

**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
- GENERAL MACHINE:**
- Machine includes two forward facing seats; however, bids with one seat will be considered.
  - 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 through 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 /  
IMPLEMENTS:**

- Attachments are preferred to be front mounted, however, rear mounted ones will be considered.
- 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 27gpm.
- 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.

