SPECIFICATION

MOTOR GRADER, ARTICULATED, ALL WHEEL DRIVE

1.0 SCOPE:
This specification meets the State of New Hampshire requirements for All Wheel Drive Articulated Motor Graders of the latest production model currently being offered to the construction industry.

2.0 APPLICABLE SPECIFICATIONS:
There are no other N.H. specifications applicable to this specification.

3.0 REQUIREMENTS, GENERAL:

- To be a current production model at the time of delivery. All ratings to be rated per S.A.E. standards. All manufacturers’ standard equipment for the make and model offered, not in conflict with the specific requirements of this specification, must be furnished. Engine offered shall be Off-Road **Tier 4 emission** Certified. All drive train components supplied shall be of same manufacturer as machine. Units to be equipped with vandal protection devices, including keyed-alike locks, denying free access to the cab, engine compartment, fuel tank, batteries, and radiator. A **HEAVY DUTY** bottom guard shall be provided.

- Unit(s) to be equipped with wireless machine monitoring system as standard equipment with a secure, web based, application to be used by the State for reviewing machine location, usage and maintenance data such as hour meter readings, all warnings, and monthly activity for a period of 10 years from in service date. State will determine in service date.

3.0.1 OPERATING WEIGHT:

- Minimum operating weight including manufacturer’s standard equipment for **base model** offered only, per ISO 7134, with ROPS cab. All operating fluids and a 175 lb. operator to be minimum 37,000 lbs. and maximum 38,000 lbs. (Attachments & hoist not included.)

3.0.2 ENGINE:

- 6 cyl.diesel, **B-20 compatible**, 4 cycle, wet sleeved, variable horsepower in AWD. Minimum 170 net SAE J1349 flywheel hp in low power range, 185 to 210 hp in mid-power range and 218 to 250 hp in high power range.
- 115 volt block heater,
- Low oil pressure/high temperature audible alarms or warning lights.
- Foot control accelerator-decelerator.
- Cold weather starting aid.
- Dry type air cleaner with a service indicator.
- Fuel/water separator
- Full engine hood and sides,
- Minimum 120 AMP alternator.
- 2 group 8D batteries or equivalent to 1,000 CCA.
- Fresh air intake shall be equipped with a “TURBO II” pre-cleaner.
- Auto-idle shutdown

3.0.3 TRANSMISSION:

- Minimum 8 speeds forward and 4 reverse, with full power shift.
- An audible back-up alarm is required.
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3.0.4 BRAKES:
- Tandem wheel power assisted wet disc brakes. Inboard brakes on final drive are acceptable. Drive line service brake is not acceptable.
- Grader shall be equipped with parking brake and warning light.

3.0.5 STEERING:
- Full hydraulic power steering.

3.0.6 HYDRAULIC SYSTEM:
- Load sensing system that reduces hydraulic pressure or flow when there is no demand on the system resulting in fuel conservation.

3.0.7 FRAME ARTICULATION:
- Minimum articulation 22 degrees left and right with indicator and no operating restrictions in articulated mode.
- Remotely located grease fittings for all grease points.

3.0.8 DIFFERENTIAL LOCK-UNLOCK:
- Manual or automatic hydraulic lock.

3.0.9 BLADE ASSEMBLY:
- Hydraulic side shift moldboard with 360 degrees rotation capability.
- Moldboard must be capable of working within full range of slope between 90 degrees right and 90 degrees left from inside the cab and without the use of extensions or other mechanical attachments.
- Size shall be 13’x24”x3/4” if reinforced box section, or 13’x24”x7/8” if a rolled blade is used.
- Moldboard shall be made up of (1) one 6’ section and (1) one 7’ section.
- Cutting edge, through hardened, ¾”x8” with AASHTO standard punching and replaceable end bits. End bits and/or extensions shall not be used in determining moldboard length.
- Hydraulic blade lift cylinders must be equipped with independent float valves actuated from inside the cab.
- Hydraulic blade pitch control.

3.0.10 REAR MOUNTED SNOW WING:
- To be manufactured by Viking, American or HP Fairfield (no substitutes). Length 14 feet overall, cutting edge hole spacing 8”. Hoist equipment to be double post all hydraulic with valve controls mounted in cab and directly connected by mechanical link. Hydraulic lines attached and fastened to grader frame terminating at tower location. Double wing braces at rear. Towers to have hydraulic cylinders attached (cylinders are not to be remote from towers), brackets, connecting hose and all other items required to make a complete wing mount ready to operate. Shelving height minimum 55”. All wing equipment shall be mounted in a manner which will permit access to all grease fittings and reasonable ease of removal.

3.0.11 WIRING:
- All major wiring harnesses are to be coded and enclosed in conduit or raceways.
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3.0.12 LIGHTS:
- Four (4) LED headlights, two (2) low beam and two (2) high beam, two (2) LED combinations stop and tail lights, turn signals front and rear, a license plate light, four (4) LED work lights mounted low for the blade, and two (2) LED lights mounted on top of cab.
- A license plate bracket and slow moving vehicle sign shall also be installed.

3.0.13 INSTRUMENTS-GAUGES-METERS:
- Engine hour meter.
- Direct reading gauges or monitoring system (In English) for ammeter/voltmeter, engine temp, transmission oil temperature, oil pressure, fuel gauge, DEF level, differential lock, and articulation

3.0.14 CAB:
- Fully enclosed, air conditioned, insulated, sound suppressed, maximum height 10’6” with safety-type glass throughout.
- ROPS/FOPS cab
- Full vision windshield and rear window. Lower front glass to be opening type.
- Full width windshield wiper(s) and washers - front and rear windows.
- Rear Camera with monitor
- Deluxe suspension type cloth seat with seat belt.
- Two (2) heated exterior mirrors and one interior mirror with convex inserts.
- A 12 volt, 20 AMP accessory terminal block shall be installed inside cab
- Horn
- AM/FM radio with speakers

3.0.15 HEATER AND DEFROSTER:
- Minimum 40,000 BTU, HIGH OUTPUT. Two heaters may be furnished to meet this requirement if the location does not interfere with controls or subject the heaters to damage.
- Defroster fans shall be installed on front and rear windows.
- Sufficient ventilation shall be provided to prevent cold weather fogging on all windows.

3.0.16 TIRES:
- Radial, 17.5-R25 Michelin SnoPlus.
- Tire loading must meet tire manufacturer’s recommendations.
- Rims to be three (3) piece, 14” Heavy Duty. Spare tire and rim shall be provided with each unit. If front rims differ from rear, one of each shall be provided.

3.0.17 COLOR:
- Manufacturers standard lead free yellow.

3.0.18 FRONT SCARIFIER:
- Unit shall be equipped with a heavy duty, front mounted, five (5) tooth scarifier.
- Controls inside cab shall accommodate power-up, power-down and float functions.

3.0.19 All Wheel Drive:
- To be equipped with all wheel drive, variable displacement pump driven hydrostatic wheel motors. To be effective in at least gears 1 - 4, to a minimum of 9 MPH before automatically disengaging.
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4.0 QUALITY ASSURANCE PROVISIONS:
- Equipment will be inspected upon delivery prior to acceptance by the State of New Hampshire.

5.0 PREPARATION FOR DELIVERY:
- Cooling system to be protected with permanent type anti-freeze to a temperature of at least thirty-four degrees (-34) below zero F.
- Grader and equipment shall be delivered completely assembled, lubricated, serviced and ready to operate.
- The vendor is to supply one (1) complete set of software and hardware (com device and cables to connect to State owned laptop) to diagnose and/or retrieve and clear any stored active or inactive codes for each unit offered. Software shall be capable of reading sensor data and conduct injector cut-out tests. Software and/or hardware upgrades provided at no additional cost to the state of N.H. for each unit for period of ten (10) years from the in-service date.
- Successful vendor will furnish at no additional charge, a qualified representative to instruct department technicians in the use of all software and web based diagnostic and troubleshooting of the purchased equipment.
- Successful vendor will furnish at no additional charge, a qualified representative to instruct department personnel in the operation and preventative maintenance of the purchased equipment.

5.0.1 WARRANTY:
- A five (5) year/7,500 hour NO COST warranty covering the entire machine including emission system, except tires, glass and battery(s) shall be provided.
- Units will be repaired within 3 working days or a registered replacement unit will be provided at the vendor’s expense including insurance and any oil and filter(s) or other parts needed at required service intervals for loaner unit.
- Warranty work will be performed at the location the machine is assigned.
- Any transportation costs shall be borne by vendor.

5.0.1 MANUALS - INSTRUCTION:
- A complete set of operator, parts and service manuals shall be provided on CDROM(s) with each unit delivered. In addition, one complete set of the above CDROMs shall be provided to the Agency office with each Purchase Order. Shop manuals and parts lists must include engine as well as basic machine components.
- Successful vendor will furnish at no additional charge, a qualified representative to instruct department personnel in the operation and preventative maintenance of the purchased equipment.
Deduct from Specification

Complete set of diagnostic software and hardware $______________