City's, judgment, the facts justify such a warranty extension. The judgment of the City shall be final.
- B. Definition: If during the warranty period, thirty percent (30%) of the total number of units delivered have the same part(s) and/or components failure requiring replacement and/or modifications, caused by defects in Design, Testing, Material, and/or Workmanship, then this "Fleet Defect Clause" goes into effect.
- C. Remedy: Following notification of a Fleet Defect, the vendor shall develop and implement a plan that either reengineers, modifies, or replaces the defective parts/ systems, such that the identified problem is cured and the operation of the vehicle/equipment is not altered. When alterations are required to cure the defect, those alterations that change or modify the original bid specifications must be approved by the City and County of Denver prior to execution. The vendor will pay for all necessary labor and materials to repair, modify, and/or "update" all vehicles/units in this group. The vendor shall also propose a work schedule that is mutually agreed upon by the City of Denver that corrects the fleet deficiency within 30 days or a mutual agreed upon schedule.
- D. Exceptions: Fleet defects will not apply to minor aftermarket accessories specified by the City of Denver and installed per instructions/specifications. Examples include: toolboxes, spotlights, bed-liners, etc.
- E. Mitigation: Should the vendor become non responsive to the City's notification of a Fleet Defect, the City may employ several options. (1) After notifying the vendor in writing of The City's intent to mitigate its circumstances, the City may chose to perform its own warranty work and seek reimbursement for both parts and labor. (2) On major components, such as engine, transmission, air conditioning, etc., the City may chose to have the repairs performed by an authorized dealer and vendor shall reimburse the City for any parts or labor not covered by other warranty.
- F. Outside Metro-Denver: Vendor will pay for all transportation costs if unit(s) must be sent out of the Denver area for repairs. The City and County of Denver reserves the right to inspect unit(s) before returning back to Denver. The City and County of Denver also reserves the right to send at least one employee, without cost to the City, to inspect the repair(s) before unit is released back to the City.



G. Expired Warranties: Units that have mutually agreed upon warranty defects during the warranty period will continue to be repaired until completed. If an on-going remedy continues past the warranty date the repairs will continue under warranty until completed or cease at a time agreed upon by the vendor and City and County of Denver.

O.J. WATSON COMPANY INC. 7.3 Warranty Options

			WARRANTY Options	(Table 3) Class 7 & 8 Vehicles			
Cost of Factory Extended Warranties			WARRANTY Options (Table 3) Class 7 & 8 Vehicles  Please indicate in the columns below the additional cost of an extended warranty for all applicable components listed in the left hand column.  NOTE: FOR STAGE 1 SUBMITTAL ONLY INDICATE THE WORD 'INC' or 'AVAILABLE' IN THE APPROPRIATE COLUMNS NOT A PRICE  Inc = Included  N/A = Not available				
			Two Years	Three Years	Five Years		
A.	Dump Body	7	ANALYSIA IN ANTHONY	Timee rears	rive rears		
B.	Hoist						
C.	Tarp						
D.	Snow controls System						
E.	Hydraulics						
F.	a. Pumps						
	b. Cylinders		N/A	N/L	Alla		
	c. Tanks	>	14		74/#		
	d. Valves						
	e. Controls	1					
G.	Body Conveyor System						
H.	Joystick						
I.	Electrical Components						
J.	Other	/					
K.	Notes:						



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SPECIFICATION AND PRICING
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Warranty Service Locations: Warranty repair parts and service shall be available locally at an established factory authorized dealership meeting requirements of Table 1 Section 7.

	Α. [	Dump Body:	Dealership Name: 0 5 w 44 Street Address: 533 5 F		Telephone #: City:	303-295	80216
	B. 8	Snow Fighting System:	Dealership Name: Street Address:	ME	Telephone #:	SAME	
	C. 8	Sundries:	Dealership Name: Street Address:	ne	Telephone #:	SAME	
8.0	Deli	very Considerations:					
			Delivery Documentation (	GVWR 26,001-Lbs and /	Above Heavy Du	utv)	
	Α.	Vehicles ordered under this specification shall be complete and delivered to CITY AND COUNTY OF DENVER, Fleet Management Division All prices quoted must be quoted at a firm price F.O.B. Denver, Colorado, 5440 Roslyn St. Building C.					
	B.	Delivery: Monday through Friday be Location: CITY AND Fleet Management 5440 Roslyn St. Building C Denver, CO 80216	tween 8:00am and 1:00pm. COUNTY OF DENVER			-3903.	

O.J. WATSON COMPANY INC.

Body and Snow Fighting Equipment Delivery Delivery of Completed Body			
	PROVIDE NUMBER OF DAYS REQUIRED FOR DELIVERY OF COMPLETED BODY AND SNOW FIGHTING SYSTEM AFTER RECEIPT OF THE CAB & CHASSIS	140 DAYS	
Complete Vehicle Cost			
Include:  -3.1: 16.6 Yard Live Floor Dump Body Equipment SUB-TOTAL COST  -3.2: Body Hoist SUB TOTAL Cost -3.3: Hydraulic System and Controls SUB TOTAL Cost -3.4 Tarp System SUB TOTAL Cost -3.5 Pintle Tow SUB TOTAL COST -3.6 Snow Plow System SUB TOTAL COST -3.7 Flat Plate Hitch SUB TOTAL COST -3.8 Snow Miscellaneous Items SUB TOTAL COST -3.9 Sundries Equipment SUB TOTAL COST -3.10 Lift Axles SUB TOTAL COST	TOTAL COST	\$ <u>153,205.6</u>	
Do NOT Include:  Optional Equipment  Warranty Cost (s)  Manual Cost (s)			
Company Name: O. S. wa Company representative: R. K.  Authorized Signature:	tson Company, Inc.  EckRich  Robbeic		
	Complete Vehicle Cost  Include: -3.1: 16.6 Yard Live Floor Dump Body Equipment SUB-TOTAL COST -3.2: Body Hoist SUB TOTAL Cost -3.3: Hydraulic System and Controls SUB TOTAL Cost -3.4 Tarp System SUB TOTAL COST -3.6 Snow Plow System SUB TOTAL COST -3.6 Snow Plow System SUB TOTAL COST -3.7 Flat Plate Hitch SUB TOTAL COST -3.8 Snow Miscellaneous Items SUB TOTAL COST -3.9 Sundries Equipment SUB TOTAL COST -3.10 Lift Axles SUB TOTAL COST  Do NOT Include: Optional Equipment Warranty Cost (s) Manual Cost (s)  Company Name:  Company Name:	Delivery of Completed Body  PROVIDE NUMBER OF DAYS REQUIRED FOR DELIVERY OF COMPLETED BODY AND SNOW FIGHTING SYSTEM AFTER RECEIPT OF THE CAB & CHASSIS  Complete Vehicle Cost  Include:  3.1: 16.6 Yard Live Floor Dump Body Equipment SUB-TOTAL COST  3.2: Body Hoist SUB TOTAL Cost 3.3: Hydraulic System and Controls SUB TOTAL Cost 3.4 Tarp System SUB TOTAL COST 3.5 Pintle Tow SUB TOTAL COST 3.6 Snow Plow System SUB TOTAL COST 3.7 Flat Plate Hitch SUB TOTAL COST 3.8 Snow Miscellaneous Items SUB TOTAL COST 3.9 Sundries Equipment SUB TOTAL COST 3.10 Lift Axles SUB TOTAL COST  Do NOT Include: Optional Equipment Warranty Cost (s) Company Name:  Company Name:  Company representative:  R.K. Eck Ric L	