



THE CORPORATION OF THE CITY OF NIAGARA FALLS

**REQUEST FOR TENDER - SUPPLY**

**RFT29-2019 - SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

***SPECIFICATIONS***

NAME OF COMPANY (DEALER): \_\_\_\_\_

ITEM/CATEGORY	CITY REQUIREMENTS	BIDDER TO STATE SPECIFICATIONS
<b>Make</b>		
<b>Year</b>	New	
<b>Model</b>	M314F or equivalent	
<b>General</b>	Standard operating weight shall be 31658 lb (14,360 kg) and maximum operating weight shall be 35,165 lb (15,950 kg). Maximum Cab height shall be 10' 9" (3280 mm). Tail swing radius shall be 6' 1" (2090 mm). Maximum Counterweight clearance shall be 4' 0" (1230 mm). Minimum undercarriage ground clearance shall be 1' 1" (335 mm). Maximum travel length shall be 27' 9" (8460 mm). Maximum travel height shall be 10' 11" (3330mm). Maximum Machine wheel base shall be 8' 2" (2500 mm) Cruise Control Ride Control Hydraulics pumped to end of stick for add-on hydraulic tools eg Breaker Hammer, controlled from in cab.	
<b>Engine</b>	Engine shall meet U.S. EPA Tier 4 Final. Engine shall have four cylinder Diesel with a displacement of not less than 4.4 L (268.5 cubic inches). Min. 148 hp. Machine shall be equipped with an electronically controlled variable speed	

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REQUEST FOR TENDER – SUPPLY  
RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	<p>hydraulic motor driven on demand fan for engine coolant and hydraulic oil. Machine shall be equipped with two 12-Volt, 900 CCA maintenance free batteries. A derate feature shall be provided to limit power if engine temperature is too high or hydraulic oil temperature is either too high or too low. Alternator shall not be rated at less than 100 amps. Engine shall have glow plugs for improved cold weather start up. An automatic engine speed control shall be provided that reduces engine speed to a minimum during periods of inactivity, to reduce noise and fuel consumption. Water separator in fuel line shall be factory installed standard equipment. Engine and Main Pump shall be longitudinally mounted for ground level maintenance and service checks. No engine derating shall be required below 9,840 ft (3000 m). Fuel injection pump shall be electronically controlled to help reduce fuel consumption. Operator sound level shall be a maximum of 71 db(A) and spectator sound level shall be a maximum of 101 db(A) as specified in 2000/14EC. Engine uses ACERT™ technology, which provides advanced electronic control, precision fuel delivery and refined air management. Engine is equipped with Air to Air After Cooler (ATAAC) that increases power density and decreases NOx emissions. The pistons shall be an all-aluminum die-cast which improves piston strength and increases engine life. The engine shall have an ADEM™ A4 to electronically control the engines' systems with the use of sensors throughout the</p>	

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ONE (1) WHEEL EXCAVATOR**

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	<p>engine. Engine shall be equipped with automatic engine speed control to improve fuel consumption. Must have Block Heater.</p>	
<b>Transmission</b>	<p>Transmission shall be mounted to the rear axle for maximum protection from damage in heavy terrain. 2-speed planetary-type transmission shall be standard. The machine shall be all-wheel drive in both speed ranges. Creeper speed shall be provided to facilitate quick and easy repositioning of the machine and to facilitate the use of attachments such as mowers and brush cutters. Creeper speed shall be at least 1.9 mph (3 km/h) and max 7.5 mph (12.0 km/h) Maximum travel speed shall be not less than 23 mph (37 km/h). Gradeability shall be up to 52.5%. A downshift inhibitor shall be provided to prevent downshift if travel speed is too high, to protect the powertrain from overspeed. A travel speed lock (cruise control) shall be available as standard Drawbar pull shall be at least 16,411 lb (73 kN). Driving speed limitation in reverse shall be available</p>	
<b>Axles</b>	<p>Machine shall have oscillating front axles and a fixed rear axle. Machine must be capable to detect automatically when the service brake and axle need to be locked (like when digging), or unlocked (roading), hence removing the need for the operator to systematically press the pedal.</p>	
<b>Wheels and Undercarriage</b>	<p>Machine shall have oscillating front axles and a fixed rear axle. Machine shall have a maximum steering angle of 35 degrees and an oscillation angle of plus or minus 8.5 degrees.</p>	

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REQUEST FOR TENDER – SUPPLY  
RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	<p>Blade and outriggers shall be welded on for additional machine stability. Blade Width of 8' 4" Each outrigger and blade shall be independently controllable from the cab. The blade shall have a single remote greasing point. Factory installed heavy duty guarding shall be available for the blade cylinders. Factory installed heavy duty guarding shall be available for each outrigger cylinder. Maximum distance from the front axle to the middle of the swing bearing shall be 4' 7" (1400mm). Maximum distance from the rear axle to the middle of the swing bearing shall be 3' 7" (1100mm). Maximum distance between the front and rear axle shall be 8' 2" (2500mm). Maximum undercarriage ground clearance shall be 1' 7" (475 mm). Machine shall be equipped with Standard Dual Tires 10.00-20.</p>	
<b>Steering</b>	<p>Front steering shall be pivotally mounted to the frame and shall be free to oscillate not less than 8.5° in either direction. It shall be possible for the operator to lock the pivotally mounted front axle. Wheels shall have at least 35° of steering angle in either direction. Joystick steering shall be available so the operator can steer the machine in first gear using a slider switch on the hand joystick.</p>	
<b>Hydraulics</b>	<p>A Standard Heavy Lift Mode hydraulic feature shall be available that maximizes lifting performance by boosting the lifting capability of the excavator by 7.0%. An optional multi-functional valve shall be available that allows the operator to select between 10 pre-set tool parameters (hydraulic flow and pressure), eliminating the</p>	

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RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	<p>need to re-set these hydraulic parameters each time a tool is changed.</p> <p>Pressure test taps for critical hydraulic circuits shall be factory installed and accessible from ground level for ease of troubleshooting and testing and adjusting.</p> <p>Hydraulic valves shall be stackable for ease of adding hydraulic valves and ease of service.</p> <p>A variable displacement, closed center, load-sensing hydraulic system shall be provided.</p> <p>A dedicated swing pump shall be provided for improved swing response when operating implements.</p> <p>The swing pump shall be variable displacement for improved fuel efficiency.</p> <p>An accumulator shall be provided to allow the boom and stick to be lowered to the ground in the case of a dead engine.</p> <p>Maximum heavy lift implement pressure for the implement circuit shall be not less than 5439 psi (350 bar).</p> <p>Maximum pressure for the travel circuit shall be not less than 5076 psi (350 bar).</p> <p>Maximum pressure for the swing circuit shall be not less than 5076 psi (350 bar).</p> <p>Maximum flow for the high pressure circuit shall be 48 gpm (180 L/min)</p> <p>Maximum flow for the medium pressure circuit shall be 13.2 gpm (50 L/min).</p> <p>The stick cylinder bore shall be no less than 4.7 in (120 mm).</p> <p>The bucket cylinder bore shall be no less than 3.9 in (100 mm).</p> <p>Factory installed proportional auxiliary medium pressure hydraulic valve and lines.</p> <p>Factory installed multifunction auxiliary high pressure hydraulic valve and lines. STATE:.</p> <p>Adjustable hydraulic sensitivity shall allow the operator to choose between four different</p>	

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RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	<p>machine hydraulic aggressiveness settings. Hydraulic Hoses on all high pressure/flow circuits. Machine shall have a high-pressure auxiliary circuit operated with a joystick slider button, with an available lockable auxiliary high-pressure circuit foot pedal. A second high-pressure work tool circuit shall be available which allows use of additional tools that require a third function. Factory installed second high-pressure work tool circuit lines . Summary ; HP Aux. lines and coupler to allow swapping and run tools as needed. STATE:</p>	
<b>Brakes</b>	<p>Maintenance free wet disc brakes shall be provided on all four wheels. Two separate pre-charged hydraulic accumulators, one per brake circuit, shall be provided in the brake system for maximum reliability. Adjustable travel motor brake with three levels of aggressiveness shall be available. Machine shall be equipped with parking brakes Disc braking system shall work directly on the hub instead of the drive shaft to avoid planetary gear backlash.</p>	
<b>Operators Station</b>	<p><i>Cab shall have an integrated Roll Over Protective Structure (ROPS) that meets ISO 12117-2:2008 criteria.</i> <i>Cab shall have a standard rear and right side view cameras for all around visibility in one split screen monitor</i> <i>Rear and side cameras should have LED lighting to ensure proper visibility at night</i> <i>Cab should have optional electrically adjustable heated mirrors</i> <i>Cab visibility must meet the requirements of ISO 5006/EN474.</i> <i>Machine shall have a system that checks the</i></p>	

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RFT29-2019 – SUPPLY & DELIVERY OF  
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	<p><i>following fluid levels prior to machine start-up and warns the operator if the levels are not within acceptable ranges: engine coolant level and hydraulic oil level.</i></p> <p><i>Cab monitor shall display warnings when oil and filter maintenance interval is due according to hours of usage.</i></p> <p><i>Cab monitor shall provide text warning messages of problems as well as provide international fault codes.</i></p> <p><i>Cab monitor shall be able to provide language capabilities of up to twenty-six different languages.</i></p> <p><i>Single rocker pedal shall control both travel direction and speed.</i></p> <p><i>Wiper and washer for lower windshield shall be provided, if equipped with lower windshield</i></p> <p><i>A left side tool box shall be provided in the undercarriage access steps.</i></p> <p><i>A right side tool box shall be available in the undercarriage access steps.</i></p> <p><i>An air cushion seat with lumbar support and a heated/cooled cushion shall be available.</i></p> <p><i>Seat and consoles shall slide forward and backward independently, so they can be adjusted to comfortably fit nearly any operator.</i></p> <p><i>The rear window shall be easily removable, without tools, for escape in the event of emergency.</i></p> <p><i>The control levers shall be mounted to the suspension seat so the relative positions between the operator and the control levers are maintained.</i></p> <p><i>Seat shall be adjustable fore and aft both together and separate from the control levers.</i></p> <p><i>Seat shall have an adjustable back rest and lumbar support.</i></p> <p><i>An available comfort seat shall have air suspension and seat heating and</i></p>	

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RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

**SPECIFICATIONS cont'd.**

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	<p><i>automatically adjust to the Operators weight. Cab shall have rubber shock dampening mounts. Cab shall have a beverage holder capable of holding a standard 340 g (12 oz) soft drink can. Factory installed AM/FM stereo radio shall be available. Factory installed HVAC system shall be standard. Cab air conditioner shall be automatic in that it will maintain the temperature level set by the operator. Cab air conditioner shall have a primary filter than can be removed for inspection without any tools. Left-hand control console shall be tiltable out of the way for ease of access. All hydraulic controls shall be locked out when console is in the raised position. Console shall be in raised position for engine to be started. Machine shall have a 63.5 mm (2.5 in) wide retractable seat belt as standard. A 76.2 mm (3 in) wide non-retractable seat belt shall be available. Operator sound level within cab with door closed shall be not greater than 71 dB(A). A tilting and telescopic steering column shall be offered for easy cab entry and exit. Joystick pattern changer with the option of Backhoe Loader pattern or Excavator pattern shall be available. A color monitor which provides operator with information about 18 different machine functions and works in conjunction with rearview camera for increased safety shall be standard. Seat shall be equipped with active climate control, which carries away body perspiration. Shall have an optional ride control system which absorbs shock for increased operator</i></p>	



**THE CORPORATION OF THE CITY OF NIAGARA FALLS  
REQUEST FOR TENDER – SUPPLY  
RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

**SPECIFICATIONS cont'd.**

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	<p><i>comfort and safety. Operator shall have the permanent auxiliary flow for operating tools with constant rotation controllable from the joystick.</i></p>	
<b>Booms and Stick</b>	<p><i>Short stick – 2000 mm (6'7") for maximum breakout force and lifting capability Medium stick – 2300 mm (7'7") for greater crowd force Long Stick length shall be long stick (8' 6" / 2.6 m), 30' reach with 19' Digging Depth. Variable Adjustable (VA) – improved right side visibility and roading balance. When working in tight quarters or lifting. Smart Boom™ which allows the operator to control the boom with free downward and upward motion called hydraulic float. This boom float option eases operation and operator comfort. The Smart Boom is for Material Handling, Hammering, Smooth Leveling, Truck Loading, and Rotary Mower applications. Machine to be supplied with one 24" Bucket .</i></p>	
<b>Work Tool Options</b>	<p>Industrial stick shall be available that will permit use of grapples and free swinging tools such as magnets and forestry grapples. An installed quick coupler which will enable the operator to simply release one work tool and pick up another without leaving the cab. A pin grabber coupler shall be available to pick up any work tool equipped with standard pins. A hydraulic actuated version shall be installed.. A hydraulic circuit to control the work tool coupler shall be installed ex- factory A pin-lock coupler with a hook and pin type interface featuring a locking mechanism for a secure fit. With this coupler work tools with the matching interface can be changed in about one minute and shall require one pin manually inserted into the coupler. A tilt-lock coupler shall be with the same</p>	

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RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	<p>functionality as the pin-lock coupler but shall have the added benefit of tilting functionality. A dedicated wedge-lock coupler to provide excellent durability in demanding applications.</p> <p>Integrated tool control shall allow for ten pre-set combinations, eliminating the need to re-set the hydraulic parameters each time a tool is changed.</p> <p>Work Tool Options shall be from the manufacturer that are designed and are compatible with the Wheeled Hydraulic Excavator such as a Hammer, Orange Peel Grapple, Multi-Processor, Vibratory Plat Compactor, Shears, and a wide range of specialized buckets.</p> <p>A Tilt rotator type coupler set up and corresponding joysticks option should be installed ex-factory</p>	
<b>Heater &amp; Defroster &amp; Air Conditioning</b>	Factory Installed as per Spec	
<b>Serviceability</b>	<p>Anti-skid, punched steel star plate shall cover the entire normal walking surface of the upper structure for excellent skid resistance. Sandpaper style anti-skid material is not acceptable.</p> <p>Engine oil and fuel filters shall be of the spin-on type and shall be vertically mounted and accessible from ground level for easy and rapid service.</p> <p>Daily maintenance points shall be accessible from the ground level.</p> <p>Swing gear shall be enclosed and lubricated not more than every 2000 hours.</p> <p>A centralized greasing port shall be provided for the front end and swing bearing greasing. Machines shall be equipped with sight gages for clear visibility of fluid levels during daily check.</p> <p>Gull-wing doors, with pneumatically-assisted lift cylinders shall effortlessly lift for access to the engine and all service points.</p>	

**THE CORPORATION OF THE CITY OF NIAGARA FALLS  
REQUEST FOR TENDER – SUPPLY  
RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	<p>Flat fins on all coolers shall reduce clogging and make debris removal easier.</p> <p>The engine air intake filter shall not need service tools for replacement and shall feature double element construction and build-in precleaner. When the air cleaner plugs, a warning shall display on the monitor screen in the cab.</p> <p>The hydraulic return filter shall be situated inside the hydraulic tank to prevent contaminants from entering the system when the hydraulic oil is changed.</p> <p>The water separator shall remove water from fuel even when under pressure and shall be in the engine/pump compartment.</p> <p>Fuel tank drain shall be located at the bottom of the upper frame and drain with hose connection to allow simple, spill free fluid draining.</p> <p>Hydraulic tank drain shall be located in the engine compartment and shall drain with hose connection to allow simple, spill free fluid changes.</p> <p>Large handrails and steps shall assist the operator in climbing on and off the machine.</p> <p>A reversing fan for the engine coolant and hydraulic oil to improve cooling in dusty environments shall be available.</p> <p>Cyclone type filters for the ATAAC to improve cooling in dusty environments shall be available.</p> <p>Factory installed automatic lubrication system, which automatically lubricates all bearings from swing bearing up, shall be standard.</p>	
<b>Fill Capacities</b>	<p>Fuel capacity shall be not less than 74 gal (280 L).</p> <p>Diesel Exhaust Fluid Tank shall be not less than 5.0 gal (19L)</p> <p>The hydraulic oil tank shall have a capacity of no less than 23.5 gal (89 L).</p> <p>The hydraulic system shall have a capacity</p>	

**THE CORPORATION OF THE CITY OF NIAGARA FALLS  
REQUEST FOR TENDER – SUPPLY  
RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

**SPECIFICATIONS cont'd.**

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	<p>of no less than 58.1 gal (220 L). Cooling system capacity shall be at least 10 gal (38 L). Engine crankcase capacity shall be at least 2.1 gal (8 L). Rear axle housing (differential) capacity shall be at least 3 gal (11.2 L). Front steering axle (differential) capacity shall be at least 2.4 gal (9 L). Final drive capacity shall be at least 0.6 gal (2.4 L). Powershift transmission shall hold 0.7 gal (2.5 L).</p>	
<b>Added Features</b>	<p>A microprocessor that controls the engine and hydraulic interface shall be provided. Dual back-up systems for the microprocessor shall be provided. A central diagnostic function to record system parameters and faults shall be provided to facilitate quick analysis and troubleshooting. Machine shall have a key-operated master electrical disconnect switch that cuts all electrical power to all circuits. All wire harnesses shall be encased in nylon mesh bindings. Counterweight shall have built-in lifting eyes. Crane lifting points shall be clearly identified by decal on the machine. Hammer circuit shall be available for both one-piece, offset, and VA booms. Guards shall be available to protect the cab and operator against falling objects. Vandalism guards shall be available for protection of the front windshield glass from damage caused by vandals. Machine shall be equipped with horn warning while traveling forward or in reverse. Standard machines shall be equipped with counter weight of up to 7'275 lbs (3300 kg) Product Link™ shall be available which allows remote monitoring of the machine</p>	

**THE CORPORATION OF THE CITY OF NIAGARA FALLS  
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RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	<p>such as location identification, geo-fencing, fuel consumption, idle time, hour meter reading, event and diagnostic codes. This information is transmitted in a secure web-based application.</p> <p>A swing lock to prevent uppercarriage from swinging while travelling shall be standard. An automatic swing lock should be able to be independent of implement lock out. Easily accessible, dry, lockable storage to protect certain items shall be available. The option of either a 1-pc windshield or 70/30 split windshield shall be available. Hydraulic quick connects shall be available at the end of the stick to ease work tool connection.</p> <p>A refuel pump shall be available to ease refueling the machine in remote locations. ANSI decals shall be standard.</p> <p>The VA boom shall be adjusted with a pedal on the cab floor</p> <p>Anti-Drift and Load Control Valves shall be available for boom, stick, bucket, and work tool circuits.</p> <p>A boom anti-drift valve shall be standard. Medium Pressure Work Tool Flow shall be adjustable electronically through the monitor. An overload warning device must be available to warn the operator when a too heavy load has been lifted.</p> <p>Heated mirrors must be available to ensure clean mirrors in inclement weather conditions.</p> <p>LED rear lights that lower maintenance costs shall be standard</p> <p>S·O·SSM ports shall be standard to monitor hydraulic oil, coolant, and engine oil cleanliness.</p> <p>Integrated Pin code into the monitor should be standard to protect equipment against theft</p> <p>Machine shall have optional hydraulic trailer</p>	

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RFT29-2019 – SUPPLY & DELIVERY OF  
ONE (1) WHEEL EXCAVATOR**

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	actuation command integrated ex-factory in the cab Machine shall be configured ex-factory to handle up to trailer GVWR of 17,600 Lbs (8 M tones)	
<b>Lighting</b>	Must come with LED Beacons	
<b>Mfg.'s Corrosion Warranty</b>		
<b>Paint</b>		
<b>Warranty</b>		
<b>Service Diagnostics</b>		
<b>Manuals</b>	Parts	
<b>Manuals</b>	Service Repair	
<b>Delivery</b>		