



CITY of NOVI CITY COUNCIL

**Agenda Item G
September 26, 2016**

SUBJECT: Approval to purchase a Zamboni 546 ice resurfacer for the Novi Ice Arena from Frank J. Zamboni & Co., Inc., a sole source, in the amount of \$98,440.30.

SUBMITTING DEPARTMENT: Parks, Recreation and Cultural Services/Novi Ice Arena

CITY MANAGER APPROVAL: *[Signature]*

EXPENDITURE REQUIRED	\$ 98,440.30
AMOUNT BUDGETED	\$ 99,000.00
APPROPRIATION REQUIRED	\$ 0
LINE ITEM NUMBER	590-000.00-969.006

BACKGROUND INFORMATION: City Council approved the purchase of one Zamboni ice resurfacer for Novi Ice Arena in the FY 2016-17 Capital Improvement Program budget to replace an aging 1998 Zamboni 500 unit that has had more than 8,000 hours of use. The 1998 Zamboni 500 will be traded in for \$16,000, which will be placed into a Novi Ice Arena revenue account. The net cost for the new Zamboni is \$82,440. The new Zamboni will allow ice arena staff to keep the two ice rink surfaces smooth for facility programming and rentals.

The new Zamboni 546 model being recommended for purchase has a 200-gallon capacity ice-making water tank and runs on a Kubota 1.6-litre engine. The Zamboni 546 is engineered to meet or exceed OSHA and ANSI requirements. Purchase includes a 24-month or 2,000-hour parts replacement warranty.

Due to the ceiling height in the location where the machine has to offload the shaved ice, we are limited to purchasing Zamboni machines.

RECOMMENDED ACTION: Approval to purchase a Zamboni 546 ice resurfacer for the Novi Ice Arena from Frank J. Zamboni & Co., Inc., a sole source, in the amount of \$98,440.30.

	1	2	Y	N
Mayor Gatt				
Mayor Pro Tem Staudt				
Council Member Burke				
Council Member Casey				

	1	2	Y	N
Council Member Markham				
Council Member Mutch				
Council Member Wrobel				

June 15, 2016

Kris Barnes
Novi Ice Arena
42400 Nick Lidstrom Drive
Novi, MI 48375

PROPOSAL

MODEL: **Zamboni 546**

QUANTITY: **One (1)**

CAPACITY: **Full Size**

- Snow Tank
100 cubic feet (actual volume)
120 cubic feet (compacted)
- Ice Making Water Tank
Constructed of High Density Polyethylene
200 U.S. gallons
Wash Water System (optional)
Constructed of High Density Polyethylene
82 U.S. gallons
Total Water Capacity
282 U.S. gallons

ENGINE: **Kubota 1.6 Litre**

- Four cylinder, 57 HP, 16 valve double overhead cam, 88 ft. lbs of torque, hydraulic valve lifters, liquid cooled
- Timing belt with automatic belt tensioners, 5 main bearings, full-flow oil filter system for long life and ease of maintenance
- Advanced electronic ignition system
- Meets or exceeds CARB/EPA 2012 standards
- Fuel choices LPG or Gasoline
- Load sensing electronic governor enables true "hands-free" engine operation by driver
- On-board engine diagnostic system with fault code readout via dash lamp or diagnostic computer

TRANSMISSION: Sauer-Danfoss Hydrostatic Pump and Motor

- Continuously variable pump and motor and axial piston-type and offer volumetric efficiencies as high as 95%.
- Maximum drawbar pull even at low speeds and full hydrodynamic braking.
- Allows the use of a smaller and more efficient engine while still providing superior on-ice power.
- Hydrostat enables the conveyor augers to operate at full speed, regardless of vehicle speed, even when slowing for corners.

DRIVETRAIN: Dana/Spicer Axles

Model 44 Front-rated 4,300 lb.

Model 60 Rear-rated 6,400 lb.

- Rear axle is a rigid full-float design
- Because the 546 uses Spicer/Dana axles that are optimized for our chassis, we offer the industry's highest manufacturer approved axle capacities.
- Our chassis/axle combination is the key to the Zamboni 546 having a turning radius of 16 feet. This is a full 3 feet tighter than most other machines.

Hub City Transfer Case

- Rugged cast iron housing for rigid gear and bearing support. Heat-treated alloy steel gears are helical cut for greater strength and lower noise.
- Hydrostatic motor is wet-mounted to housing for long shaft life.

Chassis

- 2" X 5" structural steel tubing for high strength and long service.

HYDRAULICS: Sauer-Danfoss Turolla Pump and Permco Motors

- High efficiency gear type double pump has separate pump sections for vertical and horizontal augers for the best conveyor performance in the industry. Priority flow divider provides steering circuit.
- Pump is directly mounted to the engine for trouble free service. No belts or pulleys.
- Motors are high efficiency gear type with cast-iron bodies and case drain.

- HYDRAULICS:**
- Hydrostatic transmission features loop flushing which provides fresh fluid from tank to hydrostat for enhanced performance and cooler operating temperature.

Filtration and Tank

- Two hydraulic filters (1) 20 micron return line and (1) 10 micron hydrostatic charge loop, ensure a clean environment for all hydraulic components.
- Large 21-gallon tank enhances hydraulic fluid travel to rid the oil of entrapped air and increase heat dissipation.

**SNOW TANK
AND AUGERS**

- Large snow capacity and a tank design that provides all areas of the tank to be completely filled, even the top rear corners.
- The 546's snow tank incorporates a smooth bottom and sides, allowing for the snow to slide out with the least amount of residue and at a much lower height.
- Both 10-inch large diameter augers are double-flighted to ensure good performance even during heavy shaving and the augers are teflon coated for durability.

CONDITIONER:

- Zamboni Ice Resurfacers have a well-deserved reputation for producing the finest sheet of ice, even after many years of being in use.
- A unique and patented design of spring and hydraulic down pressure is used for superior shaving results.
- Performance will continue for the life of the machine by using replaceable bushings and springs.

HUMAN

ENGINEERING:

- The operation of the 546 is very simple. The operator sets the engine speed with the "hands-free" governor and drives the machine with a foot control. However, unlike an automotive transmission, the 546 will provide full power and speed to the augers at all times, even while slowing for corners. And the 546 will ensure the snow tank is compacted and completely filled.
- Speed is controlled by the single foot pedal equipped with a "dead-man" safety feature to dynamically brake the vehicle to a stop if the operator's foot leaves the pedal.
- Operator compartment ergonomically designed including steering wheel with a spinner knob.

HUMAN

- ENGINEERING:**
- Engine and hydraulic compartment is easily accessed through both side doors for daily maintenance checks, even with the snow tank down.
 - Wiring and looms are well routed and protected. Wires are individually labelled for easier service and trouble-shooting.

FACILITY

- ENGINEERING:**
- Zamboni Ice Resurfacers offer unparalleled shaving and snow conveyor performance. A quality sheet of ice is among an arena's primary selling features.
 - Zamboni has the tightest turning radius in the industry, enabling operators to resurface deeper into their corners.
 - The snow tank on the 546 is designed in an enlarged package with a flat bottom and sides. This gives the 546 a low front-dumping height. This is important for both dumping indoors as well as outdoors in adverse conditions.
 - Our unique engine and hydrostatic transmission enables the 546 to use a smaller, more efficient engine and can provide significant fuel savings.
 - Industry Reports have recommended that arena ventilation be determined by horsepower of the ice resurfer, which is over half of larger engines used in the competitor's machine. This can translate to considerable energy and facility savings.

MANUFACTURER'S

STATEMENT: The 546 is proudly designed and manufactured by Frank J. Zamboni & Co., Inc., in the United States of America.

WARRANTY: Twenty four (24) months or 2,000 hours, parts replacement only.

SAFETY

STANDARDS: The 546 is engineered to meet or exceed O.S.H.A. and A.N.S.I. safety labelling requirements.

Zamboni Replacement Pictures



Picture of the profile of the 1998 Model 500 Zamboni Ice Resurfacing Machine



Picture of the front end of the 1998 Model 500 Zamboni Ice Resurfacing Machine



THE PERFECT BALANCE OF POWER AND EFFICIENCY

The clear choice for proven hydrostatic performance and significant fuel savings resulting in the industry's lowest emissions and a cleaner arena environment.

**MODEL
546**



POWER AND EFFICIENCY

The compact 1.6 L high output engine can be configured for gasoline or propane. On-board diagnostics with programmed oil change and maintenance intervals.



TRANSMISSION

Continuously variable hydrostatic pump and motor are axial-piston type, providing superior on-ice power with maximum drawbar pull. Full hydrodynamic braking.



DRIVETRAIN

Four-wheel drive. Rugged Dana Spicer® axles combine with an innovative hydrostatic transmission, providing the most reliable drivetrain in the industry.



HYDRAULICS

Efficient double pump delivers full power and speed to the augers, even while the machine slows for corners. Easy to access high quality, low maintenance filters.



CONSTRUCTION

Robust hand-welded steel tubing chassis. Premium primer/paint and rust-free poly water tanks for corrosion resistance in the harsh environment it will call home.



GLOBAL SERVICE AND SUPPORT

Zamboni Customer Service and a network of Zamboni Authorized Distributors provide exceptional and accessible service and support worldwide.



Industry-leading fuel economy, reduced emissions and the lowest cost of operation for significant savings



Ease of operation with familiar automobile style controls and gauges



Exceptional results from our unrivaled down pressure system

MODEL 546



This brochure has been prepared only as a general guide for the customer. Every effort has been made to assure that the information presented is correct. Some features described or shown may be optional at extra cost. Prices, colors, materials, specifications and models are subject to change. For current product information, please contact the Zamboni Company.

ZAMBONI

zamboni.com

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WHY FACILITY OPERATORS CHOOSE **ZAMBONI**

**MODEL
546**

1

★ ★ ★ ★ ★
**50
YEARS**
★ ★ ★ ★ ★

OF PROVEN **DRIVETRAIN AND HYDROSTATIC PERFORMANCE**

Five decades ago, Zamboni introduced the hydrostatic transmission to the world of ice resurfacing. Recognized as the most reliable drivetrain in the industry, our hydrostatic technology affords industry-leading fuel economy and the lowest emissions.

2

34% MORE POWER
per liter than leading competitor

31.0 HP/L
23.1 kW/L
**ZAMBONI
MODEL 546**

18.6 HP/L
13.9 kW/L
OTHERS

Highest power density in a compact engine package. Maximum power delivered to components when and where it is needed.

3

BEST VALUE RETENTION



The highest residual value speaks to the quality of each machine's construction and durability. Easy to maintain and service with simplicity by design. The industry's lowest cost of operation is yet another reason why Zamboni remains the leader.

4

COMMITMENT TO QUALITY

Our machines are built by hand, one at a time. We continually challenge our product, putting it to the test in the harsh environment it will call home. With machines designed for the needs of facilities large and small; recreational and professional:

**ZAMBONI IS
THE CLEAR CHOICE.**

