



Board Report

File #: 2021-0592, **File Type:** Contract

Agenda Number: 19.

**OPERATIONS, SAFETY, AND CUSTOMER EXPERIENCE COMMITTEE
OCTOBER 21, 2021**

SUBJECT: AUTOMATED STORAGE AND RETRIEVAL SYSTEM (ASRS) UPGRADE

ACTION: APPROVE CONTRACT AWARD

RECOMMENDATION

AUTHORIZE the Chief Executive Officer to award a single source, 24-month, firm fixed price Contract No. PS76506000 to Dematic Corporation, for a total amount of \$3,396,686, inclusive of sales tax subject to resolution of protest(s), if any.

ISSUE

This procurement will upgrade the Automated Storage and Retrieval System (ASRS) and replace obsolete components that are at the end of their useful life.. The upgraded ASRS will mitigate against the interruption of material and supply flow from the Central Warehouse and Distribution Center to Bus and Rail Storerooms and support Metro’s State of Good Repair for on time Metro bus and rail operations.

BACKGROUND

ASRS automates pick up, move, store, and retrieve inventory at the Central Warehouse and Distribution Center. This system consists of Unit Load (pallet sized) and Mini-Load (bin sized) storage and retrieval machines with access to over 42,000 cubicles of storage space. Each storage and retrieval machine has a chassis and a rigid mast with an elevating platform. A shuttle extends in and out of the storage rack opening to pick up or deposit loads on each platform. Along with automated pallet conveyors, these machines automate storage and retrieval of bus and rail parts and supplies, supporting the flow of material from the Central Maintenance Facility to Bus and Rail Storerooms across Metro.

The ASRS system was commissioned in 1986 by HK Systems Incorporated, which Dematic acquired in 2010. Within the last 35 years, ASRS went through several upgrades (2006, 2007, 2013 and 2015) to replace the original components and perform system updates.

ASRS has been successfully maintained and serviced by the OEM and more recently by Metro personnel to achieve 98% uptime. Unfortunately, Unit Load Storage and Retrieval Machine Direct Current (DC) Drives and Motors are no longer manufactured and supported by the OEM, and there

are limited spares for replacements. Shuttles on the Storage and Retrieval machines as well as the pallet conveyors are currently over 35 years old and have never been replaced. As these components are at the end of useful life, any failure would cause a significant risk to Metro.

Operational Impacts in Current State

- Increased maintenance costs for end-of-life ASRS components
- Increased maintenance time for Facilities Maintenance technicians

Foreseeable Risks in Current State

- Inability to efficiently deliver parts to bus and rail facilities
- Inability for bus and rail maintenance technicians to perform preventative maintenance and unplanned maintenance required to keep bus/rail fleet at targeted operational levels
- Loss of inventory control and increased working capital needs agency-wide

DISCUSSION

The ASRS upgrade project will eliminate obsolete parts from the Storage and Retrieval machines and modernize the system for sustainable operation. This project will be executed in multiple phases to minimize cost and transit service impacts.

Phase 1 - Storage and Retrieval Machine (SRM) Control System and Ethernet

Communications - To upgrade the obsolete DC motors and drives in the Unit Load Storage and Retrieval Machines to Alternating Current (AC) Drives and Motors. The Programmable Logic Control (PLC) will work with the new AC motors and drives. The new upgraded ethernet communications will enable remote monitor and troubleshoot the storage and retrieval machines.

Phase 2 - Replacement Shuttles for the six Unit Load Storage and Retrieval Machine - The vendor will design, fabricate, install, and test replacement shuttles for the Unit Load Storage and Retrieval Machines.

Phase 3 - Pallet Conveyor Replacement and Pick-Up and Delivery Stand Photo Eyes - The vendor will replace 19 conveyors that support shipping & receiving and the Mini-Load Storage and Retrieval Machines. Additionally, 75 obsolete photo eyes will be replaced by photo sensors.

Phase 4 - Spare Parts/Accessories Analysis - The vendor will develop a recommended Spare Parts List for the specific scope integrated in phase I, II and III, which will be provided to Metro during the project for future parts consideration.

Dematic is the original equipment manufacturer (OEM) for Metro's ASRS system. They are also responsible for ongoing support and warranty to Metro for this system. The ASRS utilizes Dematic's proprietary components, communication protocol, controls and interface logic between the server and the system components, only the OEM can perform the equipment upgrade and software support; there is no third party option available.

Metro requested the vendor to propose the best overall solutions in the Scope of Work (SOW). Dematic identified the new technology components to replace the items listed on the SOW and provided options on the proposal. Spare Parts Analysis option will replace the phase 4 in SOW to analyze Metro's current spare parts inventory compared to the existing and soon-to-be-upgraded systems in each phase to avoid delay and save time.

DETERMINATION OF SAFETY IMPACT

Unless the system is brought up to current operational standards, the Central Warehouse and Distribution Center may experience long periods of downtime (stoppage of robots and cranes used to retrieve inventory) requiring that the retrieval and storage of parts be performed by staff. Many of these areas have limited access and require extensive climbing and reaching. Prolonged exposure to these conditions could increase the likelihood of injury.

FINANCIAL IMPACT

Funding of \$1,339,133 for phase 1 of this action is included in the Adopted FY22 Budget. This procurement is included within the Life-of-Project budget of \$3,865,000 for the "ASRS Upgrade" (Capital Project 209073). Since this is a multi-year contract, the Cost Center Manager and Executive Officer will be accountable for budgeting the cost in future years, including any option exercised.

Impact to Budget

The source of funds for project is from Transportation Development Act - Article 4. No other sources of funds were considered as these funds have been identified for this project. These funds are available for use on bus and rail operating and capital projects.

EQUITY PLATFORM

The ASRS upgrade project will benefit Metro Transit riders. The project will upgrade the ASRS system using the state-of-the-art technology and bring the system to meet the demand of expanded ridership. The upgraded system will enable on time parts receiving/delivery and accurate inventory control to Metro divisions for timely Buses/Rail cars repair and maintenance. Reliable bus/rail service will ensure riders, have dependable transportation for their daily essential activities. This project will improve Metro bus and rail reliability, reduce unexpected service interruption, and provide better rider experiences. There are no potential harm and barriers anticipated as a result of the proposed action. The project provides a state-of-the-art transit experience for our riders, most of whom are BIPOC and low-income.

A Small Business Enterprise (SBE) goal was not recommended for this non-competitive proprietary

system upgrade project based on the lack of subcontracting opportunities. Dematic Corporation owns the proprietary intellectual property behind the ASRS system, and is the only firm that can perform work on this system.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

Improved Customer Information supports Metro Vision 2028 Strategic:

Metro Vision 2028 Plan Goals	Relationship to Project
1. Provide high quality mobility options that enable people to spend less time traveling	1.2 - Optimize the existing system's speed, reliability, and performance by revitalizing and upgrading Metro's transit assets.
5. Provide responsive, accountable and trustworthy governance	5.2 - Metro will exercise good public policy judgment and sound fiscal stewardship

ALTERNATIVES CONSIDERED

Metro does not possess the technical knowledge and/or documentation to support the in-house replacement of components or performing upgrades. The system integrates with Metro's enterprise applications and is considered complex with its own proprietary functions/logic. Any alternative(s) to engage other competitors would require levels of reverse engineering for both the hardware and software interfaces adding significant time to the schedule, the introduction of warranty/performance issues, and unknown additional costs associated with the engineering to be performed. Dematic is the Original Equipment Manufacturer (OEM) and only Dematic is authorized to perform the necessary upgrades effectively and in a timely manner. Introducing a competitor would put Metro at significant risk of project failure and system downtime if the system and processes do not properly function as required, or ultimately fail.

Another alternative is to consider replacing the entire system; however, this will also add significant time to the project, presenting a significant learning curve and training costs, and add considerable financial impact as a new similar system is estimated to be in the \$30 million range.

NEXT STEPS

Upon approval by the Board, staff will execute the contract and the ASRS Upgrade will occur over a twenty-four month period following award.

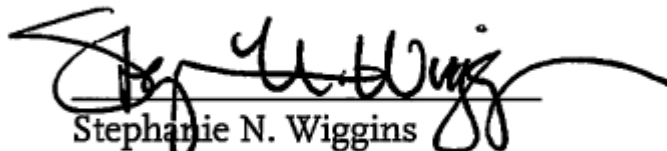
ATTACHMENTS

Attachment A - Procurement Summary

Attachment B - DEOD Summary

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