TOWN OF FALMOUTH, MAINE

DEPARTMENT OF PUBLIC WORKS

4X4 UTILITY/MULTI-PURPOSE MACHINE
BID SPECIFICATIONS BELOW

YEAR: - 2013 or newer.

HOURS: - Does not exceed 300 operating hours.

APPLICATION: - 4X4 Utility/sidewalk/Multi-Purpose Machine

- Machine includes two forward facing seats; however, bids with one seat will be considered.

GENERAL MACHINE:
- Machine to include a front loader (lift arm with double acting hydraulic cylinders).
- Front loader is capable of accepting quick-attach attachments.
- Rear of machine incorporates a cargo box.
- Engine will be diesel, rated at 62 hp (46.2kw) Gross, 59.0hp (44kw) net.
- Exhaust system will have an approved USDA Forestry Service Spark Arrester.

DRIVE SYSTEM:
- Full-time four wheel drive system.
- Limited slip differentials provided in both axles.
- Transmission to be hydrostatic.
- Drive system available with Traction Control.

DRIVE CONTROLS:
- Machine equipped with separate controls for engine speed and travel speed.
- Drive speed controlled by single pedal.
- Engine RPM controlled by a hand lever.
- Travel direction controlled by a shutter lever which includes positions for Forward, Reverse and Park.
- Placing the shuttle lever in the "park" position must engage the parking brake and disable the drive controls.
- A neutral start feature must be provided which requires machine to be in the "park" position (parking brake applied) before engine can be started.

TRAVEL SPEEDS:
- Two travel speeds ranges required "Low" and "High".
- Must have the ability to shift between travel speed ranges while machine is in motion.
- Low range travel speed infinitely variable from 0 to 8 mph.
- High range travel speed infinitely variable from 0 to 17 mph.
- Reverse travel speed limited to 8 mph, regardless of speed range selected.
- Digital speedometer provided to monitor ground speed.
- Cruise control provided to set travel speed and be easily adjusted by acceleration and deceleration buttons on dash.
**STEERING:**
- Steering angle to be shared by both axles though and all-wheel steering system.
- The turning diameter will be 17'(the diameter of the circle made by the outside tires in a full turn).

**STEERING (cont.):**
- Steering to be activated by hydraulic power steering and controlled by a steering wheel with tilt adjustment.

**SUSPENSION:**
- A suspension system will be provided between the frame and each axle of the machine.
- Front independent suspension will consist of coil springs with overload stops and shock absorbers.
- Rear independent suspension will consist of coil springs with overload stops and shock absorbers.

**CAB:**
- Front and rear cab windows provided, and made from tempered safety glass.
- Windshield wiper system and washer system.
- 12 volt power port for accessories provided in cab.
- Cup holders provided in cab.
- Factory installed cab enclosure, heated, ventilation, and air conditioning (HVAC) must be available.
- Cab enclosure will consist of two steel frame doors with locking handles and tethers to restrict door open angle, one cab door will be considered.
- Cab floor height is less than 21" above the ground level to eliminate intermediate steps for ingress and egress.
- Driver's seat must be provided with inclined adjustment track.
- A seat hip restraint must be provided for passenger.
- Four halogen work lights provided on front which can be positioned independently of each other.

**INSTRUMENTATION:**
- Gauges provided for engine temperature and fuel level. Gauges are to be back-lit when the front lights are on.
- Digital display provided which can display all the following: Travel speed, Engine RPM, Engine Hours and Job Hours(resettable). Display to be back-lit when front lights are on.
- Warning lights provided to indicate all the following: Low Engine oil pressure, Low Fuel level, Low Battery voltage, High Hydraulic temperature and High Engine temperature.
- An Engine and Hydraulic system monitor will be provided to monitor vital machine conditions. The engine will automatically shut-down in the event vital conditions exceed acceptable limits. The engine needs the ability to restart in 30 second intervals to move the machine after shut-down occurs.
- Service diagnostic capabilities- the systems monitor will also display a code when warning conditions are encountered and store these codes for later access.
- Cold engine starting will be aided by glow plugs. Control of the glow plugs will be automatic based on engine temperature.
**BRAKES:**
- Braking load must be shared by all wheels.
- The machine must automatically bring itself to a stop when drive pedal is released.
- Parking brakes will be equipped in each axle, engaged by mechanical spring force and released by hydraulic pressure.
- The Drive controls must automatically deactivate when the parking brake is applied.
- The parking brake must engage automatically when the engine is not running.
- Attachments are preferred to be front mounted, however, rear mounted ones will be considered.

**ATTACHMENTS / IMPLEMENTS:**
- Connections for all attachments must meet SAE J2513 for coupling of attachments.
- Activation of quick-hitch provided by two over-center locking levers with wear compensation features.
- Hydraulic connections supplied via hydraulic quick-couplers with flush-face design.
- Hydraulic supply to attachments must be at least 18 gpm with an optional hydraulic flow of 27 gpm.
- Hydraulic pressure release system must be provided to relieve residual pressure trapped in the attachment hydraulics for easier attachment changes.
- Primary attachment hydraulics activated by switches integrated into the loader joystick.
- Primary attachment hydraulics must have the ability to lock into continuous flow (detent) in both forward and reverse directions.
- A supplemental control system must be available to control additional attachments functions from the cab using dash-mounted switches.

**TRAILER CAPACITIES:**
- A rear receiver hitch system will be provided which is capable of accepting 2" receiver-style hitches and meets the "Hitch Strength Requirements" identified 6.1 of SAE J684.
- The rear receiver hitch must be capable of withstanding 500 lbs. of tongue load. The machine must be capable of pulling and stopping tow loads of 4,000 lbs.

**LOADER:**
- Loader rated operating capacity = 1500 lbs. per SAE J818 and ISO 14397.
- Loader functions controlled by a single pilot-operated hydraulic joystick.
- Lift-arm "float" feature must be provided and activated by the hydraulic joystick.
- An approved lift-arm support device must be provided on the machine to mechanically support the lift arm if raised for service work. The lift-arm support must meet SAE J38 and ISO 10533.

**CARGO AREA:**
- Cargo box load capacity = 2000 lbs.
- Hydraulic dump provided by two hydraulic cylinders and activated by a cab mounted control.
- An approved cargo box support device is required on the machine to mechanically support the box if raised for service work. The box support must meet SAE J/ISO 13333.
- Box sides are bolt-on and can be removed to make a flat-bed.
- A tailgate is provided which includes a quick-latch system and capable of supporting at least 300 lbs. of load in the open position.
- Stake pockets must be provided on the sides and front of the cargo box.

**SAFETY REQUIREMENTS:**
- An interlock control system must be provided which automatically disables the loader lift, loader tilt, attachment hydraulics, drive controls and engages the parking brake when the operator exits the machine.
- Cab structure must be a 4-post design which is ROPS and FOPS approved per SAE and ISO standards.
- Retractable seat belts must be provided for operator and passenger, and incorporate a 3-point design which includes a shoulder restraint per SAE J2292.
- Locations to tie-down the machine must be provided for transport on a trailer.
- Cab must provide location for storage of the Operation and maintenance manual.

**APPLICABLE STANDARDS:**
- Machine must comply with the following design and safety standards: SAE J2258-Light utility vehicle standards ASME / ANSI B56.8 - Safety standards for personnel and burden carriers (Note: Horn required for full compliance).
- SAE J1040 and ISO 3471- Roll-over Protective Structure (ROPS).
- SAE J1043 and ISO 3449 - Level 1- Falling Object Protective Structure (FOPS).
- SAE J732 - Loader specification definitions.
- ISO 14379 - Part 1- Calculation of loader rated operating capacity and test methods for tipping load.
- ISO 2867 - Access systems for earth-moving machinery.
- ISO 3411 - Human physical dimensions and minimum operator space envelope.
- ISO 6682 - Zones of comfort and reach for controls.
- ISO 3450 - Braking systems and performance requirements for rubber- tired machines.
- ISO 5010 - Steering capability for rubber-tired machines.
- SAE J386 - Operator restraint system for off-road work machines.
- ISO 6683 - Seat belts and seat belt anchorages.
- SAE J38 - Lift arm support devices for loaders.
- ISO 10533 - Lift arm support devices.
- SAE J/ISO 13333 - Dumper body support.
- SAE J2513 - Coupling of attachments to loaders.
- SAE J684 - Trailer couplings, hitches, and safety chains - automotive type. Section 6.1 "Hitch Strength Requirements".

**ATTACHMENTS:**
- 72" Snow V-Blade w/ V-Blade floatation option (Base Bid)
- 60" Snow blower (Base Bid)
- 66" Brush Mower(HF).
- Sand/Salt Spreader Hopper Capacity 13.5 Cubic FT.
- 80 Gal. Sprayer Unit w/ nozzle kit, plumbing kit and wire harness.
- 60" Sweeper Gutter Brush.
- 62" General Purpose Bucket w/ Bolt on Cutting Edge 62".
- 72" Finish Mower.
- 84" Angle Broom.