

Forum on Seattle-Tacoma International Airport's International Arrivals Facility: Financing, Planning, and Technology

Commission Meeting
July 28, 2015

Continuing the 90-day review

- ~~May 26 commission motion~~
- ~~June 23 contract award~~
- ~~July 14 forum~~
- Today's forum overview
 1. Airport Finance Overview (continued)
 2. IAF Planning History
 3. Independent Architectural Review
 4. Design-Build Contractor and Validation Process
 5. Customs & Border Protection; Technology at Federal Inspection Service Facilities
- Next meeting on August 11

An ongoing effort

Airport Finance Overview (continued)

Borgan Anderson

Director Aviation Finance and Budget

Jim Burchett

Vice President, AvAirPros

Warren Adams

Managing Partner, WJ Advisors

Introduction

- Background – previous IAF funding briefings:
 - January 27 and April 14
 - Motion: May 26
 - July 14—Airport finance
- Today –Identify sources of funds used for international facility projects
- Consultants:
 - Jim Burchett, AV Air Pros
 - Warren Adams, WJ Advisors LLC

Today is a follow-on to the July 14 presentation

Scope of Services

1. Identify other international arrival facility (IAF) projects at United States (U.S.) airports
2. Review the sources of funds for those projects
3. Identify the level of passenger facility charge (PFC) revenues used to fund IAF projects
4. Review the number of international and domestic passengers at the same airports
5. Respond to questions from the July 14 Port Commission meeting

Key question: How do other airports fund international facilities?

Important Information

- An IAF project includes an international arrivals facility or international terminal building
 - For some airports, specific international arrivals facility project information was not available
- We relied upon publicly available information, including PFC uses from FAA records
- We focused on the use of PFC revenues to fund IAF project costs; this occurs by paying project costs during construction and in paying debt service on bonds

Results based on publicly available information

Criteria for Selecting IAF Projects

- Facilities that are in use at U.S. airports
- Large-hub U.S. airports
- IAF projects that were funded by airports, not airlines
- IAF projects that were funded by different funding sources, including PFC revenues
 - PFC funded costs cannot be included in airline rates and charges

Focused on comparable facilities at large hub U.S. airports

PFC Regulations and Use

- Focuses on project eligibility only; does not stipulate how much PFC revenue should be used to fund a particular project
- The use of PFC revenue to fund a particular project is determined by the airport operator
- All 11 airports discussed in this document used varying amounts of PFC revenues to fund IAF project costs
 - This can be viewed as an indication of PFC-eligibility for these types of projects

International facilities meet FAA eligibility criteria for use of PFCs

PFC Regulation, continued

- Consultation with airlines is provided before imposing and using a PFC
 - Airlines can submit written agreement or disagreement for a project, which is required to be submitted to FAA

FAA makes determination to approve PFC application

Airport/Airline Business Arrangements

- FAA policy on rates and charges encourages *local negotiations* between airports and airlines
- SLOA III was the outcome of local negotiations; airlines with 99.9% of passengers in 2013 signed SLOA III
- SLOA III created an FIS separate cost center
 - SLOA III specifically states that Port cash (nonairline revenue) can be used to lower the FIS fee paid by airline users of the FIS

SLOA III forecast assumed use of PFCs in IAF funding plan

IAF Project at SEA

- New IAF would be used by all international deplaning passengers at SEA
- 10.6% of SEA enplaned passengers in 2019 are forecast to be international passengers
- \$608m project cost; opening date: 2019
- Scenario 6 from April 14 recommendation assumed the following sources: \$200m of Port cash, \$100m of PFCs to directly fund project costs, and \$308m of revenue bonds

Comparisons on following slides based on Scenario 6 from April 14

Use of PFCs at SEA

- PFC can be used to fund projects or to pay PFC-eligible debt service
- Scenario 6 at SEA assumed the following:

Funding Sources and Use of PFC Revenues (millions)							
	Funding Sources	Percent of Total	Use of PFCs for IAF			Effective percent of IAF costs paid with PFCs	
			Construction Costs	Pay Debt Service	Total PFCs		
Port Cash	\$ 200	33%					
PFCs to fund project costs	\$ 100	16%	\$ 100				
Revenue bond proceeds	\$ 308	51%		\$ 250			
Total funding sources	\$ 608	100%	\$ 100	\$ 250	\$ 350	57.6%	

Where PFCs pay revenue bond debt service, treated as PFC funded

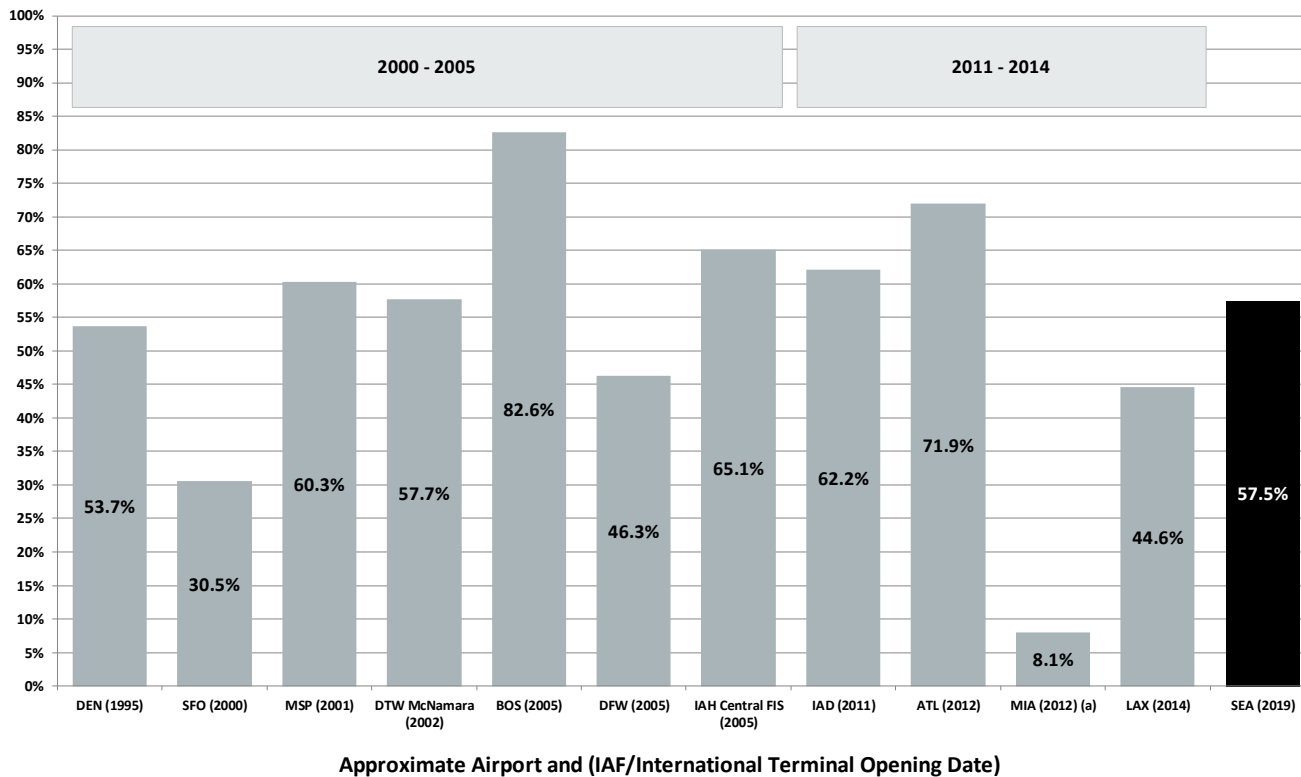
Finding #1

- Of the 11 airports meeting the criteria, all used PFCs. The PFC% ranged from:
 - A low of 8.1% at Miami International Airport
 - A high of 82.6% at Boston Logan International Airport
- Scenario 6 for the IAF at SEA proposes 57.5% (within the range)
- The results on the next page are organized by year of when the facility opened

All recent international facilities use PFCs as funding source

Finding #1

PERCENTAGE OF PROJECT COSTS PAID BY PFC REVENUES FOR IAF / INTERNATIONAL TERMINAL PROJECTS OVER TIME



(a) The percent of costs paid by PFC revenues for international arrivals facilities at MIA is low because PFC eligibility far exceeds PFC capacity. A large portion of available PFC revenues are used to pay debt service for general terminal facilities at MIA, and only 8.1% is used to pay debt service for international arrivals facilities. This percent varies from year to year based on management decisions at MIA.

Sea-Tac's proposed use of PFCs is similar to other airports

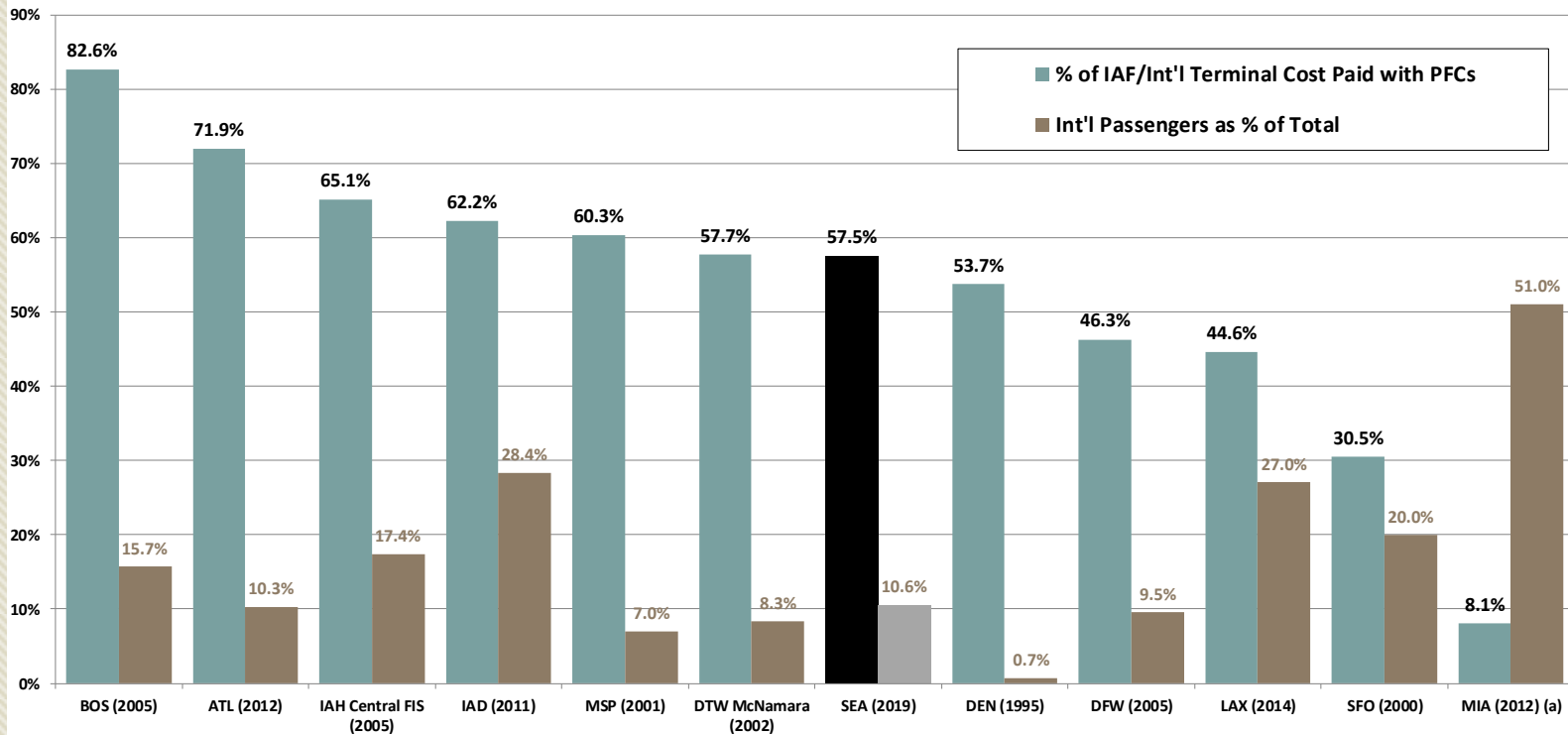
Finding #2

- The percent of PFC revenues used to fund IAF project costs typically exceeds the percent of international passengers to total enplaned passengers
 - Passenger data is for the year when the facility opened
 - For SEA, we used forecast 2019 passengers and Scenario 6 sources of funds

No apparent connection between % of int'l passengers and PFC allocation

Finding #2

Percentage of IAF/International Terminal Project Cost Paid with PFCs vs International Passengers as % of Total



(a) The percent of costs paid by PFC revenues for international arrivals facilities at MIA is low because PFC eligibility far exceeds PFC capacity. A large portion of available PFC revenues are used to pay debt service for general terminal facilities at MIA, and only 8.1% is used to pay debt service for international arrivals facilities. This percent varies from year to year based on management decisions at MIA.

Percentage of PFC funding for Sea-Tac is within the range of other airports

Responses to July 14 Questions

1. Airports with agreements, but no majority-in-interest (MII) provisions-- *Denver International Airport (DEN), George Bush Intercontinental Airport (IAH), Los Angeles International Airport (LAX)*
2. Examples of where airlines have reduced or eliminated service due to CPE increases— *Difficult question to answer as service decisions are influenced by competition, local economy, and other factors*

Each airport is different

Responses to July 14 Questions

3. Examples where FIS is a separate cost center--*LAX, DEN, IAH*

- FIS costs paid by airlines at LAX are after nonairline revenue credits
- FIS costs paid by airlines at DEN are effectively after certain nonairline revenue credits

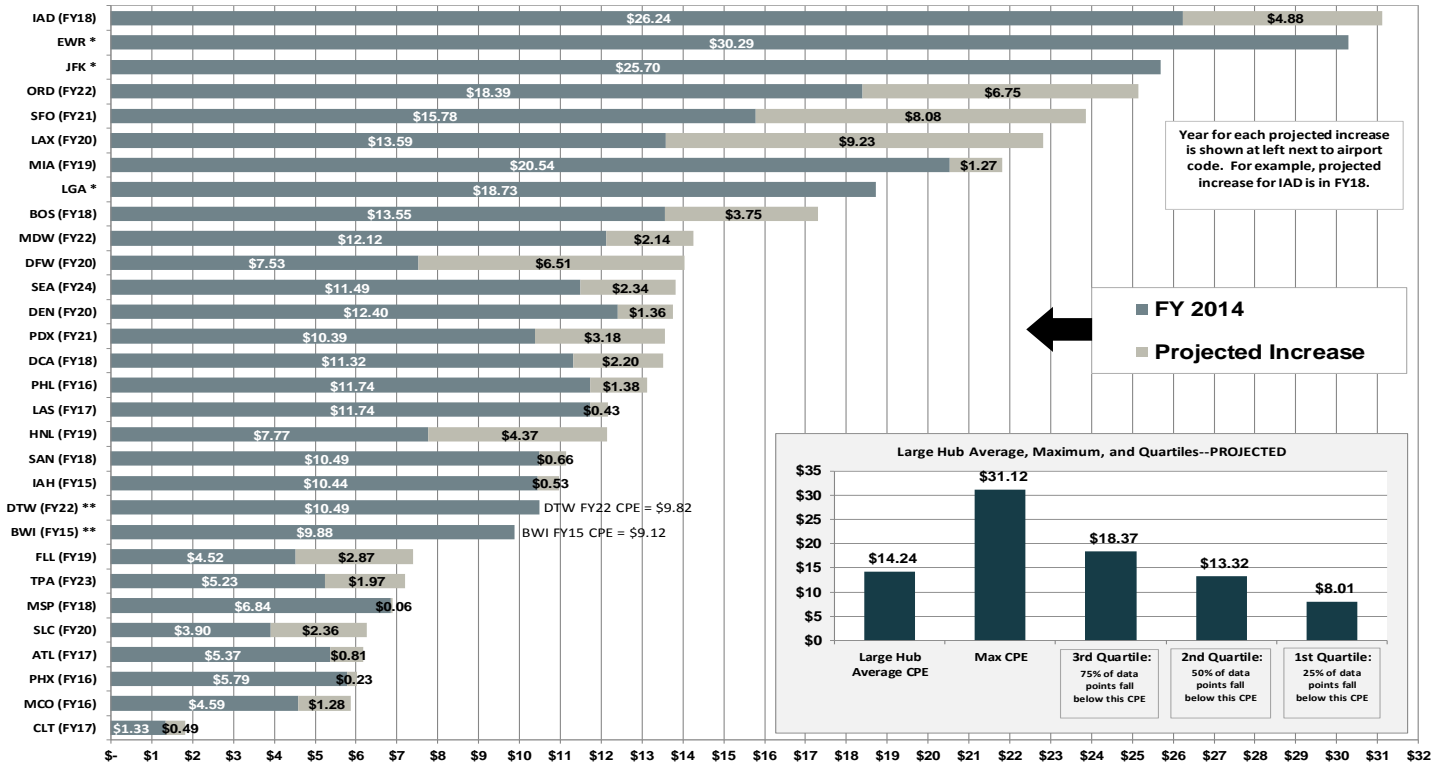
Each airport is different

Comparison of CPE

LARGE HUBS--Projected Passenger Airline CPE

Note: Each airport is different in terms of what the airlines operate/pay for directly and what the airport operator provides and charges airlines through rates and charges. CPE does not factor in what airlines operate/pay for directly. As such, not all CPE comparisons are appropriate.

Airport and Projection Year



* Projection not available.

** Projected CPE for this airport is less than the FY 2014 CPE shown.

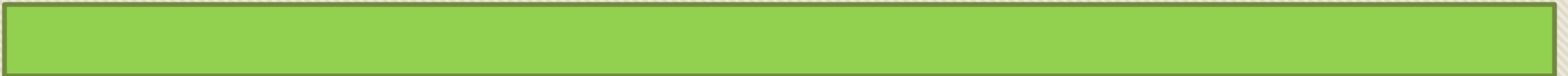
Sources: FY 2014 data--CAFRs/annual reports, rating agency press releases, and/or bond official statements.

FAA CATS data used if those sources are not available.

Projected data--Primarily bond official statements. In some cases, rating agency press releases, budgets, or reports/studies.

The ranking of SEA's cost per enplaned passenger would not materially change

Questions?



International Arrivals Facility Planning History

Elizabeth Leavitt

Director Aviation Planning and
Environmental Services

Ross Payton

Principal, AIA, Corgan

Options Considered

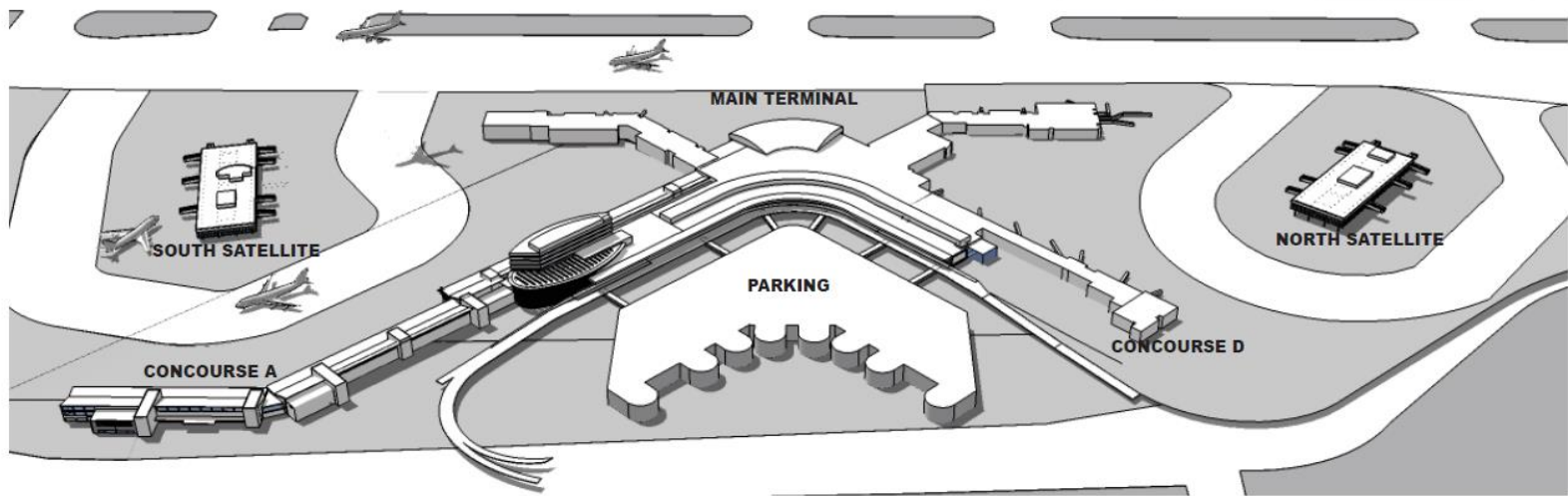
Over 50 Federal Inspection Services (FIS) and Connector Options Considered During Last 10 Years

- Slot control adjusting flight arrival times
- Technology and process improvement
 - U.S. Customs and Border Protection (CBP) staffing, POS staffing, Automated Passport Control (APC), holding passengers on planes or in corridor
- Mid-term FIS
 - Gate use, immigration, bag claim, customs, security checkpoint, train
- Long-term FIS at South
 - SSAT, Concourse A, split, under taxiway, remote
- Long-term FIS at North
 - Concourse D, NSAT
- Connector between SSAT and IAF
 - Tunnel, bridge, busing, modify existing train system

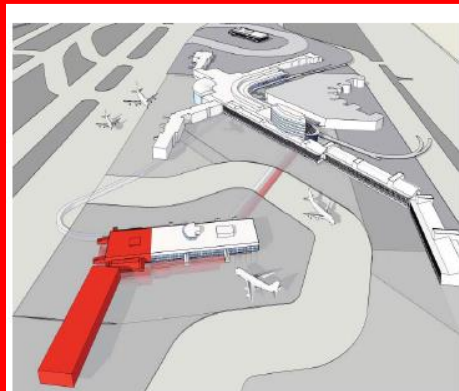
Over 50 FIS and Connector Options Considered During Last 10 Years

2009 FIS Study

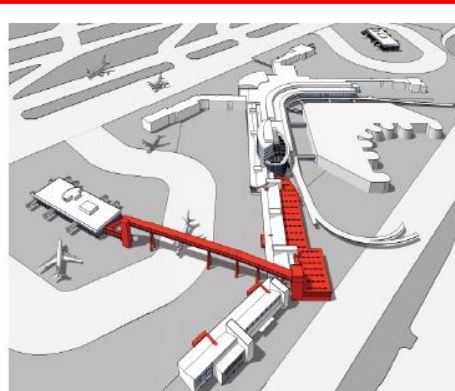
Study by HOK on Long-Term FIS Options



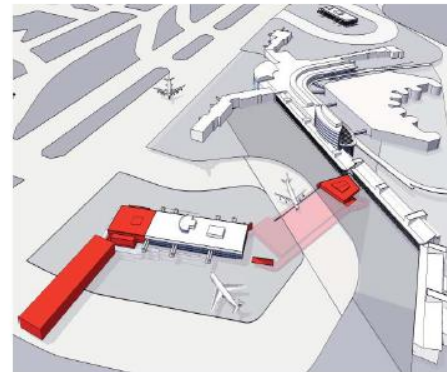
FIS FACILITY ALTERNATIVES



ALT.1 SOUTH SATELLITE BASEMENT EXPANSION



ALT.2 SOUTH CONCOURSE A / G. T Lot



ALT.3 SOUTH SATELLITE TAXI LANE TUNNEL



ALT.4 NORTH SATELLITE / G.T Lot

Two options recommended for further analysis

2009 FIS Study

Study by HOK on Long-Term FIS Options

Screening Criteria	MUST / WANT	Weight	1			2			3			4		
			SSAT Basement Expansion			South GT Lot Over Concourse A			Below SSAT Taxilane			NSAT/North GT Lot		
			Notes on Scoring /			Notes on Scoring /			Notes on Scoring /			Notes on Scoring /		
			Factual Data	Score	Formula	Factual Data	Score	Formula	Factual Data	Score	Formula	Factual Data	Score	Formula
Passenger Experience (walking distance, # of level changes, daylight, wayfinding, ceiling height, unobstructed views,)	W	6		3	18		6	36		3	18		8	48
Capital Cost (cost per incremental added passenger capacity)	W	10		8	80		4	40		7	70		2	20
Disruption during construction to airline and airport operations	W	9		5	45		8	72		2	18		1	9
				0			0			0			0	
Potential for incremental expansion	W	7		7	49		4	28		7	49		2	14
Airside vs landside FIS exit	W	8		1	8		8	64		7	56		6	48
Enabling projects required (other work needed before project can start)	W	5		7	35		5	25		7	35		1	5
Ongoing lifecycle cost (daylighting vs basement, HVAC, lighting, other O&M costs)	W	5		3	15		7	35		2	10		7	35
Aircraft movement impacts (post-construction)	W	8		8	64		7	56		7	56		1	8
Totals:				314			356			312			187	

Two options recommended for further analysis

2011 Consideration of Slot Control

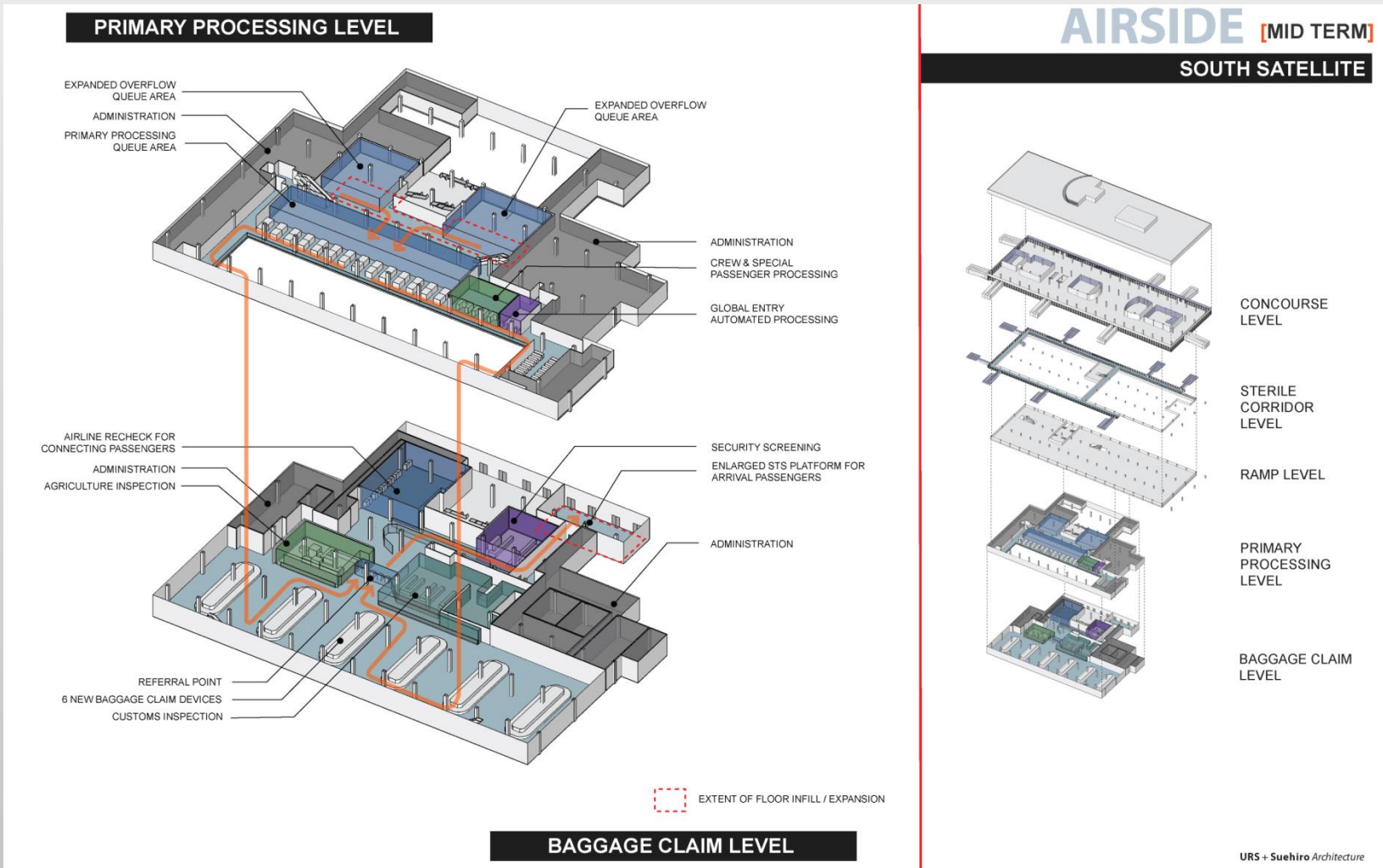
Potential Option to Reduce Peak Loads by Spreading Flight Arrival Times

- Potential mid-term capacity enhancement option
- Rejected by airlines (difficult due to system-wide issues)

Slot control is not a viable option for airlines

2012 FIS Mid-Term Capacity Enhancement

Potential Improvements within Footprint to Increase Capacity at \$37M Cost



Difficult to expand outside walls due to underground location

2012 IAF Mid-Term

Potential Improvements to Increase Capacity at Minimal Cost

- Potential mid-term capacity enhancement from 1,200 – 1,600 pax/hr
 - Additional queue space at primary inspection
 - Additional “small” bag claim devices
- Rejected by Alaska and Delta
- Decision to move to other longer-term options
 - Existing underground location too small beyond 1,600 pax/hr
 - Need larger space than South Satellite to accommodate FIS demand
- Difficult to expand while maintaining operations

Mid-Term option does not provide needed capacity

2013 IAF Landside vs Airside

Four Potential Options for Long-Term Capacity



Option 1 – New Concourse A FIS



Option 2 – Expand SSAT FIS



Option 3 – Expand FIS w/ Dogleg Gates



Option 4 – Split FIS

Options 1 and 4 most promising

2013 IAF Landside vs Airside

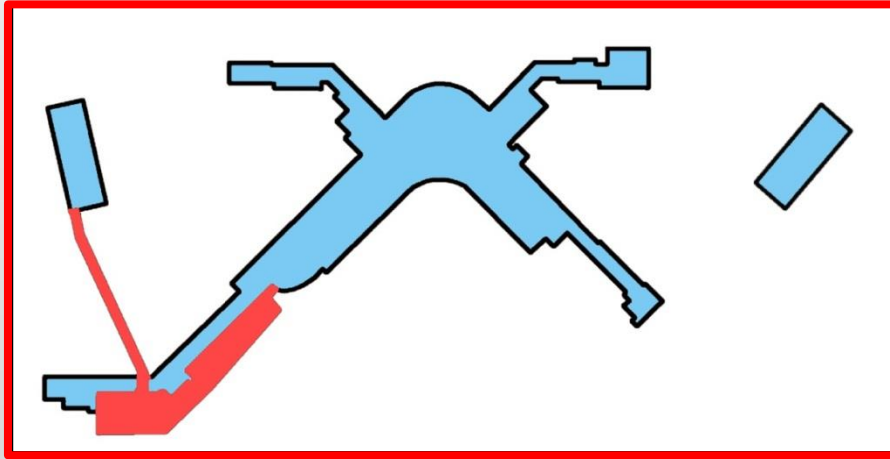
Four Potential Options for Long-Term Capacity

CRITERIA	Option 1 <i>New Concourse A FIS</i>	Option 2 <i>Expand South Satellite FIS</i>	Option 3 <i>Expand South Satellite FIS (dogleg)</i>	Option 4 <i>Dual Processing FIS</i>
Capital cost	<ul style="list-style-type: none"> Lowest total development cost \$250M - \$300M 	<ul style="list-style-type: none"> \$320M - \$385M 	<ul style="list-style-type: none"> Highest total development cost \$545M - \$655M 	<ul style="list-style-type: none"> \$335M - \$405M
Constructability <i>(considers potential for incremental development & operational impacts during construction)</i>	<ul style="list-style-type: none"> Easy to phase w/ minimal impact to airside ops Option for bridge - less impact to airside ops than tunnel Easy to maintain FIS ops during construction Build entire shell in Phase 1 - avoids higher cost of constructing shell in two phases 	<ul style="list-style-type: none"> Requires new train/tunnel to exit local PAX to landside Underground FIS expansion - can only take out 1 gate at a time Requires new train/tunnel - impactful to airside ops during construction Need to maintain FIS ops during construction Need to construct entire underground expansion in Phase 1 	<ul style="list-style-type: none"> Requires new train/tunnel to route local arriving PAX to main terminal Requires new train/tunnel - impactful to airside ops during construction Need to maintain FIS ops during construction Need to construct entire underground expansion in Phase 1 Unable to construct dogleg until AS hanger relocated 	<ul style="list-style-type: none"> Dual processing facility requires more square footage Option for bridge - less impact to airside ops than tunnel Conc A - Easy to maintain FIS ops during construction SSAT - Need to maintain FIS ops during construction (aesthetic refresh)
Customer experience <i>terminating PAX (67% of total PAX)</i>	<ul style="list-style-type: none"> Local PAX exit FIS on landside w/ bags in hand - no double claiming bags, train ride, or way finding issues International arrivals hall works as intended 			<ul style="list-style-type: none"> Local PAX exit FIS on landside w/ bags in hand - no double claiming bags, train ride, or way finding issues Congested PAX flow & confusing at aircraft exit
Customer experience <i>transfer PAX (33% of total PAX)</i>	<ul style="list-style-type: none"> Difficult PAX connections - time and level changes 	<ul style="list-style-type: none"> Faster PAX MCT with fewer level changes than Option 1, relatively difficult way-finding 	<ul style="list-style-type: none"> Faster PAX MCT with fewer level changes than Option 1, relatively difficult way-finding 	<ul style="list-style-type: none"> Congested PAX flow & confusing at aircraft exit Faster PAX MCT with fewer level changes than Option 1, relatively difficult way-finding
Operational cost/efficiency <i>(considers inefficiencies that contribute to operational costs)</i>	<ul style="list-style-type: none"> Lowest O & M cost 			<ul style="list-style-type: none"> Highest O & M cost Requires more staff to operate
Anticipates long-term development w/ least impact <i>(considers consistency w/ likely future facilities development as well as impact to existing facilities)</i>	<ul style="list-style-type: none"> Anticipates bag claim expansion Anticipates mid-term train capacity 		<ul style="list-style-type: none"> Anticipates long-term gate expansion 	<ul style="list-style-type: none"> Anticipates long-term train expansion
Ability to develop as gateway hub <i>(considers potential for additional capital improvements that would improve departing, transfer & terminating PAX flows)</i>	<ul style="list-style-type: none"> Slowest PAX MCT, could be made fastest with additional investments elsewhere Shortest baggage MCT, potentially 60 mins w/ TSA recapitalization project 	<ul style="list-style-type: none"> Baggage MCT more than Option 1 & less than Option 4, able to meet 90 min MCT published in OAG 	<ul style="list-style-type: none"> Baggage MCT more than Option 1 & less than Option 4, able to meet 90 min MCT published in OAG 	<ul style="list-style-type: none"> Longest baggage MCT, not able to meet 90 min MCT published in OAG
Renewal of aging facility	<ul style="list-style-type: none"> Renewal occurs as part of redevelopment 	<ul style="list-style-type: none"> Need to renew within existing operation 	<ul style="list-style-type: none"> Need to renew within existing operation 	<ul style="list-style-type: none"> Renewal of 40 year old facility could be viewed as discretionary, leading to higher cost of ownership
Branding identity	<ul style="list-style-type: none"> Above ground landside location is highly visible Natural advantages of views & daylight - bridge offers dramatic views of region 	<ul style="list-style-type: none"> Underground airside location is less visible 	<ul style="list-style-type: none"> Underground airside location is less visible 	<ul style="list-style-type: none"> Above ground landside location is highly visible for terminating PAX (67% of total PAX) Natural advantages of views & daylight for landside FIS

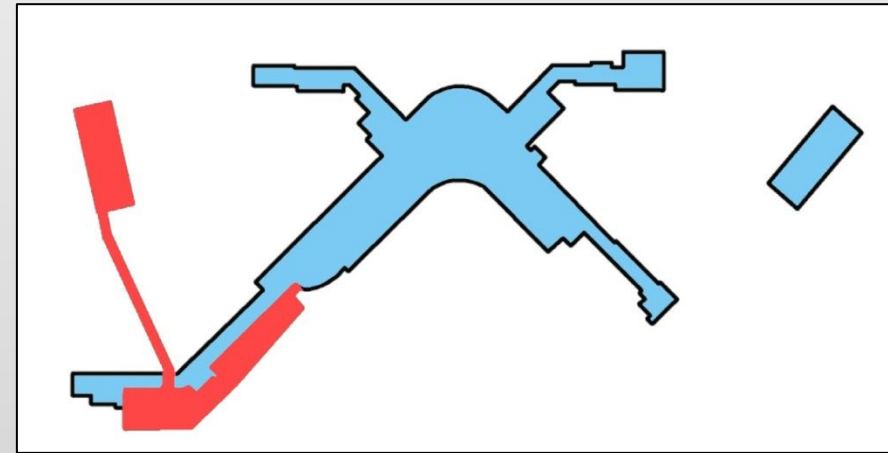
Options 1 and 4 most promising

2013 IAF Landside vs Airside

Refinement of Potential Options for Long-Term Capacity



Single – Landside IAF Only



Split – Landside IAF & Renovated FIS

- Passenger processing capacity
 - 1,900 pax/hr in Phase 1
 - 2,600 pax/hr in Phase 2
- Phase 1 gate capacity
 - Widebody gates on two concourses (12 on South Satellite & 8 on Concourse A)

Single landside option ranked best

2013 IAF Landside vs Airside

Single – Landside IAF Only

- Pros
 - Least initial cost (majority of savings in Phase 1)
 - Shortest international to domestic connect times
 - Local passengers exit directly onto street pre-security (majority of pax)
 - Local passengers do not claim bags twice or ride train
 - Easy access for construction workers and equipment (pre-security)
- Cons
 - IAF needs to be elevated to anticipate future terminal development

Single landside option ranked best

2013 IAF Landside vs Airside

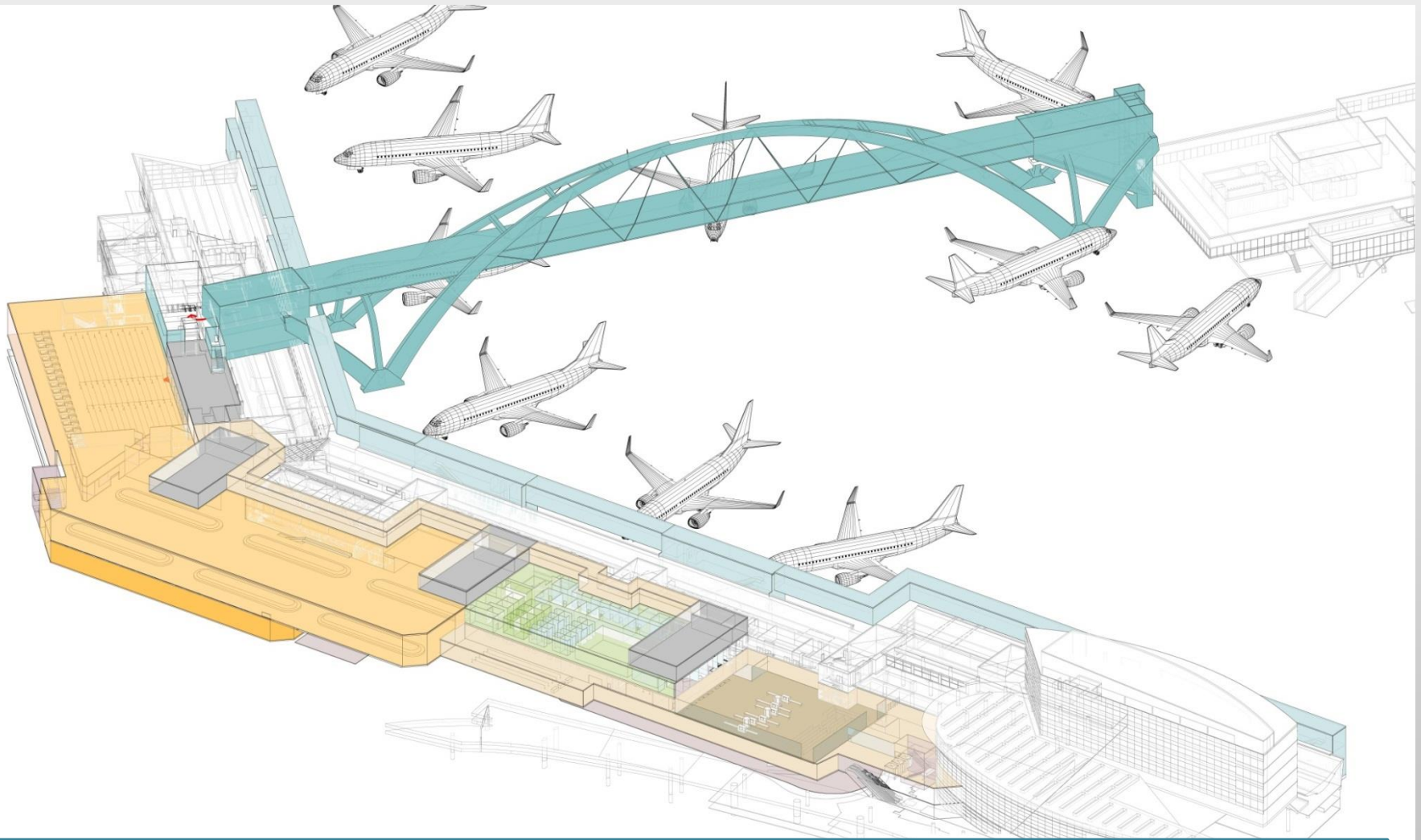
Split – Landside IAF & Renovated FIS

- Pros
 - Greater flexibility for future development at south end of Main terminal
- Cons
 - Greater initial cost (majority of additional cost in Phase 1)
 - Longest international to domestic connect times
 - Local passengers at SSAT exit post-security (majority of pax)
 - Local passengers at SSAT claim bags twice and ride train
 - Requires expensive STS train improvement to provide adequate capacity
 - No space for expanded security checkpoint at SSAT
 - Difficult access for construction workers and equipment (post-security)
 - Underground expansion impacts many gates during construction
 - IAF needs to be elevated to anticipate future terminal development

Split option ranked worst

2014 IAF Recommended Option

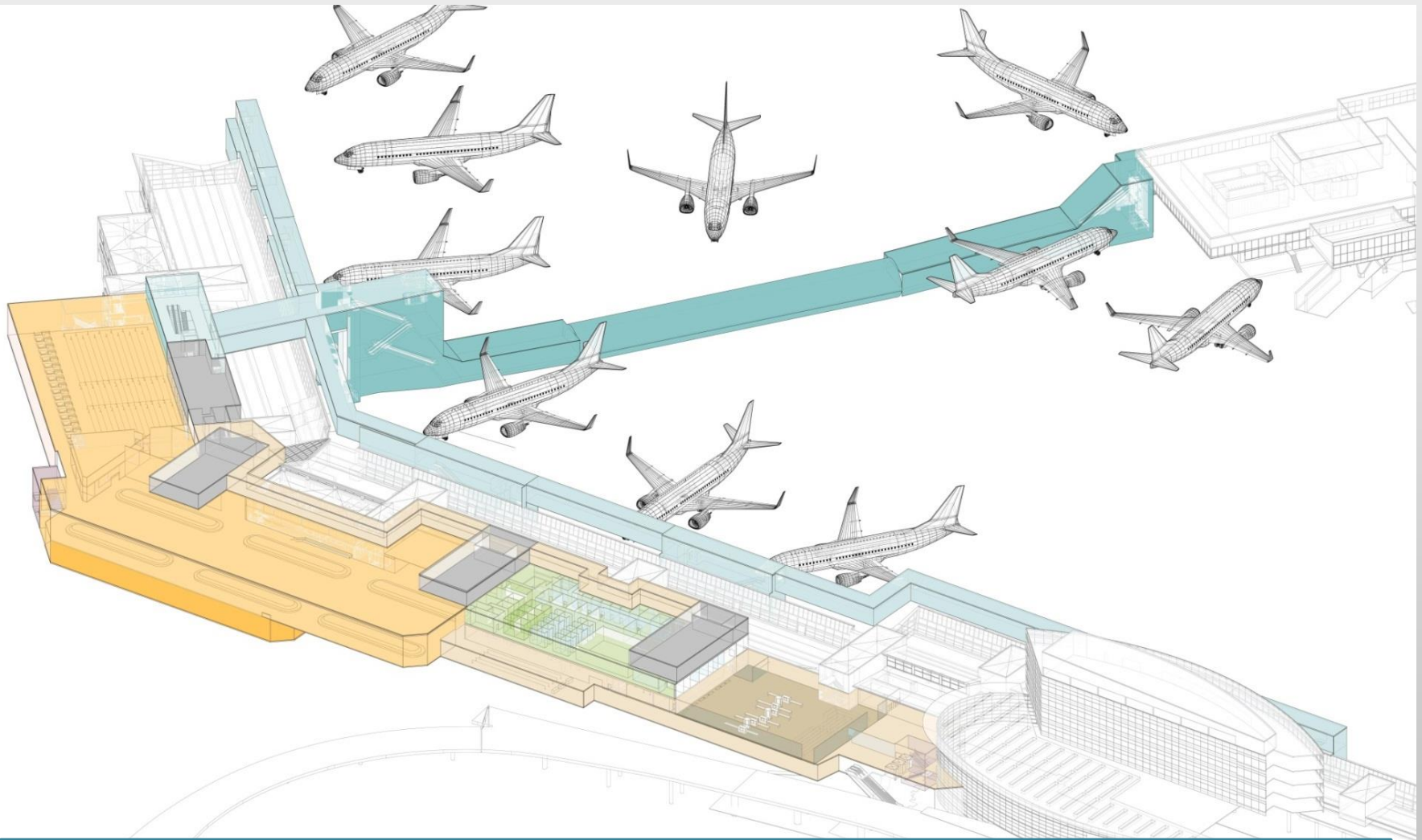
Connector Bridge Option



Connection to from South Satellite IAF via overhead bridge

2014 IAF Recommended Option – Bridge vs Tunnel

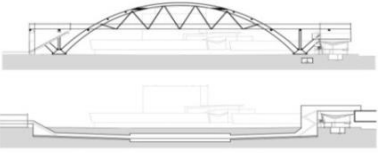
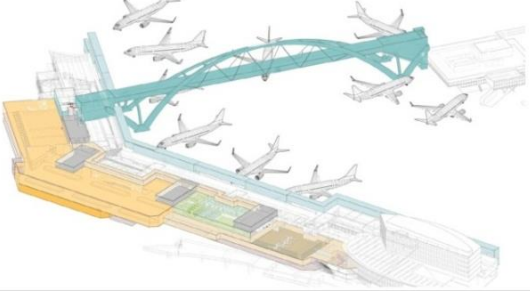
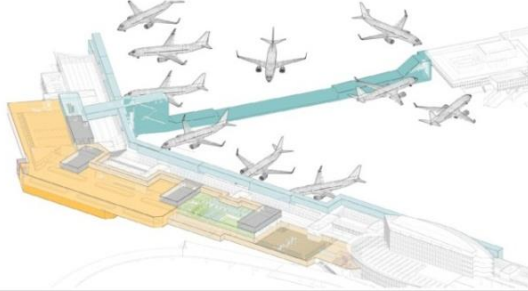
Connector Tunnel Option



Connection from South Satellite to IAF via underground tunnel

2014 IAF Recommended Option – Bridge vs Tunnel

Decision Matrix

<p>BRIDGE VS TUNNEL DECISION MATRIX International Arrivals Facility 6/25/2014</p> 	<p>Bridge</p> 	<p>Tunnel</p> 
Passenger Experience	<p>All passenger walkways to IAF are above ground Views to region & natural light Easier wayfinding</p>	<p>Passenger walkways from South Satellite to IAF are below ground Passenger walkways from Concourse A to IAF are above ground More vertical transitions for passengers to go over Concourse A</p>
Opportunity	<p>Unique iconic image for international arrivals Could change level of IAF primary inspection to provide views to region</p>	<p>Could change level of IAF primary inspection to provide views to region</p>
Capacity and Future Flexibility	<p>No impact Reduced flexibility (bridge support + vertical cores) Compatible with future terminal development</p>	<p>No impact Reduced flexibility (vertical cores) Compatible with future terminal development Future STS extension forced to deeper level</p>
Operational Impacts During Construction	<p>Gate closures: 4 gates for 12 months Taxilane closure: Taxilane closed for limited duration Airfield impacts: Lesser impacts Cargo 2 preassembly site temporarily removes 1 noseload/RON position w/ no lease impact</p>	<p>Gate closures: 2 gates for 18 months on Concourse A, followed by 2 gates for 8 months on South Satellite Taxilane closure: Taxilane closed for limited duration Airfield impacts: Greater impacts</p>
Cost (Comparative Only, Not Fully Loaded, No Shift Premium)		
Connector	\$84 MM	\$100 MM
Sterile corridor elevated	\$17 MM	\$17 MM
Connector Over Conc A	\$13 MM	\$12 MM
Subtotal (Connector + Concourse A Sterile Corridor)	\$114 MM	\$129 MM
Maintenance	<p>Greater maintenance and inspection</p>	<p>Less maintenance</p>
Risk	<p>Bridge may overscale existing terminal Reducing scale of bridge could impact gate capacity Fire lifesafety issues could compromise aesthetics</p>	<p>Varying soil conditions Disruption to existing utilities Risk of mining under taxilane with shallow tunnel</p>

Bridge better than tunnel after evaluation

2014 IAF Recommended Option – Bridge vs Tunnel

Bridge Option

- Pros
 - Lowest cost (both initial and ongoing)
 - Least impact to operations during construction (shorter duration)
 - Easier wayfinding for passengers
 - Opportunity for unique iconic image
- Cons
 - Greater maintenance and inspection

Bridge better than tunnel after evaluation

2014 IAF Recommended Option – Bridge vs Tunnel

Tunnel Option

- Pros
 - No FAA airspace issues to resolve
- Cons
 - Greater cost (both initial and ongoing)
 - Significant impact to gate access during construction with open cut
 - Significant risk of collapse with deep tunnel
 - Significant risk of ramp damage and 12 month impact with shallow tunnel
 - Greater impact to operations during construction (longer duration)

Bridge better than tunnel after evaluation

2014 IAF Recommended Option – Airline Review

- Airline Technical Representative (ATR) led review of IAF Planning Document with airlines
- Functional program accepted by airlines participating in review



IAF functional program accepted by participating airlines

Independent Architectural Review

Andy Bell

Airport Market Sector Lead,
Kimley-Horn

Kiran Merchant

CEO, DY Consultants

Mike Doucette

Deputy Executive Director,
Los Angeles World Airports



Peer Review

Proposed International Arrivals Facility (IAF)

Seattle – Tacoma International Airport

July 28, 2015



Andy Bell

Professional Resume

- 43 years of experience in planning, design and construction of Airport Development Projects
- Currently Airport Market Sector Lead with Kimley-Horn in Atlanta
- Formerly Vice President of Planning for Dallas/Ft. Worth International Airport (DFW)
 - Responsible for the Airport Development Plan which defined over \$3B in terminal, roadway, parking and rail projects
 - Developed phased expansion strategies for International Gates and passenger processing facilities
- Managing Executive for Skylink Automated People Mover at DFW
 - Directed design and construction for world's largest APM system connecting 6 terminals
- Formerly Deputy General Manager of Planning & Development for the Atlanta Airport
 - Oversight for final design and construction of new International Concourse E, largest in North America
 - Responsible for Airport Master Plan and airline approvals for \$5.4B in terminal, airfield, roadway, consolidated rental car, and parking facilities
 - Created the "Vision" and master plan for a new Concourse F International Terminal

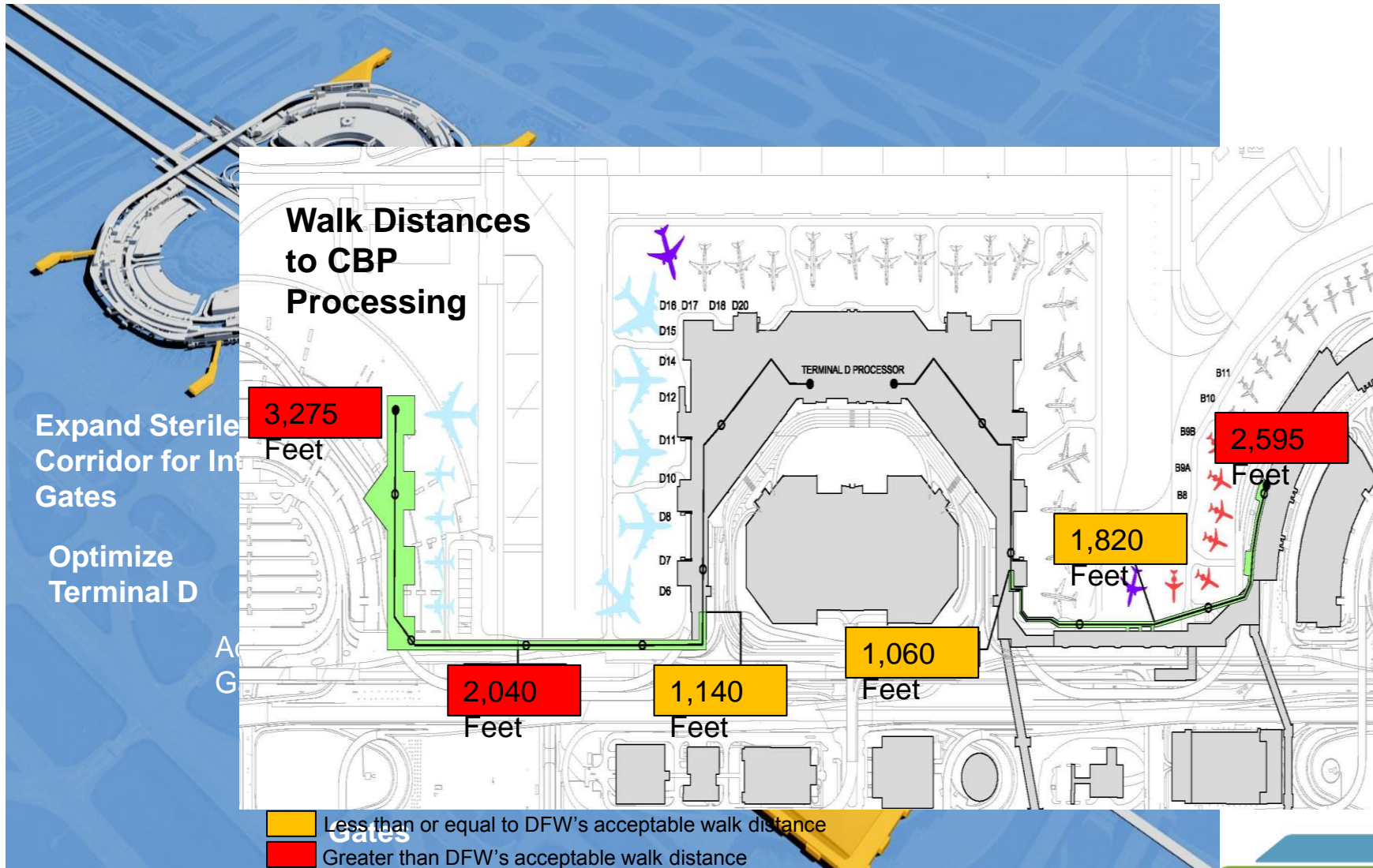
DFW - International Terminal D



- 28 Gates
- 2 million square feet
- \$1.2B development cost
- Opened July 2005
- 3,100 Int'l passengers/hour arrival capacity
- APC, Global Entry, Modified One-Stop



DFW – Phased Development Strategy for Int’l Growth

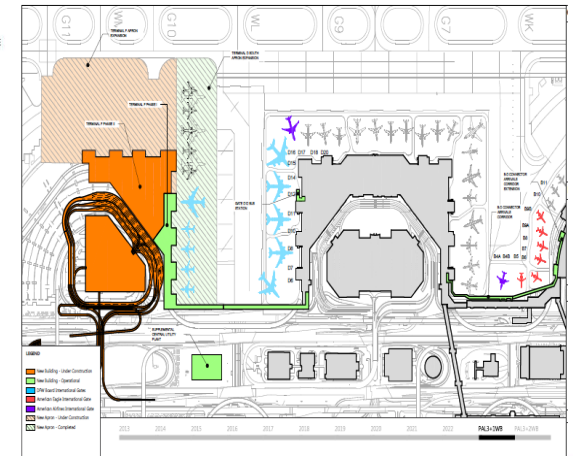
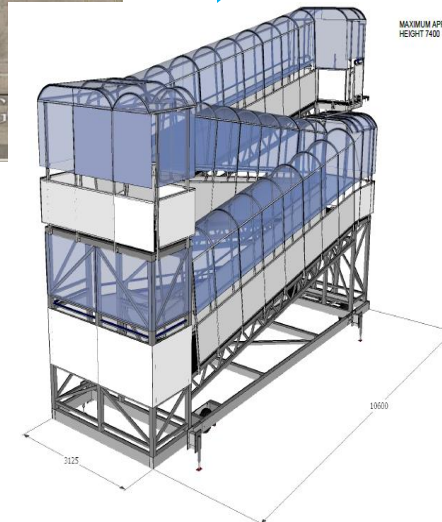


Hardstanding Aircraft – A New Paradigm for DFW



- Bus Gate Built as part of original facility
- Supports COBUS operation for convenient connection to Sterile Corridor
- Critical support during transition to new gates to meet growing demand

Sloped Ramps provide convenient and fast way to load/unload at aircraft



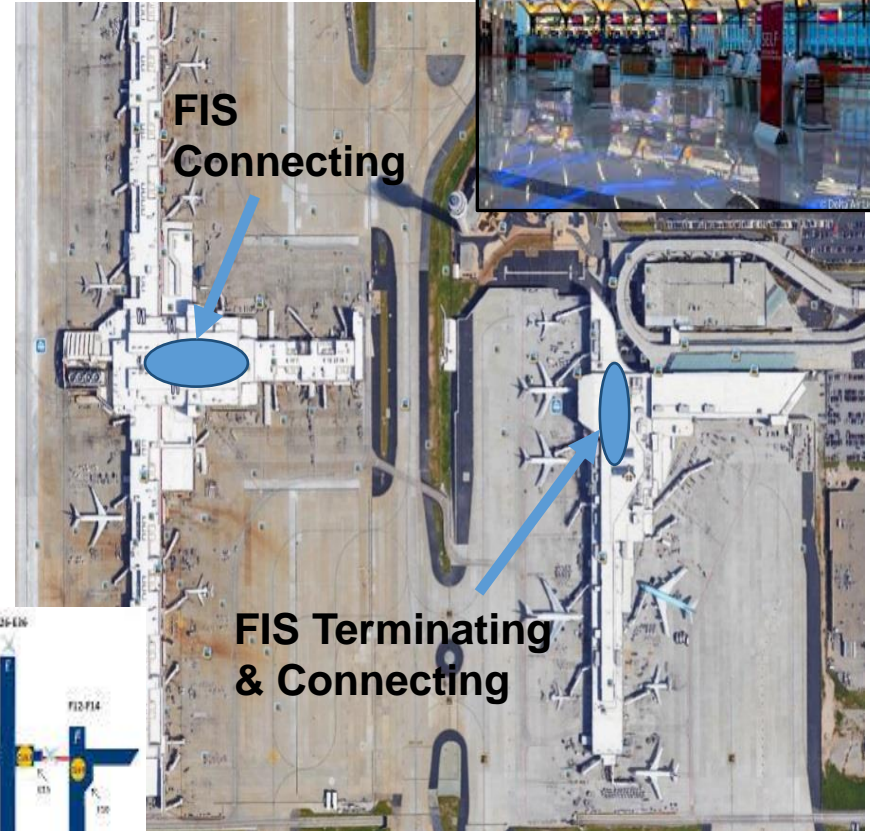
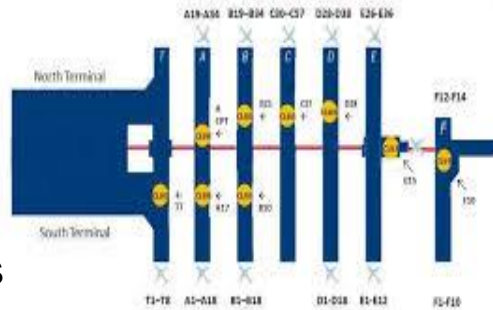
ATL – International Concourse E and Terminal F

- International Concourse E
 - 2 million Square Feet
 - Opened 1994
 - 28 gates

“Concourse E is wonderful but you still have to fix the broken arm.....Atlanta needs to have a direct connection to landside to be a global competitor”.

Atlanta Int’l Business Community

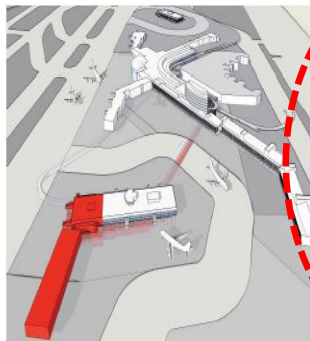
- Terminal F
 - Opened 2012
 - 12 Gates
 - 24/7 FIS
 - Landside Access



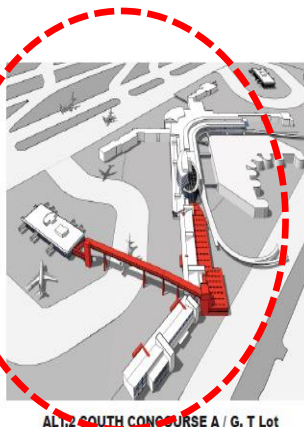
IAF Planning Process - Observations

- Holistic Approach
- Demand Driven
- Thorough Examination of Site Alternatives
- New Innovative Ideas uncovered during process
- Due Diligence exceeds Industry Norms
- Airport and Airline Stakeholders Engaged during the Process
- Sustainability Factors incorporated in the Planning Process
- Importance of cost and customer experience not lost in the process
- Result: Clear Objectives and Project Definition

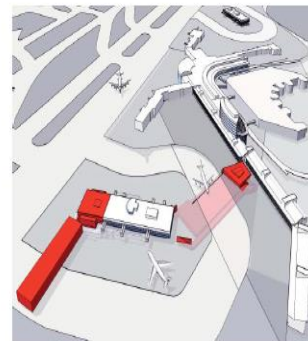
FIS FACILITY ALTERNATIVES



ALT.1 SOUTH SATELLITE BASEMENT EXPANSION



ALT.2 SOUTH CONCOURSE A / G, T Lot



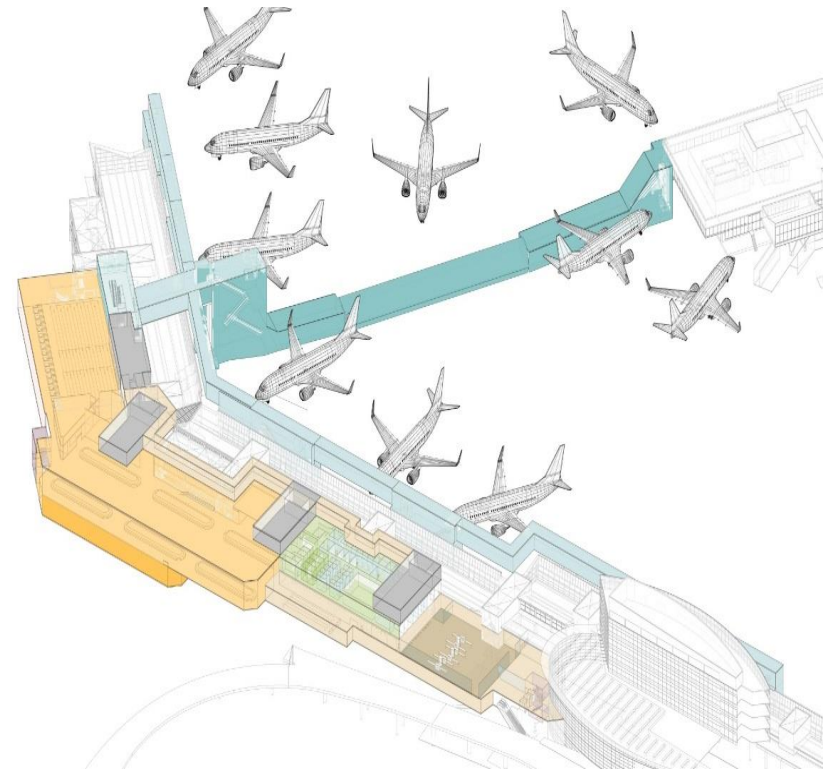
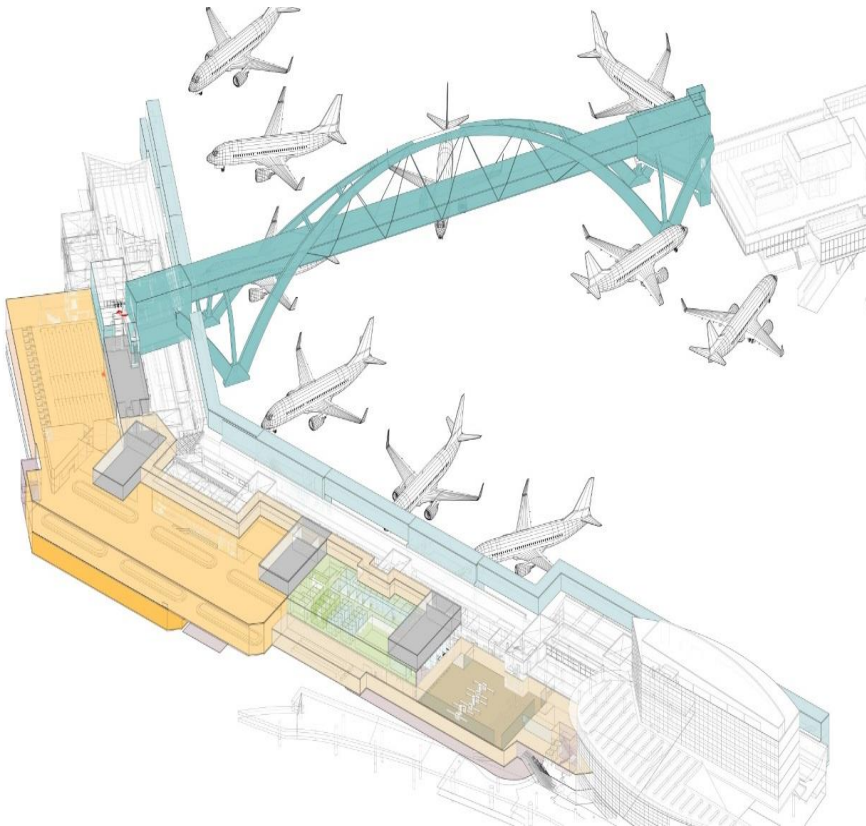
ALT.3 SOUTH SATELLITE TAXILANE TUNNEL



ALT.4 NORTH SATELLITE / G, T Lot

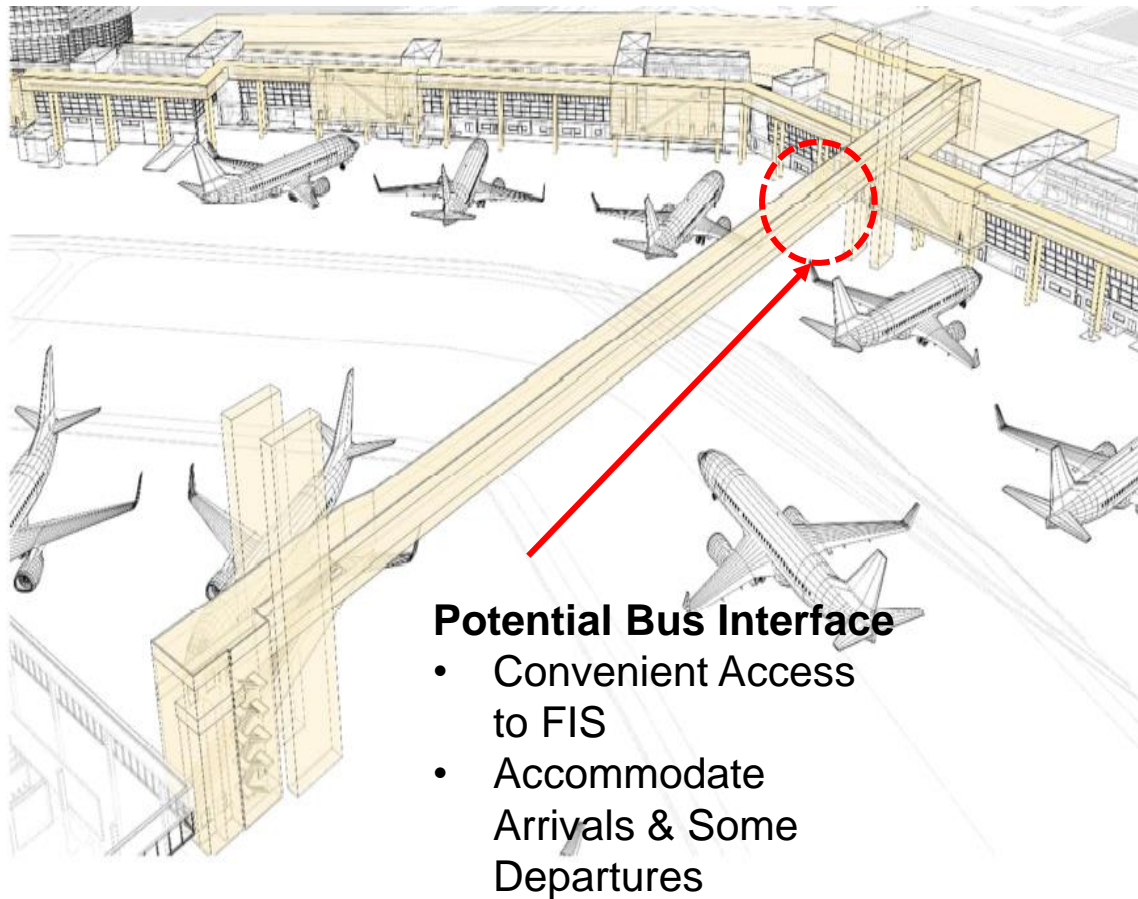
IAF Development Challenges/Opportunities

- Bridge vs Tunnel from SSA to Landside



IAF Development Challenges/Opportunities

- Bridge vs Tunnel from SSA to Landside
- Hardstand and Busing Strategy



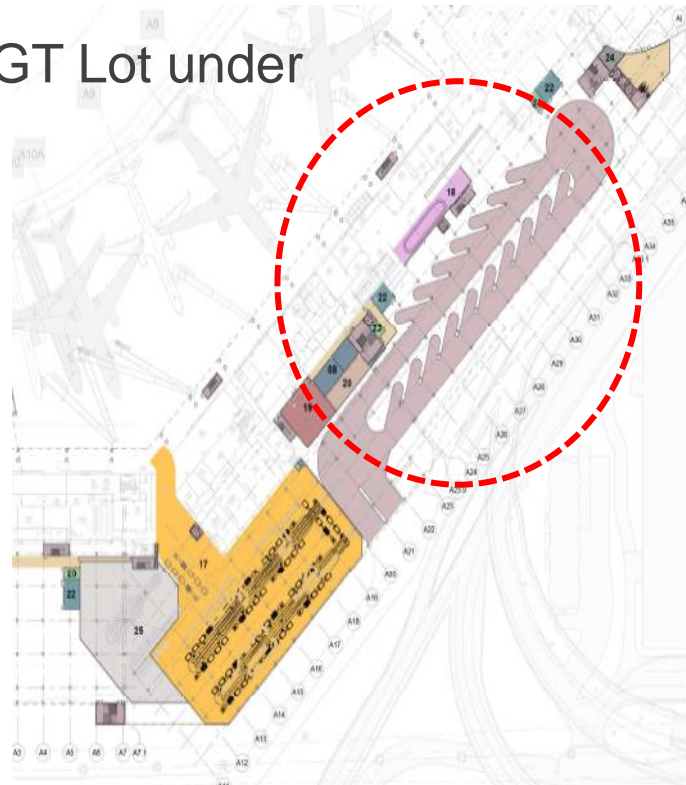
IAF Development Challenges/Opportunities

- Bridge vs Tunnel from SSA to Landside
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- Potential Congestion/Chokepoints in Customs/ReCheck/SSCP Area



IAF Development Challenges/Opportunities

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- Hardstand and Busing Strategy
- Potential Congestion/Chokepoints in Customs/ReCheck/SSCP Area
- Clarify Potential Conflict with GT Lot under Building



IAF Development Challenges/Opportunities

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- Clarify Potential Conflict with GT Lot under Building
- Ensure Central Utility Plant capacities can support new IAF space and future expansion
- Ensure Curbside is balanced with IAF demand
- Elevators sized to accommodate carts, wheelchairs and aging population

IAF Development Challenges/Opportunities

- Bridge vs Tunnel from SSA
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Building



- Support
- and



- Technology will assist in “Future Proofing” the IAF
Facilities

IAF Development Challenges/Opportunities

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- Hardstand and Busing Strategy
- Potential Congestion/Chokepoints in Customs/ReCheck/SSCP Area
- Clarify Potential Conflict with GT Lot under Building
- Ensure Central Utility Plant capacities can support new IAF space and future expansion
- Verify that the Curbside is balanced with IAF demand
- Elevators sized to accommodate carts, wheelchairs and aging population
- Technology will assist in “Future Proofing” the IAF Facilities
- Progressive Design-Build project delivery approach is excellent path to ensure collaboration, cost/schedule controls and minimize “Buyer’s Remorse”.



Peer Review

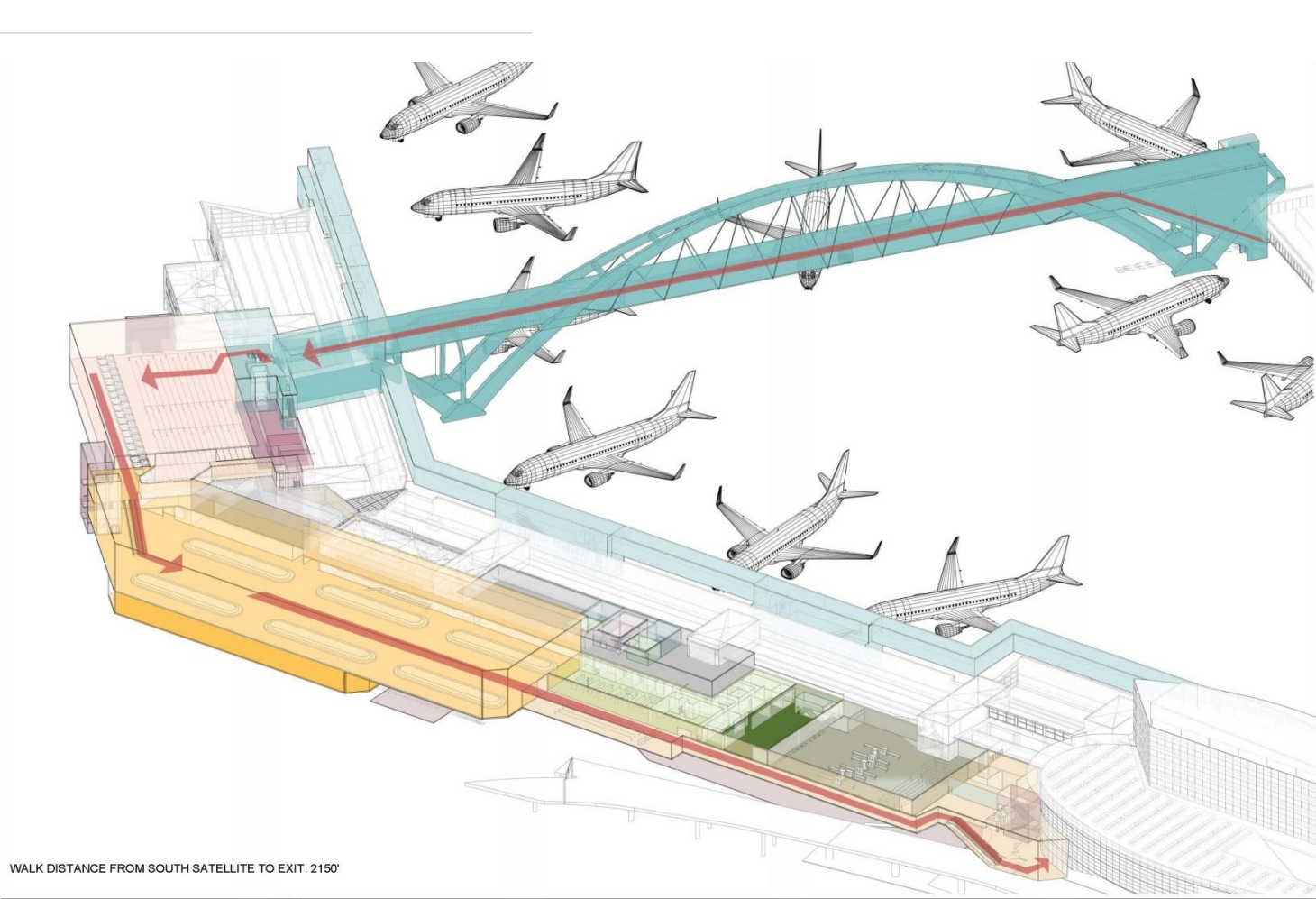
Proposed International Arrivals Facility (IAF)

Seattle – Tacoma International Airport

July 28, 2015



International Arrivals Facility – Program Review



WALK DISTANCE FROM SOUTH SATELLITE TO EXIT: 2150'

Kiran Merchant

CEO DY Consultants

- 30 years of experience at over 50 airports worldwide
- Formerly Head of Planning for Port Authority of New York New Jersey, busiest airport system in the world. Experience includes planning oversight of several major terminal development projects, such as:
 - JFK T4, Terminal Expansion Program for Delta Airlines
 - JFK T5i, new international terminal for JetBlue Airlines
 - JFK T8, new international terminal for American Airlines
 - EWR Terminal A, new 35 gate domestic terminal
- Formerly Director of Facilities for Continental Airlines
 - Oversight of Newark Terminal C international terminal, global gateway project
- Director of Facilities Design and Construction for TWA
 - Managed Capital Improvement Projects for 72 Airports System

JFK – Terminal 4

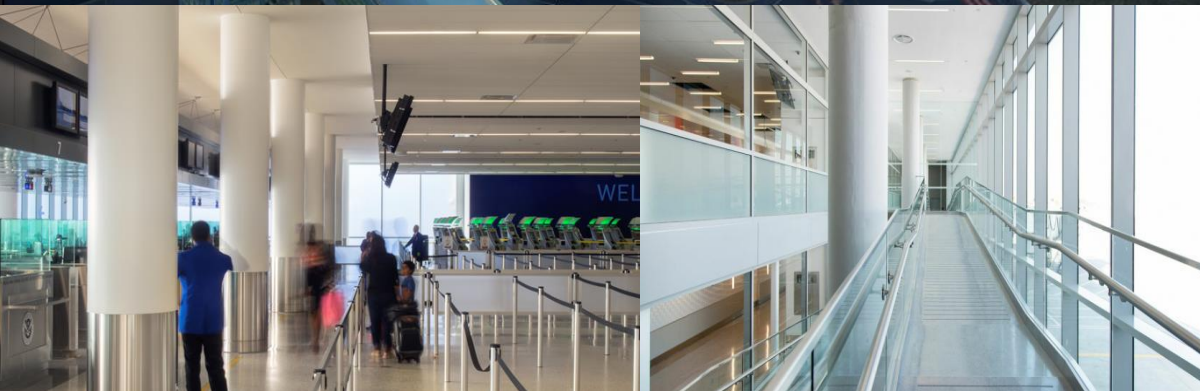


- **International Arriving PAX Demand**
 - 2,500
- **Total FIS Space Program**
 - 210,000 sft.
- **International arrival gates**
 - 25 contact gates,
 - 11 HS positions
- **Passport Control positions - 54**
- **APC Kiosk – 66**
- **Global entry kiosks - 24**
- **Baggage claim devices**
 - (7) 250 LF devices
- **Customs Positions – 9**
- **Recheck positions - 6**

JFK – JetBlue T5i

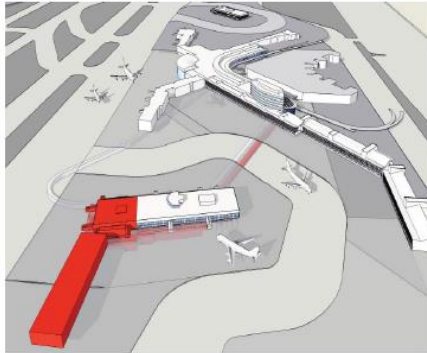


- **International Arriving PAX Demand**
 - 1,000 (Planned for 1400)
- **Total FIS Space Program**
 - 128,000 sft.
- **International arrival gates**
 - 6 contact gates,
 - 3 HS positions with bus loop
- **Passport Control positions - 14**
- **APC Kiosk – 42**
- **Global entry kiosks - 9**
- **Baggage claim devices**
 - (2) 280 LF devices
- **Customs Positions – 4**
- **Recheck positions - 4**

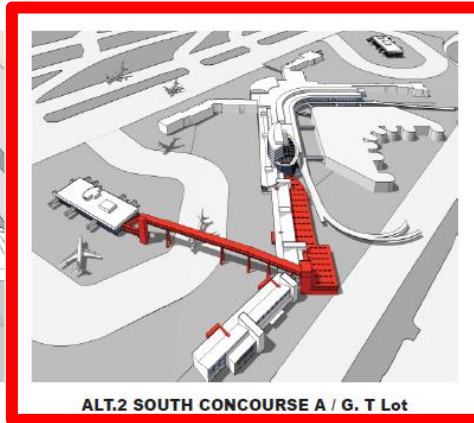


IAF – Program Strengths

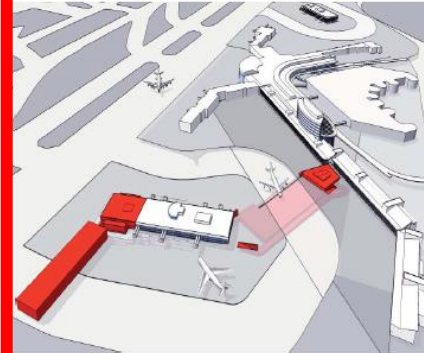
FIS FACILITY ALTERNATIVES



ALT.1 SOUTH SATELLITE BASEMENT EXPANSION



ALT.2 SOUTH CONCOURSE A / G. T Lot



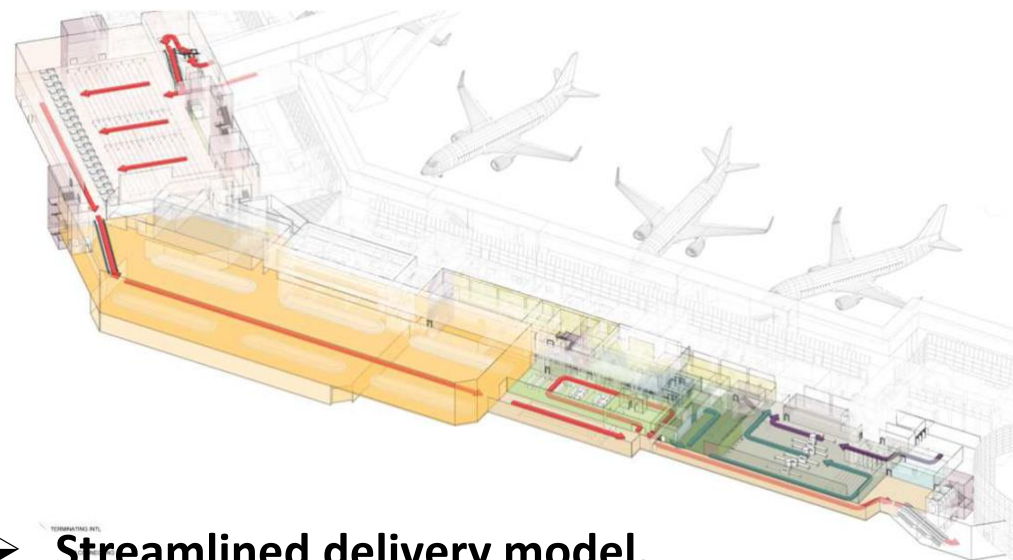
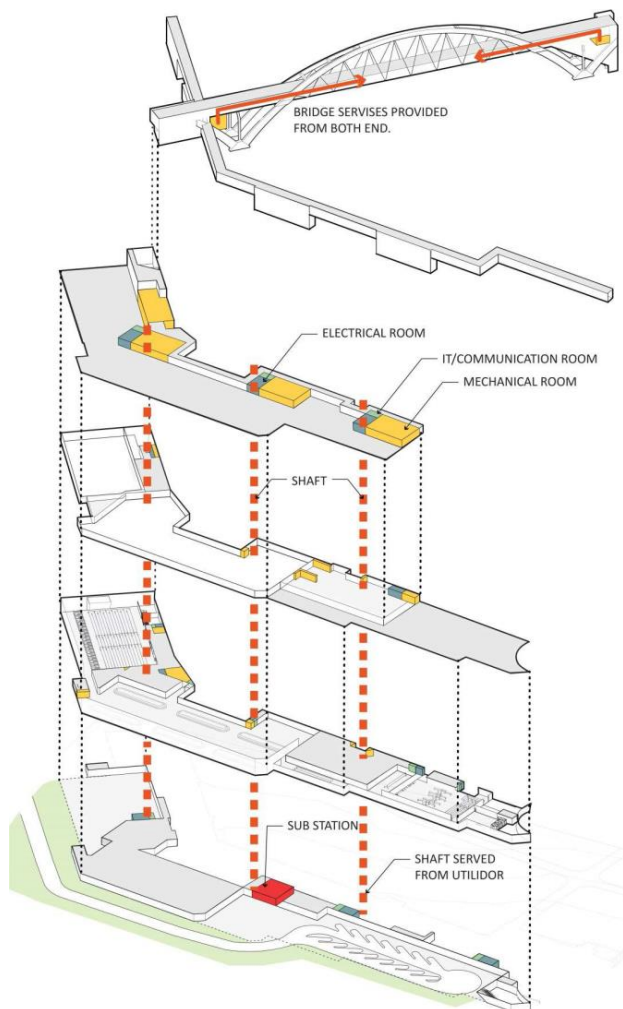
ALT.3 SOUTH SATELLITE TAXILANE TUNNEL



ALT.4 NORTH SATELLITE / G. T Lot

- **Well Defined Process & project organization.**
 - ❖ Good Project definition and methodology.
- **Focus on value-driven design.**
 - ❖ Decisions made with financial impacts in mind.
- **Positive partnering**
- **Intuitive Passenger flow**
- **Strong Arrivals Experience**
- **Landside facility creates least operational disruptions**
- **Easier access to construction site**

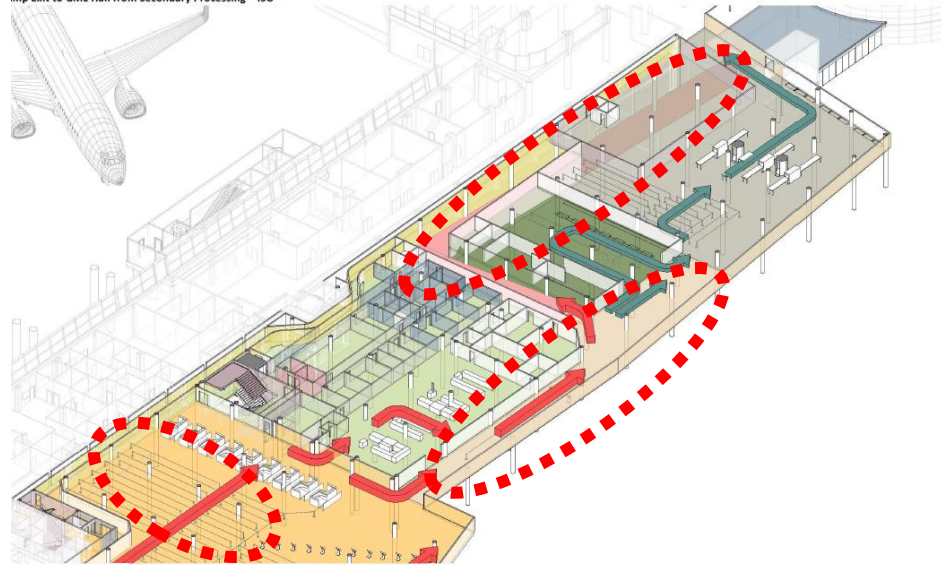
Integrated Development Process



- Streamlined delivery model.
 - ❖ Ensures on-time and latest CBP thinking.
- Structured start up process.
 - ❖ Early stakeholder engagement and agreement.
- Incremental development process.
- Cost control throughout process.
- Optimization of existing infrastructure.

Potential Challenges

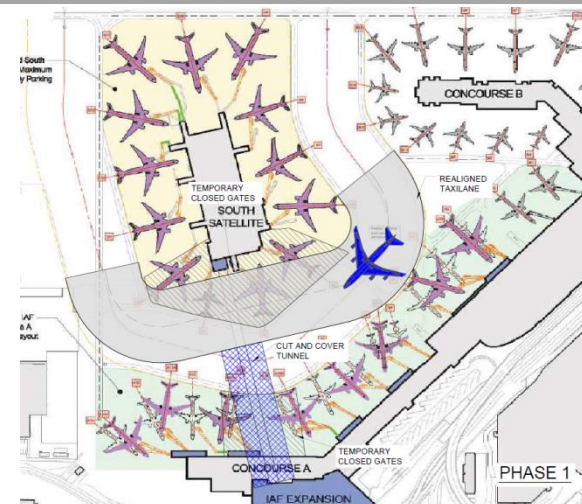
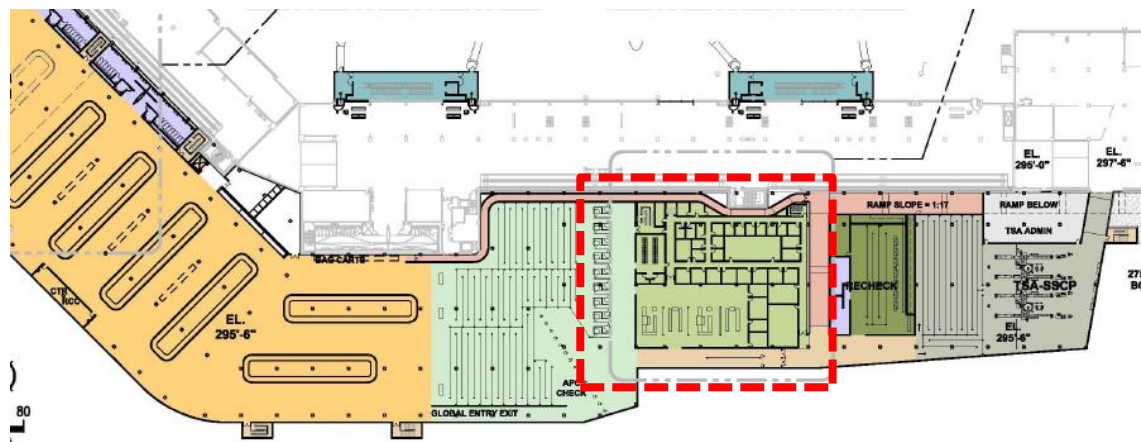
Imp Exit to GML Hall from Secondary Processing - ISO



1. Narrow exit paths - Customs, Recheck and SSCP could back up in situations of arrival delays.
2. Baggage first solution needs bigger space in claim area due to passengers arriving before bags and requires proper Queuing widths and may need alternate Queuing patterns. (Less turns).
3. Entrance to Baggage Cart route to the feeder belts may need to be widened
4. Smarte Cart Return route needs some refinement.
5. Terminating Passengers at the Arrivals frontage may create some congestion at the south end of terminal complex

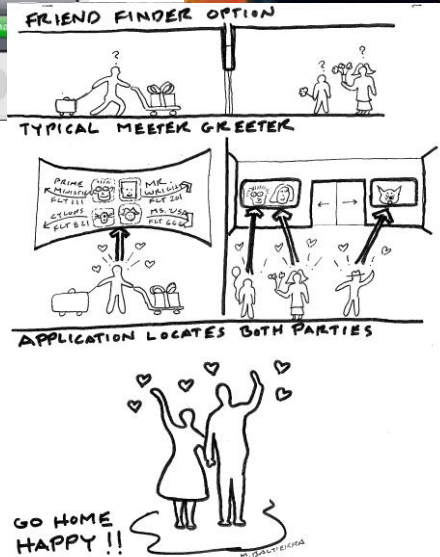
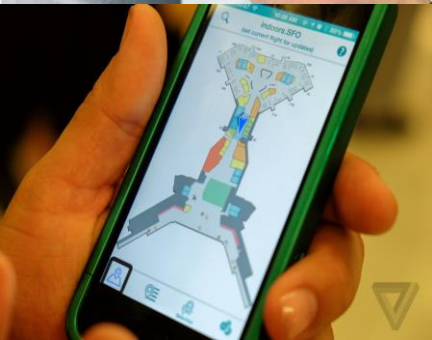
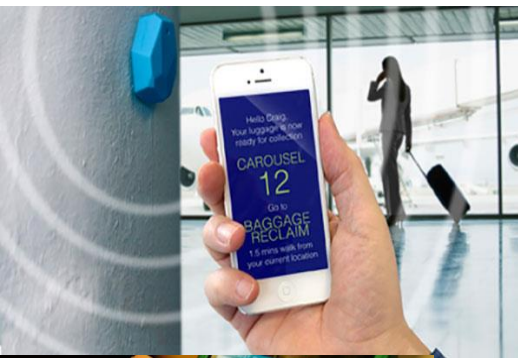


Opportunities



- Cut and Cover Tunnel option with re-aligned Taxi Lane may be explored for cost and schedule savings. However Total # of gate closure during construction need to be studied for Operational Impacts.
- Close vicinity of Primary and Secondary processing is good for “Baggage first” option. The same could be explored for other options to optimize CBP staffing.
- Way-finding and well defined Branding/Signage Plan will reduce the stress of long international travel and enhance the Sense of Place for Passengers.

Airport of the Future

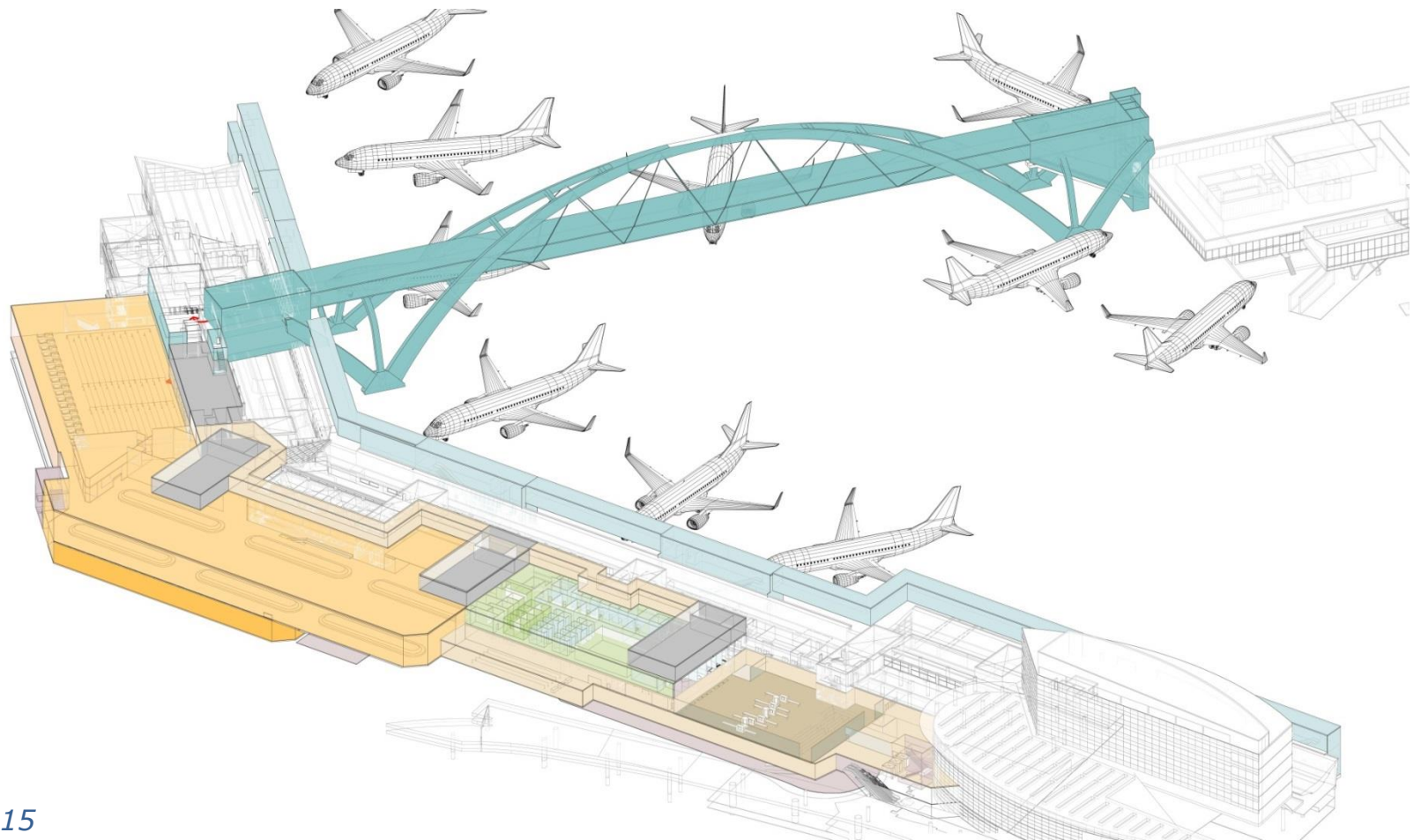


Technological innovations and changes in Social Behavior can be incorporated to improve Operational efficiencies and enhance Customer Service.



Peer review of the International Arrivals Facility (IAF)

prepared for the



July 28, 2015

Mike Doucette

Deputy Executive Director at Los Angeles World Airports

30 years of experience at over 50 airports worldwide

Registered Architect in the State of California

Former Head of Planning for Los Angeles World Airports

Previously employed by two major airport planning firms

- Landrum & Brown

- TCI (Thompson Consultants International)

Work at Los Angeles includes:

- Oversight of Design and construction of new Tom Bradley International Terminal

- Development of Airport Master Plan

- Various Individual Terminal Expansion Programs

Experience with over half a dozen international arrivals facilities, such as:

- Vancouver, BC

- Chicago O'Hare

- LAX

- Melbourne Aus.

- Austin Texas

- Phoenix Sky Harbor

- Munich

- JFK

- Seattle

LAX International Airport

18 gates

9 – A380 – Group 6

6 – B777 - Group 5

3 – B737 – Group 3

1.3 M square feet

1.7 Billion dollars

4500 PAX per hour International
Arrival Capacity



July 28, 2015

Peer review of the IAF prepared for the

Melbourne International Airport



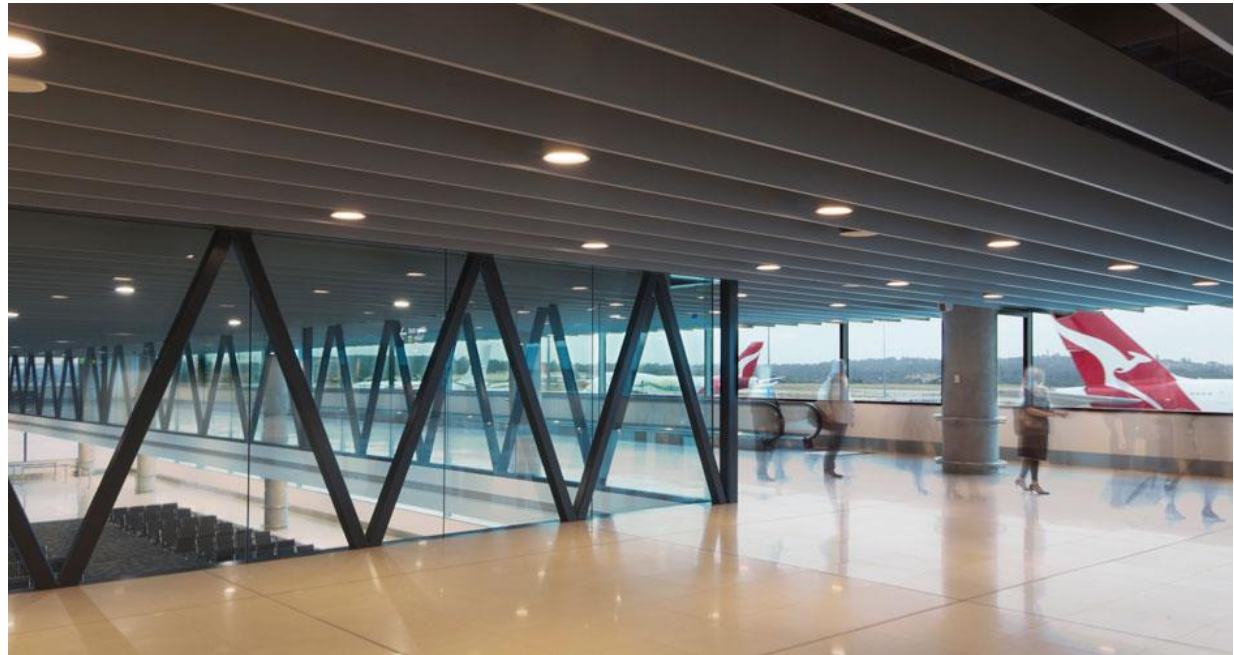
Phase 1 - 5 new Group 5 & 6 Gate Positions

Increased Outbound Pax Processing

Phase 2 – 6 additional Group 5 & 6 gate positions

New Concessions Core

Inbound Arrivals Improvements



Vancouver International Airport

Planning and Programming work including development of Basis of Design Document
15 New Group 5 Gate Positions
New International Arrivals & Departures Facilities
US pre-clearance facilities
New Concessions Core



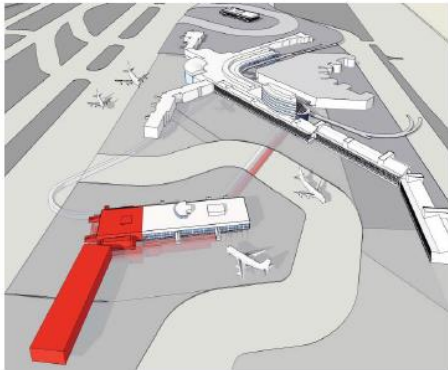
Sea-Tac IAF Macro Development Issues

- Expand existing South Satellite versus Landside IAF
- Passenger connection to Landside - Bridge - Tunnel - Busing
- International Arrivals Activity and the Potential Impact of Pre-clearance ?
- Role of Technology in Processing Arriving Passengers
- Bag First Processing and the role of BIWIS
(Baggage Image and Weight Identification)

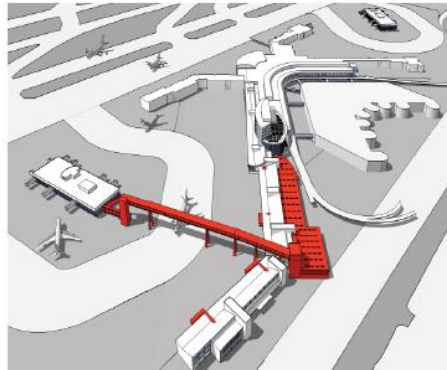
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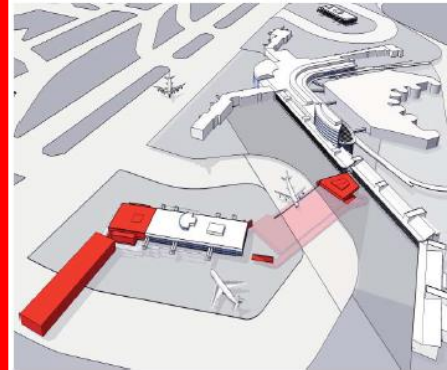
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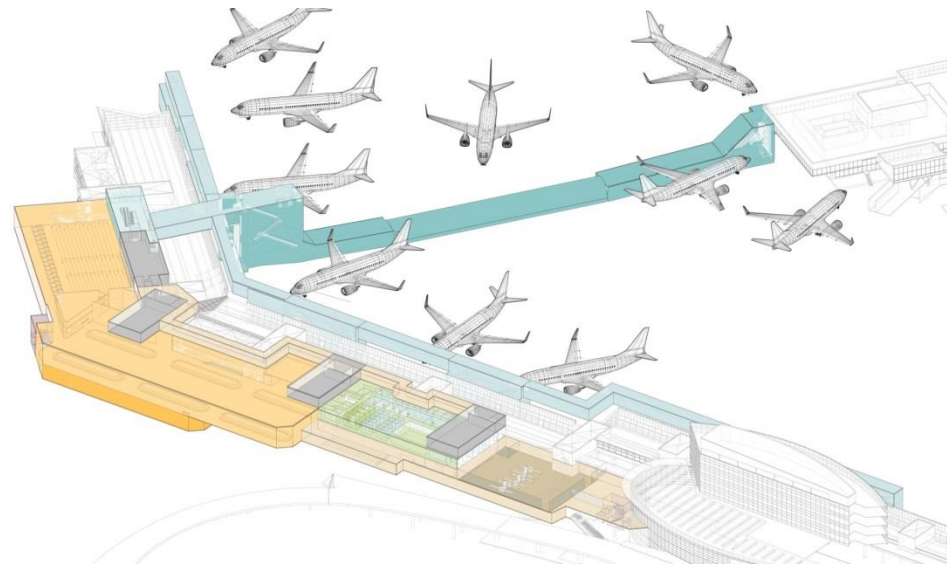
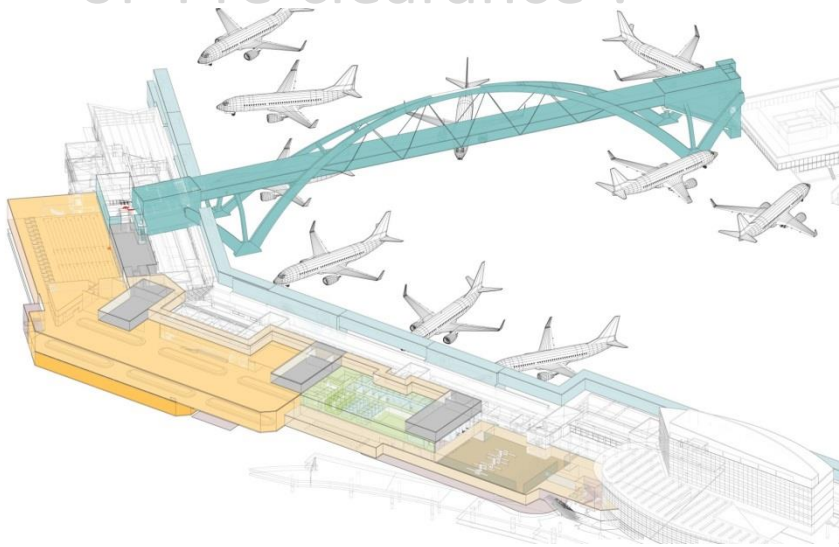
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- International Arrivals Activity and the Potential Impact of Pre-clearance ?



Sea-Tac IAF Macro Development Issues

- Expand existing South Satellite versus Landside IAF
- Passenger connection to Landside - Bridge - Tunnel - Busing
- **International Arrivals Activity and the Potential Impact of Pre-clearance ?**
- Role of Technology
- Bag First Process

“I will not have pre-clearance in Doha and from what I know, Dubai will not have that,” Akbar Al Baker* said, speaking at a press conference at Arabian Travel Market.

*Qatar Airways' CEO Akbar Al Baker

May 10, 2015

Sea-Tac IAF Macro Development Issues



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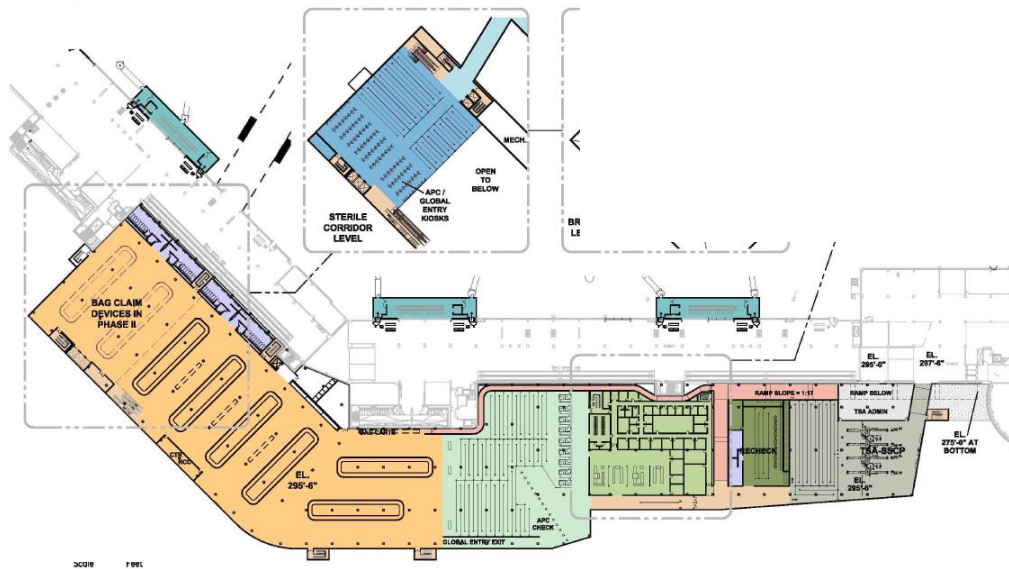
of Pre-clearance

- Role of Technology in Processing Arriving Passengers
- Bag First Processing



Sea-Tac IAF Macro Development Issues

- Expansion
- Passenger
- Busing
- International
- Pre
- Role of

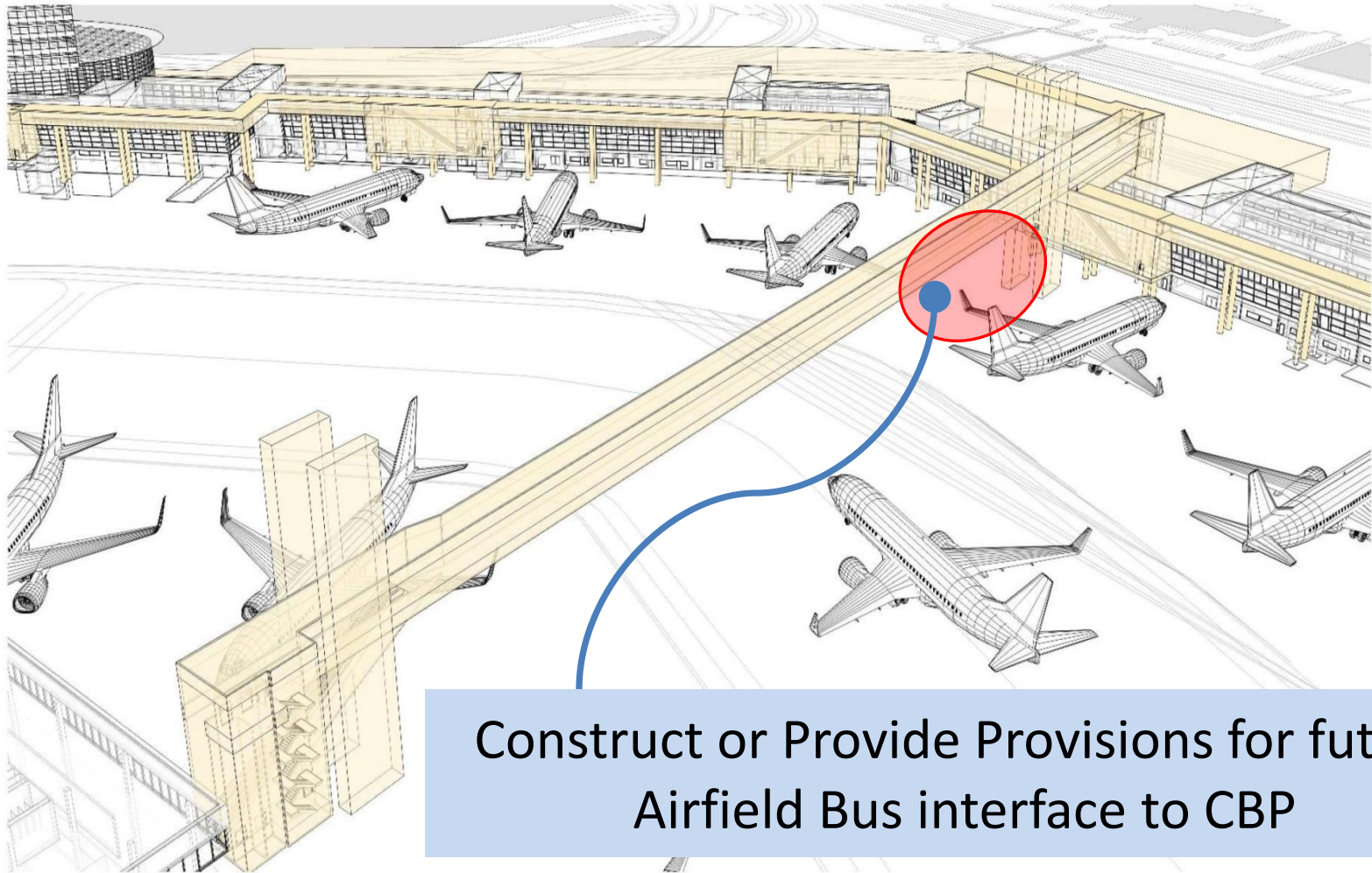


- Airside IAF
- e - Tunnel -
- Potential Impact
- Passengers

- Bag First Processing and the role of BIWIS (Baggage Image and Weight Identification)

“Let checked bags stay checked”

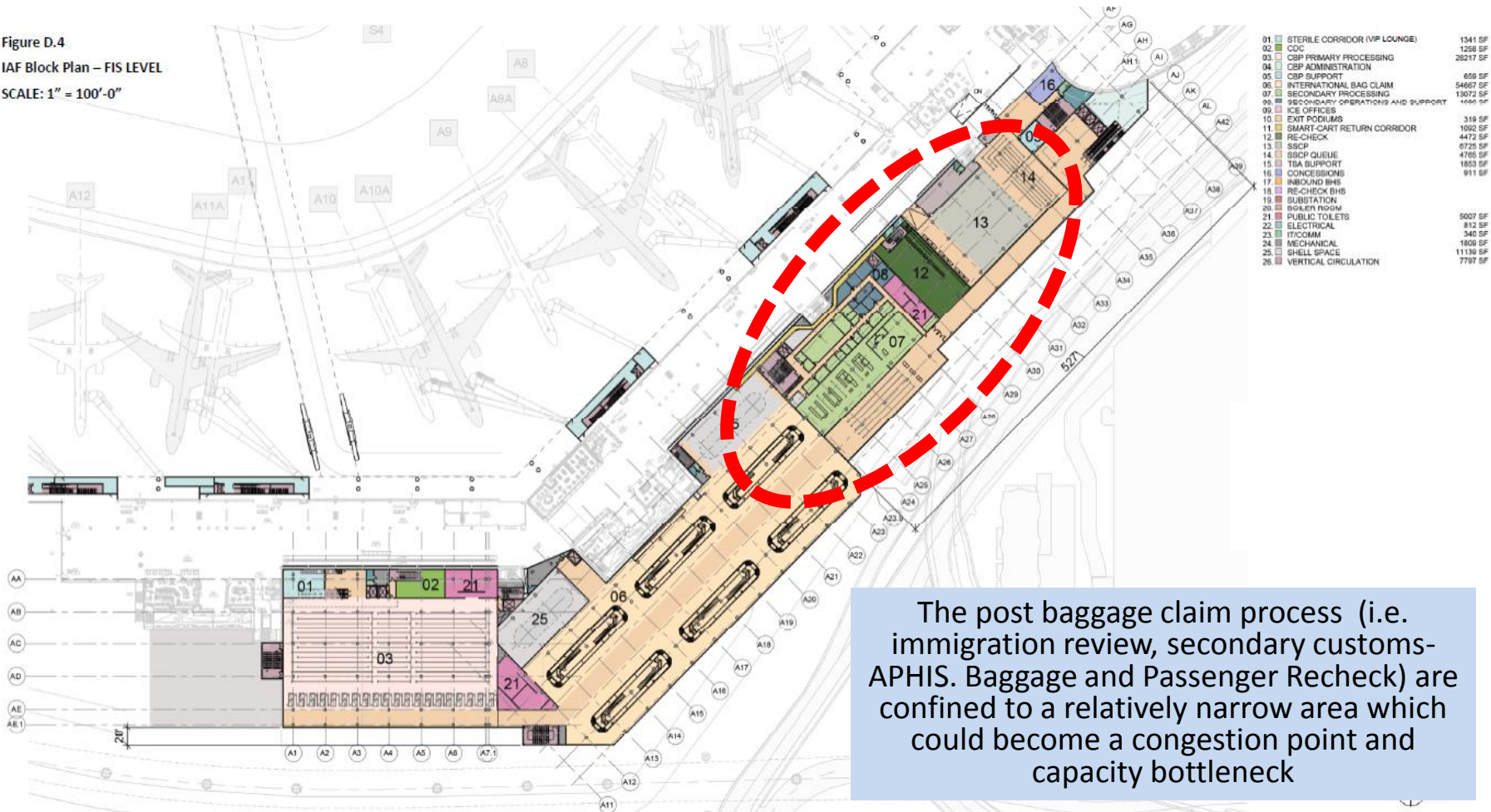
Sea-Tac IAF Specific Planning Issues



Construct or Provide Provisions for future
Airfield Bus interface to CBP

Sea-Tac IAF Specific Planning Issues

Figure D.4
IAF Block Plan – FIS LEVEL
SCALE: 1" = 100'-0"



The post baggage claim process (i.e. immigration review, secondary customs-APHIS. Baggage and Passenger Recheck) are confined to a relatively narrow area which could become a congestion point and capacity bottleneck

Sea-Tac IAF Peer Review Conclusions

Observations

- Planning Work completed to date has been well thought out and very comprehensive.
- With confidence in the Passenger Forecast/cost affordability the development of the new IAF will provide a tremendous improvement in the passenger/employee/stakeholder experience at Sea-Tac.

Recommendations

- Cost Benefit Analysis to alternative Cut and Cover Tunnel phasing approach as a possible Value Engineering fallback.
- Incorporate Airfield Bus Access for future flexibility.
- Incorporate current future technology to the extent possible.
- Consider Bag First / BIWIS approach to streamline arrivals experience.
- Continue to refine physical layout and try to reach consensus of major functional layouts prior to engaging design build team.

Design-Build Contractor and Validation Process

David Brush
IAF Program Leader

IAF Design-Build Contractor

- Introduce Lou Palandrani
 - Senior Vice President Clark Construction, Team Leader, 20 years design-build experience
- June 24 - Clark/SOM selected from among six nationally known design-build firms
- July 20 – Contract negotiations concluded & contract executed
- July 21 - Port and design-builder staff began co-locating to the SeaTac Office Center

Clark/SOM, extremely high caliber firm, is working

IAF Design-Build Validation Work

- Conduct a comprehensive assessment of all existing conditions:
 - Confirm utility locations
 - Undertake geotechnical survey and borings
 - Conduct surveys and site investigations
 - Laser scan existing structures
 - Systems assessments (Mechanical, Electrical, IT, etc.)

Validation work comprehensively assesses all existing conditions

IAF Design-Build Validation Work

- Evolve various work plans:
 - Design-Build Team Implementation Plan
 - Building Information Management (BIM) Plan
 - Quality Assurance/Quality Control Plan
 - Safety & Security Plans
 - Construction Staging Plan
 - Construction Phasing Plan
- Review and validate Project Definition
Document planning concepts & requirements

Validation involves creating many vital plans

IAF Design-Build Validation Work

- Incorporate feedback/decisions from the Commission's 90 day review period
- Actively engage stakeholders, especially the airlines, CBP & TSA, throughout Validation
- Develop design concepts options based on the current program with various passenger flows and square footage to improve passenger processing times, reduce costs and speed construction

Validation checks, and improves upon, earlier programming

IAF Design-Build Validation Work

- Advance the Port-selected concept to Early Schematic Design level
- Key Validation Period Deliverables:
 - Refined IAF concept that incorporates stakeholder input and satisfies the Airport's project goals and objectives
 - Target Budget
 - Target Schedule
- Validation concludes in late November 2015

Results and deliverables will be available in November

Customs & Border Protection; Technology at Federal Inspection Service Facilities

David Brush

IAF Program Leader

CBP Collaboration with IAF

- Dan Tanciar
 - Director, Travel & Tourism Initiatives, Office of Field Operations
- Mark Wilkerson
 - Seattle Area Port Director
- Jeff Holmgren
 - TSA Federal Security Director for State of Washington
- The Airport (SEA) has a close working relationship with Customs and Border Protection (CBP) addressing overcapacity and congestion issues in existing South Satellite FIS
- Staff has engaged in monthly meetings with CBP staff since 2012 to discuss the SEA IAF
- Airport Director engaged Gil Kerlikowske, Commissioner of CBP for joint effort to ensure creation of the most modern processing IAF possible

IAF work includes continuing collaboration with CBP

CBP Collaboration with IAF

- CBP will have a representative assigned to the IAF and will have an office with the IAF team at the SeaTac Office Center
- CBP & POS are working together to design a “Flagship” IAF
- New Passenger Processing Methods under consideration:
 - Automated Primary
 - Baggage First Layout
 - Modified Egress

CBP & POS are working together to design a “Flagship” IAF

CBP Ingenuity and Delivery

- **New Technology Vision**
 - All passengers process through automated kiosks or mobile devices
 - Dynamic wayfinding signs
 - Mobile inspections
 - Biometrics
- **New Project Delivery Method**
 - IAF to be first international facility delivered using Progressive Design Build

CBP will employ new technology to help increase passenger throughput

Preclearance – An Overview

- Preclearance takes place outside the USA
 - Passengers are screened on foreign soil, allowing DHS to determine (ahead of time) who can come into the USA with reduced risk
 - Involves the same immigration, customs and agriculture inspections of international air passengers performed upon arrival in the USA
 - Currently exists at 15 foreign airports in six different countries (Canada, Caribbean, Ireland, and UAE)

Preclearance allows passengers to be screened out side of the USA

Preclearance – An Overview

- Requirements for operating in host countries are:
 - DHS entering negotiations with ten airports in nine countries for new pre-clearance facilities
 - Host countries and airports fund new CBP/TSA facilities and majority of CBP/TSA staff costs and expenses
- Budget or security events in either country could cause Preclearance agreements to change

Preclearance will take significant time to implement

SEA Preclearance Implications

- London (LHR), Narita (NRT), Amsterdam (AMS)
- Existing service from LHR, NRT and AMS includes 18% of daily flights into the FIS during noon peak
- Schedule for expanded pre-clearance
 - LHR 2-4 years (scalable operations)
 - AMS and NRT could be 3-5 years, or longer depending upon agreements, budgets, and construction in those busy airports.

Preclearance could somewhat lower crowding at SEA

SEA Gate Overview

- 2015
 - 11 wide-body int'l gates now, 12 by year end
 - All 11 gates in simultaneous use during peak
 - 15 aircraft use int'l gates during 3 hour peak
- 2020
 - 18 wide-body int'l gates at completion of IAF
 - 16 gates in simultaneous use during peak
 - 22 wide-body aircraft use int'l gates during 3 hour peak (includes 2 anticipated new services, 2 domestic aircraft, and 4 potential preclearance aircraft)
- The Commissions' Century Agenda goal envisions 6 added int'l new services after 2020

The shortage of wide-body gates available at peak will continue to grow

SEA Passenger Overview

- Passenger (PAX) volume has greatly outgrown the existing 11 gate facility. PAX “holds” are increasing on both aircraft and in corridors.
- In 1970 the FIS was designed to process 800 passengers per hour
- Today’s peak hour demand on the FIS is 1,600 passengers.

The current FIS facility does not have capacity for the passenger volume

Preclearance Gate and PAX Summary

- Preclearance does not eliminate the need for added IAF wide-body gates at SEA during peaks
- Preclearance would slightly improve today's operation, but does not eliminate the need for expanded IAF international passenger processing capability in SEA.
- The airport will grow and the IAF is a facility to handle growth for the next 4 to 5 decades.

Preclearance does not eliminate the need for a new IAF

Airline Involvement in Project

- The Port continues to involve the airlines, including the Commission's 90 day review
- The airport has retained two individuals as “Airline Technical Representatives” who:
 - Will communicate with the airlines as intermediaries throughout the Validation period
 - Consolidate airline input and provide to the IAF team
 - Communicate IAF team progress to the airlines
- This will continue beyond the 90 day period and run to November when the IAF team returns to Commission with the results of Validation

Airline involvement will continue past the 90 day review

Forum Wrap-up and Next Meetings

- Technical discussions on July 29
- Airline Roundtable on August 11

An ongoing effort