



**COMMISSION  
AGENDA MEMORANDUM**

**Item No.** 4g

**ACTION ITEM**

**Date of Meeting** November 14, 2017

**DATE:** November 7, 2017

**TO:** Dave Soike, Interim Executive Director

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

**SUBJECT:** 2018 Taxiway Improvement Projects C800914

**Amount of this request:** \$39,685,000

**Total estimated project cost:** \$47,500,000

**ACTION REQUESTED**

Request Commission authorization for the Executive Director to: (1) advertise and execute a single major works construction contract comprised of Taxiways A/B Reconfiguration; Taxiway L Relocation; Taxiway Q Mitigation; 2018 Airfield Pavement Replacement Projects; B Concourse IWS Upgrade; and Taxiway H Signage herein to be referred to as 2018 Taxiway Improvement Projects and (2) award an irregular bid or bid greater than 10% over engineers estimate, should that occur, with Commission notification only provided the total project remains within authorized budget.

**EXECUTIVE SUMMARY**

This project consists of taxiway, runway and apron modifications, reconfiguration, repairs and relocation for safety and continued operational access by aircraft. This project also includes improvement to the industrial waste system and new taxiway signage. Originally this project was driven by the expansion of the North Satellite (NSAT) triggering the need to reconfigure the adjoining Taxiways A/B. Due to the proximity of Taxiway L to the Taxiway A/B work, the FAA has required that Taxiway L be brought into compliance with current FAA design standards by being relocated to minimize potential aircraft runway incursions. This relocation requires a closure of Runway 16L/34R. This closure provides the opportunity to proceed with fixing another safety concern at the intersection of Taxiway Q as well as needed runway repairs. Based on the complexities of coordination, similar work, seasonal construction limitations and runway use restrictions, it was decided that the many 2018 airfield work projects should be combined into a single airfield contract to best coordinate airfield construction phasing in the safest and most efficient manner.

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The request to notify rather than return to the Commission for authorization to award an irregular bid, provided there are sufficient project funds, is unusual. The request is made to reduce the risk of impact to the International Arrival Facility (IAF) project. The IAF needs the phase 1 work in this project to be complete by May 31, 2018 so aircraft can be shifted from Hardstand 2 to Hardstand 6 and assembly of the IAF pedestrian bridge can occur. The schedule is particularly tight due to the delivery being advanced to avoid having the work occur after Memorial Day when the travel demand increases.

A Project Labor Agreement (PLA) was previously authorized for this project. FAA reviewed the PLA and notified staff that certain sections do not comply with federal regulations that require full and open competition. Organized labor relayed to staff that these sections are key terms of the PLA that they are unwilling to change. Port staff have worked with both parties and now have a preliminary verbal agreement for modified verbiage that appears acceptable to each party. Staff continues to recommend that a PLA be used on this project to reduce schedule risk issues.

### **JUSTIFICATION**

A new capital improvement project (CIP) was established for the relocation of Taxiway L and modification of Taxiway Q. Because of their close proximity and similar work the previously authorized funds for the Taxiway A/B work, under CIP C800556 North Satellite Renovations & NSTS Lobbies project, were transferred and combined with Taxiway L/Q into a single CIP C800914 and major construction contract. Three other CIP's C800483, C800913 and C800406 have also be combined into CIP C800914 2018 Taxiway Improvement Projects to facilitate the administration of the combined project and to avoid delays that would occur should the bid result in an individual CIP having insufficient budget.

Taxiway A/B Reconfiguration: This is an enabling project to the NSAT project which must be completed by January 2019 to facilitate North Satellite phase one expansion opening.

Taxiway L Relocation/Taxiway Q Modification: Due to the proximity of Taxiway L to the adjacent Taxiway A/B Reconfiguration, the FAA required that Taxiway L be brought into compliance with the current FAA design standards and be relocated. With the corresponding closure of Runway 16L/34R the Taxiway Q Runway Incursion Mitigation (RIM) intersection will be modified.

2018 Airfield Pavement Replacement Projects: This project replaces individually identified distressed and or damaged concrete panels, asphalt, and joint sealant for the 2018 portion of the 2016-2020 Airfield Pavement Program.

B Concourse IWS Upgrade: Modifications to the B Concourse IWS System between gates B5 – B7 will install a new flush gutter section to complete connection. This portion of the contract has previously been authorized for both design and construction.

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Taxiway H Signage: This sign will improve safety for this area. This work is part of the RW 16C/34C Reconstruction project that has previously been authorized for both design and construction.

### **DETAILS**

Taxiways A/B Reconfiguration was the initial enabling project required for the new aircraft gate parking positions in the Phase One opening of the NSAT project. Because the NSAT expansion pushes the existing terminal to the west, the related parked aircraft will protrude into the existing, adjacent taxilane. This requires that the adjacent taxilane and taxiways be reconfigured to accommodate the expansion, maintain airport operational efficiency and maintain required aircraft separation distances. At the initial Preliminary Hazard Assessment (PHA) of the Taxiway A/B Reconfiguration, the current location of Taxiway L was identified as a potential hazard that the FAA is requiring the Port to relocate as risk mitigation.

Taxiway L was constructed prior to the current FAA guidance regarding direct access from a ramp area to a runway. To bring Taxiway L up to current design standards it is being relocated approximately 300 feet to the south and will provide a definitive turning movement for aircraft prior to entering the adjacent runway. As part of this relocation project the runway and taxiway pavement markings will also be modified to further improve situational awareness and minimize safety risk. Reconstruction of Taxiway L requires the closure of Runway 16L/34R. This runway closure brought opportunity to complete other needed improvements, which also required that the runway be closed. Additional work requiring runway closure is the Taxiway Q mitigation.

The FAA has designated the intersection of Taxiway Q and Taxiway B as a safety RIM as a result of numerous runway incursions in this location. The RIM designation alerts pilots that the location is potentially problematic. The FAA has not been able to provide definitive reasons for the incursions at Taxiway Q, but have colloquially indicated that the taxiway centerline configuration may play a part. As a step toward RIM mitigation, the centerline alignment will be modified.

As part of the continuing safety assurance at SeaTac there is an established Airfield Pavement Replacement Program. The required closure of Runway 16L/34R provides opportunity for joint seal and concrete panel replacement to occur simultaneously with the Taxiway L relocation.

Gate reconfiguration at B Concourse completed in 2017 converted 4 wide body gates to narrow body gates allowing flexibility for 6 narrow body aircraft. Currently the area between Gates B5 and B7 does not have adequate Industrial Waste System (IWS) infrastructure supporting deicing activities. This project will upgrade the IWS system to capture glycol from deicing activities and provide flexibility to our airline operations.

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The need to add a sign at Taxiway H was identified after the contract for the center runway reconstruction, that included the relocation of Taxiway H, was complete.

One of the Century Agenda goals is to use the Port's influence as an institution to promote small business growth and workforce development. Port staff is coordinating with Economic Development Division's Small Business Group to identify potential opportunities within the scope of work for small business utilization. This project may include federal assisted fund which would require the utilization of the U.S Department of Transportation's small business program per 49 CFR Part 26 - Disadvantage Business Enterprise (DBE) requirements.

**CRITICAL ISSUES**

This construction contract was initially planned using a typical construction window of May through September 2018. Due to operational concerns and other projects' constraints, the project will have critical work occur in 2 key phases outside of this period. Schedule constraints include the following:

- 1) Runway closures between Memorial Day and Labor Day are not desirable due to high traffic volumes,
- 2) IAF bridge construction is dependent upon the initial phase of this project being complete by May 31, 2018,
- 3) NSAT Phase 1 completion scheduled for January 2019 opens new gates on the west side of the terminal is dependent upon the completion of the 2018 Taxiway A/B and L work. The new gates that are critical to allow renovation of the existing terminal to proceed under NSAT Phase 2 scheduled to be complete in July 2021.

In order to address the schedule constraints, a portion of the work will occur in April to May 2018. The early construction advertisement date necessitated by this has resulted in there being only one week of float remaining in the project schedule for advertisement, award, and notice to proceed. The 2<sup>nd</sup> phase work requiring a runway closure has been shifted to begin immediately after Labor Day.

There are a number of risks associated with this project including:

- 1) Delay in being able to begin work due to construction bid outcomes such as a bid protest being received or the low bid being more than 10% over the Engineer's Estimate. The project schedule contains almost no float. Should a delay occur in awarding the contract, it would have a domino effect that would likely delay assembly of the pedestrian bridge for the IAF project.
- 2) Weather, bid protests, and other such external factors could occur and are difficult to mitigate in advance.
- 3) Labor unrest could affect delivery of the project. There are at least six union contracts that are expected to be used on this project that will expire on 5/31/18. A PLA is typically utilized on airfield projects to reduce the risk of work stoppage. Accordingly, staff continues to recommend that a PLA be used on this project to reduce risk. Even

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with the use of a PLA, offsite labor, such as for the delivery of materials, is not a part of the PLA.

- 4) Completion of the initial phase of work by 5/31/18 so the IAF bridge construction can proceed. The projects are linked as the detour route for Taxiway A during April to May construction encumbers Hardstand 6 and the IAF work will need to shift aircraft from Hardstand 2 to Hardstand 6 for the bridge assembly to occur.
- 5) Beginning work after Labor Day that is anticipated to extend into December will be highly dependent upon favorable weather, a scarce commodity at that time of year, and the ability for the Contractor to access the airfield, which may be prevented during fog or other such conditions. The late start of work could cause the work the re-opening of RW 16L/34R to be delayed. Since this runway is the longest and closest to the terminal, an extended closure has an extremely high impact on airport operations. During poor visibility conditions the airport may go into Surface Movement Guidance and Control Systems (SMGCS) and the airport will then be limited to a single runway. Once the 2<sup>nd</sup> phase of airfield construction begins, the work then must be completed and deleting scope is not a mitigation option. The nature of the work; excavation, lighting, and utilities, within the runway and taxiway safety areas cannot be left unfinished or open.
- 6) Should the 2<sup>nd</sup> phase of airfield construction, which closes the runway, extend to late January 2019, the NSAT Phase 1 opening of gates that allows work to continue on NSAT Phase 2 and to maintain airline operations would be impacted.

Mitigation measures continue to be developed and will need to be reexamined as the project is delivered. Current mitigation measures include:

- 1) Request for approval to notify rather than return to the Commission should an irregular bid occur and for the contract to be awarded as long as there are sufficient authorized funds will help to avoid delays in the project proceeding.
- 2) Appropriate measures to ensure the initial phase of work is complete before the current union contracts expire on 5/31/18 will be used.
- 3) Staff is working with FAA and the airlines to examine the potential earlier start of the 2<sup>nd</sup> phase of work to reduce risk that occurs with construction in the fall and winter. This would also help to avoid or mitigate the domino of impacts that could occur to airport operations and the NSAT project should completion of this work be delayed by weather.
- 4) As mentioned above, weather, bid protests, and other such external factors are difficult to mitigate in advance but will be monitored, communicated and addressed at the time, should they occur.

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

- 1) Relocate Taxiway L
- 2) Adjust Taxiways B/Q centerline radii to include adjustment of in-pavement taxiway centerline lights and pavement marking
- 3) Modify and realign Surface Movement Ground Control (SMGC's) lights and connection centerlines between Taxiway A, Taxiway B and entrance to North Satellite taxilane
- 4) Replace damaged asphalt with concrete at South Satellite

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- 5) Replace distressed/damages concrete panels at various locations on airfield
- 6) Install flush gutter at Concourse B
- 7) Install new signage at Taxiway H

**Schedule**

Construction has been scheduled in coordination with overall airport operations to minimize as possible the disruption to the heaviest periods of airline operations during peak summer season. Portions of the work will be performed early in the spring, with the majority of work requiring Runway 16L/34R closure to begin after Labor Day, if it cannot be advanced to earlier in August.

Commission design authorization	2017 Quarter 1
Design start	2017 Quarter 1
Commission construction authorization	2017 Quarter 4
Construction start	2018 Quarter 2
In-use date	2018 Quarter 4

**Cost Breakdown**

	This Request	Total Project
Design	\$314,000	\$4,115,000
Construction	\$39,371,000	\$43,385,000
Total	\$39,685,000	\$47,500,000

**ALTERNATIVES AND IMPLICATIONS CONSIDERED**

These alternatives are for the contract as a whole with emphasis on the major portions of work being Taxiway A/B Reconfiguration and Taxiway L Relocation.

**1. Status Quo – No Construction**

Cost Estimate: \$0 direct cost

Pros:

- No runway closures

Cons:

- Curtailment of the NSAT project expansion – will not be able to proceed without changes to the taxiways.
- Elimination of two-way directional taxiway movement at the NSAT area.
- Disruption of airline movement positioning operations north to south
- Air Traffic Control delays – aircraft movement to, from and around the North Satellite and aircraft movement north and south for take-offs

This is not the recommended alternative

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**2. Separate Construction Contracts**

Cost Estimate: \$ 49,875,000

\* previously estimated \$50,000 cost increase each time large aircraft cannot use Runway 16L/34R for takeoff.

Pros:

- Separation of funding
- Single design consultant
- Not all portions of the single contract require FAA tracking/reporting

Cons:

- Additional Runway 16L/34R closures
- Significant operational and cost increases to airlines
- Will not meet FAA deadlines for Taxiway L relocation

This is not the recommended alternative

**3. Single Major Construction Contract**

Cost Estimate: \$47,500,000

Pros:

- Meet construction deadlines for NSAT program
- Single Runway 16L/34R closure of the shortest duration
- Single construction season reducing airline and airport operational disruptions
- Best construction coordination to minimize cost and operational impacts to airlines

Cons:

- Runway closure required for construction

This is the recommended alternative

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**FINANCIAL IMPLICATIONS**

Capital	Taxiway A/B	Taxiway L/Q	2018 Pavement	B Concourse IWS	Taxiway H Signage	Total
<b>COST ESTIMATE</b>						
Original estimate	\$3,045,000	\$9,700,000	\$20,000,000	\$1,750,000	\$250,000	\$34,745,000
Current cost increase/(decrease)	\$6,955,000	\$10,300,000	(\$4,500,000)			\$12,755,000
Revised estimate	\$10,000,000	\$20,000,000	\$15,500,000	\$1,750,000	\$250,000	\$47,500,000
<b>AUTHORIZATION</b>						
Previous authorizations	\$3,045,000	\$1,750,000	\$1,020,000	\$1,750,000	\$250,000	\$7,815,000
Current request for authorization	\$6,955,000	\$18,250,000	\$14,480,000			\$39,685,000
Total authorizations, including this request	\$10,000,000	\$20,000,000	\$15,500,000	\$1,750,000	\$250,000	\$47,500,000
Remaining amount to be authorized	\$0	\$0	\$0	\$0	\$0	\$0

**C800914 Taxiway Improvement**

	CIP Budget	CIP Auth
Current C800914	\$ 23,500,000	\$ 4,795,000
Plus Transfers:		
C800406 RW 16C-24C Design - U00407	250,000	250,000
C800483 Airfield Pavement - U00349	22,000,000	1,020,000
C800913 Concourse B IWS Upgrade - U00398	1,750,000	1,750,000
Net After Transfer	<u>\$ 47,500,000</u>	<u>\$ 7,815,000</u>

**Taxiway A/B**

The initial Taxiway A/B design authorization and project construction estimate were approved in the overall NSAT project C800556. The initial Taxiway A/B Reconfiguration project estimate was \$3.2M. The original scope and estimate was based on only needing to make small adjustments to the centerline with removal of and realigning with paint. The scope and estimate increased with the determination that in-pavement lighting needed to be relocated including concrete panel removal and replacement. Finally the addition of the FAA requirement for additional taxiway separation and reconfiguration required a new design



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package, additional excavation, and additional pavement; all together increasing the project estimate to \$10,000,000.

The authorized and budget amount of \$3,045,000 has been transferred from the NSAT program CIP C800556 to the Airfield program 2018 Taxiway Improvement Projects CIP C800914.

**Taxiway L/Q**

Increase in details of scope have resulted in estimate and budget increase due to several impacts.

- 1) Lessons learned in previous projects previously utilizing on-sight concrete batch plant regarding waste water management.
- 2) Additional increase is due to extensive Storm Water Management and Temporary Erosion and Sediment Control (TESC) within such constrained areas next to runway.
- 3) Removal and replacement of concrete panels where abandoned taxiway light cans are to be removed.

**2018 Pavement Program**

The Airfield Pavement Program (C800483) is included in the 2018-2022 capital budget and plan of finance with a budget of \$32,500,000. The 2018 portion is estimated at \$22,000,000. The authorized \$1,020,000 and remaining budget of \$20,980,000 has been transferred from C800483 to the 2018 Taxiway Improvement Projects CIP C800914.

**B Concourse IWS Upgrade**

The authorized and budget amount of \$1,750,000 has been transferred from C800913 to the 2018 Taxiway Improvement Projects C800914.

**Taxiway H Signage**

The authorized and budget amount of \$250,000 has been transferred from C800406 to the 2018 Taxiway Improvement Projects CIP C800914.

***Annual Budget Status and Source of Funds***

Capital project C800914 2018 Taxiway Improvement Projects was included in the 2017-2022 capital budget and plan of finance. The budget increase of \$12.7M was transfer from C800483 Airfield Pavement Program. The funding sources would be Airport Development Fund and future revenue bonds. The Port will be submitting the Airport Improvement Program (AIP) grants, estimated at \$13 million for the use of 2017 and 2018 Entitlements.

***Financial Analysis and Summary***

Project cost for analysis	\$47,500,000
Business Unit (BU)	Airfield Apron Area and Airfield Movement Area
Effect on business performance	NOI after depreciation will decrease

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(NOI after depreciation)	
IRR/NPV (if relevant)	N/A
CPE Impact	\$0.13 in 2019, \$0.18 without grants

**ATTACHMENTS TO THIS REQUEST**

Diagram of 2018 Taxiway Improvement Projects

**PREVIOUS COMMISSION ACTIONS OR BRIEFINGS**

**Taxiways A/B/L/Q**

March 14, 2017 – The Commission authorized design funds for construction documents for Taxiways L and Q, to transfer budget and authorization from the NSAT project, and approved use of PLA.

May 24, 2016 – The Commission authorized the NSAT increase of project scope and budget that included Taxiway Lighting and Panel Replacement of \$3.2M.

**2018 Pavement Replacement**

May 9, 2017 – The Commission authorized design funds for construction documents for replacement of distressed pavement and joint seal replacement in the 2018 portion of the 2016-2020 Pavement Program, and approved use of PLA.

October 25, 2016 – The Commission authorized advertisement and execution of contract for retrofits of 400 Hz In-ground power units and reconstruction of existing pavement at Cargo 2.

February 24, 2015 – The Commission authorized design funds for construction documents for replacement of distressed pavement and joint seal replacement in the 2016 portion of the 2016-2020 Pavement Program.

**B Concourse IWS Upgrade**

October 25, 2016 – The Commission authorized capital spending for design and construction of Port utility and supportive infrastructure work associated with the Concourse B gate reconfiguration.

**Taxiway H Signage**

December 2, 2014 – The Commission authorized advertisement and execution of the Runway 16C/34C reconstruction that included the reconfiguration of Taxiway H.