SUBJECT: Single Source Approval for Road Maintenance Equipment Purchase (PW06096) - (City Wide)

RECOMMENDATIONS:

(a) That staff be authorized to make a single source purchase of one Gradall Model XL4100 Hydraulic Telescoping Boom Excavator (Appendix A) from Amaco Equipment Inc. to replace an existing Gradall excavator in the Central Fleet, at an approximate cost of $390,000.00, and

(b) That the funds required for the purchase as per recommendation “(a)” be charged to the Public Works Operations approved 2006 Capital Budget Cost Centre 58550-4940651100.

EXECUTIVE SUMMARY:

Council approved a single source request to purchase an identical piece of equipment recommended in Report PW05004 in January 2005. This request is to replace the second of three remaining units, Unit 200521, a 1981 Gradall hydraulic telescoping boom excavator used by the Roads Section for road side ditching and other work. The life expectancy of this unit is 25 years.
Gradall is a brand of hydraulic telescoping boom excavators made by JLG Inc. The only competitive manufacturer of this type of equipment offers a brand called “Badger”. Staff do not have experience with the Badger unit and it has a lighter design than a Gradall. The dealer for Badger is unable to provide us with a demonstration of the product.

The Public Works Department has been satisfied with the reliability and operation of the Gradall equipment in our fleet for the past 25 years.

**BACKGROUND:**

This equipment is a hydraulic telescoping boom excavator, mounted on a tandem axle heavy truck chassis with a 25 year expected life span. The equipment is used primarily for road side ditching and excavating in rural areas, in this case District 5, Stoney Creek. It is also used for material handling, in winter control for breaking up ice dams, culvert installations and tree removal in emergencies. The Public Works Department has three Gradall machines in its fleet, which have been operating reliably for the past 25 years.

**ANALYSIS/RATIONALE:**

Gradall is a brand of hydraulic telescoping boom excavators made by JLG Inc. The only competitive manufacturer of this type of equipment offers a brand called “Badger”. Staff have no experience with the Badger unit and it has a different design and a lighter weight than a Gradall. When staff contacted Strongco, the dealer for this equipment, they were advised that the dealer was unable to provide a unit for demonstration purposes. Staff would not be in a position to consider the Badger without a full working demonstration, and have not found any nearby municipality that owns one. A single source purchase is recommended as being most beneficial to the City by acquiring proper equipment.

**ALTERNATIVES FOR CONSIDERATION:**

Amaco Equipment is the only Ontario dealer of the Gradall product. To rent the Gradall Model XL4100 would cost $10,000.00 per month with a minimum one year term. Total one year rental cost $120,000.00. Based on information on the manufacturer’s web site, a new Gradall model xl4100 costs about $390,000 including taxes. This is the same cost as a lease for just over 3 years. Given the 25-year life expectancy for this type of equipment, staff recommends purchase of the equipment as being more economical than leasing.

**FINANCIAL/STAFFING/LEGAL IMPLICATIONS:**

**Financial**

The replacement of this unit was authorized in the 2006 Capital Replacement Program at an estimated cost of $322,000. The balance of funds will be transferred from units deferred to the 2007 Replacement Program.

**Legal**

N/A
Staffing
N/A

POLICIES AFFECTING PROPOSAL:

Purchasing Policy Section 4.11 - Negotiation permits the City of Hamilton to negotiate with the vendor of a product where a single source is more beneficial to the City. Council approval is required for a single source procurement of $250,000 or more.

Purchasing Policy Section 4.14 - Standardization to meet common needs in road maintenance operations.

RELEVANT CONSULTATION:

City of Hamilton Departments:

Public Works, Operations & Maintenance Division, Road Operations & Maintenance Section
Corporate Services, Financial Services, Purchasing Section

CITY STRATEGIC COMMITMENT:

By evaluating the “Triple Bottom Line”, (community, environment, economic implications) we can make choices that create value across all three bottom lines, moving us closer to our vision for a sustainable community.

Community Well-Being is enhanced. ☑ Yes ☐ No
A modern fleet increases community acceptance and support for Public Works programs.

Environmental Well-Being is enhanced. ☑ Yes ☐ No
This equipment will be equipped with the latest engine exhaust emission reduction technology.

Economic Well-Being is enhanced. ☑ Yes ☐ No
Public roads and lands that are properly maintained and kept in good repair are necessary to enhance economic well being.

Does the option you are recommending create value across all three bottom lines? ☑ Yes ☐ No
The delivery of efficient Public Works programs is maintained by replacing equipment at proper intervals, considering factors such as the impact of extending use beyond the most economic replacement point, environmental improvement and maintaining a state of good repair.

Do the options you are recommending make Hamilton a City of choice for high performance public servants? ☑ Yes ☐ No
The recommendation continues to make Hamilton a City of choice for high performing public servants. The maintenance and safety of our roads should demonstrate excellence in the area of service delivery through a high quality, well equipped workforce that takes pride in their efforts and in the community where they live. The implementation of a maintenance program based on cost-efficiency and job excellence makes the purchase of proper equipment necessary.
Appendix “A” to Report PW06096

GRADALL
XL 4100 II
HYDRAULIC EXCAVATOR

SPECIFICATIONS

Undercarriage

6 x 4 or 6 x 6
Wheelbase: 171” (4344mm)
Width: 102” (2590mm)
Frame: 48” (1220mm) wide, welded plate design
50 ksi material
Gross vehicle axle weight rating:
6 x 4: 80,000 lb (36285 kg)
6 x 6: 82,000 lb (37223 kg)
Front axles:
6 x 4: Mentor Model FG-941, 14,000 lb (6353 kg) rating
6 x 6: Mentor Model FF-16-145, 16,000 lb (7258 kg) rating, 7:1 ratio
Rear axle:
Mentor Model RT-48-160, 48,000 lb (21668 kg) rating, 7:1 ratio, single reduction with drive controlled differential lock in front/rear and interaxle differential with lock.
Suspension:
Front: 8 leaf spring with automatic lock-out cylinders
Rear: Hendrickson Equalizer Beam, 8’ oscillation

Brakes:
6 x 4 Front: Mentor “O” Series Cam-Master
Size: 16.5” x 6” (419 mm x 152 mm)
Automatic Slack Adjusters
6 x 6 Front: Mentor “O” Series Cam-Master
Size: 16.5” x 6” (419 mm x 152 mm)
Automatic Slack Adjusters
Rear: Mentor “P” Series Cam-Master
Size: 16.5” x 7” (419 mm x 178 mm)
Automatic Slack Adjusters

Steering:
Ross, integral hydraulic power steering
Gear type power steering pump, 4-quart power steering reservoir with filter

Standard chassis equipment:
Halogen headlamps, tilt lights, back-up lights and alarm, stoplights, identification lights front and rear, directional lights, 4-way hazard lights, and instrument panel lights.
Windshield wiper/washer, wheel wrenches, West Coast style mirror system with plane and convex mirrors, front and rear low hooks, desiccant type air dryer with automatic purge valve and thermostatically controlled heater.

Hydraulic System

PUMPS
One load-sensing axial piston pump; 0-77 GPM (0-291 L/min) total.

SYSTEM SPECIFICATIONS
Four double acting cylinders
- 2 boom hoist: 425” ID, 3.15” rod (1080 mm x 80 mm), 31’ (9457 mm) stroke
- 1 track: 60” ID, 3.7” rod (1524 mm x 94 mm), 22’ (6697 mm) stroke
- 1 telescope: 35” ID, 2.65” rod (889 mm x 67 mm), 12’ (3657 mm) stroke
Four hydraulic motors
Swing: 68 Hp (51 kW), tilt: 21’ Hp (16 kW), two remote drive, 85’ Hp (63 kW) total.

Operating pressures:
Hoist: 4700 psi (32.4 MPa)
Tilt: 4200 psi (29.3 MPa)
Swing: 4200 psi (29.3 MPa)
Toil: 4700 psi (32.4 MPa)
Telescope: 4700 psi (32.4 MPa)
Remote Pedal: 3500 psi (24.2 MPa)
Pilot system: 500 psi (3.5 MPa)

Oil capacity:
Reservoir 37 gallons (140 L), system 55 gallons (208 L), pressurized reservoir with visual oil level gauges.

Filtration system
10 micron return filter with magnet.
Fin and tube-type oil cooler with thermostatically controlled cooling fan.
Pressure-compensated, load-sensing valves with circuit reliefs in all circuits.

Chassis Cab

Upperstructure Cab
All-weather cab isolated from frame on rubber mounts. Tinted safety glass windows. Skylight, acoustical lining, four-way adjustable operator's seat, dome light, filtered air heater and defroster.
The heat source is provided by a two response, closed circuit hydraulic heater with 20,000 BTU/HR capacity.
Front window slides to overhead storage. Rearview mirror on right and left sides of the machine. Windshield wiper and washer.

Hydraulic Remote Control
Undercarriage powered by upperstructure hydraulic through hydraulic motors and PTOs on transmission. Travel and steering pedals in upperstructure cab. Digging brakes and front axle lockout cylinders set automatically with travel pedal in neutral. Parking brakes controlled by toggle.
Electrically operated alarms mounted on undercarriage signal remote control movement in either direction, reverse movement when driven from undercarriage cab.
**Engine**


**Air Filter:** 2-stage dry type with safety element, ejector valve and service indicator.

**Electrical System:** 12 volt, 100 amp alternator with integral voltage regulator. 2 SAE #C31-8 810 CCA batteries.

**Cooling System:** Fan and tube radiator with fan shroud. 8 blade, 26” diameter fan. Engine charge air cooler mounted in front of radiator. Transmission oil cooler mounted in front of radiator below charge air cooler.

**Fuel Tank Capacity:** 70 gal (265 L)


**Gear Speeds:**

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<tr>
<th>Gear</th>
<th>MPH/hr</th>
<th>Km/hr</th>
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<tr>
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<td>3.1</td>
<td>4.9</td>
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<td>2</td>
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<td>62.7</td>
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<tr>
<td>9</td>
<td>53.4</td>
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**Clutch:** Hydraulic actuated. Spicer Model 107, pull type. 14” dia, 2-plate, organic disc.

**Drivelines:** Spicer 1760 Series with “Half Round” yokes.

**Transfer Case:** (6 x 6 only) Meritor Model T-2111HD, 1:1 ratio, 3 shaft single speed. With air operated front axle disconnect.

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**Upperstructure Controls**

Two hydraulic joysticks (front & bucket, telescope & swing), one rocker switch (lift) control upperstructure. Hydraulic joysticks are mounted on arm boards that are adjustable for individual operator comfort and convenience. Quick change joystick pattern with decals is standard.

Two foot pedals for remote control of undercarriage steering, travel and digging brakers. Rocker switch on control panel selects low speed or high speed remote travel.

Joysticks and pedals are self-centering; when controls are released, power for movement disengages and swing and travel brakers set automatically.

**Engine Controls**

Key ignition switch with neutral and indicator lights for low air, engine status, park brake, travel status, hydraulic filter condition and hydraulic fluid temperature and level.

Automatic engine shut down occurs with low oil pressure or high coolant temperature.

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**Swing**


**Swing brake:** Automatic spring-set/hydraulic release wet disc parking brake. Dynamic braking is provided by the hydraulic system.

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### GRADALL Model XL 4100 II Lift Capacity Over Side or Rear - LB. (KG.)

**LOAD POINT & HEIGHT**

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<thead>
<tr>
<th>LOAD POINT &amp; HEIGHT</th>
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<tr>
<td></td>
<td>MINIMUM</td>
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<td>INCHES</td>
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<td>FEET</td>
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<td>22 1/2 in.</td>
<td>22 1/2 in.</td>
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<tr>
<td>Above Ground Level</td>
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<tr>
<td>1 1/2 in.</td>
<td>5205 lbs.</td>
<td>2370 kg.</td>
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<tr>
<td>1 1/2 in.</td>
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<td>At Ground Level</td>
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NOTE: The loads shown are in compliance with SAE standards J1097 NOV. 88. They do not exceed 87% of the hydraulic lifting capacity or 75% of the tipping capacity.

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**NOTE:** The loads shown indicate the load is limited by tipping rather than hydraulic lift capacity.

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The rated lift capacity is based on the machine being equipped with 7500 lbs (3400 kg) counterweight, standard boom and no bucket. Adjust the rated lift capacities according to each bucket as follows:

- **8065-6007:** 60" (15m) Ditching - 8200 lbs (3700kg)
- **8065-6006:** 60" (15m) Ditching - 8200 lbs (3700kg)
- **8065-6002:** 72" (18m) Ditching - 9750 lbs (440kg)
- **8065-6220:** 24" (610mm) Excavating - 5600 lbs (25kg)
- **8065-6261:** 30" (762mm) Excavating - 6600 lbs (30kg)
- **8065-6222:** 36" (914mm) Excavating - 7500 lbs (34kg)
- **8065-6123:** 42" (1118mm) Excavating - 8400 lbs (380kg)
- **8065-6124:** 48" (1219mm) Excavating - 9600 lbs (430kg)
- **8065-6213:** 72" (18m) Ditching - 11000 lbs (5000kg)
- **8065-6112:** 40" (1016mm) Vibrator - 12800 lbs (580kg)
- **8065-6224:** 8" (243mm) Blade - 3300 lbs (285kg)
- **8065-6209:** 24" Single Tooth Ripper - 2200 lbs (320kg)

**NOTE:** Bucket adjustment values are 87% of the actual bucket weights.

**The load point is located on the bucket pivot point, including load listed for maximum radius.**

Do not attempt to lift or hold any load greater than these rated values at specified load radii and heights. The weight of slings and any auxiliary devices must be deducted from the rated load to determine the net load that may be lifted.

**ATTENTION:** All rated loads are based on the machine being stationary and level on a firm supporting surface. For safe working loads, the user must make allowance for his particular job conditions such as soft or uneven ground, out of level conditions, side loads, hazardous conditions, experience of personnel, etc. The operator and other personnel must fully acquaint themselves with the Operator’s Manual furnished by the manufacturer before operating this machine. Rules for safe operation of equipment must be adhered to at all times.