Request for Quote

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ONE CAPITOL HILL
PROVIDENCE RI 02908

CREATION DATE : 28-FEB-18
BID NUMBER: 7590555
TITLE: Heavy Duty Dump Truck(10 Wheeler) w/ Single Wing Plows & All Season Dump Bodies

BID CLOSING DATE AND TIME:29-MAR-2018 01:30:00

BUYER: Missell, Katherine S
PHONE #: 401-574-8114

BILL TO

MASTER PRICE AGREEMENT
SEE BELOW
RELEASE AGAINST, RI MPA
US

SHIP TO

MASTER PRICE AGREEMENT
SEE BELOW
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US

Requistion Number: 1548712

Line	Description	Quantity	Unit	Unit Price	Total
1	DOT: 2018 HEAVY DUTY DUMP TRUCKS (10-WHEELER) W/SINGLE WING PLOW & ALL SEASON DUMP BODIES PER SPECIFICATIONS Prebid meeting March 8, 2018 1:30 PM Transportation Building 360 Lincoln Street, Warwick	13.00	Each		

Delivery: _____

Terms of Payment: _____

It is the Vendor's responsibility to check and download any and all addenda from the RIVIP. This offer may not be considered unless a signed RIVIP generated Bidder Certification Cover Form is attached and the Unit Price column is completed. The signed Certification Cover Form must be attached to the front of the offer

SPECIFICATIONS

Rhode Island

Department of Transportation

Highway and Bridge Maintenance Division

10 WHEEL HEAVY DUTY DUMP TRUCK
WITH SINGLE WING PLOW AND ALL SEASON BODY

BACKGROUND:

The Rhode Island Department of Transportation is seeking to contract with a vendor with demonstrated proficiency in building Ten-Wheel Dump Trucks for highway winter maintenance operations. Units are utilized primarily for Winter Operations and shall be suitable to be outfitted with All season body, saddle tanks, front plow, and single wing plow.

The Department expects to contract for Thirteen (13) units. The vendor cost proposal will represent one total cost per unit.

SCOPE OF WORK (SPECIFICATIONS)

General Scope of Work

The following specifications and dimensions shall apply to purchases of HEAVY DUTY TANDEM DUMP TRUCK (10-WHEELER) WITH WING PLOW ASSEMBILY for the Rhode Island Department of Transportation. The State reserves the right to waive minor technicalities under this specification. Federal and State laws supersede any conflicting part of this specification.

The unit shall be the latest current model of standard design manufactured, complete with all standard equipment, and warranties. Bidders are to supply the latest printed literature and detailed specifications on equipment the bidder purposes to furnish. All parts utilized on the unit shall be new and unused and of which parts are stocked at one or more locations in Rhode Island and/or Southern New England region.

The unit bid shall be designed and all components selected and used according to sound engineering principles and industry best practices. All completed units shall comply and be tested in accordance with all applicable FEDERAL, O.S.H.A. ANSI, FMVSS, EPA and DOT standards and regulations. The specifications listed below shall be considered minimum requirements.

The bidder agrees, if his proposal is accepted, to guarantee the design, material and workmanship of the unit bid according to the standard factory warranty, or detailed in the following specification, whichever is greater. A copy of the warranty shall accompany the bid. Warranty coverage shall include costs of transporting the unit to and from servicing shop, when outside a 50 mile radius of the delivery point. The bidder shall be responsible for pickup and delivery (including fuel) of any units that are found to have defects within the first three (3) weeks of delivery to RIDOT and have to return to dealer for repairs.

The dimensions in this specification are not intended to preclude any manufactures. Minor deviations to the dimensions based on sound engineering and proven product life in municipal applications are acceptable.

Any manufacture’s deviation from the specification, no matter how minor, shall be noted on a separate sheet and be referenced to the section. The deviation shall be explained in detail and identified as an Exception, Clarification or Enhancement. Any "or equal" or "equivalent" items for brand specified components shall be listed with the bid package. Complete description and literature on the "or equal" components shall be supplied for consideration by the RIDOT. The burden of proof regarding "or equal" items will be upon the vendor. Responses that do not include an Exception, Clarification or Enhancement sheet on the bidder’s letterhead shall be determined to be non-responsive.

GENERAL: This specification is intended to allow competitive bids on the following manufacturers or approved equal: International HX, Freightliner 114SD, Mack Granite, Peterbilt 348, Volvo Model VHD Series, and Western Star 4800.

CHASSIS MANUFACTURER AND MODEL NUMBER:
Indicate manufacturer and model number of the chassis quoted.

Manufacturer:_____

Model:_____

BODY MANUFACTURER AND MODEL NUMBER:
Indicate manufacturer and model number of the body quoted.

Body Manufacturer:_____

Body Model:_____

PLOW AND WING PLOW MANUFACTURER AND MODEL NUMBER:
Indicate manufacturer and model number of the plows quoted.

Plow Manufacturer:_____

Plow Model:_____

Wing Plow Manufacturer:_____

Wing Plow Model:_____

2017 or CURRENT MODEL YEAR CAB & CHASSIS 10-WHEEL TRUCK

These trucks are to be outfitted with SINGLE WING PLOW assemblies as well as a front plow assembly. If the below listed requirements and minimum requirements require alterations to properly execute this build, then it is the BIDDERS responsibility to bid accordingly.

Dimensions/G.V.W MINIMUM REQUIREMENTS
GVW rating – 77,000 pounds minimum
GCW rating – 80,000 pounds minimum
Wheelbase – 216" minimum shall be verified with the body installer
CA – 132" minimum, shall be verified with the body installer
Platform – 198" LP, 62"AF, verify with bodybuilder

COMPLY _____

Frames MINIMUM REQUIREMENTS
Double rail, with minimum 3.25" flange
Minimum RBM- 3,840,000 inch-pounds per rail
Minimum Section Modulus 32.0
Frame rails treated w/ Tectyl 185GW Pigmented 2.8 VOC for rust resistance
24" front frame extension, continuation of parent rail (not bolted)
Clear outside frame rail RH side back of cab for wing plow installation
I-beam crossmembers
Swept back steel bumper
Front tow hooks
Two rear tow hooks
All fuel tanks, air tanks, air drier, etc. shall be located either under the cab or on the inside of the frame rails. It is the responsibility of the vendor to coordinate with the body company to ensure that all equipment mounted on the frame rails (battery box, air tanks, hydraulic tank, tool box, shovel box, etc.)will fit in such a matter as to be functional, serviceable, and give adequate clearance for body/chassis movement and wheel travel in all normal conditions.

COMPLY _____

Engine Diesel/Engine Equipment MINIMUM REQUIREMENTS
Minimum 390 HP 13 Liter at 1500-1900 RPM, 1340 lb ft torque
Engine to utilize current SCR emission technology
Inside/outside air intake w/in-cab controls
Alternator – 12V 160 amp
Batteries – (3) 12V 1000/3000 CCA
Engine block heater 120 volt/1500 watt includes block heater socket receptacle
Air compressor, 18.7 cfm
Bug screen, radiator mounted
Engine hoses and tubing, silicone
DPF and SCR mounted RH side under cab
Exhaust after-treatment system, diesel particulate filter ceramic passive regulator
Fuel-Water Separator – with fluid heat and 120 volt heater wired with engine block heater
Oil pan – corrosion resistant
Engine compression brake with selector switch
Exhaust, clear BOC, single RH vertical stack, cab mounted, turned end

COMPLY _____

Transmission and Equipment/Drivelines
Allison 4500RDS 6 six-speed automatic with PTO gear, level oil sensor,
Synthetic lube
Driveline – Main, "XTENDED LUBE" or Equivalent
Driveline – Interaxle, "XTENDED LUBE" or Equivalant

COMPLY _____

AXLES, MINIMUM REQUIREMENTS

All hub seals shall be severe duty quality (Stemco Grit Guard or equivalent)

Front Axle
I-beam 20,000 lb capacity
20,000 lb multi-leaf shackle type springs
Front RH spring build-up for wing plow to level chassis
Shock absorbers
RH auxiliary air bag with driver control for wing plow application
Synthetic: lube
Steering –Power

COMPLY _____

Rear Axle
58,000 lb single reduction rear axles with rear lube pump
Rear, 58,000 pound multi-leaf, to articulate w/bronze center bushing 54" spacing
Driver controlled inter axle differential lock with differential lock in tandem rear carrier.
Heavy duty driveline calculated to torque requirements
synthetic lube
Automatic power divider

COMPLY _____

Driveshaft
Heavy duty calculated to driveline torque requirements

COMPLY _____

BRAKES, MINIMUM REQUIREMENTS

(Brakes shall be sized correctly for stopping distances in accordance with FMVSS regulations)
Front Brakes

Front Brake Package:	Q+ cast, standard lube
Front Brake Dimension:	l6.5"x6" minimum
Front Brake Drum:	Outboard mounted cast iron
Front Brake Chamber Type:	Minimum 24 square inch (service)

COMPLY _____

Rear Brakes

Rear Brake Package:	Q+P cast, standard lube
Rear Brake Dimension:	18"x 7" minimum
Rear Brake Drum:	Outboard mounted cast iron
Rear Brake Chambers Type:	30"/30" square inch (service/emergency)

COMPLY _____

Brake system shall include:
- Heated Air dryer
- Dust shields front and rear
- Brake lines color-coded nylon
- Slack adjusters automatic front and rear
- Anti-lock brake system w/traction control, includes dash mounted mud/snow switch
- Full trailer connections including air lines and seven wire cable and plug routed to rear of chassis

- Hand control valve for trailer brakes
- All rear brake chamber clevis pins shall be lubricated with an anti-seize lubricant
- All rear brake shoe anchor pins shall be grease-able with grease fittings COMPLY _____

Tires
Front 315/80R22.5 Load range L/20 ply 10,000 lb weight rating
Rear 12R24.5 Load range H/16 ply traction tread design.

Comply _____

Wheels
Front steel disc, hub piloted (two hand hole) rims
Rear steel disc, hub piloted (two hand hole) rims
Front and Rear - Wheels shall be powder coated white.

Comply _____

Spare Wheels and Tires
One complete set, Two(2) front and Eight(8) rear spare tires and rims matching above, shall be furnished for this lot of trucks.

Comply _____

Electrical System
Twelve-volt negative ground electrical system consisting of the following components:
- Wiring schematic shall be supplied illustrating the wiring system
- Battery box mounting – LH rail back of fuel tank
- "Bodylink" III w/cab pass-thru
- Plow Light Prep

All lights and reflectors shall conform to the motor vehicle laws of the State of Rhode Island.

COMPLY _____

Fuel System
Fuel tank - LH, Minimum 80 gallon aluminum
Aluminum fuel tank steps/straps
8.7 gallon DEF tank COMPLY _____

_____ _____

Cab
Conventional Cab, air suspended (welded steel galvanized shell) to include rust preventative procedures.
Approximately 116" BBC (front of flush bumper to back of cab), engine to sit front of firewall Hood and fenders, fiberglass – tillable with frame mounted fender splash shield section and engine inspection hatches
Identification/clearance lights (5)
Mirrors, stainless exterior west coast RH and LH
Convex spot mirrors
Single air horn
Radio – AM/FM Bluetooth COMPLY _____

Cab Interior
Seat belts with shoulder strap shall be installed for driver and passenger positions which meet latest SAE Specifications and Federal Highway Safety Standards.
Unit shall comply with Federal Motor Carrier Safety Regulations.
Steering wheel, tilt/telescopic
Floor covering rubber, black

Gauge package to include exhaust pyrometer, air restriction monitor, hour meter, engine oil temperature, and transmission oil temperature.
(6) Dash mounted miscellaneous switches - (2) 15A ign, (1) 20A ign, (1) 10A ign, (1) 15A bat, and (1) 20A bat
Dash control/power supply for local install of plow lamps w/lead at grill
PTO – control, switch and light w/wiring and piping factory installed
Keyed alike chassis
Seat driver, Bostrom Talledaga 915 air suspension
Air conditioning with integral heater/defroster
Power Windows / Power Locks COMPLY _____

Paint
Cab shall be White over proper primer for cab and sheet metal. No other color will be accepted by RIDOT, chassis and running gear shall be black. Wheels shall be powder coated white.

2" Diamond Grade 3-M conspicuity tape with 6" alternating red and white blocks shall be used to outline the perimeter of the tailgates and the dump body sides.

COMPLY _____

Accessories
Two wheel chocks, Three safety triangles, One First-Aid Kit
5 lb. ABC UL Rated 3A:40B:C industrial fire extinguisher mounted at the direction of RIDOT.
A 5 gallon absorption capacity universal spill response kit
Two (2) grip strut wheel chocks
Pin style cone holder capable of holding 6 cones
One Motorola APX 1500 Project 25, 700/800 MHz digital radio installed and ready for use,
powered by key-switch accessory. (Attachment #1)
Three sets keys, Ignition keyed synonymously with all vehicles
Fender extensions for front tires
Back up alarm
Backup camera fully installed and operational. Will provide automatic rear view camera and monitor for priority view of rear of vehicle when truck is in reverse. Camera System: 3 camera system, one at the rear for backing and one for each wing operation
In cab power source, 600 Watt invertor (Vanner 600W no exceptions) installed under passenger seat.
Air conditioning
Driver side air ride seat
Floor Mats
Heated Mirrors Comply _____

: Note all hoses and wiring have to be water tight and loomed:

An infrared pavement temperature sensor shall be properly mounted per the manufacturer's recommendations. The gauge shall be mounted in a visible location integrated into the dash layout or as part of spreader control and shall display both air and pavement temperature simultaneously. Shall be a Quixote Transportation Technologies Surface Patrol (no exceptions). Comply _____

Tool Box
A lockable weatherproof toolbox with T-handle latches shall be mounted to the frame on the curb side, under the body. The toolbox shall be approximately 36 inches long by 18 inches high by 18 inches wide. To be constructed of 12 gauge 201 Stainless Steel minimum, with curbside opening stainless steel door with stainless steel piano hinge. Front panel shall have exterior jam lip designed to deflect water away from the door opening.

Edges of door shall seal tightly against weather stripping and chain door retainer. Two keys shall be provided with each unit. The unit shall be bolted to the frame using cradle type mounting brackets.

Comply _____

Warranties

Engine - Please provide warranty information (complete engine including injectors, turbocharger, electrical harnesses, lines and tubes – 100% parts and labor). Exceptions are: aftertreatment system components and related sensors and EA harnesses which shall be covered under separate warranties.

Engine Aftertreatment system and EA Harness and sensors – 60 months/100,000 miles – 100% parts and labor

Chassis - "Bumper to bumper" - 60 months/100,000 miles – 100% parts and labor - including components (but not limited to) such as radiators, cab, suspension, and electrical.

Allison Transmission – 60 months/no mileage limits – 100% parts and labor

No engine hour limitation in above warranties

A breakdown of the standard manufacturer's warranty when it is in excess of the 2 years requested shall be listed for each component of the cab and chassis and included in the manual set.

POWER TILT CUSTOM TRUCK PLOW ATTACHMENT SPECIFICATIONS

The custom truck/plow attachment shall be manufactured by a recognized American designed and manufactured snowplow manufacturer and shall include 1/2" minimum thickness side plates reinforced and bolted as far back on the truck frame as feasible. Hitch overall height of 55" (approx.) and overall width 42" (approx.).

The upper and lower horizontal support members shall be fabricated from not less than 3/8" minimum thickness wall square and rectangular structural tubing. The cylinder base angle shall be fabricated from 3/ 8" minimum thickness wall tube with ½" cylinder connecting lugs.

Tilt shall be constructed from 1/2" minimum thickness plates and 3/8" minimum thickness wall square and rectangular structural tubing. It shall include a locking tab for the cylinder in stored position. The supporting members for wing post are designed to support a wing post at a 8 degree rearward slant. The tilt frame shall include a lift lug and license plate bracket. The attachment shall provide a selection of four (4) push heights, two on 30 1/2" and two on 21" hole centers for connection of the plow.

The plow lift cylinder shall be double acting with a 4" bore, 10" stroke, nitrited piston rod and a polypack seal with a rubber return wiper to clean the piston as it retracts into the cylinder barrel. The base of the cylinder shall attach to the aforementioned horizontal member, while the cylinder rod attaches to a horizontal pivoting lift yoke weldment. Chrome plated cylinders are unacceptable. Cylinders pins are to be 1" cold rolled steel.

The telescoping lift arm shall be manufactured of 4" x 4" x 3/8" square outer tubing and 3" x 3" x 3/8" square inner tubing. The lift plate shall be 1/2" steel and has two banjo-type chain eyes able to accept ½" chain as well as the weight of the plow. The lift arm is designed to be self-storing, eliminating the need to remove it when not in use. This is accomplished by pulling a 1"pin, folding the cylinder up, folding the lift arm into the stored position and reinserting the pin in the lift arm.

It shall be possible to lockout plow lift action and instead hydraulically tilt the entire center portion of the plow attachment (and any applicable side wing appurtenances) forward so to accommodate a tilt hood truck chassis This function shall utilize the same cylinder noted above.

In addition, it shall be possible with the removal of four (4) pins to expediently detach the plow lift device (and any applicable side wing appurtenances) from the custom truck attachment for summer truck application.

Hitch allows for up to 6" of adjustment vertically to accommodate plow mounting height requirements.

HARDWARE PLATING: All nuts, bolts and chain shall be zinc plated.

PAINT: All snowplow running gear shall be powder coated gloss black. The plow assembly shall be powder coated omaha orange.

CYLINDER RODS: All snow plow hydraulic cylinder rods shall be nitrided.

PLOW LIGHTS: **TruckLite brand LED heated element plow lights or approved equal.**

Plow lights to be wired into the truck's existing headlight circuit using the factory installed switch. Plow lights shall function in high and low beam modes using existing truck's dimmer switch. Plow lights and truck chassis headlights shall never operate at the same time

HEAVY DUTY TRIP EDGE WING:
Wing: Shall have an overall length of 12 feet, a nose height of 29” and a discharge height of 40”. The moldboard shall be fabricated from 7 gauge HRMS, the top of which shall incorporate an integral channel shaped continuation of the same so to enhance rigidity. The bottom moldboard reinforcement shall be from 3/4” structural angle.

Moldboard: Shall be provided with not less than six (6) vertical reinforcing ribs from 1/2" thick plate. All with a series of vertically punched holes so to provide a selection of attachment points for the upper and lower stand-off arms. Top angle shall be minimum 3/8” structural angle. Wing moldboard is further reinforced by two (2) intermediate full length horizontal braces fabricated from minimum ½” structural angle.

Additionally, the front nose portion of the wing shall include a selection of two (2) 1- 9/16”diameter holes for attachment with an l ½” hex head bolt at the front mast hinge.

Carbide Cutting Edge: It shall be eleven(11) foot, (3) piece ¾” x 6" carbide sections, and shall be bolted to the plow for easy replacement with 5/8” x 2 ½” Grade 5 carriage bolts and locknuts on 12" centers and be C1090 AASHO Standard. Included at the discharge end shall be 10 degree moldboard shoe and shall include a carbon steel backer blade.

The cutting edge reinforcement shall not be less than 3/4"structual angle with ½” steel plate reinforcing gussets, welded along its entire length.

The trip mechanism shall be an adjustable torsional one piece cutting edge trip. Springs shall have a zero insertion force for increased safety while servicing. Three (3) position adjustment on each individual torsion spring on the trip assembly to allow adjustment in various settings for road conditions.

Standoff Arm: The standoff arms shall be ruggedly designed with the inner arms and outer arms fabricated from a minimum 2 1/8" solid bar stock or 2 1/2" schedule 80 pipe.

Hardware Plating: All nuts, bolts and chain shall be zinc plated.

SPECIFICATIONS FOR RIGHT HAND MOUNT AND POWER HYDRAULIC CONTROLS

General: The rear wing mounting arrangement shall be located behind the cab and in front of the dump body. The intention of this specification is not to preclude products manufactured from Henke, Henderson, Viking or other manufactures that are manufactured for severe duty municipal applications with the ability to remove snow above guardrail.

Rear Mounting Arrangement: The shall be rear mast or Push arm type and shall be fabricated such that mounting points for the blade accept the existing wing plow blades used by RIDOT and the wing operates in the same manner

Rear of Wing Cylinders: Adjustable flow restrictors shall be installed between the hydraulic control valve and this cylinder to provide for variation of speed. The cylinder shall be fitted with an integral counter-balance valve at its base to protect against impact load and the possibility of the wings dropping due to pressure line failure.

Cylinders: Shall not be less than a 3" diameter, double acting,.

Front Wing Mast: Wing post attaches to front mount plow hitch for ease of removal. Moldboard shall attach to slide plate through a pivot assembly.

Shall have a Minimum 10" Round Mirror mounted to the front masts for driver visibility of wing plow during lowering operation.

HEAVY DUTY DRIFT PLOW SPECIFICATIONS

Moldboard: Shall be 11' long, 31"intake height with 53" discharge height and shall extend at least 12" out over the cutting edge. The moldboard shall be formed from one piece of 8-gauge steel sheet. The bottom of the moldboard shall be reinforced by not less than a 5" x 5" x ½" angle. It shall be provided with eight one piece ½" plate vertical ribs, and shall be equipped with two 10-degree moldboard shoes. Attack angle of moldboard shall have adjustments of 5, 10, and 20 degree.

Carbide Cutting Edge: It shall be (3) piece ¾" x 6" carbide sections, and shall be bolted to the plow for easy replacement with 5/8" Grade 5 carriage bolts and locknuts on 12" centers. Shall be C1090 AASHO Standard. Shall be equipped with a carbon steel backer blade.

Cutting Edge Reinforcement: Shall be at least 4" x 4" x ¾" steel angle with ½" steel plate gussets electrically welded to the framework. The cutting edge reinforcement shall not be less than 4" x 4" x 3/4" angle with ½" steel plate reinforcing gussets, welded along its entire length.

Shoes: Replaceable wear parts shall include two (2) moldboard shoes and two (2) cast chilled malleable iron curb shoes.

Trip Mechanism: The trip mechanism shall be an adjustable torsional one piece cutting edge trip. Springs shall have a zero insertion force for increased safety while servicing. Three (3) position adjustment on each individual torsion spring on the trip assembly to allow adjustment in various settings for road conditions.

A Frame: The intention of this specification is not to preclude products manufactured from Henke, Henderson, Viking or other manufactures that are manufactured for severe duty municipal applications. The reversing frame shall be fabricated-from 1/2" minimum thickness plates and 3/8" minimum gusseted at key stress points. Three (3) sets of ½" thick reinforced connecting lugs spanning 80" shall be welded to the 4" x 4" x 3/8" member of the reversing circle. These lugs shall serve as connection points to the moldboard.

Two (2) rear channels of the push frame shall be provided with two heavy duty 1" thick steel ears bolted to the push frame. Ear spacing of plow portion hitch shall be 21" to fit truck portion pin hitch using 1-1/4" diameter pins.

The rear plate shall be fitted with an oscillating bar from ¾" plate, which incorporates 1 ¼" drive ears on 30 ½" centers.

The oscillating bar shall revolve about an l ½" Grade 5 bolt so to allow the plow to follow road contour.

Hardware Plating: All nuts, bolts and chain shall be zinc plated

Plow lift to include dead sheave leveling device with stainless steel cable.

Wrap-A-Round Bumper: An additional bumper shall be supplied at each end of the moldboard (quantity 2). They shall be from a minimum of 5/8" thick steel, shall bolt at the cutting edge face and shall project outward beyond the cutting edge where they shall terminate with a 2 1/8" diameter round bar.

ALL SEASON COMBINATION DUMP BODY / REAR SPREADER

General

These specifications describe a Stainless Steel Rear Discharge, combination dump/spreader body. The dump box shall remain stationary on the chassis frame while spreading. Rear discharge shall be front hoist tilt action as per conventional dump bodies as well as rear spinner when in spreader mode. The unit shall be flat sloped or shaped to have an effective angle of 22.5 degree to permit gravity flow unloading. The intention of this specification is not to preclude products manufactured from Henderson Munibody®, TENCO TCM®, Viking Proline® or other manufactures that are manufactured for severe duty municipal applications.

The spreader body offered by the bidder under this specification shall be the manufacturer latest model standard commercial product and shall have demonstrated and proven industry acceptance by having been manufactured and sold in significant numbers to Municipalities and Contractors, and shall be proven in service for at least five years prior to issuing of this tender document.

The bidder if requested shall be able to provide name and contact information of a least five Municipalities who currently own and operate the same make and model of spreader body that the bidder is offering in the tender submission.

Capacity and Dimensions

Water level capacity shall be a minimum of 10 cu. yd.
Water level capacity with 10" sideboards shall be a minimum of 14 cu., yd.
Outside length 15ft.
Inside length 14ft.
Overall width outside 100"maximum
Overall width inside 96"
Height of sides 38 inches from conveyor floor.
Height of tailgate 46 inches from conveyor floor.
Height of front panel 53 inches.
Dump box dump angle shall be variable to 50 degrees from horizontal.
There will be no hoist doghouse protruding into front head of body, hoist will be external mounted to provide flat body front head.
Body structural components shall be fabricated from a 7 gauge minimum thickness 304 Stainless Steel. Corner posts will be 10 ga. 304L stainless steel. Body shall be one piece construction for both the head board and side panels.
The front head of the body will be completely clean and clear of any type of recesses or protrusions into the body including hoist dog house, bulkheads, etc.
All body welds will be 100% continuous inside and outside.

Body construction shall include integral side fenders fabricated from a minimum 10 GA 304L stainless steel. Fenders shall be full length from front to rear of body. Integral fenders to be sloped away from unit to prevent any excess material spilled during loading from building / piling up. The fenders will fully enclose and protect chassis frame mounted on-board liquid storage tanks minimum capacity of 130 U.S. gallons each tank for total 260 U.S. gallons.
Dump box access ladder shall be 15" wide, two piece fold-up ladder located at the rear curb side of body. Access ladder will be manufactured from safety grip strut material.

COMPLY _____

Hoist

Mailhot Nitrided top lift 3 stage telescopic hoist "C" series Model CS-130-5-3
Hoist lift cylinder to be forward mounted three (3) stage top lift telescopic.
Hoist capacity shall be 30 ton @ 2,000 P.S.I.
Hoist cylinder will be rod sealed.
Special Mailhot coating to provide protection to hoist seals in spreader position.
Cylinder stroke shall be 130".
Dump box dump angle shall be variable to 50 degrees from horizontal.
There will be no hoist doghouse protruding into front head of body, hoist will be external mounted to provide flat body front head.
Rear hinge diameter shall be 2 ½".
Hoist control valve shall be air operated from inside cab.
The body to be equipped with a positive locking support brace integral with rear dump hinge.

COMPLY _____

Tailgate

Tailgate shall be double acting.
Upper hinge plates to be offset design flame cut from 1" 304L stainless steel plate.
Tailgate shall be rectangle shaped to allow use of asphalt or stone chip spreader.
Construction shall be of 3/16" 304L stainless steel with 3/16" formed cross bracing.
Latch mechanism for the tailgate shall be air trip actuated from inside cab.
Spreader chains and brackets shall be supplied on tailgate and rear apron. Chain shall be grade 70 coil proof 3/8" minimum.

COMPLY _____

Main Conveyor

The main conveyor shall be a minimum 25" wide centered and recessed along the length of dump box floor.
Three-piece formed construction minimum 25" wide.
Constructed of ¼" 304L stainless steel.
Conveyor floor ¼" Hardox 450
Permanent non-removable built in protective main conveyor chain link covers.
The protective covers will run from the front to the rear of the body right and left side of the main conveyor.
The protective non removable main conveyor link covers will cover and protect the main conveyor chain links from damage by impact at all times in all operation modes.
In addition to the permanent non-removable main conveyor chain link covers a second quick removable conveyor chain cover will be supplied.
The removable cover will protect the main conveyor floor and conveyor chain cross flights from damage by impact when installed.
The removable main conveyor cover will be manufactured from 3/8" 2 ply high temperature rubber.
The removable main conveyor cover will self-feed into place to allow fast and simple installation.

Self-feeding will be achieved by simply attaching the conveyor cover to a main conveyor chain cross flight at the tailgate (idler end), starting the main conveyor will pull the cover into place under the permanent non removable protective steel chain link covers.
The removable rubber cover will be complete with attachment brackets to couple easily and directly to main conveyor chain cross flights.
Removal of the rubber conveyor cover from the body will be accomplished by starting the main conveyor, which will then feed the cover out through the front material discharge gate.
Installation and removable of the rubber main conveyor cover into or out of the spreader body will be a one man operation.
Conveyor chain to be self-cleaning D667 pintle type with an average tensile strength of 30,000 PSI, spaced apart 21" on center.
3/8" x 1 ½" cross flights welded to every 2nd link (approx. 4.5" spacing).
All conveyor flights shall be 100% fully welded to the chain links.
Drive and idler shafts to be two (2) inches diameter.
Drive and idler shafts manufactured from high-resistance stress proofed SAMSON 100.
Drive and idler sprockets to be minimum eight-tooth cast steel.
All drive and idler sprockets to be minimum C1030 cast steel.
Main conveyor drive shall be a single 25:1 high efficiency planetary drive with high torque low speed hydraulic motor.
The planetary drive shall deliver 50,000 IN/LB torque intermittent with 34,000 IN/LB constant.
Planetary drive close coupled to main conveyor shaft.

Connection of the planetary drive shaft to the main conveyor shaft shall be accomplished via a split two piece rectangular shaped coupler assembly.
The upper and lower half of the coupler assembly will be bolted together by (4) 5/8" x 4 ½" N.C. Grade 8 Hex Head bolts.
Removal of the (4) coupling bolts will allow simple disassembly of the planetary drive shaft from the main conveyor shaft, for ease of maintenance.
The two main conveyor drive shaft flange bearings will be bolted directly to the body long sill weldments.
Each of the two body long sill weldment will be vertical slotted. Simply removing the drive shaft flange bearings and uncoupling the planetary and main conveyor drive shafts. The entire conveyor drive shaft assembly will drop out through the vertical long sill slots providing easy access and simple maintenance.
Idler end of main conveyor will also be vertical slotted drop out design as described above.
Conveyor chain tension to be regulated via an automatic chain tensioning system. This tensioning system will provide appropriate chain tension for the main conveyor chain at all times and under all normal operating conditions.
The fully automated chain tensioner will eliminate the requirement for any manual chain tension adjusting mechanisms such as conventional threaded rod and nut tensioners or hydraulic grease ram tensioners.
Automated chain tensioning system to be centrally located between main conveyor drive and idle shafts.
The flow control gate between main and rear spinner shall be screw adjustable by hand crank from driver's side of dump body.
The main conveyor flow control gate, will be recessed into the body from the tailgate and act as a salt doghouse.
Underside of main conveyor to be complete with full length poly guard to prevent material spillage on to chassis components and frame rails.

COMPLY _____

_____

Rear Spinner
The rear spinner shall be hydraulic direct drive.

A material chute shall be used to discharge material from main conveyor to the spinner disc.
Rear spinner assembly to mount to chassis frame mounted rear pintle plate independent from main combination spreader unit.
Rear spinner assembly shall be removable design to reduce added weight in non-spreading applications.
Spinner guard weldment shall be fabricated from a minimum 3/16” 304L stainless steel material.
The spinner mount assembly will allow operator to swing spinner to RH side without detaching spinner assembly, to allow load discharge via conventional dump.
The spinner height shall be capable of spreading evenly up to a 20 ft radius with a main operating range of 0 to 15 ft radius.
Spinner assembly capable of discharge rate from 100 lbs./lane mile to 2,500 lbs./lane mile.
Spinner assembly will be swing away style allowing the box to be operated in conventional dump mode.
Hydraulic hoses to be spinner motor are to be complete with quick disconnect automatic sealing breakaway couplers and are to be assembled so that the male end may plug into the female end on the spinner motor and the hoist frame when the spinner assembly is disconnected.

COMPLY _____

Top Screens

Shall include removable top screen assembly COMPLY _____

Coal Door

Shall include a coal door assembly that interchanges with the feed gate door in the tailgate for summer use. COMPLY _____

Flaps

Installed front and rear of the rear axle. Rear flaps to have a stainless steel swinging bracket mounted to body and flap.

COMPLY _____

Reflective Tape

Installed on body sides and tailgate. COMPLY _____

Tool Box

A stainless steel tool box, approximately 18"x 18" x 36” shall be installed.

COMPLY _____

Camera System

3 camera system, one at the rear for backing and one for each wing operation

COMPLY _____

Side Boards

2” x 12” rough cut oak painted black

COMPLY _____

Lighting System:

There shall be a Whelen model # RIDOTSY1 Super-LED® lighting system installed. The lighting system shall be made and manufactured in the United States of America. The lighting system shall include (2) Micro 400 SS. Each Micro 400 SS shall contain (3) 400 Series Super-LED® Warning Lightheads (Front/Side/Rear) facing that are to be mounted within a 7 gauge stainless steel housing assembly. Each Micro 400 SS shall have 60' of 4/C, 14 Gauge TPE cable. Each rear corner post shall contain (1) 400 VV Series Amber Super-LED® Warning, (1) 400 LED BTT, (1) 400 LED Back-Up, and (1) side facing TIR3 Super-LED® Warning. (2) MCRNSC# Surface Mount split color Amber/White mounted on front lower corner of dump body in place of reflector. The rear Lighthead shall be mounted within a Whelen 400 series 7 gauge, stainless steel **D** housing. The lighting system shall include the Whelen SnowAway heated lens system. Each housing assembly shall include flex tubing for strain relief purposes. There shall be 45' of 2/C 14 gauge TPE cable for the warning lights and 45' of 5/C 18 gauge TPE cable for the BTT/BU included with each rear housing assembly. All the Lightheads shall be easily replaceable and utilize waterproof Deutsch® connectors for each light module. All Whelen cable shall **home run** into the cab where all connection will be made within the Whelen SmartLogic flasher/junction box. Each lens shall be made of polycarbonate and have a smooth outer surface for self-cleaning. The Lighthead assemblies shall use stainless steel screws that screw directly into a nylon mounting bracket to eliminate dissimilar metal corrosion. Units that screw into a steel bracket are unacceptable since they tend to corrode over time. The system shall be warranted by the manufacturer to the user directly to be free from defects of material or workmanship for a period of 24 months from date of purchase (no warranty is offered on optical plastic parts and halogen bulbs). LED's shall be warranted for a period of five (5) years. Written proof of this warranty by the manufacturer shall be furnished by the bidder and attached to the bid. The product being bid shall meet all current "S.A.E." requirements for this type and use of warning device, and be certified by an AMECA-accredited testing lab to meeting these requirements in the appropriate specified safety colors.

Sander Illumination
Whelen Model # P36SLCHG

Wing Illumination
Whelen Model # MPBB

Wing Warning
Whelen Model # WPLOWZ1A

COMPLY _____

Pre-Wetting System

Hydraulic powered calcium pump mounted in a stainless steel enclosure, all required hoses/spray bar and nozzles to make the system fully functional and controlled by the Hydraulic–controller~~.~~ **Shall have 1" Banjo nozzle with Cap for filling of tanks.**

Poly tanks (One per side) shall be 230 gallons per tank. COMPLY _____

GROUND SPEED ORIENTED CENTRAL HYDRAULIC SYSTEM
NO EXCEPTIONS

Power take off will be rear engine mounted(REPTO) and will be hot shift design with no less than 100% of engine speed, the PTO will accept a variable displacement pump via direct mount. Controls for engage/disengage of the PTO shall supplied by the chassis manufacturer. The controller shall monitor hydraulic reservoir oil level via the reservoir oil level float switch, once the oil level drops below a safe operating level, this switch will disengage the PTO. The controller shall be compatible with CS550 or Certified Cirus Spread Smart design.

Hydraulics

If the hydraulic component supplier is different than the supplier of the spreader controller, the truck equipment company (body installer) shall take responsibility for coordinating efforts of the two suppliers. It will be the responsibility of the truck equipment company to ensure that the total hydraulic package functions as intended.

The PTO mounted hydraulic pump shall be a piston type, variable displacement, pressure compensating design. The pump shall be a Parker VP1-75, Rexroth A 10V074 52 series or approved equal and shall be Rear Engine mounted(REPTO). COMPLY _____

All hose ends and fittings shall be compatible with the hose on which they are used. Suction and return lines shall meet or exceed a rating of SAE100R4. Pressure lines shall meet or exceed a rating of 100R2 and shall be of double wire braid construction.

All hoses shall be sized to pump and cylinder requirements and shall be routed in such a way as to avoid contact with the exhaust system, driveshaft, and/or the chassis. Hoses shall be wrapped with protective hose wrap in potential wear spots and shall be securely anchored to the frame rails. All hydraulic lines from the control valve area to the front of the truck shall be custom formed. Stainless steel tubing, bulkhead mounted at both ends and supported by cushion type clamps. All hydraulic lines from the control valve area to the rear of the chassis shall be stainless steel tubing supported by cushion type clamps. COMPLY _____

Hydraulic valves shall be a Danfoss PVG 32 pre-compensated or Rexroth load sense M4-12-series to control all hydraulic functions. The valve shall be installed in a above frame mounted stainless steel valve/tank enclosure.

Hydraulic valves

Directional Control Valve: the valve shall be pre-compensated, proportional and load independent.

Pressure and Flow: each valve section shall be settable for pressures up to 5,000psi and flow ratings up to 35gpm. Valve shall be of laminar flow design for minimal pressure drop.

Reliefs: the valve shall include settable reliefs;

- Work port reliefs as specified in each section;
- Load sense reliefs for true pressure limiting;

Actuation: valve shall be able to be actuated manually, pneumatically or electrically;

Electric Actuation: shall be controllable with a PWM signal for full proportional or on/off operation.

- Wiring to the actuator shall utilize IP 69 rated harnesses.
- Duty Cycle: 100%
- PWM actuator shall be mountable on either side of the valve;+
- Valve shall have a filter cage on each electrical operator to prevent spool sticking due to contamination.

Selectable actuation: valve shall be able to accommodate any pair of "manual, pneumatic and electrical actuation" connections on the same valve body without modification of either actuation hardware.

Field convertible: valve shall be field convertible

- Shall be able to change from one actuation type to another without the need of disassembling the valve bank.

- Shall be able to convert from an open center circuit design to a closed center design without disassembling the valve bank.
- The inlet and spreader valves shall be integrated into one section of the assembly. The Inlet shall be -16 SAE (o-ring), the Return shall be -20 SAE, the Load sense shall be -4 SAE.

- Module 1 - Inlet and spreader valves
- Will have a spinner with a (10 GPM), a conveyor with a (15 GPM), and a pre wet with a (10 GPM) spool cartridge. These functions will be proportional controlled, pulse width modulated, pressure and flow compensated, heavy duty 12VDC coils with IP-69 rated electrical connections. Each function is equipped with screw adjustable manual overrides protected by debris covers.

Modular Design:
- Valve shall be of a closed spool design for reduced contamination and be field interchangeable.
- Valve assembly shall accommodate up to 12 work sections per group.
- Valve shall be available in either open or closed center configurations

Mounting Choices: valve shall be mounted with the work ports facing down;

Controls for all valves shall be Del or CCCS pneumatic equipped with an adjustable filter/lubricator/regulator assembly plumbed in line with all controls mounted in the cab per RIDOT direction.

The spreader control shall be a Certified Cirus Spread Smart or Compu~~-Spread CS550~~ with all the latest updates and shall be compatible with RIDOT existing units. This unit shall control the pre-wet and application rate of all materials and monitor the road and air temperature. Shall include software required to transfer data to RIDOT account with Interfleet Inc. a division of Webtech Wireless in the same manner as RIDOT existing trucks.

The location and mounting of all controls shall be pre-approved by RIDOT.

The spreader controller shall be capable of operating a spreader with conveyor, spinner, and pre-wetting system. Each function shall operate individually or simultaneously without additional controller hardware.

Spreader control system shall be capable of ground speed orientated Closed or Open Loop operation. Controller will be capable of spreading in Lbs/mile (linear spreading) or Lbs/lane mile (area spreading). The system controller shall be capable of ground speed oriented, closed or open loop spinner control. System shall provide a means for operator to reset and/or indicate current volume of liquid in anti-ice and pre-wet tank(s) as part of power-up routine. System shall display current liquid volume in tank(s) while pre-wet and/or anti-ice system is active. The system controller shall be capable of managing of up to three Anti-ice boom operations with individual boom selection in a single or dual tier arrangement.

The controller shall be capable of ***Temp Response*** ***™*** operating mode, automatically applying material in correlation to measured road temperature.

The controller shall include ***Load and Rate Calculation*** **™** to set spreading rates and track remaining materials for all granular and liquid materials.

The controller shall include the capability of ground speed oriented control of a hydraulically driven, closed loop gate for a spreader.

Spreader controller shall have a single 7" Color LCD Display. Shall be operated by operator paddle style keypad. Display shall be remotely mounted with adjustable swivel bracket. Display shall be capable of simultaneous display of Granular, Pre-Wet, and Anti-Ice application rates. Display shall also show sensors (Temp, GPS, etc) as

well as actual ground speed and all active alarms.

Spreader controller shall provide "on-screen help" documentation of all main operating functions as well as on screen diagnostics for system issues. On-screen help shall be sufficient to enable users to operate the system by following the on screen instructions, without referring to the printed operations manual.

System shall alarm either audibly or visually for the following conditions: off rate, sensor failure, low liquid remaining, low liquid flow shutoff.

Material rates, granular or liquids shall be by toggle actuation **(+/-)**. Toggle actuation shall cause the display to respond accordingly: The first toggle touch shall cause the display to show the current rate set point. The second toggle touch and all subsequent toggle actuations shall increase or decrease the current rate set point.

System shall provide up to 10 "supervisor settable" application rates in each of granular, Anti-Ice, & Pre-Wet materials. Controller shall provide the ability to name each material with up to five characters. Rate increments shall be individually settable for each material.

The ground speed sensor shall be integrated into the chassis and allow the spreader to speed up or slow down the conveyor as the truck ground speed changes. All spreader functions shall stop when the truck stops, and shall resume immediately when the truck starts to move. There shall be a programmable jump start feature to provide immediate material flow at one MPH.

Spreader speed sensor wire cable shall be of the same material and integral to the main spreader control cable. Spreader cable wire shall be 18 gauge, minimum.

The system shall include all necessary wiring and switching required to be fully operational.

1. **Cable Overview:** The system shall include IP68 rated connections for all "outside the cab" connections.
2. **All Plow Control and Spreader Control "outside the cab" harnessing shall meet IP 68 and NEMA 6 standards:**
    a. All connectors shall be rated as "6x" – dust proof;
    b. All connectors shall be rated as "x8" – protected against the effects of permanent submersion in water as well as able to show no corrosion after 500 hours in a 35C salt spray.

Wiring is to be equivalent to Brad Harrison or Tuck wiring and connectors

The location and mounting of all controls shall be pre-approved by RIDOT.

The spreader control shall be constructed with a "digital" type electronic circuit. Features will include night time vision display for viewing by the operator and used in calibration. Display shall also inform operator of service problems. The light shall illuminate when spreader is in operating mode. The display shall indicate if the spreader is in operating mode or stand-by mode. A backlit minimum 7" color LCD shall be mounted in clear view of the operator, location in cab to be approved by RIDOT. Display shall show granular set rate, actual spread rate, spinner spread width, and pre-wet set rate. For Anti-Icing application, display shall show set rate, actual rate, and lanes that are active. Controller shall be able to switch from pre-wet to anti-ice with a flip of a switch and without going into set-up or calibration mode.

Controller shall be capable of adjusting granular material rates, pre-wet rates, and anti-icing rates on the fly without pause or interruption of spreader output while driving. Adjustment shall be accomplished with a straightforward, single hand operation without entering setup or calibration mode.

It shall not be possible for an operator to select manual mode unless the proper clearance password has been entered into calibration. If a feedback error occurs, the controller shall default into Open Loop Mode.

There shall be a ground speed sensor that will signal the control box to speed up or slow down the conveyor as the truck ground speed changes. All spreader functions shall stop when the truck stops, and shall resume immediately when the truck starts to move. There shall be a programmable jump start feature to provide immediate material flow at one MPH.

Spreader speed sensor wire cable shall be of the same material and integral to the main spreader control cable. Spreader cable wire shall be 18 gauge, minimum.

The system shall include all necessary wiring and switching required to be fully operational.

The electrical harness from the control console to connector #1 and from the control console to the valve bank box shall be shielded and be solvent and oil resistant. Wiring from the control console to connector #1 and from the control console to the valve solenoids shall be enclosed in a sealed, dry system with no external splices. COMPLY _____

COVER SYSTEM SPECIFICATIONS MODEL DT-2000 CH

-·1/2" STAINLESS STEEL POWER MOUNTS WITH Teflon sealed spherical bearing
Grade 8 bolts and nuts
The in-cab power cover control lever shall be in line with other control levers
- A spool sectional valve is stacked with the existing sectional valves. A built -in check valve in the sectional valve safety locks the system in both directions. 25/3000 PSI hydraulic hose with #4 JIC fitting
Hydraulic cylinders have a W-bore 16, stroke with an l" chrome plated piston rod
Stainless Steel side arm wall tubing (2" x l ½"x 11 gauge) with stainless steel welded ends and cylinder mounts
- 3 ½" galvanized steel tube roll assembly
- 18 oz Armor Guard Cover (wear resistant and asphalt approved) (UHMW) self-lubricating wedges (high density polypropylene)
- Full 100% warranty on parts and labor for two years (excludes cover) COMPLY _____

PLOW FLOAT BALANCE VALVE
A plow float/balance valve shall be provided and controlled with a dash mounted rocker switch for on/off. The plow float/balance can be turned off as needed. When in use, the valve will allow the valve to use a pressure reducing/relieving system to control the float/balance lifting pressure on the plow's lift arm assembly. Two solenoid valves wired together turn the valve off and on. One solenoid valve opens the inlet of the pressure reducing valve to the pump. The other solenoid valve opens the outlet of the pressure reducing/relieving valve to the lift port. Oil flowing in and out of the lift port is restricted with an orifice.

COMPLY _____

RESERVOIR/VALVE COMPARTMENT
One (1) 40 gallon all-welded 304 stainless steel hydraulic oil reservoir mounted on the hoist's cradle on passenger side. The hydraulic reservoir will be constructed of 10-gauge stainless. One (1) 304 stainless steel valve enclosure mounted on the hoist's cradle on the driver's side. Shall have a Stainless steel cover with one bolt-on securing mechanism. Shall be mounted in a manner as to not transmit any truck torsional loads thru the tank. The enclosure will use a gasket-less passive technology. (No rubber seals, gaskets, or weather stripping.) All valve fittings, hose ends, filter, filler breather, sending units and any electrical connections are to be protected by enclosure cover. The reservoir supplier will provide all valve fittings (JIC connections) and plumb the return line from the valve to the filter. The cover will protect from both road and pressure washer spray. A 2" full flow brass ball valve shall be plumbed at the suction

port of the tank. A low oil/high temp sending unit shall be mounted in the reservoir. Hydraulic oil filter shall be mounted in the reservoir. Hydraulic filter shall be a 10-micron absolute and rated for no less than 60 GPM. A low oil/high temp sending unit shall be mounted in the reservoir.Hydraulic oil filter shall be mounted in the reservoir. Filter shall have visual and electrical bypass indicators.
A warning light shall be mounted in the cab and wired to the electrical indicator. Plow pressure relief valve mounted on plow frame. The valve shall release the pressure in the plow lift circuit to allow connection & disconnection of the quick couplers. The valve shall be an aluminum manifold with a pull type knob release valve. The valve shall have SAE #8 o'ring ports. The exhaust line shall be plumbed direct back to the reservoir.

COMPLY _____

Hydraulic Lines and Fittings

Stainless steel tubing to be used under body and on body in addition to under cab in lieu of hosing per RIDOT's approval. Only hosing to be used is ends of stainless steel tubing to reach each function's quick couplers or connection. Tubing shall be seamless #201 stainless steel construction with a minimum wall thick- ness of 0.065". The ends shall be flared to accommodate a 37 degree JIC fitting. The use of compression fittings is not acceptable. All stainless tubing shall be mounted in polyurethane poly green tube clamps.

COMPLY _____

GPS

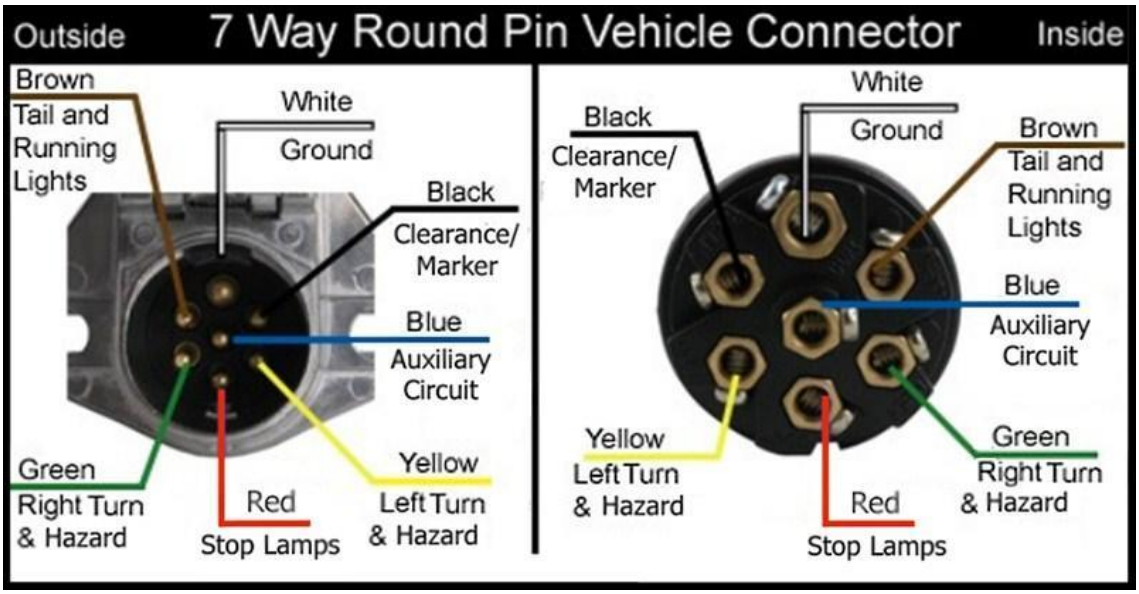
GPS/AVL with telematics shall be installed and operational with each vehicle. All required equipment and wiring shall be fully furnished and installed prior to delivery. Mapping, and data services shall be able to work in conjunction with the Department's current system (Web Tech Wireless). GPS/AVL data functioning shall include advanced reporting, telematics and real-time mapping with a minimum of 10 second update intervals. Each truck shall be tested, identified by vin#, added to the States GPS map, and added to the States report prior to delivery.

COMPLY _____

Towing

Chassis mounted ¾" pintle plate with a 25-ton swivel hook, Two "D" rings, electrical socket, and pintle. Hook height and electrical socket type per RIDOT direction. Full trailer package with air and light lines.

RIDOT Standard Truck Wiring Diagram



PLASTIC GROTE SOCKET	#82-2145
ACCEPTS PLASTIC GROTE PLUG	#82-2140

COMPLY: _____

INSTALLATION AND WARRANTY:
Minimum Twenty Four (24) months, 100% parts and labor on components (No Exceptions) and installation. No deductible. Body hoist cylinder to have manufacturer's warranty of two (2) years. For warranty considerations and future availability of parts and service, the body company shall be an authorized primary distributor for all major components they propose to furnish. Shall furnish written proof from such said vendor upon request. All equipment shall be installed by a single body company, by their employees and at their regular location. Installation of components is not to be subcontracted by body company to another installer. No welding whatsoever is to be done on chassis frame between front of most forward spring hanger and rear of rearmost spring hanger. No drilling whatsoever is to be done in frame rail flanges. Body company to furnish operator's parts and service manuals for all components manufacturer's i.e., combination body, hoist, snow plow, central hydraulic system, strobe lights, and pintle hook. All shall be supplied in a binder with outside cover stating RIDOT's name, job #, serial numbers of dump body, plow, plow hitch, and snow plow. Inside shall include all hard copies of such manuals and flash drive copy. Pictures of all major components at the time of delivery, including hydraulic system, shall be included. Completed vehicle shall be certified by the body company as meeting all federal motor vehicle safety standard in effect at time of chassis production. Approved NHTSA/FMVSS certification label shall be furnished and located inside cab on driver's side. Completed unit to comply with current OSHA regulations. Body company shall be registered with National Highway Traffic Safety Administration as a final stage manufacturer of motor vehicles as required by Federal Law. Body company to conduct operator training session on body and equipment at the RIDOT garage after delivery of completed truck. Body company shall have ASE certified installer/s and show documentation at time of bid. Body company to be registered and in good standing with National Truck Equipment Association (NTEA), be a MVP member, and be the authorized distributor for all equipment bid. Body company shall participate and provide documentation at time of bid for E-Verify®. This employment verification verification is a United States of America federally accredited verification system to insure all employees are legal residents. List Company ID# _____. No exceptions. Combination Body, Snow Plow, Wing Plows, and Snow Plow Hitch shall be engineered and manufactured in the United States of America and all from the same manufacturer. No exceptions. A required pre-build meeting will occur after award of bid and prior to the start of installation. RIDOT will inspect all equipment (plow, hitch, combination body, wings, hydraulic system, and prewetting system) prior to the start of installation. No exceptions.

COMPLY_____

PRE-DELIVERY SERVICE: The unit shall be delivered complete and fully operational. It shall be properly serviced, free of leaks, with all mechanical adjustments made prior to delivery. A copy of the line set ticket shall accompany the vehicles. A minimum of three days notice prior to delivery shall be given to the person to whom the unit is to be shipped. Upon award of the bid the successful bidder shall supply a completed RIDOT "Equipment Information" sheet listing all the pertinent details that are specific to the units being purchased. Failure to do so will result in 2% retention of the total order.

All units shall be inspected prior to delivery with a focus on functionality, consistency, and quality assurance. **The body installation company shall develop an inspection check sheet that is detailed and includes all major components of each dump truck.** Each inspection item shall be initialed and a copy of the inspection sheet shall be placed in the document holder of the truck prior to delivery. The inspection check sheet shall be developed and presented at the body company prototype meeting for review and input from RIDOT. The inspection check sheet shall be developed and presented at the final prototype meeting for review and input from RIDOT.

All units shall be inspected prior to delivery with a focus on functionality, consistency, and quality assurance just before final delivery. **The bidder shall develop an inspection check sheet that is detailed and includes**

all required pre delivery inspection and service items required by the chassis supplier. This inspection check list should also include checking items that may have loosened or have been missed by the body company such as hydraulic leaks and body components shaking loose. Each inspection item shall be initialed and a copy of the inspection sheet shall be placed in the document holder of the truck prior to delivery.

CUSTOMER SERVICE:

The Vender(s) shall provide a single, local point of contact and a backup to handle questions and resolve problems that arise. At least one Customer Service Representative and one backup shall be available at all times. All service representatives shall have access to information to provide immediate response to inquiries concerning the status of orders, service call information, delivery information, back-order information, contract pricing, contracted product offerings/exclusions, billing questions or issues, contract compliance requirements, and general product information. Representatives shall be available by phone, fax, or email (local or toll free number preferred).

Primary Customer Service Representative _____
Primary Customer Service Representative Contact Number _____
Backup Customer Service Representative _____
Backup Customer Service Representative Contact Number _____

Comply _____

Additionally, the primary function of these trucks is as emergency vehicles during winter storm events. It is imperative that these vehicles are not down for repair during the period of November 1st to May 1st each year. The vender shall have in place a 24 hour a day 7 days a week vehicle service/repair plan leading up to, during, and, after winter storm events. This service shall be available for all warranty repairs. A designated Service Representative shall be assigned by the Vendor(s) to oversee all warranty repair resolution and timely return to service.

Primary Service Representative _____
Primary Service Representative 24/7 Contact Number _____
Winter Equipment Service Representative _____
Winter Equipment Representative 24/7 Contact Number _____

At the time of bid, the vender shall be certified by the respective chassis manufacture as an accelerate service provider. Examples of these certifications are as follows:

Mack/Volvo	Certified Uptime Center
Freightliner/Western Star	Elite Support Dealership
International	Accelerated Service Dealership
Peterbilt	Rapid Check Center

Please indicate your company's ability to provide this level of service, and any other services you provide. A current copy of the above certification shall be included with the bid.

Comply _____

TRUCK DELIVERY SCHEDULE:

Fabrication of the first prototype unit shall be completed within one hundred twenty (120) days of the successful proposal. Delivery of all the units shall be completed within forty five (45) days of approval of the prototype. All bidders shall provide as part of their bid a schedule for the delivery of all trucks to RIDOT 360 Lincoln Ave, Warwick, RI 02888. This date shall be listed as the number of days following issuance of a Notice-to-Proceed (allow 10 days for approval of the prototype) that the bidder shall successfully deliver all

units to the Rhode Island Department of Transportation. Weekly updates shall be provided during the fabrication process including progress, pictures and any changes from the original schedule. Failure to submit a schedule will result in the bid being considered non-responsive. Failure to meet the schedule will result in 3% retention on the total order.

All trucks ordered shall be delivered to RIDOT, ready for immediate use, no later than November 1, 2018 without exception.

CERTIFICATE OF ORIGIN, TITLE and DELIVERY DOCUMENTATION:

At the time of delivery to the State, each vehicles delivered shall be accompanied by a window sticker, title certificate, "Certificate of Origin," and registration documents.

1. The "Certificate of Origin" shall have the owner listed as "STATE OF RI/FLEET OPERATIONS, ONE CAPITOL HILL, PROVIDENCE, RI 02908." It shall include at a minimum, the following information:
   THE MANUFACTURER, MODEL NAME AND NUMBER
   THE MANUFACTURER'S VEHICLE IDENTIFICATION NUMBER (VIN)
   THE NUMBER OF ENGINE CYLINDERS AND ENGINE TYPE
   A GENERAL DESCRIPTION OF THE BODY AND GVW #
   THE ODOMETER DISCLOSURE SHALL BE COMPLETED ON THE VENDOR'S SIDE OF "CERTIFICATE OF ORIGIN".

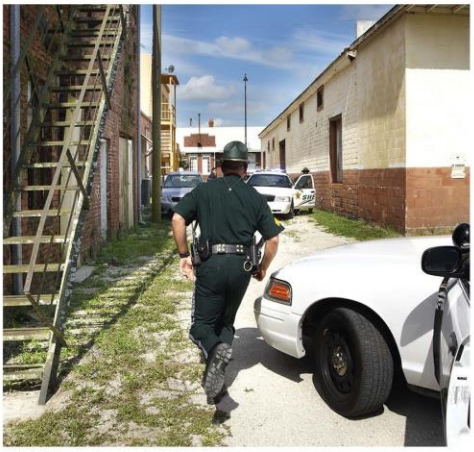
2. Title certificates shall be provided.

3. The successful vendors will be required to provide the following:
   - A completed application for registration and Title Certificate (TR-1) with the exception of Sections G and H. Owner to be listed as:
     State of RI/Fleet Operations, One Capitol Hill, Providence, RI 02908.
   - A completed States or Use Tax Exemption Certification - Motor Vehicles. Purchaser to be listed as: State of RI/Fleet Operations, One Capitol Hill, Providence, RI 02908.

CONCLUDING STATEMENTS:

Responses to this solicitation shall be submitted in duplicate and each page shall be numbered (ex. 1 of X) and include the vender's name. A Pre-Bid conference will be held for this bid at a date to be determined. Bids shall be predicated on the basis of the bidder's full and unencumbered title to the vehicle(s) as of the date of delivery to the State. Bids subject to lien or assignment at the time of delivery to the State, or which stipulate third party or joint payment, will be rejected.

MOTOROLA SOLUTIONS



WORK SAFER WHEREVER THE MISSION TAKES YOU

APX™ 1500 PROJECT 25 MOBILE RADIO

Whether a marathon race is passing through the streets of downtown or a water main breaks in the city's largest pipeline, you need the ability to interoperate seamlessly and securely with other agencies and responders. You need to instantly connect and be informed to make better decisions to keep your responders and the community safe. While the advanced technology of APX radios expertly equips you for your day to day operations and the unexpected, your organization may be challenged to improve operating expenses.

The APX 1500 P25 mobile radio is equipped with all the features you need at a price you can afford. It delivers all the benefits of TDMA technology in the most compact P25 capable mobile in the industry. The APX 1500 brings together powerful technology in an easy-to-use radio that's easy on your budget. It seamlessly unifies public works, utility, rural public safety and transportation users to first responders so they can interoperate effectively in the moments that matter.

BE UP TO THE MINUTE INFORMED

Keeping your crew safe is your number one priority. Like all our APX P25 radios trusted by responders worldwide, the APX 1500 mobile redefines safety. Your crews can count on quick, seamless interoperability and extended range wherever the mission may take them. You can depend on ADP software encryption for secure, tamperproof voice and data communications every time they connect.

The O2 Control Head with color display is easy to read and operate in all lighting conditions, from bright sunlight to dark streets. The intelligent lighting on the O2 Control Head notifies your workers when a call is received, an emergency arises, or when they are out of range. Plus, an enlarged multifunction knob makes it easy to use talk-group and volume settings when they're wearing gloves.

SIZED RIGHT FOR YOUR BUDGET

The APX 1500 gives you the ruggedibility and reliability you need at an affordable price. Since the APX 1500 is P25 Phase 2 capable for twice the voice capacity, you can add more users without adding more frequencies or infrastructure. Count on APX quality for years to come. The APX 1500 can withstand wet, dusty and hazardous conditions.

APX 1500 SPECIFICATIONS

FEATURES AND BENEFITS:

Available in 700/800 MHz, VHF, UHF R1 and UHF R2 frequency bands

Channels: Standard 512

Trunking Standards supported:
- Clear or digital private Trunked Operation

Analog MDC-1200 and Digital APCO P25 Conventional System Configurations

Narrow and wide bandwidth digital receiver (6.25kHz/12.5kHz/20kHz/25 kHz)

Embedded digital signaling (ASTRO and ASTRO 25)

Intelligent lighting

Radio profiles

Unified Call List

Meets applicable MIL-STD 810C, D, E, F, G

Ships standard IP56

Utlizes Windows XP, Vista and Windows 7 Customer Programming Software (CPS)

- Supports USB Communications
- Built in FLASHport™ support

Uses standard Dash mounted APX accessories

Software Key

ASTRO 25 integrated Voice and Data

ADP Privacy

Integrated GPS/GLONASS for outdoor location tracking

OPTIONAL FEATURES:

Programming over Project 25 (POP25)

Text Messaging

12 character RF ID asset tracking

*CPS version R12.00.00 and greater ordered after June 2014 will only support Windows 7 and 8

APX 1500 CONTROL HEAD PORTFOLIO

O2 RUGGED CONTROL HEAD

- Large color display with intelligent lighting
- 3 lines of text 14 characters max / 1 line of icons / 1 line of menus
- Built in 7.5 watt speaker
- Multifunction volume/channel knob
- Night/day mode button

TRANSMITTER - TYPICAL PERFORMANCE SPECIFICATIONS

	700 MHz	800 MHz	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	764-776 MHz 794-806 MHz	806-824 MHz 851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz
Channel Spacing	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power Adj*	3-30 Watts (2-3 Watts Itinerant)	3-35 Watts	1-50 Watts	1-40 Watts	1-45 Watts
Frequency Stability* (–30°C to +60°C, +25°C Ref.)	±0.8 PPM	±0.8 PPM	±0.8 PPM	±0.8 PPM	±0.8 PPM
Modulation Limiting*	±5 kHz / ±2.5 kHz	±5 kHz/±4 kHz (NPSPAC) /±2.5 kHz	±5 kHz / ±2.5 kHz	±5 kHz / ±2.5 kHz	±5 kHz / ±2.5 kHz
Modulation Fidelity (C4FM) 12.5kHz Digital Channel	1.5%	1.5%	2.5%	1.1%	1.1%
Emissions*	Conducted+ –75/–85 dBc Radiated+ –20/–40 dBm	Conducted –75 dBc Radiated –20 dBm	Conducted –85 dBc Radiated –20 dBm	Conducted –85 dBc Radiated –20 dBm	Conducted –85 dBc Radiated –20 dBm
Audio Response*	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)	+1, –3 dB (EIA)
FM Hum & Noise 25 & 20 kHz 12.5 kHz	–50 dB –48 dB	–50 dB –48 dB	–52 dB –51 dB	–51 dB –48 dB	–51 dB –48 dB
Audio Distortion* 25 & 20 kHz 12.5 kHz	0.50% 0.50%	0.50% 0.50%	0.50% 0.50%	0.50% 0.50%	0.50% 0.50%

RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS

	700 MHz	800 MHz	VHF	UHF Range 1	UHF Range 2
Frequency Range/Bandsplits	764-776 MHz	851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz
Channel Spacing	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz	25/20/12.5 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Audio Output Power at 3% distortion*	7.5 W or 15 W ++	7.5 W or 15 W ++	7.5 W or 15 W ++	7.5 W or 15 W ++	7.5 W or 15 W ++
Frequency Stability* (–30°C to +60°C, +25°C Ref.)	±0.8 PPM	±0.8 PPM	±0.8 PPM	±0.8 PPM	±0.8 PPM
Analog Sensitivity* 12 dB SINAD Digital Sensitivity 5% BER	–120 dBm –121 dBm	–120 dBm –121 dBm	Pre-Amp –123 dBm –123 dBm Standard –119 dBm –119 dBm	Pre-Amp –123 dBm –123 dBm Standard –119 dBm –119 dBm	Pre-Amp –123 dBm –123 dBm Standard –119 dBm –119 dBm
Intermodulation Rejection 25 kHz 12.5 kHz	82 dB 82 dB	82 dB 82 dB	84 dB 85 dB 86 dB 86 dB	82 dB 83 dB 86 dB 85 dB	82 dB 83 dB 86 dB 85 dB
Spurious Rejection	91 dB	91 dB	95 dB	91 dB	91 dB
Audio Distortion at rated*	2%	2%	2%	2%	2%
Selectivity* 25 kHz 12.5 kHz 30 kHz	85 dB 75 dB —	85 dB 75 dB —	89 dB 77 dB 90 dB	83 dB 72 dB —	83 dB 72 dB —

DIMENSIONS

	Inches	Millimeters
Mid Power Radio Transceiver	2 x 7 x 6.4	50.8 x 178 x 163
O2 Control Head	2.7 x 8.1 x 2.1	69 x 207 x 53
Mid Power Radio Transceiver and O2 Control Head - Dash Mount	2.7 x 8.1 x 8.8	69 x 207 x 223
Mid Power Radio Transceiver and O2 Control Head Weight	5.28 lbs	2.45 kg

RADIO MODELS

700/800 (763-870 MHz)	M36URS9PW1AN
VHF (136-174 MHz)	M36KSS9PW1AN
UHF Range 1 (380-470 MHz)	M36QSS9PW1AN
UHF Range 2 (450-520 MHz)	M36SSS9PW1AN

SIGNALING (ASTRO MODE)

Signaling Rate	9.6 kbps
Digital ID Capacity	10,000,000 Conventional / 48,000 Trunking
Digital Network Access Codes	4,096 network site addresses
ASTRO® Digital User Group Addresses	4,096 network site addresses
Project 25 – CAI Digital User Group Addresses	65,000 Conventional / 4,094 Trunking
Error Correction Techniques	Golay, BCH, Reed-Solomon codes
Data Access Control	Slotted CSMA: Utilizes infrastructure-sourced data status bits embedded in both voice and data transmissions.

POWER AND BATTERY DRAIN

Model Type	136-174 MHz, 380-470 MHz, 450-520 MHz, 764-870 MHz				
Minimum RF Power Output	2***-25 Watts (764-776 MHz), 2***-25 Watts (794-806 MHz), 2***-25 Watts (806-824 MHz), 2***-25 Watts (851-870 MHz), 1-25 Watts (136-174 MHz), 1-25 Watts (380-470 MHz), 1-25 Watts (450-520 MHz)				
Operation	13.8V DC ±20% Negative Ground				
Standby at 13.8V	0.85A (764-870 MHz), 0.85A (136-174 MHz), 0.85A (380-470 MHz), 0.85A (450-520 MHz)				
Receive Current at Rated Audio at 13.8V	3.2A (764-870 MHz), 3.2A (136-174 MHz), 3.2A (380-470 MHz), 3.2A (450-520 MHz)				
Transmit Current (A) at Rated Power	136-174 MHz (1-25 Watt) 380-470 MHz (1-25 Watt) 450-520 MHz (1-25 Watt)	9.5A (25W) 9.5A (25W) 9.5A (25W)	764-870 MHz (10-35 Watt)	(2***-25 Watts)	9.5A (25W)

MOBILE MILITARY STANDARDS 810 C, D, E , F, G

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G	
	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II	500.5	II
High Temperature Storage	501.1	I	501.2	I/A1	501.3	I/A1	501.4	I/Hot	501.5	I/A1
High Temperature Operation	501.1	II	501.2	II/A1	501.3	II/A1	501.4	II/Hot	501.5	II
Low Temperature Storage	502.1	I	502.2	I/C3	502.3	I/C3	502.4	I/C3	502.5	I/C3
Low Temperature Operation	502.1	I	502.2	II/C1	502.3	II/C1	502.4	II/C1	502.5	II
Temperature Shock	503.1	-	503.2	I/A1-C3	503.3	I/A1-C3	503.4	I/Hot-C3	503.5	I/C
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I	505.5	I/A1
Rain Blowing	506.1	I	506.2	I	506.3	I	506.4	I	506.5	I
Rain Steady	506.1	II	506.2	II	506.3	II	506.4	III	506.5	III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-	507.5	II-Aggravated
Salt Fog	509.1	-	509.2	-	509.3	-	509.4	-	509.5	1 Proc
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I
Blowing Sand		-	510.2	II	510.3	II	510.4	II	510.5	II
Vibration Min. Integrity	514.2	VIII/F, Curve-W	514.3	I/10	514.4	I/10	514.5	I/24	514.6	I-Cat.24
Vibration Loose Cargo	514.2	XI	514.3	II/3	514.4	II/3	514.5	II/5	514.6	-
Shock Functional	516.2	I	516.3	I	516.4	I	516.5	I	516.6	I, V, VI

ENCRYPTION

Supported Encryption Algorithms	ADP SW
Encryption Type	Digital
Key Storage	Tamper protected volatile or non-volatile memory
Key Erasure	Keyboard command

* Measured in the analog mode per TIA/EIA 603 under nominal conditions
** Accuracy specs are for long-term tracking (95th percentile values >5 satellites visible at a nominal –130 dBm signal strength)
+ Specs includes performance for the non-GNSS/GNSS bands
++ Output power in to 8 and 3.2 Ohm external speakers respectively

Specifications subject to change without notice. All specifications shown are typical. Radio meets applicable regulatory requirements.

Version 2, Dec 14

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-30°C / +60°C
Storage Temperature	-40°C / +85°C
Humidity	Per MIL-STD
ESD	IEC 801-2 KV
Water and Dust Intrusion	IP56, MIL-STD

TRANSMITTER CERTIFICATION

700/800 (764-775, 793-805, 806-824, 851-869 MHz)	AZ492FT7055
VHF (136-174 MHz)	AZ492FT4916
UHF R1 (380-470 MHz)	AZ492FT3826
UHF R2 (450-520 MHz)	AZ492FT4915

FCC EMISSIONS DESIGNATORS

FCC Emissions Designators	8K10F1D, 8K10F1E, 8K10F1W, 11K0F3E, 16K0F3E, 20K0F1E

End of Specification