

**PORT OF SEATTLE**  
**MEMORANDUM**

**COMMISSION AGENDA**  
**ACTION ITEM**

**Item No.** 6a  
**Date of Meeting** February 25, 2014

**DATE:** February 18, 2014

**TO:** Tay Yoshitani, Chief Executive Officer

**FROM:** Mike Ehl, Director, Airport Operations  
Wayne Grotheer, Director, Aviation Project Management Group

**SUBJECT:** Runway 16 Center/34 Center (RW 16C/34C) Reconstruction (CIP #C800406) at Seattle-Tacoma International Airport

<b>Amount of This Request:</b>	\$10,408,000	<b>Source of Funds:</b>	Airport Development Fund
<b>Est. Total Project Cost:</b>	\$102,863,000		FAA Grants and Future Revenue Bonds
<b>Est. State and Local Taxes:</b>	\$7,545,000		

**ACTION REQUESTED**

Request Commission authorization for the Chief Executive Officer to (1) direct staff to proceed with project management, design, and preparation of final construction documents for the RW 16C/34C Reconstruction project at Seattle-Tacoma International Airport; (2) execute a contract for an automated foreign object debris (FOD) detection system; (3) perform advance preparatory work to include the advertisement and execution of a contract to install a temporary traffic signal on S. 154th St.; (4) enter into one or more agreements with the Federal Aviation Administration (FAA) for the evaluation of impacts, relocation of utilities, installation of runway lighting, performance of flight checks, and other support needed as part of the RW 16C/34C reconstruction project; and (5) approve use of a Project Labor Agreement (PLA) for the RW 16C/34C reconstruction project. The amount of this request is \$10,408,000 of a total estimated project cost of \$102,863,000.

**SYNOPSIS**

This request for authorization is needed for the reconstruction of RW 16C/34C that is now scheduled to begin in 2015, a year earlier than previously planned. The decision to advance the reconstruction by a year was the result of discussions between the FAA and Port of Seattle staff and concern over the high number of concrete panel patches in the aging pavement that could dislodge and become a safety issue to aircraft. The authorization will allow the design for the RW 16C/34C reconstruction to progress from the previously authorized 60% design level to the final preparation of construction documents. It will allow the Port to advertise for and select an automated FOD detection system so that necessary infrastructure can be included in the subsequent, primary major construction contract. The authorization will allow the Port to design, advertise and execute a contract to install a signal on S. 154<sup>th</sup> St. to control traffic and provide for

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the efficient and safe transport of materials needed for the RW 16C/34C reconstruction and possibly also benefit the cargo enhancement projects to be constructed in 2014. There are a number of items that are currently being coordinated with the FAA including potential utility relocation, runway lighting, flight checks, and other emergent items. This authorization will allow the Port and the FAA to enter into one or more agreements for reimbursement of costs by both parties.

Port staff anticipates returning to the Commission in December 2014 to request funds and authorization to advertise and execute a major construction contract for the RW 16C/34C reconstruction project. Port staff also anticipates returning to the Commission for authorization to enter into an agreement with the City of Burien for a coordinated project that would include the Port's prior commitment to the Washington State Department of Transportation to restore the SR-518 and Des Moines Memorial Way interchange eastbound on-ramp once the modifications for the haul route are no longer needed.

Port staff recommends entering to a PLA for the RW 16C/34C reconstruction project to ensure labor force continuity and stability and facilitate the timely and efficient completion of the construction project.

The project is included in the 2014 – 2018 capital budget and plan of finance. It is subject to airline approval via the majority-in-interest voting requirements of the airline lease and operating agreement and the pending vote is due by March 3, 2014. The project was reviewed with the airlines in December 2013.

## **BACKGROUND**

RW 16C/34C, with a length of 9,426 feet and width of 150 feet, was constructed as Portland Cement Concrete pavement in 1969, with a 20-year design life, and has currently lasted more than double its expected useful life. The Airport began a Runway Improvement Program in 1993, which was designed to rehabilitate and extend the useful life of the runway. That runway rehabilitation program continues through 2014. Of the approximately 4,300 concrete panels, 690 have been replaced since the beginning of the program. Once a panel begins to deteriorate, it can cause foreign object damage to aircraft, compromise directional stability, as well as cause wheel assembly damage. Deteriorating panels also allow water infiltration below the runway surface, which leads to erosion of the sub-surface and further pavement deterioration. The Runway 16 Left/34 Right (RW 16L/34R) reconstruction in 2009 resulted in most aircraft using RW 16C/34C for departures. Departures cause the greatest amount of stress on a runway. This additional use likely further stressed the runway panels.

Airport staff previously monitored the pavement conditions and evaluated when RW 16C/34C should be reconstructed. The runway was originally planned to be reconstructed in 2010, but was deferred to 2016 for budgetary reasons. The design of the reconstruction began in 2010 and the 60% design was finished in 2011. The intent of taking the project to a 60% design was to allow the project to proceed expeditiously to a full design and construction in the event that the runway condition warranted a replacement earlier than 2016. Even with the ongoing program to replace

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runway panels, there was no guarantee that the runway would last until 2016. In August 2013 after consulting with FAA, Airport staff decided to advance the start of the reconstruction to 2015 due to the high number of concrete patches (more than 2,000) that have been installed in the runway panels and the observance of patch failures. The 60% design is currently being updated to include added scope items such as runway blast pads to comply with FAA requirements, modification of taxiway H/J to reduce the potential for runway incursions, LED lighting, an automated foreign object debris (FOD) detection system, restoring the SR-518 interchange used as a haul route, and other miscellaneous items and should be complete in February 2014.

Current practice for FOD detection is based upon visual inspections and responding to reports of FOD on the runway. It is a reactive, rather than proactive, approach. As part of the project scope, automated FOD detection equipment will be installed that will be able to scan for and detect FOD on a real-time basis, which is not possible without employing new technology. The automated FOD detection system may provide coverage to other runway surfaces in addition to RW 16C/34C. According to FAA Advisory Circular on FOD detection equipment, the presence of FOD on airport runways, taxiways, aprons and ramps poses a significant threat to the safety of air travel. FOD has the potential to damage aircraft during critical phases of flight, which can lead to catastrophic loss of life and airframe, and increased maintenance and operating costs. FOD hazards can be reduced, however, by the use of FOD detection equipment and subsequent cleanup and repair.

Since November alone, staff has recorded six incidents of aircraft losing parts on the runways of the Airport. The smallest of these was a metal bolt. The heaviest was a wheel hub from an Airbus 330, which weighed approximately five pounds. The ability of detection equipment to identify FOD on the runway will provide a significant increase in airline and airport safety. Currently, there are different FOD detection systems that meet FAA Advisory Circular requirements. After evaluating several procurement methods, staff has determined that advertising and executing a contract using a best-bid approach for an automated FOD detection system before the advertisement of the main construction project is preferred to ensure that necessary, supporting infrastructure is included in the primary construction contract.

A temporary traffic signal on South 154<sup>th</sup> Street is planned to be installed for the haul route instead of using construction road flaggers. A traffic signal is more practical to meet the duration and potential for use of the haul route at night. The installation will be coordinated with the City of SeaTac. Since the City contracts with King County for signal maintenance, it may be necessary to restrict the signal components to those maintained by the local agency. The temporary traffic signal installation on South 154<sup>th</sup> Street should be installed prior to the prime contract in order to expedite construction hauling and improve safety. This work could occur through a small works contract administered by Port Construction Services or alternatively by agreement with the City of SeaTac and King County. An early installation may also benefit the cargo area improvement project that will be constructed in 2014.

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RW 16C/34C reconstruction includes numerous scope items that involve the FAA. Re-grading a berm located at the north end of the runway and revision of Taxiways H and J may possibly impact FAA utilities and may result in the relocation of the affected utilities. Flight checks will need to be conducted for re-opening RWs 16C/34C and 16L/34R in 2015 and for RW 16L/34R in 2016. One or more agreements with FAA will be needed for items including the relocation of utilities, installation of runway lighting, flight checks, and other support needed as part of the RW 16C/34C reconstruction project. The FAA and the Port are having ongoing discussions on the project and potential impacts to FAA facilities. An initial agreement with FAA will be required in order to evaluate the potential impacts and one or more subsequent amendments to the agreement will be executed to address any impacts that are identified. FAA processes require that the Airport provide funding to them before their evaluation can begin. Accordingly, a delay in moving forward with an agreement could result in a significant delay to the project.

Reconstruction of RW 16C/34C will require closure of the runway while work is accomplished. The FAA, pilot representatives from the airlines, and Port staff conducted a safety risk assessment for the construction activities and have determined that the temporary impact on aircraft operations is manageable.

## **PROJECT JUSTIFICATION AND DETAILS**

### ***Project Objectives***

- Provide a structurally sound runway for current and future customers
- Provide reliable and appropriate-sized infrastructure systems
- Minimize total lifecycle cost (capital and expense)
- Minimize operational impacts

### ***Scope of Work***

- Reconstructing the existing RW 16C/34C in its existing location for a 40-year service life
- Expanding the blast pads for RW 16C/34C and RW 16L/34R to comply with FAA standards
- Restoring of SR-518 interchange to be used as a haul route
- Installing a temporary traffic signal on South 154<sup>th</sup> Street for the haul route
- Re-grading a berm located at the northeast side of the blast pad on the north end of the runway that the FAA has identified as an obstruction
- Replacing the section of Taxiway C and Taxiway N that is located between RW 16C/34C and RW 16L/34R due to its deteriorated condition
- Reconfiguring Taxiways H and J to reduce the potential for runway incursions
- Replacing aging infrastructure
- Installing new runway and taxiway light systems with LED fixtures where feasible
- Revising the runway lighting control system

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- Marking airfield surfaces including thermoplastic taxiway intersections markings, runway hold line markings, surface painted holding position markings and enhanced taxiway centerline markings
- Building drainage filter strips for storm water treatment
- Installing automated foreign object debris (FOD) detection equipment
- Constructing a service road to an FAA Navigational Aid
- Evaluating and possibly adding Wi-Fi access points at taxiway intersections
- Coordinating with the FAA on their affected utilities, operational issues, navigational aids, and flight checks.
- Joint sealing of cross taxiways

### ***Schedule***

60% Updated Design	Feb 2014
Majority-in-Interest Vote	Mar 2014
Final Design	Oct 2014
Commission Authorization to Advertise and Execute a Contract	Dec 2014
Begin Construction	Apr 2015
Construction Complete	Nov 2016

## **FINANCIAL IMPLICATIONS**

### ***Budget/Authorization Summary***

Capital

Expense

Total Project

	Capital	Expense	Total Project
Original Budget	\$90,390,000	\$0	\$90,390,000
Budget increase	\$9,148,000	\$3,325,000	\$12,473,000
Revised budget	\$99,538,000	\$3,325,000	\$102,863,000
Previous Authorizations	\$669,000	\$0	\$669,000
Current request for authorization	\$10,008,000	\$400,000	\$10,408,000
Total Authorizations, including this request	\$10,677,000	\$400,000	\$11,077,000
Remaining budget to be authorized	\$88,861,000	\$2,925,000	\$91,786,000
Total Estimated Project Cost	\$99,538,000	\$3,325,000	\$102,863,000

### ***Project Cost Breakdown***

This Request

Total Project

	This Request	Total Project
Construction	\$6,300,000	\$78,616,000
Construction Management	\$300,000	\$7,147,000
Design	\$2,508,000	\$3,577,000
Project Management	\$1,000,000	\$3,180,000
Permitting	\$100,000	\$1,210,000
Central Procurement Office (CPO)	\$100,000	\$794,000
Administration (AD)	\$100,000	\$794,000
State & Local Taxes (estimated)	\$0	\$7,545,000
Total	\$10,408,000	\$102,863,000

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The expense items include restoring the SR-518 interchange (\$2.8 million), moving FAA-owned infrastructure and flight checks (\$500,000) and training (\$25,000) provided by the contractor. It is anticipated that all expense items except the training will be accounted for as public expense.

### ***Budget Status and Source of Funds***

This project is included in the 2014-2018 capital budget and plan of finance within CIP C800406 (design) and C800058 (construction) with a combined budget of \$90,390,000. Upon completion of the project notebook, the scope and budget was refined and the project was consolidated into CIP C800406. The budget increase was transferred from the Aeronautical Allowance CIP (C800404), resulting in no net change to the Airport capital budget. The funding sources will include the Airport Development Fund, FAA grants, and future revenue bonds. The Port plans to issue revenue bonds in 2014 to fund a number of projects. The FAA has indicated that in 2014 the Port can apply for and likely receive \$18.7 million in grant funds and that the Port may be able to apply for approximately \$7 million to \$8 million in additional grant funds in 2015.

### ***Financial Analysis and Summary***

<b>CIP Category</b>	Renewal/Enhancement
<b>Project Type</b>	Renewal & Replacement
<b>Risk adjusted discount rate</b>	N/A
<b>Key risk factors</b>	N/A
<b>Project cost for analysis</b>	\$102,863,000
<b>Cost Center</b>	Airfield Movement Area
<b>Effect on business performance</b>	NOI after depreciation will increase
<b>IRR/NPV</b>	N/A
<b>CPE Impact</b>	\$0.36 by 2017

### ***Lifecycle Cost and Savings***

The design life for modern concrete pavement is 40 years. The installation of new lighting systems will likely reduce repair costs. Thermoplastic markings and LED components will require less maintenance and frequency of replacement.

## **STRATEGIES AND OBJECTIVES**

This project supports the Port's Century Agenda objective of meeting the region's air transportation needs at Sea-Tac Airport for the next 25 years. Maintaining this critical runway asset is key to meeting this objective.

## **TRIPLE BOTTOM LINE**

### ***Economic Development***

Generally, there are no economic impacts related to renewal/enhancement projects since they are primarily related to preservation of existing business activity.

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### ***Environmental Responsibility***

Various sustainability practices will be considered during the runway redesign. These practices include, but are not limited to, the inclusion of energy efficient lighting (i.e. LED), performing a lifecycle analysis of materials used to ensure that resources being used and/or recycled are environmentally and economically practical; utilizing onsite water for dust control and irrigation; the reuse of materials such as concrete, asphalt, and soil; possible use of fly ash in concrete materials and employing low emission construction equipment.

### ***Community Benefits***

Maintaining an operating runway benefits both our airline customers and travelers. The project manager will collaborate with the Office of Social Responsibility in determining small business opportunities, in accordance with Small Business Resolution No. 3618, and to ensure Disadvantaged Business Enterprise participation goals, as described in the Port's DBE Program, as approved by the FAA.

## **ALTERNATIVES AND IMPLICATIONS CONSIDERED**

**Alternative 1)** – Do nothing: This alternative would continue to defer the replacement of RW 16C/34C. Concrete runway panels that show signs of impending failure would need to be replaced or patched on an ongoing basis in order to keep the runway operational. The risk of concrete patches dislodging or panels failing could result in a determination that RW 16C/34C is unsafe for aircraft operations and require closure of the runway. This is not the recommended alternative.

**Alternative 2)** – Complete final reconstruction design in 2014 and accelerate construction to 2015 for RW 16C/34C. The successful reconstruction will provide a structurally sound runway for current and future customers. **This is the recommended alternative.**

## **ATTACHMENTS TO THIS REQUEST**

- PowerPoint presentation

## **PREVIOUS COMMISSION ACTIONS OR BRIEFINGS**

- On May 4, 2010, The Commission authorized proceeding with project management, design, and preparation of 60% level construction documents for the future replacement of RW 16C/34C at Seattle-Tacoma International Airport. Pre-construction project cost to accomplish the 60% design was estimated at \$669,000.