STATE OF MICHIGAN
ENTERPRISE PROCUREMENT

Department of Technology, Management, and Budget
320 S. Walnut Street 2nd Floor Lansing, MI 48933
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **5**
to
Contract Number **MA200000000034**

CONTRACTOR	
	TRUCK & TRAILER SPECIALTIES INC
	3286 Hanna Lake Industrial Drive
	Dutton MI 49316
	Dan Bouwman
	616-698-8215
	dbouwman@ttspec.com
	CV0030059

STATE			
	Program Manager	Erin Reincke	MDOT
		5178551986	
		ReinckeE@michigan.gov	
	Contract Administrator	Yvon Dufour	DTMB
		(517) 249-0455	
		dufoury@michigan.gov	

CONTRACT SUMMARY			
Winter Maintenance Truck Components			
INITIAL EFFECTIVE DATE	**INITIAL EXPIRATION DATE**	**INITIAL AVAILABLE OPTIONS**	**EXPIRATION DATE BEFORE**
October 22, 2019	November 30, 2024	2 - 12 Months	November 30, 2024
PAYMENT TERMS		**DELIVERY TIMEFRAME**	
ALTERNATE PAYMENT OPTIONS		**EXTENDED PURCHASING**	
☐ P-Card ☐ Direct Voucher (PRC) ☐ Other		☒ Yes ☐ No	
MINIMUM DELIVERY REQUIREMENTS			

DESCRIPTION OF CHANGE NOTICE				
OPTION	**LENGTH OF OPTION**	**EXTENSION**	**LENGTH OF EXTENSION**	**REVISED EXP. DATE**
☒	24 Months	☐		November 30, 2026
CURRENT VALUE	**VALUE OF CHANGE NOTICE**		**ESTIMATED AGGREGATE CONTRACT VALUE**	
$40,000,000.00	$249,000.00		$40,249,000.00	

DESCRIPTION

Effective 12/1/2024, this contract is exercising both option years and is increased by $249,000. The revised contract expiration date is 11/30/2026. All other terms, conditions, specifications and pricing remain the same. Per DTMB Procurement approval.

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget
320 S. WALNUT ST., LANSING, MICHIGAN 48933
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **4**

to

Contract Number **200000000034**

CONTRACTOR	
	TRUCK & TRAILER SPECIALTIES INC
	3286 Hanna Lake Industrial Drive
	Dutton, MI 49316
	Dan Bouwman
	616-698-8215
	dbouwman@ttspec.com
	CV0030059

STATE			
	Program Manager	Scott Poyer	MDOT
		517-284-6448	
		poyers@Michigan.gov	
	Contract Administrator	Yvon Dufour	DTMB
		(517) 249-0455	
		dufoury@michigan.gov	

CONTRACT SUMMARY

WINTER MAINTENANCE TRUCK COMPONENTS

INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE
October 22, 2019	November 30, 2024	2 - 1 Year	November 30, 2024

PAYMENT TERMS	DELIVERY TIMEFRAME
45 DAYS	

ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING	
☐ P-Card	☐ PRC	☐ Other	☒ Yes	☐ No

MINIMUM DELIVERY REQUIREMENTS

DESCRIPTION OF CHANGE NOTICE

OPTION	LENGTH OF OPTION	EXTENSION	LENGTH OF EXTENSION	REVISED EXP. DATE
☐		☐		November 30, 2024

CURRENT VALUE	VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE
$20,000,000.00	$20,000,000.00	$40,000,000.00

DESCRIPTION

Effective 10/10/2023, this contract is hereby increased by $20,000,000. All other terms, conditions, specifications, and pricing remain the same. Per agency request, DTMB Procurement approval, and State Administrative Board approval on 10/10/2023.

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget
320 S. WALNUT ST., LANSING, MICHIGAN 48933
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **3**

to

Contract Number **200000000034**

CONTRACTOR	
	TRUCK & TRAILER SPECIALTIES INC
	3286 Hanna Lake Industrial Drive
	Dutton, MI 49316
	Dan Bouwman
	616-698-8215
	dbouwman@ttspec.com
	CV0030059

STATE			
	Program Manager	Scott Poyer	MDOT
		517-284-6448	
		poyers@Michigan.gov	
	Contract Administrator	Yvon Dufour	DTMB
		(517) 249-0455	
		dufoury@michigan.gov	

CONTRACT SUMMARY			
WINTER MAINTENANCE TRUCK COMPONENTS			
INITIAL EFFECTIVE DATE	**INITIAL EXPIRATION DATE**	**INITIAL AVAILABLE OPTIONS**	**EXPIRATION DATE BEFORE**
October 22, 2019	November 30, 2024	2 - 1 Year	November 30, 2024
PAYMENT TERMS		**DELIVERY TIMEFRAME**	
45 DAYS			
ALTERNATE PAYMENT OPTIONS			**EXTENDED PURCHASING**
☐ P-Card	☐ PRC	☐ Other	☒ Yes ☐ No
MINIMUM DELIVERY REQUIREMENTS			

DESCRIPTION OF CHANGE NOTICE				
OPTION	**LENGTH OF OPTION**	**EXTENSION**	**LENGTH OF EXTENSION**	**REVISED EXP. DATE**
☐		☐		November 30, 2024
CURRENT VALUE	**VALUE OF CHANGE NOTICE**		**ESTIMATED AGGREGATE CONTRACT VALUE**	
$20,000,000.00	$0.00		$20,000,000.00	

DESCRIPTION

Effective 6/29/2022, the following amendment is hereby incorporated into the contract. New pricing shall be subject to a detailed quotation provided by the Contractor. Contractor shall limit pricing to increases and reductions by their supplier(s) using the current contract price sheet as a guide (Schedule B - Pricing is attached). This amendment shall expire on 7/1/2023, and pricing shall revert to Schedule B if not renewed by the State via Change Notice. All other terms, conditions, specifications, and pricing remain the same. Per contractor request, and DTMB Procurement approval.

STATE OF MICHIGAN

Contract No. 200000000034

Winter Maintenance Truck Build-Up Components

SCHEDULE B

PRICING

1. The Contractor must provide a pricing schedule for the proposed Contract Activities using Microsoft Excel. The pricing schedule should be submitted in a modifiable format (e.g.. Microsoft Word or Excel); however, you may also submit an additional pricing schedule in a non-modifiable format (e.g., PDF). Failure to complete the pricing schedule as requested may result in disqualification of your proposal.

2. Price proposals must include all costs, including but not limited to, any one-time or set-up charges, fees, and potential costs that Contractor may charge the State (e.g., shipping and handling, per piece pricing, and palletizing).

3. The Contractor is encouraged to offer quick payment terms. The number of days must not include processing time for payment to be received by the Contractor's financial institution.

Quick payment terms: __**0**_____ % discount off invoice if paid within ___**0**_____ days after receipt of invoice.

4. By submitting its proposal, the Contractor certifies that the prices were arrived at independently, and without consultation, communication, or agreement with any other Contractor.

5. **Pricing Term.** Pricing is firm for a 365 day period ("Pricing Period"). The first pricing period begins on the Effective Date. Adjustments may be requested, in writing, by either party and will take effect no earlier than the next Pricing Period.

6. Adjustments will be based on changes in actual Contractor costs. Any request must be supported by written evidence documenting the change in costs. The State may consider sources, such as the Consumer Price Index; Producer Price Index; other pricing indices as needed; economic and industry data; manufacturer or supplier letters noting the increase in pricing; and any other data the State deems relevant.

Following the presentation of supporting documentation, both parties will have 30 days to review the information and prepare a written response. If the review reveals no need for modifications, pricing will remain unchanged unless mutually agreed to by the parties. If the review reveals that changes are needed, both parties will negotiate such changes, for no longer than 30 days, unless extended by mutual agreement.

The Contractor remains responsible for Contract Activities at the current price for all orders received before the mutual execution of a Change Notice indicating the start date of the new Pricing Period.

7. Quantities specified if any, are estimates based on prior purchases, and the State is not obligated to purchase in these or any other quantities. Orders for delivery will be issued directly to the Contractor by MDOT on the Direct Purchase Order Contract Release Form and MiDEAL members (local units of government).

8. Please see "**Standard Contract Terms" section 7** for administrative fee.

	ITEM	PRICING
1	# 04-Fuel Tank and Hydraulic Reservior Assembly	$4,026.00
2	# 04-PLOWJACK.1.C19 Front Plow Jack	$1,250.00
3	# 04-Tarps .C19 Automatic Electric Tarp Assemblies	$1,144.00
4	# 04-Pre-Wet Systems .C19 Hydraulic driven for rear discharge combination DVS bodies -See addendum in Schedule C for option specifications	$3,402.00
5	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 1**	$10,069.00
6	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 2**	$10,560.00
7	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 3**	$10,129.00
8	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 4**	$10,733.00
9	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 5**	$10,673.00
10	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 6**	$11,276.00

11	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 7**	$10,070.00
12	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 8**	$10,693.00
13	# GRDSPD.C19 Ground Speed Oriented Salt Distribution Spreader Control System with Electric Over Hydraulic Joystick Controls - **With Multiple Joysticks**	$10,710.00
14	# GRDSPD.C19 Ground Speed Oriented Salt Distribution Spreader Control System with Electric Over Hydraulic Joystick Controls - **With Single Joystick**	$10,710.00
15	# 04-11CBBDY.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems	$31,503.00
16	# 04-11CBBDYDA.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems	$35,746.00
17	# 04-11SSDMP.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., Hoist and 1/2 Cab Protector	$15,947.00
18	# 04-11SSDMPUBH.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., with Under Body Hoist and 1/2 Cab Protector	$16,099.00
19	# 04-14CBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems	$33,907.00
20	# 04-14CBBDYDA.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems	$37,186.00
21	# 04-14FCBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Front and Rear Discharge Distribution Systems	$38,236.00
22	# 04-14SSDMP.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., Hoist and 1/2 Cab Protector	$18,809.00
23	# 04-14SSDMPUBH.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., with Under Body Hoist and 1/2 Cab Protector	$19,257.00
24	# 55-FMBBLD.C19 Under-Body Scraper, Folding Mold Board Style Snow Blade, Hydraulic Angling	$10,279.00
25	# 55-MOPBLD.C19 Under-Body Scraper, MOP Style Snow Blade, Hydraulic Angling	$9,621.00
26	# 57-0901SMW.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right	$8,637.00
27	# 57-0901SMWJR.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right	$7,961.00
28	# 57-1201SMW.C19 Wing Plow, behind Scraper Mount, 12 Foot Left or Right	$9,040.00
29	# 60-11-14SSDMP Option1.C19 Reversing Rear Cross Auger with Side Spinner	$4,621.00
30	# 60-11_14SSDMP-Option2.C19 Zero Velocity Spreader (LEFT HAND ACCUPLACE SPINNER IS 00182933-B) (RIGHT HAND ACCUPLACE SPINNER IS 00188316-B)	$4,330.00
31	# 60-11SSDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems	$12,347.00
32	# 60-11SSUBHDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems	$12,063.00
33	# 60-14SSDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems	$15,565.00
34	# 60-14SSUBHDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems	$15,281.00
35	# 04-11-14CBBDY-Option1.C19 Reversing Rear Cross Auger with Side Spinner (RIGHT MOTOR WITH LEFT SPINNER HAND ARRANGEMENT 00184407-B AUGER, 00022294-B IS THE DROP CHUTE WITH DOOR, 00022064-J- LEFT SPINNER) (LEFT MOTOR WITH RIGHT HAND SPINNER ARRANGEMENT 00184404-B AUGER,, 00022294-B IS THE DROP CHUTE WITH DOOR, , 00081047-H RIGHT HAND SPINNER)	$5,235.00
36	# 04-11-14CBBDY-Option2.C19 Reversing Rear Cross Auger with Center Spinner	$4,995.00
37	# 60-11_14MSDMP-Option3.C19 "Y" Chute Distributor - **Stainless Steel**	$3,256.00
38	# 60-11_14MSDMP-Option3.C19 "Y" Chute Distributor - **Non-Stainless Steel**	$2,763.00
39	# 04-11CBBDY_Option4.C19 Belt Over Main Conveyor Chain	$2,348.00
40	# 04-14CBBDY_Option5.C19 Belt Over Main Conveyor Chain	$3,550.00
41	# 04-11_14CBBDY_Option6.C19 Salt Slurry Generator	$8,302.00
42	# 65-HHLF.C19 Hydraulic Hook Lift Assembly - **Hook Lift Hoist**	$25,390.00
43	# 65-HHLF.C19 Hydraulic Hook Lift Assembly - **Hook Lift Body Subframe**	$5,130.00
44	**(ITEM 1 OPTION REPLACEMENT)** Western star combination tank- See addendum in schedule c for option specifications	$3,248.00
45	**(ITEM 3 OPTION ADD)** PART NO 83200- ASPHALT COVER	$247.00
46	**(ITEM 3 OPTION ADD)** PART NO 81200 MESH COVER	$155.00
47	**(ITEM 3 OPTION ADD)** Optional plug kit for swaploader application - PART NUMBER 12760	$54.00

48	**(ITEM 3 OPTION ADD)** OPTIONAL TARP COVER- CUSTOM SIZE COVER FOR SWAPLOADER V BOXES PART NO 81010@83X18	$204.00
49	**(ITEM 4 OPTIONAL REPLACEMENT)** Hydraulic driven for front and rear discharge combination DVS bodies- **See addendum in Schedule C for option specifications**	$3,696.00
50	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric driven for rear discharge combination DVS bodies **See addendum in Schedule C for option specifications**	$3,203.00
51	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric Driven for front and rear discharge DVS bodies **See addendum in Schedule C for option specifications**	$3,597.00
52	**(ITEM 4 OPTIONAL REPLACEMENT)** Hydraulic driven for V box spreades **See addendum in Schedule C for option specifications**	$3,579.00
53	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric driven for v box spreaders- S**ee addendum in Schedule C for option specifications**	$3,380.00
54	**(ITEM 4 OPTION ADD)** optional installation of prewet system to seither a combination DVS body or a V box spreader **See addendum in Schedule C for option specifications**	$528.00
55	**(ITEM 5 - 12 PART - INCLUDED)** Double acting cylinder spool valve section- ship loose pricing for section replacement or additional function. Specify flow rate at time of order	$752.00
56	**(ITEM 5 - 12 PART - INCLUDED)** Single acting motor spooled secttion- ship loose pricing, Specify flow rate at time or order	$655.00
57	**(ITEM 5 - 12 PART - INCLUDED)** Double acting motor spooled valve section- ship loose pricing for section replacement or additional function. Specify flow rate at time of order	$752.00
58	**(ITEM 13 & 14 OPTION ADD)** add on for prewet driver	$576.00
59	**(ITEM 13 & 14 OPTION ADD)** add on for cross conveyor potentiomter driver and direction control switch	$788.00
60	**(ITEM 13 & 14 OPTION ADD)** Add on for hoist and jib disable circuits on Swaploader installation	$191.00
61	**(ITEM 13 & 14 OPTION ADD)** Road Watch system 849-1242-000	$314.00
62	**(ITEM 15 OPTION ADD)** poly subfloor for 11 ft rear discharge DVS	$736.00
63	**(ITEM 19 OPTION ADD)** POLY SUBFLOOR FOR 14' REAR DISCHARGE DVS UNIT INSTALLED	$809.00
64	**(ITEM 21 OPTION ADD)** POLY SUBFLOOR FOR 14' FRONT/REAR DISCHARGE DVS UNIT INSTALLED	$735.00
65	**(ITEM 26 OPTION ADD)** 9 FT RIGHT HAND PATROL WING POLY MOLDBOARD LINER. PART NO 00188368I	$704.00
66	**(ITEM 26 OPTIONAL REPLACEMENT)** 9 FT LEFT HAND PATROL WING PART NO 00184445	$8,637.00
67	**(ITEM 26 OPTION ADD)** 9 FT LEFT HAND PATROL WING POLY MOLDBOARD LINER. PART NO 00188950I	$704.00
68	**(ITEM 27 OPTION ADD)** 9 FT RIGHT HAND JUNIOR WING POLY MOLDBOARD LINER 00188366I	$666.00
69	**(ITEM 27 OPTIONAL REPLACEMENT)** 9 FT LEFT HAND JUNIOR WING PART NO 00184443	$7,961.00
70	**(ITEM 27 OPTION ADD)** 9 FT LEFT HAND JUNIOR WING POLY MOLDBOARD LINER PART NO 00188367I	$666.00
71	**(ITEM 27 OPTIONAL REPLACEMENT)** 7 FT RIGHT HAND JUNIOR WING PART NO 00188369	$7,895.00
72	**(ITEM 27 OPTION ADD)** 7 FT RIGHT HAND JUNIOR WING POLY MOLDBOARD LINER PART NUMBER 00188372I	$665.00
73	**(ITEM 27 OPTIONAL REPLACEMENT)** 7 FT LEFT HAND JUNIOR WING PART NO 00189828	$7,895.00
74	**(ITEM 27 OPTION ADD)** 7 FT LEFT HAND JUNIOR WING POLY MOLDBOARD LINER-PART NUMBER NOT YET ISSUED	$665.00
75	**(ITEM 28 OPTION ADD)** 12 FT RIGHT HAND PATROL WING POLY MOLDBOARD LINER	$825.00
76	**(ITEM 28 OPTIONAL REPLACEMENT)** 12 FT LEFT HAND PATROL WING PART NO 00184446	$9,040.00
77	**(ITEM 28 OPTION ADD)** 12 FT LEFT HAND PATROL WING POLY MOLDBOARD LINER	$825.00
78	**(ITEM 30 OPTION ADD)** flip up rear spinner for DVS combination body **See addendum in Schedule C for option specifications**	$2,143.00
79	**(ITEM 34 OPTIONAL REPLACEMENT)** MCV168-84-56- BELT/ CHAIN V BOX WITH CUTOUT FOR DOGHOUSE **See addendum in Schedule C for option specifications**	$17,647.00
80	**(ITEM 34 OPTIONAL REPLACEMENT)** MCV168-84-56/ DUAL AUGER SLIDE IN V BOX WITH DOGHOUSE **See addendum in Schedule C for option specifications**	18,185.00

81	**(ITEM 36 OPTION ADD)** mounting tube- **See addendum in Schedule C for option specifications**	$114.00
82	**(ITEM 36 OPTIONAL REPLACEMENT)** MS9612 to fit V box application: **See addendum in Schedule C for option specifications**	$5,566.00
83	**(ITEM 37 OPTION ADD)** STAINLESS STEEL Y CHUTE EXTENSION FOR USE WITH HOOKLOADER MOUNTS OR TANDEM SLIDE IN V BOXES WITH UNDERBODY HOISTS PART NO 00129376-B	$277.00
84	**(ITEM 38 OPTION ADD)** STEEL Y CHUTE EXTENSION FOR USE WITH HOOKLOADER MOUNTS OR TANDEM SLIDE IN V BOXES WITH UNDERBODY HOISTS PART NO 00129376-A	$165.00
85	**(ITEM 40 OPTIONAL REPLACEMENT)** BELT / CHAIN OPTION FOR 14' FRONT/ REAR DISCHARGE DVS UNIT PART NO IS 00184402-C	$3,147.00
86	**(OPTION ADD)** REAR ROLLERS- EXTENDABLE/GALVANIZED FOR SKID ASSEMBLY	$452.00
87	**(OPTIONAL REPLACEMENT)** Hookloader v box assembly. See addendum in Schedule C for option specifications.	$18,003.00
88	**(OPTION ADD)** Monroe MP36-60-12-ct/316 Expressway plow . Includes Snow wheels. See addendum in Schedule C for option specifications.	10,294.00
89	**(OPTION ADD)**Monroe model MP48R12-ISCT DUAL MOUSE EAR PLOW, Includes Snow wheels. See addendum in Schedule C for option specifications.	$9,750.00
90	**(OPTION ADD)** MONROE MODEL MPFA34-71-12 ON WAY FIXED ANGLE LEFT PLOW NO 00151122. See addendum in Schedule C for option specifications.	$6,987.00

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget

525 W. ALLEGAN ST., LANSING, MICHIGAN 48913
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **2**

to

Contract Number **200000000034**

CONTRACTOR	
	TRUCK & TRAILER SPECIALTIES INC
	3286 Hanna Lake Industrial Drive
	Dutton, MI 49316
	Dan Bouwman
	616-698-8215
	dbouwman@ttspec.com
	CV0030059

STATE			
	Program Manager	Scott Poyer	MDOT
		517-284-6448	
		poyers@Michigan.gov	
	Contract Administrator	Yvon Dufour	DTMB
		(517) 249-0455	
		dufoury@michigan.gov	

CONTRACT SUMMARY

WINTER MAINTENANCE TRUCK COMPONENTS

INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE
October 22, 2019	November 30, 2024	2 - 1 Year	November 30, 2024

PAYMENT TERMS	DELIVERY TIMEFRAME
45 Days	120 days, 180 days (custom items)

ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING	
☐ P-Card	☐ PRC	☐ Other	☒ Yes	☐ No

MINIMUM DELIVERY REQUIREMENTS

N/A

DESCRIPTION OF CHANGE NOTICE

OPTION	LENGTH OF OPTION	EXTENSION	LENGTH OF EXTENSION	REVISED EXP. DATE
☐		☐		November 30, 2024

CURRENT VALUE	VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE
$10,000,000.00	$10,000,000.00	$20,000,000.00

DESCRIPTION

Effective December 7, 2021, this contract is hereby increased by $10,000,000.00. All other terms, conditions, specifications, and pricing remain the same. Per Vendor and Agency agreement, DTMB Central Procurement approval and Ad Board approval on December 7, 2021.

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget
525 W. ALLEGAN ST., LANSING, MICHIGAN 48913
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **1**

to

Contract Number **200000000034**

CONTRACTOR	
	TRUCK & TRAILER SPECIALTIES INC
	3286 Hanna Lake Industrial Drive
	Dutton, MI 49316
	Dan Bouwman
	616-698-8215
	dbouwman@ttspec.com
	CV0030059

STATE			
	Program Manager	Scott Poyer	MDOT
		517-284-6448	
		poyers@Michigan.gov	
	Contract Administrator	Yvon Dufour	DTMB
		(517) 249-0455	
		dufoury@michigan.gov	

CONTRACT SUMMARY			
WINTER MAINTENANCE TRUCK COMPONENTS			
INITIAL EFFECTIVE DATE	**INITIAL EXPIRATION DATE**	**INITIAL AVAILABLE OPTIONS**	**EXPIRATION DATE BEFORE**
October 22, 2019	November 30, 2024	2 - 1 Year	November 30, 2024
PAYMENT TERMS		**DELIVERY TIMEFRAME**	
ALTERNATE PAYMENT OPTIONS			**EXTENDED PURCHASING**
☐ P-Card ☐ PRC ☐ Other			☒ Yes ☐ No
MINIMUM DELIVERY REQUIREMENTS			

DESCRIPTION OF CHANGE NOTICE				
OPTION	**LENGTH OF OPTION**	**EXTENSION**	**LENGTH OF EXTENSION**	**REVISED EXP. DATE**
☐		☐		November 30, 2024
CURRENT VALUE	**VALUE OF CHANGE NOTICE**		**ESTIMATED AGGREGATE CONTRACT VALUE**	
$10,000,000.00	$0.00		$10,000,000.00	

DESCRIPTION

Effective 6/8/2021, the following amendment is hereby incorporated into the contract. New pricing shall be subject to a detailed quotation provided by the Contractor. Contractor shall limit pricing to increases and reductions by their supplier(s) using the current contract price sheet as a guide (Schedule B - Pricing is attached). This amendment shall expire on 12/8/2021, and pricing shall revert to Schedule B if not renewed by the State via Change Notice. All other terms, conditions, specifications and pricing remain the same. Per contractor request, and DTMB Procurement approval.

STATE OF MICHIGAN

Contract No. 200000000034

Winter Maintenance Truck Build-Up Components

SCHEDULE B

PRICING

1. The Contractor must provide a pricing schedule for the proposed Contract Activities using Microsoft Excel. The pricing schedule should be submitted in a modifiable format (e.g.. Microsoft Word or Excel); however, you may also submit an additional pricing schedule in a non-modifiable format (e.g., PDF). Failure to complete the pricing schedule as requested may result in disqualification of your proposal.

2. Price proposals must include all costs, including but not limited to, any one-time or set-up charges, fees, and potential costs that Contractor may charge the State (e.g., shipping and handling, per piece pricing, and palletizing).

3. The Contractor is encouraged to offer quick payment terms. The number of days must not include processing time for payment to be received by the Contractor's financial institution.

Quick payment terms: __**0**_____ % discount off invoice if paid within ___**0**_____ days after receipt of invoice.

4. By submitting its proposal, the Contractor certifies that the prices were arrived at independently, and without consultation, communication, or agreement with any other Contractor.

5. **Pricing Term.** Pricing is firm for a 365 day period ("Pricing Period"). The first pricing period begins on the Effective Date. Adjustments may be requested, in writing, by either party and will take effect no earlier than the next Pricing Period.

6. Adjustments will be based on changes in actual Contractor costs. Any request must be supported by written evidence documenting the change in costs. The State may consider sources, such as the Consumer Price Index; Producer Price Index; other pricing indices as needed; economic and industry data; manufacturer or supplier letters noting the increase in pricing; and any other data the State deems relevant.

Following the presentation of supporting documentation, both parties will have 30 days to review the information and prepare a written response. If the review reveals no need for modifications, pricing will remain unchanged unless mutually agreed to by the parties. If the review reveals that changes are needed, both parties will negotiate such changes, for no longer than 30 days, unless extended by mutual agreement.

The Contractor remains responsible for Contract Activities at the current price for all orders received before the mutual execution of a Change Notice indicating the start date of the new Pricing Period.

7. Quantities specified if any, are estimates based on prior purchases, and the State is not obligated to purchase in these or any other quantities. Orders for delivery will be issued directly to the Contractor by MDOT on the Direct Purchase Order Contract Release Form and MiDEAL members (local units of government).

8. Please see "**Standard Contract Terms" section 7** for administrative fee.

	ITEM	PRICING
1	# 04-Fuel Tank and Hydraulic Reservior Assembly	$4,026.00
2	# 04-PLOWJACK.1.C19 Front Plow Jack	$1,250.00
3	# 04-Tarps .C19 Automatic Electric Tarp Assemblies	$1,144.00
4	# 04-Pre-Wet Systems .C19 Hydraulic driven for rear discharge combination DVS bodies -See addendum in Schedule C for option specifications	$3,402.00
5	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 1**	$10,069.00
6	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 2**	$10,560.00
7	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 3**	$10,129.00
8	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 4**	$10,733.00
9	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 5**	$10,673.00
10	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 6**	$11,276.00

11	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 7**	$10,070.00
12	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 8**	$10,693.00
13	# GRDSPD.C19 Ground Speed Oriented Salt Distribution Spreader Control System with Electric Over Hydraulic Joystick Controls - **With Multiple Joysticks**	$10,710.00
14	# GRDSPD.C19 Ground Speed Oriented Salt Distribution Spreader Control System with Electric Over Hydraulic Joystick Controls - **With Single Joystick**	$10,710.00
15	# 04-11CBBDY.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems	$31,503.00
16	# 04-11CBBDYDA.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems	$35,746.00
17	# 04-11SSDMP.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., Hoist and 1/2 Cab Protector	$15,947.00
18	# 04-11SSDMPUBH.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., with Under Body Hoist and 1/2 Cab Protector	$16,099.00
19	# 04-14CBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems	$33,907.00
20	# 04-14CBBDYDA.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems	$37,186.00
21	# 04-14FCBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Front and Rear Discharge Distribution Systems	$38,236.00
22	# 04-14SSDMP.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., Hoist and 1/2 Cab Protector	$18,809.00
23	# 04-14SSDMPUBH.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., with Under Body Hoist and 1/2 Cab Protector	$19,257.00
24	# 55-FMBBLD.C19 Under-Body Scraper, Folding Mold Board Style Snow Blade, Hydraulic Angling	$10,279.00
25	# 55-MOPBLD.C19 Under-Body Scraper, MOP Style Snow Blade, Hydraulic Angling	$9,621.00
26	# 57-0901SMW.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right	$8,637.00
27	# 57-0901SMWJR.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right	$7,961.00
28	# 57-1201SMW.C19 Wing Plow, behind Scraper Mount, 12 Foot Left or Right	$9,040.00
29	# 60-11-14SSDMP Option1.C19 Reversing Rear Cross Auger with Side Spinner	$4,621.00
30	# 60-11_14SSDMP-Option2.C19 Zero Velocity Spreader (LEFT HAND ACCUPLACE SPINNER IS 00182933-B) (RIGHT HAND ACCUPLACE SPINNER IS 00188316-B)	$4,330.00
31	# 60-11SSDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems	$12,347.00
32	# 60-11SSUBHDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems	$12,063.00
33	# 60-14SSDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems	$15,565.00
34	# 60-14SSUBHDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems	$15,281.00
35	# 04-11-14CBBDY-Option1.C19 Reversing Rear Cross Auger with Side Spinner (RIGHT MOTOR WITH LEFT SPINNER HAND ARRANGEMENT 00184407-B AUGER, 00022294-B IS THE DROP CHUTE WITH DOOR, 00022064-J- LEFT SPINNER) (LEFT MOTOR WITH RIGHT HAND SPINNER ARRANGEMENT 00184404-B AUGER,, 00022294-B IS THE DROP CHUTE WITH DOOR, , 00081047-H RIGHT HAND SPINNER)	$5,235.00
36	# 04-11-14CBBDY-Option2.C19 Reversing Rear Cross Auger with Center Spinner	$4,995.00
37	# 60-11_14MSDMP-Option3.C19 "Y" Chute Distributor - **Stainless Steel**	$3,256.00
38	# 60-11_14MSDMP-Option3.C19 "Y" Chute Distributor - **Non-Stainless Steel**	$2,763.00
39	# 04-11CBBDY_Option4.C19 Belt Over Main Conveyor Chain	$2,348.00
40	# 04-14CBBDY_Option5.C19 Belt Over Main Conveyor Chain	$3,550.00
41	# 04-11_14CBBDY_Option6.C19 Salt Slurry Generator	$8,302.00
42	# 65-HHLF.C19 Hydraulic Hook Lift Assembly - **Hook Lift Hoist**	$25,390.00
43	# 65-HHLF.C19 Hydraulic Hook Lift Assembly - **Hook Lift Body Subframe**	$5,130.00
44	**(ITEM 1 OPTION REPLACEMENT)** Western star combination tank- See addendum in schedule c for option specifications	$3,248.00
45	**(ITEM 3 OPTION ADD)** PART NO 83200- ASPHALT COVER	$247.00
46	**(ITEM 3 OPTION ADD)** PART NO 81200 MESH COVER	$155.00
47	**(ITEM 3 OPTION ADD)** Optional plug kit for swaploader application - PART NUMBER 12760	$54.00

48	**(ITEM 3 OPTION ADD)** OPTIONAL TARP COVER- CUSTOM SIZE COVER FOR SWAPLOADER V BOXES PART NO 81010@83X18	$204.00
49	**(ITEM 4 OPTIONAL REPLACEMENT)** Hydraulic driven for front and rear discharge combination DVS bodies- **See addendum in Schedule C for option specifications**	$3,696.00
50	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric driven for rear discharge combination DVS bodies **See addendum in Schedule C for option specifications**	$3,203.00
51	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric Driven for front and rear discharge DVS bodies **See addendum in Schedule C for option specifications**	$3,597.00
52	**(ITEM 4 OPTIONAL REPLACEMENT)** Hydraulic driven for V box spreades **See addendum in Schedule C for option specifications**	$3,579.00
53	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric driven for v box spreaders- S**ee addendum in Schedule C for option specifications**	$3,380.00
54	**(ITEM 4 OPTION ADD)** optional installation of prewet system to seither a combination DVS body or a V box spreader **See addendum in Schedule C for option specifications**	$528.00
55	**(ITEM 5 - 12 PART - INCLUDED)** Double acting cylinder spool valve section- ship loose pricing for section replacement or additional function. Specify flow rate at time of order	$752.00
56	**(ITEM 5 - 12 PART - INCLUDED)** Single acting motor spooled secttion- ship loose pricing, Specify flow rate at time or order	$655.00
57	**(ITEM 5 - 12 PART - INCLUDED)** Double acting motor spooled valve section- ship loose pricing for section replacement or additional function. Specify flow rate at time of order	$752.00
58	**(ITEM 13 & 14 OPTION ADD)** add on for prewet driver	$576.00
59	**(ITEM 13 & 14 OPTION ADD)** add on for cross conveyor potentiomter driver and direction control switch	$788.00
60	**(ITEM 13 & 14 OPTION ADD)** Add on for hoist and jib disable circuits on Swaploader installation	$191.00
61	**(ITEM 13 & 14 OPTION ADD)** Road Watch system 849-1242-000	$314.00
62	**(ITEM 15 OPTION ADD)** poly subfloor for 11 ft rear discharge DVS	$736.00
63	**(ITEM 19 OPTION ADD)** POLY SUBFLOOR FOR 14' REAR DISCHARGE DVS UNIT INSTALLED	$809.00
64	**(ITEM 21 OPTION ADD)** POLY SUBFLOOR FOR 14' FRONT/REAR DISCHARGE DVS UNIT INSTALLED	$735.00
65	**(ITEM 26 OPTION ADD)** 9 FT RIGHT HAND PATROL WING POLY MOLDBOARD LINER. PART NO 00188368I	$704.00
66	**(ITEM 26 OPTIONAL REPLACEMENT)** 9 FT LEFT HAND PATROL WING PART NO 00184445	$8,637.00
67	**(ITEM 26 OPTION ADD)** 9 FT LEFT HAND PATROL WING POLY MOLDBOARD LINER. PART NO 00188950I	$704.00
68	**(ITEM 27 OPTION ADD)** 9 FT RIGHT HAND JUNIOR WING POLY MOLDBOARD LINER 00188366I	$666.00
69	**(ITEM 27 OPTIONAL REPLACEMENT)** 9 FT LEFT HAND JUNIOR WING PART NO 00184443	$7,961.00
70	**(ITEM 27 OPTION ADD)** 9 FT LEFT HAND JUNIOR WING POLY MOLDBOARD LINER PART NO 00188367I	$666.00
71	**(ITEM 27 OPTIONAL REPLACEMENT)** 7 FT RIGHT HAND JUNIOR WING PART NO 00188369	$7,895.00
72	**(ITEM 27 OPTION ADD)** 7 FT RIGHT HAND JUNIOR WING POLY MOLDBOARD LINER PART NUMBER 00188372I	$665.00
73	**(ITEM 27 OPTIONAL REPLACEMENT)** 7 FT LEFT HAND JUNIOR WING PART NO 00189828	$7,895.00
74	**(ITEM 27 OPTION ADD)** 7 FT LEFT HAND JUNIOR WING POLY MOLDBOARD LINER-PART NUMBER NOT YET ISSUED	$665.00
75	**(ITEM 28 OPTION ADD)** 12 FT RIGHT HAND PATROL WING POLY MOLDBOARD LINER	$825.00
76	**(ITEM 28 OPTIONAL REPLACEMENT)** 12 FT LEFT HAND PATROL WING PART NO 00184446	$9,040.00
77	**(ITEM 28 OPTION ADD)** 12 FT LEFT HAND PATROL WING POLY MOLDBOARD LINER	$825.00
78	**(ITEM 30 OPTION ADD)** flip up rear spinner for DVS combination body **See addendum in Schedule C for option specifications**	$2,143.00
79	**(ITEM 34 OPTIONAL REPLACEMENT)** MCV168-84-56- BELT/ CHAIN V BOX WITH CUTOUT FOR DOGHOUSE **See addendum in Schedule C for option specifications**	$17,647.00
80	**(ITEM 34 OPTIONAL REPLACEMENT)** MCV168-84-56/ DUAL AUGER SLIDE IN V BOX WITH DOGHOUSE **See addendum in Schedule C for option specifications**	18,185.00

81	**(ITEM 36 OPTION ADD)** mounting tube- **See addendum in Schedule C for option specifications**	$114.00
82	**(ITEM 36 OPTIONAL REPLACEMENT)** MS9612 to fit V box application: **See addendum in Schedule C for option specifications**	$5,566.00
83	**(ITEM 37 OPTION ADD)** STAINLESS STEEL Y CHUTE EXTENSION FOR USE WITH HOOKLOADER MOUNTS OR TANDEM SLIDE IN V BOXES WITH UNDERBODY HOISTS PART NO 00129376-B	$277.00
84	**(ITEM 38 OPTION ADD)** STEEL Y CHUTE EXTENSION FOR USE WITH HOOKLOADER MOUNTS OR TANDEM SLIDE IN V BOXES WITH UNDERBODY HOISTS PART NO 00129376-A	$165.00
85	**(ITEM 40 OPTIONAL REPLACEMENT)** BELT / CHAIN OPTION FOR 14' FRONT/ REAR DISCHARGE DVS UNIT PART NO IS 00184402-C	$3,147.00
86	**(OPTION ADD)** REAR ROLLERS- EXTENDABLE/GALVANIZED FOR SKID ASSEMBLY	$452.00
87	**(OPTIONAL REPLACEMENT)** Hookloader v box assembly. See addendum in Schedule C for option specifications.	$18,003.00
88	**(OPTION ADD)** Monroe MP36-60-12-ct/316 Expressway plow . Includes Snow wheels. See addendum in Schedule C for option specifications.	10,294.00
89	**(OPTION ADD)**Monroe model MP48R12-ISCT DUAL MOUSE EAR PLOW, Includes Snow wheels. See addendum in Schedule C for option specifications.	$9,750.00
90	**(OPTION ADD)** MONROE MODEL MPFA34-71-12 ON WAY FIXED ANGLE LEFT PLOW NO 00151122. See addendum in Schedule C for option specifications.	$6,987.00

STATE OF MICHIGAN PROCUREMENT

Department of Technology, Management & Budget

525 W. Allegan Street Lansing, MI 48933

P.O. Box 30026 Lansing, MI 48909

NOTICE OF CONTRACT

NOTICE OF CONTRACT NO. **200000000034**

between

THE STATE OF MICHIGAN

and

CONTRACTOR	
	Truck & Trailer Specialties, Inc.
	3286 Hanna Lake industrial Drive
	Dutton, MI 49316
	Dan Bouwman
	616-698-8215
	dbouwman@ttspec.com
	CV0030059

STATE			
	Program Manager	Scott Poyer	MDOT
		517-284-6448	
		poyers@michigan.gov	
	Contract Administrator	Yvon Dufour	DTMB
		517-249-0455	
		dufoury@michigan.gov	

CONTRACT SUMMARY			
DESCRIPTION: Winter Maintenance Truck Components			
INITIAL EFFECTIVE DATE	**INITIAL EXPIRATION DATE**	**INITIAL AVAILABLE OPTIONS**	**EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW**
10/22/2019	11/30/2024	2, one year	
PAYMENT TERMS		**DELIVERY TIMEFRAME**	
45 Days		120 days, 180 days (custom items)	
ALTERNATE PAYMENT OPTIONS			**EXTENDED PURCHASING**
☐ P-card ☐ Payment Request (PRC) ☐ Other			☒ Yes ☐ No
MINIMUM DELIVERY REQUIREMENTS			
MISCELLANEOUS INFORMATION			
ESTIMATED CONTRACT VALUE AT TIME OF EXECUTION			**10,000,000.00**

FOR THE CONTRACTOR:

Truck & Trailer Specialties, Inc.
Company Name

Authorized Agent Signature

Dan Bouwman
Authorized Agent (Print or Type)

10-08-2019
Date

FOR THE STATE:

Signature

Steve Rigg – Commodities Procurement Manager
Name & Title

DTMB
Agency

10/23/19
Date

STATE OF MICHIGAN

STANDARD CONTRACT TERMS

This STANDARD CONTRACT ("**Contract**") is agreed to between the State of Michigan (the "**State**") and Truck & Trailer Specialties ("**Contractor**"), a Michigan corporation. This Contract is effective on 10/22/2019 ("**Effective Date**"), and unless terminated, expires on 11/30/24.

This Contract may be renewed for up to two (2) additional one (1) year period(s). Renewal is at the sole discretion of the State and will automatically extend the Term of this Contract. The State will document its exercise of renewal options via Contract Change Notice.

The parties agree as follows:

1. **Duties of Contractor.** Contractor must perform the services and provide the deliverables described in **Schedule A – Statement of Work** (the "**Contract Activities**"). An obligation to provide delivery of any commodity is considered a service and is a Contract Activity.

   Contractor must furnish all labor, equipment, materials, and supplies necessary for the performance of the Contract Activities, and meet operational standards, unless otherwise specified in Schedule A.

   Contractor must: (a) perform the Contract Activities in a timely, professional, safe, and workmanlike manner consistent with standards in the trade, profession, or industry; (b) meet or exceed the performance and operational standards, and specifications of the Contract; (c) provide all Contract Activities in good quality, with no material defects; (d) not interfere with the State's operations; (e) obtain and maintain all necessary licenses, permits or other authorizations necessary for the performance of the Contract; (f) cooperate with the State, including the State's quality assurance personnel, and any third party to achieve the objectives of the Contract; (g) return to the State any State-furnished equipment or other resources in the same condition as when provided when no longer required for the Contract; (h) not make any media releases without prior written authorization from the State; (i) assign to the State any claims resulting from state or federal antitrust violations to the extent that those violations concern materials or services supplied by third parties toward fulfillment of the Contract; (j) comply with all State physical and IT security policies and standards which will be made available upon request; and (k) provide the State priority in performance of the Contract except as mandated by federal disaster response requirements. Any breach under this paragraph is considered a material breach.

   Contractor must also be clearly identifiable while on State property by wearing identification issued by the State, and clearly identify themselves whenever making contact with the State.

2. **Notices.** All notices and other communications required or permitted under this Contract must be in writing and will be considered given and received: (a) when verified by written receipt if sent by courier; (b) when actually received if sent by mail without verification of receipt; or (c) when verified by automated receipt or electronic logs if sent by facsimile or email.

If to State:	If to Contractor:
Yvon Dufour *525 W. Allegan,* *Constitution Hall, 1st Floor NE* *Lansing, MI 48933* *dufoury@michigan.gov* *(517) 249-0455*	Dan Bouwman-President 3286 Hanna Lake Industrial Drive Dutton, MI 49316 Toll Free Phone: (888)-200-8146 dbouwman@ttspec.com

3. **Contract Administrator.** The Contract Administrator for each party is the only person authorized to modify any terms of this Contract, and approve and execute any change under this Contract (each a "**Contract Administrator**"):

State:	Contractor:

Yvon Dufour *525 W. Allegan,* *Constitution Hall, 1st Floor NE* *Lansing, MI 48933* *dufoury@michigan.gov* *(517) 249-0455*	Dan Bouwman-President 3286 Hanna Lake Industrial Drive Dutton, MI 49316 Toll Free Phone: (888)-200-8146 dbouwman@ttspec.com

4. **Program Manager.** The Program Manager for each party will monitor and coordinate the day-to-day activities of the Contract (each a "**Program Manager**"):

State:	Contractor:
Scott Poyer *2522 W. Main St.* *Lansing, MI 48917* *poyers@michigan.gov* *(517) 284-6448*	Mike Bouwman 3286 Hanna Lake Industrial Drive Dutton, MI 49316 Toll Free Phone: (888)-200-8146 mbouwman@ttspec.com

5. **Performance Guarantee.** Contractor must at all times have financial resources sufficient, in the opinion of the State, to ensure performance of the Contract and must provide proof upon request. The State may require a performance bond (as specified in Schedule A) if, in the opinion of the State, it will ensure performance of the Contract.

6. **Insurance Requirements.** Contractor must maintain the insurances identified below and is responsible for all deductibles. All required insurance must: (a) protect the State from claims that may arise out of, are alleged to arise out of, or result from Contractor's or a subcontractor's performance; (b) be primary and non-contributing to any comparable liability insurance (including self-insurance) carried by the State; and (c) be provided by a company with an A.M. Best rating of "A-" or better, and a financial size of VII or better.

Required Limits	Additional Requirements
Commercial General Liability Insurance	
Minimum Limits: $1,000,000 Each Occurrence Limit $1,000,000 Personal & Advertising Injury Limit $2,000,000 General Aggregate Limit $2,000,000 Products/Completed Operations Deductible Maximum: $50,000 Each Occurrence	Contractor must have their policy endorsed to add "the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents" as additional insureds using endorsement CG 20 10 11 85, or both CG 2010 07 04 and CG 2037 07 04.
Umbrella or Excess Liability Insurance	
Minimum Limits: $5,000,000 General Aggregate	Contractor must have their policy follow form.
Automobile Liability Insurance	
Minimum Limits: $1,000,000 Per Accident	Contractor must have their policy: (1) endorsed to add "the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents" as additional insureds; and (2) include Hired and Non-Owned Automobile coverage.
Workers' Compensation Insurance	

Minimum Limits: Coverage according to applicable laws governing work activities.	Waiver of subrogation, except where waiver is prohibited by law.
Employers Liability Insurance	
Minimum Limits: $500,000 Each Accident $500,000 Each Employee by Disease $500,000 Aggregate Disease.	

If any of the required policies provide **claims-made** coverage, the Contractor must: (a) provide coverage with a retroactive date before the effective date of the contract or the beginning of Contract Activities; (b) maintain coverage and provide evidence of coverage for at least three (3) years after completion of the Contract Activities; and (c) if coverage is cancelled or not renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective date, Contractor must purchase extended reporting coverage for a minimum of three (3) years after completion of work.

Contractor must: (a) provide insurance certificates to the Contract Administrator, containing the agreement or delivery order number, at Contract formation and within 20 calendar days of the expiration date of the applicable policies; (b) require that subcontractors maintain the required insurances contained in this Section; (c) notify the Contract Administrator within 5 business days if any insurance is cancelled; and (d) waive all rights against the State for damages covered by insurance. Failure to maintain the required insurance does not limit this waiver.
This Section is not intended to and is not to be construed in any manner as waiving, restricting or limiting the liability of either party for any obligations under this Contract (including any provisions hereof requiring Contractor to indemnify, defend and hold harmless the State).

7. Administrative Fee and Reporting. Contractor must pay an administrative fee of 1% on all payments made to Contractor under the Contract including transactions with the State (including its departments, divisions, agencies, offices, and commissions), MiDEAL members, and other states (including governmental subdivisions and authorized entities). Administrative fee payments must be made by check payable to the State of Michigan and mailed to:

Department of Technology, Management and Budget
Cashiering
P.O. Box 30681
Lansing, MI 48909

Contractor must submit an itemized purchasing activity report, which includes at a minimum, the name of the purchasing entity and the total dollar volume in sales. Reports should be mailed to MiDeal@michigan.gov.

The administrative fee and purchasing activity report are due within 30 calendar days from the last day of each calendar quarter.

8. Extended Purchasing Program. This contract is extended to MiDEAL members. MiDEAL members include local units of government, school districts, universities, community colleges, and nonprofit hospitals. A current list of MiDEAL members is available at www.michigan.gov/mideal.

Upon written agreement between the State and Contractor, this contract may also be extended to: (a) other states (including governmental subdivisions and authorized entities) and (b) State of Michigan employees.

If extended, Contractor must supply all Contract Activities at the established Contract prices and terms. The State reserves the right to impose an administrative fee and negotiate additional discounts based on any increased volume generated by such extensions.

Contractor must submit invoices to, and receive payment from, extended purchasing program members on a direct and individual basis.

9. Independent Contractor. Contractor is an independent contractor and assumes all rights, obligations and liabilities set forth in this Contract. Contractor, its employees, and agents will not be considered employees of

the State. No partnership or joint venture relationship is created by virtue of this Contract. Contractor, and not the State, is responsible for the payment of wages, benefits and taxes of Contractor's employees and any subcontractors. Prior performance does not modify Contractor's status as an independent contractor.

10. Subcontracting. Contractor may not delegate any of its obligations under the Contract without the prior written approval of the State. Contractor must notify the State at least 90 calendar days before the proposed delegation and provide the State any information it requests to determine whether the delegation is in its best interest. If approved, Contractor must: (a) be the sole point of contact regarding all contractual matters, including payment and charges for all Contract Activities; (b) make all payments to the subcontractor; and (c) incorporate the terms and conditions contained in this Contract in any subcontract with a subcontractor. Contractor remains responsible for the completion of the Contract Activities, compliance with the terms of this Contract, and the acts and omissions of the subcontractor. The State, in its sole discretion, may require the replacement of any subcontractor.

11. Staffing. The State's Contract Administrator may require Contractor to remove or reassign personnel by providing a notice to Contractor.

12. Background Checks. Pursuant to Michigan law, all agencies subject to IRS Pub. 1075 are required to ask the Michigan State Police to perform fingerprint background checks on all employees, including Contractor and Subcontractor employees, who may have access to any database of information maintained by the federal government that contains confidential or personal information, including, but not limited to, federal tax information. Further, pursuant to Michigan law, any agency described above is prohibited from providing Contractors or Subcontractors with the result of such background check. For more information, please see Michigan Public Act 427 of 2018. Upon request, Contractor must perform background checks on all employees and subcontractors and its employees prior to their assignment. The scope is at the discretion of the State and documentation must be provided as requested. Contractor is responsible for all costs associated with the requested background checks. The State, in its sole discretion, may also perform background checks.

13. Assignment. Contractor may not assign this Contract to any other party without the prior approval of the State. Upon notice to Contractor, the State, in its sole discretion, may assign in whole or in part, its rights or responsibilities under this Contract to any other party. If the State determines that a novation of the Contract to a third party is necessary, Contractor will agree to the novation and provide all necessary documentation and signatures.

14. Change of Control. Contractor will notify within 30 days of any public announcement or otherwise once legally permitted to do so, the State of a change in Contractor's organizational structure or ownership. For purposes of this Contract, a change in control means any of the following: (a) a sale of more than 50% of Contractor's stock; (b) a sale of substantially all of Contractor's assets; (c) a change in a majority of Contractor's board members; (d) consummation of a merger or consolidation of Contractor with any other entity; (e) a change in ownership through a transaction or series of transactions; (f) or the board (or the stockholders) approves a plan of complete liquidation. A change of control does not include any consolidation or merger effected exclusively to change the domicile of Contractor, or any transaction or series of transactions principally for bona fide equity financing purposes.

In the event of a change of control, Contractor must require the successor to assume this Contract and all of its obligations under this Contract.

15. Ordering. Contractor is not authorized to begin performance until receipt of authorization as identified in Schedule A.

16. Acceptance. Contract Activities are subject to inspection and testing by the State within 30 calendar days of the State's receipt of them ("**State Review Period**"), unless otherwise provided in Schedule A. If the Contract Activities are not fully accepted by the State, the State will notify Contractor by the end of the State Review Period that either: (a) the Contract Activities are accepted, but noted deficiencies must be corrected; or (b) the Contract Activities are rejected. If the State finds material deficiencies, it may: (i) reject the Contract Activities without performing any further inspections; (ii) demand performance at no additional cost; or (iii) terminate this Contract in accordance with Section 23, Termination for Cause.

Within 10 business days from the date of Contractor's receipt of notification of acceptance with deficiencies or rejection of any Contract Activities, Contractor must cure, at no additional cost, the deficiency and deliver unequivocally acceptable Contract Activities to the State. If acceptance with deficiencies or rejection of the Contract Activities impacts the content or delivery of other non-completed Contract Activities, the parties' respective Program Managers must determine an agreed to number of days for re-submission that minimizes

the overall impact to the Contract. However, nothing herein affects, alters, or relieves Contractor of its obligations to correct deficiencies in accordance with the time response standards set forth in this Contract.

If Contractor is unable or refuses to correct the deficiency within the time response standards set forth in this Contract, the State may cancel the order in whole or in part. The State, or a third party identified by the State, may perform the Contract Activities and recover the difference between the cost to cure and the Contract price plus an additional 10% administrative fee.

17. **Delivery.** Contractor must deliver all Contract Activities F.O.B. destination, within the State premises with transportation and handling charges paid by Contractor, unless otherwise specified in Schedule A. All containers and packaging become the State's exclusive property upon acceptance.

18. **Risk of Loss and Title.** Until final acceptance, title and risk of loss or damage to Contract Activities remains with Contractor. Contractor is responsible for filing, processing, and collecting all damage claims. The State will record and report to Contractor any evidence of visible damage. If the State rejects the Contract Activities, Contractor must remove them from the premises within 10 calendar days after notification of rejection. The risk of loss of rejected or non-conforming Contract Activities remains with Contractor. Rejected Contract Activities not removed by Contractor within 10 calendar days will be deemed abandoned by Contractor, and the State will have the right to dispose of it as its own property. Contractor must reimburse the State for costs and expenses incurred in storing or effecting removal or disposition of rejected Contract Activities.

19. **Warranty Period.** The warranty period, if applicable, for Contract Activities is a fixed period commencing on the date specified in Schedule A. If the Contract Activities do not function as warranted during the warranty period, the State may return such non-conforming Contract Activities to the Contractor for a full refund.

20. **Terms of Payment.** Invoices must conform to the requirements communicated from time-to-time by the State. All undisputed amounts are payable within 45 days of the State's receipt. Contractor may only charge for Contract Activities performed as specified in Schedule A. Invoices must include an itemized statement of all charges. The State is exempt from State sales tax for direct purchases and may be exempt from federal excise tax, if Services purchased under this Agreement are for the State's exclusive use. All prices are exclusive of taxes, and Contractor is responsible for all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any federal, state, or local governmental entity on any amounts payable by the State under this Contract.

    The State has the right to withhold payment of any disputed amounts until the parties agree as to the validity of the disputed amount. The State will notify Contractor of any dispute within a reasonable time. Payment by the State will not constitute a waiver of any rights as to Contractor's continuing obligations, including claims for deficiencies or substandard Contract Activities. Contractor's acceptance of final payment by the State constitutes a waiver of all claims by Contractor against the State for payment under this Contract, other than those claims previously filed in writing on a timely basis and still disputed.

    The State will only disburse payments under this Contract through Electronic Funds Transfer (EFT). Contractor must register with the State at http://www.michigan.gov/SIGMAVSS to receive electronic fund transfer payments. If Contractor does not register, the State is not liable for failure to provide payment. Without prejudice to any other right or remedy it may have, the State reserves the right to set off at any time any amount then due and owing to it by Contractor against any amount payable by the State to Contractor under this Contract.

21. **Liquidated Damages.** Liquidated damages, if applicable, will be assessed as described in Schedule A.

22. **Stop Work Order.** The State may suspend any or all activities under the Contract at any time. The State will provide Contractor a written stop work order detailing the suspension. Contractor must comply with the stop work order upon receipt. Within 90 calendar days, or any longer period agreed to by Contractor, the State will either: (a) issue a notice authorizing Contractor to resume work, or (b) terminate the Contract or delivery order. The State will not pay for Contract Activities, Contractor's lost profits, or any additional compensation during a stop work period.

23. **Termination for Cause.** The State may terminate this Contract for cause, in whole or in part, if Contractor, as determined by the State: (a) endangers the value, integrity, or security of any location, data, or personnel; (b) becomes insolvent, petitions for bankruptcy court proceedings, or has an involuntary bankruptcy proceeding filed against it by any creditor; (c) engages in any conduct that may expose the State to liability; (d) breaches any of its material duties or obligations; or (e) fails to cure a breach within the time stated in a notice of breach.

Any reference to specific breaches being material breaches within this Contract will not be construed to mean that other breaches are not material.

If the State terminates this Contract under this Section, the State will issue a termination notice specifying whether Contractor must: (a) cease performance immediately, or (b) continue to perform for a specified period. If it is later determined that Contractor was not in breach of the Contract, the termination will be deemed to have been a Termination for Convenience, effective as of the same date, and the rights and obligations of the parties will be limited to those provided in Section 24, Termination for Convenience.

The State will only pay for amounts due to Contractor for Contract Activities accepted by the State on or before the date of termination, subject to the State's right to set off any amounts owed by the Contractor for the State's reasonable costs in terminating this Contract. The Contractor must pay all reasonable costs incurred by the State in terminating this Contract for cause, including administrative costs, attorneys' fees, court costs, transition costs, and any costs the State incurs to procure the Contract Activities from other sources.

24. Termination for Convenience. The State may immediately terminate this Contract in whole or in part without penalty and for any reason, including but not limited to, appropriation or budget shortfalls. The termination notice will specify whether Contractor must: (a) cease performance of the Contract Activities immediately, or (b) continue to perform the Contract Activities in accordance with Section 25, Transition Responsibilities. If the State terminates this Contract for convenience, the State will pay all reasonable costs, as determined by the State, for State approved Transition Responsibilities.

25. Transition Responsibilities. Upon termination or expiration of this Contract for any reason, Contractor must, for a period of time specified by the State (not to exceed 90 calendar days), provide all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the Contract Activities to continue without interruption or adverse effect, and to facilitate the orderly transfer of such Contract Activities to the State or its designees. Such transition assistance may include, but is not limited to: (a) continuing to perform the Contract Activities at the established Contract rates; (b) taking all reasonable and necessary measures to transition performance of the work, including all applicable Contract Activities, training, equipment, software, leases, reports and other documentation, to the State or the State's designee; (c) taking all necessary and appropriate steps, or such other action as the State may direct, to preserve, maintain, protect, or return to the State all materials, data, property, and confidential information provided directly or indirectly to Contractor by any entity, agent, vendor, or employee of the State; (d) transferring title in and delivering to the State, at the State's discretion, all completed or partially completed deliverables prepared under this Contract as of the Contract termination date; and (e) preparing an accurate accounting from which the State and Contractor may reconcile all outstanding accounts (collectively, "**Transition Responsibilities**"). This Contract will automatically be extended through the end of the transition period.

26. General Indemnification. Contractor must defend, indemnify and hold the State, its departments, divisions, agencies, offices, commissions, officers, and employees harmless, without limitation, from and against any and all actions, claims, losses, liabilities, damages, costs, attorney fees, and expenses (including those required to establish the right to indemnification), arising out of or relating to: (a) any breach by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable) of any of the promises, agreements, representations, warranties, or insurance requirements contained in this Contract; (b) any infringement, misappropriation, or other violation of any intellectual property right or other right of any third party; (c) any bodily injury, death, or damage to real or tangible personal property occurring wholly or in part due to action or inaction by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable); and (d) any acts or omissions of Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable).

The State will notify Contractor in writing if indemnification is sought; however, failure to do so will not relieve Contractor, except to the extent that Contractor is materially prejudiced. Contractor must, to the satisfaction of the State, demonstrate its financial ability to carry out these obligations.

The State is entitled to: (i) regular updates on proceeding status; (ii) participate in the defense of the proceeding; (iii) employ its own counsel; and to (iv) retain control of the defense if the State deems necessary. Contractor will not, without the State's written consent (not to be unreasonably withheld), settle, compromise, or consent to the entry of any judgment in or otherwise seek to terminate any claim, action, or proceeding. To the extent that any State employee, official, or law may be involved or challenged, the State may, at its own expense, control the defense of that portion of the claim.

Any litigation activity on behalf of the State, or any of its subdivisions under this Section, must be coordinated with the Department of Attorney General. An attorney designated to represent the State may not do so until approved by the Michigan Attorney General and appointed as a Special Assistant Attorney General.

27. Infringement Remedies. If, in either party's opinion, any piece of equipment, software, commodity, or service supplied by Contractor or its subcontractors, or its operation, use or reproduction, is likely to become the subject of a copyright, patent, trademark, or trade secret infringement claim, Contractor must, at its expense: (a) procure for the State the right to continue using the equipment, software, commodity, or service, or if this option is not reasonably available to Contractor, (b) replace or modify the same so that it becomes non-infringing; or (c) accept its return by the State with appropriate credits to the State against Contractor's charges and reimburse the State for any losses or costs incurred as a consequence of the State ceasing its use and returning it.

28. Limitation of Liability and Disclaimer of Damages. IN NO EVENT WILL THE STATE'S AGGREGATE LIABILITY TO CONTRACTOR UNDER THIS CONTRACT, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY OR BY STATUTE OR OTHERWISE, FOR ANY CLAIM RELATED TO OR ARISING UNDER THIS CONTRACT, EXCEED THE MAXIMUM AMOUNT OF FEES PAYABLE UNDER THIS CONTRACT. The State is not liable for consequential, incidental, indirect, or special damages, regardless of the nature of the action.

29. Disclosure of Litigation, or Other Proceeding. Contractor must notify the State within 14 calendar days of receiving notice of any litigation, investigation, arbitration, or other proceeding (collectively, "**Proceeding**") involving Contractor, a subcontractor, or an officer or director of Contractor or subcontractor, that arises during the term of the Contract, including: (a) a criminal Proceeding; (b) a parole or probation Proceeding; (c) a Proceeding under the Sarbanes-Oxley Act; (d) a civil Proceeding involving: (1) a claim that might reasonably be expected to adversely affect Contractor's viability or financial stability; or (2) a governmental or public entity's claim or written allegation of fraud; or (e) a Proceeding involving any license that Contractor is required to possess in order to perform under this Contract.

30. Reserved.

31. Reserved.

32. Non-Disclosure of Confidential Information. The parties acknowledge that each party may be exposed to or acquire communication or data of the other party that is confidential, privileged communication not intended to be disclosed to third parties. The provisions of this Section survive the termination of this Contract.

a. Meaning of Confidential Information. For the purposes of this Contract, the term "**Confidential Information**" means all information and documentation of a party that: (a) has been marked "confidential" or with words of similar meaning, at the time of disclosure by such party; (b) if disclosed orally or not marked "confidential" or with words of similar meaning, was subsequently summarized in writing by the disclosing party and marked "confidential" or with words of similar meaning; and, (c) should reasonably be recognized as confidential information of the disclosing party. The term "Confidential Information" does not include any information or documentation that was: (a) subject to disclosure under the Michigan Freedom of Information Act (FOIA); (b) already in the possession of the receiving party without an obligation of confidentiality; (c) developed independently by the receiving party, as demonstrated by the receiving party, without violating the disclosing party's proprietary rights; (d) obtained from a source other than the disclosing party without an obligation of confidentiality; or, (e) publicly available when received, or thereafter became publicly available (other than through any unauthorized disclosure by, through, or on behalf of, the receiving party). For purposes of this Contract, in all cases and for all matters, State Data is deemed to be Confidential Information.

b. Obligation of Confidentiality. The parties agree to hold all Confidential Information in strict confidence and not to copy, reproduce, sell, transfer, or otherwise dispose of, give or disclose such Confidential Information to third parties other than employees, agents, or subcontractors of a party who have a need to know in connection with this Contract or to use such Confidential Information for any purposes whatsoever other than the performance of this Contract. The parties agree to advise and require their respective employees, agents, and subcontractors of their obligations to keep all Confidential Information confidential. Disclosure to a subcontractor is permissible where: (a) use of a subcontractor is authorized under this Contract; (b) the disclosure is necessary or otherwise naturally occurs in connection with work that is within the subcontractor's responsibilities; and (c) Contractor obligates the subcontractor in a written contract to maintain the State's Confidential Information in confidence. At the State's request, any

employee of Contractor or any subcontractor may be required to execute a separate agreement to be bound by the provisions of this Section.

c. Cooperation to Prevent Disclosure of Confidential Information. Each party must use its best efforts to assist the other party in identifying and preventing any unauthorized use or disclosure of any Confidential Information. Without limiting the foregoing, each party must advise the other party immediately in the event either party learns or has reason to believe that any person who has had access to Confidential Information has violated or intends to violate the terms of this Contract and each party will cooperate with the other party in seeking injunctive or other equitable relief against any such person.

d. Remedies for Breach of Obligation of Confidentiality. Each party acknowledges that breach of its obligation of confidentiality may give rise to irreparable injury to the other party, which damage may be inadequately compensable in the form of monetary damages. Accordingly, a party may seek and obtain injunctive relief against the breach or threatened breach of the foregoing undertakings, in addition to any other legal remedies which may be available, to include, in the case of the State, at the sole election of the State, the immediate termination, without liability to the State, of this Contract or any Statement of Work corresponding to the breach or threatened breach.

e. Surrender of Confidential Information upon Termination. Upon termination of this Contract or a Statement of Work, in whole or in part, each party must, within 5 calendar days from the date of termination, return to the other party any and all Confidential Information received from the other party, or created or received by a party on behalf of the other party, which are in such party's possession, custody, or control; provided, however, that Contractor must return State Data to the State following the timeframe and procedure described further in this Contract. Should Contractor or the State determine that the return of any Confidential Information is not feasible, such party must destroy the Confidential Information and must certify the same in writing within 5 calendar days from the date of termination to the other party. However, the State's legal ability to destroy Contractor data may be restricted by its retention and disposal schedule, in which case Contractor's Confidential Information will be destroyed after the retention period expires.

33. Reserved.

34. Reserved.

35. Reserved.

36. Records Maintenance, Inspection, Examination, and Audit. The State or its designee may audit Contractor to verify compliance with this Contract. Contractor must retain and provide to the State or its designee and the auditor general upon request, all financial and accounting records related to the Contract through the term of the Contract and for 4 years after the latter of termination, expiration, or final payment under this Contract or any extension ("**Audit Period**"). If an audit, litigation, or other action involving the records is initiated before the end of the Audit Period, Contractor must retain the records until all issues are resolved.

Within 10 calendar days of providing notice, the State and its authorized representatives or designees have the right to enter and inspect Contractor's premises or any other places where Contract Activities are being performed, and examine, copy, and audit all records related to this Contract. Contractor must cooperate and provide reasonable assistance. If any financial errors are revealed, the amount in error must be reflected as a credit or debit on subsequent invoices until the amount is paid or refunded. Any remaining balance at the end of the Contract must be paid or refunded within 45 calendar days.

This Section applies to Contractor, any parent, affiliate, or subsidiary organization of Contractor, and any subcontractor that performs Contract Activities in connection with this Contract.

37. Warranties and Representations. Contractor represents and warrants: (a) Contractor is the owner or licensee of any Contract Activities that it licenses, sells, or develops and Contractor has the rights necessary to convey title, ownership rights, or licensed use; (b) all Contract Activities are delivered free from any security interest, lien, or encumbrance and will continue in that respect; (c) the Contract Activities will not infringe the patent, trademark, copyright, trade secret, or other proprietary rights of any third party; (d) Contractor must assign or otherwise transfer to the State or its designee any manufacturer's warranty for the Contract Activities; (e) the Contract Activities are merchantable and fit for the specific purposes identified in the Contract; (f) the Contract signatory has the authority to enter into this Contract; (g) all information furnished by Contractor in connection with the Contract fairly and accurately represents Contractor's business, properties, finances, and operations as of the dates covered by the information, and Contractor will inform the State of any material

adverse changes;(h) all information furnished and representations made in connection with the award of this Contract is true, accurate, and complete, and contains no false statements or omits any fact that would make the information misleading; and that (i) Contractor is neither currently engaged in nor will engage in the boycott of a person based in or doing business with a strategic partner as described in 22 USC 8601 to 8606. A breach of this Section is considered a material breach of this Contract, which entitles the State to terminate this Contract under Section 23, Termination for Cause.

38. Conflicts and Ethics. Contractor will uphold high ethical standards and is prohibited from: (a) holding or acquiring an interest that would conflict with this Contract; (b) doing anything that creates an appearance of impropriety with respect to the award or performance of the Contract; (c) attempting to influence or appearing to influence any State employee by the direct or indirect offer of anything of value; or (d) paying or agreeing to pay any person, other than employees and consultants working for Contractor, any consideration contingent upon the award of the Contract. Contractor must immediately notify the State of any violation or potential violation of these standards. This Section applies to Contractor, any parent, affiliate, or subsidiary organization of Contractor, and any subcontractor that performs Contract Activities in connection with this Contract.

39. Compliance with Laws. Contractor must comply with all federal, state and local laws, rules and regulations.

40. Reserved.

41. Reserved.

42. Nondiscrimination. Under the Elliott-Larsen Civil Rights Act, 1976 PA 453, MCL 37.2101, *et seq*., the Persons with Disabilities Civil Rights Act, 1976 PA 220, MCL 37.1101, *et seq*., and Executive Directive 2019-09. Contractor and its subcontractors agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex (as defined in Executive Directive 2019-09), height, weight, marital status, partisan considerations, any mental or physical disability, or genetic information that is unrelated to the person's ability to perform the duties of a particular job or position. Breach of this covenant is a material breach of this Contract.

43. Unfair Labor Practice. Under MCL 423.324, the State may void any Contract with a Contractor or subcontractor who appears on the Unfair Labor Practice register compiled under MCL 423.322.

44. Governing Law. This Contract is governed, construed, and enforced in accordance with Michigan law, excluding choice-of-law principles, and all claims relating to or arising out of this Contract are governed by Michigan law, excluding choice-of-law principles. Any dispute arising from this Contract must be resolved in Michigan Court of Claims. Contractor consents to venue in Ingham County, and waives any objections, such as lack of personal jurisdiction or *forum non conveniens*. Contractor must appoint agents in Michigan to receive service of process.

45. Non-Exclusivity. Nothing contained in this Contract is intended nor will be construed as creating any requirements contract with Contractor. This Contract does not restrict the State or its agencies from acquiring similar, equal, or like Contract Activities from other sources.

46. Force Majeure. Neither party will be in breach of this Contract because of any failure arising from any disaster or acts of god that are beyond their control and without their fault or negligence. Each party will use commercially reasonable efforts to resume performance. Contractor will not be relieved of a breach or delay caused by its subcontractors. If immediate performance is necessary to ensure public health and safety, the State may immediately contract with a third party.

47. Dispute Resolution. The parties will endeavor to resolve any Contract dispute in accordance with this provision. The dispute will be referred to the parties' respective Contract Administrators or Program Managers. Such referral must include a description of the issues and all supporting documentation. The parties must submit the dispute to a senior executive if unable to resolve the dispute within 15 business days. The parties will continue performing while a dispute is being resolved, unless the dispute precludes performance. A dispute involving payment does not preclude performance.

Litigation to resolve the dispute will not be instituted until after the dispute has been elevated to the parties' senior executive and either concludes that resolution is unlikely or fails to respond within 15 business days. The parties are not prohibited from instituting formal proceedings: (a) to avoid the expiration of statute of limitations period; (b) to preserve a superior position with respect to creditors; or (c) where a party makes a

determination that a temporary restraining order or other injunctive relief is the only adequate remedy. This Section does not limit the State's right to terminate the Contract.

48. Media Releases. News releases (including promotional literature and commercial advertisements) pertaining to the Contract or project to which it relates must not be made without prior written State approval, and then only in accordance with the explicit written instructions of the State.

49. Website Incorporation. The State is not bound by any content on Contractor's website unless expressly incorporated directly into this Contract.

50. Schedules. All Schedules and Exhibits that are referenced herein and attached hereto are hereby incorporated by reference. The following Schedules are attached hereto and incorporated herein:

Schedule A	Statement of Work
Schedule B	Pricing
Schedule C	Specifications

51. Entire Agreement and Order of Precedence. This Contract, which includes Schedule A – Statement of Work, and schedules and exhibits which are hereby expressly incorporated, is the entire agreement of the parties related to the Contract Activities. This Contract supersedes and replaces all previous understandings and agreements between the parties for the Contract Activities. If there is a conflict between documents, the order of precedence is: (a) first, this Contract, excluding its schedules, exhibits, and Schedule A – Statement of Work; (b) second, Schedule A – Statement of Work as of the Effective Date; and (c) third, schedules expressly incorporated into this Contract as of the Effective Date. NO TERMS ON CONTRACTOR'S INVOICES, ORDERING DOCUMENTS, WEBSITE, BROWSE-WRAP, SHRINK-WRAP, CLICK-WRAP, CLICK-THROUGH OR OTHER NON-NEGOTIATED TERMS AND CONDITIONS PROVIDED WITH ANY OF THE CONTRACT ACTIVITIES WILL CONSTITUTE A PART OR AMENDMENT OF THIS CONTRACT OR IS BINDING ON THE STATE FOR ANY PURPOSE. ALL SUCH OTHER TERMS AND CONDITIONS HAVE NO FORCE AND EFFECT AND ARE DEEMED REJECTED BY THE STATE, EVEN IF ACCESS TO OR USE OF THE CONTRACT ACTIVITIES REQUIRES AFFIRMATIVE ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

52. Severability. If any part of this Contract is held invalid or unenforceable, by any court of competent jurisdiction, that part will be deemed deleted from this Contract and the severed part will be replaced by agreed upon language that achieves the same or similar objectives. The remaining Contract will continue in full force and effect.

53. Waiver. Failure to enforce any provision of this Contract will not constitute a waiver.

54. Survival. The provisions of this Contract that impose continuing obligations, including warranties and representations, termination, transition, insurance coverage, indemnification, and confidentiality, will survive the expiration or termination of this Contract.

55. Contract Modification. This Contract may not be amended except by signed agreement between the parties (a "**Contract Change Notice**"). Notwithstanding the foregoing, no subsequent Statement of Work or Contract Change Notice executed after the Effective Date will be construed to amend this Contract unless it specifically states its intent to do so and cites the section or sections amended.

Federal Provisions Addendum

The provisions in this addendum may apply if the purchase will be paid for in whole or in part with funds obtained from the federal government. If any provision below is not required by federal law for this Contract, then it does not apply and must be disregarded. If any provision below is required to be included in this Contract by federal law, then the applicable provision applies and the language is not negotiable. If any provision below conflicts with the State's terms and conditions, including any attachments, schedules, or exhibits to the State's Contract, the provisions below take priority to the extent a provision is required by federal law; otherwise, the order of precedence set forth in the Contract applies. Hyperlinks are provided for convenience only; broken hyperlinks will not relieve Contractor from compliance with the law.

1. **Federally Assisted Construction Contracts.** If this contract is a "**federally assisted construction contract**" as defined in 41 CRF Part 60-1.3, and except as otherwise may be provided under 41 CRF Part 60, then during performance of this Contract, the Contractor agrees as follows:

   (1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

   Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

   (2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

   (3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

   (4) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

   (5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

   (6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

   (7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

2. **Davis-Bacon Act (Prevailing Wage)**

   a. If applicable, the Contractor (and its Subcontractors) for **prime construction contracts** in excess of $2,000 must comply with the Davis-Bacon Act (40 USC 3141-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction").

   b. The Contractor (and its Subcontractors) shall pay all mechanics and laborers employed directly on the site of the work, unconditionally and at least once a week, and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the advertised specifications, regardless of any contractual relationship which may be alleged to exist between the Contractor or subcontractor and the laborers and mechanics;

   c. The Contractor will post the scale of wages to be paid in a prominent and easily accessible place at the site of the work;

   d. There may be withheld from the Contractor so much of accrued payments as the contracting officer considers necessary to pay to laborers and mechanics employed by the Contractor or any Subcontractor on the work the difference between the rates of wages required by the Contract to be paid laborers and mechanics on the work and the rates of wages received by the laborers and mechanics and not refunded to the Contractor or Subcontractors or their agents.

3. **Copeland "Anti-Kickback" Act.** If applicable, the Contractor must comply with the Copeland "Anti-Kickback" Act (40 USC 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"), which prohibits the Contractor and subrecipients from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

4. **Contract Work Hours and Safety Standards Act.** If the Contract is **in excess of $100,000** and **involves the employment of mechanics or laborers**, the Contractor must comply with 40 USC 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5), as applicable.

5. **Rights to Inventions Made Under a Contract or Agreement.** If the Contract is funded by a federal "funding agreement" as defined under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

6. **Clean Air Act.** If this Contract is **in excess of $150,000,** the Contractor must comply with all applicable standards, orders, and regulations issued under the Clean Air Act (42 USC 7401-7671q) and the Federal Water Pollution Control Act (33 USC 1251-1387). Violations must be reported to the federal awarding agency and the regional office of the Environmental Protection Agency.

7. **Debarment and Suspension.** A "contract award" (see 2 CFR 180.220) must not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred,

suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

8. **Byrd Anti-Lobbying Amendment.** If this Contract **exceeds $100,000**, bidders and the Contractor must file the certification required under 31 USC 1352.

9. **Procurement of Recovered Materials.** Under 2 CFR 200.322, a non-Federal entity that is a state agency or agency of a political subdivision of a state **and its contractors** must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

Byrd Anti-Lobbying Certification

The following certification and disclosure regarding payments to influence certain federal transactions are made under FAR 52.203-11 and 52.203-12 and 31 USC 1352, the "Byrd Anti-Lobbying Amendment." Hyperlinks are provided for convenience only; broken hyperlinks will not relieve Contractor from compliance with the law.

1. FAR 52.203-12, "Limitation on Payments to Influence Certain Federal Transactions" is hereby incorporated by reference into this certification.

2. The bidder, by submitting its proposal, hereby certifies to the best of his or her knowledge and belief that:

    a. No federal **appropriated** funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress on his or her behalf in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any federal contract, grant, loan, or cooperative agreement;

    b. If any funds **other than federal appropriated funds** (including profit or fee received under a covered federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress on his or her behalf **in connection with this solicitation**, the bidder must complete and submit, with its proposal, OMB standard form LLL, Disclosure of Lobbying Activities, to the Solicitation Manager; and

    c. He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of $150,000 must certify and disclose accordingly.

3. This certification is a material representation of fact upon which reliance is placed at the time of Contract award. Submission of this certification and disclosure is a prerequisite for making or entering into this Contract under 31 USC 1352. Any person making an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision is subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

Signed by:

_____
[Type name and title]
[Type company name]

Date: _____

STATE OF MICHIGAN

Contract No. 200000000034
Winter Maintenance Truck Build-Up Components

SCHEDULE A
STATEMENT OF WORK
CONTRACT ACTIVITIES

Project Background: Optional use, multi-year contract for winter maintenance truck build-up components

Requirements
1. Specifications **1.1 The Contractor must provide the following:**
Contractor must provide the resources and staffing needed to supply all items per **Schedule C – Specifications.**
1.2 Product Literature/Manuals
Contractor is to provide two sets of operating, maintenance and parts manuals with each unit at the time of delivery.
1.3 Warranties
Bidder is to provide a one-year warranty on all components, starting on the in-service start date (MDOT shall provide the Contractor with the in-service start date as applicable). Warranty shall include parts and labor, or manufacturer's warranty whichever is greater. Warranty shall be provided by factory trained technicians at a Michigan dealership, designated in the vendor offering section of this specification. **All products have at least a full warranty of one year minimum from in-service date except for Bosch hydraulic components which are warrantied 1 year from date of purchase and 6 months from in-service date. Some products have a longer limited warranty beyond the one-year.** The State reserves the right to require additional warranties other than those identified by the Contractor in its response to this RFP.
1.4 Recall Requirements and Procedures
Upon receipt of recall notice from the manufacturer, the Contractor will contact MDOT Fleet Administrator via email and/or phone with follow-up as deemed necessary for expeditious communication.
2. Service Levels **2.1 Time Frames**
All Contract Activities must be delivered within **120** calendar days from receipt of order. The receipt of order date is pursuant to Section 2, Notice provisions of the Standard Contract. **Exception: Monroe Truck, Snow & Ice standard delivery lead time is 180 days, or less, from completion of preconstruction meeting.**
2.2 Delivery
Delivery will be expected within **120** calendar days upon date of order. Delivery shall be to the Fleet Operations Garage, 2522 W. Main Street, Lansing, Michigan, 48917. Hours of operation for deliveries will be between 7:30 AM to 2:30 PM, Monday through Friday except Holidays. **Contact: TBD at least 48 hours before delivery.** **Exception: Monroe Truck, Snow & Ice standard delivery lead time is 180 days, or less, from completion of preconstruction meeting.**
2.3 Reporting
The Contractor must submit reports per **Standard Contract Terms, section 7. Administrative Fee and Reporting.**
2.4 Meetings

The Contractor must attend the following meetings:
Example: Kick-off meeting within 30 calendar days of the Effective Date.
The State may request other meetings as it deems appropriate.

3. Staffing

3.1 Contractor Representative

The Contractor must provide one (1) individual, specifically assigned to State of Michigan accounts, that will respond to State inquiries regarding the Contract Activities, answering questions related to ordering and delivery, etc. (the "Contractor Representative").

Mike Bouwman-Contract Program Manager
3286 Hanna Lake Industrial Drive Dutton, MI 49316
Toll free: (888)-200-8146
mbouwman@ttspec.com

The Contractor must notify the Contract Administrator at least **30** calendar days before removing or assigning a new Contractor Representative.

3.2 Customer Service Toll-Free Number

The Contractor must specify its toll-free number for the State to make contact with the Contractor Representative. The Contractor Representative must be available for calls during the hours of 8 am to 5 pm EST.

(888)-200-8146 toll free number
Regular business hours: 7:00 a.m. to 5:00 p.m. EST weekdays.
Saturday 7:00 a.m. to 12:00 noon EST.

3.3 Technical Support, Repairs and Maintenance

The Contractor must specify its toll-free number for the State to make contact with the Contractor for technical support, repairs and maintenance. The Contractor must be available for calls and service during the hours of 8 am to 5 pm EST.

(888)-200-8146 toll free number
Regular business hours: 7:00 a.m. to 5:00 p.m. EST weekdays.
Saturday 7:00 a.m. to 12:00 noon EST.

3.4 Disclosure of Subcontractors

- If the Contractor intends to utilize subcontractors, the Contractor must disclose the following:
- The legal business name; address; telephone number; a description of subcontractor's organization and the services it will provide; and information concerning subcontractor's ability to provide the Contract Activities.
- The relationship of the subcontractor to the Contractor.
- Whether the Contractor has a previous working experience with the subcontractor. If yes, provide the details of that previous relationship.
- A complete description of the Contract Activities that will be performed or provided by the subcontractor.

3.5 Security

The Contractor's staff may be required to make deliveries to or enter State facilities.

The bidder must: Deliver items in placarded company vehicles. Names of delivery personnel will be provided upon request.

The State may require the Contractor's personnel to wear State issued identification badges.

4. Pricing

4.1 Price Term

Pricing is firm for a 365 day period ("Pricing Period"). The first pricing period begins on the Effective Date. Adjustments may be requested, in writing, by either party and will take effect no earlier than the next Pricing Period.

4.2 Price Changes

Adjustments will be based on changes in actual Contractor costs. Any request must be supported by written evidence documenting the change in costs. The State may consider sources, such as the Consumer Price Index; Producer Price Index; other pricing indices as needed; economic and industry data; manufacturer or supplier letters noting the increase in pricing; and any other data the State deems relevant.

Following the presentation of supporting documentation, both parties will have 30 days to review the information and prepare a written response. If the review reveals no need for modifications, pricing will remain unchanged unless mutually agreed to by the parties. If the review reveals that changes are needed, both parties will negotiate such changes, for no longer than 30 days, unless extended by mutual agreement.

The Contractor remains responsible for Contract Activities at the current price for all orders received before the mutual execution of a Change Notice indicating the start date of the new Pricing Period.

5. Ordering
5.1 Authorizing Document

The appropriate authorizing document for the Contract will be a ***delivery order*** (AKA purchase order).

5.2 Order Verification

The Contractor must have internal controls, approved by Central Procurement Services, to verify abnormal orders and to ensure that only authorized individuals place orders.

6. Delivery
6.1 Delivery Programs

Large components are delivered either f.o.b. from manufacturer to MDOT Lansing Shop or by Contractor personnel in company vehicle and/or trailer. Smaller items will be delivered by the most economical method; either UPS, FedEx, or by Contractor personnel.

6.2 Packaging and Palletizing

Packaging must be optimized to permit the lowest freight rate. Shipments must be palletized whenever possible using manufacturer's standard 4-way shipping pallets.

7. Acceptance
7.1 Acceptance, Inspection and Testing

Purchase Orders issued to the Contractor for more than one unit: Contractor will be required to provide subsistence and transportation for **three (3)** MDOT personnel to inspect and approve the first completed unit constructed, before production begins on the balance of the order. The date and time of inspection shall be agreed upon by the Contractor and MDOT.
The following criteria will be used by the State to determine Acceptance of the Services or Deliverables provided under this contract:
Winter Maintenance Truck Components are inspected for compliance with the attached specification and approved or rejected upon delivery.

8. Invoice and Payment
8.1 Invoice Requirements

All invoices submited to the State must include: (a) date; (b) delivery order; (c) quantity; (d) description of the Contract Activities; (e) unit price; (f) shipping cost (if any); and (g) total price.

8.2 Payment Methods

The State will make payment for Contract Activities by EFT.

9. Additional Requirements
9.1 Environmental and Energy Efficient Products

The Contractor must identify any energy efficient, bio-based, or otherwise environmental friendly products used in the products. Contractor must include any relevant third-party certification, including the verification of a United States department of agriculture certified bio based product label.

9.2 Hazardous Chemical Identification

In accordance with the federal Emergency Planning and Community Right-to-Know Act, 42 USC 11001, *et seq.*, as amended, the Contractor must provide a Material Safety Data Sheet listing any hazardous chemicals, as defined in 40 CFR §370.2, to be delivered. Each hazardous chemical must be properly identified, including

any applicable identification number, such as a National Stock Number or Special Item Number.

The Contractor must identify any hazardous chemicals that will be provided under any resulting contract.

9.3 Mercury Content

Pursuant to MCL 18.1261d, mercury-free products must be procured when possible. The Contractor must explain if it intends to provide products containing mercury, the amount or concentration of mercury, and whether cost competitive alternatives exist. If a cost competitive alternative does exist, the Contractor must provide justification as to why the particular product is essential. All products containing mercury must be labeled as containing mercury.

9.4 Brominated Flame Retardants

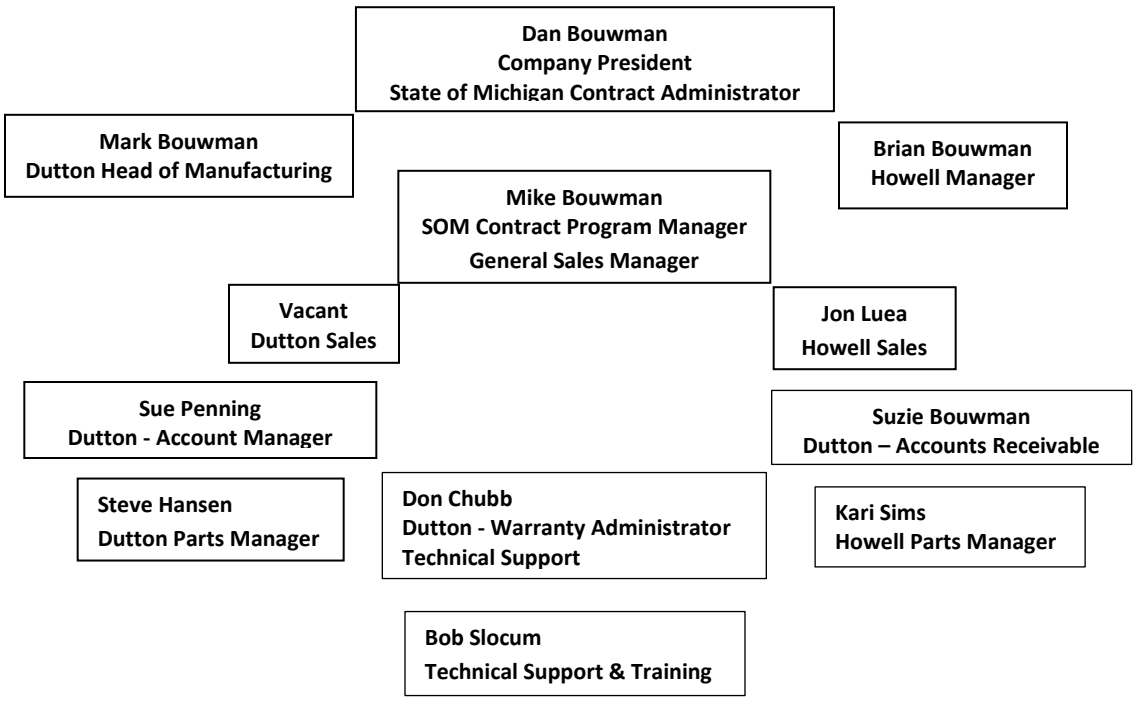
The State prefers to purchase products that do not contain brominated flame retardants (BFRs) whenever possible. The Contractor must disclose whether the products contain BFRs.

9.5 Key Personnel

The Contractor must appoint one (1) individual who will be directly responsible for the day to day operations of the Contract ("Key Personnel"). Key Personnel must be specifically assigned to the State account, be knowledgeable on the contractual requirements, and respond to State inquires within 4 hours.
The Contractor may not remove or assign Key Personnel without the prior consent of the State. Prior consent is not required for reassignment for reasons beyond the Contractor's control, including illness, disability, death, leave of absence, personal emergency circumstances, resignation, or termination for cause. The State may request a résumé and conduct an interview before approving a change. The State may require a 30 calendar day training period for replacement personnel.
The Contractor must identify the Key Personnel, indicate where they will be physically located, describe the functions they will perform, and provide current chronological résumés.

Mike Bouwman-Contract Program Manager
3286 Hanna Lake Industrial Drive Dutton, MI 49316
Toll free: (888)-200-8146
mbouwman@ttspec.com

9.6 Organizational Chart



9.7 Project Plan

The contractor will carry out this project under the direction and control of MDOT, Office of Operations Administrative Services, Fleet Administration & Operations. Contact in Field Support is TBD.

10. Liquidated Damages

The delivery of units must be consistent with the scheduling as established within the Purchase Order. If any units are not delivered within the delivery schedule specified, the delay will interfere with the build-up and implementation of the winter maintenance fleet and fleet management programs utilizing these vehicles, to the loss and damage of the State of Michigan. From the nature of the case, it would be impracticable and extremely difficult to fix the actual damage sustained in the event of any such delay. The State of Michigan and the Contractor, therefore, agree that in the event of any such delay, the amount of damage which will be sustained from a delay will be the amount set forth in Paragraphs A & B. They agree that in the event of such delay, the contractor shall pay such amounts as liquidated damages and not a penalty. The State of Michigan as its option for amounts due as liquidated damages, may deduct such from any money payable to the Contractor or may bill the Contractor as a separate item.

A. If the Contractor does not deliver the units before the delivery date scheduled, the Contractor shall pay to the State of Michigan fixed and agreed, liquidated damages, for each calendar day between the due date and the date the units are received, but not more than 30 calendar days. In lieu of all other damages due to such non-delivery, an amount of 2/10th of 1% of per unit cost of the Purchase Order for each unit that is not delivered by the delivery date.

B. If the Contractor delivers the units before the delivery due date specified and the units do not comply with the Purchase Order Specifications and therefore are not ready for the build-up operation, the State of Michigan may, at its options, delay the implementation of the units into fleet build-up operation. The Contractor shall pay to the State of Michigan, as fixed and agreed liquidated damages in the amount of 2/10 of 1% of the Purchase Order Unit Cost, per Unit, for each calendar day beginning from the delivery date scheduled in the Purchase Order, and the date the unit is accepted as being in compliance with Purchase Order Specifications, but not more than 30 calendar days.

C. Exception. Except with respect to defaults of subcontractors, the Contractor shall not be liable for liquidated damages when delays arise out of causes beyond the control and without the fault or negligence of the Contractor. Such causes may include, but not be restricted to, acts of God, or of the public enemy, acts of the State in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, or unusually severe weather; but, in every case, the delays must be beyond the control and without the fault or negligence of the Contractor. If the delays are caused by the default of the subcontractor, and if such default arises out of causes beyond the control of both the Contractor and subcontractor and without the fault or negligence of any of them, the Contractor shall not be liable for liquidated damages for delays, unless the supplies or services to be furnished by their subcontractors were obtainable from other sources in sufficient time to permit the Contractor to meet the required performance schedule.

STATE OF MICHIGAN

Contract No. 200000000034

Winter Maintenance Truck Build-Up Components

SCHEDULE B

PRICING

1. The Contractor must provide a pricing schedule for the proposed Contract Activities using Microsoft Excel. The pricing schedule should be submitted in a modifiable format (e.g.. Microsoft Word or Excel); however, you may also submit an additional pricing schedule in a non-modifiable format (e.g., PDF). Failure to complete the pricing schedule as requested may result in disqualification of your proposal.

2. Price proposals must include all costs, including but not limited to, any one-time or set-up charges, fees, and potential costs that Contractor may charge the State (e.g., shipping and handling, per piece pricing, and palletizing).

3. The Contractor is encouraged to offer quick payment terms. The number of days must not include processing time for payment to be received by the Contractor's financial institution.

Quick payment terms: __**0**_____ % discount off invoice if paid within ___**0**_____ days after receipt of invoice.

4. By submitting its proposal, the Contractor certifies that the prices were arrived at independently, and without consultation, communication, or agreement with any other Contractor.

5. **Pricing Term.** Pricing is firm for a 365 day period ("Pricing Period"). The first pricing period begins on the Effective Date. Adjustments may be requested, in writing, by either party and will take effect no earlier than the next Pricing Period.

6. Adjustments will be based on changes in actual Contractor costs. Any request must be supported by written evidence documenting the change in costs. The State may consider sources, such as the Consumer Price Index; Producer Price Index; other pricing indices as needed; economic and industry data; manufacturer or supplier letters noting the increase in pricing; and any other data the State deems relevant.

Following the presentation of supporting documentation, both parties will have 30 days to review the information and prepare a written response. If the review reveals no need for modifications, pricing will remain unchanged unless mutually agreed to by the parties. If the review reveals that changes are needed, both parties will negotiate such changes, for no longer than 30 days, unless extended by mutual agreement.

The Contractor remains responsible for Contract Activities at the current price for all orders received before the mutual execution of a Change Notice indicating the start date of the new Pricing Period.

7. Quantities specified if any, are estimates based on prior purchases, and the State is not obligated to purchase in these or any other quantities. Orders for delivery will be issued directly to the Contractor by MDOT on the Direct Purchase Order Contract Release Form and MiDEAL members (local units of government).

8. Please see "**Standard Contract Terms" section 7** for administrative fee.

	ITEM	PRICING
1	# 04-Fuel Tank and Hydraulic Reservior Assembly	$4,026.00
2	# 04-PLOWJACK.1.C19 Front Plow Jack	$1,250.00
3	# 04-Tarps .C19 Automatic Electric Tarp Assemblies	$1,144.00
4	# 04-Pre-Wet Systems .C19 Hydraulic driven for rear discharge combination DVS bodies -See addendum in Schedule C for option specifications	$3,402.00
5	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 1**	$10,069.00
6	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 2**	$10,560.00
7	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 3**	$10,129.00
8	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 4**	$10,733.00
9	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 5**	$10,673.00
10	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 6**	$11,276.00

11	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 7**	$10,070.00
12	# HYD-PP.C19 Hydraulic System - **With Valve Combination Number 8**	$10,693.00
13	# GRDSPD.C19 Ground Speed Oriented Salt Distribution Spreader Control System with Electric Over Hydraulic Joystick Controls - **With Multiple Joysticks**	$10,710.00
14	# GRDSPD.C19 Ground Speed Oriented Salt Distribution Spreader Control System with Electric Over Hydraulic Joystick Controls - **With Single Joystick**	$10,710.00
15	# 04-11CBBDY.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems	$31,503.00
16	# 04-11CBBDYDA.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems	$35,746.00
17	# 04-11SSDMP.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., Hoist and 1/2 Cab Protector	$15,947.00
18	# 04-11SSDMPUBH.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., with Under Body Hoist and 1/2 Cab Protector	$16,099.00
19	# 04-14CBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems	$33,907.00
20	# 04-14CBBDYDA.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems	$37,186.00
21	# 04-14FCBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Front and Rear Discharge Distribution Systems	$38,236.00
22	# 04-14SSDMP.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., Hoist and 1/2 Cab Protector	$18,809.00
23	# 04-14SSDMPUBH.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., with Under Body Hoist and 1/2 Cab Protector	$19,257.00
24	# 55-FMBBLD.C19 Under-Body Scraper, Folding Mold Board Style Snow Blade, Hydraulic Angling	$10,279.00
25	# 55-MOPBLD.C19 Under-Body Scraper, MOP Style Snow Blade, Hydraulic Angling	$9,621.00
26	# 57-0901SMW.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right	$8,637.00
27	# 57-0901SMWJR.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right	$7,961.00
28	# 57-1201SMW.C19 Wing Plow, behind Scraper Mount, 12 Foot Left or Right	$9,040.00
29	# 60-11-14SSDMP Option1.C19 Reversing Rear Cross Auger with Side Spinner	$4,621.00
30	# 60-11_14SSDMP-Option2.C19 Zero Velocity Spreader (LEFT HAND ACCUPLACE SPINNER IS 00182933-B) (RIGHT HAND ACCUPLACE SPINNER IS 00188316-B)	$4,330.00
31	# 60-11SSDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems	$12,347.00
32	# 60-11SSUBHDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems	$12,063.00
33	# 60-14SSDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems	$15,565.00
34	# 60-14SSUBHDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems	$15,281.00
35	# 04-11-14CBBDY-Option1.C19 Reversing Rear Cross Auger with Side Spinner (RIGHT MOTOR WITH LEFT SPINNER HAND ARRANGEMENT 00184407-B AUGER, 00022294-B IS THE DROP CHUTE WITH DOOR, 00022064-J- LEFT SPINNER) (LEFT MOTOR WITH RIGHT HAND SPINNER ARRANGEMENT 00184404-B AUGER,, 00022294-B IS THE DROP CHUTE WITH DOOR, , 00081047-H RIGHT HAND SPINNER)	$5,235.00
36	# 04-11-14CBBDY-Option2.C19 Reversing Rear Cross Auger with Center Spinner	$4,995.00
37	# 60-11_14MSDMP-Option3.C19 "Y" Chute Distributor - **Stainless Steel**	$3,256.00
38	# 60-11_14MSDMP-Option3.C19 "Y" Chute Distributor - **Non-Stainless Steel**	$2,763.00
39	# 04-11CBBDY_Option4.C19 Belt Over Main Conveyor Chain	$2,348.00
40	# 04-14CBBDY_Option5.C19 Belt Over Main Conveyor Chain	$3,550.00
41	# 04-11_14CBBDY_Option6.C19 Salt Slurry Generator	$8,302.00
42	# 65-HHLF.C19 Hydraulic Hook Lift Assembly - **Hook Lift Hoist**	$25,390.00
43	# 65-HHLF.C19 Hydraulic Hook Lift Assembly - **Hook Lift Body Subframe**	$5,130.00
44	**(ITEM 1 OPTION REPLACEMENT)** Western star combination tank- See addendum in schedule c for option specifications	$3,248.00
45	**(ITEM 3 OPTION ADD)** PART NO 83200- ASPHALT COVER	$247.00
46	**(ITEM 3 OPTION ADD)** PART NO 81200 MESH COVER	$155.00
47	**(ITEM 3 OPTION ADD)** Optional plug kit for swaploader application - PART NUMBER 12760	$54.00

48	**(ITEM 3 OPTION ADD)** OPTIONAL TARP COVER- CUSTOM SIZE COVER FOR SWAPLOADER V BOXES PART NO 81010@83X18	$204.00
49	**(ITEM 4 OPTIONAL REPLACEMENT)** Hydraulic driven for front and rear discharge combination DVS bodies- **See addendum in Schedule C for option specifications**	$3,696.00
50	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric driven for rear discharge combination DVS bodies **See addendum in Schedule C for option specifications**	$3,203.00
51	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric Driven for front and rear discharge DVS bodies **See addendum in Schedule C for option specifications**	$3,597.00
52	**(ITEM 4 OPTIONAL REPLACEMENT)** Hydraulic driven for V box spreades **See addendum in Schedule C for option specifications**	$3,579.00
53	**(ITEM 4 OPTIONAL REPLACEMENT)** Electric driven for v box spreaders- S**ee addendum in Schedule C for option specifications**	$3,380.00
54	**(ITEM 4 OPTION ADD)** optional installation of prewet system to seither a combination DVS body or a V box spreader **See addendum in Schedule C for option specifications**	$528.00
55	**(ITEM 5 - 12 PART - INCLUDED)** Double acting cylinder spool valve section- ship loose pricing for section replacement or additional function. Specify flow rate at time of order	$752.00
56	**(ITEM 5 - 12 PART - INCLUDED)** Single acting motor spooled secttion- ship loose pricing, Specify flow rate at time or order	$655.00
57	**(ITEM 5 - 12 PART - INCLUDED)** Double acting motor spooled valve section- ship loose pricing for section replacement or additional function. Specify flow rate at time of order	$752.00
58	**(ITEM 13 & 14 OPTION ADD)** add on for prewet driver	$576.00
59	**(ITEM 13 & 14 OPTION ADD)** add on for cross conveyor potentiomter driver and direction control switch	$788.00
60	**(ITEM 13 & 14 OPTION ADD)** Add on for hoist and jib disable circuits on Swaploader installation	$191.00
61	**(ITEM 13 & 14 OPTION ADD)** Road Watch system 849-1242-000	$314.00
62	**(ITEM 15 OPTION ADD)** poly subfloor for 11 ft rear discharge DVS	$736.00
63	**(ITEM 19 OPTION ADD)** POLY SUBFLOOR FOR 14' REAR DISCHARGE DVS UNIT INSTALLED	$809.00
64	**(ITEM 21 OPTION ADD)** POLY SUBFLOOR FOR 14' FRONT/REAR DISCHARGE DVS UNIT INSTALLED	$735.00
65	**(ITEM 26 OPTION ADD)** 9 FT RIGHT HAND PATROL WING POLY MOLDBOARD LINER. PART NO 00188368I	$704.00
66	**(ITEM 26 OPTIONAL REPLACEMENT)** 9 FT LEFT HAND PATROL WING PART NO 00184445	$8,637.00
67	**(ITEM 26 OPTION ADD)** 9 FT LEFT HAND PATROL WING POLY MOLDBOARD LINER. PART NO 00188950I	$704.00
68	**(ITEM 27 OPTION ADD)** 9 FT RIGHT HAND JUNIOR WING POLY MOLDBOARD LINER 00188366I	$666.00
69	**(ITEM 27 OPTIONAL REPLACEMENT)** 9 FT LEFT HAND JUNIOR WING PART NO 00184443	$7,961.00
70	**(ITEM 27 OPTION ADD)** 9 FT LEFT HAND JUNIOR WING POLY MOLDBOARD LINER PART NO 00188367I	$666.00
71	**(ITEM 27 OPTIONAL REPLACEMENT)** 7 FT RIGHT HAND JUNIOR WING PART NO 00188369	$7,895.00
72	**(ITEM 27 OPTION ADD)** 7 FT RIGHT HAND JUNIOR WING POLY MOLDBOARD LINER PART NUMBER 00188372I	$665.00
73	**(ITEM 27 OPTIONAL REPLACEMENT)** 7 FT LEFT HAND JUNIOR WING PART NO 00189828	$7,895.00
74	**(ITEM 27 OPTION ADD)** 7 FT LEFT HAND JUNIOR WING POLY MOLDBOARD LINER-PART NUMBER NOT YET ISSUED	$665.00
75	**(ITEM 28 OPTION ADD)** 12 FT RIGHT HAND PATROL WING POLY MOLDBOARD LINER	$825.00
76	**(ITEM 28 OPTIONAL REPLACEMENT)** 12 FT LEFT HAND PATROL WING PART NO 00184446	$9,040.00
77	**(ITEM 28 OPTION ADD)** 12 FT LEFT HAND PATROL WING POLY MOLDBOARD LINER	$825.00
78	**(ITEM 30 OPTION ADD)** flip up rear spinner for DVS combination body **See addendum in Schedule C for option specifications**	$2,143.00
79	**(ITEM 34 OPTIONAL REPLACEMENT)** MCV168-84-56- BELT/ CHAIN V BOX WITH CUTOUT FOR DOGHOUSE **See addendum in Schedule C for option specifications**	$17,647.00
80	**(ITEM 34 OPTIONAL REPLACEMENT)** MCV168-84-56/ DUAL AUGER SLIDE IN V BOX WITH DOGHOUSE **See addendum in Schedule C for option specifications**	18,185.00

81	**(ITEM 36 OPTION ADD)** mounting tube- **See addendum in Schedule C for option specifications**	$114.00
82	**(ITEM 36 OPTIONAL REPLACEMENT)** MS9612 to fit V box application: **See addendum in Schedule C for option specifications**	$5,566.00
83	**(ITEM 37 OPTION ADD)** STAINLESS STEEL Y CHUTE EXTENSION FOR USE WITH HOOKLOADER MOUNTS OR TANDEM SLIDE IN V BOXES WITH UNDERBODY HOISTS PART NO 00129376-B	$277.00
84	**(ITEM 38 OPTION ADD)** STEEL Y CHUTE EXTENSION FOR USE WITH HOOKLOADER MOUNTS OR TANDEM SLIDE IN V BOXES WITH UNDERBODY HOISTS PART NO 00129376-A	$165.00
85	**(ITEM 40 OPTIONAL REPLACEMENT)** BELT / CHAIN OPTION FOR 14' FRONT/ REAR DISCHARGE DVS UNIT PART NO IS 00184402-C	$3,147.00
86	**(OPTION ADD)** REAR ROLLERS- EXTENDABLE/GALVANIZED FOR SKID ASSEMBLY	$452.00
87	**(OPTIONAL REPLACEMENT)** Hookloader v box assembly. See addendum in Schedule C for option specifications.	$18,003.00
88	**(OPTION ADD)** Monroe MP36-60-12-ct/316 Expressway plow . Includes Snow wheels. See addendum in Schedule C for option specifications.	10,294.00
89	**(OPTION ADD)**Monroe model MP48R12-ISCT DUAL MOUSE EAR PLOW, Includes Snow wheels. See addendum in Schedule C for option specifications.	$9,750.00
90	**(OPTION ADD)** MONROE MODEL MPFA34-71-12 ON WAY FIXED ANGLE LEFT PLOW NO 00151122. See addendum in Schedule C for option specifications.	$6,987.00

CONTRACT Dept. 171, No. 200000000034

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1	**Specification # 04-Fuel Tank and Hydraulic Reservoir Assembly** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe 00140316 or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe Combo tank, current part no is 00170637-A**
1.0	**Basic Requirements:**	yes.
1.1	Tank shall be a combination diesel fuel, hydraulic oil and hydraulic valve enclosure behind the cab style unit with mounting feet and angle truck frame mounting brackets	yes.
1.2	The combination tank/enclosure shall have mounting feet designed to support the weight of a full fuel tank, a full hydraulic oil tank and a fully assembled hydraulic valve assembly	yes.
1.3	The fuel/oil tank shall have continuous welded seams throughout. The integrated valve enclosure shall be in the lower driver side beneath the fuel tank fill. The integrated valve enclosure shall have a stainless steel valve mounting plate bolted in the base and a removable access door equipped with "T" handle latches	yes.
1.4	Tank truck frame mounting brackets shall be 4 inch x 12 inch x 17 inch x 1/2 inch angle with four gussets and an 8-1/2 inch wide x 7-1/2 inch cutout for access to the bottom of the tank	yes.
1.5	Top of the angle bracket shall have two (2) elongated holes 1-1/2 inch long x 11/16 inch wide	yes.
1.6	There shall be four (4) round rubber sandwich mounts to fasten the tank/enclosure assembly to the truck frame mounting brackets. The sandwich mounts shall be secured with a 5/8 inch grade 8 bolt through the center and be made of fuel resistant rubber	yes.
1.7	Tank /enclosure assembly shall have all metal surfaces pre-cleaned and prepped prior to applying black powder coat	yes.
1.8	Fuel/oil tank/enclosure and the removable enclosure door shall be powder coated black in color	yes.
1.9	Fuel capacity shall be 115 gallons minimum	yes.

1.10	Approximate overall dimensions shall be 34 inches tall x 19 inches wide x 80 inches long	yes.
1.11	Construction shall be of pickled and oiled, #7 gauge steel	yes.
1.12	Each tank shall have a magnetic drain plug, be pressure tested for leaks, and be FHWA labeled	yes.
2.0	**Hydraulic Tank:**	
2.1	Hydraulic tank shall have installed, one (1) Zinga RF-1618-S-25-EP15-0 tank top mounted return filter with bypass, bolted and gasketed or equivalent	yes.
2.2	Screen in the fill port	yes.
2.3	Lockable breather cap with filtered vent	yes.
2.4	3 inch NPT flange for suction outlet	yes.
2.5	Steel suction strainer Zinga #2030-3 or D equivalent with a 2 inch NPT ID	yes.
2.6	Combined level/temperature gauge mounted on outside end of tank approximately 6 inches from the top of the reservoir to the top hole in the gauge	yes.
2.7	One (1) 1-1/16-12 straight threaded fitting in bottom	yes.
2.8	Hydraulic tank shall be delivered clean with no contamination particles in excess of 5 microns	yes.
3.0	**Filtration:**	
3.1	Bypass switch shall be Force America PS-25-WP or equivalent	yes.
3.2	Filter unit shall have a pressure drop of less than 3psi @ 40gpm with 150 SSU oil	yes.
3.3	Filter unit shall have a 1-1/2 inch NPT port out the bottom of the canister and extended drop tube	yes.
3.4	Two Zinga RE409-10 or equivalent replacement elements shall be furnished	yes.
4.0	**Fuel Tank:**	
4.1	Fuel tanks shall have a pickup sump 6 inch x 6 inch x 3 inch with three (3) 3/4 -16 straight thread fittings, one out the bottom and two out the front.	yes.
4.2	Fuel tank shall be shipped with sending units for fuel level, installed, and standard baffles within the tank	yes.
4.3	Fuel sending units shall be ISS PRO RA9531-ISS-LP or equivalent	yes.
4.4	Fuel tanks shall have ball check vent on top of the tank and a male safety filler cap with chain valve enclosure shall have a wire access hole 5 inches wide by 2-1/2 tall located approximately 6 inches in from the outside edge and 5 inches up from the bottom	yes.
4.5	Valve enclosure shall have a wire access hole 5 inches wide by 2-1/2 tall located approximately 6 inches in from the outside edge and 5 inches up from the bottom	yes.
4.6	Access hole shall have a plate to be attached with four (4) 5/16 inch bolts and nuts, 6-1/2inches wide by 4 inches tall with no holes drilled in it	yes.
4.7	Enclosure shall have a stainless steel hydraulic valve mounting plate cutout to fit the current MDOT hydraulic valve and attached to enclosure with fourteen (14) 3/8 inch bolts and nuts	yes.
4.8	Bottom of valve enclosure shall be cutout to accommodate the hydraulic valve mounting plate	yes.
4.9	A 3/16 inch x 2 inch stiffener shall be welded vertically to the underside of the valve enclosure opening and shall have two (2) 7/16 inch elongated holes centered 1-1/8 inch and 4-1/8 inches in from the left edge, both front and back for step installation	yes.
4.10	Fuel tank shall be delivered clean with no contamination particles in excess of 5 microns	yes.
5.0	**Wire Tie Downs:**	
5.1	Tie downs will be constructed from 3/16 inch thick 1 inch x 1 inch with 5/16 inch hole in the center	yes.
5.2	Back of tank locations	yes.
a.	Four (4) welded vertical, 36 inches in from left edge with holes centered at 4, 12-1/2,21, 29-1/2 inches up from bottom of tank	yes.
b.	Four (4) welded vertical, 12-1/2 inches in from right edge with holes centered at 4, 12-1/2, 21, 29-1/2 inches up from bottom of tank	yes.
5.3	Front of tank locations	yes.
a.	Four (4) welded vertical, 12-1/2 inches in from right edge with holes centered at 4, 12-1/2, 21, 29-1/2 inches up from bottom of tank	yes.
b.	One (1) welded horizontal, with hole centered 3-1/2 inches in from right edge 1 inch up from bottom of tank	yes.
c.	Four (4) welded horizontal, 4 inches up from bottom of tank with holes centered at 25-1/2, 40, 54-1/2 inches in from right edge	yes.
6.0	**Steps:**	
6.1	3/16 inch thick 4 inch x 1-1/2 inch light mounting plate shall be welded to the bottom of the tank, 4-1/4 inches back from front edge and 1/2 inch in from right edge with two (2) 5/16 holes on 3 inch centers, 1/2 inch in from front and rear edges and 3/4 inch up from bottom	yes.
6.2	Step fabricated from 9-1/2 inch deep by 18 inch wide expanded metal step material with "L" shaped plates on each end to be mounted on the left side of tank assembly to stiffener and have 5 inch wide mounting surface with three (3) sets of mounting holes 3 inches on center horizontally and 2 inches on center vertically shall be provided	yes.
6.3	Step shall have a light mounting bracket 3/16 inch thick x 1-1/2 inch x 2-1/2 welded to the inside of the front "L" shaped plate at the bottom with 1/2 inch hole centered 3/4 inches in from the inside end	yes.
7.0	**Low Oil Alert:**	yes.
7.1	A Compac Erecta Switch low oil sensor shall be provided and installed in the hydraulic tank	yes.
7.2	A 1-1/4 inch NPT fitting shall be located in the top of the hydraulic tank for the low oil sensor	yes.
7.3	The low oil level sensor shall be normally open, low oil level in the tank will cause the sensor to close	yes.
	END OF SPECIFICATION	
2	**Specification # 04-PLOWJACK.1.C19 Front Plow Jack** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**

	Referenced Make and Model: Monroe/HH34 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe Model HH34, part no 00031145**
1.0	**Basic Requirements:**	yes.
1.1	Truck portion of the hitch shall be of the automatic snap coupling type	yes.
1.2	Hitch assemblies shall be 34 inches wide and 42 inches in height	yes.
1,3	The slide rails of the hitch shall be manufactured of .375 inch thick plate, formed from a 12.221 inch wide x 42 inch high plate	yes.
1.4	Side rails shall be 9.858 inches deep with an inside radii of .406 forming a 2.5 inch wide front face	yes.
1.5	Top and bottom 1 inch of the side rails will be tapered inward to prevent restriction with the mating plow portion	yes.
1.6	The back inside of the slide plates will be reinforced with 3/8 inch x 2-½ inch x 2-½ inch angle	yes.
1.7	Top and bottom cross member angle shall be 3-½ inch x 3-½ inch x .375 inch	yes.
1.8	Bottom angle shall be supported with an additional angle inner brace of 2-½ inch x 2-½ inch x .375 inch	yes.
1.9	Lift arm assembly shall be manufactured from ¾ inch plate, a solid 2 ½ inch diameter x 3 ¼ inch long lift shaft and shall have ½ inch plate provisions for attaching the plow lift cylinder with 1 inch pins	yes.
1.10	Plow lift cylinders shall be 3 inch x 10 inch double acting, with a Socratic rod, with 1 inch pin at base and rod end, ¾-16 ORB ports.	yes.
1.11	Bracing for the lift arm shall consist of two (2) 3/8 inch triangular plates and 3/8 inch angle and have a 1 inch pivot pin	yes.
1.12	The enclosed spring loaded canisters shall have a tapered 1.875 inch machined pin that is induction hardened to 48-52RC and to a case depth of .030 inches, that is greaseable	yes.
1.13	Canisters will be welded to the slide plates and reinforced with ½ inch triangular gussets	yes.
1.14	Unlocking lever shall be of 3/8 inch x 1-½ inch bar with 3/8 inch round linkage rods connecting the canister pins	yes.
1.15	Hitches shall be powder coated black	yes.
1.16	Hitch slide plates shall be coated with a graphite anti-seize compound and shall be 100% continuously welded, **No Exceptions**	yes.
	END OF SPECIFICATION	
3	**Specification # 04-Tarps .C19 Automatic Electric Tarp Assemblies** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Roll-Rite or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: RollRite kit no 64172M, Asphalt cover is number 83200. Mesh cover is number 81200**
1.0	**Basic Requirements:**	yes
1.1	The unit will need to be available for 11 foot and 14 foot applications	yes
2.0	**Tarp:**	yes
2.1	Tarp shall be made of high quality minimum 18oz material with a urethane coating on both sides	yes
2.2	Tarp shall have a 350° F temperature rating. (Must indicate when ordering: Black Mesh or Asphalt	yes
2.3	Main body of tarp shall be constructed of a single piece of material	yes
2.4	Tarp tube pocket shall be lined with a solid weave material	yes
2.5	Tarp shall have rear corners reinforced by doubling the 18oz material in the corners	yes
2.6	Edges shall be heat welded to bind them	yes
2.7	Any stitching shall be bonded polyester thread	yes
2.8	Tarps shall not have side or tail flaps	yes
3.0	**Component Construction:**	
3.1	Components shall be constructed of 6005 T5 aluminum which exceed the 6061 T6 ratings	yes
3.2	Springs shall be Teflon coated for added rust and wear protection	yes
4.0	**Arms and Springs:**	
4.1	Tarp arms shall be aluminum extrusions in the shape of a modified oval with two flat sides for maximum strength to weight ratio	yes
4.2	Springs shall be spiral torsion style	yes
4.3	Springs shall be designed for easy replacement without replacing whole arm	yes
5.0	**Pivots:**	yes
5.1	Pivots shall be mounted on an 1 1/4 inch pin that has been nitro carburized to stop corrosion	yes
5.2	Pivots shall be mounted through the side rail of the body	yes
5.3	Pivots shall be adjustable by simply adjusting hook pin height or by adding/subtracting spiral torsion springs	yes
5.4	Pivot tubes shall be polished, with four (4) springs per side, 84 inches long	yes
5.5	Bearings shall be greaseable	yes
6.0	**Bows:**	
6.1	Bow arms shall have 90° corners welded in them	yes
6.2	Bow arms shall be polished	yes
7.0	**Tension Bow:**	
7.1	System shall include gravity powered tarp tensioning bow to assist in holding the tarp down behind cab shield to prevent sailing	yes
7.2	Tension arm shall mount on the main pivot arm; it shall NOT attach to the cab shield or main dump body	yes
7.3	Tension bow arms shall have 90° elbows welded in them	yes
7.4	Tension bow arms shall be polished	yes
8.0	**Tarp Spool:**	

8.1	Tarp spool shall include a one piece polished aluminum wind deflector that can be cut to fit any truck	yes
8.2	Ends of wind deflector shall incorporate mounts for strobe lights and drive motor	yes
8.3	Tarp spool shall include a tarp axle with five (5) full length pre-threaded grooves for mounting the tarp	yes
8.4	Axle shall have a Nitro carburized stub shaft to help prevent corrosion between a-similar metals	yes
8.5	Tarp spools shall include all electrical components needed to wire truck for easy in cab operation	yes
8.6	Tarp spools shall be designed so as NOT to trap debris on the cab shield and allow for easy cleaning of cab shield	yes
9.0	**Tarp Drive:**	
9.1	Tarp drive shall have controls mounted in cab	yes
9.2	Tarp drive shall have a 12 volt gear motor	yes
9.3	Tarp drive shall be chrome plated	yes
9.4	Tarp drive shall have a tool steel Nitro carburized output shaft	yes
9.5	There shall be NO chain drives in the construction of the gear motor	yes
9.6	The tarp control system shall include a remote mounted, solenoid controlled, polarity reversing switch, a three position, non-detent control switch, circuit protection, and enough 6 gauge dual conductor wire to extend from the batteries to solenoid switch and to the tarp motor	yes
4	**Specification # 04-Pre-Wet Systems .C19** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe LDS or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Yes Monroe LDS is a hydraulic driven prewet system. See additional information for electric systems**
1.0	**Basic Requirements:**	
1.1	Units shall provide a ground speed controlled pre-wet systems to be mounted on MDOT winter maintenance trucks	yes.
1.2	Pre-wet liquid pump shall be directly coupled to the hydraulic motor	yes.
1.3	Pre-wet pump shall be capable of 6gpm and constructed with a built in system relief valve	yes.
1.4	Pre-wet pump shall be constructed with bronze type gears	yes.
1.5	Pre-wet pump/motor shall be mounted inside a NEMA type enclosure with a hinged door for access, size to be determined by MDOT at pre-construction meeting.	yes.
1.6	A Dickey-John flow meter shall also be mounted in the enclosure	yes.
1.7	Stainless steel hydraulic lines for the pump motor shall be plumbed to bulkhead fittings mounted on the side of the enclosure	yes.
1.8	Pre-wet pump system shall have a poly check valve to be mounted in the discharge line to the spray nozzles	yes.
1.9	Prewet elctric controls including 15amp driver and all necessary cables	no-driver for an electric system is to be supplied with the spreader controller system
2.0	**Pre-wet system shall include a nozzle kit including:**	yes.
2.1	Three (3) 2gpm spray nozzles	yes.
2.2	All necessary hoses and fittings	yes.
2.3	Strainers shall be included in line in the discharge lines	yes
2.4	Stainless steel guards to be installed with the nozzles	yes.
3.0	**Liquid Tanks:**	yes.
3.1	Liquid tanks shall be 100 gallon minimum capacity for combination body trucks and 100 gallon capacity for slide-in V-box bodies	yes.
3.2	Each body shall be equipped with twin tanks and shall be fitted with an equalizing hose between tanks	yes.
3.3	Tanks shall be fitted with 2 inch cam-lock fittings for bulk filling	no- 1.5" poly cam lock fitting, not 2"
3.4	Tanks shall be constructed of 3/8 inch wall rotationally molded polypropylene and shall have built in baffles	yes.
3.5	Each tank shall have a minimum 3 inch fill opening at the top	yes.
3.6	Tanks shall fit existing MDOT combination bodies and slide in material spreaders	yes.
3.7	Tanks shall be fitted with the proper poly type tank vents	yes.
3.8	Discharge fittings shall be molded type	yes.
3.9	Spin welded or flange type fittings shall NOT be acceptable _	yes.
3.10	Tanks shall be provided with stainless steel mounting brackets and all necessary stainless steel hardware and attachments	yes.
3.11	Tank kits for the combination bodies and the slide in bodies shall include a one (1) piece stainless steel tray that is as long as the tank	yes.
3.12	The V-box kits shall include brackets that bolt directly to the V-box cross members	yes.
3.13	A stainless steel pump enclosure mounting bracket shall be supplied with pre-wet system	yes.
3.14	A bulk fill kit with poly cam-lock fittings and poly shut-off valve shall be provided	yes.
3.15	A flusher kit consisting of a poly directional ball valve and a separate suction hose shall also be provided to be installed in the liquid supply line from the tank to the pump	yes.
3.16	Quick disconnect poly cam fitting kits shall be supplied for the liquid discharge line to the spinner	yes.
3.17	Tanks to be mounted to either the body or the slide in spreader that correspond to the unit that it is ordered for at time of delivery from factory	yes.
	END OF SPECIFICATION	yes.
5	**Specification # HYD-PP.C19 Hydraulic System** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**

	Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model:**
1.0	**Basic Requirements:**	YES
1.1	Hydraulic valve must be compatible with Dickey-john Control Point and Freedom controllers as manufactured by Certified Power	yes.
1.2	Each system shall be priced individually and shall include the pump, shutdown system, driveline and a specific valve as described in the following.	yes.
1.3	The Contractor shall package each system and identify by label as to the truck unit numbers as assigned by M-DOT.	yes.
2.0	**Pump Drive:**	yes.
2.1	Pump shall be driven from the front of the engine crankshaft via a Spicer 1310 series drive-line assembly, or equal, with a splined slip yoke and fixed end yokes assembled per MDOT specifications	yes.
2.2	The drive line assembly shall include a companion flange with a 1.5 inch keyed opening to fit the hydraulic pump. The companion flange shall be keyed to the pump and shall include a hub piloted flange. Drive line assembly shall include hub piloted end yokes to fit both the front of the engine as well as the companion flange.	yes.
2.3	Pump shall be driven from the front of the engine crankshaft via a Spicer 1310 series drive-line assembly, or equal, with a splined slip yoke and fixed end yokes assembled per MDOT specifications	yes.
2.4	Two (2) setscrews will be drilled for, and secured by, a safety wire and all cross and bearing assemblies will have grease fittings that are readily accessible	yes.
2.5	The splined slip joint shall have a readily accessible grease fitting also	yes.
3.0	**Hydraulic Pump:**	yes.
3.1	Furnish a variable volume, pressure, and flow compensated, load sensing axial piston pump	yes.
3.2	The pump shall offer the following features as standard	yes.
a.	Bolt on compensator with separate adjustments for stand by and main pressure	yes.
b.	SAE C mounting flange	yes.
c.	SAE code 62 flanged pressure port	yes.
d.	SAE code 61 flanged suction port size 2-½ inch	yes.
e.	1-½ inch SAE keyed input shaft. The end of the shaft shall be drilled and tapped to accept a retainer bolt for the companion flange	yes.
f.	One piece input shaft for long service life	yes.
3.3	The pump shall be of cast iron construction, **6.0ci** displacement for all truck systems	yes.
3.4	**Low Oil Alert**: A low oil level sensor (**Sensor furnished by hydraulic tank vendor**) of the solid state, non-mechanical, non-float type, to be connected to a normally open, energize to close, solenoid operated control valve of the cartridge and manifold design to be directly bolted to the pump pressure port. Actuation shall be by the closing of a ground connection through the low oil level sensor, to automatically shut off pump pressure port flow to all downstream functions in the event of low hydraulic oil level.	yes.
4.0	**Valve Body:**	yes.
4.1	Hydraulic control valve shall be a closed center sectional type valve, load sense, individually pressure and flow compensated, rated at minimum 40gpm	yes.
4.2	The valve shall be assembled with a mid-inlet to allow a maximum flow into P (pressure port) of 52gpm	yes.
4.3	All valve assemblies shall have the same "footprint" to facilitate the use of M-DOT valve enclosures	yes.
4.4	The P port must be SAE 16, tank (T) SAE 20 X, Y, L, M ports SAE 6	yes.
4.5	The valve shall feature individual sections for all functions. The A & B work-ports shall be SAE 12	yes.
4.6	The valve shall include a cartridge type shuttle network with access opposite the working ports for serviceability	yes.
4.7	All valve functions shall be pilot solenoid operated	yes.
4.8	All valve functions shall include individual load sense pressure adjustment for each work port	yes.
4.9	Valve section flow to be determined by spool selection, for proper proportional joystick operation at C in the down travel position under induced load conditions	yes.
4.10	Spool flows shall be easily field adjustable within a range by the addition or subtraction of shims or adjusting nuts, adjustment shall not reduce main spool travel	yes.
4.11	For serviceability when enclosure mounted the solenoid coils and the individual work port load sense pressure controls shall be adjustable and accessible on the same side of the valve	yes.
4.12	Push pin manual overrides on the proportional coils shall be covered to exclude corrosion	yes.
4.13	Coils will be one piece assemblies with covered manual overrides	YES
4.14	All valve functions shall include stroke limiter	yes.
4.15	All valve functions shall have adjustable flow compensators, either shim or screw adjustment is acceptable	yes.
4.16	The hydraulic pilot supply will be internal to the valve	YES
4.17	The pump sense line bleed off shall be integral to the valve	yes.
4.18	All valve assemblies shall be painted	yes.
4.19	All valve sections shall be identified as to their function	YES
4.20	All sections are to be fully proportional electric	yes.
5.0	Vender shall supply pricing for the following valve sections. All sections shall be EPC type and shall include adjustable load sense pressure control as well as spool stops. Flow rates will be determined at the time of order. Pricing to include the following sections.	yes.
a.	4 way, EPC section	yes.
b.	3 way motor spooled EPC section	yes.
c.	4 way motor spooled EPC section	yes.
5.1	**Valve Combination Number 1:**	yes.
a.	Combination number 1 system shall include the following sections for a rear discharge combination body with one wing, and shall include the following	yes.

b.	**Left End Cover:** Blank	yes.
c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.
d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way Low boy, 34g.p.m., SAE 12 A&B work-ports, with 500psi load sense relief for down pressure	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Main conveyor 3 way, 24 gpm, motor spooled, adjustable load sense pressure control section for rear discharge combination body includes adjustable load sense relief for B port	yes.
k.	**Section 8:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
l.	**Section 9:** Spinner, 4 way motor spooled, asymmetrical section, SAE 12 ports, 18 gpm A port, 8 gpm B port, adjustable load sense pressure control for either a standard spinner or a zero velocity spinner	yes.
m.	**Section 10:** pass through section	yes.
n.	**Section 11:** pass through section	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
5.2	**Valve Combination Number 2:**	yes.
a.	Combination number 2 system shall include the following sections for a rear discharge combination body with two wings , and shall include the following	yes.
b.	**Left End Cover:** Blank	yes.
c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.
d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way section, 34g.p.m., SAE 12 A&B work-ports, with 500psi load sense relief for down pressure	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
k.	**Section 8:** Main conveyor 3 way, 24 gpm, motor spooled, adjustable load sense pressure control section for rear discharge combination body includes adjustable load sense relief for B port	yes.
l.	**Section 9:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
m.	**Section 10:** Spinner, 4 way motor spooled, asymmetrical section, SAE 12 ports, 18 gpm A port, 8 gpm B port, adjustable load sense pressure control for either a standard spinner or a zero velocity spinner	yes.
n.	**Section 11:** pass through section	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
5.3	**Valve Combination Number 3:**	yes.
a.	Combination Number 3 system shall include the following sections for a front and rear discharge combination body with one wing , and shall include the following	yes.
b.	**Left End Cover:** Blank	yes.
c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.
d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way section, 34g.p.m., SAE 12 A&B work-ports, with 500psi load sense relief for down pressure	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Main conveyor 4 way, 24 gpm, motor spooled, adjustable load sense pressure control section for rear discharge combination body includes adjustable load sense relief for A& B port	yes.
k.	**Section 8:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
l.	**Section 9:** Spinner, 4 way motor spooled, section, SAE 12 ports,, 8 gpm A&B port, adjustable load sense pressure control for front and rear spinners	yes.
m.	**Section 10:** pass through section	yes.
n.	**Section 11:** pass through section	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
5.4	**Valve Combination Number 4:**	yes.
a.	Combination Number 4 system shall include the following sections for a front and rear discharge combination body with two wings , and shall include the following	yes.
b.	**Left End Cover:** Blank	yes.
c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.

d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way section, 34g.p.m., SAE 12 A&B work-ports, with 500psi load sense relief for down pressure	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
k.	**Section 8:** Main conveyor 4 way, 24 gpm, motor spooled, adjustable load sense pressure control section for rear discharge combination body includes adjustable load sense relief for A& B port	yes.
l.	**Section 9:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
m.	**Section 10:** Spinner, 4 way motor spooled, section, SAE 12 ports,, 8 gpm A&B port, adjustable load sense pressure control for front and rear spinners	yes.
n.	**Section 11:** pass through section	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
5.5	**Valve Combination Number 5:**	yes.
a.	Combination Number 5 system shall include the following for sections for hookloader units with one wing, and shall include the following	yes.
b.	**Left End Cover:** Blank	yes.
c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.
d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way motor spooled section, 34g.p.m., SAE 12 A&B work-ports, adjustable pressure control with 3500 psi on A&B ports	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Jib, 4 way motor spooled section, 19 gpm., SAE 12 A&B work-ports, adjustable pressure control with 3500 psi on A&B ports	yes.
k.	**Section 8:** Main conveyor/auger, 3 way, 15 gpm, motor spooled, adjustable load sense pressure control section for v box attachment includes adjustable load sense relief for B port	yes.
l.	**Section 9:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
m.	**Section 10:** Spinner, 4 way motor spooled, asymmetrical section, SAE 12 ports, 18 gpm A port, 8 gpm B port, adjustable load sense pressure control for either a standard spinner or a zero velocity spinner	yes.
n.	**Section 11:** pass through section	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
5.6	**Valve Combination Number 6:**	yes.
a.	Combination Number 6 system shall include the following for sections for hookloader units with two wings, and shall include the following	yes.
b.	**Left End Cover:** Blank	yes.
c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.
d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way motor spooled section, 34g.p.m., SAE 12 A&B work-ports, adjustable pressure control with 3500 psi on A&B ports	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Jib, 4 way motor spooled section, 19 gpm., SAE 12 A&B work-ports, adjustable pressure control with 3500 psi on A&B ports	yes.
k.	**Section 8:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
l.	**Section 9:** Main conveyor/auger, 3 way, 15 gpm, motor spooled, adjustable load sense pressure control section for v box attachment includes adjustable load sense relief for B port	yes.
m.	**Section 10:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
n.	**Section 11:** Spinner, 4 way motor spooled, asymmetrical section, SAE 12 ports, 18 gpm A port, 8 gpm B port, adjustable load sense pressure control for either a standard spinner or a zero velocity spinner	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
5.7	**Valve Combination Number 7:**	yes.
a.	Combination Number 7 system shall include the following for sections for dump trucks with slide in V Boxes and one wing, and shall include the following	yes.
b.	**Left End Cover:** Blank	yes.

c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.
d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way section, 34g.p.m., SAE 12 A&B work-ports, with 500psi load sense relief for down pressure	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Main conveyor 3 way, 15 gpm, motor spooled, adjustable load sense pressure control section for slide in V box includes adjustable load sense relief for B port	yes.
k.	**Section 8:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
l.	**Section 9:** Spinner, 4 way motor spooled, asymmetrical section, SAE 12 ports, 18 gpm A port, 8 gpm B port, adjustable load sense pressure control for either a standard spinner or a zero velocity spinner	yes.
m.	**Section 10:** pass through section	yes.
n.	**Section 11:** pass through section	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
5.8	**Valve Combination Number 8:**	yes.
a.	Combination Number 8 system shall include the following for sections for dump trucks with slide in V Boxes and two wings, and shall include the following	yes.
b.	**Left End Cover:** Blank	yes.
c.	**Section 1:** Front plow swing, 4 way, 15gpm, SAE 12 A&B work-ports, adjustable load sense pressure control	yes.
d.	**Section 2:** Front plow lift, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
e.	**Section 3:** Underbody swing, 4 way, SAE 12 A&B work-ports 15gpm, adjustable load sense pressure control	yes.
f.	**Section 4:** Underbody blade up/down, 4 way, 15gpm, SAE 12 A&B work-ports adjustable pressure control, 800psi load sense relief down and 1,400psi load sense relief up	yes.
g.	**Section 5:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
h.	**Section 6:** Hoist, 4 way section, 34g.p.m., SAE 12 A&B work-ports, with 500psi load sense relief for down pressure	yes.
i.	**Mid Inlet:** Must have adjustable anti-cavitation relief valve	yes.
j.	**Section 7:** Wing raise and lower (extend/retract shall be incorporated with the single valve), 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control	yes.
k.	**Section 8:** Main conveyor 3 way, 15 gpm, motor spooled, adjustable load sense pressure control section for slide in V box includes adjustable load sense relief for B port	yes.
l.	**Section 9:** Cross auger, 4 way, 15gpm, motor spooled, SAE 12 A&B work-ports adjustable load sense pressure control to control either front or rear cross auger	yes.
m.	**Section 10:** Spinner, 4 way motor spooled, asymmetrical section, SAE 12 ports, 18 gpm A port, 8 gpm B port, adjustable load sense pressure control for either a standard spinner or a zero velocity spinner	yes.
n.	**Section 11:** pass through section	yes.
o.	**Right end cover:** Outlet cover shall include power beyond with load sense carryover for plumbing of a zero velocity spinner attachment; port sizes (P) SAE 12, (T) SAE 16 (LS) SAE 6	yes.
	END OF SPECIFICATION	yes.
6	**Specification # GRDSPD.C19 Ground Speed Oriented Salt Distribution Spreader Control System with Electric Over Hydraulic Joystick Controls** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Certified Power Freedom XDS (FRXDS) or equivalent. Contractor to identify proposed make and model. Brands or trade names are for identification purposes only and do not limit the contractor to such brands.	**Make and Model: Certified Power Freedom XDS controller**
1.0	**Basic Requirements:**	
1.1	These systems will be used in conjunction with a closed center valve and load sense/pressure compensated piston pump, to be supplied by MDOT	yes.
1.2	Electric over hydraulic joysticks are to control the underbody scraper up/down, left/right, front plow up/down, left/right, dump body and mid-mount wing up/down	yes.
1.3	Spreader functions shall be ground speed controlled with in-cab display and control	yes.
1.4	The control must be capable of closed loop prewet and anti-ice systems and dual spreaders (tow plow)	yes.
2.0	**Remote Valve Controls:**	
2.1	Remote valve joysticks (or single joystick) controllers shall be located in the cab of the truck, configured for mounting in a location convenient to the operator, on a console mounting base, to a fixture on the cab floor supplied by MDOT.	yes.
2.2	Joystick controllers shall have the capability to provide proportional control to the hydraulic pulse width modulated (PWM) valves up to 14 per output module	yes.
2.3	The joysticks will be incorporated into the CAN bus network.	yes
2.4	The joysticks (or joystick) shall be mounted in a console that houses them and provides an armrest.	yes.
2.5	Controllers shall have a user selectable interface to be compatible with a proportional hydraulic valves	yes.
2.6	Controllers shall be mounted in a modular base that accepts one to four controllers and be available in a dual or single gated axis configuration	yes.
3.0	**Controls:**	yes.
3.1	Single function controller shall have a single push button, red in color, that is mounted in the joystick handle. Single, multiplexed joystick will have function colored buttons.	yes.

3.2	Red button shall serve as a safety lockout, or switch, whereas output from the control will not activate without first depressing the push button	yes.
3.3	All other components shall be black in color	yes.
3.4	Controller shall contain a microprocessor with 14 control channels and the sticks shall be gated such that the handle only moves in one axis (front to back) or side to side.	yes.
3.5	Single Joystick shall be Multiplexed and shall have 3 axis.	yes
3.6	Controller shall be user selectable to provide PWM frequency from 0-300Hz	yes.
3.7	Electrostatic discharge and electromagnetic interference protection shall be provided	yes.
3.8	Single axis joysticks shall control both the dump body and the wing, if so equipped, with the use of a toggle switch provided in the console	yes.
4.0	**Base Plate:**	
4.1	Standard base will include terminal strips and necessary relays. Three rocker switches will be included	yes.
4.2	Base will be enclosed cabinet style with mounting post for armrest. Front access panel will be bolt on.	yes.
4.3	MDOT supplied floor rails for the console and base plate shall be reviewed at the preconstruction meeting	yes.
5.0	**Ground Speed System I (GSS I):**	
5.1	System shall have the capability to maintain a uniform application rate of granular deicing materials and liquid materials simultaneously (based on granular output)	yes.
5.2	System shall have the capability of being used as a liquid only control and monitor boom shutoff inputs	yes.
5.3	System shall have the flexibility of closed loop control of the spinner in order to maintain a desired spinner spread width	yes.
6.0	**GSS I - Console:**	
6.1	Control console shall have an easy to read LCD display which is capable of displaying a minimum of four (4) control channel application rates, ground speed, spread width, time/date, gate height, liquid level, simultaneously	yes.
6.2	Control console shall contain a microprocessor and have a minimum of four (4) closed loop control channels	yes.
6.3	One control channel shall be used for application of granular material on a pounds (kilograms) per mile (kilometer) or area based (pounds per square foot/grams per square meter)	yes.
6.4	A second channel and third shall be used for control of liquid material on a gallons (liters) per ton based on the granular application rate or gallons (liters) per mile (kilometer) and gallons (liters) per square yard (meter) a direct application channel will be included	yes.
6.5	A fourth channel will be used for controlling the spinner speed and be capable of utilizing a feedback sensor to close the loop in order to maintain a desired spinner rpm and spread width	yes.
6.6	Display will offer switches to cycle to menus and enter accumulated spread rate data screens.	yes.
6.7	Console shall have sufficient memory capable of recording the following information and display as current run totals and season totals:	yes.
a.	Miles(kilometers), tons (metric/English), and gallons (liters) spread while in automatic control mode	yes.
b.	Miles(kilometers), tons (metric/English), and gallons (liters) spread while in BLAST mode	yes.
c.	Total miles (kilometers), tons (metric/English), and gallons (liters) spread in automatic control mode	yes.
d.	Total vehicle miles (kilometers) driven while output is active	yes.
e.	Liquid gallons (liters) sprayed during pre-wetting and anti-icing applications	yes.
6.8	Console shall also record system information which includes:	yes.
a.	Application rate history	yes.
b.	Alarm history indicating when control system was operating in an error condition (application error, manual override, or loss of feedback sensor)	yes.
6.9	Control console will automatically adjust the amount of granular material being applied when the closed loop spinner is in operation and the spread width knob setting is increased or decreased, this shall provide for spreading granular material in pounds per lane mile or pounds (kilograms) per square yard (meter)	yes.
6.10	Control console shall have visual display of when unit is operating in application rate error, unload or blast condition, manual speed and automatic manual override condition, and built in ground speed simulator	yes.
6.11	Truck ID can be entered into the unit that has a unique code for each truck	yes.
6.12	This ID would also show up on AVL so that data tracking can be done on an entire fleet of trucks	yes.
6.13	Console shall have the capability of being switched from English units to metric units	yes.
6.14	For **Combination Body trucks**, units shall have Electro Proportional Control (EPC) for speed of cross conveyor and two (2) position switch to control direction	yes- see option for cross conveyor driver
6.15	A two (2) position switch to control main conveyor direction and spinner shall be provided	yes.
6.16	This switch shall be wired into the main controller to maintain ground speed control	yes.
6.17	Unit shall be programmable for at least four (4) types of material, four (4) liquids, and capable of controlling pre-wet and anti-icing with boom controls without changing consoles or modules	yes.
6.18	Wiring for liquid operation shall be plug and program	yes.
6.19	Units shall include a two (2) year warranty on the processor and console	yes.
6.20	Data logging information shall be available for transmission through AVL.	yes
6.21	Unit to include on board diagnostics of all CAN BUS connected hardware	yes.
6.22	Console will allow dynamic joystick calibration on screen with adjustments for travel, deadband, multiplexing of outputs and PWM output range.	yes.
6.23	Controller shall beep and flash a warning to the operator	yes
6.24	Console can be programmed on screen, or through USB port via computer.	yes.
6.25	Console to include FIRST guide , on screen tutorial for programming.	yes.
6.26	Console calibration mode:	yes.
a.	Automatic calibration procedures for granular and liquid channels to determine the granular spreader constant of conveyor/auger and liquid sprayer constant of flow meter	yes.
b.	Ground speed calibration procedure in units of 1 mile or 1 kilometer	yes.

c.	Unit will include capability for GPS speed input signal.	yes.
d.	Automatic calibration procedure that will determine the PWM offset and saturation points of valve as well as system gain and enter into the console's memory	yes.
e.	Programmable blast timed button or on/off when blast button is pressed and then released	yes.
f.	Spinner calibration procedure to allow for open loop operation of spinner or closed loop to coordinate spread width knob position with a specific spread width for lane mile application of material	yes.
g.	Calibration procedures shall only be accessible with password protection	yes.
6.27	Console programming features:	yes.
a.	Application rates may be preset for thirty (30) fixed rates or to expand application rate choices, a preset minimum rate, preset maximum rate and rate change increments between	yes.
b.	A blast application rate is provided for each material for control of the blast function	yes.
c.	All of the granular and liquid materials can have user defined labels to aid in easy selection of the correct material by the operator	yes.
d.	Reset of granular season accumulators	yes.
e.	Reset of liquid season accumulators	yes.
f.	Ability to lockout granular and liquid materials availability in the operate mode	yes.
g.	Program the console for use as a granular and liquid material control, a liquid only control, or a granular only control	yes.
h.	When liquid only control is selected, the operate screen automatically configures itself and displays three boom identifiers	yes.
i.	Capability to program console for automatic switch of liquid materials from pre-wet (gal/ton) to liquid only (gal/lane mile) for anti-icing	yes.
j.	Display to offer customizable color and configuration sizes.	yes.
k.	Have provisions to work with a low oil level sensor connected to a normally open, energize to close, solenoid operated control valve, actuated by the closing of a ground connection through the sensor, to automatically shutoff pump pressure (also connected to a light on the console to alert operator)	yes.
7.0	**GSS I - Operator Remote Switch Module:**	yes.
7.1	A remote switch module shall be used for operator convenience which contains switches to:	yes.
a.	Power liquid and granular channels on or off individually	yes.
b.	Allow liquid and granular application rates to be increased or decreased separately	yes.
c.	Provide a momentary push button switch used for blast mode	yes
d.	Master spreader switch for off, automatic and unload of granular, liquid, and spinner channels	yes.
e.	Provide a infinite position rotary knob for adjustment of spinner speed	yes.
7.2	Remote switch module shall be backlit for visibility and use during night operation	yes.
7.3	Remote switch module shall allow operator to select materials to be applied	yes.
8.0	**Hydraulic valves (MDOT provided) have pulse width modulated outputs to control hydraulic flow to spinner and conveyor motors**	yes.
8.1	Unit shall be compatible with Hall Effect conveyor feed rate sensored hydraulic motors (MDOT provided) with at least 50 pulses per revolution of motor	yes.
8.2	Vehicle speed sensor will be provided by a cable to adapt to vehicle electronic speed sensing device	yes.
8.3	Conveyor feed rate sensor adapter cable shall be provided with LED indicator lights	yes.
8.4	Flow meter shall be provided for accurate measurement of liquid sprayed	yes.- provided with the prewet system- not part of the controller. Only necessary cable to hook up to the flow meter
8.5	A modulated valve driver (15amps) shall be provided to drive PWM hydraulic valve for desired volume of liquid application rate if electric prewet pump is used	yes.- see option for liquid driver
8.6	System shall have in line ball valve control capability for on/off boom valves	yes.
8.7	System shall have the capability to maintain a uniform application rate of up to four (4) individual products simultaneously in any combination of granular and liquid deicing materials	yes.
8.8	This combination can include two (2) granular and one (1) liquid or two (2) liquid and one (1) granular	yes.
8.9	System console shall have the integrated boom section control capable of controlling up to three (3) boom section shut offs	yes.
8.10	System shall have the flexibility of closed and open loop control of the spinner in order to maintain a desired spinner rpm or spread width	yes.
8.11	Display terminal, master control module, member control module, and remote switch unit shall communicate via a CAN BUS	yes.
8.12	Channels 1-3 can be used for applications of granular material on a pounds (kilograms) per mile (km) or area based (pounds per square foot/grams per square meter), liquid material on a gallons (liters)per ton based on a granular application rate or gallons (liters) per mile (km) and gallons (liters) per square yard (meter)	yes.
8.13	Channel 4 shall be used for controlling the spinner speed and be capable of utilizing a feedback sensor to close the loop in order to maintain a desired spinner rpm and spread width	yes.
8.14	Control channels can be programmed for manual control of operation allowing for operating hydraulic tools other than used in snow and ice control operations	yes.
8.15	All logged data events shall be available in a single .csv formatted file before transferred to a modem of third party AVL device via DB9	yes.
8.16	Operator remote switch module, member module, and master control module shall act as slave devices on the system	yes.
8.17	Display terminal shall consist of a 7 inch LCD touchscreen	yes
8.18	Backlighting of terminal shall be adjustable	yes.
8.19	Display terminal shall be touch screen with menu access on right side for access to information and selection of varying parameters.	yes.
8.20	Display terminal shall provide simultaneous viewing of:	yes.

a.	Four (4) control channel application rates	yes.
b.	Ground speed	yes.
c.	Spread width	yes.
d.	Time/date	yes.
e.	Five (5) accessory analog inputs, eight (8) digital inputs, four (4) feedback sensor inputs	yes.
f.	Plow selection	yes.
8.21	Display terminal shall have the capability to display date, time, road speed and four (4) control channel application rates simultaneously and pavement and air temp on screen	yes.
8.22	Display terminal shall contain a microprocessor and a memory to send operation commands to a minimum of four (4) control channels simultaneously	yes.
8.23	Display terminal shall have sufficient memory capable of logging and recording the following information:	yes.
a.	Total miles (km), tons, (metric/English) and gallons (liters) spread while in automatic control for each control channel and product spread	yes.
b.	Miles (km), tons (metric/English) and gallons (liters) spread while in blast mode for each product spread	yes.
c.	Total vehicle miles (km) driven	yes.
d.	Liquid gallons (liters) sprayed during pre-wetting and anti-icing application	yes.
e.	Total time spent spreading granular, spraying liquid, and blasting	yes.
f.	Miles (km), tons (metric/English), and gallons (liters) spread while in pause mode	yes.
g.	All of this information shall be viewable on the display terminal as current run totals and season totals to the operator/supervisor	yes.
8.24	Display terminal shall also record system information including:	yes.
a.	Percentage of time when in automatic mode of control versus off as well as when blast and pause functions were activated	yes.
8.25	When the closed loop spinner is in operation and the spread width knob is increased or decreased, the control console shall automatically adjust the amount of granular material being applied, which shall provide for spreading granular material in pounds (kilograms) per square yard (meter) units of application	yes.
8.26	Display terminal shall have visual display and/or audible alerting operator of when unit is operating in application rate error, unload or blast condition, pause mode, manual speed, and automatic manual override condition	yes.
8.27	Display terminal shall have an integrated manual ground speed simulator for use when speedometer sensor fails or stationary testing or spreading is required	yes.
8.28	Display terminal shall have capability of changing all application, distance, and vehicle speed units from English units to metric units	yes.
8.29	A remote switch module shall be used for operator convenience which contains:	yes.
a.	Multiple independent switches to allow various functions such as conveyor direction, cross conveyors with speed adjustment, placement chute selection, prewet nozzle diversion.	yes.
b.	Blast switch	yes.
c.	Pause switch	yes.
d.	Master spreader switch for material application auto/off	yes.
e.	Rotary knob for adjustment of spinner speed, conveyor speed, and liquid rate with unlimited detents and rotation	yes.
8.30	Remote switch module shall be backlit for visibility and use during night operation and be capable of being mounted next to display terminal, driver seat arm rest or on side of electronic joystick hydraulic controller	yes.
8.31	Master control module (ECU) shall be connected to the display terminal via a CAN BUS	yes.
8.32	ECU shall contain the control channel algorithms, electronic driver devices to control the signal output for PWM hydraulic valve, servo valves, electronic pumps, and switching valves to control the desired liquid and granular material application rates, spinner speed, and spread width	yes.
8.33	All input sensors for monitoring application rates (360 pulse per revolution shaft sensors), liquid flow meters, accessory monitoring sensors (gate height, electronic joystick, functions, hydraulic pressure sensors, rpm sensors, position sensors) shall be connected directly to the ECU	yes.
8.34	An optional member output module shall be connected to the master control module via a CAN BUS interface protocol to drive additional accessories installed on the vehicle such as boom section shut off valves, open and close V-box gates, switching valves for front/rear conveyors, switch valves for left/right discharge cross augers and accessory 12 volt switched output	yes.
8.35	Granular application control:	yes.
a.	Compatible with pulse width modulated hydraulic valves used to control hydraulic oil flow to auger and conveyor motors	yes.
b.	High current solenoid interface driver to operate electric motor drive augers and spinners	yes.
c.	Input from Dickey-John photoelectric conveyor feed rate sensor with 360 counts per revolution	yes.
d.	Compatible with hydraulic motors with integrated feed rate sensors signal generators	yes.
8.36	Liquid Application Control:	yes.
a.	Input from liquid flow meters for accurate measurement of liquid flow from pump and application sprayed	yes.
b.	High current solenoid interface driver (15amps) to drive liquid pump for desired volume of liquid application rate	yes.
c.	Compatible with control ball valves for liquid application control available in ¼ inch, 3/8 inch, ½ inch, ¾ inch, 1 inch, 2 inch, and 3 inch sizes	yes.
d.	Compatible with pulse width modulated hydraulic valves used to control hydraulic oil flow to hydraulic motors driving liquid pumps delivering product to pre-wet and anti-ice spray booms	yes.
8.37	Display terminal and system shall be programmed on screen and USB port and shall have a minimum of twelve (12) menu driven set up screens to aid in programming process	yes.
a.	Automatic calibration procedures for granular and liquid channels to determine the granular spreader constant of conveyor/auger and liquid sprayer constant of flow meter	yes.
b.	Ground speed calibration procedure requiring driving the vehicle a distance of 1 mile or 1 kilometer	yes.

c.	Calibration procedures shall include an on screen set up tutorial to step through the calibration process	yes.
8.38	Programming mode for entering application rates and resetting accumulators:	yes.
8.39	Program independent application rates for up to four (4) separate granular materials and four (4) separate liquid materials	yes.
b.	Application rates may be preset for ten (10) fixed rates or to expand application rate choices, a preset minimum and maximum rate and rate change increments can be selected	yes.
c.	A blast application rate is provided for each material for rate control of the blast function	yes.
d.	Reset of granular current and season accumulators	yes.
e.	Reset of liquid current and season accumulators	yes.
f.	Ability to lock out granular and liquid materials availability in the operate mode	yes.
g.	Program the console for use as a granular and liquid material control, a liquid only control or a granular material only control	yes.
h.	When liquid only control is selected the operator screen automatically configures itself and displays a three (3) section boom shut off along left side of terminal	yes.
i.	The operator screen of the display terminal shall automatically configure itself dependent upon the number of active control channels to fit all active products being applied on display for viewing	yes.
8.40	System shall have an automatic override feature which, in the event of loss of feed rate sensor or flow meter signal, transfers system to open loop control with a "manual" indication flashing next to the appropriate control channel and continue application of material until sensor is required	yes.
8.41	System shall have a built in ground speed simulator	yes.
8.42	The system shall have the capability of being programmed to allow access to manual speed for the driver to turn on and off	yes.
8.43	System shall have the capability to program three (3) control channels as manual mode of operation	yes.
8.44	When set as manual mode of control, the control channel will allow for nudging the control valve open and close in 5% increments with the application rate change increase/decrease switches located on operator remote switch module	yes.
8.45	Manual mode of control channel shall allow for running accessory hydraulic tools in winter and summer months possibly not associated with winter maintenance activities	yes.
8.46	System shall have the ability to unload/flush both granular and liquid materials separately or simultaneously	yes.
8.47	Unload/flush shall provide for full spreader and sprayer output	yes.
8.48	Console shall **NOT** accumulate granular or liquid quantities while in unload or flush	yes.
8.49	System shall **NOT** initiate unload or flush unless vehicle ground speed is zero	yes.
8.50	After unload or flush is activated, the system shall allow forward movement of vehicle but pause at 5mph.	yes.
8.51	Spinner shall stop when the spreading of granular material is stopped	yes.
8.52	Spinner can be preset to run or be stopped at the console when ground speed is zero	yes.
8.53	System shall allow the spread of granular material without spraying liquid material	yes.
8.54	Each of the four (4) liquid materials programmed into console memory shall be able to be set as either gallons (liters) per mile (km) or gallons (liters) per ton units allowing for the liquid channel of console to be used in an anti-icing application and for pre-wetting of granular material without the need for reprogramming	yes.
8.55	Console shall have a visual and audio indication of inaccurate application for both granular and liquid channels	yes.
8.56	System shall have a programmable start up ground speed in percent of valve drive which the control will utilize until true ground speed of vehicle exceeds the start up speed value	yes.
8.57	System shall have a programmable shut off speed which the control will utilize and shut off the spreading of materials when the true ground speed of the vehicle drops below the programmed shut off speed	yes.
8.58	System shall be able to be used for application of liquid or granular on meters square, yards square, square foot, gallons per acre and lane miles units of measure	yes.
8.59	Display terminal ports:	yes.
a.	Shall provide an RS232 for connection to 3rd party hardware which shall allow the transmission of current operation information and logged data to be exported and/or accessed real time	yes.
b.	Shall provide a USB port to allow insertion of USB media storage to allow for export of logged spreadsheet data and transfer to lap top computer	yes.
c.	USB terminal shall allow for import of system firmware updates to display terminal and master control module from USB media storage device	yes.
d.	USB port on terminal shall allow for import of critical system configuration file which shall provide means to program each display terminal and master control module with pre-determined system	yes.
	END OF SPECIFICATION	yes.
7	**Specification # 04-11CBBDY.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/DVS-132-96-56 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: MONROE DVS132-96-56/ REAR DISCHARGE- CHAIN**
1.0	**Basic Requirements:**	yes.
1.1	MDOT will install this dump box on a 44,000 GVW single axle, cab, and chassis with chassis measurements of approx. 187 inch W.B., 112 inch CA., and 187 inch C.E.	yes.
1.2	11 foot combination 45° slope side dump and spreader bodies which shall consist of self-unloading dump bodies constructed of a type 201 stainless steel body, dump hoist, discharge/feed conveyor.	yes.
1.3	Body shall have an approximate struck capacity of 7-¾ cu/yd minimum for rear discharge without removable side boards	yes.
1.4	Bodies will have holes pierced and wire tie studs mounted per MDOT specifications	yes.
1.5	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.

1.6	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.7	All lighting shall be provided by MDOT	yes.
2.0	**Body:**	yes.
2.1	Bodies shall be of type 201 stainless steel construction	yes.
2.2	Overall height above truck frame shall not exceed 55 inches without cab shield	yes.
2.3	Top inside width of body shall be approximately 89 inches and outside width shall not exceed 96 inches	yes.
2.4	Top of floor to the top of the side wall shall be approximately 44 inches	yes.
2.5	Body shall be rigidly constructed with a boxed top rail construction of 7 gauge type 201 stainless steel, 5 inch height x 4 inch depth	yes.
2.6	Sides shall include vertical channel type ribs, approximately 4 inches wide x 2 inches deep constructed of 7 gauge type 201 stainless steel, spaced on 36 inch centers minimum	yes.
2.7	Body longitudinal shall be constructed of ¼ inch type 201 stainless steel with minimum 12 inch height and include two (2) 3 inch ID cross over tubes for installation of hydraulic hoses and wiring	yes.
2.8	Rear of body longsills must be slotted to facilitate removal of drive system	yes.
2.9	Drive system including gearboxes, drive shaft, sprockets and bearings, must be removable as an assembly	yes.
2.10	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x ½ inch x 38 inch, Hinge pins shall be 2-3/8 inch x 8 inch round stainless steel and shall be greaseable	yes.
2.11	Rear body hinge top plate shall not extend rearward more than 4 inches from the centerline of the pivot pin	yes.
2.12	A 1.25 inch x ¼ inch, 201 stainless steel flat stock tarp tie rail, welded to side braces, full length of body	yes.
2.13	Tarp tie rail shall be installed just below the 45° break on the side braces	yes.
2.14	Two (2) body props shall be provided to support empty body weight	yes.
2.15	Body floor shall be 1/4inch 201 stainless steel and shall be bolted in with 1 inch welds at all four corners, and be supported by 7 gauge 3 inch x 3 inch cross angles located on 12 inch centers, and shall have rear "roller" lip with wiper belt	yes.
2.16	Body longitudinal shall be supported under chain by 4 inch formed cross members on 24 inch centers	yes.
2.17	All channel supports under the floor shall be constructed of ¼ inch type 201 stainless steel	yes.
2.18	Return angle on the longitudinal shall be 4-½ inch boxed type for additional support and any retention of material	yes.
2.19	All joints on body shall be continuous welded	yes.
2.20	Four (4) covered access openings shall be provided below the body interior on the rear facing panel:	yes.
a.	For accessing the rear gear boxes for maintenance	yes.
b.	For installation of rear attachments/accessories	yes.
2.21	Two (2) covered access openings shall be provided on the forward facing panel of the rear corner post	yes.
2.22	Rear of body shall be flat to allow installation of MDOT approved accessories	yes.
2.23	Rear corner posts shall be boxed in and drilled and tapped to accept MDOT rear lighting arrangement	yes.
2.24	Both rear side posts shall have one (1) 1-1/2 inch hole, two (2) 1-¼ inch holes, one (1) 13/16 inch hole and four (4) 9/16 inch holes with ½ inch stainless steel nuts welded to the backside	yes.
2.25	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
2.26	Body sides shall be 45° sloped	yes.
2.27	Additional wire/cable retention studs shall be installed, per MDOT specifications	YES
3.0	**Head Sheet:**	yes.
3.1	Head sheet shall be constructed of 7 gauge type 201 stainless steel and be sloped 45° back	yes.
3.2	Front of body shall be sloped to accommodate a trunnion-mounted cylinder with partial doghouse and conform to the 45° slope of the body, 100% welded on the inside and outside	yes.
3.3	Front sheet to include an enclosure for a front mounted telescopic hoist	yes.
3.4	Cylinders mounted forward of the front of the body will **NOT** be acceptable	yes.
3.5	Front shall be at least 6 inches higher than the sides	yes.
3.6	All horizontal surfaces shall be dirt shedding	yes.
3.7	All bolts used shall be stainless steel	yes.
3.8	All areas of body shall be constructed to withstand heavy duty use as a dump and as a spreader	yes.
3.9	Body shall include all items needed to be fully operational	YES
3.10	All items which are normally furnished as standard equipment shall be supplied and shall conform in strength, quality of material, and workmanship to best commercial practice	yes.
4.0	**Conveyor:**	yes.
4.1	Conveyor shall be pintle chain type running longitudinally with the body feeding material to the hinged rear end-gate opening	yes.
4.2	Conveyor shall not extend past the vertical tailgate	yes.
4.3	Overall conveyor width shall be 34 inches minimum	yes.
4.4	Conveyor chain shall be heat-treated 2-¼ inch pitch pintle type with .224 inch link thickness, 15/32 inch pin diameter and have a 26,000 pound minimum average tensile strength, manufactured in the USA	yes.
4.5	Cross bars ½ inch x 1-½ inch shall be positioned on approximately 2-¼ inch centers and welded on both the top and bottom of the bar	yes.
4.6	Eight toothed, case hardened to 40-48 Rc, self-cleaning drive sprockets shall be keyed to the 2 inch drive and idler shafts	yes.
4.7	Conveyor drive shaft shall have heavy duty, dust sealed self-aligning four bolt flange bearings	yes.
4.8	Heavy duty idler assembly with side rail style adjusters and 1-¼ inch adjusting bolt shall provide 9 inches of adjustment for proper conveyor chain tension	yes.
5.0	**Tailgate:**	yes.

5.1	Tailgate shall be minimum of 6 inches higher than sides of body	yes.
5.2	Tailgate shall be manufactured of minimum 3/16 inch, type 201 stainless steel with, 5 panel, boxed perimeter of 3 inch formed channel	yes.
5.3	Tailgate shall have a 3 inch x 3 inch D-ring welded to the top center of tailgate	yes.
5.4	Tailgate shall be double acting with squared perimeter and two (2) horizontal braces of 3/16 inch material the full width of the tailgate	yes.
5.5	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.6	Chain shall be removable, 3/8 inch, high tensile plated type	YES
5.7	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.8	Tailgate shall have a 5/8 inch stainless rod by a minimum 7 inch grip handle located in the lower left hand corner	yes.
5.9	Material door shall extend 16 inches into the interior of the body to prevent material from escaping through the partially opened door over the conveyor	yes.
5.10	An adjustable discharge gate or door with an opening of at least 21 inches x 8-½ inches of a minimum of ¼ inch thick with a heavy duty screw-type operated adjustment mechanism on passenger's side and at bottom edge of tailgate	yes.
5.11	Feedgate must have infinite positions and include ruler to indicate gate opening height	yes.
5.12	Tailgate shall have 1 inch x 4 inch bar stock tailgate hardware with 1-¼ inch hardened pins	yes.
5.13	Tailgate latches shall be 1 inch flame cut with each latch being adjustable, over center type	yes.
5.14	Tailgate latches shall be air operated	yes.
5.15	Air cylinder must provide power latch and power release, spring assist latching systems are **not acceptable**	yes.
5.16	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.17	Air cylinder housing shall be aluminum	yes.
5.18	Air cylinder rod shall be stainless steel	yes.
5.19	Cylinder kits shall fit the existing brackets body without modification	YES
6.0	**Power Drive and Controls:**	yes.
6.1	Two (2) high torque, variable speed 6:1 gearboxes and hydraulic motors with ground speed sensor having 100 pulses/revolution capability on one of the gearboxes shall be provided	yes.
6.2	Sensor shall be a Hall Effect speed type	yes.
6.3	Rear discharge bodies shall have drive located at the rear of the conveyor	yes.
6.4	Hydraulic drive shall include two (2) geroler-type, high-torque, low speed hydraulic motors 12.1 CID, integrally mounted to the conveyor gear cases	yes.
6.5	Hydraulic tubing shall be stainless steel, rated along with hydraulic hose to withstand 1-½ times system operating pressure requirements	yes.
6.6	Hydraulic tubing shall be ¾ inch minimum I.D.	yes.
6.7	All tubing shall be secured to body with polymer retaining blocks	yes.
7.0	**Hoist:**	yes.
7.1	Double acting hoist cylinder	yes.
7.2	Hard nitride hoist cylinder surfaces	yes.
7.3	Inverted, trunnion mounted cylinder	yes.
7.4	5 inch, 4 inch, 3 inch active sections	yes.
7.5	NTEA Class 90, rated at 27.5 tons lift capacity @ 2,500psi and 22.0 tons @ lift capacity @ 2,000psi	yes.
7.6	Cylinder total stroke of 99 inches	yes.
7.7	Hoist must be listed in the NTEA dump body hoist chart	yes.
8.0	**Cab Protector:**	yes.
8.1	Half cab protector shall be 7 gauge type 201 steel, installed by vendor on the front of the body	yes.
8.2	All welding shall be continuous	yes.
8.3	End plates shall be streamlined to prevent sharp corners or edges	yes.
a.	A stainless steel grab handle shall be located on the cab protector	yes.
b.	Cab protector shall extend forward of the body a minimum of 24 inches	yes.
c.	Stainless steel studs for wire and cable retention shall be on the cab protector as well as the body	yes.
8.4	MDOT will notify successful vendor of the proper mounting height of cab protector and stud location prior to construction	yes.
9.0	**Fenders:**	yes.
9.1	Body shall be equipped with 7 gauge type 201 stainless steel fenders	yes.
9.2	Fenders shall be sufficiently constructed and supported so as to allow for mounting of 100 gallon liquid tanks on each side of the body	yes.
9.3	Overall length of fenders shall be 81 inches	yes.
9.4	Fenders must have factory cut holes for installation of tarp springs, to be provided by MDOT at pre construction meeting	yes.
10.0	**Miscellaneous:**	yes.
10.1	A grease extension kit shall be provided and installed at the front and the rear of the body	yes.
10.2	Rear grease kits shall provide lubrication to both the rear bearings and all pivot points for the tailgate linkage	yes.
10.3	Front grease kits shall provide lubrication to both the upper and lower trunnions on the hoist, front conveyor bearings, and the pivot points for the over center cam that operates the tailgate linkage	yes.
10.4	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes.
10.5	Swing up type side ladder constructed of type 201 stainless steel shall be provided by manufacturer and shipped loose for custom fitting by MDOT	yes.
11.0	**Body Preparation:**	yes.

11.1	Entire body shall be cleaned and rinsed	yes.
11.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
11.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
	END OF SPECIFICATION	yes.
8	**Specification # 04-11CBBDYDA.C19 11 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/DVS-132-96-56 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe DVS132-96-56/DA/201ss**
1.0	**Basic Requirements:**	yes.
1.1	MDOT will install this dump box on a 44,000 GVW single axle, cab, and chassis with chassis measurements of approx. 187 inch W.B., 112 inch CA., and 187 inch C.E.	yes.
1.2	11 foot combination 45° slope side dump and spreader bodies which shall consist of self-unloading dump bodies constructed of a type 201 stainless steel body, dump hoist, discharge/augers.	yes.
1.3	Body shall have an approximate struck capacity of 7-¾ cu/yd minimum for rear discharge without removable side boards	yes.
1.4	Bodies will have holes pierced and wire tie studs mounted per MDOT specifications	yes.
1.5	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.
1.6	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.7	All lighting shall be provided by MDOT	yes.
2.0	**Body:**	yes.
2.1	Bodies shall be of type 201 stainless steel construction	yes.
2.2	Overall height above truck frame shall not exceed 55 inches without cab shield	yes.
2.3	Top inside width of body shall be approximately 89 inches and outside width shall not exceed 96 inches	yes.
2.4	Top of trough to the top of the side wall shall be approximately 44 inches	yes.
2.5	Body shall be rigidly constructed with a boxed top rail construction of 7 gauge type 201 stainless steel, 5 inch height x 4 inch depth	yes.
2.6	Sides shall include vertical channel type ribs, approximately 4 inches wide x 2 inches deep constructed of 7 gauge type 201 stainless steel, spaced on 36 inch centers minimum	yes.
2.7	Body longitudinal shall be constructed of ¼ inch type 201 stainless steel with minimum 12 inch height and include two (2) 3 inch ID cross over tubes for installation of hydraulic hoses and wiring	yes.
2.8	Rear of body longsills must be slotted to facilitate removal of drive system	REMOVEABLE PLANETARY GEAR BOXES-INDIVIDUALLY REMOVEABLE ON AUGER DVS
2.9	Drive system including gearboxes must be removable as an assembly	REMOVEABLE PLANETARY GEAR BOXES-INDIVIDUALLY REMOVEABLE ON AUGER DVS
2.10	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x ½ inch x 38 inch, Hinge pins shall be 2-3/8 inch x 8 inch round stainless steel and shall be greaseable	yes.
2.11	Rear body hinge top plate shall not extend rearward more than 4 inches from the centerline of the pivot pin	yes.
2.12	A 1.25 inch x ¼ inch, 201 stainless steel flat stock tarp tie rail, welded to side braces, full length of body	yes.
2.13	Tarp tie rail shall be installed just below the 45° break on the side braces	yes.
2.14	Two (2) body props shall be provided to support empty body weight	yes.
2.15	Body auger trough shall be bolted in with 3/8 inch bolts on 12 inch centers and supported by 7 gauge 4 inch cross angles located on 24 inch centers. The longitudinal will be boxed with 1/4 inch plate interlaced with the cross angles	yes.
2.16	Body longitudinal shall be supported under the trough by 4 inch formed cross members on 24 inch centers	yes.
2.17	All channel supports under the floor shall be constructed of ¼ inch type 201 stainless steel	yes.
2.18	Return angle on the longitudinal shall be 4-½ inch boxed type for additional support and any retention of material	yes.
2.19	All joints on body shall be continuous welded	yes.
2.20	Two (2) covered access openings shall be provided below the body interior on the rear facing corner panel	NO-NOT NEEDED ON DUAL AUGER SYSTEM
2.21	Two (2) covered access openings shall be provided on the forward facing panel of the rear corner post	yes.
a.	For accessing the rear linkage and wiring for maintenance	yes.
b.	For installation of rear attachments/accessories	yes.
2.22	Rear of body shall be flat to allow installation of MDOT approved accessories	yes.
2.23	Rear corner posts shall be boxed in and drilled and tapped to accept MDOT rear lighting arrangement	yes.
2.24	Both rear side posts shall have one (1) 1-1/2 inch hole, two (2) 1-¼ inch holes, one (1) 13/16 inch hole and four (4) 9/16 inch holes with ½ inch stainless steel nuts welded to the backside	yes.
2.25	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
2.26	Body sides shall be 45° sloped	yes.
2.27	Additional wire/cable retention studs shall be installed, per MDOT specifications	YES

3.0	**Head Sheet:**	yes.
3.1	Head sheet shall be constructed of 7 gauge type 201 stainless steel and be sloped 45° back	yes.
3.2	Front of body shall be sloped to accommodate a trunnion-mounted cylinder with partial doghouse and conform to the 45° slope of the body, 100% welded on the inside and outside	yes.
3.3	Front sheet to include an enclosure for a front mounted telescopic hoist	yes.
3.4	Cylinders mounted forward of the front of the body will **NOT** be acceptable	yes.
3.5	Front shall be at least 6 inches higher than the sides	yes.
3.6	All horizontal surfaces shall be dirt shedding	yes.
3.7	All bolts used shall be stainless steel	yes.
3.8	All areas of body shall be constructed to withstand heavy duty use as a dump and as a spreader	yes.
3.9	Body shall include all items needed to be fully operational	YES
3.10	All items which are normally furnished as standard equipment shall be supplied and shall conform in strength, quality of material, and workmanship to best commercial practice	yes.
4.0	**Conveyor:**	yes.
4.1	Conveyor shall be dual 7 inch OD augers running longitudinally with the body feeding material to the rear discharge ramp opening	yes.
4.2	Conveyor shall not extend past the vertical tailgate	yes.
4.3	Overall conveyor trough width shall be approximately 34 inches	yes.
4.4	Bolt in conveyor trough shall have 37 degree sloped out sides and an intergral 8 inch high centered inverted "V" to separate the augers and shall be 1/4 inch type 201 stainless steel	yes.
4.5	The dual auger drive system will be bolted to the 3/8 inch gearbox mounting plate that is welded to the front of the long member weldment	yes.
4.6	Counter rotating, hard surfaced 7 inch OD augers with 1/2 inch progessive flighting with 4-1/2 inch pitch, 6-1/2 inch pitch and 8-3/4 inch pitch welded to schedule 80, 3-1/2 inch pipe. One auger with right hand helical and one auger with left hand helical flighting	yes.
5.0	**Tailgate:**	yes.
5.1	Tailgate shall be minimum of 6 inches higher than sides of body	yes.
5.2	Tailgate shall be manufactured of minimum 3/16 inch, type 201 stainless steel with, 5 panel, boxed perimeter of 3 inch formed channel	yes.
5.3	Tailgate shall have a 3 inch x 3 inch D-ring welded to the top center of tailgate	yes.
5.4	Tailgate shall be double acting with squared perimeter and two (2) horizontal braces of 3/16 inch material the full width of the tailgate	yes.
5.5	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.6	Chain shall be removable, 3/8 inch, high tensile plated type	YES
5.7	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.8	Tailgate shall have a 5/8 inch stainless rod by a minimum 7 inch grip handle located in the lower left hand corner	yes.
5.9	Tailgate shall have 1 inch x 4 inch bar stock tailgate hardware with 1-¼ inch hardened pins	yes.
5.10	Tailgate latches shall be 1 inch flame cut with each latch being adjustable, over center type	yes.
5.11	Tailgate latches shall be air operated	yes.
5.12	Air cylinder must provide power latch and power release, spring assist latching systems are **not acceptable**	yes.
5.13	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.14	Air cylinder housing shall be aluminum	yes.
5.15	Air cylinder rod shall be stainless steel	yes.
5.16	Cylinder kits shall fit the existing brackets body without modification	YES
6.0	**Power Drive and Controls:**	yes.
6.1	Two (2) high torque, variable speed 3.6:1 planetary gearboxes and 14 tooth 24.9 CID hydraulic motors with ground speed sensor having 100 pulses/revolution capability on one of the gearboxes shall be provided	yes.
6.2	Gearboxs will float on the drive system mounting plate	yes.
6.3	Sensor shall be a Hall Effect speed type	yes.
6.4	Gearbox drive shafts will be isolated from the auger tube with an ABS plastic bushing and bolted to the auger shaft with 7/8 inch bolt and nut	yes.
6.5	Ther rear 3/8 inch idler plate will have two (2) two inch 4 -bolt flange bearings bolted to the plate and the 2 inch idler shafts will have ABS plastic bushings and be bolted to the auger tube using 7/8 inch bolts and nuts	yes.
6.6	Hydraulic tubing shall be stainless steel, rated along with hydraulic hose to withstand 1-½ times system operating pressure requirements	yes.
6.7	Hydraulic tubing shall be ¾ inch minimum I.D.	yes.
6.8	All tubing shall be secured to body with polymer retaining blocks	yes.
7.0	**Top Grates:**	yes.
7.1	One piece removable, bolt in top grates shall be provided. Grates will be designed to be retained within the board pockets front and rear on both sides of the body	yes.
7.2	The grate kit will have a centered 3-1/2 inch schdule 80 beam supported front and rear with a 2 inch x 4 inch x 1/4 inch tube welded to the 1/4 inch formed angles that sit on the top rails of the body	yes.
7.3	The top screens shall be constructed of 3/8 inch rods welded to form a 2-1/2 inch square mesh which is formed by a combination of 1/4 inch x 1-1/2 flat steel and 2 inch angle iron with the edge supports reinforced by1/4 inch x 1 inch flat steel bars	yes.
7.4	Top grates will be bolted to the top beam mounting brackets and be secured to prevent opening with out tools	yes.
8.0	**Hoist:**	yes.
8.1	Double acting hoist cylinder	yes.
8.2	Hard nitride hoist cylinder surfaces	No- hard chromed- not nitrided

8.3	Inverted, trunnion mounted cylinder	yes.
8.4	5 inch, 4 inch, 3 inch active sections	yes.
8.5	NTEA Class 90, rated at 27.5 tons lift capacity @ 2,500psi and 22.0 tons @ lift capacity @ 2,000psi	yes.
8.6	Cylinder total stroke of 99 inches	yes.
8.7	Hoist must be listed in the NTEA dump body hoist chart	yes.
9.0	**Cab Protector:**	yes.
9.1	Half cab protector shall be 7 gauge type 201 steel, installed by vendor on the front of the body	yes.
9.2	All welding shall be continuous	yes.
9.3	End plates shall be streamlined to prevent sharp corners or edges	yes.
a.	A stainless steel grab handle shall be located on the cab protector	yes.
b.	Cab protector shall extend forward of the body a minimum of 24 inches	yes.
c.	Stainless steel studs for wire and cable retention shall be on the cab protector as well as the body	yes.
9.4	MDOT will notify successful vendor of the proper mounting height of cab protector and stud location prior to construction	yes.
10.0	**Fenders:**	yes.
10.1	Body shall be equipped with 7 gauge type 201 stainless steel fenders	yes.
10.2	Fenders shall be sufficiently constructed and supported so as to allow for mounting of 100 gallon liquid tanks on each side of the body	yes.
10.3	Overall length of fenders shall be 81 inches	yes.
10.4	Fenders must have factory cut holes for installation of tarp springs, to be provided by MDOT at pre construction meeting	yes.
11.0	**Miscellaneous:**	yes.
11.1	A grease extension kit shall be provided and installed at the front and the rear of the body	yes.
11.2	Rear grease kits shall provide lubrication to both the rear bearings and all pivot points for the tailgate linkage	yes.
11.3	Front grease kits shall provide lubrication to both the upper and lower trunnions on the hoist, front conveyor bearings, and the pivot points for the over center cam that operates the tailgate linkage	yes.
11.4	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes.
11.5	Swing up type side ladder constructed of type 201 stainless steel shall be provided by manufacturer and shipped loose for custom fitting by MDOT	yes.
12.0	**Body Preparation:**	yes.
12.1	Entire body shall be cleaned and rinsed	yes.
12.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
12.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
	END OF SPECIFICATION	yes.
9	**Specification # 04-11SSDMP.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., Hoist and 1/2 Cab Protector** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Crysteel/Select Stainless Steel or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Crysteel Select ss body with Marathon M5399 hoist**
1.0	**Basic Requirements:**	
1.1	MDOT will install this dump box on a 44,000 GVW single axle, cab, and chassis with chassis measurements of approx. 187 inch W.B., 112 inch CA., and 187 inch C.E.	yes.
1.2	Bodies will have holes pierced and studs mounted per MDOT specifications	yes.
1.3	Body shall measure 132 inches long, 40 inch high front, 34 inch high sides and tailgate	yes. Except front is 46" to accommodate hoist doghouse
1.4	Body shall have inside width of 87 inches	yes.
1.5	Body shall have outside width of 96 inches	yes.
1.6	Capacity shall be approximately 8 cubic yards	yes.
1.7	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.8	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.
2.0	**Floor:**	
2.1	Floor shall be constructed of 1/4 inch AR400 plate steel, 180,000 PSI tensile strength and yield of 145,000 PSI	yes. Exceed- floor is AR450,175000 yeild, 205000 tensile
2.2	Floor shall have 9 inch radius wings of 1/4 inch A1011 carbon steel at **sides only**	yes.
3.0	**Understructure:**	yes.
3.1	Understructure shall be cross-memberless	yes.
3.2	All welding shall be continuous	yes.
3.3	Fabricated longsills shall be of 1/4 inch CQ carbon steel inner panels and 1/4 inch CQ carbon steel outer panels	no-10" I beam western understructure
3.4	Interior of longsills shall be coated with rust inhibitor coating at factory	yes.
3.5	Rear rub rail shall be full width, fabricated design, 7-gauge 201 stainless steel, **Channel style rear aprons are not acceptable**	yes.
3.6	Wiring tie down loop of 1/4 inch steel rod shall be installed on the underside of the floor, 3 inches in from the inside of the longsills and 3-1/4 inches forward of the rear rubrail and extend the entire length of the underside of the floor	yes.

3.7	Support plates shall be installed from the rub rails to the floor:	no floor is flush - no supports needed
a.	Open at the front and rear	yes.
b.	Made of A1011 carbon steel	yes.
c.	Notched opening 31-38 inches behind the front corner posts of the body to allow access for tarp arm mounting bracket fasteners	yes.
3.8	Longsills shall have 3 inch passageway in the rear of the longitudinal for wiring	yes.
4.0	**Front Bulkhead & 1/2 Cab Shield:**	
4.1	Front bulkhead shall be constructed of 7-gauge 201 polished stainless steel with pressed in brace for rigidity	no- type 201 2B finish- not polished
4.2	Front sheet to include an enclosure for a front mounted telescopic hoist	yes.
4.3	A hoist mounting that is in front of the body will **not** be acceptable	yes.
4.4	Front of body shall have a 1-1/4 inch wiring hole placed in the lower left corner, center to be 1.875 inches from side and 2 inches up from lower edge	yes.
4.5	1/2 cab shield shall be 100% welded to the front bulkhead at the factory per MDOT measurements	yes.
4.6	1/2 cab shield shall be of 7-gauge 201 stainless steel with flat plate style reinforcements on top	yes.
4.7	Two (2) 9/16 inch holes shall be located on both sides of the cab shield, 1 and 8 inches back from the front of the cab shield, forward hole shall be 1-3/8 inches down from top and they shall be parallel with box sides	yes.
4.8	A grab handle made of 5/8 inch stainless steel rod, 20 inches long and 3 inches high, shall be welded to the cab shield and the bulk head, diagonally	yes.
4.9	Wiring studs 1/4 inch x 3/4 inch stainless steel threaded, shall be installed on the front bulkhead and cab shield:	yes.
a.	Studs shall be placed along the left side of front bulkhead 3 inches in from the left edge of the cab shield beginning 7 inches up from the bottom edge of bulkhead and proceeding vertically on 16 inch centers to the horizontal member of the cab shield. Studs shall be placed on the underside of the cab shield starting 4 inches from the rear bend towards the front of the cab shield on 16 inch centers with one directly inline on front facing return	yes.
4.10	Studs shall be placed on the front of the cab shield horizontally, the first 6 inches in from the left edge on 16 inch centers, 1-1/2 inches down from the top bend	yes.
5.0	**Tailgate:**	
5.1	Tailgate shall be double acting	yes.
5.2	Tailgate shall be fully boxed, double walled design	yes.
5.3	All horizontal surfaces shall be dirt shedding	yes.
5.4	Inner wall shall be 1/4 inch AR400 to match the strength and durability of the floor and shall be primer coated	yes.- exceed, AR450
5.5	Outer wall shall be 10-gauge 201 stainless steel	yes.
5.6	All tailgate hardware on body shall be 201 stainless steel	yes
5.7	Upper tailgate hinges shall be 1-1/2 inch thick 201 stainless steel with 5 inch offset	yes.
5.8	Upper and lower pins shall be 1-1/4 inch 201 stainless steel	yes.
5.9	All tailgate hinges shall be greaseable	yes.
5.10	A 201 stainless steel grab handle shall be located on the lower left corner of the tailgate	yes.
5.11	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.12	Chain shall be removable, 3/8 inch, high tensile plated type	yes
5.13	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.14	All pivot points shall be grease zerk lubricated	yes.
5.15	201 stainless steel latches shall be retractable, grease zerk lubricated, with the zerks located on the outside of the rear corner posts for accessibility	no- Zerk is located inside rear corner post
5.16	Tailgate release shall be air operated	yes.
5.17	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.18	Air cylinder housing shall be aluminum	yes.
5.19	Air cylinder rod shall be stainless steel	yes.
6.0	**Sides:**	
6.1	Sides of dump body shall be 7-gauge 201 stainless steel, 85,000 PSI tensile strength, 35,000 PSI yield strength	yes.
6.2	Finish shall be polished	no- finish is not polished- 201 stainless steel type 2B
6.3	All welds shall be continuous	yes.
6.4	Sides shall have a reverse-bend design	yes.
6.5	Top rail shall be fully boxed and dirt shedding	yes.
6.6	Rubrail shall have 45° slope to the flat side	yes.
6.7	One integral break-formed strengthening brace per side	yes.
6.8	Front pillars shall be full-depth, radiused, 201 stainless steel	yes.
6.9	Rear pillars shall be full-depth, 201 stainless steel with 1 inch center hole and two (2) 11/64 inch holes (one on either side of center hole) for 45° marker light in corner 24 inches from bottom of pillar	yes.
6.10	Pillars shall be dirt shedding	yes.
6.11	Two (2) 11/16 inch holes shall be located on the sloped surface of left & right rubrails, 2-1/2 inches below the breakline, 11 and 13 1/2 inches back from the rear of the front corner post	yes.
6.12	Two (2) threaded wiring studs 1/4 inch x 3/4 inch stainless steel shall be located 4 inches above sloped surface of left & right rubrails, 12 and 20-3/4 inches forward of the rear corner post	yes.
6.13	Three (3) 1-1/2 inch holes shall be located on the sloped surface of the left rub rail, 1-3/4 inches below the break line. They shall be 2, 4-1/2 and 7 inches forward of the rear corner post	yes.
6.14	Two (2) 1-½ inch holes shall be located on the sloped surface of right rubrail, 1-¾ inches below the breakline. They shall be 2 and 4-½ inches forward of the rear corner post	yes.

6.15	Two (2) 9/16 inch holes shall be located on the flat portion of left rubrail, 1 inch down from the breakline, 2 and 11-¼ inches rear of the front corner post	yes.
6.16	Two (2) 9/16 inch holes shall be located on the flat portion of left & right rubrails, 2-1/2 inches below the breakline, 31-1/2 and 37-1/4inches back from the front post	yes.
6.17	A 2 inch tarp rail shall be installed 2 inches above the horizontal side and shall extend from the back side of the of the front corner post to the front side of the rear corner post on each side of the body	yes.
6.18	The tarp rail shall include supports to the body sides located on 24 inch centers	yes.
6.19	Both the tarp rail and the gussets shall be constructed of type 201 stainless steel	yes.
6.20	Holes shall be provided in both rear pillars:	yes.
a.	A 13/16 inch hole shall be located 6-3/4 inches forward of the rear of the pillar and 30-1/2 inches from the bottom of the rubrail	yes.
b.	A 5/8 inch hole shall be located 4-3/4 inches from the rear of the pillar and 30-1/2 inches from the bottom of the rubrail with a 1/2 x 13 stainless steel nut welded on the inside of pillar	yes.
c.	A 1-¼ inch hole shall be located 6-¾ inches forward of the rear of the pillar and 13 inches up from the bottom of the rubrail	yes.
d.	A 5/8 inch hole shall be located 4-¾ inches forward of the rear of the pillar and 13 inches from the bottom of the rubrail	yes.
e.	A 1-1/4 inch hole shall be located 6-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
f.	A 5/8 inch hole shall be located 4-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
g.	A 5/8 inch hole shall be located 3-¾ inches in from the rear of the pillar and ½ inch below the bottom of the rubrail	yes.
h.	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
i.	Left pillar shall have two (2) 3/8 inch holes 10 inches forward of the rear of the pillar, up 7 inches and 10-¼ inches from the bottom of the pillar	yes.
7.0	**Hoist:**	yes.
7.1	Double acting hoist cylinder	yes.
7.2	Hard nitride hoist cylinder surfaces	No- hard chromed- not nitrided
7.3	Inverted, trunnion mounted cylinder	yes.
7.4	5 inch, 4 inch, 3 inch active sections	yes.
7.5	NTEA Class 90, rated at 27.5 tons lift capacity @ 2,500psi and 22.0 tons @ lift capacity @ 2,000psi	yes.
7.6	Cylinder total stroke of 99 inches	yes.
7.7	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x ½ inch x 38 inch, Hinge pins shall be 2-3/8 inch x 8 inch round stainless steel and shall be greaseable	no- hinge is 8" x 4-3/8" x 1/2" x 39"
7.8	Rear body hinge top plate shall not extend rearward more than 4 inches from the centerline of the pivot pin	no- top plates can be eliminated from the hinge package
7.9	Two (2) body props shall be provided to support empty body weight	yes.
7.10	Hoist must be listed in the NTEA dump body hoist chart	yes.
8.0	**Body Preparation:**	
8.1	Entire body shall be cleaned and rinsed	yes
8.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
8.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
	END OF SPECIFICATION	
10	**Specification # 04-11SSDMPUBH.C19 Dump Body, Stainless Steel, 8 cu. yd., 11 ft., with Under Body Hoist and 1/2 Cab Protector** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Crysteel/Select Stainless Steel or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Crysteel Select ss body with RC750 hoist**
1.0	**Basic Requirements:**	yes.
1.1	MDOT will install this dump box on a 44,000 GVW single axle, cab, and chassis with chassis measurements of approx. 187 inch W.B., 112 inch CA., and 187 inch C.E.	yes.
1.2	Bodies will have holes pierced and studs mounted per MDOT specifications	yes.
1.3	Body shall measure 132 inches long, 40 inch high front, 34 inch high sides and tailgate	yes.
1.4	Body shall have inside width of 87 inches	yes.
1.5	Body shall have outside width of 96 inches	yes.
1.6	Capacity shall be approximately 8 cubic yards	yes.
1.7	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.8	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.
2.0	**Floor:**	
2.1	Floor shall be constructed of 1/4 inch AR400 plate steel, 180,000 PSI tensile strength and yield of 145,000 PSI	yes. Exceed- floor is AR450,175000 yeild, 205000 tensile
2.2	Floor shall have 9 inch radius wings of 1/4 inch A1011 carbon steel at **sides only**	yes.
3.0	**Understructure:**	yes.
3.1	Understructure shall be cross-memberless	yes.

3.2	All welding shall be continuous	yes.
3.3	Fabricated longsills shall be of 1/4 inch CQ carbon steel inner panels and 1/4 inch CQ carbon steel outer panels	no- 10" I beam western understructure
3.4	Interior of longsills shall be coated with rust inhibitor coating at factory	yes.
3.5	Rear rub rail shall be full width, fabricated design, 7-gauge 201 stainless steel, **Channel style rear aprons are not acceptable**	yes
3.6	Wiring tie down loop of 1/4 inch steel rod shall be installed on the underside of the floor, 3 inches in from the inside of the longsills and 3-1/4 inches forward of the rear rubrail and extend the entire length of the underside of the floor	yes.
3.7	Support plates shall be installed from the rub rails to the floor:	yes.
a.	Open at the front and rear	yes.
b.	Made of A1011 carbon steel	yes.
c.	Notched opening 31-38 inches behind the front corner posts of the body to allow access for tarp arm mounting bracket fasteners	yes.
3.8	Longsills shall have 3 inch passageway in the rear of the longitudinal for wiring	yes.
4.0	**Front Bulkhead & 1/2 Cab Shield:**	yes.
4.1	Front bulkhead shall be constructed of 7-gauge 201 polished stainless steel with pressed in brace for rigidity	no- type 201 2B finish- not polished
4.2	Front of body shall have a 1-1/4 inch wiring hole placed in the lower left corner, center to be 1.875 inches from side and 2 inches up from lower edge	yes.
4.3	1/2 cab shield shall be 100% welded to the front bulkhead at the factory per MDOT measurements	yes.
4.4	1/2 cab shield shall be of 7-gauge 201 stainless steel with flat plate style reinforcements on top	yes.
4.5	Two (2) 9/16 inch holes shall be located on both sides of the cab shield, 1 and 8 inches back from the front of the cab shield, forward hole shall be 1-3/8 inches down from top and they shall be parallel with box sides	yes.
4.6	A grab handle made of 5/8 inch stainless steel rod, 20 inches long and 3 inches high, shall be welded to the cab shield and the bulk head, diagonally	yes.
4.7	Wiring studs 1/4 inch x 3/4 inch stainless steel threaded, shall be installed on the front bulkhead and cab shield:	yes.
a.	Studs shall be placed along the left side of front bulkhead 3 inches in from the left edge of the cab shield beginning 7 inches up from the bottom edge of bulkhead and proceeding vertically on 16 inch centers to the horizontal member of the cab shield. Studs shall be placed on the underside of the cab shield starting 4 inches from the rear bend towards the front of the cab shield on 16 inch centers with one directly inline on front facing return	yes.
4.8	Studs shall be placed on the front of the cab shield horizontally, the first 6 inches in from the left edge on 16 inch centers, 1-1/2 inches down from the top bend	yes.
5.0	**Tailgate:**	
5.1	Tailgate shall be double acting	yes.
5.2	Tailgate shall be fully boxed, double walled design	yes.
5.3	All horizontal surfaces shall be dirt shedding	yes.
5.4	Inner wall shall be 1/4 inch AR400 to match the strength and durability of the floor and shall be primer coated	yes.- exceed, AR450
5.5	Outer wall shall be 10-gauge 201 stainless steel	yes.
5.6	All tailgate hardware on body shall be 201 stainless steel	yes
5.7	Upper tailgate hinges shall be 1-1/2 inch thick 201 stainless steel with 5 inch offset	yes.
5.8	Upper and lower pins shall be 1-1/4 inch 201 stainless steel	yes.
5.9	All tailgate hinges shall be greaseable	yes.
5.10	A 201 stainless steel grab handle shall be located on the lower left corner of the tailgate	yes.
5.11	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.12	Chain shall be removable, 3/8 inch, high tensile plated type	yes
5.13	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.14	All pivot points shall be grease zerk lubricated	yes.
5.15	201 stainless steel latches shall be retractable, grease zerk lubricated, with the zerks located on the outside of the rear corner posts for accessibility	no- Zerk is located inside rear corner post
5.16	Tailgate release shall be air operated	yes.
5.17	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.18	Air cylinder housing shall be aluminum	yes.
5.19	Air cylinder rod shall be stainless steel	yes.
6.0	**Sides:**	
6.1	Sides of dump body shall be 7-gauge 201 stainless steel, 85,000 PSI tensile strength, 35,000 PSI yield strength	yes.
6.2	Finish shall be polished	no- finish is not polished- 201 stainless steel type 2B
6.3	All welds shall be continuous	yes.
6.4	Sides shall have a reverse-bend design	yes.
6.5	Top rail shall be fully boxed and dirt shedding	yes.
6.6	Rubrail shall have 45° slope to the flat side	yes.
6.7	One integral break-formed strengthening brace per side	yes.
6.8	Front pillars shall be full-depth, radiused, 201 stainless steel	yes.
6.9	Rear pillars shall be full-depth, 201 stainless steel with 1 inch center hole and two (2) 11/64 inch holes (one on either side of center hole) for 45° marker light in corner 24 inches from bottom of pillar	yes.
6.10	Pillars shall be dirt shedding	yes.
6.11	Two (2) 11/16 inch holes shall be located on the sloped surface of left & right rubrails, 2-1/2 inches below the breakline, 11 and 13 1/2 inches back from the rear of the front corner post	yes.

6.12	Two (2) threaded wiring studs 1/4 inch x 3/4 inch stainless steel shall be located 4 inches above sloped surface of left & right rubrails, 12 and 20-3/4 inches forward of the rear corner post	yes.
6.13	Three (3) 1-1/2 inch holes shall be located on the sloped surface of the left rub rail, 1-3/4 inches below the break line. They shall be 2, 4-1/2 and 7 inches forward of the rear corner post	yes.
6.14	Two (2) 1-½ inch holes shall be located on the sloped surface of right rubrail, 1-¾ inches below the breakline. They shall be 2 and 4-½ inches forward of the rear corner post	yes.
6.15	Two (2) 9/16 inch holes shall be located on the flat portion of left rubrail, 1 inch down from the breakline, 2 and 11-¼ inches rear of the front corner post	yes.
6.16	Two (2) 9/16 inch holes shall be located on the flat portion of left & right rubrails, 2-1/2 inches below the breakline, 31-1/2 and 37-1/4inches back from the front post	yes.
6.17	A 2 inch tarp rail shall be installed 2 inches above the horizontal side and shall extend from the back side of the of the front corner post to the front side of the rear corner post on each side of the body	yes.
6.18	The tarp rail shall include supports to the body sides located on 24 inch centers	yes.
6.19	Both the tarp rail and the gussets shall be constructed of type 201 stainless steel	yes.
6.20	Holes shall be provided in both rear pillars:	yes.
a.	A 13/16 inch hole shall be located 6-3/4 inches forward of the rear of the pillar and 30-1/2 inches from the bottom of the rubrail	yes.
b.	A 5/8 inch hole shall be located 4-3/4 inches from the rear of the pillar and 30-1/2 inches from the bottom of the rubrail with a 1/2 x 13 stainless steel nut welded on the inside of pillar	yes.
c.	A 1-¼ inch hole shall be located 6-¾ inches forward of the rear of the pillar and 13 inches up from the bottom of the rubrail	yes.
d.	A 5/8 inch hole shall be located 4-¾ inches forward of the rear of the pillar and 13 inches from the bottom of the rubrail	yes.
e.	A 1-1/4 inch hole shall be located 6-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
f.	A 5/8 inch hole shall be located 4-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
g.	A 5/8 inch hole shall be located 3-¾ inches in from the rear of the pillar and ½ inch below the bottom of the rubrail	yes.
h.	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
i.	Left pillar shall have two (2) 3/8 inch holes 10 inches forward of the rear of the pillar, up 7 inches and 10-¼ inches from the bottom of the pillar	yes.
7.0	**Hoist:**	
7.1	Hoist shall be Crysteel Roller Combo Model # RC 750 or approved equal	yes.
7.2	Hoist shall be NTEA Performance Class 50 NTEA Type VII	yes
7.3	Hoist shall have two, double acting, single stage cylinders	yes.
7.4	Cylinder bore shall be 7 inches	yes.
7.5	Cylinder shaft diameter shall be 2-1/4 inches	yes.
7.6	Cylinder stroke shall be 21-5/8 inches	yes.
7.7	Cylinder shaft shall be nitrite SW85 steel with 85,000psi yield strength	yes.
7.8	Cylinders shall have maximum operating pressure of 2,200psi with internal bypass to protect cylinder from damage	yes.
7.9	Cylinder base (raise) port size shall be SAE-12 (7/8-14)	yes.
7.10	Rod port (lower) shall be SAE-8 (3/4-16)	yes.
7.11	Cylinder Displacement:	yes.
a.	Up shall be 832.2 cubic inches	yes.
b.	Down shall be 746.5.4 cubic inches	yes.
7.12	Load capacity shall be 15.3 tons @ 50° dump angle	yes
7.13	Hoist shall have 13-3/4 inch mounting height	yes.
7.14	Hoist shall have “Roller Combo” design with the initial lift point ahead of the center line of the body, directing the force of the hoist cylinder upwards for more breakaway power before transferring it to a scissors action	yes.
7.15	Greaseless composite bearings shall be provided at all critical pivot points	yes.
7.16	Hoist shall have full length sub-frame that is the same length as the dump body	yes.
7.17	Sub-frame shall have 4-3/4 inch high, “C” channel frame rails fabricated of ¼ inch A1011 steel with 50,000psi yield and 65,000psi tensile strength	yes.
7.18	Remote grease kit - Hoist shall have a grease fitting bulkhead for the primary hoist pivot, located on the right (passenger) side and have Four (4) grease zerks	yes.
7.19	Rear hinge shall be fabricated with structural steel angle that is 5 inch x 3 inch x 3/8 inch x 36-1/2 inch	no- hinge is 8" x 4-3/8" x 1/2" x 39" pin is 2-1/4" x 8" long
7.20	Hinge pins shall be 1-3/4 inch x 5-13/16 inch round stainless steel with greaseless composite bearings	no
7.21	Two (2) body props shall be provided to support empty body weight	yes.
7.22	Hoist must be listed in the NTEA dump body hoist chart	yes.
8.0	**Body Preparation:**	
8.1	Entire body shall be cleaned and rinsed	yes.
8.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
8.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
	END OF SPECIFICATION	

11	**Specification # 04-14CBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Rear Discharge and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/DVS-168-96-56 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe model DVS168-96-56/201 rear discharge 00188377-C**
1.0	**Basic Requirements:**	yes.
1.1	MDOT will install this dump box on a 64,000 GVW tandem axle, cab, and chassis with chassis measurements of approx. 218 inch W.B., 136 inch CA., and 192 inch C.E.	yes.
1.2	14 foot combination 45° slope side dump and spreader bodies which shall consist of self-unloading dump bodies constructed of a type 201 stainless steel body, dump hoist, discharge/feed conveyor.	yes.
1.3	Body shall have an approximate struck capacity of 10 cu/yd minimum for rear discharge without removable side boards	yes.
1.4	Bodies will have holes pierced and wire tie studs mounted per MDOT specifications	yes.
1.5	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.
1.6	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.7	All lighting shall be provided by MDOT	yes.
2.0	**Body:**	yes.
2.1	Bodies shall be of type 201 stainless steel construction	yes.
2.2	Overall height above truck frame shall not exceed 55 inches without cab shield	yes.
2.3	Top inside width of body shall be approximately 89 inches and outside width shall not exceed 96 inches	yes.
2.4	Top of floor to the top of the side wall shall be approximately 44 inches	yes.
2.5	Body shall be rigidly constructed with a boxed top rail construction of 7 gauge type 201 stainless steel, 5 inch height x 4 inch depth	yes.
2.6	Sides shall include vertical channel type ribs, approximately 4 inches wide x 2 inches deep constructed of 7 gauge type 201 stainless steel, spaced on 36 inch centers minimum	yes.
2.7	Body longitudinal shall be constructed of ¼ inch type 201 stainless steel with minimum 12 inch height and include two (2) 3 inch ID cross over tubes for installation of hydraulic hoses and wiring	yes.
2.8	Rear of body longsills must be slotted to facilitate removal of drive system	yes.
2.9	Drive system including gearboxes, drive shaft, sprockets and bearings, must be removable as an assembly	yes.
2.10	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x ½ inch x 38 inch, Hinge pins shall be 2-3/8 inch x 8 inch round stainless steel and shall be greaseable	yes.
2.11	Rear body hinge top plate shall not extend rearward more than 4 inches from the centerline of the pivot pin	yes.
2.12	A 1.25 inch x ¼ inch, 201 stainless steel flat stock tarp tie rail, welded to side braces, full length of body	yes.
2.13	Tarp tie rail shall be installed just below the 45° break on the side braces	yes.
2.14	Two (2) body props shall be provided to support empty body weight	yes.
2.15	Body floor shall be 1/4inch 201 stainless steel and shall be bolted in with 1 inch welds at all four corners, and be supported by 7 gauge 3 inch x 3 inch cross angles located on 12 inch centers, and shall have rear "roller" lip with wiper belt	yes.
2.16	Body longitudinal shall be supported under chain by 4 inch formed cross members on 24 inch centers	yes.
2.17	All channel supports under the floor shall be constructed of ¼ inch type 201 stainless steel	yes.
2.18	Return angle on the longitudinal shall be 4-½ inch boxed type for additional support and any retention of material	yes.
2.19	All joints on body shall be continuous welded	yes.
2.20	Four (4) covered access openings shall be provided below the body interior on the rear facing panel:	yes.
a.	For accessing the rear gear boxes for maintenance	yes.
b.	For installation of rear attachments/accessories	yes.
2.21	Two (2) covered access openings shall be provided on the forward facing panel of the rear corner post	yes.
2.22	Rear of body shall be flat to allow installation of MDOT approved accessories	yes.
2.23	Rear corner posts shall be boxed in and drilled and tapped to accept MDOT rear lighting arrangement	yes.
2.24	Both rear side posts shall have one (1) 1-1/2 inch hole, two (2) 1-¼ inch holes, one (1) 13/16 inch hole and four (4) 9/16 inch holes with ½ inch stainless steel nuts welded to the backside	yes.
2.25	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
2.26	Body sides shall be 45° sloped	yes.
2.27	Additional wire/cable retention studs shall be installed, per MDOT specifications	yes.
3.0	**Head Sheet:**	yes.
3.1	Head sheet shall be constructed of 7 gauge type 201 stainless steel and be sloped 45° back	yes.
3.2	Front of body shall be sloped to accommodate a trunnion-mounted cylinder with partial doghouse and conform to the 45° slope of the body, 100% welded on the inside and outside	yes.
3.3	Front sheet to include an enclosure for a front mounted telescopic hoist	yes.
3.4	Cylinders mounted forward of the front of the body will **NOT** be acceptable	yes.
3.5	Front shall be at least 6 inches higher than the sides	yes.
3.6	All horizontal surfaces shall be dirt shedding	yes.
3.7	All bolts used shall be stainless steel	yes.
3.8	All areas of body shall be constructed to withstand heavy duty use as a dump and as a spreader	yes.
3.9	Body shall include all items needed to be fully operational	Yes

3.10	All items which are normally furnished as standard equipment shall be supplied and shall conform in strength, quality of material, and workmanship to best commercial practice	yes.
4.0	**Conveyor:**	yes.
4.1	Conveyor shall be pintle chain type running longitudinally with the body feeding material to the hinged rear end-gate opening	yes.
4.2	Conveyor shall not extend past the vertical tailgate	yes.
4.3	Overall conveyor width shall be 34 inches minimum	yes.
4.4	Conveyor chain shall be heat-treated 2-¼ inch pitch pintle type with .224 inch link thickness, 15/32 inch pin diameter and have a 26,000 pound minimum average tensile strength, manufactured in the USA	yes.
4.5	Cross bars ½ inch x 1-½ inch shall be positioned on approximately 2-¼ inch centers and welded on both the top and bottom of the bar	yes.
4.6	Eight toothed, case hardened to 40-48 Rc, self-cleaning drive sprockets shall be keyed to the 2 inch drive and idler shafts	yes.
4.7	Conveyor drive shaft shall have heavy duty, dust sealed self-aligning four bolt flange bearings	yes.
4.8	Heavy duty idler assembly with side rail style adjusters and 1-¼ inch adjusting bolt shall provide 9 inches of adjustment for proper conveyor chain tension	yes.
5.0	**Tailgate:**	yes.
5.1	Tailgate shall be minimum of 6 inches higher than sides of body	yes.
5.2	Tailgate shall be manufactured of minimum 3/16 inch, type 201 stainless steel with, 5 panel, boxed perimeter of 3 inch formed channel	yes.
5.3	Tailgate shall have a 3 inch x 3 inch D-ring welded to the top center of tailgate	yes.
5.4	Tailgate shall be double acting with squared perimeter and two (2) horizontal braces of 3/16 inch material the full width of the tailgate	yes.
5.5	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.6	Chain shall be removable, 3/8 inch, high tensile plated type	yes.
5.7	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.8	Tailgate shall have a 5/8 inch stainless rod by a minimum 7 inch grip handle located in the lower left hand corner	yes.
5.9	Material door shall extend 16 inches into the interior of the body to prevent material from escaping through the partially opened door over the conveyor	yes.
5.10	An adjustable discharge gate or door with an opening of at least 21 inches x 8-½ inches of a minimum of ¼ inch thick with a heavy duty screw-type operated adjustment mechanism on passenger's side and at bottom edge of tailgate	yes.
5.11	Feedgate must have infinite positions and include ruler to indicate gate opening height	yes.
5.12	Tailgate shall have 1 inch x 4 inch bar stock tailgate hardware with 1-¼ inch hardened pins	yes.
5.13	Tailgate latches shall be 1 inch flame cut with each latch being adjustable, over center type	yes.
5.14	Tailgate latches shall be air operated	yes.
5.15	Air cylinder must provide power latch and power release, spring assist latching systems are **not acceptable**	yes.
5.16	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.17	Air cylinder housing shall be aluminum	yes.
5.18	Air cylinder rod shall be stainless steel	yes.
5.19	Cylinder kits shall fit the existing brackets body without modification	yes
6.0	**Power Drive and Controls:**	yes.
6.1	Two (2) high torque, variable speed 6:1 gearboxes and hydraulic motors with ground speed sensor having 100 pulses/revolution capability on one of the gearboxes shall be provided	yes.
6.2	Sensor shall be a Hall Effect speed type	yes.
6.3	Rear discharge bodies shall have drive located at the rear of the conveyor	yes.
6.4	Hydraulic drive shall include two (2) geroler-type, high-torque, low speed hydraulic motors 12.1 CID, integrally mounted to the conveyor gear cases	yes.
6.5	Hydraulic tubing shall be stainless steel, rated along with hydraulic hose to withstand 1-½ times system operating pressure requirements	No hydraulic tubing is required for a rear discharge unit
6.6	Hydraulic tubing shall be ¾ inch minimum I.D.	yes.
6.7	All tubing shall be secured to body with polymer retaining blocks	yes.
7.0	**Hoist:**	yes.
7.1	Double acting hoist cylinder	yes.
7.2	Hard nitride hoist cylinder surfaces	No. Cylinder is hard chromed- not nitrated
7.3	Inverted, trunnion mounted cylinder	yes.
7.4	5 inch, 4 inch, 3 inch active sections	yes.
7.5	NTEA Class 120, rated at 46.4 tons lift capacity @ 2,500psi and 37.1 tons @ lift capacity @ 2,000psi	yes.
7.6	Cylinder total stroke of 138 inches	yes.
7.7	Hoist must be listed in the NTEA dump body hoist chart	yes.
8.0	**Cab Protector:**	yes.
8.1	Half cab protector shall be 7 gauge type 201 steel, installed by vendor on the front of the body	yes.
8.2	All welding shall be continuous	yes.
8.3	End plates shall be streamlined to prevent sharp corners or edges	yes.
a.	A stainless steel grab handle shall be located on the cab protector	yes.
b.	Cab protector shall extend forward of the body a minimum of 24 inches	yes.
c.	Stainless steel studs for wire and cable retention shall be on the cab protector as well as the body	yes.

8.4	MDOT will notify successful vendor of the proper mounting height of cab protector and stud location prior to construction	yes.
9.0	**Fenders:**	yes.
9.1	Body shall be equipped with 7 gauge type 201 stainless steel fenders	yes.
9.2	Fenders shall be sufficiently constructed and supported so as to allow for mounting of 100 gallon liquid tanks on each side of the body	yes.
9.3	Overall length of fenders shall be 108 inches	yes.
9.4	Fenders must have factory cut holes for installation of tarp springs, to be provided by MDOT at pre construction meeting	yes.
10.0	**Miscellaneous:**	yes.
10.1	A grease extension kit shall be provided and installed at the front and the rear of the body	yes.
10.2	Rear grease kits shall provide lubrication to both the rear bearings and all pivot points for the tailgate linkage	yes.
10.3	Front grease kits shall provide lubrication to both the upper and lower trunnions on the hoist, front conveyor bearings, and the pivot points for the over center cam that operates the tailgate linkage	yes.
10.4	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes.
10.5	Swing up type side ladder constructed of type 201 stainless steel shall be provided by manufacturer and shipped loose for custom fitting by MDOT	yes.
11.0	**Body Preparation:**	yes.
11.1	Entire body shall be cleaned and rinsed	yes.
11.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
11.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
	END OF SPECIFICATION	
12	**Specification # 04-14CBBDYDA.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Dual Auger, Hoist, Rear Discharge and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/DVS-168-96-56 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe DVS168-96-56/201/DA part no 00182934-C**
1.0	**Basic Requirements:**	yes.
1.1	MDOT will install this dump box on a 64,000 GVW tandem axle, cab, and chassis with chassis measurements of approx. 218 inch W.B., 136 inch CA., and 192 inch C.E.	yes.
1.2	14 foot combination 45° slope side dump and spreader bodies which shall consist of self-unloading dump bodies constructed of a type 201 stainless steel body, dump hoist, discharge/feed conveyor.	yes.
1.3	Body shall have an approximate struck capacity of 10 cu/yd minimum for rear discharge without removable side boards	yes.
1.4	Bodies will have holes pierced and wire tie studs mounted per MDOT specifications	yes.
1.5	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.
1.6	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.7	All lighting shall be provided by MDOT	yes.
2.0	**Body:**	yes.
2.1	Bodies shall be of type 201 stainless steel construction	yes.
2.2	Overall height above truck frame shall not exceed 55 inches without cab shield	yes.
2.3	Top inside width of body shall be approximately 89 inches and outside width shall not exceed 96 inches	yes.
2.4	Top of trough to the top of the side wall shall be approximately 44 inches	yes.
2.5	Body shall be rigidly constructed with a boxed top rail construction of 7 gauge type 201 stainless steel, 5 inch height x 4 inch depth	yes.
2.6	Sides shall include vertical channel type ribs, approximately 4 inches wide x 2 inches deep constructed of 7 gauge type 201 stainless steel, spaced on 36 inch centers minimum	yes.
2.7	Body longitudinal shall be constructed of ¼ inch type 201 stainless steel with minimum 12 inch height and include two (2) 3 inch ID cross over tubes for installation of hydraulic hoses and wiring	yes.
2.8	Rear of body longsills must be slotted to facilitate removal of drive system	Not Necessary- Dual auger drive motors are at the front
2.9	Drive system including gearboxes must be removable as an assembly	REMOVEABLE PLANETARY GEAR BOXES- INDIVIDUALLY REMOVEABLE ON AUGER DVS
2.10	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x ½ inch x 38 inch, Hinge pins shall be 2-3/8 inch x 8 inch round stainless steel and shall be greaseable	yes.
2.11	Rear body hinge top plate shall not extend rearward more than 4 inches from the centerline of the pivot pin	yes.
2.12	A 1.25 inch x ¼ inch, 201 stainless steel flat stock tarp tie rail, welded to side braces, full length of body	yes.
2.13	Tarp tie rail shall be installed just below the 45° break on the side braces	yes.
2.14	Two (2) body props shall be provided to support empty body weight	yes.
2.15	Body auger trough shall be bolted in with 3/8 inch bolts on 12 inch centers and supported by 7 gauge 4 inch cross angles located on 24 inch centers. The longitudinal will be boxed with 1/4 inch plate interlaced with the cross angles	yes.
2.16	Body longitudinal shall be supported under the trough by 4 inch formed cross members on 24 inch centers	yes.
2.17	All channel supports under the floor shall be constructed of ¼ inch type 201 stainless steel	yes.

2.18	Return angle on the longitudinal shall be 4-½ inch boxed type for additional support and any retention of material	yes.
2.19	All joints on body shall be continuous welded	yes.
2.20	Two (2) covered access openings shall be provided below the body interior on the rear facing corner panel	no- not needed on dual auger system
2.21	Two (2) covered access openings shall be provided on the forward facing panel of the rear corner post	yes.
a.	For accessing the rear linkage and wiring for maintenance	yes.
b.	For installation of rear attachments/accessories	yes.
2.22	Rear of body shall be flat to allow installation of MDOT approved accessories	yes.
2.23	Rear corner posts shall be boxed in and drilled and tapped to accept MDOT rear lighting arrangement	yes.
2.24	Both rear side posts shall have one (1) 1-1/2 inch hole, two (2) 1-¼ inch holes, one (1) 13/16 inch hole and four (4) 9/16 inch holes with ½ inch stainless steel nuts welded to the backside	yes.
2.25	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
2.26	Body sides shall be 45° sloped	yes.
2.27	Additional wire/cable retention studs shall be installed, per MDOT specifications	yes
3.0	**Head Sheet:**	yes.
3.1	Head sheet shall be constructed of 7 gauge type 201 stainless steel and be sloped 45° back	yes.
3.2	Front of body shall be sloped to accommodate a trunnion-mounted cylinder with partial doghouse and conform to the 45° slope of the body, 100% welded on the inside and outside	yes.
3.3	Front sheet to include an enclosure for a front mounted telescopic hoist	yes.
3.4	Cylinders mounted forward of the front of the body will **NOT** be acceptable	yes.
3.5	Front shall be at least 6 inches higher than the sides	yes.
3.6	All horizontal surfaces shall be dirt shedding	yes.
3.7	All bolts used shall be stainless steel	yes.
3.8	All areas of body shall be constructed to withstand heavy duty use as a dump and as a spreader	yes.
3.9	Body shall include all items needed to be fully operational	yes
3.10	All items which are normally furnished as standard equipment shall be supplied and shall conform in strength, quality of material, and workmanship to best commercial practice	yes.
4.0	**Conveyor:**	yes.
4.1	Conveyor shall be dual 7 inch OD augers running longitudinally with the body feeding material to the rear discharge ramp opening	yes.
4.2	Conveyor shall not extend past the vertical tailgate	yes.
4.3	Overall conveyor trough width shall be approximately 34 inches	no- dual auger trough
4.4	Bolt in conveyor trough shall have 37 degree sloped out sides and an intergral 8 inch high centered inverted "V" to separate the augers and shall be 1/4 inch type 201 stainless steel	yes.
4.5	The dual auger drive system will be bolted to the 3/8 inch gearbox mounting plate that is welded to the front of the long member weldment	yes.
4.6	Counter rotating, hard surfaced 7 inch OD augers with 1/2 inch progessive flighting with 4-1/2 inch pitch, 6-1/2 inch pitch and 8-3/4 inch pitch welded to schedule 80, 3-1/2 inch pipe. One auger with right hand helical and one auger with left hand helical flighting	yes.
5.0	**Tailgate:**	yes.
5.1	Tailgate shall be minimum of 6 inches higher than sides of body	yes.
5.2	Tailgate shall be manufactured of minimum 3/16 inch, type 201 stainless steel with, 5 panel, boxed perimeter of 3 inch formed channel	yes.
5.3	Tailgate shall have a 3 inch x 3 inch D-ring welded to the top center of tailgate	yes.
5.4	Tailgate shall be double acting with squared perimeter and two (2) horizontal braces of 3/16 inch material the full width of the tailgate	yes.
5.5	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.6	Chain shall be removable, 3/8 inch, high tensile plated type	yes
5.7	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.8	Tailgate shall have a 5/8 inch stainless rod by a minimum 7 inch grip handle located in the lower left hand corner	yes.
5.9	Tailgate shall have 1 inch x 4 inch bar stock tailgate hardware with 1-¼ inch hardened pins	yes.
5.10	Tailgate latches shall be 1 inch flame cut with each latch being adjustable, over center type	yes.
5.11	Tailgate latches shall be air operated	yes.
5.12	Air cylinder must provide power latch and power release, spring assist latching systems are **not acceptable**	yes.
5.13	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.14	Air cylinder housing shall be aluminum	yes.
5.15	Air cylinder rod shall be stainless steel	yes.
5.16	Cylinder kits shall fit the existing brackets body without modification	yes
6.0	**Power Drive and Controls:**	yes.
6.1	Two (2) high torque, variable speed 3.6:1 planetary gearboxes and 14 tooth 24.9 CID hydraulic motors with ground speed sensor having 100 pulses/revolution capability on one of the gearboxes shall be provided	yes.
6.2	Gearboxs will float on the drive system mounting plate	yes.
6.3	Sensor shall be a Hall Effect speed type	yes.
6.4	Gearbox drive shafts will be isolated from the auger tube with an ABS plastic bushing and bolted to the auger shaft with 7/8 inch bolt and nut	yes.
6.5	Ther rear 3/8 inch idler plate will have two (2) two inch 4 -bolt flange bearings bolted to the plate and the 2 inch idler shafts will have ABS plastic bushings and be bolted to the auger tube using 7/8 inch bolts and nuts	yes.

6.6	Hydraulic tubing shall be stainless steel, rated along with hydraulic hose to withstand 1-½ times system operating pressure requirements	yes.
6.7	Hydraulic tubing shall be ¾ inch minimum I.D.	yes.
6.8	All tubing shall be secured to body with polymer retaining blocks	yes.
7.0	**Top Grates:**	yes.
7.1	One piece removable, bolt in top grates shall be provided. Grates will be designed to be retained within the board pockets front and rear on both sides of the body	yes.
7.2	The grate kit will have a centered 3-1/2 inch schdule 80 beam supported front and rear with a 2 inch x 4 inch x 1/4 inch tube welded to the 1/4 inch formed angles that sit on the top rails of the body	yes.
7.3	The top screens shall be constructed of 3/8 inch rods welded to form a 2-1/2 inch square mesh which is formed by a combination of 1/4 inch x 1-1/2 flat steel and 2 inch angle iron with the edge supports reinforced by1/4 inch x 1 inch flat steel bars	yes.
7.4	Top grates will be bolted to the top beam mounting brackets and be secured to prevent opening with out tools	yes.
8.0	**Hoist:**	yes.
8.1	Double acting hoist cylinder	yes.
8.2	Hard nitride hoist cylinder surfaces	No- hard chromed- not nitrided
8.3	Inverted, trunnion mounted cylinder	yes.
8.4	5 inch, 4 inch, 3 inch active sections	yes.
8.5	NTEA Class 120, rated at 46.4 tons lift capacity @ 2,500psi and 37.1 tons @ lift capacity @ 2,000psi	yes.
8.6	Cylinder total stroke of 138 inches	yes.
8.7	Hoist must be listed in the NTEA dump body hoist chart	yes.
9.0	**Cab Protector:**	yes.
9.1	Half cab protector shall be 7 gauge type 201 steel, installed by vendor on the front of the body	yes.
9.2	All welding shall be continuous	yes.
9.3	End plates shall be streamlined to prevent sharp corners or edges	yes.
a.	A stainless steel grab handle shall be located on the cab protector	yes.
b.	Cab protector shall extend forward of the body a minimum of 24 inches	yes.
c.	Stainless steel studs for wire and cable retention shall be on the cab protector as well as the body	yes.
9.4	MDOT will notify successful vendor of the proper mounting height of cab protector and stud location prior to construction	yes.
10.0	**Fenders:**	yes.
10.1	Body shall be equipped with 7 gauge type 201 stainless steel fenders	yes.
10.2	Fenders shall be sufficiently constructed and supported so as to allow for mounting of 100 gallon liquid tanks on each side of the body	yes.
10.3	Overall length of fenders shall be 108 inches	yes.
10.4	Fenders must have factory cut holes for installation of tarp springs, to be provided by MDOT at pre construction meeting	yes.
11.0	**Miscellaneous:**	yes.
11.1	A grease extension kit shall be provided and installed at the front and the rear of the body	yes.
11.2	Rear grease kits shall provide lubrication to both the rear bearings and all pivot points for the tailgate linkage	yes.
11.3	Front grease kits shall provide lubrication to both the upper and lower trunnions on the hoist, front conveyor bearings, and the pivot points for the over center cam that operates the tailgate linkage	yes.
11.4	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes.
11.5	Swing up type side ladder constructed of type 201 stainless steel shall be provided by manufacturer and shipped loose for custom fitting by MDOT	yes.
12.0	**Body Preparation:**	yes.
12.1	Entire body shall be cleaned and rinsed	yes.
12.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
12.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
	END OF SPECIFICATION	yes.
13	**Specification # 04-14FCBBDY.C19 14 ft. Combination 45 degree Sloped Side Dump and Spreader Body, Hoist, Front and Rear Discharge Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/DVS-168-96-56 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe model DVS168-96-56/201/front-rear**
1.0	**Basic Requirements:**	
1.1	MDOT will install this dump box on a 64,000 GVW tandem axle, cab, and chassis with chassis measurements of approx. 218 inch W.B., 136 inch CA., and 192 inch C.E.	yes.
1.2	14 foot combination 45° slope side dump and spreader bodies which shall consist of self-unloading dump bodies constructed of a type 201 stainless steel body, dump hoist, discharge/feed conveyor.	yes.
1.3	Body shall have an approximate struck capacity of 10 cu/yd minimum for rear discharge without removable side boards	yes.
1.4	Bodies will have holes pierced and wire tie studs mounted per MDOT specifications	yes.
1.5	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.

1.6	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.7	All lighting shall be provided by MDOT	yes.
2.0	**Body:**	yes.
2.1	Bodies shall be of type 201 stainless steel construction	yes.
2.2	Overall height above truck frame shall not exceed 55 inches without cab shield	yes.
2.3	Top inside width of body shall be approximately 89 inches and outside width shall not exceed 96 inches	yes.
2.4	Top of floor to the top of the side wall shall be approximately 44 inches	yes.
2.5	Body shall be rigid construction with a boxed top rail of 7 gauge type 201 stainless steel, 5" height x 4" depth	yes.
2.6	Sides shall include vertical channel type ribs, approximately 4 inches wide x 2 inches deep constructed of 7 gauge type 201 stainless steel, spaced on 36 inch centers minimum	yes.
2.7	Body longitudinal shall be constructed of ¼ inch type 201 stainless steel with minimum 12 inch height and include two (2) 3 inch ID cross over tubes for installation of hydraulic hoses and wiring	yes.
2.8	Rear of body longsills must be slotted to facilitate removal of drive system	yes.
2.9	Drive system including gearboxes, drive shaft, sprockets and bearings, must be removable as an assembly	yes.
2.10	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x ½ inch x 38 inch, Hinge pins shall be 2-3/8 inch x 8 inch round stainless steel and shall be greaseable	yes.
2.11	Rear body hinge top plate shall not extend rearward more than 4 inches from the centerline of the pivot pin	yes.
2.12	A 1.25 inch x ¼ inch, 201 stainless steel flat stock tarp tie rail, welded to side braces, full length of body	yes.
2.13	Tarp tie rail shall be installed just below the 45° break on the side braces	yes.
2.14	Two (2) body props shall be provided to support empty body weight	yes.
2.15	Body floor shall be 1/4inch 201 stainless steel and shall be bolted in with 1 inch welds at all four corners, and be supported by 7 gauge 3 inch x 3 inch cross angles located on 12 inch centers, and shall have rear "roller" lip with wiper belt	yes.
2.16	Body longitudinal shall be supported under chain by 4 inch formed cross members on 24 inch centers	yes.
2.17	All channel supports under the floor shall be constructed of ¼ inch type 201 stainless steel	yes.
2.18	Return angle on the longitudinal shall be 4-½ inch boxed type for additional support and any retention of material	yes.
2.19	All joints on body shall be continuous welded	yes.
2.20	Four (4) covered access openings shall be provided below the body interior on the rear facing panel:	yes.
a.	For accessing the rear gear boxes for maintenance	yes.
b.	For installation of rear attachments/accessories	yes.
2.21	Two (2) covered access openings shall be provided on the forward facing panel of the rear corner post	yes.
2.22	Rear of body shall be flat to allow installation of MDOT approved accessories	yes.
2.23	Rear corner posts shall be boxed in and drilled and tapped to accept MDOT rear lighting arrangement	yes.
2.24	Both rear side posts shall have one (1) 1-1/2 inch hole, two (2) 1-¼ inch holes, one (1) 13/16 inch hole and four (4) 9/16 inch holes with ½ inch stainless steel nuts welded to the backside	yes.
2.25	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
2.26	Body sides shall be 45° sloped	yes.
2.27	Additional wire/cable retention studs shall be installed, per MDOT specifications	yes.
3.0	**Head Sheet:**	
3.1	Head sheet shall be constructed of 7 gauge type 201 stainless steel and be sloped 45° back	yes.
3.2	Front of body shall be sloped to accommodate a trunnion-mounted cylinder with partial doghouse and conform to the 45° slope of the body, 100% welded on the inside and outside	yes.
3.3	Front sheet to include an enclosure for a front mounted telescopic hoist	yes.
3.4	Cylinders mounted forward of the front of the body will **NOT** be acceptable	yes.
3.5	Front shall be at least 6 inches higher than the sides	yes.
3.6	All horizontal surfaces shall be dirt shedding	yes.
3.7	All bolts used shall be stainless steel	yes.
3.8	All areas of body shall be constructed to withstand heavy duty use as a dump and as a spreader	yes.
3.9	Body shall include all items needed to be fully operational	yes
3.10	All items which are normally furnished as standard equipment shall be supplied and shall conform in strength, quality of material, and workmanship to best commercial practice	yes.
4.0	**Conveyor:**	
4.1	Conveyor shall be pintle chain type running longitudinally with the body feeding material to the hinged rear end-gate opening	yes.
4.2	Conveyor shall not extend past the vertical tailgate	yes.
4.3	Overall conveyor width shall be 34 inches minimum	yes.
4.4	Conveyor chain shall be heat-treated 2-¼ inch pitch pintle type with .224 inch link thickness, 15/32 inch pin diameter and have a 26,000 pound minimum average tensile strength, manufactured in the USA	yes.
4.5	Cross bars ½ inch x 1-½ inch shall be positioned on approximately 2-¼ inch centers and welded on both the top and bottom of the bar	yes.
4.6	Eight toothed, case hardened to 40-48 Rc, self-cleaning drive sprockets shall be keyed to the 2" drive and idler shafts	yes.
4.7	Conveyor drive shaft shall have heavy duty, dust sealed self-aligning four bolt flange bearings	yes.
4.8	Heavy duty idler assembly with side rail style adjusters and 1-¼ inch adjusting bolt shall provide 9 inches of adjustment for proper conveyor chain tension	yes.
5.0	**Tailgate:**	yes.

5.1	Tailgate shall be minimum of 6 inches higher than sides of body	yes.
5.2	Tailgate shall be manufactured of min. 3/16", type 201 stainless steel with, 5 panel, boxed perimeter of 3" formed channel	yes.
5.3	Tailgate shall have a 3 inch x 3 inch D-ring welded to the top center of tailgate	yes.
5.4	Tailgate shall be double acting with squared perimeter and two (2) horizontal braces of 3/16 inch material the full width of the tailgate	yes.
5.5	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.6	Chain shall be removable, 3/8 inch, high tensile plated type	yes
5.7	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.8	Tailgate shall have a 5/8 inch stainless rod by a minimum 7 inch grip handle located in the lower left hand corner	yes.
5.9	Material door shall extend 16 inches into the interior of the body to prevent material from escaping through the partially opened door over the conveyor	yes.
5.10	An adjustable discharge gate or door with an opening of at least 21 inches x 8-½ inches of a minimum of ¼ inch thick with a heavy duty screw-type operated adjustment mechanism on passenger's side and at bottom edge of tailgate	yes.
5.11	Feedgate must have infinite positions and include ruler to indicate gate opening height	yes.
5.12	Tailgate shall have 1 inch x 4 inch bar stock tailgate hardware with 1-¼ inch hardened pins	yes.
5.13	Tailgate latches shall be 1 inch flame cut with each latch being adjustable, over center type	yes.
5.14	Tailgate latches shall be air operated	yes.
5.15	Air cylinder must provide power latch and power release, spring assist latching systems are **not acceptable**	yes.
5.16	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.17	Air cylinder housing shall be aluminum	yes.
5.18	Air cylinder rod shall be stainless steel	yes.
5.19	Cylinder kits shall fit the existing brackets body without modification	yes
6.0	**Power Drive and Controls:**	
6.1	Two (2) high torque, variable speed 6:1 gearboxes and hydraulic motors with ground speed sensor having 100 pulses/revolution capability on one of the gearboxes shall be provided	yes.
6.2	Sensor shall be a Hall Effect speed type	yes.
6.3	Rear discharge bodies shall have drive located at the rear of the conveyor	yes.
6.4	Hydraulic drive shall include two (2) geroler-type, high-torque, low speed hydraulic motors 12.1 CID, integrally mounted to the conveyor gear cases	yes.
6.5	Hydraulic tubing shall be stainless steel, rated along with hydraulic hose to withstand 1-½ times system operating pressure requirements	yes.
6.6	Hydraulic tubing shall be ¾ inch minimum I.D.	yes.
6.7	All tubing shall be secured to body with polymer retaining blocks	yes.
7.0	**Hoist:**	
7.1	Double acting hoist cylinder	yes.
7.2	Hard nitride hoist cylinder surfaces	No- hard chromed- not nitrided
7.3	Inverted, trunnion mounted cylinder	yes.
7.4	5 inch, 4 inch, 3 inch active sections	yes.
7.5	NTEA Class 120, rated at 46.4 tons lift capacity @ 2,500psi and 37.1 tons @ lift capacity @ 2,000psi	yes.
7.6	Cylinder total stroke of 138 inches	yes.
7.7	Hoist must be listed in the NTEA dump body hoist chart	yes.
8.0	**Cab Protector:**	
8.1	Half cab protector shall be 7 gauge type 201 steel, installed by vendor on the front of the body	yes.
8.2	All welding shall be continuous	yes.
8.3	End plates shall be streamlined to prevent sharp corners or edges	yes.
a.	A stainless steel grab handle shall be located on the cab protector	yes.
b.	Cab protector shall extend forward of the body a minimum of 24 inches	yes.
c.	Stainless steel studs for wire and cable retention shall be on the cab protector as well as the body	yes.
8.4	MDOT will notify Contractor of the proper mounting height of cab protector and stud location prior to construction	yes.
9.0	**Fenders:**	
9.1	Body shall be equipped with 7 gauge type 201 stainless steel fenders	yes.
9.2	Fenders shall be sufficiently constructed and supported so as to allow for mounting of 100 gallon liquid tanks on each side of the body	yes.
9.3	Overall length of fenders shall be 108 inches	yes.
9.4	Fenders must have factory cut holes for installation of tarp springs, provided by MDOT at pre-construction meeting	yes.
10.0	**Miscellaneous:**	
10.1	A grease extension kit shall be provided and installed at the front and the rear of the body	yes.
10.2	Rear grease kits shall provide lubrication to both the rear bearings and all pivot points for the tailgate linkage	yes.
10.3	Front grease kits shall provide lubrication to both the upper and lower trunnions on the hoist, front conveyor bearings, and the pivot points for the over center cam that operates the tailgate linkage	yes.
10.4	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes.
10.5	Swing up type side ladder constructed of type 201 stainless steel shall be provided by manufacturer and shipped loose for custom fitting by MDOT	yes.
11.0	**Body Preparation:**	yes.

11.1	Entire body shall be cleaned and rinsed	yes.
11.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
11.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	no- entire underside of the body is stainless steel construction. No paint is needed
	see note below on front cross augers included with the front discharge unit	
	The cross auger assembly shall be designed to be installed within the long members of the 23" X 12" rectangular opening of a DVS front discharge live floor body. **The cross auger assembly will be installed on top of the chassis frame within the openings and remain stationary when the body is raised.** **The cross auger assembly will have the ability to discharge front left or right .** **The auger trough weldment will be manufactured of 7-gauge 201 stainless steel and be 20" in depth, 76" in width and 18" in overall height.** **The trough will have 30° sloped sides front and rear and 10" x 11" bottom openings on each end.** **A 52" long inverted "V" will be centered and welded to the bottom of the trough to isolate each auger assembly.** **The 7-gauge boxed sides and ends of the trough assembly will be designed to accept various spinner assemblies and have two openings on each end for placement of pre-wet nozzles if required.** **Mounting angles, two each side of the chassis frame, one front and one rear, will be integral with the trough assembly.** **A rubber wiper will be bolted on the rear side of the trough assembly to wipe the top of the chain or belt into the trough when it returns to the rear.** **The 7-gauge end plates will support the drive and idler components for the dual auger system.** **The auger weldments will be manufactured of 2-1/2" schedule 40 pipe 72" long with a 1" idler shaft centered and welded inside the pipe.** **There will be two 1" two-bolt flange relubable bearings to support the idler shafts, bolted to the end plate.** **The auger flighting will be 7" OD x 2-7/8" ID with 4" pitch, LH helical, 3/8" x 1-3/4" stock x 72" long, stitch welded to the schedule 40 pipe .** **The drive side of the auger pipe will have a 9/16" cross hole for the ½" bolt that retains the UHMW bushing and 1" shaft coupler.** **The 4-bolt flange 10 cubic inch drive motors will engage the drive side of the auger thru the drive end plate and be secured to the auger coupler with a set screw and to the endplate with four 3/8" bolts and lock washers.** **There shall be two 10-gauge 201 stainless steel covers.** **One for the left side and one for the right side to cover the top exposed area over the augers when the body is on the chassis frame.** **The covers will be pooched punched grating type.** **A 10-gauge gravity chute that is 20" wide x 24" long shall bolt to the end plate of the cross conveyor. The chute will be designed to pin in the gravity flow position or up in the stored position.** **An adjustable 10 gauge stainless steel spinner assembly with a top mounted 3.2 cubic inch motor and an 18" CCW polymer spinner disc coupled to the cast hub shall be installed on the endplate.** **The spinner design will have a shield to deflect material away from the chassis frame and be adjustable in height for underbody**	yes
	END OF SPECIFICATION	
14	**Specification # 04-14SSDMP.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., Hoist and 1/2 Cab Protector** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	CONTRACTOR must respond to each section with **YES** (or additional information as requested). If **NO** is indicated, provide explanation and available option.
	Referenced Make and Model: Crysteel/Select Stainless Steel or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Crysteel Selectss body with Marathon 63138 hoist**
1.0	**Basic Requirements:**	yes.
1.1	MDOT will install this dump box on a 64,000 GVW tandem axle, cab, and chassis with chassis measurements of approx. 218 inch W.B., 136 inch CA., and 192 inch C.E.	yes.
1.2	Bodies will have holes pierced and studs mounted per MDOT specifications	yes.
1.3	Body shall measure 168 inches long, 42 inch high front, 34 inch high sides and 42 inch tailgate	yes. Except front is 58" to accommodate the hoist doghouse
1.4	Body shall have inside width of 87 inches	yes.
1.5	Body shall have outside width of 96 inches	yes.
1.6	Capacity shall be approximately 10 cubic yards	yes.
1.7	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.8	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.
2.0	**Floor:**	yes.
2.1	Floor shall be constructed of 1/4 inch AR400 plate steel, 180,000 PSI tensile strength and yield of 145,000 PSI	yes. Exceed- AR450 175,000 yeild, 205,000 tensile
2.2	Floor shall have 9 inch radius wings of 1/4 inch A1011 carbon steel at **sides only**	yes.
3.0	**Understructure:**	yes.
3.1	Understructure shall be cross-memberless	yes.
3.2	All welding shall be continuous	yes.
3.3	Fabricated longsills shall be of 1/4 inch CQ carbon steel inner panels and 1/4 inch CQ carbon steel outer panels	no- 10 " I beam western understructure
3.4	Interior of longsills shall be coated with rust inhibitor coating at factory	yes.
3.5	Rear rub rail shall be full width, fabricated design, 7-gauge 201 stainless steel, **Channel style rear aprons are not acceptable**	yes.

3.6	Wiring tie down loop of 1/4 inch steel rod shall be installed on the underside of the floor, 3 inches in from the inside of the longsills and 3-1/4 inches forward of the rear rubrail and extend the entire length of the underside of the floor	yes.
3.7	Support plates shall be installed from the rub rails to the floor:	no- floor is flush
a.	Open at the front and rear	yes.
b.	Made of A1011 carbon steel	yes.
c.	Notched opening 60-80 inches behind the front corner posts of the body to allow access for tarp arm mounting bracket fasteners	yes.
3.8	Longsills shall have 3 inch passageway in the rear of the longitudinal for wiring	yes.
4.0	**Front Bulkhead & 1/2 Cab Shield:**	
4.1	Front bulkhead shall be constructed of 7-gauge 201 polished stainless steel with pressed in brace for rigidity	no- type 201 2B finish- not polished
4.2	Front sheet to include an enclosure for a front mounted telescopic hoist	yes.
4.3	A hoist mounting that is in front of the body will **not** be acceptable	yes.
4.4	Front of body shall have a 1-1/4 inch wiring hole placed in the lower left corner, center to be 1.875 inches from side and 2 inches up from lower edge	yes.
4.5	1/2 cab shield shall be 100% welded to the front bulkhead at the factory per MDOT measurements	yes.
4.6	1/2 cab shield shall be of 7-gauge 201 stainless steel with flat plate style reinforcements on top	yes.
4.7	Two (2) 9/16 inch holes shall be located on both sides of the cab shield, 1 and 8 inches back from the front of the cab shield, forward hole shall be 1-3/8 inches down from top and they shall be parallel with box sides	yes.
4.8	A grab handle made of 5/8 inch stainless steel rod, 20 inches long and 3 inches high, shall be welded to the cab shield and the bulk head, diagonally	yes.
4.9	Wiring studs 1/4 inch x 3/4 inch stainless steel threaded, shall be installed on the front bulkhead and cab shield:	yes.
a.	Studs shall be placed along the left side of front bulkhead 3 inches in from the left edge of the cab shield beginning 7 inches up from the bottom edge of bulkhead and proceeding vertically on 16 inch centers to the horizontal member of the cab shield. Studs shall be placed on the underside of the cab shield starting 4 inches from the rear bend towards the front of the cab shield on 16 inch centers with one directly inline on front facing return	yes.
4.10	Studs shall be placed on the front of the cab shield horizontally, the first 6 inches in from the left edge on 16 inch centers, 1-1/2 inches down from the top bend	yes.
5.0	**Tailgate:**	yes.
5.1	Tailgate shall be double acting	yes.
5.2	Tailgate shall be fully boxed, double walled design	yes.
5.3	All horizontal surfaces shall be dirt shedding	yes.
5.4	Inner wall shall be 1/4 inch AR400 to match the strength and durability of the floor and shall be primer coated	yes.- AR450
5.5	Outer wall shall be 10-gauge 201 stainless steel	yes.
5.6	All tailgate hardware on body shall be 201 stainless steel	yes
5.7	Upper tailgate hinges shall be 1-1/2 inch thick 201 stainless steel with 5 inch offset	yes.
5.8	Upper and lower pins shall be 1-1/4 inch 201 stainless steel	yes.
5.9	All tailgate hinges shall be greaseable	yes.
5.10	A 201 stainless steel grab handle shall be located on the lower left corner of the tailgate	yes.
5.11	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.12	Chain shall be removable, 3/8 inch, high tensile plated type	yes
5.13	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.14	All pivot points shall be grease zerk lubricated	yes.
5.15	201 stainless steel latches shall be retractable, grease zerk lubricated, with the zerks located on the outside of the rear corner posts for accessibility	yes. But Zerks are inside the corner posts
5.16	Tailgate release shall be air operated	yes.
5.17	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.18	Air cylinder housing shall be aluminum	yes.
5.19	Air cylinder rod shall be stainless steel	yes.
6.0	**Sides:**	yes.
6.1	Sides of dump body shall be 7-gauge 201 stainless steel, 85,000 PSI tensile strength, 35,000 PSI yield strength	
6.2	Finish shall be polished	no- finish is not polished- 201 stainless steel type 2B
6.3	All welds shall be continuous	yes.
6.4	Sides shall have a reverse-bend design	yes.
6.5	Top rail shall be fully boxed and dirt shedding	yes.
6.6	Rubrail shall have 45° slope to the flat side	yes.
6.7	One integral break-formed strengthening brace per side	yes.
6.8	Front pillars shall be full-depth, radiused, 201 stainless steel	yes.
6.9	Rear pillars shall be full-depth, 201 stainless steel with 1 inch center hole and two (2) 11/64 inch holes (one on either side of center hole) for 45° marker light in corner 24 inches from bottom of pillar	yes.
6.10	Pillars shall be dirt shedding	yes.
6.11	Two (2) 11/16 inch holes shall be located on the sloped surface of left & right rubrails, 2-1/2 inches below the breakline, 11 and 13 1/2 inches back from the rear of the front corner post	yes.
6.12	Two (2) threaded wiring studs 1/4 inch x 3/4 inch stainless steel shall be located 4 inches above sloped surface of left & right rubrails, 12 and 20-3/4 inches forward of the rear corner post	yes.
6.13	Three (3) 1-1/2 inch holes shall be located on the sloped surface of the left rub rail, 1-3/4 inches below the break line. They shall be 2, 4-1/2 and 7 inches forward of the rear corner post	yes.

6.14	Two (2) 1-½ inch holes shall be located on the sloped surface of right rubrail, 1-¾ inches below the breakline. They shall be 2 and 4-½ inches forward of the rear corner post	yes.
6.15	Two (2) 9/16 inch holes shall be located on the flat portion of left rubrail, 1 inch down from the breakline, 2 and 11-¼ inches rear of the front corner post	yes.
6.16	Two (2) 9/16 inch holes shall be located on the flat portion of left & right rubrails, 2-1/2 inches below the breakline, 31-1/2 and 37-1/4inches back from the front post	yes.
6.17	A 2 inch tarp rail shall be installed 2 inches above the horizontal side and shall extend from the back side of the of the front corner post to the front side of the rear corner post on each side of the body	yes.
6.18	The tarp rail shall include supports to the body sides located on 24 inch centers	yes.
6.19	Both the tarp rail and the gussets shall be constructed of type 201 stainless steel	yes.
6.20	Holes shall be provided in both rear pillars:	yes.
a.	A 13/16 inch hole shall be located 6-3/4 inches forward of the rear of the pillar and 30-1/2 inches from the bottom of the rubrail	yes.
b.	A 5/8 inch hole shall be located 4-3/4 inches from the rear of the pillar and 30-1/2 inches from the bottom of the rubrail with a 1/2 x 13 stainless steel nut welded on the inside of pillar	yes.
c.	A 1-¼ inch hole shall be located 6-¾ inches forward of the rear of the pillar and 13 inches up from the bottom of the rubrail	yes.
d.	A 5/8 inch hole shall be located 4-¾ inches forward of the rear of the pillar and 13 inches from the bottom of the rubrail	yes.
e.	A 1-1/4 inch hole shall be located 6-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
f.	A 5/8 inch hole shall be located 4-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
g.	A 5/8 inch hole shall be located 3-¾ inches in from the rear of the pillar and ½ inch below the bottom of the rubrail	yes.
h.	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
i.	Left pillar shall have two (2) 3/8 inch holes 10 inches forward of the rear of the pillar, up 7 inches and 10-¼ inches from the bottom of the pillar	yes.
7.0	**Hoist:**	
7.1	Double acting hoist cylinder	yes.
7.2	Hard nitride hoist cylinder surfaces	yes.
7.3	Inverted, trunnion mounted cylinder	yes.
7.4	5 inch, 4 inch, 3 inch active sections	yes.
7.5	NTEA Class 120, rated at 46.4 tons lift capacity @ 2,500psi and 37.1 tons @ lift capacity @ 2,000psi	yes.
7.6	Cylinder total stroke of 138 inches	yes.
7.7	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x ½ inch x 38 inch, Hinge pins shall be 2-3/8 inch x 8 inch round stainless steel and shall be greaseable	yes.
7.8	Rear body hinge top plate shall not extend rearward more than 4 inches from the centerline of the pivot pin	yes.
7.9	Two (2) body props shall be provided to support empty body weight	yes.
7.10	Hoist must be listed in the NTEA dump body hoist chart	yes.
8.0	**Body Preparation:**	yes.
8.1	Entire body shall be cleaned and rinsed	yes.
8.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
8.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
	END OF SPECIFICATION	
15	**Specification # 04-14SSDMPUBH.C19 Dump Body, Stainless Steel, 10 cu. yd., 14 ft., with Under Body Hoist and 1/2 Cab Protector** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Crysteel/Select Stainless Steel or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Crysteel Select ss body with Crysteel RC690 Hoist**
1.0	**Basic Requirements:**	
1.1	MDOT will install this dump box on a 64,000 GVW tandem axle, cab, and chassis with chassis measurements of approx. 218 inch W.B., 136 inch CA., and 192 inch C.E.	yes.
1.2	Bodies will have holes pierced and studs mounted per MDOT specifications	yes.
1.3	Body shall measure 168 inches long, 42 inch high front, 34 inch high sides and 42 inch tailgate	yes.
1.4	Body shall have inside width of 87 inches	yes.
1.5	Body shall have outside width of 96 inches	yes.
1.6	Capacity shall be approximately 10 cubic yards	yes.
1.7	Body raised light (supplied by MDOT) shall be activated by an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W2OME2 12V - 24V supplied with each body **No Exceptions**	yes.
1.8	MDOT can adjust hole and wire tie stud locations at a preconstruction meeting after units are ordered	yes.
2.0	**Floor:**	yes.
2.1	Floor shall be constructed of 1/4 inch AR400 plate steel, 180,000 PSI tensile strength and yield of 145,000 PSI	yes. Exceed- AR450 175,000 yeild, 205,000 tensile
2.2	Floor shall have 9 inch radius wings of 1/4 inch A1011 carbon steel at **sides only**	yes.
3.0	**Understructure:**	yes.

3.1	Understructure shall be cross-memberless	yes.
3.2	All welding shall be continuous	yes.
3.3	Fabricated longsills shall be of 1/4 inch CQ carbon steel inner panels and 1/4 inch CQ carbon steel outer panels	no- 12 " I beam western understructure
3.4	Interior of longsills shall be coated with rust inhibitor coating at factory	no- painted
3.5	Rear rub rail shall be full width, fabricated design, 7-gauge 201 stainless steel, **Channel style rear aprons are not acceptable**	yes.
3.6	Wiring tie down loop of 1/4 inch steel rod shall be installed on the underside of the floor, 3 inches in from the inside of the longsills and 3-1/4 inches forward of the rear rubrail and extend the entire length of the underside of the floor	yes.
3.7	Support plates shall be installed from the rub rails to the floor:	no- floor is flush
a.	Open at the front and rear	yes.
b.	Made of A1011 carbon steel	yes.
c.	Notched opening 60-80 inches behind the front corner posts of the body to allow access for tarp arm mounting bracket fasteners	yes.
3.8	Longsills shall have 3 inch passageway in the rear of the longitudinal for wiring	yes.
4.0	**Front Bulkhead & 1/2 Cab Shield:**	yes.
4.1	Front bulkhead shall be constructed of 7-gauge 201 polished stainless steel with pressed in brace for rigidity	no- type 201 2B finish- not polished
4.2	Front of body shall have a 1-1/4 inch wiring hole placed in the lower left corner, center to be 1.875 inches from side and 2 inches up from lower edge	yes.
4.3	1/2 cab shield shall be 100% welded to the front bulkhead at the factory per MDOT measurements	yes.
4.4	1/2 cab shield shall be of 7-gauge 201 stainless steel with flat plate style reinforcements on top	yes.
4.5	Two (2) 9/16 inch holes shall be located on both sides of the cab shield, 1 and 8 inches back from the front of the cab shield, forward hole shall be 1-3/8 inches down from top and they shall be parallel with box sides	yes.
4.6	A grab handle made of 5/8 inch stainless steel rod, 20 inches long and 3 inches high, shall be welded to the cab shield and the bulk head, diagonally	yes.
4.7	Wiring studs 1/4 inch x 3/4 inch stainless steel threaded, shall be installed on the front bulkhead and cab shield:	yes.
a.	Studs shall be placed along the left side of front bulkhead 3 inches in from the left edge of the cab shield beginning 7 inches up from the bottom edge of bulkhead and proceeding vertically on 16 inch centers to the horizontal member of the cab shield. Studs shall be placed on the underside of the cab shield starting 4 inches from the rear bend towards the front of the cab shield on 16 inch centers with one directly inline on front facing return	yes.
4.8	Studs shall be placed on the front of the cab shield horizontally, the first 6 inches in from the left edge on 16 inch centers, 1-1/2 inches down from the top bend	yes.
5.0	**Tailgate:**	yes.
5.1	Tailgate shall be double acting	yes.
5.2	Tailgate shall be fully boxed, double walled design	yes.
5.3	All horizontal surfaces shall be dirt shedding	yes.
5.4	Inner wall shall be 1/4 inch AR400 to match the strength and durability of the floor and shall be primer coated	yes.- exceed. AR450
5.5	Outer wall shall be 10-gauge 201 stainless steel	yes.
5.6	All tailgate hardware on body shall be 201 stainless steel	yes
5.7	Upper tailgate hinges shall be 1-1/2 inch thick 201 stainless steel with 5 inch offset	yes.
5.8	Upper and lower pins shall be 1-1/4 inch 201 stainless steel	yes.
5.9	All tailgate hinges shall be greaseable	yes.
5.10	A 201 stainless steel grab handle shall be located on the lower left corner of the tailgate	yes.
5.11	Upper and lower dogleg slotted chain keepers shall be 201 stainless steel, with sufficient plated chain to lay tailgate flat	yes.
5.12	Chain shall be removable, 3/8 inch, high tensile plated type	yes
5.13	5/8 inch 201 stainless steel lift loop shall be welded on the outside	yes.
5.14	All pivot points shall be grease zerk lubricated	yes.
5.15	201 stainless steel latches shall be retractable, grease zerk lubricated with zerks located on the outside of the rear corner posts for accessibility	yes. But Zerks are inside the corner posts
5.16	Tailgate release shall be air operated	yes.
5.17	Air cylinder shall be 3-1/2 inch diameter and meet military specifications for cold weather service	yes.
5.18	Air cylinder housing shall be aluminum	yes.
5.19	Air cylinder rod shall be stainless steel	yes.
6.0	**Sides:**	
6.1	Sides of dump body shall be 7-gauge 201 stainless steel, 85,000 PSI tensile strength, 35,000 PSI yield strength	yes.
6.2	Finish shall be polished	no- finish is not polished- 201 stainless steel type 2B
6.3	All welds shall be continuous	yes.
6.4	Sides shall have a reverse-bend design	yes.
6.5	Top rail shall be fully boxed and dirt shedding	yes.
6.6	Rubrail shall have 45° slope to the flat side	yes.
6.7	One integral break-formed strengthening brace per side	yes.
6.8	Front pillars shall be full-depth, radiused, 201 stainless steel	yes.
6.9	Rear pillars shall be full-depth, 201 stainless steel with 1 inch center hole and two (2) 11/64 inch holes (one on either side of center hole) for 45° marker light in corner 24 inches from bottom of pillar	yes.
6.10	Pillars shall be dirt shedding	yes.

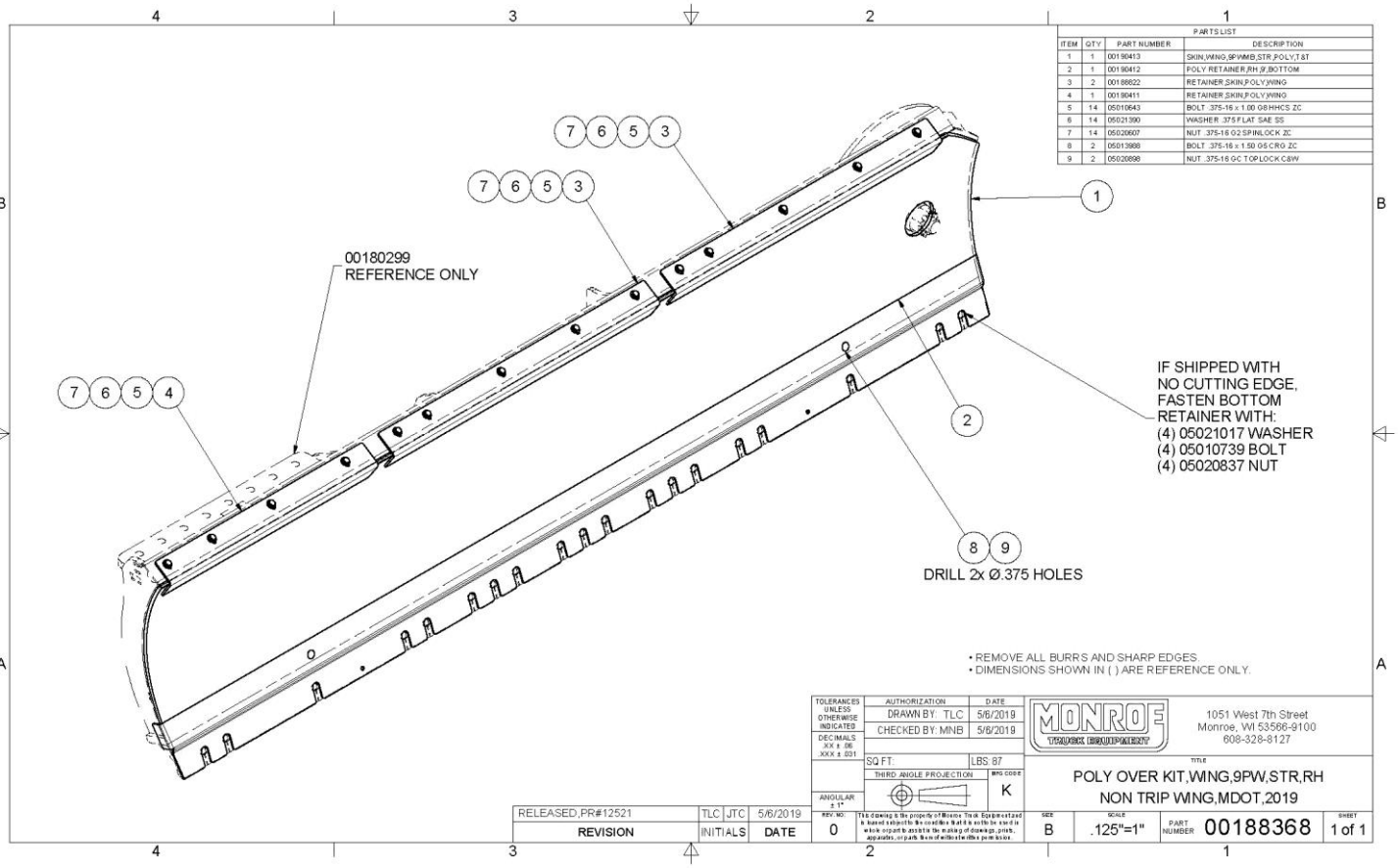
6.11	Two (2) 11/16 inch holes shall be located on the sloped surface of left & right rubrails, 2-1/2 inches below the breakline, 11 and 13 1/2 inches back from the rear of the front corner post	yes.
6.12	Two (2) threaded wiring studs 1/4 inch x 3/4 inch stainless steel shall be located 4 inches above sloped surface of left & right rubrails, 12 and 20-3/4 inches forward of the rear corner post	yes.
6.13	Three (3) 1-1/2 inch holes shall be located on the sloped surface of the left rub rail, 1-3/4 inches below the break line. They shall be 2, 4-1/2 and 7 inches forward of the rear corner post	yes.
6.14	Two (2) 1-½ inch holes shall be located on the sloped surface of right rubrail, 1-¾ inches below the breakline. They shall be 2 and 4-½ inches forward of the rear corner post	yes.
6.15	Two (2) 9/16 inch holes shall be located on the flat portion of left rubrail, 1 inch down from the breakline, 2 and 11-¼ inches rear of the front corner post	yes.
6.16	Two (2) 9/16 inch holes shall be located on the flat portion of left & right rubrails, 2-1/2 inches below the breakline, 54-1/2 and 60-3/4inches back from the front post	yes.
6.17	A 2 inch tarp rail shall be installed 2 inches above the horizontal side and shall extend from the back side of the of the front corner post to the front side of the rear corner post on each side of the body	yes.
6.18	The tarp rail shall include supports to the body sides located on 24 inch centers	yes.
6.19	Both the tarp rail and the gussets shall be constructed of type 201 stainless steel	yes.
6.20	Holes shall be provided in both rear pillars:	yes.
a.	A 13/16" hole shall be located 6-3/4" forward of the rear of the pillar and 38-1/2" from the bottom of the rubrail	yes.
b.	A 5/8" hole shall be located 4-3/4" from the rear of the pillar and 38-1/2" from the bottom of the rubrail with a 1/2 x 13 stainless steel nut welded on the inside of pillar	yes.
c.	A 1-¼" hole shall be located 6-¾" forward of the rear of the pillar and 13" up from the bottom of the rubrail	yes.
d.	A 5/8" hole shall be located 4-¾" forward of the rear of the pillar and 13" from the bottom of the rubrail	yes.
e.	A 1-1/4 inch hole shall be located 6-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
f.	A 5/8 inch hole shall be located 4-¾ inches forward of the rear of the pillar and 5 inches from the bottom of the rubrail	yes.
g.	A 5/8 inch hole shall be located 3-¾ inches in from the rear of the pillar and ½ inch below the bottom of the rubrail	yes.
h.	The marker light cut out with mounting light bracket shall be installed in each rear pillar posts. The cutout shall include light mounting brackets installed at a 45°. The bracket shall fit a Betts maker light. The pilot hole shall be 2.25 inches. The mounting holes shall be .125 inches and shall be 3.625 inches apart	yes.
i.	Left pillar shall have two (2) 3/8 inch holes 10 inches forward of the rear of the pillar, up 7 inches and 10-¼ inches from the bottom of the pillar	yes.
7.0	**Hoist:**	
7.1	Hoist shall be Crysteel Roller Combo Model # RC 690 or approved equal	yes.
7.2	Hoist shall be NTEA Performance Class 90 NTEA Type VII	yes
7.3	Hoist shall have two, double acting, single stage cylinders	yes.
7.4	Cylinder bore shall be 6 inches	yes.
7.5	Cylinder shaft diameter shall be 2-3/8 inches	yes.
7.6	Cylinder stroke shall be 32-1/2 inches	yes.
7.7	Cylinder shaft shall be nitride SW85 steel with 85,000psi yield strength	yes.
7.8	Cylinders shall have maximum operating pressure of 2,200psi with internal bypass to protect cylinder from damage	yes.
7.9	Cylinder base (raise) port size shall be SAE-12 (1-16)	yes.
7.10	Rod port (lower) shall be SAE-10 (7/8-14)	yes.
7.11	Cylinder Displacement:	yes.
a.	Up shall be 1837.8 cubic inches	yes.
b.	Down shall be 1579.4 cubic inches	yes.
7.12	Load capacity shall be 28.4 tons @ 50° dump angle	yes
7.13	Hoist shall have 17-1/2 inch mounting height	yes.
7.14	Hoist shall have "Roller Combo" design with the initial lift point ahead of the center line of the body, directing the force of the hoist cylinder upwards for more breakaway power before transferring it to a scissors action	yes.
7.15	Greaseless composite bearings shall be provided at all critical pivot points	yes.
7.16	Hoist shall have full length sub-frame that is the same length as the dump body	yes.
7.17	Sub-frame shall have 5-1/8 inch high, "C" channel frame rails fabricated of ¼ inch A1011 steel with 50,000psi yield and 65,000psi tensile strength	yes.
7.18	Remote grease kit - Hoist shall have a grease fitting bulkhead for the primary hoist pivot, located on the right (passenger) side and have six (6) grease zerks	yes.
7.19	Rear hinge shall be fabricated with structural steel angle that is 8 inch x 4 inch x 1/2 inch x 38 inch	no- mounting angle is 8" x 4-3/8" x 1/2" x 39" long
7.20	Hinge pins shall be 2-3/8 inch x 6 inch round stainless steel with greaseless composite bearings	pin is 2-1/4"
7.21	Two (2) body props shall be provided to support empty body weight	yes.
7.22	Hoist must be listed in the NTEA dump body hoist chart	yes.
8.0	**Body Preparation:**	
8.1	Entire body shall be cleaned and rinsed	yes.
8.2	Underside of body to be sandblasted and primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
8.3	Inside floor, floor radius, and inner tailgate panel to be primed with 4-part Epoxy primer, then top coated with a Black Poly-Urethane paint	yes. Except paint is 2 part epoxy
	END OF SPECIFICATION	

16	**Specification # 55-FMBBLD.C19 Under-Body Scraper, Folding Mold Board Style Snow Blade, Hydraulic Angling** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/FMB-3512 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Monroe FMB3512-MI, part no 00183844I**
1.0	**Basic Requirements:**	yes.
1.1	12 foot under-body scrapers/snow blades, with a two-piece "Folding Mold Board"	yes.
1.2	MDOT will install this scraper blade on a 44,000 GVWR single axle 4 x 2, dump truck with chassis measurements of approximately 186 inch W.B., 108 inch C.A. and 171 inch C.E. or a 64,000 GVWR tandem axle 6 x 4, dump truck with chassis measurements of approx. 211 inch W.B., 136 inch C.T. and 213 inch C.E.	yes.
2.0	**Folding Mold Board:**	yes.
2.1	Folding mold board shall be approximately 20-½ inches high x 12 feet long, heat treated, high carbon steel	no- Grade 50 hi tensile steel- not heat treated
2.2	Upper deflector or "folding flap" shall be ½ inch x 10 inches and welded at its bottom side with a hinge line to connect to the lower mold board "backer plate"	yes.
2.3	Lower mold board shall consist of two (2) pieces	yes.
2.4	"Backer plate" shall be 5/8 inch thick x 6 inches high and include the pivot hinge line for raising and lowering the blade	yes.
2.5	Lower section of mold board shall be ¾ inch x 9 inch, heat treated, roll formed with pressed in offset for USS blades, AASHO punched and capable of mounting a 5/8 inch x 6 inch x 4 foot carbide edges. It shall be bolted to lower "backer plate"	no- lower section of moldboard is grade 50 hi tensile steel- not heat treated- all other items comply
2.6	Mold board assembly, actuating cylinders and reversing circle shall be shipped as a complete unit	no- reversing cylinders shipped loose to prevent damage. Actuating cylinders are installed
2.7	Hanger brackets, reversing cylinders and mounting box shall be packaged with each scraper	yes.
3.0	**Mold Board Hinge:**	yes.
3.1	Mold board hinge shall consist of seamless DOM tubing, 1-¼ inch OD x 13/16 ID and a ¾ inch solid cold rolled 1018 steel hinge shaft the full length of mold board	yes.
3.2	Ends of hinge shall be encapsulated and supported by two (2) ¾ inch gussets to/from the upper and lower deflector pieces	yes.
3.3	Gussets shall be notched and fitted to the deflectors, welded top and bottom, both sides	yes.
3.4	This additional area at the ends of the mold boards shall add strength at the ends of the hinge shaft, eliminating the mold board hinge tubing from breaking away from deflectors	yes.
4.0	**Reversing Table (Circle):**	yes.
4.1	Reversing table (circle) shall be 1 inch thick solid one piece circle, no notches, with infinite plowing positions available to 45°	yes.
4.2	Because of rear wing installation, circle must **not** exceed 55-¼ inches in length	yes.
4.3	To maximize circle strength and durability, the cut outs for the hanger board 3 inch pin bosses, shall not exceed 4-5/8 inch wide x 15 inches long and follow the contour of the circle	yes.
4.4	Power reversing shall be accomplished with two (2) 4 inch ID, 4-½ inch OD, double acting cylinders	yes.
4.5	Cylinder rods shall be Socatri 1000, 2 inch diameter, cast iron heads, 2 inch thick base and rod ends with grease zerks	yes.
a.	Heads shall have external locks to prevent backing out and poly pack seals on the head and piston	yes.
b.	Cylinders shall be mounted with 2 inch hardened pivot pins	yes
4.6	Pivot pins shall be zinc coated and have spiraled grease groove	yes.
4.7	Cross over relief (cushion) valve will be furnished and set for 2,500 psi and 30 gpm for reversing protection	yes.
4.8	Reversing circle with hardened center bushing (RC 51-58), shall pivot on a hardened 5 inch center pin with a 3 port grease journal, 5/16 inches wide x 3/16 inches deep full circumference grease groove and be attached with three (3) 3-¾ inch grade 8 mounting bolts to prevent hole elongation and will be lubricated with a grease zerk	yes.
4.9	Circle clamp blocks shall be 20 inch long x 7 inches deep minimum and shall make full contact with the circle when fully reversed at 45° on both the right and left sides	yes.
4.10	Circle clamp blocks shall be contoured to the circle and bolted to the hanger board with three 1 inch grade 8 bolts as close to the circle as possible for maximum strength	yes.
4.11	Circle clamp blocks shall have 3/8 inch UHMW poly wear plate for ease of movement of hanger board and replacement	yes.
4.12	Rear of circle for the reversing cylinder mounts shall be braced by a ¾ inch x 3 inch bars gusset under the bottom side and the bracing to support the rear cylinder pin and boss	yes.
4.13	Because of rear wing mount, additional circle support from the chassis frame to the circle at the rear will **not** be acceptable	yes.
4.14	The hold down block shall include a lower half welded to the hanger plate, which will act as a stop block against the rear of the circle for a positive stop	yes.
5.0	**Hanger Brackets:**	yes.
5.1	Hanger brackets shall be one piece solid ¾ inch x 35 inch x 25-½ inch x 9-½ inch, A36 or equal steel plate for maximum strength	yes.
5.2	Hanger brackets to have 7 inch x 7 inch hand hole cut outs	yes.
5.3	**Hanger Board:**	yes.
5.4	Hanger board or mold board headboard shall consist of approximately 1 inch x 10 inch x 103 inch heavy duty steel	yes.
6.0	**Power Actuation:**	yes.
6.1	Power actuation shall be relative to horizontal axis and shall be accomplished through at least two (2) hydraulic steel cylinders mounted beneath the hanger board, activating the mold board's up and down movement and shall **i**ncludes a J50 relief valve for actuating cylinder protection(required for warranty protection)	yes.
7.0	**Main Hinge:**	yes.

7.1	Hinge line shall be solid shaft 1-½ inch diameter cold rolled 1018 steel	yes.
7.2	Hinge tubing shall be 2-1/8 inch OD x 1-9/16 inch ID pre-channel tube	yes.
7.3	There shall be a minimum of 12 grease zerks on hinge shaft	yes.
8.0	**Mold Board Activation:**	yes.
8.1	Mold board activation shall be accomplished by two (2) 3 inch ID double acting cylinders with 1-½ inch minimum nitride piston rods	yes.
8.2	Cylinders are to have 9/16 inch ORB ports and supplied with 3/8 inch, 2 wire hydraulic hose and tubing	yes.
8.3	A 250-1000 psi adjustable relief valve with ½ inch ports shall be supplied with the scraper	yes.
8.4	Hydraulic tubing shall be retained with a minimum of four (4) machined polymer hold down blocks	yes.
8.5	Hydraulic hose inside tubing shall **not** be acceptable	yes.
9.0	**Mold Board Cylinders and Pistons:**	yes.
9.1	Cylinders shall be trunnion mounted so with the mold board operating in the down position, the application of pressure on the piston shall be at the end of the cylinder opposite the piston rod	yes.
9.2	Cylinders shall have:	yes.
a.	3 inch inside diameter minimum	yes.
b.	5,000psi bursting pressure minimum	yes.
c.	2,500psi working pressure	yes.
d.	Ground or polished inside cylinder surface	yes.
e.	Polypak (type B) cylinder packing	yes.
f.	Internal thread type head glands with two (2) locks to prevent backing out	yes.
9.3	Pistons, cylinder heads and packing glands shall be either aluminum or cast steel	yes.
9.4	Cylinder heads shall be designed such that head nut cracking will not occur after it is tightened	yes.
9.5	Piston rods shall be high carbon nitride steel	no- socatri rods
9.6	Socatri 1000 rods shall be used on all swing cylinders	yes
10.0	**Shock Absorbers:**	yes.
10.1	Cushioning of the mold board shall be with four (4), heavy duty, long travel springs with 1-¼ inch cold rolled shafts, threaded at the top and double nutted for adjustable spring tension	yes.
10.2	Springs shall be 3-3/8 inch OD and 5,500 pound solid capacity each	yes.
11.0	**Standard Equipment:**	yes.
11.1	Stainless steel hydraulic tubing shall be externally mounted and clamped in machined polymer brackets for ease of maintenance	yes.
11.2	A remote grease kit that allows grease to be applied at two centralized locations outside of the chassis frame shall be provided	yes.
11.3	Grease kit hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes.
11.4	Grease line kit shall incorporate all grease points on the scraper including center pin, entire hinge line, cylinder pivot points, and canister trunion bearings	yes.
11.5	**All** fabricated sub-components shall be shot blasted and powder coated black prior to assembly	yes.
11.6	All bolts, nuts, and washers shall be Grade 8	yes.
11.7	**No** cutting edges shall be furnished	yes.
	END OF SPECIFICATION	yes.
17	**Specification # 55-MOPBLD.C19 Under-Body Scraper, MOP Style Snow Blade, Hydraulic Angling** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MS4512 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe MS4512 part no 00183844I**
1.0	**Basic Requirements:**	yes.
1.1	12 foot under-body scrapers/snow blades, with a single hinge "MOP Style"	yes.
1.2	MDOT will install this scraper blade on a 44,000 GVWR single axle 4 x 2, dump truck with chassis measurements of approximately 186 inch W.B., 108 inch C.A. and 171 inch C.E. or a 64,000 GVWR tandem axle 6 x 4, dump truck with chassis measurements of approx. 211 inch W.B., 136 inch C.T. and 213 inch C.E.	yes.
2.0	**Mold Board:**	yes.
2.1	Mold board shall be 1 inch thick x 20 inches high x 12 feet long, heat treated 1045 carbon steel, 185 Brinnell Hardness, 89 ksi tensile strength, rolled formed with pressed offset for cutting edges, and AASHO punched for mounting USS blades	no- Grade 50 hi tensile steel- not heat treated
2.2	Blades shall have hole spacing for 5/8 inch x 6 inch x 4 feet, carbide cutting edges	yes.
2.3	Blades shall have two (2) holes of a 3 inch spacing for each end of the 4 foot cutting edge	yes.
2.4	Mold board shall be assembled to the circle, the reversing cylinders, hanger brackets and mounting box shall be shipped loose, but kitted with the scraper assembly	yes.
3.0	**Reversing Table (Circle):**	yes.
3.1	Reversing table (circle) shall be 1 inch thick solid one piece circle, no notches, with infinite plowing positions available to 45°	yes.
3.2	Because of rear wing installation, circle must **not** exceed 55-¼ inches in length	yes.
3.3	To maximize circle strength and durability, the cut outs for the hanger board 3 inch pin bosses, shall not exceed 4-5/8 inch wide x 15 inches long and follow the contour of the circle	yes.
3.4	Power reversing shall be accomplished with two (2) 4 inch ID, 4-½ inch OD, double acting cylinders	yes.
3.5	Cylinder rods shall be Socatri 1000, 2 inch diameter, cast iron heads, 2 inch thick base and rod ends with grease zerks	yes.
3.6	Heads shall have external locks to prevent backing out and poly pack seals on the head and piston	yes.

3.7	Cylinders shall be mounted with 2 inch hardened pivot pins	yes
3.8	Pivot pins shall be zinc coated and have spiraled grease groove	yes.
3.9	Cross over relief (cushion) valve will be furnished and set for 2,500psi and 30gpm for reversing protection	yes.
3.10	Reversing circle with hardened center bushing (RC 51-58), shall pivot on a hardened 5 inch center pin with a 3 port grease journal, 5/16 inches wide x 3/16 inches deep full circumference grease groove and be attached with three (3) 3-¾ inch grade 8 mounting bolts to prevent hole elongation and will be lubricated with a grease zerk	yes.
3.11	Center pin shall be piloted ½ inch deep x 5 inch diameter into hanger board	yes.
3.12	Circle clamp blocks shall be 20 inch long x 7 inches deep minimum and shall not extend beyond the circle when fully reversed at 45° on both the right and left rotation	yes.
3.13	Circle clamp blocks shall be contoured to the circle and bolted to the hanger board with three 1 inch grade 8 bolts as close to the circle as possible for maximum strength	yes.
3.14	Circle clamp blocks shall have 3/8 inch UHMW poly wear plate for ease of movement of hanger board and replacement	yes.
3.15	Rear of circle for the reversing cylinder mounts shall be braced by a ¾ inch x 3 inch bars gusset under the bottom side and the bracing to support the rear cylinder pin and boss	yes.
3.16	Because of rear wing mount, additional circle support from the chassis frame to the circle at the rear will **not** be acceptable	yes.
3.17	The hold down block shall include a lower half welded to the hanger plate, which will act as a stop block against the rear of the circle for a positive stop	yes.
4.0	**Hanger Brackets:**	yes.
4.1	Hanger brackets shall be one piece solid ¾ inch x 35 inch x 25-½ inch by 9-½, A36 or equal steel plate for maximum strength	yes.
4.2	Hanger brackets to have 7 inch x 7 inch cut outs centered in the plate just above the top of the circle	yes.
5.0	**Hanger Board:**	yes.
5.1	Hanger board shall consist of formed ½ inch plate and reinforced by ½ inch formed plate full length of the hanger board	yes.
5.2	Cylinder pin mounting tubes shall be 3 inch OD, reinforced at the base with two (2) ½ inch plates	yes.
5.3	Hinge tubes shall be 3-¼ inch OD.344 inch wall thickness, 36 inches long with two (2) grease zerks each	yes.
5.4	Hanger board cut out for center hinge shall have a ½ inch stiffener plate full width front to rear that adds an anchor point for pin bosses and adds thrust plate for ends of hinge tubes	yes.
5.5	Outer canister mounting arm must be bolted to the hanger board. Welded arms are not acceptable	yes.
6.0	**Hinge:**	yes.
6.1	Hinge line shall be a solid shaft 96 inches long and have three (3) mold board anchor points	yes.
6.2	Hinge shaft shall be 2-½ inch diameter cold rolled 1018 steel with the two (2) outer hinges being 3-¼ inch x 6 inch and one (1) center hinge being 3-½ inch x 10-¾ inch minimum in length and .344 inch wall thickness mechanical tubing	yes.
6.3	Hinge shall be reinforced with one (1) wrap around ½ inch gusset on the outer two (2) and two (2) gussets on the inner hinge	yes.
6.4	Three heavy duty hinges shall be located to minimize stress along the hanger board for maximum strength	yes.
6.5	There shall be four (4) grease zerks on the hinge shaft	yes.
6.6	Inner hinge shall have two thrust plates to prevent side to side shifting of the mold board	yes.
7.0	**Mold Board Activation:**	yes.
7.1	Mold board activation shall be accomplished by two (2) 3 inch ID x 10 inch stroke minimum double with 2 inch minimum Socatri 1000 treated piston rods and shall include a J50 relief valve for actuating cylinder protection(required for warranty protection)	Actuating cylinders are 3.5"- not 3". All other items comply
7.2	Cylinders shall have 3/8 inch NPT ports, cast iron heads, poly pack seals and 2-¼ inch diameter x 1-¾ inch wide cross tube on the rod side with grease zerks.	yes.
7.3	Cylinders shall have a ½ inch x 5-¾ inch diameter flange with a ½ inch x 1-3/8 inch guide tang reinforced to the 3/8 rod port with ½ inch bar to protect the port	yes.
7.4	A 250-1000 psi adjustable relief valve with ½ inch ports shall be supplied with the scraper	yes.
7.5	Canister cylinder assembly shall be retained by a four (4) bolt minimum ½ inch flange assembly with an internal ½ inch x 1-½ inch ring	yes.
7.6	Canister cylinders shall be mounted in shock housings with a 1-½ inch cylinder guide at the top and a 1-½ inch x 6 inch relief slot at the bottom, which are trunnion mounted with ¾ inch thick reinforced steel trunnion brackets	yes.
7.7	Trunnion bearings shall be 2-¾ inch x .344 inch wall thickness carbon steel, lubricated by two (2) grease zerks per cylinder at the trunnion mounts	yes.
7.8	Canister trunion mount pins are 2 inch solid rod, bolt in removable design	yes.
7.9	A grease zerk shall be provided at the cylinder head	yes
7.10	Mold board cushioning shall be through two (2) heavy duty shock assemblies with two (2) internally mounted 586lb/inch 13/16 inch wire AISI 5161 steel springs	yes.
8.0	**Standard Equipment:**	yes.
8.1	Hydraulic stainless steel tubing shall be externally mounted with machined polymer hold down blocks	yes.
8.2	Hoses, tubing, and ports on actuating cylinders shall be 3/8 inch NPT minimum	yes.
8.3	Ports on reversing cylinders shall be ¾ inch ORB	yes.
8.4	All fabricated sub-components shall be shot blasted and powder coated black prior to assembly	yes.
8.5	A remote grease kit that allows grease to be applied at two centralized locations outside of the chassis frame shall be provided	yes.
8.6	Grease kit hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes.
8.7	Grease line kit shall incorporate all grease points on the scraper including center pin, entire hinge line, cylinder pivot points, and canister trunion bearings	yes.
8.8	**All** fabricated sub-components shall be shot blasted and powder coated black prior to assembly	yes.
8.9	All bolts, nuts, and washers shall be Grade 8	yes.

8.10	**No** cutting edges shall be furnished	yes.
	END OF SPECIFICATION	
18	**Specification # 57-0901SMW.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/9DFWMB-PG or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe 9 ft patrol wing with Decel cylinder for the heel**



1.5	Wing shall be operated by hydraulic lift, **no cables or chains shall be accepted**	yes.
1.6	Wing shall be capable of mounting with an overlap to the scraper discharge to prevent a windrow between the scraper and the wing mold board	yes.
1.7	Wing shall have a minimum of 6-½ foot clearing path when in the winging position	yes.
1.8	All seems and joints shall be 100% continuous welded	yes.
2.0	**Mold Board:**	
2.1	Wings shall be designed to mount behind the underbody blade and shall have a mold board length of 113 inches at the top and 108 inches at the bottom	yes. Also includes a captive clamp to the moldboard
2.2	Mold board height shall measure 33 inches inboard and 33 inches outboard with cutting edge	yes.
2.3	Mold board shall be 3/16 inch A36 steel	yes.
2.4	Top of mold board shall be formed into a 2-¾ inch x 1 inch channel for additional strength	yes.
2.5	Top flange of moldboard shall have holes located 6 inches from each end and 12 inches on center for full length of moldboard, drilled prior to powder coat	yes.
2.6	Bottom angle shall be 4 inch x 4 inch x ¾ inch and reinforced between the cutting edge holes with ten (10) 3 inch x 3 inch x ½ inch gussets	yes.
2.7	There shall be six (6) ½ inch mold board reinforcement ribs tapered from 4 inches at the bottom to 2-½ inches at the top	yes.
2.8	There shall be two (2) horizontal reinforcement angles between the discharge end last two ribs, bottom 4 inch x 3 inch x ½ inch reinforcement angle shall have seven (7) evenly spaced 5/8 inch holes for push arm adjustment, top 4 inch x 4 inch x ½ inch reinforcement angle shall have seven (7) evenly spaced 5/8 inch holes for push arm adjustment	yes.
2.9	Front attachment pivot plate will be ½ inch steel, completely boxed and supported with ½ inch and 3/16 inch plate	yes.

2.10	Pivot tube for the 1-½ inch pivot bolt shall have a minimum .625 inch wall and be welded 100% to the inside of the ½ inch plate and outside of the mold board	yes.
2.11	A ½ inch safety stop eyelet shall be on the front of the mold board and a ½ inch centered lift loop	yes.
2.12	Mold board shall be designed to except a poly liner with no additional modifications	yes.
3.0	**Mounting/Push Arms:**	
3.1	A ½ inch x 4 inch x 6 inch cross tube passing thru two (2) mounting plates shall attach the wing to the frame of the truck	yes.
3.2	Side plates shall be 5/8 inch thick, 25-1/2 inches tall, 16 inches wide at the top, 10 inches wide at the bottom	yes.
3.3	Side plates shall have 3 inch x 3 inch x 3/8 inch angle welded to inside of the plate to butt to bottom flange of the chassis frame rail	yes.
3.4	Each side plate shall have two (2) 2 inch x ½ inch bar stock reinforcement bars welded to the outside of the side plate contoured to the shape of the side plate	yes.
3.5	The cross tube shall pass behind the underbody blade "circle"	yes.
3.6	The front wing post shall be welded to the cross tube	yes.
3.7	Front post shall be of trailing link, free floating, design	yes.
3.8	Wing post must be able to be mounted under a dump body without adding to chassis CA	yes.
3.9	The post front structure shall be no more than 24 inches high and 14 inches wide	yes.
3.10	Post is manufactured with a ¾ inch inside plate and a matching ½ inch outer plate	yes.
3.11	Inner and outer plates shall be reinforced inside with 3/8 inch Ex-Ten 50 and ½ inch plate	yes.
3.12	The front post shall be an anchor point for the three trailing link assemblies; one (1) lift link and two (2) float links	yes.
3.13	All link arms shall be oriented parallel to the chassis frame	yes.
3.14	Upper and lower link arms shall be ¾ inch bar stock with 1-3/4 inch machined hole on each end	yes.
3.15	Float link arms shall be joined and reinforced with 2-1/2 inch schedule 80 pipe and ½ inch plate	yes.
3.16	Lift link arms shall be ½ inch plate joined and reinforced with 2-1/2 inch schedule 80 pipe and 1 inch plate	yes.
3.17	Upper and lower float arms shall be linked with ½ inch inner and 1 inch outer lift bars	yes.
3.18	Lift bars shall have 1-3/4 inch machined holes at both ends	yes.
3.19	Outer 1 inch lift bar shall have three (3) 1 inch ears to accept the pin for the wing mounting plate	yes.
3.20	A 1 inch thick reinforced banjo mounting plate shall be pinned to the post and bolted to the moldboard	yes.
3.21	Pin for banjo plate shall be 1-½ inch diameter	yes.
3.22	Banjo plate/hinge for moldboard shall be fabricated of 1 inch material, reinforced with ½ inch bar and have four (4) 1 inch thick reinforced ears for the hinge pin	yes. Also includes a captive clamp to the moldboard
3.23	The bolt for retaining the mold board shall be 1-½-6 x 7 G8 HHCS Zinc plated with castle nut and cotter pin	yes.
3.24	Bolt shall be drilled for the cotter pin	yes.
3.25	Rear wing mount shall be fabricated from 4 inch x 6 inch x ½ inch steel tube, and shall include one (1) 12 inch x 15 inch x ½ inch plate and six (6) 3 inch x 3 inch x ½ inch gussets for tube reinforcement	yes.
3.26	Rear wing mounting post and rear push arm/cylinder mounting plate with gussets shall be fully assembled	yes.
3.27	The rear upper push arm shall be equipped with an external slide assembly to allow for mechanical float and attachment of the heel lift cylinder	yes.
3.28	Rear push arms and heel lift cylinder shall be attached with 1-¼ inch bolts for attach and detach	yes.
3.29	There shall be two (2) rear wing heavy duty, 2-½ inch schedule 80, adjustable, spring cushioned lift arms including safety shear pins, 6 feet long fully extended, pin mounting points shall have flange tube weldments to prevent premature wear	yes.
3.30	Mounting hardware shall include schedule 80 pipe bracing, two (2) pipe balls, a flame cut ¾ inch support plate, Grade 8 nuts, bolts, and washers necessary for a complete installation	yes.
3.31	Rear push arm/cylinder mounting plate shall include two (2) ½ inch plates, flame cut with three (3) offset mounting holes to mount the rear push arms and the heel lift cylinder fabricated from ½ inch plate	yes.
3.32	All 1-3/4 inch machined holes in all link arms shall have RC 50 hardened bushings	yes.
3.33	Hinge pins shall be 1-1/2 inch OD, case hardened to RC 55-60	yes.
3.34	All hinge pins shall be rifled and cross drilled with grease zerks on both ends	yes.
4.0	**Hydraulics:**	
4.1	One (1) 3 inch OD x 5 inch double acting lift cylinder, 1-1/2 inch nitride rod, ¾-16ORB ports, polypak seals	yes.
4.2	Cylinder shall be attached with 1 inch stress proof pins, machine washers and roll pins	yes.
4.3	Lifting action for the heel end of the wing shall be accomplished via a single 3 inch ID x 15 inch stroke, nitrated 2 inch rod, ¾-16ORB ports, polypak seals, double acting hydraulic deceleration cylinder	yes.
4.4	Heel cylinder shall be attached to the upper rear push arm slide assembly	yes.
	Line lock to be provided in the heel cylinder to keep mold board from dropping from the storage position in the event of a hydraulic line failure	yes.
4.5	A sequencing valve shall be supplied with the wings	yes.
4.6	Sequencing valve shall be adjustable for both the up sequencing of the wing and the down sequencing of the wing	yes.
4.7	Lock valves shall be built into the sequencing valve to prevent both the toe and heel cylinder from drifting when in the stored position	yes.
4.8	The sequencing valve shall allow wing to hydraulically drift up when in the plowing position	yes.
4.9	Sequencing valve shall be equipped with an adjustable metering valve to control the speed at which the blade drops when going from the stored position to the plow position	yes.
5.0	**Finish:**	yes.
5.1	All fabricated components shall be shot blasted and washed prior to powder coating	yes.
5.2	Mold board shall be powder coated to a match a paint color sample supplied by MDOT at the preconstruction meeting	yes.
5.3	All other components shall be powder coated black	yes.

	END OF SPECIFICATION	
19	**Specification # 57-0901SMWJR.C19 Wing Plow, behind Scraper Mount, 9 Foot Left or Right** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/9MJW-PG or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe 9 ft junior wings with decel cylinders**
1.0	**Basic Requirements:**	
1.1	9 ft. Left or right side behind scraper mount wings	yes. Part number and pricing for both 9 ft and 7 ft right and left Jr wings supplied on price sheet as well as option for poly liners
1.2	MDOT will install this scraper blade on a 64,000 GVWR tandem axle 6 x 4, dump truck with underbody scraper chassis measurements of approx. 211 inch W.B., 136 inch C.T. and 213 inch C.E.	yes
1.3	MDOT assigned unit numbers shall be welded to a stainless steel plate 2"x 10" with two (2) holes 1/2' from each end that will accept a 1/4' bolt, Two (2) 1/4' x 1" bolts with 4 flat washers and lock nuts shall be provided and shipped loose with the plow. Hole location in the mold board shall be determined at the preconstruction meeting.	yes
1.4	Each wing assembly shall be furnished with an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W20ME2 12V - 24V to activate a "wing down" light, shipped loose (MDOT will furnish light) **No Exceptions**	yes
1.5	Wing shall be operated by hydraulic lift, **no cables or chains shall be accepted**	yes
1.6	Wing shall be capable of mounting with an overlap to the under body scraper discharge to prevent a windrow between the scraper and the wing mold board	yes
1.7	Wing shall have a minimum of 6-½ foot clearing path when in the winging position	yes
1.8	All seems and joints shall be 100% continuous welded	yes
2.0	**Mold Board:**	
2.1	Wings shall be designed to mount behind the underbody blade and shall have a mold board length of 113 inches at the top and 108 inches at the bottom	yes. Also includes a captive clamp to the moldboard
2.2	Mold board height shall measure 27 inches inboard and 28 inches outboard with cutting edge	yes
2.3	Mold board shall be 3/16 inch A36 steel	yes
2.4	Top of mold board shall be formed into a 2-¾ inch x 1 inch channel for additional strength	yes
2.5	Top flange of moldboard shall have holes located 6 inches from each end and 12 inches on center for full length of moldboard, drilled prior to powder coat	yes
2.6	Bottom angle shall be 4 inch x 4 inch x ¾ inch and reinforced between the cutting edge holes with ten (10) 3 inch x 3 inch x ½ inch gussets	yes
2.7	There shall be five (5) ½ inch mold board reinforcement ribs tapered from 4 inches at the bottom to 2-½ inches at the top	yes
2.8	There shall be three (3) horizontal reinforcement angles between the discharge end last two ribs, bottom 3 inch x 3 inch x ½ inch reinforcement angle shall have seven (7) evenly spaced 5/8 inch holes for push arm adjustment, top 4 inch x 4 inch x ½ inch reinforcement angle shall have seven (7) evenly spaced 5/8 inch holes for push arm adjustment	yes
2.9	Front attachment pivot plate will be ½ inch steel, completely boxed and supported with ½ inch and 3/16 inch plate	yes
2.10	Pivot tube for the 1-½ inch pivot bolt shall have a minimum .625 inch wall and be welded 100% to the inside of the ½ inch plate and outside of the mold board	yes
2.11	A ½ inch safety stop eyelet shall be on the front of the mold board and a ½ inch centered lift loop	yes
2.12	Mold board shall be designed to except a poly liner with no additional modifications	yes
3.0	**Mounting/Push Arms:**	
3.1	A ½ inch x 4 inch x 6 inch cross tube passing thru two (2) mounting plates shall attach the wing to the frame of the truck	yes
3.2	Side plates shall be 5/8 inch thick, 25-1/2 inches tall, 16 inches wide at the top, 10 inches wide at the bottom	yes
3.3	Side plates shall have 3 inch x 3 inch x 3/8 inch angle welded to inside of the plate to butt to bottom flange of the chassis frame rail	yes
3.4	Each side plate shall have two (2) 2 inch x ½ inch bar stock reinforcement bars welded to the outside of the side plate contoured to the shape of the side plate	yes
3.5	The cross tube shall pass behind the underbody blade "circle"	yes
3.6	The front wing post shall be welded to the cross tube	yes
3.7	Front post shall be of trailing link, free floating, design	yes
3.8	Wing post must be able to be mounted under a dump body without adding to chassis CA	yes
3.9	The post front structure shall be no more than 24 inches high and 14 inches wide	yes
3.10	Post is manufactured with a ¾ inch inside plate and a matching ½ inch outer plate	yes
3.11	Inner and outer plates shall be reinforced inside with 3/8 inch Ex-Ten 50 and ½ inch plate	yes
3.12	The front post shall be an anchor point for the three trailing link assemblies; one (1) lift link and two (2) float links	yes
3.13	All link arms shall be oriented parallel to the chassis frame	yes
3.14	Upper and lower link arms shall be ¾ inch bar stock with 1-3/4 inch machined hole on each end	yes
3.15	Float link arms shall be joined and reinforced with 2-1/2 inch schedule 80 pipe and ½ inch plate	yes
3.16	Lift link arms shall be ½ inch plate joined and reinforced with 2-1/2 inch schedule 80 pipe and 1 inch plate	yes
3.17	Upper and lower float arms shall be linked with ½ inch inner and 1 inch outer lift bars	yes
3.18	Lift bars shall have 1-3/4 inch machined holes at both ends	yes

3.19	Outer 1 inch lift bar shall have three (3) 1 inch ears to accept the pin for the wing mounting plate	yes
3.20	A 1 inch thick reinforced banjo mounting plate shall be pinned to the post and bolted to the moldboard	yes
3.21	Pin for banjo plate shall be 1-½ inch diameter	yes
3.22	Banjo plate/hinge for moldboard shall be fabricated of 1 inch material, reinforced with ½ inch bar and have four (4) 1 inch thick reinforced ears for the hinge pin	yes. Also includes a captive clamp to the moldboard
3.23	The bolt for retaining the mold board shall be 1-½-6 x 7 G8 HHCS Zinc plated with castle nut and cotter pin	yes
3.24	Bolt shall be drilled for the cotter pin	yes
3.25	Rear wing mount shall be fabricated from 4 inch x 6 inch x ½ inch steel tube, and shall include one (1) 12 inch x 15 inch x ½ inch plate and six (6) 3 inch x 3 inch x ½ inch gussets for tube reinforcement	yes
3.26	Rear wing mounting post and rear push arm/cylinder mounting plate with gussets shall be fully assembled	yes
3.27	The rear upper push arm shall be equipped with an external slide assembly to allow for mechanical float and attachment of the heel lift cylinder	yes
3.28	Rear push arms and heel lift cylinder shall be attached with 1-¼ inch bolts for attach and detach	yes
3.29	There shall be one (1) rear wing heavy duty, 2-½ inch schedule 80, adjustable, spring cushioned lift arm including safety shear pins, 6 feet long fully extended, pin mounting points shall have flange tube weldments to prevent premature wear	yes
3.30	A safety cable shall be provided that is fastened to the both ends of the lower push arm	yes
3.31	Mounting hardware shall include schedule 80 pipe bracing, two (2) pipe balls, a flame cut ¾ inch support plate, Grade 8 nuts, bolts, and washers necessary for a complete installation	yes
3.32	Rear push arm/cylinder mounting plate shall include two (2) ½ inch plates, flame cut with three (3) offset mounting holes to mount the rear push arm fabricated from ½ inch plate	yes
3.33	All 1-3/4 inch machined holes in all link arms shall have RC 50 hardened bushings	yes
3.34	Hinge pins shall be 1-1/2 inch OD, case hardened to RC 55-60	yes
3.35	All hinge pins shall be rifled and cross drilled with grease zerks on both ends	yes
4.0	**Hydraulics:**	
4.1	One (1) 3 inch OD x 5 inch double acting lift cylinder, 1-1/2 inch nitride rod, ¾-16ORB ports, polypak seals	yes
4.2	Cylinder shall be attached with 1 inch stress proof pins, machine washers and roll pins	yes
4.3	Lifting action for the heel end of the wing shall be accomplished via a single 4 inch ID x 10 inch stroke, nitrated 2 inch rod, ¾-16ORB ports, polypak seals, double acting hydraulic deceleration cylinder	yes
4.4	Heel cylinder shall be attached to the front banjo plate and the lower mold board float link assembly	yes
	Line lock to be provided in the heel cylinder to keep mold board from dropping from the storage position in the event of a hydraulic line failure	yes
4.5	A sequencing valve shall be supplied with the wings	yes
4.6	Sequencing valve shall be adjustable for both the up sequencing of the wing and the down sequencing of the wing	yes
4.7	Lock valves shall be built into the sequencing valve to prevent both the toe and heel cylinder from drifting when in the stored position	yes
4.8	The sequencing valve shall allow wing to hydraulically drift up when in the plowing position	yes
4.9	Sequencing valve shall be equipped with an adjustable metering valve to control the speed at which the blade drops when going from the stored position to the plow position	yes
5.0	**Finish:**	yes
5.1	All fabricated components shall be shot blasted and washed prior to powder coating	yes
5.2	Mold board shall be powder coated to a manufactures standard orange	yes
5.3	All other components shall be powder coated black	yes
	END OF SPECIFICATION	
20	**Specification # 57-1201SMW.C19 Wing Plow, behind Scraper Mount, 12 Foot Left or Right** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/12SFWMB or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe 12 ft Patrol wing with decel cylinder**
1.0	**Basic Requirements:**	yes
1.1	12 ft. Left or right side behind scraper mount wings	yes
1.2	MDOT will install this scraper blade on a 64,000 GVWR tandem axle 6 x 4, dump truck with underbody scraper chassis measurements of approx. 211 inch W.B., 136 inch C.T. and 213 inch C.E.	yes
1.3	MDOT assigned unit numbers shall be welded to a stainless steel plate 2"x 10" with two (2) holes 1/2' from each end that will accept a 1/4' bolt, Two (2) 1/4' x 1" bolts with 4 flat washers and lock nuts shall be provided and shipped loose with the plow. Hole location in the mold board shall be determined at the preconstruction meeting.	yes
1.4	Each wing assembly shall be furnished with an epoxy sealed, magnetic proximity switch, Grainger part # 6C834 or Omron type TL-W20ME2 12V - 24V to activate a “wing down” light, shipped loose (MDOT will furnish light) **No Exceptions**	yes
1.5	Wing shall be operated by hydraulic lift, **no cables or chains shall be accepted**	yes
1.6	Wing shall be capable of mounting with an overlap to the scraper discharge to prevent a windrow between the scraper and the wing mold board	yes
1.7	Wing shall have a minimum of 9-½ foot clearing path when in the winging position	yes
1.8	All seems and joints shall be 100% continuous welded	yes
2.0	**Mold Board:**	
2.1	Wings shall be designed to mount behind the underbody blade and shall have a mold board length of 149 inches at the top and 145 inches at the bottom	yes. Also includes a captive clamp to the moldboard
2.2	Mold board height shall measure 33 inches inboard and 33 inches outboard with cutting edge	yes

2.3	Mold board shall be 3/16 inch A36 steel	yes
2.4	Top of mold board shall be formed into a 2-¾ inch x 1 inch channel for additional strength	yes
2.5	Top flange of moldboard shall have holes located 6 inches from each end and 12 inches on center for full length of moldboard, drilled prior to powder coat	yes
2.6	Bottom angle shall be 4 inch x 4 inch x ¾ inch and reinforced between the cutting edge holes with thirteen (13) 3 inch x 3 inch x ½ inch gussets	yes
2.7	There shall be nine (9) ½ inch mold board reinforcement ribs tapered from 4 inches at the bottom to 2-½ inches at the top	yes
2.8	There shall be three (3) horizontal reinforcement angles between the discharge end last three ribs, bottom one (1) - 5 inch x 3 inch x ½ inch shall have five (5) evenly spaced 5/8 inch holes and Two (2) -22 inch x 3 inch reinforcement angle shall have seven (7) evenly spaced 5/8 inch holes for push arm adjustment, top one (1) 16 1/2 inch x 6 1/2 inch x ½ inch shall have five (5) evenly spaced 5/8 inch holes an Two (2) 22 inch x 6 1/2 inch reinforcement angle shall have seven (7) evenly spaced 5/8 inch holes for push arm adjustment	yes
2.9	Front attachment pivot plate will be ½ inch steel, completely boxed and supported with ½ inch and 3/16 inch plate	yes
2.10	Pivot tube for the 1-½ inch pivot bolt shall have a minimum .625 inch wall and be welded 100% to the inside of the ½ inch plate and outside of the mold board	yes
2.11	A ½ inch safety stop eyelet shall be on the front of the mold board and a ½ inch centered lift loop	yes
2.12	Mold board shall be designed to except a poly liner with no additional modifications	yes
3.0	**Mounting/Push Arms:**	yes
3.1	A ½ inch x 4 inch x 6 inch cross tube passing thru two (2) mounting plates shall attach the wing to the frame of the truck	yes
3.2	Side plates shall be 5/8 inch thick, 25-1/2 inches tall, 16 inches wide at the top, 10 inches wide at the bottom	yes
3.3	Side plates shall have 3 inch x 3 inch x 3/8 inch angle welded to inside of the plate to butt to bottom flange of the chassis frame rail	yes
3.4	Each side plate shall have two (2) 2 inch x ½ inch bar stock reinforcement bars welded to the outside of the side plate contoured to the shape of the side plate	yes
3.5	The cross tube shall pass behind the underbody blade “circle”	yes
3.6	The front wing post shall be welded to the cross tube	yes
3.7	Front post shall be of trailing link, free floating, design	yes
3.8	Wing post must be able to be mounted under a dump body without adding to chassis CA	yes
3.9	The post front structure shall be no more than 24 inches high and 14 inches wide	yes
3.10	Post is manufactured with a ¾ inch inside plate and a matching ½ inch outer plate	yes
3.11	Inner and outer plates shall be reinforced inside with 3/8 inch Ex-Ten 50 and ½ inch plate	yes
3.12	The front post shall be an anchor point for the three trailing link assemblies; one (1) lift link and two (2) float links	yes
3.13	All link arms shall be oriented parallel to the chassis frame	yes
3.14	Upper and lower link arms shall be ¾ inch bar stock with 1-3/4 inch machined hole on each end	yes
3.15	Float link arms shall be joined and reinforced with 2-1/2 inch schedule 80 pipe and ½ inch plate	yes
3.16	Lift link arms shall be ½ inch plate joined and reinforced with 2-1/2 inch schedule 80 pipe and 1 inch plate	yes
3.17	Upper and lower float arms shall be linked with ½ inch inner and 1 inch outer lift bars	yes
3.18	Lift bars shall have 1-3/4 inch machined holes at both ends	yes
3.19	Outer 1 inch lift bar shall have three (3) 1 inch ears to accept the pin for the wing mounting plate	yes
3.20	A 1 inch thick reinforced banjo mounting plate shall be pinned to the post and bolted to the moldboard	yes
3.21	Pin for banjo plate shall be 1-½ inch diameter	yes
3.22	Banjo plate/hinge for moldboard shall be fabricated of 1 inch material, reinforced with ½ inch bar and have four (4) 1 inch thick reinforced ears for the hinge pin	yes. Also includes a captive clamp to the moldboard
3.23	The bolt for retaining the mold board shall be 1-½-6 x 7 G8 HHCS Zinc plated with castle nut and cotter pin	yes
3.24	Bolt shall be drilled for the cotter pin	yes
3.25	Rear wing mount shall be fabricated from 4 inch x 6 inch x ½ inch steel tube, and shall include one (1) 12 inch x 15 inch x ½ inch plate and six (6) 3 inch x 3 inch x ½ inch gussets for tube reinforcement	yes
3.26	Rear wing mounting post and rear push arm/cylinder mounting plate with gussets shall be fully assembled	yes
3.27	The rear upper push arm shall be equipped with an external slide assembly to allow for mechanical float and attachment of the heel lift cylinder	yes
3.28	Rear push arms and heel lift cylinder shall be attached with 1-¼ inch bolts for attach and detach	yes
3.29	There shall be two (2) rear wing heavy duty, 2-½ inch schedule 80, adjustable, spring cushioned lift arms including safety shear pins, 6 feet long fully extended, pin mounting points shall have flange tube weldments to prevent premature wear	yes
3.30	Mounting hardware shall include schedule 80 pipe bracing, two (2) pipe balls, a flame cut ¾ inch support plate, Grade 8 nuts, bolts, and washers necessary for a complete installation	yes
3.31	Rear push arm/cylinder mounting plate shall include two (2) ½ inch plates, flame cut with three (3) offset mounting holes to mount the rear push arms and the heel lift cylinder fabricated from ½ inch plate	yes
3.32	All 1-3/4 inch machined holes in all link arms shall have RC 50 hardened bushings	yes
3.33	Hinge pins shall be 1-1/2 inch OD, case hardened to RC 55-60	yes
3.34	All hinge pins shall be rifled and cross drilled with grease zerks on both ends	yes
4.0	**Hydraulics:**	
4.1	One (1) 3 inch OD x 5 inch double acting lift cylinder, 1-1/2 inch nitride rod, ¾-16ORB ports, polypak seals	yes
4.2	Cylinder shall be attached with 1 inch stress proof pins, machine washers and roll pins	yes
4.3	Lifting action for the heel end of the wing shall be accomplished via a single 3 inch ID x 15 inch stroke, nitrated 2 inch rod, ¾-16ORB ports, polypak seals, double acting hydraulic deceleration cylinder	yes
4.4	Heel cylinder shall be attached to the upper rear push arm slide assembly	yes

4.5	Line lock to be provided in the heel cylinder to keep mold board from dropping from the storage position in the event of a hydraulic line failure	yes
4.6	A sequencing valve shall be supplied with the wings	yes
4.7	Sequencing valve shall be adjustable for both the up sequencing of the wing and the down sequencing of the wing	yes
4.8	Lock valves shall be built into the sequencing valve to prevent both the toe and heel cylinder from drifting when in the stored position	yes
4.9	The sequencing valve shall allow wing to hydraulically drift up when in the plowing position	yes
4.10	Sequencing valve shall be equipped with an adjustable metering valve to control the speed at which the blade drops when going from the stored position to the plow position	yes
5.0	**Finish:**	yes
5.1	All fabricated components shall be shot blasted and washed prior to powder coating	yes
5.2	Mold board shall be powder coated to a match a paint color sample supplied by MDOT at the preconstruction meeting	yes
5.3	All other components shall be powder coated black	yes
	END OF SPECIFICATION	
21	**Specification # 60-11-14SSDMP Option1.C19 Reversing Rear Cross Auger with Side Spinner** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MS969 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Monroe model MS969**
1.0	**Basic Requirements:**	
1.1	Cross auger shall be capable of moving free-flowing granular material to either a left or right opening	YES
1.2	Trough, lids and bottom assembly shall be 7 gauge 201 stainless steel with ¼ inch one-piece endplates and 96 inch overall width	YES
1,3	The rear of the conveyor shall be reinforced with a 2 inch x 5 inch x 7 gauge tube with the bottom trough latch system attached to this tube	YES
1.4	A 7 gauge, four (4) sided, 201 stainless steel chute extension shall be designed to lower the cross auger assembly to allow discharge on to a spinner or direct placement attachment. The chute shall be height adjustable	YES
1.5	The chute extension shall allow unloading of the hopper box without going through the cross auger	YES
1.6	Chute extension shall have a grate assembly to prevent chunks from entering the auger	YES
1.7	The three-piece combination cover and top openings shall be designed to be mounted to the bottom of the reinforced longsills on a hopper box	YES
1.8	The unobstructed, hinged bottom shall allow clogged material to drop out when it is opened for easy cleanout	YES
1.9	A centered 201 stainless steel lift handle shall be included	YES
1.10	Bottom trough shall have three (3) solid ½ inch pipe hinges	YES
1.11	Bottom opening shall have a removable door that can be either left or right mount	YES
1.12	Bottom trough door shall have return bends at both the hinge and handle sides of the door	YES
1.13	Bottom door shall have a center handle	YES
1.14	All latches shall be captive, heavy duty 201 stainless steel that will work in the coldest weather without the use of tools and (the need for) have a safety lock	YES
1.15	Latches are located approximately 48 inches apart	YES
1.16	Latches must pinch and retain the lip of the trough door against the rear trough cross tube	YES
1.17	Endplates shall have convenient chain hoist lifting slots placed at the balance points to provide easy level mounting and dismounting of the conveyor	YES
1.18	Auger shall be a full 7 foot in length with one-way flighting for left or right hand discharge of material	YES
1.19	Auger shall be 9 inch diameter, 4 inch pitch and 5/16 inch thick on the outer edge and welded to a 2-7/8 inch OD schedule 40 pipe EWR pipe/tubing	YES
1.20	Shafts shall be 1-½ inch and supported by a heavy duty 1-½ inch sealed, self-aligning, relubable four (4) bolt flange bearing	YES
1.21	The exposed end of the shaft on the opposite end of the motor shall include a stainless steel cover	YES
1.22	Auger shall be driven by a hydraulic, direct drive motor, 9.9 CID, 1-¼ inch – 14 spline shaft with 5/8 inch O-ring port	YES
1.23	Shaft coupler shall be stainless steel	YES
1.24	MDOT can order the cross auger with either left hand or right hand mounted motor as deemed necessary	YES
1.25	The spinner assembly is mounted to the bottom clean out door and has an easy one man mount and dismount, and shall include a shroud to prevent the discharge of materials towards the chassis, and shall have 1/2 inch stainless steel rod guard to prevent inadvertent contact with the rotating spinner	YES
1.26	Spinner assembly shall include a direct coupled 3.0 CID drive motor, an 18 inch poly spinner disc, and a mounting bracket that attaches to the left or right side of the auger trough, spinner shall be mounted to allow the spinner to pivot freely	YES
1.27	Spinner disc shall be 18 inches in diameter and manufactured from polyurethane material	YES
1.28	Six (6) formed spinner flights shall be manufactured from polyurethane	YES
1.29	Spinner disc shall be mounted directly to the hydraulic motor by means of a cast iron spinner hub	YES
1.30	Spinner motor shall be 3.0 CID low speed/high torque type	YES
1.31	Spinner motor shall have seal saver greaseable cavity	YES
1.32	Spinner shall be completely adjustable for all normal variations of spread patterns	YES
1.33	All interior seams shall be continuously electronically welded to eliminate corrosion pockets	YES
1.34	Mounting hardware shall be 201 stainless steel and be provided	YES

1.35	All stainless steel parts shall be in bare stainless	YES
1.36	All mild steel parts shall be painted black	YES
	END OF SPECIFICATION	
22	**Specification # 60-11_14SSDMP-Option2.C19 Zero Velocity Spreader** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/ACCU-Place or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: MONROE ACCUPLACE**
1.0	**Basic Requirements:**	
1.1	Spinner housing shall be of 10 gauge type 201 stainless steel	YES
1.2	Housing shall have a 12 inch x 14 inch opening with three flexible bolt on flares to divert material into housing	YES
1,3	Housing opening shall have four (4) safety bars of 3/16 inch 201 stainless steel to prevent large objects from entering housing opening	YES
1.4	Spreader impeller shall dispense material onto roadway, and be manufactured from type 201 stainless steel and shall include replaceable end bits	YES
1.5	Impeller shall have four (4) 4-¾ inch x 4 inch paddles, 16 inches in diameter with a 1 inch bore steel hub integrally welded to impeller	YES
1.6	Impeller motor shall be low speed/high torque “orbital type” hydraulic wheel motor with 3 CID displacement	YES
1.7	Motor shall be capable of applications up to 800rpm	YES
1.8	Motor shall be Parker type with a stainless steel output shaft	YES
1.9	Impeller drive shaft shall extend through both sides of the housing and is supported by a greaseable bearing on the housing side opposite the drive motor	YES
1.10	An in line flow meter with a hall affect speed sensor shall be provided with a Brad Harrison type connector to interface with control console	Standard MDOT application has deleted the flow meter
1.11	A sensor cable with LED indicator lights shall be provided to interface the Hall Effect flow meter sensor to a Certified Power Freedom XDS (or equivalent) Control Point controller	Standard MDOT application has deleted the flow meter
1.12	Spinner assembly shall be mounted with approximately 6 inches ground clearance and be adjustable in height	yes
1.13	Mount brackets **MUST** have MDOT written approval	yes
1.14	Unit must be capable of being mounted on the left or right side of the unit	yes
1.15	Spinner assembly shall lift 6 inches by actuating in cab switch	yes
1.16	Spinner assembly shall rotate 45° right and left of center position by actuating remote in cab switch	yes
1.17	Direction of spinner assembly shall be displayed on console by indicator lights	Standard MDOT application has deleted the flow meter
1.18	Spinner assembly shall include up/down actuating cylinder, right/left actuating cylinder with a built in position sensor, and a deflector actuating cylinder	right/left cylinder is included- position indicator has been deleted
1.19	A closed center, electric actuated valve shall be provided with the zero velocity spinner to control the up/down, right/left, and deflector functions	yes
1.20	Cab controls for the zero velocity spinner shall include switches for up/down, right /left, deflector up/down, a position display, and all necessary wiring harnesses to interface the controls to the valve	Custom MDOT switch includes a vertical switch for up/down, ahorizontal switch for left right, and a vertical switch for deflector up/down
	END OF SPECIFICATION	
23	**Specification # 60-11SSDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MCV-132-84-50 or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe MCV132-85-50/201- CHAIN- DOGHOUSE**
1.0	**Basic Requirements:**	
1.1	MDOT will install this slide in type hopper box material spreader on a 44,000 GVW single axle truck with 11 foot dump box and a closed center load sensing hydraulic system	yes
1.2	**Spreader Body:**	
1.3	Spreader body length shall be 11 feet	yes
1.4	Spreader overall height shall be approximately 50 inches without extensions or splices, one piece sides and ends	yes
1.5	Spreader shall be of modular, slot and tab design	yes
1.6	Spreader hopper is approximate 5.8 cubic yard capacity	yes
1.7	Spreader overall width shall be approximately 84 inches	yes
1.8	Spreader body and vertical bracing shall be 10 gauge type 201 stainless steel	yes
1.9	Longitudinal support members shall be 7 gauge type 201 stainless steel	yes
1.10	Longitudinal shall have a 24 inch bolt on replaceable rear tail section	yes
1.11	Tail section and the mating longitudinal shall have ¼ inch flanges reinforced with ¼ inch triangular gussets	yes
1.12	Bolts to secure tail section to longitudinal must be minimum ½ inch stainless steel	yes
1.13	Body sides shall have adequate pitch (approximately 45°) to insure free flow of material to the conveyor	yes
1.14	The eight (8) vertical braces shall be placed on approximate 24 inch centers, welded to the hopper sides and cross-members, in such a manner to allow future installation of two (2) 180 gallon liquid tanks	yes
1.15	End panels shall slope inward 25° on front panel and 20° on back panel	yes
1.16	Lateral cross-members shall be 3 inch x 1-1/4 inch x 39 inch x 7 gauge type 201 stainless steel	yes
1.17	Cross-members shall set on a longitudinal stainless steel angle of 2 inch x 3 inch x ¼ inch	yes

1.18	Top of body shall be strengthened by flanging the edges to form a 2 inch x 1 inch channel	yes
1.19	Hopper shall have a 2 inch x 2 inch x 7 gauge upper cross angle that ties the sides together and provides support for top screen center beam	yes
1.20	A heavy duty 5/8 inch bolt on lift loop shall be provided at each corner of the hopper	yes
1.21	Additional reinforcement on both the inside and outside of the body is required to support hold down brackets	yes
1.22	Front of the body shall be drilled to accept MDOT furnished rubber bumpers, location to be determined at preconstruction meeting	yes
1.23	Front sheet to include a welded in box section that will allow the unit to be installed in dump body spec 04-SSDMP.C19(front telescoping hoist)	yes
1.24	Two (2) hold down brackets constructed of 6 inch x 5 inch x ¼ inch stainless steel plate with a 3 inch tall piece of 5 inch stainless steel channel welded to the center shall be welded to the body centered 16 inches back of front bulkhead on the sloped surface centered 3 inches below the breakline, one (1) each side	yes
1.25	Spreader shall be equipped with a bolt-in conveyor floor of 7 gauge type 201 stainless steel supported with a combination of 10 gauge angles, 7 gauge flat bar, and 7 gauge formed channel	yes
1.26	A wiper belt shall be at the rear most end of the floor to direct material into the center region of the chute assembly	yes
1.27	Wiper belt in the front to prevent material leakage	yes
1.28	Long sills shall be slotted each end with openings at the extreme ends for ease of idler and drive sprocket shaft replacement	yes
1.29	Long sills shall have an additional 2 inch x 2 inch x ¼ inch stainless steel angle welded to the bottom of each side to support the cross auger	yes
2.0	**Feed Gate Opening:**	
2.1	A 10 gauge type 201 stainless steel feed gate approximately 12 inch x 18 inch with a ruler, shall be provided in the unloading end of the box with a heavy duty screw type mechanism with ½ inch stainless steel handle which shall regulate material discharge	yes
2.2	The crank handle shall be extended so that it is not more than 72 inches from the ground with the V box installed	yes
2.3	Crank handle screw type mechanism shall be located on the passenger's side of spreader	yes
2.4	Feed gate shall be adequately braced with a 24 inch embossment just above the door opening	yes
3.0	**Conveyor:**	
3.1	Conveyor shall be maximum 24 inches wide, with heavy duty type 201 stainless steel bolt in chain shields over the chain strands, exposing only the drag bars to the material	yes
3.2	Conveyor chain shall be 667XH heat treated 2.25 pitch, self-cleaning, pintle-type with .224 inch link thickness, 15/32 inch diameter pins and a minimum average tensile strength of 26,000 pounds, manufactured in the USA	yes
3.3	Eight tooth cast iron sprockets with 1-½ inch drive and idler shafts, and four (4) bolt relubable flange bearings shall be provided	yes
3.4	Cross bars ½ inch x 1-½ inch x 18-¾ inches shall be positioned on approximately 2-¼ inch centers, welded top and bottom	yes
3.5	Overall chain width shall not exceed 22-¼ inches	yes
3.6	A heavy duty, spring loaded, idler adjustment assembly (sufficient to carry the extra load or weight of the conveyor chain with added cross bars), shall provide 9 inches of travel for proper conveyor chain tension. Spring must be rated at a minimum of 708 PSI and be 6 inches long 2.187 inch OD	yes
3.7	Adjuster screw shall be a minimum of ¾ inch stainless steel	yes
3.8	Adjuster shall be extended so the adjustment can be made at the rear of the spreader with jam nuts at the rear	yes
4.0	**Welds and Fasteners:**	yes
4.1	Hopper shall be robotically welded	yes
4.2	All welds shall be continuous, inside and outside and cleaned of weld slag and spatter	yes
4.3	Bolts on the spreader body shall all be 201 stainless steel	yes
5.0	**Grease tubes:**	
5.1	Grease tubes shall be provided from the front to the rear of the spreader body for ease of lubrication of front conveyor bearings (both sides)	yes
5.2	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes
6.0	**Hydraulic Motors:**	yes
6.1	Spinner motors shall be manufacturers standard for the spreader capacity specified	yes
6.2	Spinner disc fins shall be designed for clockwise rotation	yes
6.3	Conveyor drive motor shall be 12.1 CID and equipped with a Hall effect type speed sensor that produces 100 or more pulses per revolution	Most recent MDOT orders included a 2.5 CID hi pressure motor. Monroe standard is 6.3 CID. MDOT choice of 2.5, 6.5, or 12.1 CID motors
7.0	**Gear Reduction Conveyor Drive:**	
7.1	Gear reduction shall be approximately 50:1 with hardened, precision- machined, worm type gear with tapered roller bearings on the output shaft	yes
7.2	Gear case shall be oil tight, equipped with filler, drain, and oil level drain plugs	yes
7.3	Gear case will be vented	yes
7.4	Conveyor motor shall be mounted directly to the gear case	yes
7.5	Conveyor drive motor shall be positioned on the forward side of the gearbox	yes
7.6	Offset gearbox mounting plate shall be minimum ¼ inch type 201 stainless steel	yes
7.7	Gearbox driveshaft shall not extend beyond case opposite the drive motor	yes
7.8	A coupling with a ½ inch shear bolt shall be provided between the gear box and the conveyor drive shaft	yes
7.9	A shear key inside the gear box is **NOT** acceptable	yes
	END OF SPECIFICATION	

24	**Specification # 60-11SSUBHDMP.C19 Hopper Box Material Spreader 11 Foot and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MCV-132-84-50 or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe MCV132-85-50/201- CHAIN- NO DOGHOUSE**
1.0	**Basic Requirements:**	
1.1	MDOT will install this slide in type hopper box material spreader on a 44,000 GVW single axle truck with 11 foot dump box and a closed center load sensing hydraulic system	yes
1.2	**Spreader Body:**	
1.3	Spreader body length shall be 11 feet	yes
1.4	Spreader overall height shall be approximately 50 inches without extensions or splices, one piece sides and ends	yes
1.5	Spreader shall be of modular, slot and tab design	yes
1.6	Spreader hopper is approximate 5.8 cubic yard capacity	yes
1.7	Spreader overall width shall be approximately 84 inches	yes
1.8	Spreader body and vertical bracing shall be 10 gauge type 201 stainless steel	yes
1.9	Longitudinal support members shall be 7 gauge type 201 stainless steel	yes
1.10	Longitudinal shall have a 24 inch bolt on replaceable rear tail section	yes
1.11	Tail section and the mating longitudinal shall have ¼ inch flanges reinforced with ¼ inch triangular gussets	yes
1.12	Bolts to secure tail section to longitudinal must be minimum ½ inch stainless steel	yes
1.13	Body sides shall have adequate pitch (approximately 45°) to insure free flow of material to the conveyor	yes
1.14	The eight (8) vertical braces shall be placed on approximate 24 inch centers, welded to the hopper sides and cross-members, in such a manner to allow future installation of two (2) 180 gallon liquid tanks	yes
1.15	End panels shall slope inward 25° on front panel and 20° on back panel	yes
1.16	Lateral cross-members shall be 3 inch x 1-1/4 inch x 39 inch x 7 gauge type 201 stainless steel	yes
1.17	Cross-members shall set on a longitudinal stainless steel angle of 2 inch x 3 inch x ¼ inch	yes
1.18	Top of body shall be strengthened by flanging the edges to form a 2 inch x 1 inch channel	yes
1.19	Hopper shall have a 2 inch x 2 inch x 7 gauge upper cross angle that ties the sides together and provides support for top screen center beam	yes
1.20	A heavy duty 5/8 inch bolt on lift loop shall be provided at each corner of the hopper	yes
1.21	Additional reinforcement on both the inside and outside of the body is required to support hold down brackets	yes
1.22	Front of the body shall be drilled to accept MDOT furnished rubber bumpers, location to be determined at preconstruction meeting	yes
1.23	Two (2) hold down brackets constructed of 6 inch x 5 inch x ¼ inch stainless steel plate with a 3 inch tall piece of 5 inch stainless steel channel welded to the center shall be welded to the body centered 16 inches back of front bulkhead on the sloped surface centered 3 inches below the breakline, one (1) each side	yes
1.24	Spreader shall be equipped with a bolt-in conveyor floor of 7 gauge type 201 stainless steel supported with a combination of 10 gauge angles, 7 gauge flat bar, and 7 gauge formed channel	yes
1.25	A wiper belt shall be at the rear most end of the floor to direct material into the center region of the chute assembly	yes
1.26	Wiper belt in the front to prevent material leakage	yes
1.27	Long sills shall be slotted each end with openings at the extreme ends for ease of idler and drive sprocket shaft replacement	yes
1.28	Long sills shall have an additional 2 inch x 2 inch x ¼ inch stainless steel angle welded to the bottom of each side to support the cross auger	yes
2.0	**Feed Gate Opening:**	yes
2.1	A 10 gauge type 201 stainless steel feed gate approximately 12 inch x 18 inch with a ruler, shall be provided in the unloading end of the box with a heavy duty screw type mechanism with ½ inch stainless steel handle which shall regulate material discharge	yes
2.2	The crank handle shall be extended so that it is not more than 72 inches from the ground with the V box installed	yes
2.3	Crank handle screw type mechanism shall be located on the passenger's side of spreader	yes
2.4	Feed gate shall be adequately braced with a 24 inch embossment just above the door opening	yes
3.0	**Conveyor:**	
3.1	Conveyor shall be maximum 24 inches wide, with heavy duty type 201 stainless steel bolt in chain shields over the chain strands, exposing only the drag bars to the material	yes
3.2	Conveyor chain shall be 667XH heat treated 2.25 pitch, self-cleaning, pintle-type with .224 inch link thickness, 15/32 inch diameter pins and a minimum average tensile strength of 26,000 pounds, manufactured in the USA	yes
3.3	Eight tooth cast iron sprockets with 1-½ inch drive and idler shafts, and four (4) bolt relubable flange bearings shall be provided	yes
3.4	Cross bars ½ inch x 1-½ inch x 18-¾ inches shall be positioned on approximately 2-¼ inch centers, welded top and bottom	yes
3.5	Overall chain width shall not exceed 22-¼ inches	yes
3.6	A heavy duty, spring loaded, idler adjustment assembly (sufficient to carry the extra load or weight of the conveyor chain with added cross bars), shall provide 9 inches of travel for proper conveyor chain tension. Spring must be rated at a minimum of 708 PSI and be 6 inches long 2.187 inch OD	yes
3.7	Adjuster screw shall be a minimum of ¾ inch stainless steel	yes
3.8	Adjuster shall be extended so the adjustment can be made at the rear of the spreader with jam nuts at the rear	yes
4.0	**Welds and Fasteners:**	yes
4.1	Hopper shall be robotically welded	yes

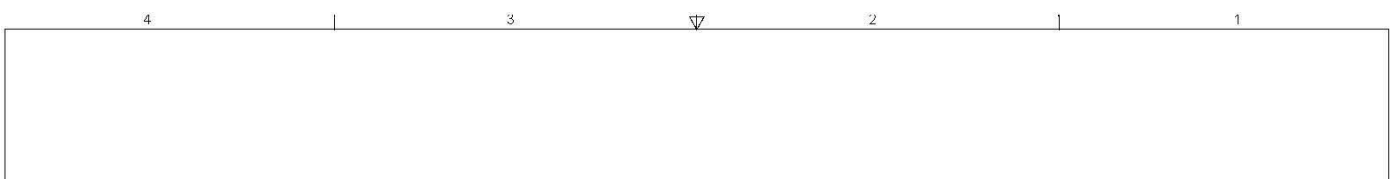
4.2	All welds shall be continuous, inside and outside and cleaned of weld slag and spatter	yes
4.3	Bolts on the spreader body shall all be 201 stainless steel	yes
5.0	**Grease tubes:**	
5.1	Grease tubes shall be provided from the front to the rear of the spreader body for ease of lubrication of front conveyor bearings (both sides)	yes
5.2	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	yes
6.0	**Hydraulic Motors:**	
6.1	Spinner motors shall be manufacturers standard for the spreader capacity specified	yes
6.2	Spinner disc fins shall be designed for clockwise rotation	yes
6.3	Conveyor drive motor shall be 12.1 CID and equipped with a Hall effect type speed sensor that produces 100 or more pulses per revolution	Most recent MDOT orders included a 2.5 CID hi pressure motor. Monroe standard is 6.3 CID. MDOT choice of 2.5, 6.5, or 12.1 CID motors
7.0	**Gear Reduction Conveyor Drive:**	YES
7.1	Gear reduction shall be approximately 50:1 with hardened, precision-machined, worm type gear with tapered roller bearings on the output shaft	YES
7.2	Gear case shall be oil tight, equipped with filler, drain, and oil level drain plugs	YES
7.3	Gear case will be vented	YES
7.4	Conveyor motor shall be mounted directly to the gear case	YES
7.5	Conveyor drive motor shall be positioned on the forward side of the gearbox	YES
7.6	Offset gearbox mounting plate shall be minimum ¼ inch type 201 stainless steel	YES
7.7	Gearbox driveshaft shall not extend beyond case opposite the drive motor	YES
7.8	A coupling with a ½ inch shear bolt shall be provided between the gear box and the conveyor drive shaft	YES
7.9	A shear key inside the gear box is **NOT** acceptable	YES
	END OF SPECIFICATION	
25	**Specification # 60-14SSDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MCV-168-84-56 or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe MCV168-85-56/201- CHAIN- DOGHOUSE**
1.0	**Basic Requirements:**	
1.1	MDOT will install this slide in type hopper box material spreader on a 64,000 GVW tandem axle truck with 14 fort dump box and a closed center load sensing hydraulic system	YES
1.2	**Spreader Body:**	
1.3	Spreader body length shall be 14 feet	YES
1.4	Spreader overall height shall be approximately 50 inches without extensions or splices, one piece sides and ends	YES
1.5	Spreader shall be of modular, slot and tab design	YES
1.6	Spreader hopper is approximate 9.2 cubic yard capacity	YES
1.7	Spreader overall width shall be approximately 84 inches	YES
1.8	Spreader body and vertical bracing shall be 10 gauge type 201 stainless steel	YES
1.9	Longitudinal support members shall be 7 gauge type 201 stainless steel	YES
1.10	Longitudinal shall have a 24 inch bolt on replaceable rear tail section	YES
1.11	Tail section and the mating longitudinal shall have ¼ inch flanges reinforced with ¼ inch triangular gussets	YES
1.12	Bolts to secure tail section to longitudinal must be minimum ½ inch stainless steel	YES
1.13	Body sides shall have adequate pitch (approximately 45°) to insure free flow of material to the conveyor	YES
1.14	The ten (10) vertical braces shall be placed on approximate 24 inch centers, welded to the hopper sides and cross-members, in such a manner to allow future installation of two (2) 180 gallon liquid tanks	YES
1.15	End panels shall slope inward 25° on front panel and 20° on back panel	YES
1.16	Lateral cross-members shall be 3 inch x 1-1/4 inch x 39 inch x 7 gauge type 201 stainless steel	YES
1.17	Cross-members shall set on a longitudinal stainless steel angle of 2 inch x 3 inch x ¼ inch	YES
1.18	Top of body shall be strengthened by flanging the edges to form a 2 inch x 1 inch channel	YES
1.19	Hopper shall have a 2 inch x 2 inch x 7 gauge upper cross angle that ties the sides together and provides support for top screen center beam	YES
1.20	A heavy duty 5/8 inch bolt on lift loop shall be provided at each corner of the hopper	YES
1.21	Additional reinforcement on both the inside and outside of the body is required to support hold down brackets	YES
1.22	Front of the body shall be drilled to accept MDOT furnished rubber bumpers, location to be determined at preconstruction meeting	YES
1.23	Front sheet to include a welded in box section that will allow the unit to be installed in dump body spec 04-SSDMP.C19(front telescoping hoist)	YES
1.24	Two (2) hold down brackets constructed of 6 inch x 5 inch x ¼ inch stainless steel plate with a 3 inch tall piece of 5 inch stainless steel channel welded to the center shall be welded to the body centered 16 inches back of front bulkhead on the sloped surface centered 3 inches below the breakline, one (1) each side	YES
1.25	Spreader shall be equipped with a bolt-in conveyor floor of 7 gauge type 201 stainless steel supported with a combination of 10 gauge angles, 7 gauge flat bar, and 7 gauge formed channel	YES
1.26	A wiper belt shall be at the rear most end of the floor to direct material into the center region of the chute assembly	YES
1.27	Wiper belt in the front to prevent material leakage	YES

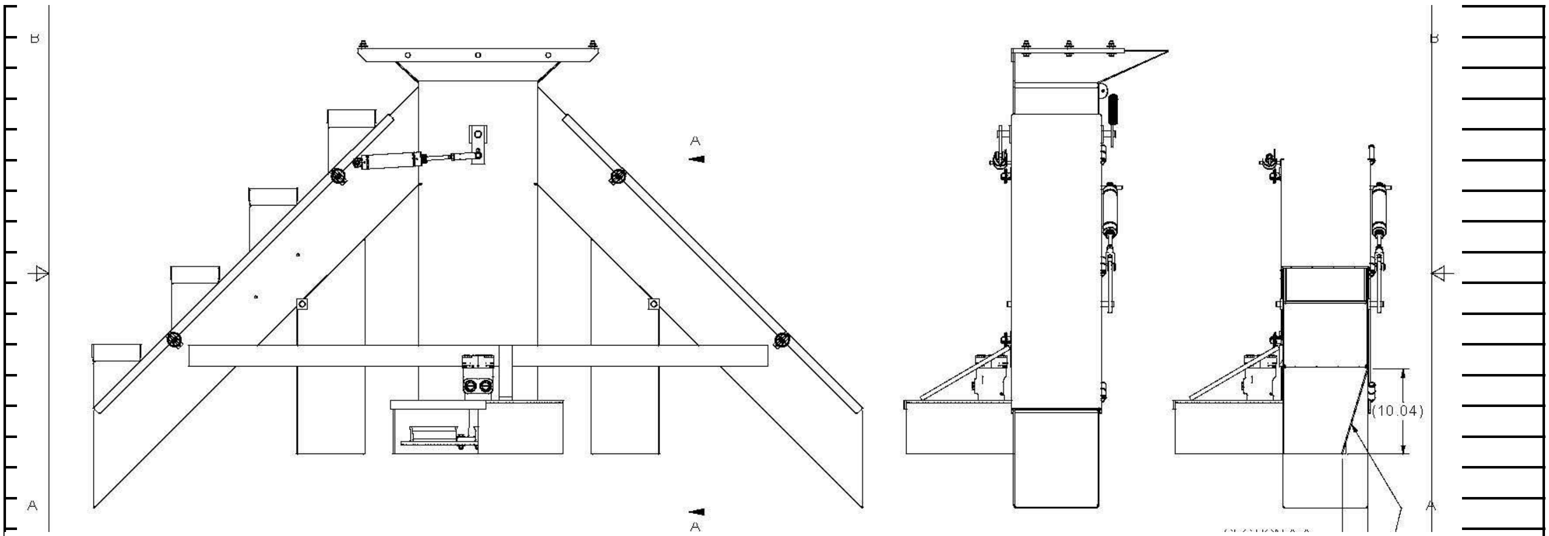
1.28	Long sills shall be slotted each end with openings at the extreme ends for ease of idler and drive sprocket shaft replacement	YES
1.29	Long sills shall have an additional 2 inch x 2 inch x ¼ inch stainless steel angle welded to the bottom of each side to support the cross auger	YES
2.0	**Feed Gate Opening:**	
2.1	A 10 gauge type 201 stainless steel feed gate approximately 12 inch x 18 inch with a ruler, shall be provided in the unloading end of the box with a heavy duty screw type mechanism with ½ inch stainless steel handle which shall regulate material discharge	YES
2.2	The crank handle shall be extended so that it is not more than 72 inches from the ground with the V box installed	YES
2.3	Crank handle screw type mechanism shall be located on the passenger's side of spreader	YES
2.4	Feed gate shall be adequately braced with a 24 inch embossment just above the door opening	YES
3.0	**Conveyor:**	
3.1	Conveyor shall be maximum 24 inches wide, with heavy duty type 201 stainless steel bolt in chain shields over the chain strands, exposing only the drag bars to the material	YES
3.2	Conveyor chain shall be 667XH heat treated 2.25 pitch, self-cleaning, pintle-type with .224 inch link thickness, 15/32 inch diameter pins and a minimum average tensile strength of 26,000 pounds, manufactured in the USA	YES
3.3	Eight tooth cast iron sprockets with 1-½ inch drive and idler shafts, and four (4) bolt relubable flange bearings shall be provided	YES
3.4	Cross bars ½ inch x 1-½ inch x 18-¾ inches shall be positioned on approximately 2-¼ inch centers, welded top and bottom	YES
3.5	Overall chain width shall not exceed 22-¼ inches	YES
3.6	A heavy duty, spring loaded, idler adjustment assembly (sufficient to carry the extra load or weight of the conveyor chain with added cross bars), shall provide 9 inches of travel for proper conveyor chain tension. Spring must be rated at a minimum of 708 PSI and be 6 inches long 2.187 inch OD	YES
3.7	Adjuster screw shall be a minimum of ¾ inch stainless steel	YES
3.8	Adjuster shall be extended so the adjustment can be made at the rear of the spreader with jam nuts at the rear	YES
4.0	**Welds and Fasteners:**	
4.1	Hopper shall be robotically welded	
4.2	All welds shall be continuous, inside and outside and cleaned of weld slag and spatter	YES
4.3	Bolts on the spreader body shall all be 201 stainless steel	YES
5.0	**Grease tubes:**	
5.1	Grease tubes shall be provided from the front to the rear of the spreader body for ease of lubrication of front conveyor bearings (both sides)	YES
5.2	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	YES
6.0	**Hydraulic Motors:**	
6.1	Spinner motors shall be manufacturers standard for the spreader capacity specified	YES
6.2	Spinner disc fins shall be designed for clockwise rotation	YES
6.3	Conveyor drive motor shall be 12.1 CID and equipped with a Hall effect type speed sensor that produces 100 or more pulses per revolution	Most recent MDOT orders included a 2.5 CID hi pressure motor. Monroe standard is 6.3 CID. MDOT choice of 2.5, 6.5, or 12.1 CID motors
7.0	**Gear Reduction Conveyor Drive:**	
7.1	Gear reduction shall be approximately 50:1 with hardened, precision- machined, worm type gear with tapered roller bearings on the output shaft	YES
7.2	Gear case shall be oil tight, equipped with filler, drain, and oil level drain plugs	YES
7.3	Gear case will be vented	YES
7.4	Conveyor motor shall be mounted directly to the gear case	YES
7.5	Conveyor drive motor shall be positioned on the forward side of the gearbox	YES
7.6	Offset gearbox mounting plate shall be minimum ¼ inch type 201 stainless steel	YES
7.7	Gearbox driveshaft shall not extend beyond case opposite the drive motor	YES
7.8	A coupling with a ½ inch shear bolt shall be provided between the gear box and the conveyor drive shaft	YES
7.9	A shear key inside the gear box is **NOT** acceptable	YES
	END OF SPECIFICATION	
26	**Specification # 60-14SSUBHDMP.C19 Hopper Box Material Spreader 14 Foot and Distribution Systems** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MCV-168-84-56 or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: MCV168-85-56/201-CHAIN-NO DOGHOUSE**
1.0	**Basic Requirements:**	
1.1	MDOT will install this slide in type hopper box material spreader on a 64,000 GVW tandemm axle truck with 14 foot dump box and a closed center load sensing hydraulic system	YES
1.2	**Spreader Body:**	
1.3	Spreader body length shall be 14 feet	YES
1.4	Spreader overall height shall be approximately 50 inches without extensions or splices, one piece sides and ends	YES
1.5	Spreader shall be of modular, slot and tab design	YES
1.6	Spreader hopper is approximate 9.2 cubic yard capacity	YES
1.7	Spreader overall width shall be approximately 84 inches	YES

1.8	Spreader body and vertical bracing shall be 10 gauge type 201 stainless steel	YES
1.9	Longitudinal support members shall be 7 gauge type 201 stainless steel	YES
1.10	Longitudinal shall have a 24 inch bolt on replaceable rear tail section	YES
1.11	Tail section and the mating longitudinal shall have ¼ inch flanges reinforced with ¼ inch triangular gussets	YES
1.12	Bolts to secure tail section to longitudinal must be minimum ½ inch stainless steel	YES
1.13	Body sides shall have adequate pitch (approximately 45°) to insure free flow of material to the conveyor	YES
1.14	The ten (10) vertical braces shall be placed on approximate 24 inch centers, welded to the hopper sides and cross-members, in such a manner to allow future installation of two (2) 180 gallon liquid tanks	YES
1.15	End panels shall slope inward 25° on front panel and 20° on back panel	YES
1.16	Lateral cross-members shall be 3 inch x 1-1/4 inch x 39 inch x 7 gauge type 201 stainless steel	YES
1.17	Cross-members shall set on a longitudinal stainless steel angle of 2 inch x 3 inch x ¼ inch	YES
1.18	Top of body shall be strengthened by flanging the edges to form a 2 inch x 1 inch channel	YES
1.19	Hopper shall have a 2 inch x 2 inch x 7 gauge upper cross angle that ties the sides together and provides support for top screen center beam	YES
1.20	A heavy duty 5/8 inch bolt on lift loop shall be provided at each corner of the hopper	YES
1.21	Additional reinforcement on both the inside and outside of the body is required to support hold down brackets	YES
1.22	Front of the body shall be drilled to accept MDOT furnished rubber bumpers, location to be determined at preconstruction meeting	YES
1.23	Two (2) hold down brackets constructed of 6 inch x 5 inch x ¼ inch stainless steel plate with a 3 inch tall piece of 5 inch stainless steel channel welded to the center shall be welded to the body centered 16 inches back of front bulkhead on the sloped surface centered 3 inches below the breakline, one (1) each side	YES
1.24	Spreader shall be equipped with a bolt-in conveyor floor of 7 gauge type 201 stainless steel supported with a combination of 10 gauge angles, 7 gauge flat bar, and 7 gauge formed channel	YES
1.25	A wiper belt shall be at the rear most end of the floor to direct material into the center region of the chute assembly	YES
1.26	Wiper belt in the front to prevent material leakage	YES
1.27	Long sills shall be slotted each end with openings at the extreme ends for ease of idler and drive sprocket shaft replacement	YES
1.28	Long sills shall have an additional 2 inch x 2 inch x ¼ inch stainless steel angle welded to the bottom of each side to support the cross auger	YES
2.0	**Feed Gate Opening:**	
2.1	A 10 gauge type 201 stainless steel feed gate approximately 12 inch x 18 inch with a ruler, shall be provided in the unloading end of the box with a heavy duty screw type mechanism with ½ inch stainless steel handle which shall regulate material discharge	YES
2.2	The crank handle shall be extended so that it is not more than 72 inches from the ground with the V box installed	YES
2.3	Crank handle screw type mechanism shall be located on the passenger's side of spreader	YES
2.4	Feed gate shall be adequately braced with a 24 inch embossment just above the door opening	YES
3.0	**Conveyor:**	
3.1	Conveyor shall be maximum 24 inches wide, with heavy duty type 201 stainless steel bolt in chain shields over the chain strands, exposing only the drag bars to the material	YES
3.2	Conveyor chain shall be 667XH heat treated 2.25 pitch, self-cleaning, pintle-type with .224 inch link thickness, 15/32 inch diameter pins and a minimum average tensile strength of 26,000 pounds, manufactured in the USA	YES
3.3	Eight tooth cast iron sprockets with 1-½ inch drive and idler shafts, and four (4) bolt relubable flange bearings shall be provided	YES
3.4	Cross bars ½ inch x 1-½ inch x 18-¾ inches shall be positioned on approximately 2-¼ inch centers, welded top and bottom	YES
3.5	Overall chain width shall not exceed 22-¼ inches	YES
3.6	A heavy duty, spring loaded, idler adjustment assembly (sufficient to carry the extra load or weight of the conveyor chain with added cross bars), shall provide 9 inches of travel for proper conveyor chain tension. Spring must be rated at a minimum of 708 PSI and be 6 inches long 2.187 inch OD	YES
3.7	Adjuster screw shall be a minimum of ¾ inch stainless steel	YES
3.8	Adjuster shall be extended so the adjustment can be made at the rear of the spreader with jam nuts at the rear	YES
4.0	**Welds and Fasteners:**	
4.1	Hopper shall be robotically welded	YES
4.2	All welds shall be continuous, inside and outside and cleaned of weld slag and spatter	YES
4.3	Bolts on the spreader body shall all be 201 stainless steel	YES
5.0	**Grease tubes:**	YES
5.1	Grease tubes shall be provided from the front to the rear of the spreader body for ease of lubrication of front conveyor bearings (both sides)	YES
5.2	Grease hoses shall be SAE107 Hytron hose rated at 3000 psi maximum work pressure	YES
6.0	**Hydraulic Motors:**	YES
6.1	Spinner motors shall be manufacturers standard for the spreader capacity specified	YES
6.2	Spinner disc fins shall be designed for clockwise rotation	YES
6.3	Conveyor drive motor shall be 12.1 CID and equipped with a Hall effect type speed sensor that produces 100 or more pulses per revolution	Most recent MDOT orders included a 2.5 CID hi pressure motor. Monroe standard is 6.3 CID. MDOT choice of 2.5, 6.5, or 12.1 CID motors
7.0	**Gear Reduction Conveyor Drive:**	
7.1	Gear reduction shall be approximately 50:1 with hardened, precision-machined, worm type gear with tapered roller bearings on the output shaft	YES
7.2	Gear case shall be oil tight, equipped with filler, drain, and oil level drain plugs	YES

7.3	Gear case will be vented	YES
7.4	Conveyor motor shall be mounted directly to the gear case	YES
7.5	Conveyor drive motor shall be positioned on the forward side of the gearbox	YES
7.6	Offset gearbox mounting plate shall be minimum ¼ inch type 201 stainless steel	YES
7.7	Gearbox driveshaft shall not extend beyond case opposite the drive motor	YES
7.8	A coupling with a ½ inch shear bolt shall be provided between the gear box and the conveyor drive shaft	YES
7.9	A shear key inside the gear box is **NOT** acceptable	YES
	END OF SPECIFICATION	
27	**Specification # 04-11-14CBBDY-Option1.C19 Reversing Rear Cross Auger with Side Spinner** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MS969 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe MS969**
1.0	**Basic Requirements:**	
1.1	Cross auger shall be of modular design, constructed of 7 gauge type 201 stainless steel	yes
1.2	Auger trough shall be constructed of 7 gauge type 201 stainless steel with ¼ inch type 201 stainless steel end plates	yes
1,3	Endplates below the top lid must be tapered to provide adequate clearance for hose routings and wing mounts, design to be approved at MDOT pre-construction meeting	yes
1.4	The auger trough shall be made to fit to the discharge trough on the combination body	yes
1.5	Auger housing shall include a three (3) piece hinged lid	yes
1.6	All three (3) section covers shall open and close independently of each other and center section shall be the width of the combination body main conveyor	yes
1.7	All three (3) sections can be latched in an open or closed position	yes Note : The center section includes the drop chute that attaches to the v box longitudinal and does include a sloped center cover as well as a stainless steel bar cover. The center lid is up for operations and is a drop chute for unlading operations
1.8	The auger trough shall have discharge openings on each end of the trough and shall be supplied with a cover that can be used in either opening	yes
1.9	Auger trough shall include a full opening bottom for material cleanout	yes
1.10	Auger motor shall be directly coupled to the auger shaft with a stainless steel coupler	yes
1.11	Drive motor shall be a 9.9 CID with 5/8 inch O-ring ports	yes
1.12	MDOT can order the cross auger with either left hand or right hand mounted motor as deemed necessary	yes
1.13	Shafts shall be 1-½ inch and supported by a heavy duty 1-½ inch sealed, self-aligning, re-lubeable four (4) bolt flange bearing	yes
1.14	Exposed end of the shaft on the opposite end of the motor shall include a stainless steel cover	yes
1.15	Auger shall be 9 inch diameter with continuous one way flighting with a 4 inch pitch	yes
1.16	Flighting shall be a minimum of 5/16 inch thick on the outer edge and welded to a 2-7/8 inch OD schedule 40 pipe	yes
1.17	All bearings shall be equipped with grease fittings	yes
1.18	A spinner shall be supplied for all the units that are not equipped with a zero velocity spinner assembly	yes
1.19	Spinner assembly shall include a direct coupled 3.0 CID drive motor, an 18 inch poly spinner disc, and a mounting bracket that attaches to the left or right side of the auger trough, spinner shall be mounted to allow the spinner to pivot freely	yes
1.20	All supports and brackets shall be type 201 stainless steel	yes
1.21	Spinner disc shall include a shroud to prevent the discharge of materials towards the chassis, and shall have 1/2 inch stainless steel rod guard to prevent inadvertent contact with the rotating spinner	yes
1.22	Spinner assembly shall be mounted independently of the bottom cleanout door and have an easy one-man mount and dismount	yes
1.23	Standard spinner disk shall be 18 inches in diameter and manufactured from red polyurethane material	yes
1.24	Spinner disk shall be direct mounted to the hydraulic motor by means of a cast iron hub	yes
1.25	Spinner motor must have seal saver greaseable cavity with grease zerk between the motor and hub	yes
1.26	Six (6) formed flights on the spinner disk shall be cupped for even spreading	yes
1.27	Spinner motor shall be 3.0 CID low speed/high torque type	yes
1.28	Quick disconnect mounting hardware shall be provided	yes
1.29	All 201 stainless steel parts shall be in bare condition	yes
	END OF SPECIFICATION	
28	**Specification # 04-11-14CBBDY-Option2.C19 Reversing Rear Cross Auger with Center Spinner** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/MS912 or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe MS9612 - DVS application- see opttion for v box application**
1.0	**Basic Requirements:**	yes

1.1	Cross auger shall be of modular design, self-leveling, and mounted to the rear of the combination body	NO- NO LONGER USING SELF LEVELLING MOUNTS BUT USING TWO 00183957-B STAINLESS STEEL TUBULAR MOUNTING BRACKETS THAT MOUNT ON TOP OF THE WING BRACKETS. A 00183960 IS OPTIONED ON THE PRICE SHEET
1.2	Cross auger shall be constructed of 201 stainless steel	yes
1.3	Auger trough shall be 12 inches wide minimum	yes
1.4	The auger trough shall be made to fit to the discharge trough on the combination body	yes
1.5	Trough side and end panels shall be ¼ inch and bottom panel shall be 7 gauge type 201 stainless steel	yes
1.6	Side delivery unit shall be equipped with an air operated diverter chute to direct the flow of material to either the cross auger or the center spinner	yes
1.7	Center opening to the auger shall be fitted with a guard 12 gauge sheet and ¼ inch stainless steel rods	yes
1.8	Trough shall include removable covers of 10 gauge type 201 stainless steel on each end	yes
1.9	Trough shall include removable chutes on each discharge end of 10 gauge type 201 stainless steel with hinged door with handle	yes
1.10	24 inch poly spinner assembly shall be center mounted below trough	yes
1.11	Spinner chute and diverter door shall be 7 gauge type 201 stainless steel	yes
1.12	Diverter door shall be activated by a 2 inch diameter by 2 inch stroke air cylinder	yes
1.13	Spinner assembly shall have three (3) adjustable hinged deflectors of 7 gauge type 201 stainless steel surrounding the spinner disc to regulate spread pattern	yes
1.14	Deflectors shall be adjustable without use of tools	yes
1.15	Spinner assembly with hub shall have a 3.0 CID top mounted hydraulic motor	yes
1.16	Side delivery unit shall be equipped with swivel type mounting brackets and 2 inch tubular inserts for mounting to the combination body	yes
1.17	Auger shall be 9 inch diameter with continuous one way flighting	yes
1.18	Flighting shall be 5/16 thick minimum on outer edge, welded to a 2-7/8 inch OD schedule 40 pipe	yes
1.19	Auger motor shall be directly coupled to the auger shaft with a stainless steel coupler	yes
1.20	Auger shall be driven by a 9.9 CID direct drive hydraulic motor mounted on right hand side	yes
1.21	Drive motor shall have 5/8 inch O-ring ports	yes
1.22	Idler end of auger shall have 1-1/2 inch shaft and be supported by a heavy duty 1-1/2 inch sealed, self-aligning, re-lubable four (4) bolt flange bearing	yes
1.23	All bearings shall be equipped with grease zerks	yes
1.24	Exposed end of shaft opposite drive motor shall have a stainless steel cover	yes
1.25	All 201 stainless steel parts shall be in bare condition	yes
	END OF SPECIFICATION	
29	**Specification # 60-11_14MSDMP-Option3.C19 "Y" Chute Distributor** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Monroe Y chute assembly part no 00100666-A FOR MILD STEEL AND 00100666-E FOR STAINLESS STEEL**
1.0	**Basic Requirements:**	
1.1	Contractor shall provide two (2) "Y" chute distributors: Main body of one "Y" chute distributors shall be in **stainless steel**, and the other **non-stainless steel**.	YES
1.2	Includes "Y" chute distributor, one for 3 spreader, fabricated and assembled as noted in the following MDOT drawings except where this specification differs, specification takes precedence over Drawings.	YES
1,3	All "Y" chute assemblies shall have both right and left drop chutes **(Exceeds drawings)**	YES
1.4	A 1 inch x ¼ inch safety guard shall be welded at the top of the cutout for the spinner **(Exceeds drawings)**	YES
1.5	Chute assemblies shall be designed to be fastened to the 2 inch x 2 inch x ¼ inch type 201 stainless angle members of the spreader body with six (6) 3/8 diameter grade 5 bolts	YES
1.6	Non-stainless chute assemblies shall be powder coated ohma orange to match PPG#700-X or equal	YES
1.7	Chute assemblies may be shipped loose and separate from spreaders	YES
1.8	Vendor shall supply air cylinders to operate both the directional and drop chute doors	YES
1.9	Cylinders shall be 1-½ inch x 4 inch and have a stainless steel rod and bore with poly piston head	YES
1.10	Cylinders shall be mounted and functional upon delivery	YES
1.11	Hinges for the chute doors shall be constructed of type 201 stainless steel **(Exceeds drawings)**	YES
1.12	Each door shall have three (3) hinges, a continuous hinge is not acceptable **(Exceeds drawings)**	YES





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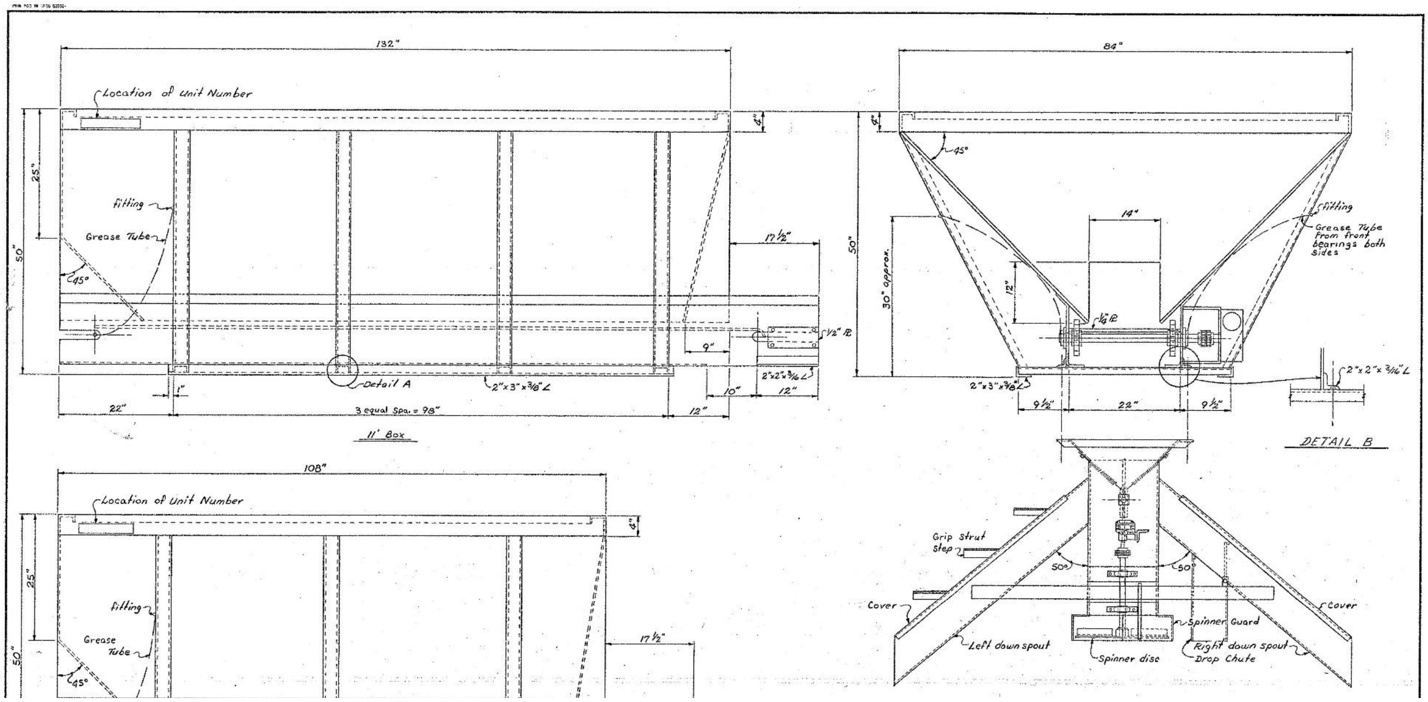
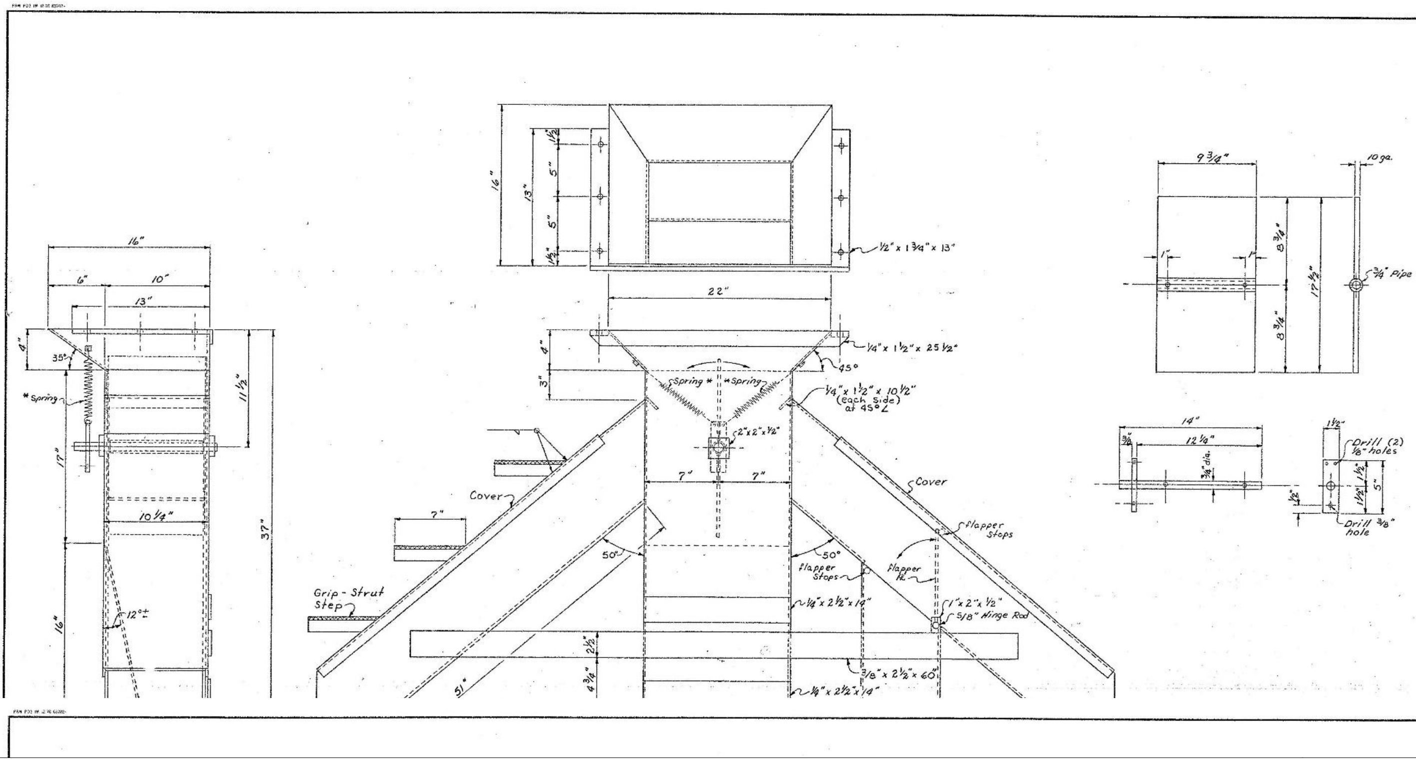
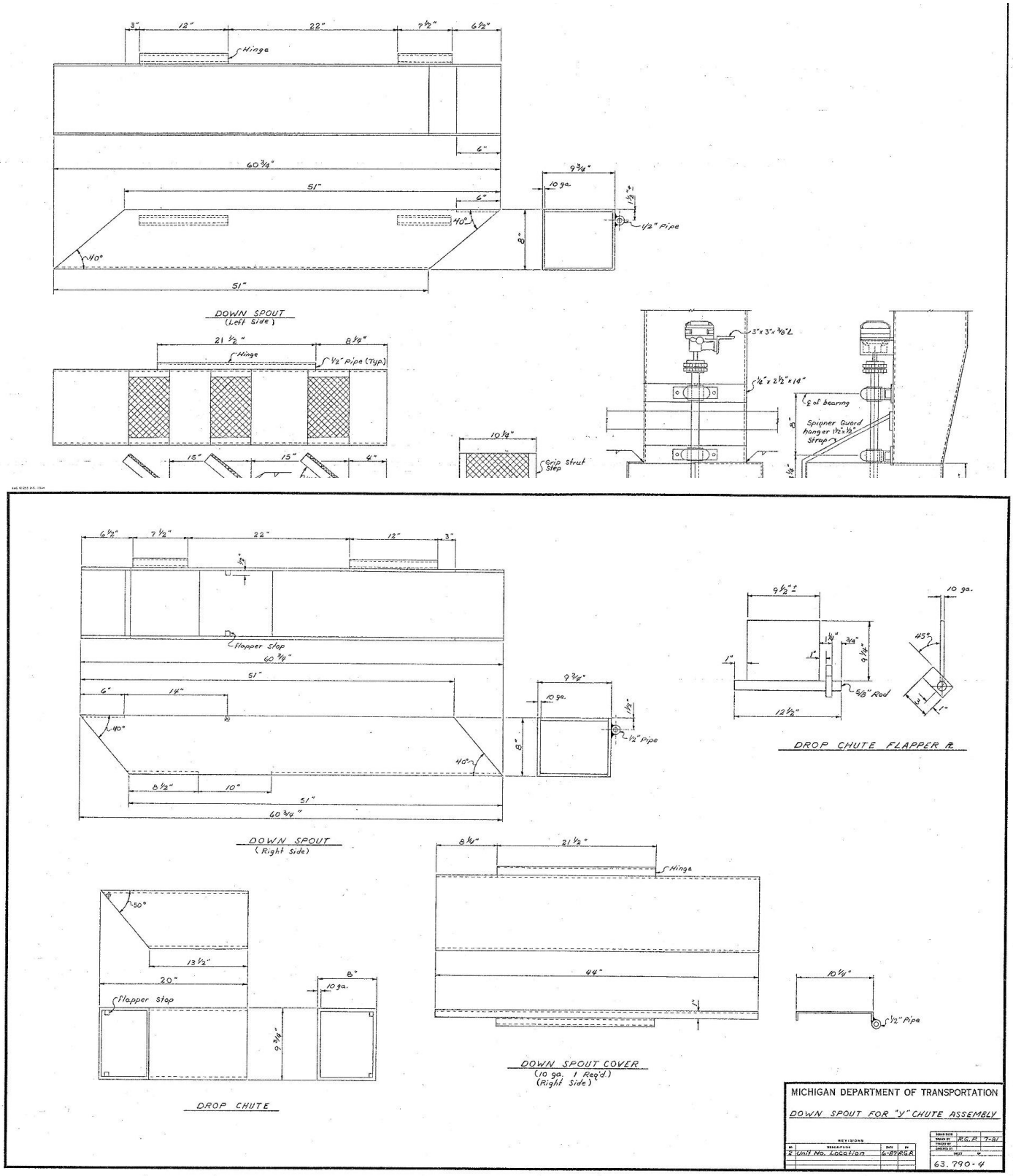


132"
Location of Unit Number
4"
25"
Fitting
Grease Tube
50"
45°
17½"
½" R
9"
Detail A
2"x3"x⅜"∠
1"
10"
2"x2"x3/16∠
12"
22"
3 equal Spa. = 98"
12"
11' Box
84"
45°
14"
Fitting
Grease Tube From front bearings both sides
50" approx.
30" approx.
12"
2"x3"x⅜"∠
9½"
22"
9½"
2"x2"x3/16"∠
DETAIL B
108"
Location of Unit Number
4"
25"
Fitting
Grease Tube
50"
45°
17½"
Grip Strut Step
50°
50°
Cover
Cover
Left down spout
Spinner disc
Spinner Guard
Right down spout
Drop Chute



16"
13"
1½"
5"
5"
1½"
½" x 1¾" x 13"
22"
¼" x 1½" x 25½"
4"
3"
45°
Spring
Spring
¼" x 1½" x 10½" (each side) at 45°∠
2"x2"x¼"
7"
7"
Cover
Cover
7"
50°
50°
Flapper Stops
Flapper Stops
Flapper R
Flapper Stops
Grip - Strut Step
¼" x 2½" x 19"
1"x2"x½"
5/8" Hinge Rod
2½"
4⅜"
51"
⅜" x 2½" x 60"
⅛" x 2½" x 14"
16"
6"
10"
13"
4"
35°
Spring
11½"
17"
10¼"
37"
16"
12°±
9¾"
10 ga.
1"
1"
8⅜"
17½"
8⅜"
¾" Pipe
14"
12¼"
⅜" dia.
1½"
Drill (2) ⅛" holes
5"
Drill ⅜" hole



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		YES.
1.2	Main conveyor shall have the option of a belt over the conveyor chain	YES.
1,3	Chain shall be 667XH type with ½ inch x 1-½ inch cross bars on 4-½ inch centers	YES.
1.4	A 3/8 inch hi-temp rubber belt rated for 212° shall be bolted over the top of the chain, to every cross bar with a minimum of 6 stainless steel bolts and washers on every cross bar	YES.
1.5	Chain shield shall be equipped with rubber hi-temp side seals	YES.
	END OF SPECIFICATION	
31	**Specification # 04-14CBBDY_Option5.C19 Belt Over Main Conveyor Chain** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**YES- WE HAVE PROVIDED THE UPCHARGE AMOUNT FOR BOTH THE REAR DISCHARGE DVS AND THE FRONT DISCHARGE DVS**

1.0	**Basic Requirements:**	
1.1	Shall fit Spec 04-14CMBBDY. C19	YES.
1.2	Main conveyor shall have the option of a belt over the conveyor chain	YES.
1,3	Chain shall be 667XH type with ½ inch x 1-½ inch cross bars on 4-½ inch centers	YES.
1.4	A 3/8 inch hi-temp rubber belt rated for 212° shall be bolted over the top of the chain, to every cross bar with a minimum of 6 stainless steel bolts and washers on every cross bar	YES.
1.5	Chain shield shall be equipped with rubber hi-temp side seals	YES.
	END OF SPECIFICATION	
32	**Specification # 04-11_14CBBDY_Option6.C19 Salt Slurry Generator** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Monroe/SSG-DVS or equivalent. Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**MONROE TAILGATE MOUNTED ROLLER MILL- PART NO 00167887**
1.0	**Basic Requirements:**	
1.1	Unit shall consist of upper chute assembly with guard, roller mill main frame assembly, spinner assembly with shield and spray nozzles	YES
1.2	Upper chute shall be 10 gauge type 201 stainless steel with 3/8 inch reinforced hinge plates	YES
1,3	Upper chute shall have hinges, pins, winch and slide rail assembly to allow chute raising for load dumping	YES
1.4	Upper chute assembly shall be designed for tailgate mounting on combination body	YES
1.5	Upper chute to include fiberglass Nema rated enclosure to house the air pressure regulator and air valve assembly	YES
1.6	Pressure regulator shall be manually adjustable from 0-140 psi	YES
1.7	Air valve shall be electronically activated via a switch in cab of truck (switch supplied by MDOT)	YES
1.8	Upper chute shall be continuously welded 100% throughout	YES
1.9	Upper chute shall bolt directly to the roller mill main frame using stainless steel hardware	YES
1.10	Roller mill main frame shall be ,250 inch and .375 inch type 201 stainless steel	YES
1.11	Roller mill shall incorporate a slide mechanism for roller engagement	YES
1.12	Roller slide engagement shall be activated by 4 inch x 4 inch double acting cylinder with a maximum 200psi rating	YES
1.13	Cylinder shall have a stainless steel rod and aluminum body	YES
1.14	Idler side of rollers shall be 1-3/4 inch shaft mounted to a 1-3/4 inch relubable bearing assembly	YES
1.15	Drive side of rollers shall be direct coupled to the Parker motors	YES
1.16	Rigid set roller shall be driven by a 6 ci 4 bolt Parker motor with a 1 inch drive shaft and coupler	YES
1.17	Engagement roller shall be driven by a 10 ci 4 bolt Parker motor with a 1 inch drive shaft	YES
1.18	Drive motors shall be plumbed in series	YES
1.19	Roller shall be 9 inch diameter and 10 inches in overall length of chrome silicone alloy steel and hardened by heat treating to 53-60 Rockwell C specifications	YES
1.20	Rollers shall have a minimum of four (4) teeth per inch set at .08516 depth	YES
1.21	Rolls shall be balanced to reduce vibration and prevent premature wear	YES
1.22	Complete spinner frame shall bolt directly to the roller mill with stainless steel hardware	YES
1.23	Spinner disc shall be 18 inches in diameter of molded poly	YES
1.24	Spinner shall have a 1 inch diameter hub bolted directly to the spinner motor	YES
1.25	Spinner assembly to have locking rotational adjustment to change spinner's dispersion pattern of granular output	YES
1.26	Mounted on spinner guard shall be three (3) fan nozzles of 3 gpm capacity to fully encapsulate the granular product with the liquid injection of up to 60-90 gallons per ton	YES
1.27	Entire assembly shall be easily raised a minimum of 18 inches to allow for dumping of loaded material without creating interference	YES
1.28	Slide assembly shall be manufactured from type 201 stainless steel structural tube	YES
1.29	Winch, cable and pulleys shall be rated for 1,200 pounds	YES
	END OF SPECIFICATION	
33	**Specification # 65-HHLF.C19 Hydraulic Hook Lift Assembly** **All items specified and furnished by the Contractor shall be new of the latest model in current production and shall include all standard features normally offered with these models**	**Contractor Specification Compliance**
	Referenced Make and Model: Swaploader/SL-412 Hydraulic Hook Lift or equal Contractor to identify proposed make and model Brands or trade names are for identification purposes only and do not limit the Contractor to such brands	**Make and Model: Swaploader SL-412**
1.0	**Basic Requirements:**	
1.1	Chassis will be 64,000 GVW tandem axle, cab, and chassis. Chassis measurements of approx. 218 inch W.B., 136 inch CT., and 192 inch C.E.	yes
1.2	Minimum 40,000 pounds lifting and dumping capacity with the gross weight evenly distributed on the body.	yes
1.3	Hook lift shall be able to handle sub frame mounted bodies with lengths of 12' – 15' with the optimum body length being 12' – 14'	yes
1.4	Minimum lifting and dumping capacity (40,000#) of the hook lift hoist must be achieved for all stated body lengths	yes
1.5	Hook lift hoist shall have a minimum of 60 degree dump angle.	yes
1.6	Hook lift hoist (fixed jib 61 3/4" hook height) not to exceed 4,780 pounds.	yes- not fixed- it rotates to be 61.75" or 53.75"

1.7	Hook lift hoist (adjustable jib 53 7/8” or 61 3/4” hook height) not to exceed 4,930 pounds.	yes
1.8	Sub frame mounted bodies shall be supported with a pair of 7-1/4” min. diameter outside flanged rollers at the rear of the hoist, and be adjustable to accommodate bodies with outside sub frame rail widths of 40-1/2” or 41-5/8”.	yes
1.9	The hook to rear roller dimension to be 143.5” in length.	yes
1.10	Hook lift shall be capable of being mounted to a truck chassis with an “effective” cab-to-trunnion of 102” - 114” with 114” being the optimum dimension for weight distribution and stability	yes (effective CT would be the available frame behind the combination tanks)
2.0	**Operation:**	
2.1	The hook lift telescopic jib shall be capable of hydraulically sliding the body horizontally on the chassis to adjust for weight distribution while remaining in the body locks of the hoist and without lifting the body rails off the hoist frame. Tilting or articulating jib designs are not acceptable	yes
2.2	Hook lift hoist shall have a dual rear pivot section incorporated into the hoist design to allow for both a true dump truck operation, with the body secured to the hook lift via body locks during the entire dump cycle, and providing increased mounting leverage through the mount cycle.	yes
2.3	Hook lift jib to cycle rearward, to the A-frame lifting bar, by means of double articulating hinge points (dual rear pivot) incorporated into the hoist mechanism	yes
2.4	Hook lift body shall lock into a common rigid full-length frame to support the body when in a dump mode. This must be accomplished by mechanical operated latches, which secure the mast lock without relying on gravity or hydraulic operated locks to accomplish	yes
2.5	Must have a jib lockout valve to prevent operation of the jib while in a dump mode.	yes
2.6	Hook lift shall be designed to function through all modes (load, unload and dump) without the use of breakaway tabs and/or proximity switches	yes
3.0	**Hydraulic Cylinders:**	
3.1	All hydraulic cylinders shall be double acting with polished nitrided cylinder rods. Unpolished nitrided or chrome cylinder rods are not acceptable	yes
3.2	Dual dump/lift cylinders to be a minimum 6” diameter bore with 56” stroke and 3” diameter rods.	yes
3.3	Dump/lift cylinders must have dual integral counterbalance valves. No external or remote mount (connected by steel lines) counterbalance valve configurations to be accepted.	yes
3.4	Dump/lift cylinders must include 3” diameter spherical bearings on both end mounts to ensure flexibility and longevity of the cylinders	yes
3.5	Telescopic jib cylinder shall be a minimum 4” diameter bore with 30” stroke and 2-1/2” diameter rod	yes
3.6	Telescopic jib cylinder must have a single integral counterbalance valve. No external or remote mount (connected by steel lines) counterbalance valve configurations to be accepted	yes
4.0	**Hydraulic System:**	
4.1	Note Items 4.2-4.4 through will normally not be required for MDOT applications	yes
4.2	Direct mount gear type pump, 22.3 GPM at 1500 RPM, with a 3,500 PSI maximum system operating pressure	yes- applicable but not included
4.3	30 gallon oil reservoir tank (minimum) is to have a sight gauge to indicate fluid level with integral thermometer. Must have a 100 mesh suction strainer with bypass relief	yes- applicable but not included
4.4	Must contain a return filter assembly; with replaceable 10 micron filter cartridge.	yes- applicable but not included
4.5	High-pressure hoses to be SAE 100R2 type AT, or equivalent, rated for 3,500 PSI (minimum) working pressure with JIC 37 degree swivel fittings	yes- applicable but not included
4.6	Hydraulic fittings are to be SAE O-ring boss or JIC 37 degree type wherever possible. Metric fittings are not acceptable	yes
4.7	Control valve to be stackable type with JIC 37 degree fittings, and contain an integral 3,500 PSI relief valve cartridge	yes- applicable but not included
4.8	Dual control levers, cable or air operated, mounted in the truck cab. Controls are to be spring centering type for safe operation	yes- applicable but not included
4.9	Hook lift hydraulic system shall be designed to allow for ease of integration into a Central Hydraulic package through maximum system operating pressures not to exceed 3,500 PSI.	yes- applicable but not included
5.0	**Mainframe Design:**	
5.1	The overall height of the hook lift mainframe assembly to be 11”.	yes
5.2	The mainframe of the hoist is to be constructed of a “Z” rail configuration.	yes
5.3	The “Z” rail mainframe is to be a maximum of 10-1/2' in height and constructed of 1/4" thick A572 50 KSI steel	yes
5.4	The hoist “Z” rail mainframe assembly to include a minimum of 6 (3 per side) 11-3/4” x 2-3/4” x 1/2" nylatron wear pads. The nylatron pads allow the bodies to slide back and forth horizontally on the “Z” rail of the hoist with ease	yes
5.5	Metal to metal contact (direct contact of the body sub frame rail on the hoist mainframe rail) will not be allowed.	yes
6.0	**Jib Hook Design:**	
6.1	Fixed Jib:	yes
a.	Vertical jib to be constructed of a 9” x 9” x 1/2" wall square tube of A500 50 KSI steel.	yes
b.	The fixed jib hook height shall be 61-3/4”, as measured from the bottom of the sub frame long rails to the bottom of the A-frame lift bar.	yes
c.	The fixed 61-34” jib hook shall be able to pick up a body 22-1/2” below the grade of the A-frame lift bar (presumes a 41” truck frame height as loaded/unloaded on a level surface	yes
d.	Jib hook to be permanently welded to jib	
6.2	Adjustable Jib:	yes
a.	The adjustable jib hook must be adjustable to either 53-7/8” or 61-3/4” hook height	yes
b.	With the jib hook height set at the 61-3/4” position, the hook lift shall be able to pick up a body 23-1/2 below the grade of the A-frame lift bar	yes
c.	With the jib hook height set at the 53-7/8” position, the hook lift shall be able to pick up a body 8-1/2” below the grade of the A-frame lift bar	yes

6.3	Both positions presume a 41” truck frame height as loaded / unloaded on a level surface	yes
6.4	Both the fixed or adjustable jib hook to be designed to secure the body to the hoist without the need for a hook latch assembly	yes
7.0	**Pins:**	
7.1	All hook lift pins to be constructed of high-strength CFR steel bar	yes
7.2	All pinned connections to be greaseable to lubricate and flush out all contaminates	yes
7.3	Permanently lubed pins are not acceptable	yes
8.0	**Hook Lift Hoist Body Locks:**	
8.1	Hook lift hoist to have passive integral slide through body locks to secure the body latch plates of the body, to the hook lift hoist, in both the dump and transport positions	yes
8.2	The hook lift hoist body locks shall accommodate different length bodies and allow for weight distribution changes while remaining in the body locks of the hoist, when in the transport mode	yes
8.3	The hook lift hoist body lock assembly must be a bolt-on design	yes
8.4	Prong style body locks are not acceptable	yes
9.0	**Sub frame:**	yes
9.1	The A-frame of the body shall be designed to allow the hook lift operator to approach and load the body on the truck chassis frame from an angle	yes
9.2	The sub frame mounted body shall have integral slide through latch plates installed on the outside of each long rail to secure the body to the hook lift hoist in both the dump and transport positions	yes
9.3	Slide through latch plates on the sub frame long rails to be a minimum of 24” in length to allow the body to slide forward and back horizontally while remaining fully engaged in the hoist body locks	yes
10.0	**Swap Loader Sub Frame:**	
		
10.1	Swaploader sub frame to fit 400 Swap Loader series unit	yes
10.2	Unit shall be galvanized coated	yes
10.3	All welds shall be continuous	yes
10.4	Frame shall be 182 inches long x 41 1/2 inches	yes
10.5	Long sills, front cross brace and front hook attachment shall be constructed out of 6" x 2 1/4" x 1/4" steel box channel	NO- 3/8" X 3" X 6" FORMED CHANNEL WITH A 20 IN LONG REINFORCMENT INSIDE THE CHANNEL AT THE FRONT
10.6	The bottom front corners of the long sills shall have a 3 inch x 3 inch diagonal surface	FRONT DIAGONAL BRACES/GUSSETS ARE 3/8" X 12" X 12"
10.7	Both ends of long sill shall be gusseted with 1/4 inch plate	FRONT A FRAME LAPS OVER THE LONGITUDIAL SO NO PLATE IS NEEDED
10.8	Long sills shall have a steel plate that is 35 1/2 inches x 2 1/4 inch x 1/2 inch plate welded on. Plates shall be located beginning 67 1/2 inch's forward from the rear of the long sill and shall have a 2 1/4 inch taper on the front edge. Shall be continuously welded to the long sill	YES
10.9	Long sills shall have four (4) 5/8" holes drilled at the rear for mounting rollers or legs. The top two (2) holes shall be located 1" down from the top of the rail and shall be located 13" and 3" from the rear of the long sill, the bottom two (2) holes shall be located 5" from the top of the rail be located 12" and 2" from the rear of the long sill	MULTIPLE HOLE FOR ROLLER LEG ATTACHMENTS LEG ATTACHEMENTS AND MULTIPLE LOCATIONS FOR VARIOUS REAR ATTACHMENTS
10.10	Unit shall have a 4 inch x 1/4 c channel, 37 3/4 inch's long welded between the rear of the long sills. The c channel shall be located 7 1/4 inch's in from the rear of the long sills	yes

10.11	The front of the frame shall be constructed with two (2) pieces of 6 inch x 2 1/4 inch by 1/4 steel box channel. The channels shall be welded at an angle that allows them to fit to an 11 1/4 inch x 15 inch x 10 1/2 inch c channel at the top. The uprights shall have 1/4 inch gussets welded on the inside and outside where they connect to the long sills	No- front A frame is constructed of 3/8" formed channel. The a frame also has a 1/4" reinforcment plate welded acress the back side of it to prevent the hook from accidently hitting the front of the V box if the operator misjudges the location when loading.
10.12	The front of the frame shall have a 41 1/2 inch piece of 6 inch x 2 1/4 inch steel box channel welded to the uprights and the top of both long sills	NO- 6" STRUCTURAL FRONT CHANNEL IS INSTALLED
10.13	The 11 1/4 inch channel shall have a hole sized to accommodate a 2 1/2 bar that is bent at an angle that allows it to be hooked by the jib hook of the jib arm	yes
10.14	The 2 1/2 inch bar shall have 5 inch diameter gussets continuously welded to the outside of the 11 1/4 inch angle and the 2 1/4 inch bar shall be continuously welded to the 5 inch gusset as well as the inside of the channel	yes
10.15	There shall be six (6) mounting brackets on the inside of each long sill, these shall be 8 1/4 inch's x 4 3/4 inch x 1/4 inch steel with the 8 1/4 inch x 2 1/4 inch portion welded to the top of the longsills and they shall have 2 inch angles welded down each side along the long sill.	no- Brackets are integrated into the construction of the subframe longitudial.
10.16	The brackets shall have two (2) 5/8 holes located 3 1/2 inch from the outside of the long sill, 5 1/2 inch on center on each bracket	yes
10.17	The first bracket shall be located 30 1/2 inch's from the rear of the long sills, the remaining brackets shall be located 24 inch's on center from the first bracket	yes
	END OF SPECIFICATION	

	ADDENDUM FOR ADDIONAL SPECIFICATIONS ON OPTIONAL PRICING SUBMITTED ON SCHEDULE B PRICING	
1	**OPTIONAL TANK FOR WESTERN STAR APPLICATION- DOES NOT INCLUDE MOUNTING BRACKET**	
	optional pricing for combination tank to fiit Western Star Chassis: Because of chassis configuration, this combination tank does not include a valve enclosure. Part no 00187678 20 GAL/30 GAL TANK KIT INCLUDES THE FOLLOWING: TANK IS PAINTED BLACK , TANK IS 46 LONG, 40 TALL, 21 WIDE, LOW OIL SENDING UNIT IN THE OIL TANK-24" UNIT, 3 PSI CAP FOR HYD TANK, LENS TYPE FILTER MOUNTED IN THE TANK WITH A SPARE ELEMENT , 3" SUPPLY PORT MOUNTED IN THE HYD TANK ,FUEL TANK INCLUDES A CLEANOUT FOR THE CENTER BAFFLED ARE ABOVE THE SUMP, 3 PORTED SUMP FOR ENGINE SUPPLY AND RETURN MOUNTED IN THE BOTTOM OF THE TANK , MOUNTING BRACKETS AND BUBBER BUSHINGS SUPPLIED WITH THE TANKS, SUPPLY WITH TWO SPARE FILTER ELEMENTS , SUPPLY WITH Bypass switch shall be Force America PS-25-WP, SUPPLY WITH LOW OIL SENSOR PART NUMBER 248896 , FUEL SENSOR ISSPRO NUMBER RA9536ISSLP, FILTER KIT NO IS 00187682 INCLUDES 2 SPARE FILTER ELEMENTS AND A 3" X 2" SUCTION STRAINER	
1		yes
	Optional pricing for prewet systems for various applications	
4.1	Hydraulic drven prewet system for **rear discharge combination bodies** includes the followling: 00017232 PUMP WITH DJ RATE SENSOR, 00065210 NOZZLE KIT, 05050320 BULK FILL KIT, 00185532 FLUSHER KIT, 00020043 QUICK CONNECT KIT , 00188379-C ENCLOSURE MOUNTING KIT, 00185534 CROSS OVER KIT RDS/DVS, TWO 00012641-B 100 GAL LIQUID TANKS WITH SS MOUNTS	YES
4.2	Hydraulic drven prewet system for **front and rear discharge combination** bodies includes the followling: 00017232 PUMP WITH DJ RATE SENSOR, , 05050320 BULK FILL KIT, 00185532 FLUSHER KIT, 00020043 QUICK CONNECT KIT , 00188379-C ENCLOSURE MOUNTING KIT, 00185534 CROSS OVER KIT RDS/DVS, TWO 00012641-B 100 GAL LIQUID TANKS WITH SS MOUNTS, 00065211 NOZZLE KIT W 6 NOZZLES AND DIVERTER.	YES
4.3	Electric pump driven prewet system for **rear discharge combination** bodies includes the following:2019 PRICING INCLUDES THE FOLLOWING 00188374 CLOSED LOOP BASE KIT W/ PLUMBING KIT, 6 GPM ELECTRIC PUMP W/ 14" x 12" x 5" ENCLOSURE AND PLUMBING KIT FOR DICKEY JOHN FLOWMETER *DOES NOT INCLUDE CONTROLLER OR HARNESS* 00188379-C STAINLESS STEEL MOUNTING BRACKST FOR PREWET SYSTEM, 00012641-C TANK KIT: 100 GAL, 5" LID, 201 STAINLESS STEEL HDW, 00065210 NOZZEL KIT, ELECTRIC UNIT, 2 GPM, 3 NOZZELS, 00185534 CROSS OVER KIT 00185532 FLUSH KIT, MTE PRE-WET SYSTEM 12VDC & HYDRAULIC, 05050320 BULK FILL KIT, MTE PRE-WET SYSTEM 12VDC & HYDRULIC, 00020043 QUICK DISCONNECT KIT	YES
4.4	Electric pump driven prewet system for **front and rear discharge combination dump bodies** includes the following:2019 PRICING INCLUDES THE FOLLOWING 00188374 CLOSED LOOP BASE KIT W/ PLUMBING KIT, 6 GPM ELECTRIC PUMP W/ 14" x 12" x 5" ENCLOSURE AND PLUMBING KIT FOR DICKEY JOHN FLOWMETER *DOES NOT INCLUDE CONTROLLER OR HARNESS* 00188379-C STAINLESS STEEL MOUNTING BRACKST FOR PREWET SYSTEM, 00012641-C TANK KIT: 100 GAL, 5" LID, 201 STAINLESS STEEL HDW, 00185534 CROSS OVER KIT, 00065211 NOZZLE KIT W 6 NOZZLES AND DIVERTER. 00185532 FLUSH KIT, MTE PRE-WET SYSTEM 12VDC & HYDRAULIC, 05050320 BULK FILL KIT, MTE PRE-WET SYSTEM 12VDC & HYDRULIC, 00020043 QUICK DISCONNECT KIT	YES
4.5	Hydraulic driven prewet system to fit **Slide in V boxes i**ncluding the following: 00017232 PUMP WITH DJ RATE SENSOR, 00065210 NOZZLE KIT, 05050320 BULK FILL KIT, 00190327 FLUSHER KIT, 00020043 QUICK CONNECT KIT, 00185531 CROSS OVER KIT V BOX SPREADER, 00056496-B TWO 100 GAL LIQ TANKS W/ NEW STYLE MOUNT BRACKETS TO FIT V BOX	yes
4.6	Electric drieven prewet system to fit **slide in V box spreaders** includes the following: 00188374 CLOSED LOOP ELECTRIC BASE KIT W/ PLUMBING KIT 6GPM ELECRIC PUMP W/ ENCLOSURE AND PLUMBING KIT TO BE USED IN CONJUNCTION W/ DICKEY JOHN FLOW METER, INCLUDES 14" X 12" X 5" ENCLOSURE, *DOES NOT INCLUDE CONTROLLER OR HARNESS* , 00020043 QUICK DISCONNECT KIT, 00185531 CROSS OVER KIT, 1 1/4" HOSE, 05050320 BULK FILL KIT, MTE PRE-WET SYSTEM, 00190327 FLUSH KIT, 00056496IB TANK KIT, MV/MSV, (2) 100 GAL,POLY,1TK,304,STD TANK,M-DOT, 00065210 NOZZEL KIT, ELECTRIC UNIT, 2 GPM, 3 NOZZELS.	yes
4.7	installation of prewt system on DVS bodies or V box spreaders	yes
	FLIP UP SPINNER OPTION	

Flip up spinner for DVS combination bodies includes the following- part number 00050733-L Includes a 24" poly spinner disc with adjustable inside delfectors, 3.2 cid spinner motor, hinged lid, and comes with a 00050708 winch kit with brake

22.1 assembly yes

V BOX OPTIONS

Monroe model MCV168-84-36/201ss with belt over chain - part no 00184408-B includes the following.14 FT V BOX SPREADER
INCLUDES THE FOLLOWING
HI TEMP BELT OVER CHAIN
56" SIDE HEIGHT/84" WIDTH
10 GA 201 OR 304 HOPPER, 7 GA 201 OR 304 LONGITUDINAL
1/4" 201 OR 304 SS REPLACEABLE FLOOR
FORMED CHAIN SHIELDS WITH RUBBER SIDE SEALS
INCLUDES DOGHOUSE CUTOUT FOR TELESCOPIC HOIST
STRUCTURAL C CHANNEL CROSSS MEMBERS
INSTALL HOPPER HOLD DOWN BRACKETS ON THE SIDE OF THE V BOX
00058885I FRONT BEARING GREASE EXTENSION KIT TO REAR

26.1 00034163IB SLACK ADJUSTERS TO THE REAR yes

Monroe model MCV168-84-36/201ss with dual augers PART NO 00183152-B includes the following:
10 GA HOPPER SHELL WITH 7 GA LONGITUDINAL CONSTRUCTED OF TYPE
201 STAINLESS STEEL
REPLACEABLE AUGER TROUGH
DUAL AUGERS WITH STEP FLIGHTING AND INVERTED V
PLANETARY GEAR BOXES WITH DIRECT MOUNTED MOTORS
APPLICATION RATE SENSOR IN ONE MOTOR
FRONT BEARING GREASE EXTENSIONS TO THE REAR
STANDARD TOP GRATE WITH HYDRAULIC INTERLOCK KIT
USE CHANNEL TYPE CROSS MEMEBERS UNDER THE V BOX AS WELL AS A
ANGULAR SUPPORT THAT GOES FRONT TO BACK ON EACH SIDE OF THE
BODY.
INSTALL TOP SCREENS WITH DISCONNECT
INSTALL DOGHOUSE TO FIT DUMP WITH TELESCOPIC CYLINDER AUGER MOTORS

26.2 ARE MOUNTED AT THE REAR YES

ATTACHEMENT OPTIONS

Mounting tube for MS9612 installation on a DVS body is the mounting bracket that bolts to the rear hitch plate. It is reversible for unit that have either right or left hand mounted wings. For units with dual wings, no bracket will be needed. For units with no wings,

28.1 2 units will be needed. Part number is 00183960 yes

Option for MS9612 cross auger with necessary mounting bracket to fit a MCV slide in V box spreader including the following:
00188376-C WITH 00190365-C DROP CHUTE FROM V BOX
UPDATED IN 2018 WITH 9 CID DRIVE MOTOR
MS9612 CROSS AUGER ASSEMBLY INCLUDES THE FOLLOWING
9" AUGER
ONE WAY FLIGHTING- NO REVERSE FLIGHTING
CENTER SPINNER WITH24" POLY SPINNER DISC
MOTOR MOUNTED ON THE CURB SIDE
MOUNTING BRACKETS TO FIT V BOX

28.2 DROP CHUTES EACH SIDE YES

SWAPLOADER V BOX OPTION

14 FT MCV168-84-36 DUAL AUGER V BOX INCLUDES THE FOLLOWING
10 GA HOPPER SHELL WITH 7 GA LONGITUDINAL CONSTRUCTED OF TYPE
201 STAINLESS STEEL
REPLACEABLE AUGER TROUGH
DUAL AUGERS WITH STEP FLIGHTING
PLANETARY GEAR BOXES WITH DIRECT MOUNTED MOTORS
APPLICATION RATE SENSOR IN ONE MOTOR
FRONT BEARING GREASE EXTENSIONS TO THE REAR
USE CHANNEL TYPE CROSS MEMEBERS UNDER THE V BOX AS WELL AS A
ANGULAR SUPPORT THAT GOES FRONT TO BACK ON EACH SIDE OF THE
BODY.
1/2" PIPE GROUP DOWN THE SIDE OF BODY FOR REAR SPINNER AND CROSS AUGER
AUGER MOTORS ARE MOUNTED IN THE FRONT INVERTED V
OVER AUGERS BOLT TOP SCREENS- NO

33.2 INTERLOCK YES

PLOW OPTIONS

	Monroe model MP36-60-12-CT. Expressway plow includes the following:CENTER HEIGHT IS 36" , DISCHARGE HEIGHT ON EACH END IS 60" MOLDBOARD LENGTH IS 12 FT. 3/16" ROLL FORMED MOLDBOARD SEVEN 1PC 1/2" FLAME CUT TAPERED RIBS DUAL COMPRESSION TRIP ASSEMBLIES TWO 4" X 10" DOUBLE ACTING CYLINDER W/CUSHION VALVE 34" HUSTING HITCH STRESS PROOF MACHINED AND PLATED PINS ALL COMPONENTS AND MOLDBOARD 100% CONTINUOUSLY WELDED MOLDBOARD SHOT BLASTED AND POWDER COATED ORANGE ON FRONT, BLACK ON REAR PUSHFRAME AND COMPONENTS SHOT BLASTED AND POWDER COATED BLACK 34" HUSTING HITCH (INSTALLED) STANDARD RUBBER SNOW DEFLECTOR 4" POWER REVERSE CYLINDERS SNOW WHEEL MOUNTING BRACKETS WITH 6509 ADJUSTABLE SNOW WHEELS		
34	PAINT FRONT OF MOLDBOARD ORANGE, BACK OF MOLDBOARD BLACK.		YES
	Monroe model no MP48R12-ISCT-2ME PART NO 00029455 INCLUDES THE FOLLOWING REVERSIBLE PLOW, MP48R12-ISCT-ME2, 10 GA, HHL 48" TALL, 12' LONG W/ INTEGRAL SHIELD 10 GAUGE ROLL FORMED MOLDBOARD DUAL MOUSE EARS SIX (6) 1 PIECE 1/2" FLAMECUT TAPERED RIBS 6-ATTACH POINT PUSHFRAME DUAL COMPRESSION TRIP ASSEMBLIES TWO (2) 4"x10" DOUBLE ACTING CYLINDER W/ CUSHION VALVE HUSTING HITCH LIFT STRESS PROOF MACHINED AND PLATED PINS ALL COMPONENTS & MOLDBOARD 100% CONTINUOUSLY WELDED MOLDBOARD SHOTBLASTED & POWDER COATED ORANGE PUSHFRAME & COMPONENTS SHOTBLASTED & POWDER COATED BLACK INCLUDES 00059130I DEFLECTOR KIT INCLUDES 00069489I 34" HUSTYING HITCH KIT	12	
35	00148092 SNOW WHEEL KIT WITH 6509 SNOW WHEELS		YES
	MONROE ONE WAY, LEFT DISCHARGE FIXED ANGLE, NO TRIP PLOW MODEL MPFA34-71-12NT-LH-3/16" INCLUDES TRIP 3/16 MOLDBOARD MOLDBOARD LENDTH IS 178" DISCHARGE HEIGHT IS 73" LEFT HAND DISCHARGE, FIXED ANGLE, HEAVY DUTY PUSH FRAME W/ 3" OFFSET NOSE HEIGHT IS 34" STEEL DEFLECTOR 38 DEGREE ATTACK ANGLE 3/8 LANDSLIDE PLATE NOSE GAURD 3/16" BRAKE FORMED MOLDBOARD 12' X 8" X 5/8" CUTTING EDGE TO INCLUDE PLOW PORTION OF A 34" HUSTING HITCH BOOMERANGE ADJUSTABLE 2" X 6" X 16" CAST SHOES MOLDBOARD AND PUSH FRAME ARE CONTINUOUS WELDED 1 PIECE FLAME CUT RIBS MOLDBOARD POWDER COATED ORANGE WITH BACK SIDE BLACK	RIGID NO	
36	MOLDBOARD IS OFF SET TO THE LEFT 3"		YES