

PORT OF SEATTLE
MEMORANDUM

COMMISSION AGENDA
ACTION ITEM

Item No.	6c
Date of Meeting	June 28, 2016

DATE: June 20, 2016
TO: Ted Fick, Chief Executive Officer
FROM: Wayne Grotheer, Director, Aviation Project Management Group
Eileen Francisco, Interim Director, Aviation Facilities and Capital Programs
SUBJECT: Early work package for North Terminals Utilities Upgrade Project (#C800717)

Amount of This Request:	\$7,271,000	Source of Funds:	Airport Development Fund and Revenue Bonds
Est. Total Project Cost:	\$21,335,000		
Est. State and Local Taxes:	\$1,514,000		

ACTION REQUESTED

Request Commission authorization for the Chief Executive Officer to (1) increase the North Terminals Utilities Upgrade (NTUU) project scope to include the creation of a piping loop to provide redundancy; (2) increase the project budget by \$11,385,000 for a revised total budget of \$21,335,000; (3) increase authorization by \$7,271,000 for a new total of \$9,271,000; (4) utilize Port crews and small works contracts to perform construction work; and (5) authorize the advertisement and award of a major works construction contract that will install the time critical sections of the utilidor(s) portion of the project.

SYNOPSIS

This project will replace and extend the existing 45-year-old undersized steam, condensate and chilled water supply and return piping from the Central Mechanical Plant to the North half of the Airport. The existing piping is undersized for current and future heating, venting and air conditioning (HVAC) loads. This project is required to supply HVAC to Concourses C & D, the expanded North Satellite that will be the result of that separate project, and the new north terminal facilities that may be built under implementation of the Sustainable Airport Master Plan (SAMP).

During the NTUU project 15% design development, the team developed a software model of the future HVAC pipe routing in order to identify interferences with the future baggage conveyance system to be constructed in the same area under the separate Baggage Optimization project. The model identified the areas of conflict and assisted the designers in developing the optimum and most constructible routing for the HVAC piping. The areas of severe congestion and conflict between the NTUU project and baggage optimization projects are the primary drivers for this early work project. This project installs the necessary HVAC piping utilidor(s) early to eliminate

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known conflicts with Phase 1 construction of the Baggage Optimization project that will begin in 2017. Port staff and the designer identified this early works project as the most viable alternative to improve the HVAC service on the C & D concourses and create the desired capacity and redundancy prior to Phase 1 construction of the Baggage Optimization project. The team has confirmed that attempting to install these utilidor(s) concurrently or after the Baggage Optimization phase 1 project is implemented will not be possible.

Completion of these piping system legs will complete a loop system and enable any part of the airport terminal to operate HVAC systems while being supplied from either of the South, West or North steam, condensate and chilled water supply and return loops creating full system redundancy. This system redundancy currently exists for Concourses A, B and the South Satellite. Completing this project will enable airport wide HVAC system redundancy for all Concourses and the North Satellite. The original scope of work for this project could not have been completed within the original project budget.

BACKGROUND

On April 28, 2015, the Commission authorized design of the NTUU project. The design authorization included a provision for staff to return to Commission proposing the addition of new scope to create a loop system if it became apparent during design that the creation of a loop could be completed in a cost effective manner and with demonstrated corresponding benefits.

PROJECT JUSTIFICATION AND DETAILS

The existing 45 year old undersized steam, condensate and chilled water supply and return piping, from the Central Mechanical Plant to the end of Mechanical Room Four then back to the Central Mechanical Plant is not capable of adequately heating or cooling concourses C & D. The same line will not have the capacity to support the planned expansion of the North Satellite nor any additional north terminal development contemplated in SAMP. The 15% design effort indicates that if portions of this project are not constructed prior to the Baggage Optimization programs planned construction activities, the ability to create a loop in the future will be lost. Furthermore, the existing piping does not provide a “loop” to the connection of the South and West loops at the Central Terminal.

Project Objectives

Accelerate the design and complete the utilidor construction for the NTUU project ahead of the Baggage Optimization program phase one construction.

- Accelerate design from 15% to 100% for the two time critical sections of the utilidor portion of this project.
- Advertise and award a major works construction contract to install the utilidor(s).
- Complete utilidor(s) construction prior to and with minimal impacts to the Baggage Optimization program phase one construction.
- Complete the remaining NTUU project design on the current schedule.

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- Return to Commission and request authorization to advertise and award a major works construction contract for the remaining NTUU project elements on the current schedule.

Scope of Work

Advertise and award a major works construction contract that will install two time critical utilidor sections of the project (early works) and all required supporting infrastructure.

Schedule

Accelerated early works design complete	3 rd Quarter 2016
Early works construction complete	3 rd Quarter 2017
Remaining design effort complete	2 nd Quarter 2017
Remaining project construction complete	2 nd Quarter 2019

FINANCIAL IMPLICATIONS

Budget/Authorization Summary

	Capital	Expense	Total Project
Original Budget	\$11,950,000	\$50,000	\$12,000,000
Previous budget adjustments	-\$2,950,000	\$900,000	-\$2,050,000
Current budget increase	\$11,299,000	\$86,000	\$11,385,000
Revised Budget	\$20,299,000	\$1,036,000	\$21,335,000
Previous Authorizations	\$2,000,000	\$0	\$2,000,000
Current request for authorization	\$7,036,000	\$235,000	\$7,271,000
Total Authorizations, including this request	\$9,036,000	\$235,000	\$9,271,000
Remaining budget to be authorized	\$11,263,000	\$801,000	\$12,064,000
Total Estimated Project Cost	\$20,299,000	\$1,036,000	\$21,335,000

Project Cost Breakdown

	This Request	Total Project
Construction	\$6,803,000	\$17,821,000
Design	\$0	\$2,000,000
Sales Tax	\$468,000	\$1,514,000
Total	\$7,271,000	\$21,335,000

Budget Status and Source of Funds

This project, C800717, is included in the 2016-2020 capital budget and plan of finance at an estimated cost of \$9,000,000. The capital budget increase of \$11,299,000 will be transferred from the Aeronautical Allowance C800404 resulting in no net change to the Airport capital budget. The funding sources will be Airport Development Fund and future revenue bonds.

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Financial Analysis and Summary

CIP Category	Renewal/Enhancement
Project Type	Renewal/Replacement
Risk adjusted discount rate	N/A
Key risk factors	N/A
Project cost for analysis	\$21,335,000
Business Unit (BU)	Terminal
Effect on business performance	NOE after depreciation will increase
IRR/NPV	N/A
CPE Impact	\$.06 in 2019

Lifecycle Cost and Savings

The major assets this project will install are steam, condensate and chilled water piping, valves, and connections. All of these assets have useful life spans of 25-30 years.

STRATEGIES AND OBJECTIVES

This project supports the Port's Century Agenda objective meeting the region's air transportation needs here at Seattle-Tacoma International Airport for the next 25 years. This project will ensure that HVAC demands are met in the existing and planned future north terminals. Fully functional HVAC systems are critical to airport operations.

This project has collaborated with the Economic Development Division to maximize small business participation throughout the design process with Notkin Engineering, 15% of the design effort will be completed by a small business partner working with Notkin and will continue that collaboration during construction phase of this early work portion of the project. The project team will coordinate with the small business program manager to maximize the participation of qualified small business firms, in accordance with Resolution No. 3618.

ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Status Quo – Do not proceed with replacing and upsizing the existing 45-year-old HVAC piping and do not proceed with designing and installing a redundant interconnecting loop.

Cost Implications: \$500,000 in design costs would need to be expensed.

Pros:

- (1) No capital investment.

Cons:

- (1) The majority of the HVAC piping is over 45 years old and is approaching the estimated service life.
- (2) The HVAC services on Concourses C & D will not meet the expected passenger comfort levels.

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- (3) The existing HVAC infrastructure does not support planned expansion of the North Satellite footprint.
- (4) Does not support any new north terminal that may be built as part of the SAMP.
- (5) Does not create system redundancy and the flexibility to supply HVAC from the Central Mechanical Plant throughout the facility from either loop; any piping failure creates an HVAC outage. The ability to add this redundancy in the future will be lost due to infrastructure installed by the Baggage Optimization program?

This is not the recommended alternative.

Alternative 2 – Replace and upsize the existing 45-year-old HVAC piping. Do not proceed with designing and installing a redundant interconnecting loop.

Cost Implications: \$250,000 in design costs to date would need to be expensed. Estimated total project cost \$15,000,000.

Pros:

- (1) Reduced capital investment.
- (2) Provides upgraded HVAC to Concourses C & D
- (3) Provides the required HVAC infrastructure for the planned expansion of the North Satellite footprint.

Cons:

- (1) Does not support any new north terminal facilities that may be built by the SAMP.
- (2) Does not create system redundancy and the flexibility to supply HVAC from the Central Mechanical Plant throughout the facility from either loop (*the ability to add this redundancy in the future will be lost due to infrastructure installed by the Baggage Optimization program*)

This is not the recommended alternative.

Alternative 3 – Replace and upsize the existing 45-year-old HVAC piping. Proceed with designing and installing the required new utilidor(s) for a loop system, but do not install the new utilidor(s) infrastructure piping.

Cost Implications: Estimated construction costs to install “early work” utilidor(s) without piping is \$4,393,000. Estimated total project cost without new utilidor(s) piping is \$18,500,000.

Pros:

- (1) Reduces first cost by deferring utilidor piping installation.
- (2) Provides upgraded HVAC to Concourses C & D.
- (3) Provides the required HVAC infrastructure for the planned expansion of the North Satellite footprint.
- (4) Supports new north terminal facilities that may be built by the SAMP. (future \$5M project required)

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- (5) Creates system redundancy and the flexibility to supply HVAC from the Central Mechanical Plant throughout the facility from either loop.;

Cons:

- (1) Highest final cost. (installing utilidor piping under a future contract will result in a total system expenditure of approximately \$23.5 million)

This is not the recommended alternative.

Alternative 4 – Replace and upsize the existing 45-year-old HVAC piping. Proceed with designing and installing the required new utilidor(s) for a loop system, and install all infrastructure piping.

Cost Implications: Estimated construction costs to install “early work” utilidor(s) and piping are \$7,271,000. The estimated total project cost \$21,335,000

Pros:

- (1) Provides upgraded HVAC to Concourses C & D.
- (2) Provides the required HVAC infrastructure for the planned expansion of the North Satellite footprint.
- (3) Supports new north terminal facilities that may be built by the SAMP.
- (4) Creates system redundancy and the flexibility to supply HVAC from the Central Mechanical Plant throughout the facility from either loop.

Cons:

- (1) Highest first cost.

This is the recommended alternative.

ATTACHMENTS TO THIS REQUEST

- Computer slide presentation.

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

- April 28, 2015 (Item 4g.) Commission authorized \$2,000,000 for the design phase of the project.