State of Illinois

Department of Transportation

Bureau of Business Services

**Specifications and Questionnaire for a Track-Mounted, Multi-Purpose, Reduced Tail Swing Radius Excavator**

84,000 Lbs. Operating Weight

November 2019

The following specifications describe the **minimum** requirements for heavy-duty, multi-purpose, reduced tail swing radius, track type excavator. The equipment bid shall be new, of current design and manufacture, and a regular production model. Any additions, deletions, or variations from the following specifications must be noted or the bid will be rejected. Any standard items appearing in the manufacturer’s regular published specifications furnished by the bidder shall be included in the bid unless otherwise noted.

Machine modification to meet the operational and capacity requirements shall be limited to the published standard or optional equipment as regularly installed and approved for use by the manufacturer and depicted in the furnished literature. All operating specifications are based on SAE standards. These standards shall be the basis for determining compliance with specified requirements.

Bidders quoting on other-than-specified equipment must submit with their bid written proof of the following:

1. The manufacturer of the equipment proposed has been actively involved in the manufacture of the equipment called for in the Bid for a period of not less than 5 years.
2. Parts and service for the equipment proposed are readily available in the State of Illinois.

It is the responsibility of each bidder to complete and return this questionnaire with the bid.

**Unless otherwise specified, the proposed equipment shall be complete in all parts and ready for immediate use upon delivery.**

**Bidders are advised to carefully read these specifications as changes have been made since the last solicitation issue.**

|  |
| --- |
| **Proposed With This Bid:** |
| Make: |       |
| Model: |       |
| Manufactured By: |       |
| Bidder: |       |
|  |       |
|  |       |
| Telephone: |       |
| Contact Name: |       |
| Email: |       |

The Illinois Department of Transportation reserves the right to waive minor informalities, deficiencies or technical variances which by their nature are restrictive to a given manufacturer, if in its’ judgement, it would be in the best interest of the State to do so and it would not prejudice the rights of other bidders.

Serviceability will be a factor in award. Successful bidder shall either be able to provide service after purchase or shall indicate other qualified service facilities able to service equipment, within a reasonable period of time at agency locations. Bidder shall provide documentation and enumerating service locations. A Review of the bidder's ability to provide prompt parts and service to the State of Illinois and in particular to the delivery location, will be considered in determining award.

Bids will only be accepted from established manufacturers or their authorized dealers. Any dealer submitting a bid hereby guarantees that it is an authorized dealer of the manufacturer and that the manufacturer has agreed to supply the dealer with all quantities of products required by the dealer in fulfillment of its obligations under any resultant contract with the State. Bidder must submit authorized dealer letter upon request.

**Warranty:**

Unless otherwise specified, Manufacturers’ standard warranty shall be provided. **Bidder shall attach copies of warranty with their bid****. Warranty shall commence at the Illinois Department of Transportation in-service date.** If any equipment fails to conform to the warranties during the applicable warranty period, the Vendor or Manufacturer will adjust, repair or replace the equipment at no charge to the Department as soon as possible upon notice from the Department. Equipment shall be repaired on-site and will be performed at no additional cost to the Department.

The Vendor may provide or perform warranty service at a dealer location within the Districts geographic region if on-site repair is not possible. Vendor shall facilitate pickup and delivery of equipment at Vendor's cost if warranty repair(s) are made off-site during the warranty period. The contract Vendor is responsible for any failure of their allied or sub-contractors’ fulfillment of said warranties. Failure to provide this service shall result in a “Complaint to Vendor” that could affect future bid awards.

**Delivery:**

It will be the responsibility of the successful vendor to guarantee delivery within the quoted time and to require allied manufacturers or suppliers to complete the installation of auxiliary equipment in accordance with the quoted delivery time.

Failure to comply with the quoted delivery time because of delays resulting from the inability of suppliers of allied equipment such as bodies, snowplows, spreaders, etc., may be reason to refuse to consider similar items from those suppliers on future bids.

All equipment provided by the Vendor and the sub-contractor(s) shall be fully operational when delivery is made. Any noted defects at the time of delivery shall be addressed by Vendor in the first 30 days of in-service.

Bidder/Vendor acknowledges the requirements above. Yes [ ]  No [ ]

|  |  |  |  |
| --- | --- | --- | --- |
| Bidder/Vendor Initials: |       | Date: |       |

**Note: If the equipment proposed exceeds the minimums called for in the specification please do not mark NO. Mark Yes and explain with a short comment on how it exceeds.**

**The excavator shall include the following standard or optional equipment and accessories:**

**Size:**

The excavator shall have a minimum compliant operating weight of 83,500 to 84,500 lbs. when equipped per specifications. The design of the excavator shall allow operation in a single traffic lane without protruding into oncoming traffic during swing function.

Complies: [ ]  Yes [ ]  No

Operating weight equipped per specifications:

|  |  |  |
| --- | --- | --- |
| Operating weight: |       | Lbs. |

Tail swing radius shall be no greater than 6’-3”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Swing radius:  |       | Feet |       | Inches |

Complies: [ ]  Yes [ ]  No

**Arm, Buckets, and Accessories:**

The excavator shall be furnished with standard length boom with a minimum length of 20’-0”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Boom length:  |       | Feet |       | Inches |

Note: Variable Angle Boom (two piece) is acceptable if it meets specification requirements.

The excavator shall be furnished with an arm (stick) length of no less than 10’-0”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Arm length:  |       | Feet |       | Inches |

Complies: [ ]  Yes [ ]  No

Equipped per specifications, the excavator shall have an approximate digging depth of 22’-0” to dig to an 8’-0” level bottom excavation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Digging Depth for 8’ level bottom:  |       | Feet |       | Inches |

Equipped per specifications; the excavator shall have an approximate digging depth of 22’-9”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Maximum Digging Depth:  |       | Feet |       | Inches |

Minimum reach at ground level shall be approximately 34’-0”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reach @ ground level:  |       | Feet |       | Inches |

Complies: [ ]  Yes [ ]  No

The boom shall be furnished with a boom holding or anti-drift valve for precise boom control while setting pipe or other similar functions.

Complies: [ ]  Yes [ ]  No

Equipped per specifications the excavator shall have a transport height of approximately 11’-0”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Transport Height:  |       | Feet |       | Inches |

Complies: [ ]  Yes [ ]  No

Lifting capacity at ground level over the end, blade down and fully extended shall be approximately 15,000 pounds. equipped per specifications, including counterweight.

|  |  |  |
| --- | --- | --- |
| Extended over the end lifting capacity @ ground level: |       | Lbs. |

Complies: [ ]  Yes [ ]  No

Lifting capacity at ground level over-the-side, blade down, 20’-0” reach with the specified arm shall be approximately 18,000 pounds.

|  |  |  |
| --- | --- | --- |
| Extended 20’-0”over the side lifting capacity @ ground level: |       | Lbs. |

Complies: [ ]  Yes [ ]  No

The excavator equipped with the specified arm shall have an ISO rated bucket digging force minimum of 40,000 pounds.

|  |  |  |
| --- | --- | --- |
| Bucket digging force: |       | Lbs. |

Counter weighting is extremely important in ensuring the stability of the machine while operating in uneven terrain. The machine will be operated in severe conditions and be used in response to natural and manmade disasters as well as routine ditch cleaning, roadway maintenance, setting pipe and entrance culverts. Proper balance is important to promote operator and other worker’s safety. Please list below the counter weighting provided with this machine, keeping in mind the options specified with the base machine.

|  |  |  |
| --- | --- | --- |
| Counter weight: |       | Lbs. |

This machine is to be furnished with a coupler system to allow the operator to switch buckets or attachments. This device may be of the manufacturers design or purchased from a supplier. This coupler shall also be compatible with the hydraulic “thumb” specified. The use of this type coupler serves several purposes. First it allows the district to use any of the assortments of buckets presently in their inventory and allows the machine to perform the routine ditch cleaning operations with minimal repositioning of the machine. Second and most important, the use of this device has reduced the personal injuries we have experienced while manually removing, aligning, and reinstalling pins in both the end of the stick and at the bucket. Manually removing pins, realigning pins is more difficult and dangerous when performed on the uneven terrain of a construction work site. The size of the coupler shall be as recommended by the manufacturer of the machine with consideration given to the buckets and features specified.

Complies: [ ]  Yes [ ]  No

Component:

|  |  |
| --- | --- |
| Make: |       |
| Model: |       |

The following two (2) buckets shall be furnished with the track excavator requested. All capacities listed shall be measured using SAE heaped standards:

* Standard 42” wide - Digging type bucket, with replaceable type teeth and a 1.46 cu. yd. capacity.
* 72” - Grading, ditch cleaning bucket with smooth cutting edge. The bucket shall have a 2.56 cubic yard capacity.

Note: IDOT is aware size and capacities may vary between manufacturers.

Complies: [ ]  Yes [ ]  No

|  |  |  |
| --- | --- | --- |
| Standard digging bucket capacity: |       | Cu.Yd. |

Component:

|  |  |
| --- | --- |
| Make: |       |
| Model: |       |
| Grading / Ditch cleaning bucket capacity: |       | Cu.Yd. |

Component:

|  |  |
| --- | --- |
| Make: |       |
| Model: |       |

**Hydraulic “Thumb” Attachment:**

The thumb type bucket attachment shall be rated for the capacity of the excavator, hydraulically operated and be fully controlled by the operator’s controls in the cab. All hydraulic hoses, connections, hardware, and brackets shall be included.

Complies: Yes [ ]  No [ ]

|  |  |
| --- | --- |
| Describe:  |       |
|       |
|       |

The thumb shall fold and store on the dipper stick when not in use.

Complies: Yes [ ]  No [ ]

The hydraulic “thumb” shall be mounted after the specified coupler so they will function independently, without interfering with the operations of each other.

Complies: Yes [ ]  No [ ]

**Diesel Engine:**

The loader shall be powered by a current production, liquid cooled, turbo charged, diesel engine with an SAE J1349 net horsepower minimum of 200HP and minimum displacement of 425 cu. in.

Component provided:

|  |  |
| --- | --- |
| Make: |       |
| Model: |       |
| Net H.P.: |  |  @  |  | RPM |
| Number of cylinders: |       |
| Displacement: |       |
| Rated H.P. (Gross) |       |
| Turbo Charged: Yes | [ ]  |  No  | [ ]  |  |

The engine shall be compliant with all present clean air regulations and include all Tier 4 emission standards.

Complies: [ ]  Yes [ ]  No

Additional equipment and accessories shall include:

1. Cold weather starting aid.
2. Dry type primary air cleaning element equipped with safety element and restriction indicator.
3. Muffler as required to meet emissions.
4. Engine side shields or hood with locks.
5. Engine fuel filter/water separator.
6. Auto-idle feature

Complies: Yes [ ]  No [ ]

**Cooling System:**

Pressurized liquid cooling system with thermostat. System shall be filled with manufacturer’s approved extended life antifreeze.

Complies: Yes [ ]  No [ ]

**Transmission:**

Independent hydraulic drive to each track shall be provided by compact axial piston motors. Travel speeds shall be controlled by an auto-shift feature for high/low utilizing an auto or power shift feature. These functions shall include both forward and reverse directions and from 0 to approximately 3.0 MPH.

|  |  |  |
| --- | --- | --- |
| Travel speed range: |       | MPH |

|  |  |
| --- | --- |
| Describe travel feature :  |       |
|       |
|       |

The excavator shall include a switch controlled travel motion alarm system including a cancellation with auto-reactivate feature.

Complies: [ ]  Yes [ ]  No

Travel motors shall be equipped with a device to prevent over-speeding when going down an incline.

Complies: [ ]  Yes [ ]  No

**Steering:**

Independent drive to each track that allows track counter-rotation. Foot pedal control steering and/or combination lever-steer system shall be provided. Shall include straight line travel pedal or similar feature.

Complies: [ ]  Yes [ ]  No

|  |  |
| --- | --- |
| Describe :  |       |
|       |
|       |

**Brakes:**

Service brakes shall be wet disc design that automatically releases when propelling and applies when stationary.

Complies: [ ]  Yes [ ]  No

|  |  |
| --- | --- |
| If No describe:  |       |
|       |
|       |

**Tracks and Undercarriage:**

The undercarriage and tracks shall be sealed and lubricated.

Complies: [ ]  Yes [ ]  No

Track overall length shall be approximately 16’-2”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Track length:  |       | Feet |       | Inches |

Complies: [ ]  Yes [ ]  No

Track shoes shall have an approximate width of 28” and feature 3-bar grouser type track shoes.

|  |  |  |
| --- | --- | --- |
| Track shoe width: |       | Inches |

Complies: [ ]  Yes [ ]  No

Undercarriage rollers shall be of an excavator design with large diameter pins. Undercarriage shall have a minimum of 8 bottom rollers per side.

|  |  |  |
| --- | --- | --- |
| Rollers per side: |       | Each side |

The excavator undercarriage shall include hydraulic type track tension adjustment.

Complies: [ ]  Yes [ ]  No

**Electrical:**

The excavator shall be equipped with a 12 or 24 volt electrical system with two (2) batteries.

|  |  |  |
| --- | --- | --- |
| Batteries: |       | CCA |

Complies: Yes [ ]  No [ ]

A minimum 100-amp alternator and transistorized voltage regulator.

Complies: Yes [ ]  No [ ]

|  |  |  |
| --- | --- | --- |
| Alternator rating: |       | Amps |

The excavator shall be provided with the following lighting for day and night operations:

* Boom mounted work light(s).
* Turntable mounted work lights.
* Cab exterior and cab interior lighting
* Instrument and gauge lighting
* Amber LED Warning strobes

Complies: Yes [ ]  No [ ]

|  |  |
| --- | --- |
| If No Describe:  |       |
|       |
|       |

**Hydraulic System:**

The excavator shall feature two (2) joystick hydraulic control with functions in the SAE approved pattern for swing, boom, dipper, and bucket control functions. These excavators shall include adjustable control patterns as selected by the operator.

Complies: Yes [ ]  No [ ]

|  |  |
| --- | --- |
| Describe pattern alteration and control:  |       |
|       |

All excavator operations shall be powered by a minimum of two (2) hydraulic pumps with an approximate total capacity of 65.0 gpm each. The system shall be variable flow design monitored and controlled by the operator.

Complies: Yes [ ]  No [ ]

|  |  |  |
| --- | --- | --- |
| Pump #1 flow rating: |       | GPM |
| Pump #2 flow rating: |       | GPM |
| Hydraulic system operating pressure: |       | PSI |

Note: Load sensing Single axial piston pump system is acceptable providing it meets hydraulic requirements specified above.

The hydraulic system shall capable of operating all attachments specified and delivered with this machine from the operator’s position. If additional High-Flow auxiliary hydraulics are required, they shall be included. A case drain back system shall be included for attachments.

Complies: Yes [ ]  No [ ]

**Operator’s Cab:**

The cab shall be manufacturer’s deluxe fully enclosed cab with sound suppression and lockable door(s). Cab shall be constructed to incorporate an OSHA approved and SAE rated ROPS support structure.

Complies: Yes [ ]  No [ ]

The side windows shall open if option is available and an opening “sky light” with sun shade or tinted glass in the top of the cab shall be included.

Complies: Yes [ ]  No [ ]

An operator controlled wiper/washer system shall be provided for the front window.

Complies: Yes [ ]  No [ ]

The operator’s seat shall be fully adjustable suspension type either air or mechanical, and provide adjustment for leg room, height, reach, weight and lumbar support. High visibility seatbelt (i.e. Blaze orange) with warning indicator shall be included (Fasten seatbelt).

Complies: Yes [ ]  No [ ]

|  |  |  |
| --- | --- | --- |
| Suspension type: |       |  |

The cab shall include manufacturer’s standard circulated Air conditioning/heater/defroster and controls.

Complies: Yes [ ]  No [ ]

The operator’s cab shall include vibration dampeners and Manufacturer’s standard sound suppression treatment.

Complies: Yes [ ]  No [ ]

**Rear View / Camera System:**

* Color Monitor Displays Camera and Distance or position to Obstacles
* System Provides Visual and Audible Alert from Obstacles
* Waterproof and heated Backup Camera (IP69K) with Infra-Red Night Vision
* View displayed as seen (not mirror image)
* Aircraft grade cable connectors
* Mounting locations subject to IDOT approval

 Complies: [ ]  Yes [ ]  No

A multi-function LCD or LED screen shall feature the ability to monitor the following machine information:

* Engine coolant temperature
* Fuel level
* DEF fluid level if equipped
* Digital electric hour meter
* Oil pressure warning
* Hydraulic oil temperature

Complies: Yes [ ]  No [ ]

|  |  |
| --- | --- |
| If No Describe:  |       |
|       |

Additional cab equipment and accessories shall include:

* Ignition with safety start
* Horn
* Mounting steps with handholds
* Exterior and interior mirrors
* AM/FM radio with weather band and Bluetooth connectivity
* 12-volt power point
* Cab rock guards (vertical and horizontal removable bars to protect cab from debris)
* Bumper guards

Complies: Yes [ ]  No [ ]

|  |  |
| --- | --- |
| If No Describe:  |       |
|       |

**Optional Equipment and Installation:**

**The following optional equipment or installation shall only be quoted when specifically called for in the “Bid”.**

**Hydraulic Demolition / Sorting Grapple:**

Reference: CAT G325B, Engcon SK30 or Steelwrist SG55 **-** or Department of Transportation approved equal.

The grapple proposed must be rated by the manufacturer for the excavator specified. It shall include all hoses to attach to the excavator and coupler as specified above.

Complies: Yes [ ]  No [ ]

Component:

|  |  |
| --- | --- |
| Make: |       |
| Model: |       |

**Finish:**

All exterior surfaces normally painted or powder coated shall be manufacturer’s standard color.

|  |  |
| --- | --- |
| Describe finish: |       |

|  |
| --- |
|       |

**Warranty:**

Full coverage warranty for a minimum 12 months shall be provided. The warranty shall be the standard maximum coverage warranty offered with no additional charges. The bidder shall attach a copy of warranty with the bid.

|  |  |
| --- | --- |
| Describe warranty:  |       |
|       |
|       |

**Preparation:**

This machine is to be delivered in first-class operating condition with acceptance subject to Department of Transportation approval.

Complies: Yes [ ]  No [ ]

The unit shall be delivered oiled, greased, serviced and ready for operation.

Complies: Yes [ ]  No [ ]

**General:**

Three copies of all operator’s manuals, parts lists, and warranty information shall be provided at time of delivery to each district receiving one or more units.

Complies: Yes [ ]  No [ ]

One set of service manuals shall be provided to each delivery location.

Complies: Yes [ ]  No [ ]

***Note:*** The manuals, parts lists, and service or shop manuals listed above may be furnished on CD/DVD or flash drive in lieu of paper.

**Training:**

Instruction performed by a **qualified** factory or dealer personnel covering the operation, routine service and maintenance of the machine shall be provided upon delivery. The training shall be for all personnel in the assigned headquarters location of the machine. More than a single day may be required to satisfy this requirement.

Complies: Yes [ ]  No [ ]

|  |  |
| --- | --- |
| Describe:  |       |
|       |
|       |

**Note:** This is not a sales call. Training not meeting IDOT expectations will be cause to generate a “Complaint-to-Vendor” that would affect award recommendations for future quotations.

**Requirements Covering Items Detailed Above:**

All equipment cataloged as standard or safety related shall be furnished and in place and shall be included in the purchase price of the unit. Any parts, tools, and/or accessories not specifically called for but required for proper operation shall be provided.

Complies: [ ]  Yes [ ]  No

The component parts of the unit shall be of proper size and design to safely withstand maximum stresses imposed by a capacity load, and the manufacturer's rated loads for all component parts shall **not** be exceeded when the unit is so loaded.

Complies: [ ]  Yes [ ]  No

**Repair Parts and Service:**

Since continuous operation of this excavator is of the utmost importance and sometimes of an emergency nature, it is necessary that the successful bidder be in a position to render prompt parts and service within the State of Illinois.

|  |  |
| --- | --- |
| List locations where service is readily available:  |       |
|       |
|       |
|       |

The vendor or manufacturer of the unit which is considered for award shall, at the request of the State of Illinois, demonstrate this equipment within the receiving District in the State of Illinois in the presence of authorized State personnel to prove out any features which may be in question.

Complies: Yes [ ]  No [ ]

|  |  |
| --- | --- |
| If NO to any portion, please explain:  |       |
|       |
|       |

**Bid Package:**

If not quoting in BidBuy, bidders will need to send two copies of each of the following with their bid response.

a) Specification Questionnaire

b) Descriptive Literature

Hydraulic Demolition / Sorting Grapple: Visual reference only

