

PORT OF SEATTLE
MEMORANDUM

COMMISSION AGENDA
ACTION ITEM

Item No. 5d
Date of Meeting May 28, 2013

DATE: May 20, 2013
TO: Tay Yoshitani, Chief Executive Officer
FROM: Mike Ehl, Director, Airport Operations
Wayne Grotheer, Director, Aviation Project Management Group
SUBJECT: North Satellite (NSAT)–Satellite Transit Station (STS) Ceiling Leak Long-Term Repair (CIP #C800609)

Amount of This Request: \$ 220,000 **Source of Funds:** Airport Development Fund and future revenue bonds
Est. State and Local Taxes: \$ 105,000 **Est. Jobs Created:** TBD
Est. Total Project Cost: \$1,750,000

ACTION REQUESTED:

Request Port Commission authorization for the Chief Executive Officer to design and prepare construction documents for the 2014 NSAT-STS Ceiling Leak Long-Term Repair Project in the amount of \$220,000. The total estimated project cost is \$1.75 million.

SYNOPSIS:

This project will eliminate ceiling leaks at the North Satellite (NSAT) that occur between the satellite transit station (STS) and the elevators. Rainwater currently infiltrates through the severely cracked topping slab. The existing water-proofing membrane between the topping slab and underlying structural slab is now over 40 years old and has exceeded its service life. There is also inadequate drainage to keep water from ponding on the slab. The combination of the cracked slab, inadequate drainage, and non-functional water-proofing membrane allows water to enter the interior of the NSAT at the STS lobby. Ceiling leaks create risk in an area with a high amount of passenger traffic that contains electrical and mechanical equipment, such as escalators. The timing of the project is critical to limit exposure of the interior of the STS lobby to weather while exterior components are being replaced. The design is to be completed by the first quarter of 2014 to allow construction to occur during the driest months of 2014. Although planned as an independent project, the construction phase could be included as part of the NorthSTAR program, which will remodel the entire North Satellite, should the construction schedules coincide. While it is unlikely this will be the case, staff wants to preserve the option to combine with NorthSTAR if possible. If the project proceeds as a stand-alone project, Port staff will return to the Commission in the first quarter of 2014 to request authorization for advertisement for construction bids and for construction funding.

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This project was not included in the 2013 – 2017 capital budget and plan of finance because the urgency of the project was not anticipated at the time the capital budget was prepared. The budget will be transferred from the Aeronautical Allowance and the funding sources will include the Airport Development Fund and an anticipated 2014 revenue bond issuance.

BACKGROUND:

The North Satellite was constructed in the early 1970s. As part of this project, a concrete topping slab was installed over a structural “waffle slab” at Gate N10. The original design had several design deficiencies. The existing topping slab is relatively thin, which has contributed to its now being severely cracked. The thin characteristic of the topping slab is inadequate to withstand the deflections from live loads applied to the underlying waffle slab. The original design did not provide a needed relief interlayer between the topping slab and the waffle slab that would help to prevent the topping slab from cracking. The drainage installed at the time was inadequate and is no longer functional. The combination of the thin topping slab; no interlayer; and deflection of the underlying waffle slab by live loads that approach the design limits of the structural slab, has resulted in significant cracking and failure of the topping slab. The asphalt waterproofing membrane that was originally installed between the topping slab and waffle slab is now more than 40 years old, and needs to be replaced. Currently, water ponds on the topping slab, enters the interior of the North Satellite STS lobby through the cracked topping slab and the failing water-proofing membrane, and drips from the ceiling onto the STS lobby floor and equipment such as the escalators.

The Aviation Maintenance Department has made previous attempts to eliminate the surface water from entering the terminal. Staff has removed the STS lobby ceiling panels and attempted to seal cracks from below, which has had limited success. Maintenance has also sealed cracks in the pavement slab at Gate N10, which helped reduce the amount of water entering the NSAT but the results have only been temporary. The placement of plastic buckets and sheets, as well as other measures within the NSAT, has been required to address the water entering the facility. There currently is risk to airline passengers, staff, and the infrastructure of the terminal from the water leaks.

The existing elevation of the waffle slab, airfield panels, and NSAT is a constraint on installing a thicker topping slab or interlayer that would help in preventing future cracking of a rigid topping slab. Accordingly, rigid and flexible pavement alternatives will be evaluated during the design for resistance to cracking, structural integrity, ease of maintenance, service life, and cost. Regardless of the pavement type selected, it is anticipated that future projects will need to replace the components at a more frequent interval than 40 years. The replacement interval will depend upon the weight and frequency of live loads applied to the waffle slab and the reasonably expected service life for the materials used to replace the original installation. Airline realignment is currently underway and it is anticipated that the heaviest tugs will not continue to use the area resulting in less live loads and deflections. This should help to increase the interval between future replacements.

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PROJECT JUSTIFICATION:

The failing topping slab, inadequate drainage, and aging water-proofing membrane in the vicinity of Gate N10 allows rainwater to enter into the interior of the North Satellite above the STS station and escalators. The presence of water in the STS lobby could present risk to Airport patrons, staff, and building infrastructure.

Project Objectives:

- Eliminate rainwater from infiltrating into the STS lobby that could present a risk to Airport patrons, staff, and infrastructure.

PROJECT SCOPE OF WORK AND SCHEDULE:

Scope of Work:

Produce a final design for preventing rainwater from pooling on the ramp pavement and leaking into the STS Lobby. The design will involve pavement replacement, drainage improvements, and installing a new waterproofing membrane.

Schedule:

Commission Design Authorization	May 2013
Begin Design	June 2013
Final Design	December 2013
Commission Authorization to Advertise and Construct	January 2014
Advertise	January 2014
Construction	July to September 2014

FINANCIAL IMPLICATIONS:

<i>Budget/Authorization Summary:</i>	Capital	Expense	Total Project
Original Budget	\$0	\$0	\$0
Previous Authorizations	\$0	\$0	\$0
Current request for authorization	\$220,000	\$0	\$220,000
Total Authorizations, including this request	\$220,000	\$0	\$220,000
Remaining budget to be authorized	\$1,550,000	\$0	\$1,550,000
Total Estimated Project Cost	\$1,750,000	\$0	\$1,750,000

<i>Project Cost Breakdown:</i>	This Request	Total Project
Construction	\$0	\$1,115,000
Construction Management	\$0	\$280,000
Design	\$140,000	\$140,000
Project Management	\$80,000	\$90,000
Permitting	\$0	\$20,000
State & Local Taxes (estimated)	\$0	\$105,000
Total	\$220,000	\$1,750,000

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Budget Status and Source of Funds:

This project was not included in the 2013-2017 capital budget and plan of finance. The budget of \$1,750,000 was transferred from C800404, Aeronautical Allowance, to C800609 North Satellite (NSAT)–Satellite Transit Station (STS); thus there is no change to the 2013-2017 capital budget. The funding source is the Airport Development Fund and future revenue bonds. The plan of finance assumes there will be a revenue bond issue in 2014 to fund a number of projects.

Financial Analysis and Summary:

CIP Category	Renewal / Enhancement
Project Type	Infrastructure Upgrade
Risk adjusted discount rate	N/A
Key risk factors	N/A
Project cost for analysis	\$1,750,000
Business Unit (BU)	Aeronautical – Apron Area Cost Center
Effect on business performance	NOI after depreciation will increase.
IRR/NPV	N/A
CPE Impact	\$0.01 by 2015 but no change to business plan forecast as this project was included.

Lifecycle Cost and Saving:

The lifecycle costs and savings will be established during design and will depend on the resurfacing material selected for the topping slab.

STRATEGIC OBJECTIVES:

Maintaining critical airfield assets supports the Port's Century Agenda objective to meet the region's air transportation needs at Sea-Tac for the next 25 years.

ENVIRONMENTAL SUSTAINABILITY:

During the design, various sustainable practices will be considered and implemented when practicable. These include, but are not limited to, performing a lifecycle cost analysis of materials for replacement of the topping slab.

BUSINESS PLAN OBJECTIVES:

This project furthers the Airport's business plan objectives to operate a world-class international airport by ensuring safe and secure operations and by managing our assets to minimize the total long-term cost of ownership.

ALTERNATIVES CONSIDERED AND THEIR IMPLICATIONS:

Alternative 1) Do nothing: This alternative would result in rainwater continuing to enter the interior of the STS lobby and require ongoing maintenance to try to limit the amount of water that enters. The presence of water on the floor in a high pedestrian traffic area could cause risk to Airport patrons and staff from slips and falls. Water leaking through the slab could potentially

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damage the interior and building infrastructure, such as the escalators. This is not the recommended alternative.

Alternative 2) Replace the topping slab and improve drainage: This alternative will remove and replace the failed concrete topping ramp slab at Gate N10, repair cracks in the underlying structural waffle slab, install adequate drainage, repair cracks in the waffle slab, replace the water-proofing membrane on top of the waffle slab, replace the topping slab with either asphalt or concrete pavement, and applying sealant. This alternative would best eliminate the potential risk to Airport patrons, staff, the interior of the NSAT, and electrical infrastructure. **This is the recommended alternative.**

OTHER DOCUMENTS ASSOCIATED WITH THIS REQUEST:

- Project Vicinity Map
- Photos

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS:

- None