

GENERAL SERVICES  
830 MoDOT Drive, P.O. Box 270  
Jefferson City, MO 65102

REQUEST NO.	3-121024RJ
DATE	October 5, 2012
PAGE NO.	1 NO. OF PAGES 40

SEALED BIDS, SUBJECT TO THE ATTACHED CONDITIONS WILL BE RECEIVED AT THIS OFFICE UNTIL

**2:00 p.m., Local Time, October 24, 2012**

AND THEN PUBLICLY OPENED AND READ FOR FURNISHING THE FOLLOWING SUPPLIES OR SERVICES.

**BIDS TO BE BASED F.O.B. MISSOURI DEPARTMENT OF TRANSPORTATION**

Submit net bid as cash discount stipulations will not be considered  
Various MoDOT Locations

DEFINITE DELIVERY DATE SHOULD BE SHOWN. THE BIDDER MUST SIGN AND RETURN BEFORE DATE AND TIME SET FOR OPENING.

BUYER: Reva Jones

BUYER TELEPHONE: 573-526-2744

BUYER EMAIL: reva.jones@modot.mo.gov

**Equipment**

**(TITLE) Mowers**

To establish a contract to furnish "mowers" in accordance with the following pages.

**Components of Agreement:** The Agreement between MHTC and the successful Bidder shall consist of: the RFB and any written amendments thereto, the "Standard Bid/Proposal Provisions, General Terms and Conditions and Special Terms and Conditions" that are attached to this RFB, the bid submitted by the Bidder in response to the RFB and the post-award contract agreement signed between the parties. However, MHTC reserves the right to clarify any relationship in writing and such written clarification shall govern in case of conflict with the applicable requirements stated in the RFB or the Bidder's bid. The Bidder is cautioned that its bid shall be subject to acceptance by MHTC without further clarification.

**Return sealed bid to the address shown at the top of this page.**

**(SEE ATTACHED FOR TERMS, CONDITIONS, AND INSTRUCTIONS)**

*In compliance with the above Request For Bid, and subject to all conditions thereof, the undersigned bidder agrees to furnish and deliver any or all the items on which prices were bid within the timeframe specified herein, after receipt of formal purchase order.*

Date: \_\_\_\_\_  
 Telephone No.: \_\_\_\_\_  
 Fax No.: \_\_\_\_\_  
 Federal I.D. No. \_\_\_\_\_  
 Email Address: \_\_\_\_\_

Firm Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 By (Signature): \_\_\_\_\_  
 Type/Print Name \_\_\_\_\_

Is your firm MBE certified?  Yes  No

Title: \_\_\_\_\_  
Is your firm WBE certified?  Yes  No

## 1. INTRODUCTION AND GENERAL INFORMATION

### 1.1 Introduction:

- 1.1.1 This Request for Bid (RFB) seeks bids from qualified organizations to provide **mowers** for the locations in the State of Missouri (listed on page 2 of this document), to the Missouri Highways and Transportation Commission (MHTC) and Missouri Department of Transportation (MoDOT). Each bid must be in a sealed envelope, be mailed or delivered by courier to the RFB Coordinator at the below listed address, on or before the date and time listed herein for receipt of bids. All questions regarding the RFB shall be submitted to the RFB Coordinator. **Bids must be returned to the office of the RFB Coordinator no later than 2:00 p.m., CDT, October 24, 2012.**

#### RFB COORDINATOR:

Reva Jones, Senior General Services Specialist  
Missouri Department of Transportation, General Services  
830 MoDOT Drive  
Jefferson City, MO 65109

PHONE: 573-526-2744

FAX: 573-526-6948

### 1.2 General Information:

- 1.2.1 This document constitutes an invitation for competitive, sealed bids for the procurement of mowers as set forth herein.
- 1.2.2 Organization: This RFB is divided into the following parts:
- 1) Introduction and General Information
  - 2) Scope of Work
  - 3) Bid Submission
  - 4) Pricing Page(s)
  - 5) Vendor Information and Preference Certification Form
  - 6) Anti-Collusion Statement
  - 7) Specifications
  - 8) Terms and Conditions

## 2. SCOPE OF WORK

### 2.1 General Requirements:

- 2.1.1 The contractor shall provide mowers on an as needed, if needed basis for the MHTC and MoDOT, in accordance with the provisions and requirements stated herein.
- 2.1.2 The contractor shall provide all deliverables/services to the sole satisfaction of MoDOT.
- 2.1.3 MoDOT does not guarantee how many units will be ordered.
- 2.1.4 Unless otherwise specified herein, the contractor shall furnish all material, labor, facilities, equipment, and supplies necessary to provide the deliverables/services required herein.
- 2.1.5 MoDOT reserves the right to reject any or all bids, and to accept or reject any items thereon, and to waive technicalities. In case of error in the extension of prices in the bid, unit prices will govern.

### 2.2 Specific Requirements:

- 2.2.1 The contractor shall provide MoDOT with mowers, in accordance with the attached specifications.

### 2.3 Required Specifications:

- a. All materials, equipment, and/or services bid upon must comply with the attached MoDOT specification and any other provisions outlined in the solicitation documents.

### 2.4 Delivery Requirements:

- 2.4.1 The following delivery requirements shall apply:
  - a. Unless otherwise specified on the solicitation documents or purchase order, suppliers shall give at least 24 hours advance notice of each delivery. Delivery will only be received between the hours of 8:00 a.m. to 3:00 p.m., Monday through Friday. Material arriving after 3:00 p.m. will not be unloaded until the following workday. No material will be received on Saturday, Sunday or state holidays.
  - b. If the prices bid herein include the delivery cost of the material, the Contractor agrees to pay all transportation charges on the material as FOB - Destination. Freight costs must be included in the unit price bid and not listed as a separate line item.
  - c. Any demurrage is to be paid by the Contractor direct to the railroad or carrier.
- 2.4.2 The contractor shall deliver the products specified herein to the following MoDOT locations:
  - a. St. Joseph, Missouri 64502
  - b. Macon, Missouri 63552
  - c. Hannibal, Missouri 63401
  - d. Lee's Summit, Missouri 64064-8002
  - e. Jefferson City, Missouri 65102
  - f. Chesterfield, Missouri 63017-5712
  - g. Joplin, Missouri 64802
  - h. Springfield, Missouri 65801
  - i. Willow Springs, Missouri 65793
  - j. Sikeston, Missouri 63801

## 2.5 Contract/Purchase Order:

- 2.5.1 The contract expresses the complete agreement of the parties and performance shall be governed solely by the specifications and requirements contained therein. Any change, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the Contractor and the duly authorized representative of the MHTC, by a modified purchase order prior to the effective date of such modification. The Contractor expressly and explicitly understands and agrees that no other method and/or no other document, including correspondence, acts, and oral communications by or from any person, shall be used or construed as an amendment or modification.

## 2.6 Invoicing and Payment Requirements:

- 2.6.1 The contractor shall submit an itemized invoice to the applicable requesting address for the completion of deliverables, as specified herein.

Missouri Department of Transportation  
105 W. Capitol Avenue  
P.O. Box 270  
Attn: Accounts Payable  
Jefferson City, MO 65102

- 2.6.2 Each invoice should be itemized in accordance with items listed on the purchase order and/or contract. The statewide financial management system has been designed to capture certain receipt and payment information. Therefore, each invoice submitted must reference the purchase order number and must be itemized in accordance with items listed on the purchase order. Failure to comply with this requirement may delay processing of invoices for payment.
- 2.6.3 The contractor shall understand and agree MoDOT reserves the right to make contract payments to the contractor through electronic funds transfer (EFT). Therefore, prior to any payments becoming due under the contract, the contractor must return a completed state Vendor Input ACH/EFT Application, which is downloadable from the Vendor Services Portal at: <https://www.vendorservices.mo.gov/vendorservices/Portal/Default.aspx>. Each contractor invoice must be on the contractor's original descriptive business invoice form and must contain a unique invoice number. The invoice number will be listed on the state's Vendor Payment Website to enable the contractor to properly apply state payments to invoices. The contractor must comply with all other invoicing requirements stated in the RFB.
- 2.6.4 The contractor shall be paid in accordance with the firm, fixed prices stated on the pricing page of this document after completion of deliverables specified herein and acceptance by MoDOT.
- 2.6.5 Other than the payment specified above, no other payments or reimbursements shall be made to the contractor for any reason whatsoever.
- 2.6.6 Unless otherwise provided for in the solicitation documents, payment for all equipment, supplies, and/or services required herein shall be made in arrears. The MHTC shall not make any advance deposits.
- 2.6.7 The MHTC assumes no obligation for equipment, supplies, and/or services shipped or provided in excess of the quantity ordered. Any authorized quantity is subject to the MHTC's rejection and shall be returned at the contractor's expense.

## 2.7 Other Contractual Requirements:

- 2.7.1 Contract Period - The contract shall commence from the date of award until September 30, 2013 with up to two (2) one-year renewal option periods, or any portion therein.
- 2.7.2 Renewal Periods - If the option for renewal is exercised by MoDOT, the contractor shall agree to all terms and conditions of the RFB and all subsequent amendments. Renewal options are at the sole discretion of MoDOT.

2.7.3 Escalation Clause - In the event the contractor requests a price increase during the contract period, either the original contract period or any contract renewal period, the contractor must provide a written request and documentation justifying the need for a price increase, and the amount of such price increase. MoDOT will review the contractor's written request and documentation, and decide if a price increase is to be granted at that particular time. The contractor shall understand and agree that MoDOT's decision shall be final and without recourse.

- a. No price increase shall be granted during the first 3 months of the original contract period, or if applicable, first 3 months of a contract renewal period.

2.7.4 Inspection and Acceptance: MoDOT reserves the right to inspect the equipment at the point of manufacture, intermediate storage point, or at a destination which shall be at the discretion of MoDOT.

- a. No equipment, supplies, and/or services received by MoDOT pursuant to a contract shall be deemed accepted until MoDOT has had reasonable opportunity to inspect said equipment, supplies, and/or services.
- b. All equipment, supplies, and/or services which do not comply with the specifications and/or requirements or which are otherwise unacceptable or defective may be rejected. In addition, all equipment, supplies, and/or services which are discovered to be defective or which do not conform to any warranty of the Contractor upon inspection (or at any later time if the defects contained were not reasonably ascertainable upon the initial inspection) may be rejected.
- c. The MHTC reserves the right to return any such rejected shipment at the Contractor's expense for full credit or replacement and to specify a reasonable date by which replacements must be received.
- d. The MHTC's right to reject any unacceptable equipment, supplies, and/or services shall not exclude any other legal, equitable or contractual remedies the MHTC may have.

## 2.8 **Additional Notifications:**

2.8.1 Bidders are encouraged to obtain minority business enterprise (MBE) and women business enterprise (WBE) participation in this work through the use of subcontractors, suppliers, joint ventures, or other arrangements that afford meaningful participation for M/WBEs. Bidders are encouraged to obtain 10% MBE and 5% WBE participation.

### 2.8.2 **Equipment Trade-In Allowance:**

- a. If equipment trade-ins are offered as an option, the trade-in(s) must be negotiated between the District, Division and vendor.
- b. The vendor must be currently under contract with MoDOT.
- c. It will be the responsibility of the vendor to examine the condition of the equipment offered for trade. The vendor must not impose any mandatory requirements or restrictions on equipment disposal.
- d. If the value offered is less than the Division's pre-established minimum price, the Division and District must both approve the trade in value.
- e. Allowance for trade-in(s) will be deducted from the full purchase price in computing the net purchase price. Trade-in(s) will not be available until the receipt and acceptance of the new equipment unless agreed upon by the District.

**Trade-In Worksheet Example:**

<b>Make/Model of New Equipment:</b>
<b>Full Purchase Price: \$</b>
<b>Make/Model of Trade-In:</b>
<b>Less Trade-In (Deduct): \$</b>
<b>Net Purchase Price: \$</b>

**2.8.3 Equipment Refurbishments:**

- a. If equipment refurbishments are available, the refurbishment(s) must be negotiated between the district and vendor. The vendor must be currently under contract with MoDOT. It will be the responsibility of the vendor to examine the condition of the equipment offered for refurbishment. The districts must keep accurate records verifying the process.

2.8.4 In accordance with RSMo 414.365, MoDOT must use fuel with at least the biodiesel content of B-20. (<http://www.moga.mo.gov/statutes/C400-499/4140000365.htm>) By submitting a response to this bid, you agree to comply with all the terms of your company's standard equipment warranties, except to the extent the equipment problems are determined to be attributed to MoDOT's use of B-20 fuel.

2.8.5 **Please submit a complete parts and options list with detailed pricing information for each mower your company would be willing to provide.** Please indicate below the percent (%) discount off Manufacturers' Suggested Retail Prices (MSRP) for all mower options available in your data book or pricing guides.

*% discount off MSRP for all Data Book or Pricing Guide Options: - % Discount \_\_\_\_\_*

### 3. BID SUBMISSION

#### 3.1 Bid Submission Information:

- 3.1.1 All bids must be received in a sealed envelope/packaging clearly marked "3-121024RJ - Mowers".
- 3.1.2 All bids must be received at the office of the RFB Coordinator as outlined in Section 1. "INTRODUCTION AND GENERAL INFORMATION".
- 3.1.3 The bidder may withdraw, modify or correct his/her bid after it has been deposited with MoDOT provided such request is submitted in writing and received at the location designated for the bid opening prior to the date and time specified for opening bids. Such a request received as specified will be attached to the bid and the bid will be considered to have been modified accordingly. No bid may be modified after the date and time specified for the opening of bids.
- 3.1.4 Open Competition / Request For Bid Document:
- a. It shall be the bidder's responsibility to ask questions, request changes or clarification, or otherwise advise MoDOT if any language, specifications or requirements of an RFB appear to be ambiguous, contradictory, and/or arbitrary, or appear to inadvertently restrict or limit the requirements stated in the RFB to a single source. Any and all communication from bidders regarding specifications, requirements, competitive bid process, etc., must be directed to the buyer from MoDOT, unless the RFB specifically refers the bidder to another contact. Such communication should be received at least three (3) working days prior to the official bid opening date.
  - b. Every attempt shall be made to ensure that the bidder receives an adequate and prompt response. However, in order to maintain a fair and equitable bid process, all bidders will be advised, via the issuance of an amendment to the RFB, of any relevant or pertinent information related to the procurement. Therefore, bidders are advised that unless specified elsewhere in the RFB, any questions received less than three (3) working days prior to the RFB opening date may not be answered.
  - c. Bidders are cautioned that the only official position of the MoDOT is that which is issued by MoDOT in the RFB or an amendment thereto. No other means of communication, whether oral or written, shall be construed as a formal or official response or statement.
  - d. MoDOT monitors all procurement activities to detect any possibility of deliberate restraint of competition, collusion among bidders, price-fixing by bidders, or any other anticompetitive conduct by bidders which appears to violate state and federal antitrust laws. Any suspected violation shall be referred to the Missouri Attorney General's Office for appropriate action.
- 3.1.5 Contract Award:
- a. This is a Multiple Award bid and there will be no 'one' bidder awarded each item within this bid. Each individual delivery destination will have sole responsibility for the discretion of all purchasing decisions. Criteria used to determine the "lowest and best" bid are based on price, location of servicing dealers, past performance of servicing dealers, and past performance of different makes and models of mowers. This bid will not be awarded solely based on low price per delivery destination. Units must be delivered to the listed delivery destinations but they will have to be serviced at other locations within the district.

4. PRICING PAGES

The bidder shall provide a firm, fixed price below for the original contract period for providing the deliverables/services in accordance with the provisions and requirements of this RFB. All costs associated with providing the required deliverables/services shall be included in the prices stated below.

Item # 1

Slope Mower, meeting the MoDOT specification below, delivered to any of the MoDOT locations listed on page 2.

(MAKE & MODEL) \_\_\_\_\_

Price \$ \_\_\_\_\_

Any additional options must be listed on a separate page on company letterhead.

Minimum Specifications:

30 hp diesel engine, water-cooled, capable of slope mowing; Electric start with 12 volt system and alternator for charging; Hour meter and deluxe gauge package required; Minimum 11 gallon fuel tank; Dual hydraulic drive steering preferred (skid steer effect) with independently controlled hand levers; Zero (0) turning radius preferred but not mandatory; Super heavy duty construction, out front rotary type mower, minimum 72" cut, 2-6" cutting height, rear discharge, capable of mowing 30-40 degree slopes; Blades shall be of heat treated alloy steel; Shall have automatic safety switch to kill PTO drive and engine when operator is removed from machine; Each unit shall be equipped with a heavy duty steel ANSI certified ROPS with canopy and seatbelt for safety assurance of operator protection; Warning light kit (rotary or LED) required on top of roll bar; Unit or seat shall be of self-leveling type with adjustable suspension seat up to 30 degrees capable of handling operator weight of 100 to 265 lbs; Mower must be operationally tested and shipped fully assembled.

Agricultural turf type tires required, capable of mowing highway roadside and landscape, Serviceable dealers must be located within the State of Missouri.

Options:

1) Extended Warranty \$ \_\_\_\_\_

For bids to be considered turning radius, drive/steering system, blade assembly type and slope degree rating must be listed below:

\_\_\_\_\_  
\_\_\_\_\_

*Any deviation from these specifications must be indicated for review, or else bid may be considered non-responsive.*

Delivery will be made \_\_\_\_\_ days after receipt of order.

**Item #2**

**60”(5 foot) Right Side Mount Rotary Mower.** Complete with all standard equipment and meeting the Missouri Department of Transportation **Specification E697.**

One (1) new latest production (MAKE & MODEL) \_\_\_\_\_ 60”  
(5 foot) right side mount rotary mower complete with all standard equipment and meeting the Missouri Department of Transportation **Specification E697.**

**Two separate prices required:**

**Item #2a - First Price, (Unit price and delivery):**

- Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item # 2b - Second Price, (Unit price with mounting and delivery):**

- One (1) unit mounted to a provided agricultural tractor
- Delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Extended Warranty | \$ _____ |
| 2) _____             | \$ _____ |
| 3) _____             | \$ _____ |

Delivery will be made \_\_\_\_\_ days after receipt of order.

**Item #3**

**60"(5 foot) Right Side Mount Rotary Mower with double deck design.** Complete with all standard equipment and meeting the Missouri Department of Transportation **Specification E696.**

One (1) new latest production (MAKE & MODEL) \_\_\_\_\_ 60"  
(5 foot) right side mount rotary mower, double deck design, complete with all standard equipment and meeting the Missouri Department of Transportation **Specification E696.**

**Two separate prices required:**

**Item #3a - First Price, (Unit price and delivery):**

- Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #3b - Second Price, (Unit price with mounting and delivery):**

- One (1) unit mounted to a provided agricultural tractor
- Delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Extended Warranty | \$ _____ |
| 2) _____             | \$ _____ |
| 3) _____             | \$ _____ |

Delivery will be made \_\_\_\_\_ days after receipt of order.

**Item #4**

**72"(6 foot) Right Side Mount Rotary Mower.** Complete with all standard equipment and meeting the Missouri Department of Transportation **Specification E698**.

One (1) new latest production (MAKE & MODEL) \_\_\_\_\_ 72"  
(6 foot) right side-mount rotary.

**Two separate prices required:**

**Item #4a - First Price, (Unit price and delivery):**

- Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #4b - Second Price, (Unit price with mounting and delivery):**

- One (1) unit mounted to a provided agricultural tractor
- Delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Extended Warranty | \$ _____ |
| 2) _____             | \$ _____ |
| 3) _____             | \$ _____ |

**Delivery will be made \_\_\_\_\_ days after receipt of order.**

**Item #5**

**60" Rear Boom Right Side Mount Rotary Mower.** Complete with all standard equipment meeting the Missouri Department of Transportation Specification E701.

One (1) new latest production (MAKE & MODEL) \_\_\_\_\_ 60"  
Rear boom right side-mount rotary.

**Two separate prices required:**

**Item #5a - First Price, (Unit price and delivery):**

- Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item # 5b - Second Price, (Unit price with mounting and delivery):**

- One (1) unit mounted to a provided agricultural tractor
- Delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Extended Warranty | \$ _____ |
| 2) _____             | \$ _____ |
| 3) _____             | \$ _____ |

**Delivery will be made \_\_\_\_\_ days after receipt of order.**

**Item #6**

**60"(5 foot) Right Side Flail Mower.** Complete with all standard equipment and meeting the Missouri Department of Transportation Specification below.

One (1) new latest production (MAKE & MODEL) \_\_\_\_\_ 60"  
(5 foot) right side mount flail mower complete with all manufactured standard equipment.

**Two separate prices required:**

**Item #6a - First Price, (Unit price and delivery):**

- Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #6b - Second Price, (Unit price with mounting and delivery):**

- One (1) unit mounted to a provided agricultural tractor
- Delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Smooth knives     | \$ _____ |
| 2) Extended Warranty | \$ _____ |
| 3) _____             | \$ _____ |

**Minimum Specifications**

Mid-mount located between front and rear wheels of tractor with left side reservoir tank minimum of 60 gallon, acting as counter balance; Frame shall be capable of interchanging with a boom, side-mount mower, and side-mount ditcher; minimum 10 gauge deck, side plates shall be minimum 1/2" thick inboard and 5/16" thick outboard; front and rear deflectors required; Full length replaceable skid shoes; Cuttershaft shall be balanced, minimum 4 1/2" tube, mounting shall provide anti-jamming seal, bearings shall be greaseable, sealed and self aligning; Lift and tilt cylinder shall be single acting; Hydraulically driven side mower of steel gear type, hydraulics shall be open loop system; Knives shall be of coarse cut type, reversible and self-cleaning, heated treated; Roller shall be a minimum 6" in diameter bearing type, sealed, greaseable and self aligning; Cutting height shall be 1/2" to 5" capable of cutting vertically and horizontally; Must have serviceable dealers in the state of Missouri.

**Any deviations to these specifications must be noted on a separate sheet of paper.**

**Delivery will be made \_\_\_\_\_ days after receipt of order.**

**Item #7**

**72”(6 foot) Right Side Flail Mower.** Complete with all standard equipment and meeting the Missouri Department of Transportation Specification below.

One (1) new latest production (MAKE & MODEL) \_\_\_\_\_ 72” (6 foot) right side mount flail mower complete with all manufactured standard equipment.

**Two separate prices required:**

**Item #7a - First Price, (Unit price and delivery):**

- Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #7b - Second Price, (Unit price with mounting and delivery):**

- One (1) unit mounted to a provided agricultural tractor
- Delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Smooth knives     | \$ _____ |
| 2) Extended Warranty | \$ _____ |
| 3) _____             | \$ _____ |

**Minimum Specifications**

Mid-mount located between front and rear wheels of tractor with left side reservoir tank minimum of 60 gallon, acting as counter balance; Frame shall be capable of interchanging with a boom, side-mount mower, and side-mount ditcher; minimum 10 gauge deck, side plates shall be minimum ½” thick inboard and 5/16” thick outboard; front and rear deflectors required; Full length replaceable skid shoes; Cuttershaft shall be balanced, minimum 4 ½” tube, mounting shall provide anti-jamming seal, bearings shall be greaseable, sealed and self aligning; Lift and tilt cylinder shall be single acting; Hydraulically driven side mower of steel gear type, hydraulics shall be open loop system; Knives shall be of coarse cut type, reversible and self-cleaning, heated treated; Roller shall be a minimum 6” in diameter bearing type, sealed, greaseable and self aligning; Cutting height shall be ½” to 5” capable of cutting vertically and horizontally; Must have serviceable dealers in the state of Missouri.

**Any deviations to these specifications must be noted on a separate sheet of paper.**

**Delivery will be made \_\_\_\_\_ days after receipt of order.**

**Item #8**

**Six-Foot Rotary Mowers**

New (MAKE & MODEL) \_\_\_\_\_ **6' Cut Rotary Mowers**, complete with all standard equipment and meeting the attached Missouri Department of Transportation **Specification E686**.

Unit Base Price \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Extended Warranty | \$ _____ |
| 2) _____             | \$ _____ |
| 3) _____             | \$ _____ |

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #9**

**Seven-Foot, Rotary Mower**

New (MAKE & MODEL) \_\_\_\_\_ **7' Cut Rotary Mowers**, complete with all standard equipment and meeting the attached Missouri Department of Transportation **Specification E687**.

Unit Base Price \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Extended Warranty | \$ _____ |
| 2) _____             | \$ _____ |
| 3) _____             | \$ _____ |

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #10**

**Eight-Foot Rotary Mower**

New (MAKE & MODEL) \_\_\_\_\_ 8' Cut Rotary Mowers, complete with all standard equipment and meeting the attached Missouri Department of Transportation Specification E694.

Unit Base Price \$ \_\_\_\_\_

**Options:**

- |                      |          |
|----------------------|----------|
| 1) Extended Warranty | \$ _____ |
| 2) _____             | \$ _____ |
| 3) _____             | \$ _____ |

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #11**

**Fifteen-Foot, Three Section Rotary Mower**

New (MAKE & MODEL) \_\_\_\_\_ **15' Cut Three Section Rotary Mowers,**  
complete with all standard equipment and meeting the attached Missouri Department of Transportation  
**Specification #E683.**

Unit Base Price \$ \_\_\_\_\_

**OPTIONAL EQUIPMENT PRICE**

Indicate the additional cost or deduction for the options listed below. The Department may purchase a limited number of units with this option. All of the units ordered with any of the listed options must meet the attached specifications with the exception of the options specified on the purchase orders.

Option 1. - Pneumatic aircraft take off tires, minimum 18 ply with new rib retread cap (in lieu of laminated tires).

EACH \$ \_\_\_\_\_

Option 2. - Main deck suspension shall be a walking beam type rear tire suspension. It will be designed to reduce scalping when entering approaches and to keep the mower deck from excess wear from dropping into ruts. The walking axles will be positioned as far forward as possible to best control cutter height over uneven grounds. The walking beam is limited in oscillation so that one wheel would be on high ground most of the time (in lieu of the standard wheel design that was specified).

EACH \$ \_\_\_\_\_

Option 3. - Bondioli driveline components to include driveshafts, clutches and gear boxes (in lieu of the driveline components in the specification). Three-year warranty.

EACH \$ \_\_\_\_\_

Option 4. – Extended Warranty

PRICE \$ \_\_\_\_\_

Option 5. – Hydraulic batwing option (In order to add this option the following items need to be included: 1) The addition of hydraulic motors and hoses in lieu of gear boxes and drive shafts on the top of the deck, 2) The addition of a speed increaser, and 3) An independent hydraulic reservoir and independent hydraulic system will be need to be added. (No tractor hydraulics will be utilized.)

PRICE \$ \_\_\_\_\_

**Delivery will be made approximately \_\_\_\_\_ days after receipt of order.**

**Item #12**

**Mid-Mount Sicklebar and Boom Mower(s) for attachment to agricultural tractors.**

Outright purchase of one (1) new hydraulic 5' foot Cutterbar (Sicklebar), complete and ready for use with any manufactured approved agricultural tractor, 40-70 hp and meeting the Missouri Department of Transportation specification below.

**MAKE & MODEL:** \_\_\_\_\_

**Unit price:** \$ \_\_\_\_\_

**Option 1) Mounting/delivery price on a provided agricultural tractor:** \$ \_\_\_\_\_

**Option 2) Extended Warranty** \$ \_\_\_\_\_

**Minimum Specifications:**

Side-mounted on the right hand side of the agricultural tractor. Unit should feature an automatic, self-returning breakaway system to allow the cutterbar to hinge when obstructed. Planetary drive system and 3/16" abrasion resistant 360 minimum BHN alloy steel replaceable skid shoes. 5' blade length.

**Delivery will be made approximately \_\_\_\_\_ days after receipt of order.**

**Item #13**

Outright purchase of one (1) new hydraulic 6' foot Cutterbar (Sicklebar), complete and ready for use with any manufactured approved agricultural tractor, 40-70 hp and meeting the Missouri Department of Transportation specification below.

MAKE & MODEL: \_\_\_\_\_

Unit price: \$ \_\_\_\_\_

Option 1) Mounting/delivery price on a provided agricultural tractor: \$ \_\_\_\_\_

Option 2) Extended Warranty \$ \_\_\_\_\_

**Minimum Specifications:**

Side-mounted on the right hand side of the agricultural tractor. Unit should feature an automatic, self-returning breakaway system to allow the cutterbar to hinge when obstructed. Planetary drive system and 3/16" abrasion resistant 360 minimum BHN alloy steel replaceable skid shoes. 6' blade length.

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #14**

Outright purchase of one (1) new mid-mount Boom Mower attachment complete and ready for use with any manufactured approved agricultural tractor, 85-115 hp and meeting the Missouri Department of Transportation specification below. Minimum boom reach shall be 20 feet.

MAKE & MODEL: \_\_\_\_\_

50" Rotary Cutter

60" Rotary Cutter

Item #14a - Unit price: \$ \_\_\_\_\_

Item #14b - Unit price: \$ \_\_\_\_\_

**Option Pricing**

Option 1) Mounting/delivery price on a provided agricultural tractor: \$ \_\_\_\_\_

Option 2) Left side counter weight: \$ \_\_\_\_\_

Option 3) Extended Warranty \$ \_\_\_\_\_

**Minimum Specification:**

Cutter width: 50" and 60"

Blade: ½" x 4" updraft

Hyd. Motor Rating: Gear type 45 GPM

Deck thickness: 10-gauge

Deck Frame: 4" x 9" channel

Skid Shoes: Full length, replaceable

Debris Deflector: Rubber

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #15**

Outright purchase of one (1) new mid-mount Boom Mower attachment complete and ready for use with any manufactured approved agricultural tractor, 85-115 hp and meeting the Missouri Department of Transportation specification below. Minimum boom reach shall be 25 feet.

MAKE & MODEL: \_\_\_\_\_

50" Rotary Cutter

Item #15a - Unit price: \$ \_\_\_\_\_

60" Rotary Cutter

Item #15b - Unit price: \$ \_\_\_\_\_

**Option Pricing**

Option 1) Mounting/delivery price on a provided agricultural tractor: \$ \_\_\_\_\_

Option 2) Left side counter weight: \$ \_\_\_\_\_

Option 3) Extended Warranty \$ \_\_\_\_\_

**Minimum Specification:**

- Cutter width: 50" and 60"
- Blade: ½" x 4" updraft
- Hyd. Motor Rating: Gear type 45 GPM
- Deck thickness: 10-gauge
- Deck Frame: 4" x 9" channel
- Skid Shoes: Full length, replaceable
- Debris Deflector: Rubber

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #16**

**Schulte XH1500 15' cut three section rotary mower.** Item shall meet the attached Missouri Department of Transportation Minimum **Specification E683-A.**

Unit Price (EACH) \$ \_\_\_\_\_

**Options**

**Option 1.** Pneumatic aircraft take off-tires minimum 18 ply with new rib retread cap (in lieu of laminated tires)

Total \$ \_\_\_\_\_

**Option 2.** Equal Angle Hitch (540 RPM) **non CV Drive with built in precision type hitch.** In Lieu of 80 degree CV drive. Comes with Weasler u-joint shaft requiring greasing every 40 hours

\_\_\_\_\_ If, yes please check here and initial. This kit is a N/C in Lieu of the standard CV drive and therefore the districts would just have to specify if they want it.

**Option 3.** Right hand wing-walking axle kit with laminated tires. Part # C301-260

Total \$ \_\_\_\_\_

**Option 4.** Left Hand wing-walking axle kit with laminated tires. Part # C301-265

Total \$ \_\_\_\_\_

**Option 5.** Right hand wing walking axle kit with 18 ply recapped aircraft tires. Part # C301-281

Total\$ \_\_\_\_\_

**Option 6.** Left hand wing walking axle kit with 18 ply recapped aircraft tires. Part # C301-286

Total\$ \_\_\_\_\_

**Option 7.** Precision Hitch (available on CV Drive standard unit only) Part # C000-300

Total \$ \_\_\_\_\_

**Option 8.** Extended Warranty

Price \$ \_\_\_\_\_

**Delivery will be made approximately \_\_\_\_\_ days after receipt of order.**

**Item #17**

**6 Foot (72") Rear mount, contoured double deck design heavy-duty rotary mower (or approved equivalent), meeting the attached MoDOT specification, E702, delivered to any of the MoDOT locations listed on page 2.**

**MAKE/MODEL** \_\_\_\_\_

**OPTIONS**

<b>OPTION</b>	<b>DESCRIPTION</b>	<b>Price</b>
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
<b>Option 1</b>	<b>Extended Warranty</b>	
<b>Option 2</b>		
<b>Option 3</b>		
<b>Option 4</b>		
<b>Option 5</b>		

**Item# 17a - (Unit price and delivery):**

Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #17b - Unit price with mounting and delivery):**

One (1) unit mounted to a provided agricultural tractor and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Delivery will be made approximately \_\_\_\_\_ days after receipt of order.**

**Item #18**

**7 Foot (84") Rear mount, contoured double deck design heavy-duty rotary mower (or approved equivalent), meeting the attached MoDOT specification, E702, delivered to any of the MoDOT locations listed on page 2.**

**MAKE/MODEL** \_\_\_\_\_

**OPTIONS**

OPTION	DESCRIPTION	Price
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
Option 1	Extended Warranty	
Option 2		
Option 3		
Option 4		
Option 5		

**Item #18a - (Unit price and delivery):**

Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #18b - (Unit price with mounting and delivery):**

One (1) unit mounted to a provided agricultural tractor and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Delivery will be made approximately \_\_\_\_\_ days after receipt of order.**

**Item #19**

8 Foot (96") Rear mount, contoured double deck design heavy-duty rotary mower (or approved equivalent), meeting the attached MoDOT specification, E702, delivered to any of the MoDOT locations listed on page 2.

MAKE/MODEL \_\_\_\_\_

**OPTIONS**

OPTION	DESCRIPTION	Price
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
Option 1	Lift type hitch	(Deduct)
Option 2	Pull type hitch	(Deduct)
Option 3	Puncture proof laminate tires	(Deduct)
Option 4	Extended Warranty	
Option 5		

**Item #19a - (Unit price and delivery):**

Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #19b - (Unit price with mounting and delivery):**

One (1) unit mounted to a provided agricultural tractor and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #20**

(126") Rear mount, contoured double deck design heavy-duty rotary mower (or approved equivalent), meeting the attached MoDOT specification, E702, delivered to any of the MoDOT locations listed on page 2.

MAKE/MODEL \_\_\_\_\_

**OPTIONS**

OPTION	DESCRIPTION	Price
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
Option 1	Lift type hitch	(Deduct)
Option 2	Pull type hitch	(Deduct)
Option 3	Puncture proof laminate tires	(Deduct)
Option 4	Extended Warranty	
Option 5		

**Item #20a - (Unit price and delivery):**

Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #20b - (Unit price with mounting and delivery):**

One (1) unit mounted to a provided agricultural tractor and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #21**

(180") Rear mount, contoured double deck design commercial-duty rotary mower (or approved equivalent), meeting the attached MoDOT specification, E702, delivered to any of the MoDOT locations listed on page 2.

MAKE/MODEL \_\_\_\_\_

**OPTIONS**

OPTION	DESCRIPTION	Price
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
Option 1	Dual cutting blades	(Deduct)
Option 2	Puncture proof laminate tires	(Deduct)
Option 3	Extended Warranty	
Option 4		
Option 5		

**Item #21a - (Unit price and delivery):**

Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #21b - (Unit price with mounting and delivery):**

One (1) unit mounted to a provided agricultural tractor and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item #22**

(20' or 240") Rear mount, contoured double deck design commercial-duty rotary mower (or approved equivalent), meeting the attached MoDOT specification, E702, delivered to any of the MoDOT locations listed on page 2.

MAKE/MODEL \_\_\_\_\_

**OPTIONS**

OPTION	DESCRIPTION	Price
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
Option 1	Puncture proof laminate tires	(Deduct)
Option 2	Extended Warranty	
Option 3		
Option 4		
Option 5		

**Item #22a - (Unit price and delivery):**

Price of one (1) unit and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

**Item #22b - (Unit price with mounting and delivery):**

One (1) unit mounted to a provided agricultural tractor and delivered to any of the MoDOT locations listed on page 2.

EACH \$ \_\_\_\_\_

Delivery will be made approximately \_\_\_\_\_ days after receipt of order.

**Item # 23**

22.5' Extreme Duty Triple Gang Flail Mower, meeting the attached MoDOT specification, E703, delivered to any of the MoDOT locations listed on page 2.

MAKE/MODEL \_\_\_\_\_ EACH \$ \_\_\_\_\_

**OPTIONS**

OPTION	DESCRIPTION	Price
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
Option 1	Extended Warranty	
Option 2		
Option 3		
Option 4		
Option 5		
Option 6		

Delivery will be made \_\_\_\_\_ days after receipt of order.

**Item # 24**

15', 3-Section Flex-Wing Rotary Mower, meeting the attached MoDOT specification, E683-B, delivered to any of the MoDOT locations listed on page 2.

MAKE/MODEL \_\_\_\_\_ EACH \$ \_\_\_\_\_

**OPTIONS**

OPTION	DESCRIPTION	Price
	<i>Please list any vendor-recommended options relevant to this operation. Use additional sheets if necessary.</i>	
Option 1	Extended Warranty	
Option 2		
Option 3		
Option 4		
Option 5		
Option 6		

Delivery will be made \_\_\_\_\_ days after receipt of order.

This page should be completed for each line item the bidder is bidding.

**Warranty Information**

Standard Warranty: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Begin Date: \_\_\_\_\_

Warranty coverage is as follows: (Example: Bumper to Bumper – what does it cover?)

\_\_\_\_\_

Extended Warranty: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Begin Date: \_\_\_\_\_

Warranty coverage is as follows: (Example: Bumper to Bumper - what does it cover?)

\_\_\_\_\_

**Training – A complete list or catalog describing all available training materials related to the items you are bidding should be included in your bid.**

All specialty equipment and equipment purchased by MoDOT shall have the minimum vendor training supplied as outlined below:

- a. Training shall take place at each district where equipment is delivered or at an off- site location at the vendor's expense. A qualified service technician or mechanic shall conduct the training. Training will be supplied to operators and mechanics of equipment and will cover safe operation and routine/preventative maintenance. The vendor shall supply training within one month of delivery and acceptance. The vendor shall supply all training materials.
- b. Operator and repair manuals must be hard copy and supplied with each individual unit.

All vendors shall provide an 800 number for technical assistance, manned during normal working hours (8AM to 5PM)

# VENDOR INFORMATION & PREFERENCE CERTIFICATION FORM

## Vendor Information

**All bidders must furnish ALL applicable information requested below**

Vendor Name/Mailing Address:  Email Address:	Vendor Contact Information (including area codes): Phone #: Cellular #: Fax #: Signature:									
Printed Name of Responsible Officer or Employee:	Signature:									
For Corporations - State in which incorporated:	For Others - State of domicile:									
If the address listed in the Vendor Name/Mailing Address block above is not located in the State of Missouri, list the address of Missouri offices or places of business:  If additional space is required, please attach an additional sheet and identify it as <u>Addresses of Missouri Offices or Places of Business</u> .										
<b>M/WBE INFORMATION:</b> List all certified Minority or Women Business Enterprises ( <u>M/WBE</u> ) utilized in the fulfillment of this bid. Include <u>percentages</u> for subcontractors and identify the M/WBE certifying agency:  <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 33%;"><u>M/WBE Name</u></th> <th style="text-align: center; width: 33%;"><u>Percentage of Contract</u></th> <th style="text-align: center; width: 33%;"><u>M/WBE Certifying Agency</u></th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> If additional space is required, please attach an additional sheet and identify it as <u>M/WBE Information</u>		<u>M/WBE Name</u>	<u>Percentage of Contract</u>	<u>M/WBE Certifying Agency</u>						
<u>M/WBE Name</u>	<u>Percentage of Contract</u>	<u>M/WBE Certifying Agency</u>								

## Preference Certification

**All bidders must furnish ALL applicable information requested below**

<b>GOODS/PRODUCTS MANUFACTURED OR PRODUCED IN USA:</b> If any or all of the goods or products offered in the attached bid which the bidder proposes to supply to the MHTC are <u>not</u> manufactured or produced in the "United States", or imported in accordance with a qualifying treaty, law, agreement, or regulation, list below, by item or item number, the country other than the United States where each good or product is manufactured or produced.	
Item (or item number)	Location Where Item is Manufactured or Produced
If additional space is required, please attach an additional sheet and identify it as <u>Location Products are Manufactured or Produced</u> .	
<b>MISSOURI SERVICE-DISABLED VETERAN BUSINESS:</b> Please complete the following if applicable. Additional information may be requested if preference is applicable. See below definitions for qualification criteria: <b>Service-Disabled Veteran</b> is defined as any individual who is disabled as certified by the appropriate federal agency responsible for the administration of veterans' affairs. <b>Service-Disabled Veteran Business</b> is defined as a business concern: <ol style="list-style-type: none"> <li>a. Not less than fifty-one (51) percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than fifty-one (51) percent of the stock of which is owned by one or more service-disabled veterans; and</li> <li>b. The management and daily business operations of which are controlled by one or more service-disabled veterans.</li> </ol>	
<u>Veteran Information</u>	<u>Business Information</u>
Service-Disabled Veteran's Name (Please Print)	Service-Disabled Veteran Business Name
Service-Disabled Veteran's Signature	Missouri Address of Service Disabled Veteran Business

**NOTICE OF COOPERATIVE PURCHASING**

**MODOT IS INTERESTED IN ASSISTING MISSOURI GOVERNMENTAL ENTITIES, ETC. IN PURCHASING EQUIPMENT, VARIOUS MATERIALS, AND SUPPLIES THAT MEET THE MISSOURI DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.**

Each bidder is asked to indicate below whether they would be willing to offer **mowers** listed in the attached "Request for Bid" for sale to these local political entities at the same bid price offered to MoDOT.

It is understood MoDOT will not issue purchase orders, accept delivery nor make payment for these items ordered by any of these agencies. It is further understood the price is based on the **mowers** meeting MoDOT specifications. Any added options, deletions, or extra freight costs would be negotiated between the local agency and the successful vendor.

Indicate below whether your company is willing to offer such cooperative purchasing for Missouri counties, cities or other political entities.

YES \_\_\_\_\_ NO \_\_\_\_\_

If the price varies throughout the state on MoDOT bids because of different delivery destinations, please indicate the price F.O.B. your location that would be offered as described.

F.O.B. Location \_\_\_\_\_

Indicate the deadline date that orders will be accepted. \_\_\_\_\_

COMPANY NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

E-MAIL \_\_\_\_\_

PHONE NUMBER \_\_\_\_\_

SIGNATURE \_\_\_\_\_

TITLE \_\_\_\_\_

DATE \_\_\_\_\_

ANTI-COLLUSION STATEMENT

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

SS.

\_\_\_\_\_ being first

duly sworn, deposes and says that he is \_\_\_\_\_

Title of Person Signing

of \_\_\_\_\_

Name of Bidder

that all statements made and facts set out in the bid for the above project are true and correct; and that the bidder (The person, firm, association, or corporation making said bid) has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such bid or any contract which may result from its acceptance.

Affiant further certifies that bidder is not financially interested in, or financially affiliated with, any other bidder for the above project.

By \_\_\_\_\_

By \_\_\_\_\_

By \_\_\_\_\_

Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires \_\_\_\_\_



MISSOURI DEPARTMENT OF TRANSPORTATION  
THREE SECTION FLEXIBLE 15' CUT ROTARY MOWER

GENERAL - The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty tow type, P.T.O. driven hinged three section rotary mower providing an optional cutting swath of 5', 10', or 15' without evidence of streaking. The intent and purpose of this specification is also to describe a mower with engineering and design that will assure trouble-free Highway right-of-way mowing with a minimum amount of down time. Parts and service availability must be within 24 hour of contact.

DRIVE - The mower shall be gear driven with power transmitted directly from tractor P.T.O. to a heavy duty primary gear box or power divider located on mower center section which will transmit power to secondary gear boxes located on mower wing sections. The output shafts of primary and secondary gear boxes shall be the spindles for the blade carrier assemblies. The tractor yoke of the main driveshaft shall have a spring tension lock coupler for quick attachment to the tractor RPM P.T.O. output shaft. Yoke connector at the splitter gearbox shall be an interference bolt type. Quick connector yoke at splitter gearbox is not acceptable. Drivelines will have a three year warranty. A copy of the warranty must be included in your bid.

GEAR BOX ASSEMBLIES - Gears shall be of forged heat treated steel running on lubricated bearings, completely enclosed in malleable or steel housing. Gear boxes shall be reinforced base mounted type. Gearbox bolts must have the capability of being retightened from the topside. All lubrication areas will be of easy access. Gear boxes will have a three year warranty. A copy of the warranty must be included in your bid.

PRIMARY GEAR BOX - The primary power divider or gear box shall be the manufacturers premium model; engineered, rates and listed a minimum 120 HP by the gearbox manufacturer in their standard engineer/sales data. The divider gear box will evenly divide the input power between three output shafts to power three individual and separate spindle gearboxes.

SECONDARY GEAR BOX - The secondary or wing gear boxes shall be the manufacturers premium model; engineered, rates and listed a minimum have a rating minimum of 150 HP by the gearbox manufacturer in their standard engineer/sales data. Secondary gear boxes shall all be the same, except for the direction of rotation.

BLADE ROTATION - As viewed from above the deck, facing the tractor, the left wing and center section shall turn clockwise and the right wing shall turn counterclockwise

DRIVE LINES AND U-JOINTS - Heavy-duty self adjusting and telescopic drive shafts with main drive shaft to be of a 80° constant velocity type and U-Joints will be not less than 44R size and type (ASAE Category 5, 80 HP at 540 RPM). A decal shall be attached to the towing tongue detailing correct hitch placement and driveline attachment dimensions as per SAE Standard J1170, Rear Power Take-Off for Agriculture Tractors. All U-Joints will be equipped with neoprene seals and needle bearings. Drive lines and U-Joints shall automatically compensate for angles as wings are raised or lowered. P.T.O. drive lines and wing drivelines shall have quick disconnect slip clutches. Drivelines to the three gear boxes will be a minimum 35R size and type(ASAE Category 4, 46 HP at 540 RPM) size. The splitter gear box end yoke shall have a spring tension lock coupler for quick attachment/removal to the splitter gearbox shafts. Spindle gearbox yoke shall be an interference bolt type. Quick connector yoke at splitter gearbox is not acceptable. Heavy duty slip clutches(torque limiter) shall be installed before each of the three spindle gearboxes. Power take-off shaft and all drivelines shall be of one brand manufacture. Drivelines will allow a smooth transfer of torque during all modes and angles of operation of the mower. All universal joints and sliding tubes shall be equipped with grease zerks. All universal joints and driveshafts shall be completely covered with a non-rotating shield in compliance with OSHA regulations.

STRUCTURAL - Deck and wings a minimum of 7 gauge steel and reinforced with 7 gauge steel to maintain integrity. Band or skirt will be 1/4" thickness with a minimum depth of 10 1/2" welded to the deck with a continuous weld. An under deck ring, 1/2" thick by 3" high by 48" in diameter, rolled from a continuous piece of flat steel shall be continuously welded, perpendicular to the bottom of the mower's deck. The ring shall be positioned so a blade would contact it just behind the blade cutting edge. The deck ring will provide reinforcement and protection of the deck.



**BLADES AND RUNNERS** - The blades shall be heavy-duty 1/2" x 4" SAE 5160 chrome steel suction type with break-away feature. Blades may have a minimum 3" drop. Blades will be mounted with replaceable minimum 1 1/8" UNF hardened blade bolts with 1 1/2" blade wear surface. The three gear box spindles shall be equipped with heavily reinforced round dish (stump jumper) blade carrier. Carrier will be a dish shaped minimum 7 gauge steel stamping with a minimum 30" diameter and 2 3/4" side height. When installed the top lip of dish shall be no more than 4" from the bottom of the deck. The blade carrier shall be dynamically balanced to minimize vibration. Replaceable, hard faced, skid shoes on center and wing sections shall be provided for protection in the event the tractor drops in a low place or ridges over a high point. Blades shall overlap 6". Mower shall be equipped with adjustable mechanical stops to prevent scalping when the mower is lowered to the cutting position. A system shall be provided to lock the center section and both wings in roading position. Transport locks shall be mechanical devices to remove all stress from the hydraulic cylinders and their mounts.

**CUTTING HEIGHT** - Adjustable from 4" - 12".

**HYDRAULICS** - The mower shall utilize the tractor hydraulic system and have hydraulic cylinders to raise the wings and adjust the cutting height. The wing cylinders shall allow for a minimum of 11° wing movement or float during operation without pumping the hydraulics. Hydraulic cylinders shall be designed for 3,000 PSI operating pressure. All cylinder shafts will be hard chrome plated and rebuildable. The piston seal shall be poly-hone glass-filled-teflon type, O-ring seal designs are not acceptable. The piston rod packing shall be a V-stack or U-pack design. V-stack shall include provisions for adjustment, U-pack shall be retained in an internal groove. Rod wiper shall be a urethane wiper ring(not metal clad). Gland collar will be either externally threaded onto the outside of the cylinder barrel or internally threaded into the cylinder barrel. Designs using an internal wire/lock ring to hold the gland in/on are not acceptable. The hydraulic inlet and outlet shall be welded fixed ferrules located on the cylinder shell. Wings will be capable of flexing from 22° below horizontal to 90° above horizontal to follow any terrain. You should not include the hydraulic valves which will be supplied on the tractors. All hoses(minimum 1/2" ID 2-wire non-skive) and quick couplings necessary for mounting on the tractor should be included. Safe-guards shall be provided to stop the wings from raising to a point that would prevent it from being lowered from the operators station. Mower shall have an A-Frame or similar support to protect the hoses between tractor and mower. The mower shall have a manually operated auxiliary winch to raise or lower each wing independently in case of hydraulic failure and rods or bars to secure the wings when roading. Hydraulics will meet SAE J517 and J232 requirements.

**WHEELS, AXLES AND SUSPENSIONS** - The mower shall be equipped with not less than six trail type laminated tires properly spaced for best weight distribution. The wheels will be mounted with a minimum of five lug bolts and the wheel hubs shall have roller bearings. Rear axle arrangement shall provide for two sets of two wheels each at center section, and a single wheel at each wing section. Main axle, axle arms and wheel spindles will be heavy duty with independent heavy-duty 3" spring suspension for each wheel. All wheel hubs will be heavy duty cast type with grease zerk.

**HITCH** - Towing hitch shall be a heavy-duty swivel clevis type providing easy maneuverability. Hitch shall be of adequate design to accommodate all angles and stress caused from roadside right-of-way mowing. The tongue will be "A" frame design. Twin leveling rods to balance the weight.

**PARKING JACK** - A heavy-duty retractable pin-on type hand operated screw type jack is to be furnished and installed on the tongue perpendicular to the ground with the mower set at a 6" mowing height to aid in attaching the mower to the tractor. A second mount for this jack shall be attached to the top of the mower deck to safely store it when not in use and not to interfere with mowing operation.

**SAFETY** - All guards and shields will meet SAEJ232 requirements. The mower shall have 3/8" safety chain guards to protect the area surrounding the mower from flying objects. A minimum 3/16" high strength aircraft cable shall be interlaced through the second to the lowest chain link. Unit will have wing transport locks.

**COLOR** - Color to be manufacturer's standard over a prime coat.

**NOTE:** Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.



The Missouri Highway and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



MISSOURI DEPARTMENT OF TRANSPORTATION  
THREE SECTION FLEXIBLE 15' or 10' CUT ROTARY MOWER SPECIFICATIONS

GENERAL - The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty tow type, P.T.O. driven hinged three-section rotary mower providing an optional cutting swath of 10' or 15' without evidence of streaking. The intent and purpose of this specification is also to describe a mower with engineering and design that will assure trouble-free Highway right-of-way mowing with a minimum amount of down time. Parts and service availability must be within 24 hour of contact.

DRIVE - The mower shall be gear driven with power transmitted directly from tractor P.T.O. to a heavy duty power divider gearbox located on mower center section which will transmit power to secondary gear boxes located on mower wing sections. The output shafts of primary and secondary gearboxes shall be the spindles for the blade carrier assemblies. The tractor yoke of the main drive shaft shall have a spring tension lock coupler with three ball yoke for quick attachment to the tractor RPM P.T.O. output shaft. Yoke connector at the splitter gearbox shall be an interference bolt type. Quick connector yoke at splitter gearbox is not acceptable. Drivelines will have a one-year complete warranty. A copy of the warranty must be included in your bid. Bondioli and Pavesi drivelines are required.

GEAR BOX ASSEMBLIES - Gears shall be of forged heat-treated steel running on lubricated bearings, completely enclosed in malleable or steel housing. Gearboxes shall be reinforced base mounted type. Gearbox bolts must have the capability of being retightened from the topside. All lubrication areas will be of easy access. Gearboxes will have a five-year pro-rated warranty. A copy of the warranty must be included in your bid. Bondioli and Pavesi gearboxes are required.

PRIMARY GEAR BOX - The primary power divider gearbox shall be the manufacturers premium model; engineered, rates and listed a minimum 200 HP by the gearbox manufacturer in their standard engineer/sales data. The divider gearbox will evenly divide the input power between three output shafts to power three individual and separate spindle gearboxes.

SECONDARY GEAR BOX - The secondary or wing gearboxes shall be the manufacturers premium model; engineered, rates and listed a minimum have a rating minimum of 160 HP by the gearbox manufacturer in their standard engineer/sales data. Secondary gearboxes shall all be the same, except for the direction of rotation.

BLADE ROTATION - As viewed from above the deck, facing the tractor, the left wing and center section shall turn clockwise and the right wing shall turn counterclockwise.

DRIVE LINES AND U-JOINTS - Heavy-duty self adjusting and telescopic drive shafts with main drive shaft to be of a 80° constant velocity type and U-Joints will be not less than 44R size and type (ASAE Category 6, 80 HP at 540 RPM). An optional Equal Angle Hitch non-constant velocity drive may be substituted in lieu of the 80degree CV drive. This Equal Angle hitch shall have a Weasler main power shaft in lieu of the Bondioli and shall be u-joint style verses CV style shaft requiring greasing once every 40 hours. This Equal Angle Hitch cannot be a jackshaft style with steady bearing. A decal shall be attached to the towing tongue detailing correct hitch placement and driveline attachment dimensions as per SAE Standard J1170, Rear Power Take-Off for Agriculture Tractors. All U-Joints will be equipped with neoprene seals and needle bearings. Drivelines and U-Joints shall automatically compensate for angles as wings are raised or lowered. P.T.O. drivelines and wing drivelines shall have quick disconnect slip clutches. Drivelines to the three gearboxes will be a minimum 35R size and type (ASAE Category 5, 46 HP at 540 RPM) size. The splitter gearbox end yoke shall have a spring tension lock coupler for quick attachment/removal to the splitter gearbox shafts. Spindle gearbox yoke shall be an interference bolt type. Quick connector yoke at splitter gearbox is not acceptable. Heavy duty self-adjusting two plate slip clutches (torque limiter) shall be installed before each of the three spindle gearboxes. Power take-off shaft and all drivelines shall be of one brand manufacture. Drivelines will allow a smooth transfer of torque during all modes and angles of operation of the mower. All universal joints and sliding tubes shall be equipped with grease zerks. All universal joints and drive shafts shall be completely covered with a non-rotating shield in compliance with OSHA regulations.



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**STRUCTURAL** - Deck and wings a minimum of 7 gauge, ASTM A-569 hot rolled carbon-manganese steel continuously welded top deck and reinforced with 7 gauge steel and 1/4" ASTM A-500 hollow structural tubing to maintain integrity. Band or skirt will be 1/4" thickness with a minimum depth of 10 1/2" welded to the deck with a continuous weld. An under deck ring, 1/2" thick by 3" high by 48" in diameter, rolled from a continuous piece of flat steel shall be continuously welded, perpendicular to the bottom of the mower's deck. The ring shall be positioned so a blade would contact it just behind the blade cutting edge. The deck ring will provide reinforcement and protection of the deck. The mower shall have a draw bar tongue weight on the tractor of no more than 1550lbs. The length of the center section of the mower shall be no longer than 92.5". All major pivot points on the mower shall include grease able and replaceable spring steel bushings with locking head pins that ensure that pivot points in the frame cannot wear.

**BLADES AND RUNNERS** - The blades shall be heavy-duty 1/2" x 4" SAE 5160 chrome steel suction type with break-away feature. Blades may have a minimum 3" drop. Blades will be mounted with replaceable minimum 1 1/8" UNF hardened pentagon shaped blade bolts with 1 1/2" blade wear surface. A replaceable pentagon shaped blade bolt bushing shall be welded into the blade bar. Blades materials are to be tested in blade lots and should include these tests and processes: Minimum hardness test, ductility bend test, charpy v-notch impact strength test, surface carbon loss test, fatigue life test, microstructure purity inspection, material chemical analysis along with part # and lot code. The blades should also have: beneficial induced compressive surface stresses through shot-peening along with smoothed transitional surfaces around the blade bolt hole. The three gearbox spindles shall be equipped with heavily reinforced round dish (stump jumper) blade carrier. Carrier will be a dish that has a minimum 1/4" thick steel pressed and spun with a minimum 30" diameter and 2 3/4" side height. The blade bar in the carrier shall be made of 1" thick steel and two cross members shall be made of 3/8" thick steel both welded to the carrier dish. When installed the top lip of dish shall be no more than 4" from the bottom of the deck. The blade carrier shall be dynamically balanced to minimize vibration. Replaceable skid shoes on center and wing forward sections made of minimum ASTM A514 alloy steel shall be provided for protection in the event the tractor drops in a low place or ridges over a high point. The forward section of the wing skids are to be wider than the rear section as to prevent gouging and must also have the ability to be mounted outside or inside the side skirt. The Blades shall overlap 6 1/2". Mower shall be equipped with adjustable mechanical stops to prevent scalping when the mower is lowered to the cutting position. A system shall be provided to lock the center section and both wings in roading position. These lock up pin locations should be located in a raised position above the deck as to ease in finding them should the deck have debris on top. Transport locks shall be mechanical devices to remove all stress from the hydraulic cylinders and their mounts. A wheel transport mechanism for the wing wheels shall be incorporated into the center lock up so that when the center lock up pin is installed and the main cylinder is retracted the wing wheels are pulled inside of the wing sections to aid in an ultra narrow transport width.

**CUTTING HEIGHT** - Adjustable from 1.5" - 15".

**HYDRAULICS** - The mower shall utilize the tractor hydraulic system and have hydraulic cylinders to raise the wings and adjust the cutting height. The wing cylinders along with floating lugs shall allow for a minimum of 35 degree up and 25 degree down wing float during operation without pumping the hydraulics. Hydraulic cylinders shall be designed for 3,000 PSI operating pressure. All cylinder shafts will be nitro steel and re-build-able. The two hydraulic wing lift cylinders should each be 3" X 12" welded cylinders, 3" diameter bore, 12" stroke, 1.25" diameter rod, 22 1/4" closed pin center. A Hydraulic Phasing System shall be used to level the cutter from the center to the wing sections. This hydraulic phasing cylinder system shall consist of one 3 1/2" X 5" center cylinder, one 3 1/4" X 5" wing wheel standard cylinder and one other 3" X 5" wing wheel standard cylinder. Each phasing cylinder shall have 1 1/4" diameter rods, 18 1/8" closed pin center, rephasing orifices and mechanical stop collars fitted to all cylinders. Cylinder seals shall be as follows: Static and dynamic O-ring seals with nitrile 90 durometer, ASTM D2000, 86/SAE J200. Static and dynamic backup washers, unithane 395A, and liquid cast polyurethane. 3000-PSI series piston seal, 15% fiberglass filled Teflon piston seal c/w 90 durometer o-ring expander. 3000-PSI series piston and cylinder rod wear rings, #66 nylon, 33% glass filled. 3000-PSI series rod seal, #605 twin lip u-cup seal. Cylinder rod wipers seals, 3000-PSI series, metal encased nitrile lip wiper seal. Wings will be capable of flexing from 25° below horizontal to 90° above horizontal to follow any terrain. You should not include the hydraulic valves, which will be supplied on the tractors. All hoses (minimum 1/2" ID 2-wire non-skive) and quick couplings necessary for mounting on the tractor should be included. Safe guards shall be provided to stop the wings from raising to a point that would prevent it from being lowered from the operator's station. Mower shall have an A-Frame or similar support to protect the hoses between tractor and mower. The mower shall have a manually operated auxiliary winch to raise or lower each wing independently in case of hydraulic failure and lock up pins to secure the wings when roading. Hydraulics will meet SAE J517 and J232 requirements.



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WHEELS, AXLES AND SUSPENSIONS - The mower shall be equipped with not less than six trail type laminated tires properly spaced for best weight distribution. The wheels will be mounted with a minimum of five lug bolts and the wheel hubs shall have roller bearings. Rear axle arrangement shall provide for two sets of two wheels each at center section, and a single wheel at each wing section. Main deck suspension shall be a walking beam-type rear suspension consisting of a main beam 5"X5" X .250 ASTM A-500 tubing material and wing wheel arms 4"X3"X .250 ASTM A-500 tubing material. The walking axle must be supported by two tapered roller bearings placed on both sides of the walking beam with a 1 3/8" lock head shaft running through. This walking axle suspension will be positioned as far forward as possible to best control cutter height over uneven ground. Outer wing wheel standards shall be equipped with a rubber grommet for suspension and must include a threaded rod with adjusting nuts at the end of the phasing cylinder to allow to fine tune the height of the wings to the center section of the cutter.

HITCH - Towing hitch shall be a heavy-duty swivel precision clevis type providing easy maneuverability. Hitch shall be of adequate design to accommodate all angles and stress caused from roadside right-of-way mowing. The tongue will be "A" frame design. Twin leveling rods to balance the weight with built in floating front hitch to keep undo stress off the leveling rods

PARKING JACK - A heavy-duty retractable pin-on type hand operated screw type jack is to be furnished and installed on the tongue perpendicular to the ground with the mower set at a 6" mowing height to aid in attaching the mower to the tractor. A second mount for this jack shall be attached to the top of the mower deck to safely store it when not in use and not to interfere with mowing operation.

SAFETY - All guards and shields will meet SAEJ232 requirements. The mower shall have 3/8" safety chain guards to protect the area surrounding the mower from flying objects. A minimum 3/16" high strength aircraft cable shall be interlaced through the second to the lowest chain link. Unit will have wing transport locks.

COLOR - Color to be manufacturer's standard over a prime coat.

NOTE: Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.

The Missouri Highways and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



MISSOURI DEPARTMENT OF TRANSPORTATION  
15', 3-SECTION FLEX-WING HYDRAULICALLY POWERED ROTARY MOWER SPECIFICATIONS

**GENERAL** - The intent and purpose of this specification is to establish minimum quality, safety and performance standards for a 15', 3-section flex-wing hydraulically powered rotary mower providing an optional cutting swath of 15' without evidence of streaking. The intent and purpose of this specification is also to describe a mower with engineering and design that will assure trouble-free Highway right-of-way and other large areas of mowing with a minimum amount of down time.

**MOWER FEATURES:**

The mower shall be rotary, 3-section, flex-wing style and constructed from heavy-duty 7-gauge steel.

Deck design shall be easy clean style with a double-deck center section for durability.

The mower shall feature an adjustable cutting height of 1-1/2" – 14-1/2".

Side skirts shall be bolt-on, replaceable, and constructed to a minimum of 1/4" x 10 1/2" thick.

Overall width of the mower, with wings unfolded, shall be 186".

Overall length of the mower shall be 183".

Overall height of the mower shall be 85-1/2"

Overall transport width, with wings folded, shall be 96".

Overall cutting width of the mower shall be 180".

Replaceable, heat-treated skid shoes shall be bolt-on under each wing side skirt.

(6) replaceable, puncture resistant foam-filled airplane tailwheels shall be featured as standard equipment

Wheel spacing shall be 50" from center outside and 25" center inside.

The mower shall cut up to 3-1/2" grass, weed, and brush material.

The mower shall feature a spring-cushioned axle shock absorber.

A hydro-mechanical level-lift system shall be featured for uniform cut.

**BLADE CARRIER AND BLADES:**

The blade carrier shall be constructed of 7-gauge hardened steel reinforced with a 1" thick cross-bar weldment for durability.

(2) free-swinging updraft cutting blades made of 1/2" thick x 4" wide, heat-treated, alloy steel and weighing 15.8 lbs. (Center) and 12.5 lbs. (Wings) each shall be featured as standard on wing and center blade carriers.

Blade length, from pin center to tip, shall be 22-1/2" (Center) and 19-1/2" (Wings) and shall have a blade overlap of 6".

Blade spindles on both wings and center section shall be 2-3/4" in diameter and run at the following speeds:



**Blade Spindle Speed:**

<u>Center</u>	<u>Wings</u>
864	1,045

**Center Blade Tip Velocity:**

<u>FPM</u>	<u>MPH</u>
16,286	185

**Wing Blade Tip Velocity:**

<u>FPM</u>	<u>MPH</u>
16,415	186

\*\*Ratings based on actual field performance.

**POWER:**

**PUMP:**

Two-section pump with one section furnishing flow to the center motor and the other section furnishing power to the wing motors in series.

**PUMP DRIVE:**

Tractors PTO shaft turns speed changer turning the pump.

The speed changer should have an oil bath and breather plug.

The tractor's PTO lever shall control the pump rotation through speed changer to take 540-RPM to 2160 RPM at the pump.

**HYDRAULICS SYSTEM:**

Front-mounted hydraulic tank with a capacity of 35 gallons.

Flex hoses connect the tank to the pump.

**MOTOR:**

Hydraulic, gear-type motors, one for the center section and one for each wing

Relief valves for the motors set at 3000 PSI for the center and 3000 PSI for wings.

Motors rated at 63 HP for center and 58-HP for wings

Must have a splined shaft that fits a splined socket in the spindle.

**BEARINGS:**

Tapered roller bearings, top and bottom, running in oil bath. Needs seal at the bottom of the housing and a filler hole located at the top of the housing.

**HOSES/DRIVESHAFT:**

1" hoses on center section and wings

4-spiral sire SAW100R12 pressure hoses with a 16,000-PSI minimum burst pressure.



SAE 100 R4 suction hoses with spring guard

**MOUNTING:**

The mower shall be attached to the rear of the tractor using a self level-lift drawbar hitch design.

The tongue weight shall be approximately 700 lbs. when mowing and 1,500 lbs in transport.

**TRACTOR REQUIREMENTS:**

The mower shall be mounted on a tractor featuring a minimum horsepower rating of 50 HP.

**SAFETY FEATURES:**

The mower shall feature a safety lock for additional protection during transport.

The mower shall feature double-row chainguards on front and back as standard equipment.

No moving parts above the deck.

An automatic shutoff system shall engage when a wing is raised above a 45 degree angle from the ground.

**COLOR** - Color to be manufacturer's standard over a prime coat.

**NOTE:** Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.

The Missouri Highways and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



MISSOURI DEPARTMENT OF TRANSPORTATION  
6' CUT ROTARY MOWER

GENERAL - The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty 3 point hitch type, P.T.O. driven 6 foot rotary mower. The purpose of this specification to specify a mower engineered and designed that will assure Highway right-of-way mowing with a minimum amount of down time. Parts and service availability must be within 24 hour of contact.

DRIVE - The mower shall be gear driven with power transmitted directly from tractor P.T.O. The output shaft of gear box shall be the spindle for the blade carrier assembly. The tractor yoke of the main driveshaft shall have a spring tension lock coupler for quick attachment to the tractor P.T.O. shaft. Driveline shall have a three year warranty. A copy of the warranty must be included in your bid.

GEAR BOX ASSEMBLY - Gears shall be of forged heat treated steel running on lubricated bearings, completely enclosed in malleable or steel housing. Gear box shall be reinforced base mounted type. Gearbox bolts must have the capability of being retightened from the topside. All lubrication areas will be of easy access. Gear box will have a three year warranty. A copy of the warranty must be included in your bid. The gear box shall be the manufactures premium model; engineered, rated at minimum of 70 HP by the gear box manufacture in their standard engineer/sales data.

BLADE ROTATION - As viewed from above the deck, facing the tractor, the blade shall turn counter clockwise .

DRIVE LINES AND U-JOINTS - All U-Joints will be equipped with neoprene seals and needle bearings. P.T.O. drive lines shall have heavy duty four disk type and quick disconnect slip clutches. Drive line gear box will be a minimum 35R size and type (ASAE Category 4, 46 HP at 540 RPM) size. Power take-off shaft and driveline shall be of one brand manufacture. Driveline will allow a smooth transfer of torque during all modes and angles of operation of the mower. All universal joints shall be equipped with grease zerks. All universal joints and driveshafts shall be completely covered with a non-rotating shield in compliance with OSHA regulations.

STRUCTURAL - Deck minimum of 7 gauge steel and reinforced with 7 gauge steel to maintain integrity. Band or skirt will be 1/4" thickness rolled I beam sides with a minimum depth of 10 1/2" welded to the deck with a continuous weld. An under deck ring, 1/2" thick by 3" high by 48" in diameter, rolled from a continuous piece of flat steel shall be continuously welded, perpendicular to the bottom of the mower's deck. The ring shall be positioned so a blade would contact it just behind the blade cutting edge. The deck ring will provide reinforcement and protection of the deck.

BLADES AND RUNNERS - The blades shall be heavy-duty 1/2" x 3 1/2" SAE 5160 chrome steel suction type with breakaway feature. Blades may have a maximum 3" drop. Blades will be mounted with replaceable minimum 1 1/8" UNF hardened blade bolts with 1 1/2" blade wear surface. The gear box spindle shall be equipped with heavily reinforced round dish (stump jumper) blade carrier. Carrier will be a dish shaped minimum 7 gauge steel stamping with a minimum 30" diameter and 2 3/4" side height. When installed the top lip of dish shall be no more than 4" from the bottom of the deck. The blade carrier shall be dynamically balanced to minimize vibration. Replaceable, hard faced, skid shoes shall be provided to protect the leading edge of the mowersides.

CUTTING HEIGHT - Adjustable from 4" - 12".

WHEELS, AXLES AND SUSPENSIONS - The mower shall be equipped with one tail wheel for 3 point hitch. Wheel hub will be heavy duty cast type with grease zerk. Tire shall be a laminated type puncture proof tire .

HITCH - Hitch shall be a heavy-duty category one 3 point type. Hitch shall have 3 braces welded on both sides of hitch (total of 6 braces ) and to the mower deck.

SAFETY - All guards and shields will meet SAEJ232 requirements. The mower shall have 3/8" safety chain guards to protect the area surrounding the mower from flying objects. A minimum 3/16" high strength aircraft cable shall be interlaced through the second to the lowest chain link.

COLOR - Color to be manufacturer's standard over a prime coat.



NOTE: Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.

The Missouri Highways and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



MISSOURI DEPARTMENT OF TRANSPORTATION  
7' CUT ROTARY MOWER

GENERAL - The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty 3 point hitch type, P.T.O. driven 7-foot rotary mower. The purpose of this specification is to specify a mower engineered and designed that will assure Highway right-of-way mowing with a minimum amount of down time. Parts and service availability must be within 24 hour of contact.

DRIVE - The mower shall be gear driven with power transmitted directly from tractor P.T.O. The output shaft of gear-box shall be the spindle for the blade carrier assembly. The tractor yoke of the main driveshaft shall have a spring tension lock coupler for quick attachment to the tractor P.T.O. shaft. Driveline shall have a three-year warranty. A copy of the warranty must be included in your bid.

GEAR BOX ASSEMBLY - Gears shall be of forged heat treated steel running on lubricated bearings, completely enclosed in malleable or steel housing. Gear box shall be reinforced base mounted type. Gearbox bolts must have the capability of being retightened from the topside. All lubrication areas will be of easy access. Gear box will have a three year warranty. A copy of the warranty must be included in your bid. The gear box shall be the manufactures premium model; engineered, rated at minimum of 70 HP by the gear box manufacture in their standard engineer/sales data.

BLADE ROTATION - As viewed from above the deck, facing the tractor, the blade shall turn counter clockwise .

DRIVE LINES AND U-JOINTS - All U-Joints will be equipped with neoprene seals and needle bearings. P.T.O. drive lines shall have heavy duty four disk type and quick disconnect slip clutches. Drive line gear box will be a minimum 35R size and type (ASAE Category 4, 46 HP at 540 RPM) size. Power take-off shaft and driveline shall be of one brand manufacture. Driveline will allow a smooth transfer of torque during all modes and angles of operation of the mower. All universal joints shall be equipped with grease zerks. All universal joints and driveshafts shall be completely covered with a non-rotating shield in compliance with OSHA regulations.

STRUCTURAL - Deck minimum of 7 gauge steel and reinforced with 7 gauge steel to maintain integrity. Band or skirt will be 1/4" thickness rolled I beam sides with a minimum depth of 10 1/2" welded to the deck with a continuous weld. An under deck ring, 1/2" thick by 3" high by 48" in diameter, rolled from a continuous piece of flat steel shall be continuously welded, perpendicular to the bottom of the mower's deck. The ring shall be positioned so a blade would contact it just behind the blade cutting edge. The deck ring will provide reinforcement and protection of the deck.

BLADES AND RUNNERS - The blades shall be heavy-duty 1/2" x 3 1/2" SAE 5160 chrome steel suction type with breakaway feature. Blades may have a maximum 3" drop. Blades will be mounted with replaceable minimum 1 1/8" UNF hardened blade bolts with 1 1/2" blade wear surface. The gear box spindle shall be equipped with heavily reinforced round dish (stump jumper) blade carrier. Carrier will be a dish shaped minimum 7 gauge steel stamping with a minimum 30" diameter and 2 3/4" side height. When installed the top lip of dish shall be no more than 4" from the bottom of the deck. The blade carrier shall be dynamically balanced to minimize vibration. Replaceable, hard faced, skid shoes shall be provided to protect the leading edge of the mowersides.

CUTTING HEIGHT - Adjustable from 4" - 12".

WHEELS, AXLES AND SUSPENSIONS - The mower shall be equipped with one tail wheel for 3 point hitch. Wheel hub will be heavy duty cast type with grease zerk. Tire shall be a laminated type puncture proof tire .

HITCH - Hitch shall be a heavy-duty category one 3 point type. Hitch shall have 3 braces welded on both sides of hitch (total of 6 braces ) and to the mower deck.

SAFETY - All guards and shields will meet SAEJ232 requirements. The mower shall have 3/8" safety chain guards to protect the area surrounding the mower from flying objects. A minimum 3/16" high strength aircraft cable shall be interlaced through the second to the lowest chain link.

COLOR - Color to be manufacturer's standard over a prime coat.



NOTE: Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.

The Missouri Highways and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



MISSOURI DEPARTMENT OF TRANSPORTATION  
8' CUT ROTARY MOWER

GENERAL - The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty 3 pt. hitch, P.T.O. driven dual gear box rotary mower providing a centerpull cutting swath of 8', without evidence of streaking. The intent and purpose of this specification is also to describe a mower with engineering and design that will assure trouble-free Highway right-of-way mowing with a minimum amount of down time. Single gear box mowers will not be acceptable. Parts and service must be available within 24 hours of contact. *Finish cut type of mower is not acceptable.*

DRIVE - The mower shall be gear driven with power transmitted directly from tractor P.T.O. to a heavy duty primary gear box or power divider which will transmit power to secondary gear box(s). The output shafts of primary and secondary gear boxes shall be the spindles for the blade carrier assemblies. The mower shall operate with tractors with 540 RPM P.T.O. speed.

GEAR BOX ASSEMBLIES - Gears shall be of forged heat treated steel running on lubricated bearings, completely enclosed in malleable or heavy-duty steel housing. Gear boxes shall be reinforced base mounted type.

PRIMARY GEAR BOX - The primary power divider or gear box shall have approximate rating of minimum 70 HP.

SECONDARY GEAR BOX - The secondary gear box(s) shall have approximate rating of minimum 50 HP. The secondary box(s) shall be of a design allowing the rotation of the blades to be reversed. (You must include specifications, literature and instructions for rotation reversal in your bid.)

DRIVE LINES AND U-JOINTS - Heavy-duty self adjusting and telescopic drive shafts with main drive shaft as a constant velocity type and U-Joints will be not less than 35R size and type. All U-Joints will be equipped with neoprene seals and needle bearings. P.T.O. drive lines shall have quick disconnect slip clutches. Drive lines shall have metal guards or shields meeting J232 requirements.

STRUCTURAL - Deck and side bands minimum 7 gauge steel with deck reinforced. Equipped with a torsion bar type to reduce vibration. Must have rolled I beam sides made of 1/4" material shaped to form sides of cutter.

BLADES AND RUNNERS - The blades shall be heavy-duty 1/2" x 4" SAE 5160 chrome steel suction type with breakaway feature. Replaceable skid shoes shall be provided for protection in the event the tractor drops in a low place or rides over a high point.

CUTTING HEIGHT - Adjustable from 4" - 10".

WHEELS, AXLES AND SUSPENSIONS - The mower shall be equipped with not less than two trail type laminated tires properly spaced for best weight distribution. The wheels will be mounted with a minimum of five lug bolts and the wheel hubs will have roller bearings.

HITCH - 3 pt. hitch with pin diameters and inside spread width suitable for attaching to tractors with category II three point hitch and lift, double lift chain assemblies.

SAFETY - The mower shall have steel side deflectors, front and rear 5/16" safety chain guards to protect the area surrounding the mower from flying objects. All guards and shields will meet SAE J232 requirements.

COLOR - Color to be manufacturer's standard safety or industrial yellow over a prime coat.

NOTE: Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.

The Missouri Highways and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



*Missouri Department of Transportation*

**60" (5 Foot) RIGHT SIDE-MOUNT 'DOUBLE WALL' ROTARY MOWER SPECIFICATIONS**

**GENERAL** – The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty 60" (5 foot) right side-mount rotary mower with dual deck wall design to be mounted between the front and rear wheels. The purpose of this specification to specify a mower engineered and designed that will assure Highway right-of-way mowing, including ditch banks and roadsides with a minimum amount of down time. Mower shall be fully equipped (including counterbalances/oil reserve), capable of mowing in a declined or inclined position. This unit shall be of the manufacturer's current production model. Parts and service availability must be within 24 hour of contact. No boom type mowers. Main application should be interchangeable with ditchers, flail heads and other mowers.

**DRIVE** – The mower shall be rotary type, hydraulically provided. The output shaft of gearbox shall be the spindle for the blade carrier assembly.

**SPINDLE** – Shall be one (1) piece forged alloy steel, of bearing type, sealed in oil.

**BLADE CARRIER** – Equipped with stump-jumper, applicable to type, brand, or model being used.

**CUTTER** – Two (2) cutter knives standard, capable of accommodating up to six, ½", heat treated, full swinging suction knives; knives shall be attached with heat treated shoulder and keyed bolts, backed with preferred T-1 spacer and hex lock nuts. Actual cutting width is 60" and adjustable mowing height, 4" minimum.

**LIFT CONTROLS** – Shall be minimum two (2) single acting hydraulic cylinders.

**HYDRAULICS MOTOR & PUMP** – Motors shall have cast steel housing with steel gears; minimum 95 hp hydraulic pump; Minimum 60 gallon hydraulic reservoir.

**DECK STRUCTURE** – Shall have multilayer yielding minimum of 110,000 PSI, fully enclosed, ribbed construction, minimum 5/32" steel bottom, minimum 1/8" smooth top, crowned. Deck side walls shall be minimum of two (2) layers withstanding 110,000 PSI yielded steel. Replaceable, full length inner and outer, abrasion resistant shoes.

**SAFETY** – The mower shall have safety chain guards on front and rear to protect the area surrounding the mower from flying objects. Travel and transport locks shall be required. Unit shall meet or exceed all applicable ANSI, ASAE, SAE test standards.

**COLOR** – Color to be manufacturer's standard over a prime coat.

**MANUALS/WARRANTY** – Manufacturer shall furnish operation manual; unit shall be guaranteed against defects in workmanship and materials for a period of one (1) year.

**The Missouri Department of Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.**



*Missouri Department of Transportation*

**60" (5 Foot) RIGHT SIDE-MOUNT ROTARY MOWER SPECIFICATIONS**

**GENERAL** – The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty 60" (5-foot) right side-mount rotary mower to be mounted between the front and rear wheels. The purpose of this specification to specify a mower engineered and designed that will assure Highway right-of-way mowing, including ditch banks and roadsides with a minimum amount of down time. Mower shall be fully equipped (including counterbalances/oil reserve), capable of mowing in a declined or inclined position. This unit shall be of the manufacturer's current production model. Parts and service availability must be within 24 hour of contact. No boom type mowers. Main application should be interchangeable with ditchers, flail heads and other mowers.

**DRIVE** – The mower shall be rotary type, hydraulically provided. The output shaft of gearbox shall be the spindle for the blade carrier assembly.

**SPINDLE** – Shall be one (1) piece forged alloy steel, of bearing type, sealed in oil.

**BLADE CARRIER** – Equipped with stump-jumper, applicable to type, brand, or model being used.

**CUTTER** – Two (2) cutter knives standard, capable of accommodating up to six, ½", heat treated, full swinging suction knives; knives shall be attached with heat treated shoulder and keyed bolts, backed with preferred T-1 spacer and hex lock nuts. Actual cutting width is 60" and adjustable mowing height, 4" minimum.

**LIFT CONTROLS** – Shall be minimum two (2) single acting hydraulic cylinders.

**HYDRAULICS MOTOR & PUMP** – Motors shall have cast steel housing with steel gears; minimum 95 hp hydraulic pump; Minimum 60 gallon hydraulic reservoir.

**DECK STRUCTURE** – Minimum 10 gauge on top decking and minimum 3/8" solid steel side walls. Replaceable, full length inner and outer shoes.

**SAFETY** – The mower shall have safety chain guards on front and rear to protect the area surrounding the mower from flying objects. Travel and transport locks shall be required. Unit shall meet or exceed all applicable ANSI, ASAE, SAE test standards.

**COLOR** – Color to be manufacturer's standard over a prime coat.

**MANUALS/WARRANTY** – Manufacturer shall furnish operation manual; unit shall be guaranteed against defects in workmanship and materials for a period of one (1) year.

**The Missouri Department of Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.**



## 72" (6 Foot) RIGHT SIDE-MOUNT ROTARY MOWER SPECIFICATIONS

**GENERAL** – The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty 72" (6 foot) right side-mount rotary mower to be mounted between the front and rear wheels. The purpose of this specification to specify a mower engineered and designed that will assure Highway right-of-way mowing, including ditch banks and roadsides with a minimum amount of down time. Mower shall be fully equipped (including counterbalances/oil reserve), capable of mowing in a declined or inclined position. This unit shall be of the manufacturer's current production model. Parts and service availability must be within 24 hour of contact. No boom type mowers. Main application should be interchangeable with ditchers, flail heads and other mowers.

**DRIVE** – The mower shall be rotary type, hydraulically provided. The output shaft of gearbox shall be the spindle for the blade carrier assembly.

**SPINDLE** – Shall be one (1) piece forged alloy steel, of bearing type, sealed in oil.

**BLADE CARRIER** – Equipped with stump-jumper, applicable to type, brand, or model being used.

**CUTTER** – Two (2) cutter knives standard, capable of accommodating up to six, ½" x 4", heat treated, full swinging suction knives; knives shall be attached with heat treated shoulder and keyed bolts, backed with preferred T-1 spacer and hex lock nuts. Actual cutting width is 60" and adjustable mowing height, capable of a minimum 2" cutting capacity.

**LIFT CONTROLS** – Shall be minimum two (2) single acting hydraulic cylinders.

**HYDRAULICS MOTOR & PUMP** – Motors shall have cast steel housing with steel gears; minimum 95 hp hydraulic pump; Minimum 60 gallon hydraulic reservoir.

**DECK STRUCTURE** – Minimum 10 gauge on top decking and minimum 3/8" solid steel side walls. Replaceable, full length inner and outer shoes.

**SAFETY** – The mower shall have safety chain guards on front and rear to protect the area surrounding the mower from flying objects. Travel and transport locks shall be required. Unit shall meet or exceed all applicable ANSI, ASAE, SAE test standards.

**COLOR** – Color to be manufacturer's standard over a prime coat.

**MANUALS/WARRANTY** – Manufacturer shall furnish operation manual; unit shall be guaranteed against defects in workmanship and materials for a period of one (1) year.

**The Missouri Department of Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.**



**MISSOURI DEPARTMENT OF TRANSPORTATION  
THREE SECTION FLEXIBLE 15' CUT ROTARY MOWER**

**GENERAL** - The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty tow type, P.T.O. driven hinged three section rotary mower providing an optional cutting swath of 5', 10', or 15' without evidence of streaking. The intent and purpose of this specification is also to describe a mower with engineering and design that will assure trouble-free Highway right-of-way mowing with a minimum amount of down time. Parts and service availability must be within 24 hour of contact.

**DRIVE** - The mower shall be gear driven with power transmitted directly from tractor P.T.O. to a heavy duty primary gear box or power divider located on mower center section which will transmit power to secondary gear boxes located on mower wing sections. The output shafts of primary and secondary gear boxes shall be the spindles for the blade carrier assemblies. The tractor yoke of the main driveshaft shall have a spring tension lock coupler for quick attachment to the tractor RPM P.T.O. output shaft. Yoke connector at the splitter gearbox shall be an interference bolt type. Quick connector yoke at splitter gearbox is not acceptable. Drivelines will have a three year warranty. A copy of the warranty must be included in your bid.

**GEAR BOX ASSEMBLIES** - Gears shall be of forged heat treated steel running on lubricated bearings, completely enclosed in malleable or steel housing. Gear boxes shall be reinforced base mounted type. Gearbox bolts must have the capability of being retightened from the topside. All lubrication areas will be of easy access. Gear boxes will have a three year warranty. A copy of the warranty must be included in your bid.

**PRIMARY GEAR BOX** - The primary power divider or gear box shall be the manufacturers premium model; engineered, rates and listed a minimum 120 HP by the gearbox manufacturer in their standard engineer/sales data. The divider gear box will evenly divide the input power between three output shafts to power three individual and separate spindle gearboxes.

**SECONDARY GEAR BOX** - The secondary or wing gear boxes shall be the manufacturers premium model; engineered, rates and listed a minimum have a rating minimum of 150 HP by the gearbox manufacturer in their standard engineer/sales data. Secondary gear boxes shall all be the same, except for the direction of rotation.

**BLADE ROTATION** - As viewed from above the deck, facing the tractor, the left wing and center section shall turn clockwise and the right wing shall turn counterclockwise

**DRIVE LINES AND U-JOINTS** - Heavy-duty self adjusting and telescopic drive shafts with main drive shaft to be of a 80° constant velocity type and U-Joints will be not less than 44R size and type (ASAE Category 5, 80 HP at 540 RPM). A decal shall be attached to the towing tongue detailing correct hitch placement and driveline attachment dimensions as per SAE Standard J1170, Rear Power Take-Off for Agriculture Tractors. All U-Joints will be equipped with neoprene seals and needle bearings. Drive lines and U-Joints shall automatically compensate for angles as wings are raised or lowered. P.T.O. drive lines and wing drivelines shall have quick disconnect slip clutches. Drivelines to the three gear boxes will be a minimum 35R size and type (ASAE Category 4, 46 HP at 540 RPM) size. The splitter gear box end yoke shall have a spring tension lock coupler for quick attachment/removal to the splitter gearbox shafts. Spindle gearbox yoke shall be an interference bolt type. Quick connector yoke at splitter gearbox is not acceptable. Heavy duty slip clutches (torque limiter) shall be installed before each of the three spindle gearboxes. Power take-off shaft and all drivelines shall be of one brand manufacture. Drivelines will allow a smooth transfer of torque during all modes and angles of operation of the mower. All universal joints and sliding tubes shall be equipped with grease zerks. All universal joints and driveshafts shall be completely covered with a non-rotating shield in compliance with OSHA regulations.

**STRUCTURAL** - Deck and wings a minimum of 7 gauge steel and reinforced with 7 gauge steel to maintain integrity. Band or skirt will be 1/4" thickness with a minimum depth of 10 1/2" welded to the deck with a continuous weld. An under deck ring, 1/2" thick by 3" high by 48" in diameter, rolled from a continuous piece of flat steel shall be continuously welded, perpendicular to the bottom of the mower's deck. The ring shall be positioned so a blade would contact it just behind the blade cutting edge. The deck ring will provide reinforcement and protection of the deck.



**BLADES AND RUNNERS** - The blades shall be heavy-duty 1/2" x 4" SAE 5160 chrome steel suction type with break-away feature. Blades may have a minimum 3" drop. Blades will be mounted with replaceable minimum 1 1/8" UNF hardened blade bolts with 1 1/2" blade wear surface. The three gear box spindles shall be equipped with heavily reinforced round dish (stump jumper) blade carrier. Carrier will be a dish shaped minimum 7 gauge steel stamping with a minimum 30" diameter and 2 3/4" side height. When installed the top lip of dish shall be no more than 4" from the bottom of the deck. The blade carrier shall be dynamically balanced to minimize vibration. Replaceable, hard faced, skid shoes on center and wing sections shall be provided for protection in the event the tractor drops in a low place or ridges over a high point. Blades shall overlap 6". Mower shall be equipped with adjustable mechanical stops to prevent scalping when the mower is lowered to the cutting position. A system shall be provided to lock the center section and both wings in roading position. Transport locks shall be mechanical devices to remove all stress from the hydraulic cylinders and their mounts.

**CUTTING HEIGHT** - Adjustable from 4" - 12".

**HYDRAULICS** - The mower shall utilize the tractor hydraulic system and have hydraulic cylinders to raise the wings and adjust the cutting height. The wing cylinders shall allow for a minimum of 11° wing movement or float during operation without pumping the hydraulics. Hydraulic cylinders shall be designed for 3,000 PSI operating pressure. All cylinder shafts will be hard chrome plated and rebuildable. The piston seal shall be poly-hone glass-filled-teflon type, O-ring seal designs are not acceptable. The piston rod packing shall be a V-stack or U-pack design. V-stack shall include provisions for adjustment, U-pack shall be retained in an internal groove. Rod wiper shall be a urethane wiper ring(not metal clad). Gland collar will be either externally threaded onto the outside of the cylinder barrel or internally threaded into the cylinder barrel. Designs using an internal wire/lock ring to hold the gland in/on are not acceptable. The hydraulic inlet and outlet shall be welded fixed ferrules located on the cylinder shell. Wings will be capable of flexing from 22° below horizontal to 90° above horizontal to follow any terrain. You should not include the hydraulic valves which will be supplied on the tractors. All hoses(minimum 1/2" ID 2-wire non-skive) and quick couplings necessary for mounting on the tractor should be included. Safe-guards shall be provided to stop the wings from raising to a point that would prevent it from being lowered from the operators station. Mower shall have an A-Frame or similar support to protect the hoses between tractor and mower. The mower shall have a manually operated auxiliary winch to raise or lower each wing independently in case of hydraulic failure and rods or bars to secure the wings when roading. Hydraulics will meet SAE J517 and J232 requirements.

**WHEELS, AXLES AND SUSPENSIONS** - The mower shall be equipped with not less than six trail type laminated tires properly spaced for best weight distribution. The wheels will be mounted with a minimum of five lug bolts and the wheel hubs shall have roller bearings. Rear axle arrangement shall provide for two sets of two wheels each at center section, and a single wheel at each wing section. Main axle, axle arms and wheel spindles will be heavy duty with independent heavy-duty 3" spring suspension for each wheel. All wheel hubs will be heavy duty cast type with grease zerk.

**HITCH** - Towing hitch shall be a heavy-duty swivel clevis type providing easy maneuverability. Hitch shall be of adequate design to accommodate all angles and stress caused from roadside right-of-way mowing. The tongue will be "A" frame design. Twin leveling rods to balance the weight.

**PARKING JACK** - A heavy-duty retractable pin-on type hand operated screw type jack is to be furnished and installed on the tongue perpendicular to the ground with the mower set at a 6" mowing height to aid in attaching the mower to the tractor. A second mount for this jack shall be attached to the top of the mower deck to safely store it when not in use and not to interfere with mowing operation.

**SAFETY** - All guards and shields will meet SAEJ232 requirements. The mower shall have 3/8" safety chain guards to protect the area surrounding the mower from flying objects. A minimum 3/16" high strength aircraft cable shall be interlaced through the second to the lowest chain link. Unit will have wing transport locks.

**COLOR** - Color to be manufacturer's standard over a prime coat.

**NOTE:** Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.



The Missouri Highway and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



*Missouri Department of Transportation*

**60" (5 Foot) REAR, RIGHT SIDE ROTARY MOWER SPECIFICATIONS**

**GENERAL** – The intent and purpose of this specification is to establish minimum quality, safety and performance standards for heavy-duty 60" (5 foot) rotary mower to be mounted on the rear 3-point hitch. The purpose of this specification to specify a mower engineered and designed that will assure Highway right-of-way mowing, including ditch banks and roadsides with a minimum amount of down time. Mower shall be fully equipped (including counterbalances/oil reserve), capable of mowing in a declined or inclined position. This unit shall be of the manufacturer's current production model. Parts and service availability must be within 24 hour of contact. No boom type mowers. Comparable models are Rhino DB150 and Bush Hog SM60.

**DRIVE** – The mower shall be rotary type, hydraulically provided. The output shaft of gearbox shall be the spindle for the blade carrier assembly.

**SPINDLE** – Shall be one (1) piece forged alloy steel, of bearing type, sealed in oil.

**BLADE CARRIER** – Equipped with stump-jumper, applicable to type, brand, or model being used.

**BLADES** – 1/2" X 3 blades, double edge, 17,000 FPM minimum blade tip speed

**CUTTER HEAD** – Minimum 90 degree upward movement and 85 degree downward movement.

**HYDRAULICS** – Minimum 35 gallon hydraulic reservoir. Hydraulic relief valve required.

**DECK STRUCTURE** – Minimum 10 gauge construction. Replaceable, full length inner and outer shoes.

**SAFETY** – The mower shall have safety chain guards on front and rear to protect the area surrounding the mower from flying objects. Travel and transport locks shall be required. Unit shall meet or exceed all applicable ANSI, ASAE, SAE test standards.

**COLOR** – Color to be manufacturer's standard over a prime coat.

**MANUALS/WARRANTY** – Manufacturer shall furnish operation manual; unit shall be guaranteed against defects in workmanship and materials for a period of one (1) year.

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MISSOURI DEPARTMENT OF TRANSPORTATION  
REAR MOUNT, CONTOURED DOUBLE DECK DESIGN HEAVY-DUTY ROTARY MOWERS

**6 Foot Minimum Specifications:** Contoured double deck design cutter head, minimum .14" upper and lower deck thickness; minimum .24" skirt thickness; round pan (stump jumper) blade holder, minimum of two (2) suction type blades; lift type hitch (CAT II); puncture-proof, laminate tires); safety chain shields (front & rear) with cable through chains.

**7 Foot Minimum Specifications:** Contoured double deck design cutter head, minimum .14" upper and lower deck thickness; minimum .24" skirt thickness; round pan (stump jumper) blade holder, minimum of two (2) suction type blades; lift type hitch (CAT II); puncture-proof, laminate tires); safety chain shields (front & rear) with cable through chains.

**8 Foot Minimum Specifications:** Contoured double deck design cutter head, minimum .125" upper and lower deck thickness; minimum .19" skirt thickness; Round pan (stump jumper) blade holder, minimum of two (2) suction type blades; Semi-mount hitch (CAT II); 5 bolt Aircraft tires; safety chain shields (front & rear) with cable through chains.

**126" Minimum Specifications:** Contoured double deck design cutter head, minimum .125" upper and lower deck thickness; minimum .19" skirt thickness; round pan (stump jumper) blade holder, minimum of two (2) suction type blades; semi-mount hitch (CAT II); 5 bolt aircraft tires; safety chain shields (front & rear) with cable through chains.

**180" Minimum Specifications:** Contoured double deck design cutter head, minimum 180" cutting width; interior deck rings; minimum .138" upper deck and minimum .177" lower deck thickness; minimum .24" skirt thickness; round pan (stump jumper) blade holder, minimum of two (2) suction type blades; suspension system on axles; 5 bolt aircraft tires; safety chain shields (front & rear) with cable through chains; minimum 4" cutting capacity; self leveling clevis hitch.

**240"(20') Minimum Specifications:** Contoured double deck design cutter head, minimum 180" cutting width; interior deck rings; minimum .138" upper deck and minimum .177" lower deck thickness; minimum .24" skirt thickness; round pan (stump jumper) blade holder, minimum of two (2) suction type blades; suspension system on axles; 5 bolt aircraft tires; safety chain shields (front & rear) with cable through chains; minimum 4" cutting capacity; self leveling clevis hitch.

**COLOR** - Color to be manufacturer's standard over a prime coat.

**NOTE:** Complete unit(s) must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.

The Missouri Highway and Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.



MISSOURI DEPARTMENT OF TRANSPORTATION  
TRACTOR MOUNTED 22.5' EXTREME DUTY TRIPLE GANG FLAIL MOWER  
SPECIFICATIONS

**GENERAL** - The intent and purpose of the following specifications to describe a self-propelled, hydraulically powered flail type mowers, which shall mow forward, right and left of rear tires and shall have a rear centered flail mower. The unit shall be of the manufacturer's current production model, meeting or exceeding the terms of these specifications.

For any mower to be considered all items must be of standard production configuration and not a product that is modified for bid purposes.

**SAFETY AND TESTING** – Shall be tested to meet or exceed all applicable ANSI, SAE, and ASAE test standards.

**SIDE MOWERS** –

Cutting width is 22' 6" of actual cut

Side-cutting assemblies shall be flail type, hydraulically powered

Cutter shafts shall be dynamically balanced, 6" diameter, 3/8" wall tubing with 2 3/16" diameter stuff shafts and bearings

Each 90" cutter head shall have 96 forged, self-cleaning, reversible all purpose knives, or 48 smooth cut grass knives

Knife interchangeability shall not require change of cutter shaft

Cutting height shall be infinitely adjustable between 1/2" to + 6"

Cutter shafts will have bearing wrap protection

All cutter heads shall have 6 5/8" diameter rollers, 1 3/8" double-row spherical bearings and replaceable 1 3/8" stub shafts with internal seal on greasable bearing and o-ring on 6 bolt heavy duty cap

Cutter head arc shall be 150 degree from vertical position (side unit)

Cutter heads shall have 10 gauge, 80,000 PSI yield steel bonnet, 1/2" drive side and 3/8" carrier steel end plates.

Cutter head shall have replaceable skid shoes

Cutter head shall have 20 1/4" of inboard travel

Cutter shaft shall have operating speed of 2,400 RPM at rated tractor RPM

Knife swing circumferences shall be a minimum of 58 1/2"

**HYDRAULICS** –

Hydraulic motor shall have an rating of 74 H.P.

Motors shall have cast steel housing with steel gears

Hydraulic pump shall be tandem gear type with a rating of 136 input H.P., producing 59.6 GPM at 3,500 PSI

Reservoir shall be internally treated against corrosion with industry approved chemical agent at time of manufacture. Reservoir shall be 26 gallons and equipped with intank filter rated at 75 GPM, 10 micron,



200 beta absolute element with restriction gauge, have positive pressure at suction outlet and ball valve at suction line

Hydraulic cooler fan shall have reverser switch electric brake, be outdoor weather rated with maximum of 25 psi pressure drop and minimum heat transfer of 17,000 BTUH @ 50 degree F ITD, 40 GPM, 720 CFM

Mower drive control valve shall not cause restriction while cutter head in operation. Valve to stop cutting assembly in maximum 3 seconds from full RPM

Hydraulic pressure connections shall meet SAE o-ring and JIC standards

Pressure and return system hoses shall be 1" unrestricted inside diameter. Hoses shall have a burst pressure of 4 times working pressure.

Lift assembly shall have two single acting and two double-acting cylinders controlling inboard and outboard ends of cutter heads.

Lift control shall have four-spool metering type valve, spring-centered, with detented float position and pilot relief valve.

Suction line shall be an unrestricted 1 1/4" inside diameter. (Specifically excluding suction filters and screens.)

Drive belt system shall have automatic belt tightener. (Specifically excluding back bend belt tightener).

Reverse rotation models shall be equipped with steel front deflector

Rear safety discharge deflector shall be provided.

Travel and transport locks shall be required.

### **102" REAR PTO FLAIL –**

Cutting width shall be at least 102" of actual cut.

Cutting assembly shall be flail type, mechanically driven.

Cutting shaft shall have a minimum of 112 all purpose, forged, self cleaning, reversible knives, or 56 smooth cut grass knives

Knife interchangeability shall not require change of cutter shaft.

Cutting shaft shall be a minimum of 6" diameter, with 3/8" wall and 2 3/16" diameter bearings.

Cutter shaft shall have bearing wrap protection

Cutter shafts will be dynamically balanced

Cutter heads cutting height shall be infinitely adjustable between -1/2" to + 6". It shall not be necessary to remove the roller mounting brackets to adjust cutting height.

All ground rollers shall be 6 5/8" diameter, and use 1 3/8" double row spherical bearings and replaceable stub shafts with internal seal on greasable bearing and o-ring on 6 bolt heavy duty cap

Cutting head weight shall be a minimum of 1,700 pounds

Cutting head shall have a minimum 1/2" solid steel sidewall on drive side and 3/8" on carrier side

Bonnet shall be a minimum of 7 gauge 80,000 PSI yield steel

Cutting head shall have replaceable skid shoes

Cutting assembly shall have operating speed of 2,400 RPM at rated tractor RPM

Knife swing circumference shall be a minimum of 58 1/2"

Gearbox shall be reversible.



Cutting head shall be rated for 540 RPM PTO  
PTO shaft shall have a minimum rating of 65 horsepower.  
Cutter head shall have PTO shaft storage yoke  
Unit shall have three point hitch Category I and II mountings.  
Rear safety discharge flap shall be provided.  
Reverse rotation models shall be equipped with steel front deflector

The unit shall be delivered complete and ready for use to the delivery destination, then tested and placed in service with detailed instructions and training of Department personnel.

COLOR - Color to be Federal Standard #595B (Colors Used in Government Procurement) "Highway Yellow" #13432 or manufacturer's standard safety or industrial yellow over a prime coat. (IF YOU HAVE ANY QUESTIONS REGARDING COLOR PLEASE CONTACT THIS OFFICE.)

NOTE: Complete unit must be manufactured in accordance with the latest adopted OSHA or SAE Standards and amendments thereto.

The Missouri Department of Transportation Commission reserves the right to waive technicalities and to reject any or all bids and no bid is final until formally accepted by the Commission.

**Missouri Highways and Transportation Commission  
Standard Bid Provisions, General Terms and Conditions and Special Terms and Conditions**

**STANDARD SOLICITATION PROVISIONS**

- a. The solicitation for the procurement of the supplies referenced therein, to which these "Standard Bid Provisions, General Terms and Conditions and Special Terms and Conditions" are attached, is being issued under, and governed by, the provisions of Title 7 – Missouri Department of Transportation, Division 10 – Missouri Highways and Transportation Commission, Chapter 11 – Procurement of Supplies, of the Code of State Regulations. The Missouri Highways and Transportation Commission (MHTC), acting by and through its operating arm, the Missouri Department of Transportation (MoDOT), draws the Bidder's attention to said 7 CSR 10-11 for all the provisions governing solicitation and receipt of bids/quotes and the award of the contract pursuant to this solicitation.
- b. All bids/quotes must be signed with the firm name and by a responsible officer or employee. Obligations assumed by such signature must be fulfilled.

**GENERAL TERMS AND CONDITIONS**

**Definitions**

Capitalized terms as well as other terms used but not defined herein shall have the meaning assigned to them in section 7 CSR 10-11.010 Definition of Terms.

**Nondiscrimination**

- a. The Contractor shall comply with all state and federal statutes applicable to the Contractor relating to nondiscrimination, including, but not limited to, Chapter 213, RSMo; Title VI and Title VII of Civil Rights Act of 1964 as amended (42 U.S.C. Sections 2000d and 2000e, *et seq.*); and with any provision of the "Americans with Disabilities Act" (42 U.S.C. Section 12101, *et seq.*)
- b. **Sanctions for Noncompliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, MHTC shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
  - i. withholding of payments to the Contractor under the contract until the Contractor complies, and/or,
  - ii. cancellation, termination or suspension of the contract, in whole or in part.

**Contract/Purchase Order**

- a. By submitting a bid/quote, the Bidder agrees to furnish any and all equipment, supplies and/or services specified in the solicitation documents, at the prices quoted, pursuant to all requirements and specifications contained therein.
- b. A binding contract shall consist of: (1) the solicitation documents, amendments thereto, and/or Best and Final Offer (BAFO) request(s) with any changes/additions, (2) the Contractor's bid response, and (3) the MHTC's acceptance of the bid by post-award contract or purchase order.
- c. A notice of award does not constitute an authorization for shipment of equipment or supplies or a directive to proceed with services. Before providing equipment, supplies and/or services, the Contractor must receive a properly authorized notice to proceed and/or purchase order.

**Applicable Laws and Regulations**

- a. The contract shall be construed according to the laws of the State of Missouri. The Contractor shall comply with all local, state, and federal laws and regulations related to the performance of the contract. The exclusive venue for any legal proceeding relating to or arising, out of the contract shall be in the Circuit Court of Cole County, Missouri.
- b. The Contractor must be registered and maintain good standing with the Secretary of State of the State of Missouri, Missouri Department of Revenue, and other regulatory agencies, as may be required by law or regulations. Prior to the issuance of a purchase order and/or notice to proceed, the Contractor may be required to submit to MHTC a copy of their current Authority Certificate from the Secretary of State of the State of Missouri and/or a copy of their Certificate of No Tax Due from the Missouri Department of Revenue.
- c. Prior to the issuance of a purchase order and/or notice to proceed, all **out-of-state** Contractors **providing services** within the state of Missouri must submit to MHTC a copy of their current Transient Employer Certificate from the Missouri Department of Revenue, in addition to a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.

**Executive Order:**

The Contractor shall comply with all the provisions of Executive Order 07-13, issued by the Honorable Matt Blunt, Governor of Missouri, on the sixth (6<sup>th</sup>) day of March, 2007. This Executive Order, which promulgates the State of Missouri's position to not tolerate persons who contract with the state engaging in or supporting illegal activities of employing individuals who are not eligible to work in the United States, is incorporated herein by reference and made a part of this Agreement.

- 1) "By signing this Agreement, the Contractor hereby certifies that any employee of the Contractor assigned to perform services under the contract is eligible and authorized to work in the United States in compliance with federal law."
- 2) In the event the Contractor fails to comply with the provisions of the Executive Order 07-13, or in the event the Commission has reasonable cause to believe that the contractor has knowingly employed individuals who are not eligible to work in the United States in violation of federal law, the Commission reserves the right to impose such contract sanctions as it may determine to be appropriate, including but not limited to contract cancellation, termination or suspension in whole or in part or both.
- 3) The Contractor shall include the provisions of this paragraph in every subcontract. The Contractor shall take such action with respect to any subcontract as the Commission may direct as a means of enforcing such provisions, including sanctions for noncompliance.

**Preferences**

- a. In the evaluation of bids/quotes, preferences shall be applied in accordance with 7 CSR 10-11.020(7). Contractors should apply the same preferences in selecting subcontractors. The attached document entitled "VENDOR INFORMATION AND PREFERENCE CERTIFICATION FORM" must be completed and returned with the solicitation documents.
- b. Bidders are encouraged to obtain minority business enterprise (MBE) and women business enterprise (WBE) participation in this work through the use of subcontractors, suppliers, joint ventures, or other arrangements that afford meaningful participation for M/WBEs. Bidders are encouraged to obtain 10% MBE and 5% WBE participation.

**Missouri Highways and Transportation Commission**  
**Standard Bid Provisions, General Terms and Conditions and Special Terms and Conditions**

**Cancellation of Contract**

The MHTC may cancel the Contract at any time for a material breach of contractual obligations or for convenience by providing Contractor with written notice of cancellation. Should the MHTC exercise its right to cancel the contract for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Contractor.

**Bankruptcy or Insolvency**

Upon filing for any bankruptcy or insolvency proceeding by or against the Contractor, whether voluntarily, or upon the appointment of a receiver, trustee, or assignee, for the benefit of creditors, the Commission reserves the right and sole discretion to either cancel the Agreement or affirm the Agreement and hold the Contractor responsible for damages.

**Warranty**

The Contractor expressly warrants that all equipment, supplies, and/or services provided shall: (1) conform to each and every specification, drawing, sample or other description which was furnished to or adopted by the MHTC, (2) be fit and sufficient for the purpose expressed in the solicitation documents, (3) be merchantable, (4) be of good materials and workmanship, and (5) be free from defect.

**Status of Independent Contractor**

The Contractor represents itself to be an independent Contractor offering such services to the general public and shall not represent itself or its employees to be an employee of the MHTC. Therefore, the Contractor shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, etc., and agrees to indemnify, save and hold the MHTC, its officers, agents and employees harmless from and against any and all losses (including attorney fees) and damage of any kind related to such matters.

**Non-Waiver**

If one of the parties agrees to waive its right to enforce any term of this Contract, that party does not waive its right to enforce such term at any other time or to enforce any or all other terms of this Contract.

**Indemnification**

The Contractor shall defend, indemnify and hold harmless MHTC, including its members and department employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the Contractor's performance of its obligations under the contract awarded pursuant to this solicitation.

Missouri Highways and Transportation Commission  
Standard Bid/Proposal Provisions, General Terms and Conditions and Special Terms and Conditions

SPECIAL TERMS AND CONDITIONS

Tax Exempt Status:

MHTC is exempt from paying Missouri Sales Tax, Missouri Use Tax and Federal Excise Tax. However, the Contractor may themselves be responsible for the payment of taxes on materials they purchase to fulfill the contract. A Project Tax Exemption Certificate will be furnished to the successful Bidder upon request if applicable.