



## **Specifications for SWC #201 Equipment Rental**

### **A. Scope of Work**

The purpose of this Invitation to Bid (“ITB”) is to provide equipment rental services for State of Tennessee (“State”) Agencies. Other Governmental Bodies, members of the University of Tennessee or Tennessee board of regents systems, and the nonprofit entities identified in Tenn. Code Ann. § 33-2-1001 (“Authorized Users”) may utilize the awarded Contract. Contractor agrees to extend this Contract to Authorized Users.

### **B. Definitions**

Agency	State of Tennessee board, commission, committee, department, office, or any other unit of State government except for those governmental entities identified in Tenn. Code Ann. § 12-3-102(a).
Contract Administrator	Contractor’s main point of contact at the Central Procurement Office.
Contractor(s)	Any successful Respondent(s) to whom a Contract has been awarded by the Central Procurement Office (CPO).
Central Procurement Office or CPO	The State of Tennessee Central Procurement Office (CPO).
DGS	Department of General Services
Downtime	Calculated from the time a service call is placed to the Contractor until the time the technician completely repairs the equipment.
End User or Authorized User	Using Agency, local government, or other entity of the statewide contract.
MBE/WBE/SDVBE/SBE	Minority business enterprise, women business enterprise, service-disabled veteran business enterprise, and small business enterprise.
Normal State Operating Hours	Monday through Friday 8:00 AM – 4:30 PM, excluding legal State holidays. A listing of State holidays can be found at <a href="http://www.tn.gov/state-holidays.shtml">http://www.tn.gov/state-holidays.shtml</a> .
Other Governmental Bodies	Any governmental entity in the State of Tennessee, other than Agencies, including but not limited to: 1) Judicial branch entities; 2) Legislative branch entities;

	<p>3) Local governments (includes counties, cities, townships and municipalities);</p> <p>4) Educational institutions (includes universities, colleges and K-12); and</p> <p>5) Authorities and quasi-governmental bodies.</p>
Purchasing Card or P-Card	Commercial card that allows organizations to take advantage of the existing credit card infrastructure to make electronic payments for goods or services. A P-Card is similar to a consumer credit card, but the card-using organization must pay the card issuer in full each month.
Wear and Tear	Deterioration that occurs over time with the use of the equipment even though the equipment receives reasonable care and maintenance. Such deterioration could be caused by exposure, time or ordinary and reasonable use of the equipment.

C. Rental Specifications

- a. Unless otherwise stated, monthly rental rates are based on one (1) month of usage based on an eight (8) hour day and forty (40) hour week. One month is equal to four (4) weeks or one hundred sixty (160) hours of usage. If the End User uses the equipment for more than 160 hours during the monthly rental term, Contractor will prorate the End User's additional use.
- b. Contractor shall supply discounted rates for the following long-term rental terms for each piece of equipment listed in Section D as applicable: six (6), twelve (12), or thirty-six (36) months.
- c. Special note regarding Term of Contract. This is a three (3) year contract term running from May 15, 2016 to May 14, 2019, with five (5) additional one-year options to renew. No new equipment will be rented beyond the end of year five (5) from the resulting contract(s). The remaining three (3) years of the statewide contract will allow agencies to complete existing rental terms.
- d. Contractor will receive a minimum of seven (7) calendar days' notice to deliver equipment to the End User's specified location after a purchase order or request is made. The specified equipment must be delivered within those seven (7) days unless a different delivery time is mutually agreed to by the End User and Contractor. If the specified equipment is unavailable for delivery within those seven (7) days, then the Contractor shall provide an equivalent or larger unit at the same price. If Contractor initially delivers a larger piece of equipment than requested and then swaps it with the size originally requested, the State shall not incur any additional costs.
- e. Contractor will deliver and pick up equipment at the location specified by End User at Contractor's expense. Contractor is responsible for full delivery and pick-up, including but not limited to, acquiring required permits and safely loading and unloading equipment. End Users will inspect all equipment at the time of delivery and pick up. End Users will contact Contractor if equipment is not per specifications and of any issues which occurred during transit.
- f. If an equipment breakdown occurs during the rental term, the Contractor is responsible for equipment repairs, cost, and rental rate adjustment for the Downtime. If equipment Downtime

exceeds twenty-four (24) hours, the Contractor is responsible for providing operational equipment (“Replacement”) of equal or greater value at no expense to the State. Contractor shall incur all transportation costs associated with providing the Replacement. The Contractor will not charge the End User for the time during which the equipment was down.

- g. Contractor shall not bill the State for costs of normal wear and tear to rented property as determined by the formal discretion of the State. Wear and tear means the deterioration that occurs over time with the use of the equipment even though the equipment receives reasonable care and maintenance. Such deterioration could be caused by exposure, time or ordinary and reasonable use of the equipment.
- h. Any End User seeking to extend the rental term must notify the Contractor via email or purchase order at least a minimum of seven (7) calendar days prior to the initial end date of the rental term.
- i. Rental term shall end when the End User notifies the Contractor, in writing or by phone, that the equipment is ready for pick up. It is the Contractor’s responsibility to coordinate the removal or pick up of the equipment with the End User at a mutually agreeable time. If Contractor is notified and mutually agrees to pick up equipment and pick up is delayed by the Contractor, the State shall not incur any additional costs.
- j. Equipment rental terms will not be terminated early. In the event of a substantiated lack of funding, rental terms may be terminated early with mutual agreement between the State and the Contractor. Contractor shall be required to pick-up the rental equipment at no additional cost to the State. CPO must determine substantial lack of funding before early termination.
- k. Contractor will obtain the appropriate insurance coverage as stated in Section 16, Terms and Conditions.
- l. The Contractor shall have a two (2) hour maximum response time to respond to an End User’s call or email during Normal State Operating Hours, unless otherwise specified by the End User. Response time is satisfied when the Contractor responds to the End User either by email or telephone. End Users may request specified means of contact.
- m. Contractor must be a manufacturer’s authorized dealer or full-service rental company and must have parts and service facilities within four (4) hours of every county within its awarded region. Contractor must have available parts, sales, services, specialized tools and service trucks. Contractor must supply documentation with bid that substantiates they are capable of providing parts and service within four (4) hours of every county within its awarded region. Exceptions to the four-hour time frame may be made with written approval of the End User.
- n. The Contractor will be responsible for all routine maintenance, unless Contractor and End User mutually agree to allow End User to perform routine maintenance. Manufacturer’s standard warranty is the responsibility of the Contractor. Routine maintenance must be provided at no additional cost including parts and labor. Maintenance to be provided per suggested maintenance schedule. The State will be responsible for daily operator care such as checking fluids, tire pressure, lubricating key components, belts and lights. The State must provide the appropriate usage data for equipment (i.e., number of hours, remaining battery life) to Contractor on a monthly basis for scheduling of routine maintenance.

D. Equipment Specifications

- a. All rental property, unless otherwise specified, must be less than four (4) years old (from date of original manufacture) and have less than two thousand (2,000) hours of use to provide optimum performance. Refurbished equipment is not acceptable.
- b. All requirements listed above will be required on each enumerated item listed in this specification.

(1) Tractor with Flex-wing Mower, Double Deck Required

89 PTO (power take off) HP (horsepower)  
Engine: 274 Cubic inch minimum  
Factory CHA  
Valves – 3 sets of remote valves (total of 6 couplers) required  
Front and rear tread width – approximately 80" (c-c)  
Tractor must have steering column forward reverse shuttle lever  
Must have less than 600 hours upon delivery  
MFWD (mechanical front wheel drive)  
Front Weights: 800 lbs.  
With 15' FT (foot) flex-wing mower  
Double deck  
Domed top design  
Rental Term – Monthly or thirty-six (36) months

Acceptable brands/models: tractor: John Deere 6105E, New Holland T6.145 or equal; mower: John Deere HX15, Bush Hog 2815 or equal.

Per Terms and Conditions Special Term (16) e. Product Liability Insurance, Contractors who are awarded this line item must provide a copy of the mowing equipment manufacturer's Certificate of Insurance for Product Liability.

(2) Tractors

Applies to Tractors listed below:

Cab - factory cab required  
MFWD required  
Factory CHA required on 89 HP and above (under 89 HP Factory CHA is optional)  
Transmission - synchro transmission, minimum 12F 12R  
PTO RPM (rotations per minute) - 540 wet clutch pack required  
Valves – 1 set of remote valves (total of 2 couplers) required  
Front and rear tread width – approximately 80" (c-c)  
Tractor must have steering column forward reverse shuttle lever  
Must have less than 600 hours upon delivery  
Rental Term – Monthly or thirty-six (36) months

- a. 50 PTO HP  
Left-hand power reverser  
Factory CHA optional  
Acceptable brands/models: John Deere 5065E, New Holland T4.65 or Equal

- b. 70 PTO HP  
4-cylinder  
Left-hand power reverser  
Factory CHA optional  
Acceptable brands/models: John Deere 5085E, New Holland T4.90 or Equal
- c. 89 PTO HP Tractor  
4-cylinder, Engine: 274 cubic inch minimum  
Left-hand power reverser  
Acceptable brands/models tractor: John Deere 6105E, New Holland T4.65 or equal
- d. 89 PTO HP Tractor with loader, Engine: 274 Cubic inch minimum  
Front end loader with minimum 73" (inch) bucket  
3,500 lbs. (pounds) lift capacity (not for salt use)  
Acceptable brands/models tractor: John Deere 61120E, New Holland T6.145 or equal
- e. 89 PTO HP Tractor with boom mower, Engine: 274 cubic inch minimum  
\*Side-mount 22' FT Boom Mower (See Appendix I in Section E)  
4-cylinder  
Left-hand power reverser  
Acceptable brands/models tractor: John Deere 6105E, New Holland T6.145 or equal

\*Per Terms and Conditions Special Term (16) e. Product Liability Insurance, Contractors who are awarded this line item must provide a copy of the mowing equipment manufacturer's Certificate of Insurance for Product Liability.

### (3) Mowers

Rental Term – Monthly, six (6) months, or twelve (12) months

- a. Commercial, cab  
15' FT cutting width  
2" to 9" cutting height  
Rear discharge  
100 HP Diesel Engine  
  
Acceptable brands/models: Mowermaxx Model MM100 or equal
- b. Minimum 40 HP Diesel Engine  
Remote controlled mower  
Flail head  
Rubber track unit with steel inserts (tires are not acceptable)  
Mows up to 60 degree slope

(4) Trimmers

Rental Term – Monthly

a. Tree Trimmer

75' FT Saw reach  
90 degree range of motion  
360 degree rotation on turntable tree trimmer with 24" saw  
2 four-way joy stick upper controls  
Articulating cab allows the operator to tilt 40 degrees in each direction with boom during operation  
20,000 lbs. Hydraulic Winch with 150' FT 5/8" cable  
8' FT Push Blade  
130 HP Cummins or 97 HP Deutz engine  
Must have extremely low ground pressure not to exceed 7.9 PSI at 3" penetration and 30-40 PSI. Traveling length is 41'6". Non-conductive telescoping fiberglass boom with 24" saw at 3,200 RPM.  
45 GA fuel tank approximately 3 GPH (gallons per hour)  
Operates off all quadrants without outriggers  
Hydrostatically driven  
4WD or Steel/rubber track

Acceptable brands/models: Jarraff Model or equal

b. Rear Lot Trimmer

55' FT vertical reach measured from the ground to the center of the saw blade  
Non-conductive, fiberglass tubing with 1 telescoping section  
24" diameter circular saw driven by a high-duty-cycle hydraulic motor, 180 degree saw rotation  
Articulated frame with ground-contour-following rear axle and hydraulically locked when not moving  
Diesel Engine, 46 HP, 3-cylinder, Tier 4i compliant, air cooled  
Engine-driven hydraulic pump with hydrostatic wheel motors  
Remote control or manual-override control of all machine functions  
20 GA hydraulic tank fill volume  
10-16.5 8-ply, 27 PSI ground pressure for tires  
29 GA fuel tank fill volume  
Slow speed up to 3 MPH (miles per hour)  
Fast speed up to 4 MPH  
25 degree maximum incline for operation

Acceptable brands/models: Mini Jarraff Rear Lot Trimmer Model or equal

(5) Trailer Mounted Attenuator

Support structure with articulating arms  
A dual cartridge attenuation system (replaceable cartridge if damaged)  
Impact frame  
Cylinder hitch assembly (trailer hitch with cylinder dampener system)  
Intermediate steel frame

Suspension, axle, wheels and tires will be located in the approximate center of the trailer (axle located at rear not acceptable)  
15 light arrow board; powered by truck via trailer electrical connector, manual tilt  
Rental Term – Monthly, six (6) months, or twelve (12) months

(6) Portable Longitudinal Steel Barriers

Dimensions

Length: minimum of 13' maximum of 28'

Width: minimum of 21" maximum of 28"

Height: minimum of 32" maximum of 33"

Each barrier section shall contain 2 pairs of crank down caster wheels for increased mobility and deployment of sections

Performance criteria: portable steel barrier shall be fully tested and shall meet the recommended structural adequacy, occupant risk, and vehicle trajectory

Criteria set forth in the National Cooperative Highway Research Program report 350 (NCHRP-350) when properly installed according to the manufacturers recommendations

Rental Term – Monthly

(7) Portable Traffic Control Systems

Rental Term – Monthly, six (6) months, twelve (12) months or thirty-six (36) months

Applies to Systems listed below:

Manual, fixed time, and traffic actuated operation options

Battery powered and 110 volt charging

12" diameter LED lamps (red, yellow, green)

NEMA and MUTCD compliant

Storage/transport trailer

Grouped Lines: All Portable Traffic Control Systems and Add-ons

- a. Short-term usage – estimated 50 hours battery life  
NCHRP 350 Test Level 3 compliant
- b. Long-term usage – solar powered estimated 30 days without recharging  
Dual signals  
Remote Monitoring System – User access to manage and monitor Portable Traffic Systems, i.e. location, run time, battery status, and system logs; capable of monitoring both traffic directions  
Overhead adjustable mast arm with 180 degree rotating signal head
- c. System Add-ons
  - 1) Remote Monitoring System Add-on for short-term usage. User access to manage and monitor Portable Traffic Systems, i.e. location, run time, battery status, and system logs.
  - 2) Wireless Remote Add-on for short-term or long-term usage.
  - 3) Cabled Remote Add-on for short-term or long-term usage.

- 4) Signal Change Vehicle Detection Capability Add-on for short-term or long-term usage. System detects traffic within the work zone and automatically adjusts signal change to the appropriate duration in both traffic directions (i.e., slow moving traffic through work zone).

(8) Excavators

Rental Term – Monthly, six (6) months, or twelve (12) months

- a. 1.09 YD (yard) with bucket  
Minimum 46,000 lbs.  
145 HP  
Must be compatible with hammer and plumbed with auxiliary hydraulics  
Grouped Lines: Excavator, hammer, and grapple (145 HP)
- b. 2.3 YD minimum  
78,000 lbs.  
245 HP  
SAE with bucket  
Must be compatible with hammer and plumbed with auxiliary hydraulics  
Grouped Lines: Excavator, hammer, and grapple (245 HP)
- c. 3/4 YD minimum  
35,900 lbs.  
94 HP minimum
- d. Steel Excavator  
Includes Long Reach Boom and Bucket  
55,000 lbs. operating weight  
194 HP minimum  
60' FT boom reach
- e. Highway Speed Hydraulic Excavator  
Automatic transmission  
Auxiliary hydraulics  
A/C in upper and lower cabs  
32,000 lbs. with ditching bucket and fixed thumb grapple  
  
Acceptable brands/models: Gradall D152 or equal
- f. Highway Speed Hydraulic Excavator with automatic transmission  
Auxiliary hydraulics  
A/C in upper and lower cabs  
49,000 lbs. with ditching bucket and fixed thumb grapple  
  
Acceptable brands/models: Gradall XL 4100 or equal

(9) Grapples

Rental Term – Monthly, six (6) months, or twelve (12) months

- a. Mechanical Thumb, Compatible with 145 HP Excavator  
Grouped Lines: Excavator, hammer, and grapple (145 HP)
- b. Mechanical Thumb, Compatible with 245 HP Excavator  
Grouped Lines: Excavator, hammer, and grapple (245 HP)

(10) Hammers

Rental Term – Monthly, six (6) months, or twelve (12) months

- a. Compatible with 145 HP Excavator, automatic greaser  
Grouped Lines: Excavator, hammer, and grapple (145 HP)
- b. Compatible with 245 HP Excavator, automatic greaser  
Grouped Lines: Excavator, hammer, and grapple (245 HP)

(11) Loaders

General purpose buckets are required (Light material buckets are not acceptable)

Rental Term – Monthly, six (6) months, or twelve (12) months

- a. 2.5 YD  
Rubber tired  
Minimum 145 HP  
Minimum 25,500 lbs.
- b. 3 YD  
Rubber tired  
Minimum 160 HP  
Minimum 30,000 lbs.
- c. 4 YD  
Rubber tired  
Minimum 180 SAE HP  
Minimum 38,000 lbs.
- d. Compact track loader with mulching attachment  
106 HP  
Enclosed cab  
Minimum 38,000 lbs.

(12) Pavers

Rental Term – Monthly, six (6) months, or twelve (12) months

- a. Asphalt Paver  
Minimum 12,000 lbs.

Minimum 35 HP  
Paving Width 5' FT to 9' FT

5 Ton Hopper  
Track Driven

- b. Mini Paver  
Ability to connect to any skid loader  
Minimum of 20 HP

Acceptable brands/models: Hitek Model MG7 or equal

(13) Pot Hole Patcher

Trailer mounted with 250 GA (gallon) emulsion tank  
Rental Term – Monthly, six (6) months, or twelve (12) months

Acceptable brands/models: Cimline Durapatcher or equal

(14) Backhoe

4WD (four wheel drive)  
Standard Front Bucket  
Factory cab with heat and air conditioning  
Rear Bucket  
12" or 24"  
Minimum 74 SAE HP  
Rental Term – Monthly, six (6) months, or twelve (12) months

(15) Lifts

Rental Term – Monthly, six (6) months, or twelve (12) months

- a. Minimum 60' FT Working Height, Boom Lift. Rugged Terrain, Diesel Powered
- b. 40' FT 4WD telescopic Boom lift

Acceptable brands/models: JLG 400s or equal

- c. 30' FT Manual Lift

Acceptable brands/models: Genie AWP30SDC or equal

- d. 26' FT Scissor lift

Acceptable brands/models: JLG 2630es or equal

(16) Dozer

D4  
Track

6-way blade  
95 SAE HP minimum  
Minimum 19,640 lbs.  
Rental Term – Monthly, six (6) months, or twelve (12) months

(17) Tornado Regenerative Air Sweeper

115 HP auxiliary engine  
7 CU YD (cubic yard) usable hopper mounted on a 33,000 GVW (gross vehicle weight rating) chassis  
Rental Term – Monthly, six (6) months, or twelve (12) months

Acceptable brands/models: Schwarze model A7 or equal

(18) Culvert Cleaner

- a. Trailer Mounted  
700 GA water tank  
65 HP diesel engine  
40 GPM (gallons per minute) at 2,000 PSI (pounds per square inch) water pump  
Pivoting hose reel with 500' FT of 1/4" hose  
15 degree and 35 degree radial nozzles  
KEG torpedo and Royal nozzles  
2 tiger tails  
25" fill hose and hydrant wrench  
Rental Term – Monthly, six (6) months, or twelve (12) months
- b. Mechanical Culvert Cleaner  
Trackhoe and 12" auger system  
Capable of cleaning 12" to 8' diameter round or boxed pipe up to 140' long  
Rental Term – Monthly

## **E. Appendix I.**

### **SPECIFICATIONS FOR ARTICULATED MID-MOUNT 22' BOOM MOWER MOUNTED ON JOHN DEERE TRACTOR MODEL 6105E, NEW HOLLAND T6.145 OR EQUIVALENT**

#### **ACCEPTABLE BRANDS/MODELS: ALAMO MACHETTE OR EQUIVALENT**

#### **GENERAL**

It is the purpose of this specification to describe a 22' mid-mounted, hydraulically powered boom mower for cutting grass and brush on roadsides and other areas that are not accessible to conventional mowing equipment. The unit bid shall be the manufacturer's current production model that meets or exceeds the following minimum specifications. Only a standard production machine can be bid on these specifications and a supplier will not be allowed to modify his standard production unit in order to meet these specifications.

#### **BASIC FEATURES**

- 22' minimum horizontal reach.
- 22' 7" minimum vertical reach.
- 9' 1" below grade reach.
- Two section articulated boom.
- 60" rotary cutting head (specifications listed separately).

#### **BOOM FEATURES & MOUNTING**

- Main Boom: 6" x 6" x ¼" wall structural tubing conforming to ASTM A-500 Gr. B (58,000 psi min tensile).
- Outer Boom: 5" x 5" x ¼" wall structural tubing conforming to ASTM A-500 Gr. B (58,000 psi min tensile).
- The main boom pivot points shall be reinforced with ¾" ASTM A-572 Gr. 50 (65,000 psi min tensile).
- Main pivot pins shall be constructed of 2" ETD 150 alloy steel bar (150,000 psi min tensile/32 Rc min).
- Each pin shall be supported by a pair of 3" hardened steel, greaseable Connex® bushings.
- Standard boom functions shall include horizontal swing, vertical lift, dipper reach, and mower head tilt.
- Boom must swing hydraulically a minimum of 120° utilizing a king post style turning arm.
- The 2 ½" diameter king pin shall be constructed from AISI 1045 chrome steel.
- The king pin shall pivot about a pair of 2 ¾" diameter greaseable Connex® bushings.
- The weight of the boom and turning arm shall be supported by a 5" diameter UHMW polyethylene thrust washer.
- The tilt mechanism shall feature a four-bar linkage to allow for 215° mowing head rotation.
- The tractor mount kit shall feature a subframe spanning from the front bolster to the rear axle.
- Subframe shall consist of 4" x 4" x 5/16" wall tubing with a 6" x 4" x ½" vertical support.
- Torsional loading shall be minimized with a 4" x 2" x ¼" lateral cross-brace spanning the width of the tractor.
- All structural tubing used in the mount kit shall conform to ASTM A-500 Gr. B (58,000 psi min tensile).
- Frame work fastened to the tractor bell housing area will not be accepted.
- The mainframe which supports the king post shall brace over the hood just above the operator's line of sight.
- The brace shall be a formed 4" x 4" x 5/16" wall tube conforming to ASTM A-500 Gr. B (58,000 psi min tensile).
- Only a one piece, formed structural brace shall be accepted.
- A minimum 1,600 lb counterweight shall be fastened to the frame opposite the boom.
- A self-adjusting axle stabilizer system shall provide counter-stability for the articulated boom.
- An additional 1,300 lb wheel weight shall be provided as standard equipment.
- A two-piece boom rest structure shall mount to the rear axle to support the weight of the boom in transport.

## HYDRAULIC SYSTEM

- Unit shall feature a self-contained hydraulic circuit for both mowing head and boom control.
- Mowing head circuit shall feature a closed-loop, hydrostatic, variable displacement, piston pump.
- The pump shall be rated at 28 gpm (40 hp) and 2,500 psi @ 2,200 rpm and feature a no flow neutral circuit.
- The hydrostatic pump shall also feature a charge pump rated at 8 gpm (1.4 hp) and 300 psi @ 2,200 rpm.
- The purpose of the charge pump is to refresh and cool the cutter head circuit.
- The control circuit shall feature a load sensing variable displacement piston pump.
- The load sensing pump shall be rated at 19 gpm (33 hp) and 3,000 psi @ 2,200 rpm.
- Both piston pumps shall provide internal relief for component protection.
- Entire pump system shall be mounted to the front of the tractor and coupled to the engine crankshaft pulley.
- The hydraulic reservoir shall be front-mounted for improved operator visibility, safety, and operator access.
- Reservoir shall feature a 100 mesh suction line filter and a 10-micron, 40 gpm return filter with restriction gauge.
- Reservoir shall feature visual indication of tank level and temperature to insure a 20 gallon working volume.
- The hydraulic oil must be of a superior grade with anti-wear additives conforming to ISO AW68 specifications.
- Convenient access points for draining and cleaning the reservoir shall be provided.
- A heavy duty steel bumper shall provide frontal protection for the reservoir.
- The cylinder control circuit shall feature a multi-section, electro-hydraulic, directional valve.
- The valve shall be open-center and provide section-specific pressure compensation.
- Valve shall allow a minimum of four functions to be operated simultaneously by joystick control.
- A manual override control system shall be available in lieu of the standard joystick.
- The swing, lift and dipper sections must feature individual work port relief valves for breakaway protection.
- Valve shall feature a separate 20 micron, 35 gpm in-line pressure filter.
- The valve shall be mounted on the oil reservoir and protected by a hinged fiberglass cover.
- All high-pressure hydraulic hoses shall be of four-wire braid construction with a minimum SAE100R12 rating.

## 60" HEAVY-DUTY ROTARY HEAD

### CUTTER HEAD FEATURES & CAPABILITIES

The unit shall have a minimum cutting width of 58". The cutter head shall cut grass, weeds, and brush up to 5" in diameter. The cutting head top deck shall be constructed using a minimum of A606 alloy steel or equivalent. The side skirts shall be constructed using a minimum of 3/8" steel. Top of the deck shall be reinforced with a channel frame and a reinforced spindle mount plate. The cutting head shall feature full-length, replaceable skid-shoes. The cutter head shall have 80 degrees of rotation, to allow mower to be stowed behind the tractor during transport.

#### Spindle

The spindle shall be a minimum of 4 1/2" x 9" heat-treated, high strength alloy steel. The spindle bearing shall be tapered roller bearings, 2 1/2" ID top and 2-5/8" ID bottom, in a sealed housing.

#### Blade Carrier and Blades

The blade carrier shall be three-leaf, stacked blade-bar type with the bottom leaf being made out of high strength steel. The blades shall be 5/8" x 5" x 14-5/8", 360-degree full-swinging, double-edged, and constructed of tempered steel.

## **OPERATION & POWER**

### **Motor**

The motor shall be a cast-iron, piston-type, rated at 205 HP at 4,100 RPM and 6,000 PSI. The spindle speed shall be a minimum of 1,220 RPM and 4,916 in. lb. of torque.

### **Motor Drive**

The motor drive shall be direct drive, splined and totally enclosed. This specifically excludes a chain or dodge coupler.

### **Safety**

The front shield shall be hydraulically actuated, center feed, metal door operational from the joystick control. The rear shield shall be constructed of rubber material.

## **MISCELLANEOUS**

**Weight** The cutter head shall have a shipping weight of approximately 1,000 lbs.

## **OPERATOR PROTECTION & SAFETY**

- The mower cutter head shall have a six-second emergency shutdown engaged by the operator inside the cab.
- The boom controls shall feature a master ON/OFF switch for complete power shutdown.
- An ignition lock-out safety switch shall prevent the tractor from being started with the cutter head valve engaged.
- Cab units shall include Shields® Premier 3/8" thick right side replacement polycarbonate windows.
- The replacement windows shall feature Supercoat™ anti-abrasion coating with integrated UV protection.
- Open station tractors shall be supplied with a cage which shields the operator from flying debris.
- The right side of the cage shall feature a combination of opaque 3/8" Lexan® MR10 and 10 ga. ASTM A-36 steel.
- Overhead shielding shall consist of a FOPS rated canopy or a 1 1/2" - #9 raised expanded metal cage extension.

## **TRACTOR SPECIFICATIONS**

- Tractor shall weigh a minimum of 6,000 lbs. and have an 85" minimum wheelbase.
- The engine shall produce a minimum of 80 net hp.

## **WARRANTY**

There shall be a one (1) year 100% parts and labor against defects in material and workmanship, including components parts. Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility are not acceptable. The successful bidder through the manufacturer shall be solely responsible for the guarantee of the complete unit.

## **PRODUCT LIABILITY INSURANCE**

See Insurance Section (16) of the Terms and Conditions: "Given the unique nature of liability relative to the 22' boom mower and the tractor with flex-wing mower found in the specifications document (Section D - Equipment Specifications (1) and (2) and Appendix I), Contractors who are awarded these line items must provide a copy of the mowing equipment manufacturer's Certificate of Insurance for Product Liability of at least \$25,000,000 per occurrence for the product subject to its bid."

## **SAFETY AND TESTING**

Due to the severe mowing conditions, safety tests are a requirement for the operator's safety and highway traffic safety. All equipment must meet or exceed the following: ANSI S474/SAE J232 Industrial Rotary Mower: "Guidelines for operator and by-stander protection for industrial type rotary mowers whose use falls within the scope of this recommended practice".

ARM TYPE MOWER: Must meet or exceed ASAE S474/SAE J232 when the mower head is positioned at ground level.

GUARDING & SHIELDING ASAE S474/SAE J232 SECTION 4.1: Bidder to submit compliance report.

LABELS – ASAE S474/SAE J232 SECTION 4.2: Bidder to submit compliance report.

OPERATOR ZONE: PRESSURIZED COMPONENTS - ASAE S474/SAE J232 SECTION 4.3: Bidder to submit compliance report.

FOOT PROBE TEST – ASAE S474/SAE J232 SECTION U.2: Bidder to submit compliance report to section 7.2.4 Test acceptability.

BLADE IMPACT TESTS – ASAE S474/SAE J232 SECTION 7.3: Bidder must submit test protocol to section 7.3.4 test.

Acceptability requirements impact test results to be documented to demonstrate acceptable criteria of: 1) Dropping cutting head onto 2" diameter 1018-1020 steel, HR or CD test rod with contact as close as possible to blade carrier when mower operated at rated speed. 2) Dropping cutting head onto 2" diameter 1018-1020 steel, HR or CD test rod with contact .25 mm from end of blade when operated at rated speed.

BLADE UNBALANCE TEST – ASAE S474/SAE J232 SECTION 7.4: Bidder to submit test protocol to section 7.4.4 test acceptability requirements, mower to be operated for two (2) minutes at rated speed with one (1) blade removed.

STRUCTURAL INTEGRITY TEST – ASAE S474/SAE J232 SECTION 7.5: Bidder to submit protocol section 7.5.4 test acceptability requirements: Protocol to detail results or 12 rod hits through 8 equally spaced holes.

THROWN OBJECT TEST – ASAE S474/SAE J232 SECTION 7.6: Bidder to submit protocol for scoring & test compliance to section 7.6.4 and 7.6.5 test acceptability. Bidder to submit documentation detailing compliance and/or test acceptability with the following standards:

ANSI/ASAE 201.4 – Application of hydraulic remote control cylinders

ANSI/ASAE S350 – Safety alert symbol

SAE J284 – Safety alert symbol

ASAE EP363.1 – Technical publications

ANSI/ASAE S493 – Guarding for agricultural equipment

SAE J1065 – Pressure rating for hydraulic tube

ANSI/ASAE S279.12 SECTION 305 – Reflective materials

ANSI/ASAE S483 – Rotary mower blade difficulty test

ASTM E23 (FOR CUTTER BLADES) – Charpy v-notch impact test

## **SPECIFICATIONS FOR TRACTOR, 89 PTO HP, 4WD**

### **ACCEPTABLE BRANDS/MODELS: JOHN DEERE 6105E, NEW HOLLAND T6.145, OR EQUIVALENT**

#### **ALL SPECIFICATIONS ARE CONSIDERED MINIMUM UNLESS OTHERWISE NOTED.**

1. Engine: Tier 4 B, water cooled diesel w/cold starting aid, turbocharged. Must be B-20 compatible while maintaining full warranty.

2. PTO Horse Power (S.A.E.): 89
3. Cylinders: 4
4. Displacement: 274 cubic inches
5. Fuel Moisture Separator: Required
6. Seat: Suspension, w/seat belt & arm rest
7. Steering: Power, w/tilt & telescopic column
8. Hitch: Category 2, 3-point with telescopic link ends with top link
9. Adjustable Telescopic Sway Bars: Right & left side of the draft lift arms, tube type with pins or screw type with pin are acceptable. (**NOTE:** Adjustable chains are not acceptable) Dealer installed is acceptable.
10. PTO w/Guard & Wet Clutch: 540/1000, electric hydraulic engagement. Digital PTO indicator.
11. Digital Ground Speed Indicator, Dash Mounted: Required
12. Brakes: Wet Disk
13. Clutch: Wet
14. Transmission: 12F – 12R, w/left hand power reverser
15. Fuel Capacity: 44.4 gallons
16. Lighting Package: Two (2) headlights; two (2) tail lights
17. Manufacturer Standard Gauges: **1)** Lighted Instrument Panel; **2)** Tachometer; **3)** Electric Hour Meter; **4)** Fuel gauge; **5)** Temperature gauge; **6)** Warning Lights for Oil Pressure & Alternator; **7)** PTO Warning Light or Buzzer.
18. Final Drive: Planetary
19. Exhaust: Vertical

20. Differential Lock: Required
21. Electrical System: 12 volt, key start, 90 AMP alternator, 800 CCA battery
22. Throttle: Hand & foot
23. Warning Flashers: Required
24. Rear Wheels: 8 position, adjustable
25. Rear Fenders: Required
26. Tires (Bias): Front – 360/80 R24; Rear – 480/80 R34, Nokian TRI2 Required
27. Wheels: Eight position adjustable front & rear. Thread width to be delivered approximately 76” center to center.
28. Hydraulic Pump Flow at a Single SCV: 20 GPM
29. Remote Hydraulic Valves: Three (3) sets of dual remotes
30. Main Tractor Hydraulic System: Direct Gear Driven
31. Shipping Weight Unballasted (S.A.E.): 10,240 lbs.
32. SMV (Slow Moving Vehicle) Emblem: Required
33. Factory Cab Required: Factory installed w/heater & air conditioner, & ROPS. Items advertised as standard to include tinted safety glass. OSHA & ANSI approved.
34. Draft Sensing Method: Lower link
35. Unit to Contain All Equipment Advertised as Standard by the Manufacturer.
36. Anti-Freeze Solution: Protected to -34 degrees F.
37. Manuals: One (1) operator & one (1) service manual-paper, CD or internet access. One (1) operator safety CD required for safe operation training.