

City of Chicago

Office of the City Clerk

Document Tracking Sheet



F2017-4

Meeting Date:

Sponsor(s):

Type:

Title:

1/25/2017

Dept./Agency

Communication

Application request regarding Passenger Facility Charge Program at Chicago O'Hare International Airport to Impose and Use Authority Funding for Terminal 5 Expansion

Committee(s) Assignment:

City of Chicago Department of Aviation

Rahm Emanuel, Mayor Ginger S. Evans, Commissioner of Aviation



Chicago O'Hare International Airport

Passenger Facility Charge

Application for Impose and Use Authority Funding for Terminal 5 Expansion - Design Project and Impose Only Authority Funding for Terminal 5 Expansion - Construction Project



November 2016



CHICAGO DEPARTMENT OF AVIATION CITY OF CHICAGO

December 16, 2016

The Honorable Susana A. Mendoza City Clerk City of Chicago City Hall Room 107 121 N. LaSalle Street Chicago, IL 60602

Dear Ms. Mendoza:

Pursuant to the ordinance passed on January 12, 1993, attached hereto please find an application submitted to the Federal Aviation Administration (FAA) dated November 23, 2016 regarding the Passenger Facility Charge (PFC) program at Chicago O'Hare International Airport.

If you have any questions regarding these matters, please contact me at (773) 686-3579.

Sincerely

Michael Cosentino Department of Aviation

Enclosure



CHICAGO DEPARTMENT OF AVIATION

CITY OF CHICAGO

November 23, 2016

Ms. Amy Hanson Chicago Airport District Office, CHI-ADO-600 Federal Aviation Administration (FAA) 2300 East Devon Avenue Des Plaines, IL 60018'

Dear Ms. Hanson:

Pursuant to Title 14 Code of Federal Regulations (CFR) Part 158, *Passenger Facility Charges*, following herewith please find these items regarding the Passenger Facility Charge (PFC) program at Chicago O'Hare International Airport (O'Hare), as administered by the City of Chicago (the City):

- one application form pertaining to the City's intent to:
 - impose a PFC at O'Hare and use PFC revenue for the Terminal 5 Expansion Design Project at O'Hare
 - impose a PFC at O'Hare for the Terminal 5 Expansion Construction Project at O'Hare

• all necessary attachments relating to the PFC authority being sought by the City

The Terminal 5 Expansion includes two projects: the design of an expansion of, and set of modifications to, the existing Terminal 5 at O'Hare (Design Project) and the construction of that expansion and modification (Construction Project). Descriptions of the Design Project and the Construction Project, and other required information, are included in Attachment B. This application is for impose and use PFC authority for the Design Project and impose only PFC authority for the Construction Project.

A notification letter detailing this proposed PFC action was sent on June 27, 2016 to all air carriers operating at O'Hare. A consultation meeting took place on July 28, 2016. Notice and opportunity for public comment pursuant to 14 CFR 158.24 occurred as detailed in Attachment C.



CHICAGO DEPARTMENT OF AVIATION

CITY OF CHICAGO

The net effects of the proposed application to impose a PFC for the Design Project and the Construction Project and to use a PFC for the Design Project are the following:

	Impose Authority	Impose and Use
		Authority
Terminal 5 Expansion – Design Project	\$27,092,883	\$27,092,883
Terminal 5 Expansion – Construction Project	\$349,003,646	
Terminal 5 Expansion Application	\$376,096,529	\$27,092,883

The total effect of the proposed application to the currently approved total PFC Impose authority and PFC Impose and Use authority is as follows:

	Impose	Impose and Use
Current PFC Authority	\$6,550,608,985	\$6,550,608,985
Terminal 5 Expansion Application PFC Authority	\$376,096,529	\$27,092,883
Estimated Total PFC Authority (cumulative to date)	\$6,926,705,514	\$6,577,701,868
Estimated Charge Expiration Date	July 1, 2041	

The City appreciates the opportunity to submit this application with regards to the PFC program at O'Hare. We continue to be available if you require additional information during your review.

Respectfully submitted,

Sun Wa Dorg

Susan Warner Dooley First Deputy Commissioner Chicago Department of Aviation (CDA)

OMB Approved 2120-0557 Exp. 8/31/2013

Federal Aviation Administration U. S. Department of Transportation	PASSENGER F	ACILITY CHARGE (I	PFC) APP	
1. Application Type (Check all that apply)		FAA USE ON	NLY	
IX a. Impose PFC Charges	Date Receiv	ed PFC	Number	
IX b. Use PFC Revenue				
C Amend PFC No.				
	PARTI		·····	
2. Public Agency Name, Address, and Contact	t Person 3. Airport(s) to	Use 4. Consu	Itation Dates	<u>s</u>
Agency Name City of Chicago, Department of	Aviation	a. Date o June 2	r Written No 7. 2016	tice to Air Carriers:
Address 10510 W. Zemke Rd.		b. Date o	f Consultatio	on Meeting with Air
City, State, ZIP Chicago, IL 60666	ORD	Carrier	's: July 28. 2	2016
Contact Person Reshma Soni		c. Date o July 28	f Public Noti	ice
	PARTI			
5. Charges				
a. Airport to Impose b. Level	c. Total Estimat Revenue by I	ed PFC d. Proposed .evel Date:	I Effective	e. Estimated Expiration Date:
S1.00 \$2.00	\$3.00			
	Impose \$376.09	January ⁻ 16.529	1, 2039	July 1, 2041
\$4.00 ×\$4.50	0 Use \$27,092	2,883		
	PART III			· · · · · · · · · · · · · · · · · · ·
c. X	Aii Re All CC All CC AL	Carrier Consultation and equest to Exclude Class(es ernative Uses/Projects impetition Plan/Update P/Airspace/Environmental tice of Intent Project Inform Iditional Project Informatio	Public Notice) of Carriers nation	Information
				· · · · · · · · · · · · · · · · · · ·
7. With respect to this PFC application I hereby To the best of my knowledge and belief, all dat This application has been duly authorized by th The public agency will comply with the assuran For those projects for which approval to use P environmental reviews required by the Nationa If required, the public agency has submitted a o If required by 49 U.S.C. 40117(d)(4), adequate been made by the public agency.	certify as follows: a in this application are true a the governing body of the publi- tices (Appendix A to Part 158) FC revenue is requested, all I Environmental Policy Act ha competition plan in accordance a provision for financing the al	nd correct; c agency; if the application is approv applicable ALP approvals, ve been completed. e with 49 U.S.C. 47106(f); rside needs, including run	ed, airspace det and ways, taxiwa	erminations, and ys, aprons, and gates, has
a. Typed Name of Authorized Representative	b. Title First Deputy Commission	er: CDA c. Teleph 773-68	one Number	
Susan Warner Dooley	d. E-mail Address susan.warnerdooley@city	ofchicago.org	umber	· · · · · · · · · · · · · · · · · · ·
f. Signature of Authorized Representative		g. Date S	ligned	
Sum Wa Dorg		11-2	3-16	
Paperwork Reduction Act Statement: This form is the F This information is used to determine the eligibility and jus system; or which reduce noise or mitigate noise impacts in estimated that it will take approximately 5-80 hours to fill ou authority to collect PFC revenue (49 U.S C. 40117(c)). No sponsor, and a person is not required to respond to a collece associated with this collection of information is 2120-0557, to the FAA at: 800 independence Ave. SW, Washington, Di	AA's primary source for collectin tification of airport development p esulting from an airport; or furnisi t the application depending on the assurance of confidentiality is ne clion of information unless it displa Comments concerning the accura C, 20591, Attn: Information Collec	g information for the authority rojects regarding safety, secu- n opportunities for enhanced of complexity. The use of the for cessary or provided. It should ys a currently valid OMB contr cy of this burden and suggesti tions Clearance Officer, AIO-2	to collect PFC rity, or capacity competition bet rm is required be noted that ol number. Th ons for reducir 0.	revenue for airport developmer y of the national air transportation ween or among air carriers. It to obtain FAA approval of an agency may not conduct or e OMB control number ig the burden should be directed



Airports

Passenger Facility Charge (PFC) Program Assurances

A. General.

1. These assurances shall be complied with in the conduct of a project funded with passenger facility charge (PFC) revenue.

2. These assurances are required to be submitted as part of the application for approval of authority to impose a PFC under the provisions of 49 U.S.C. 40117.

3. Upon approval by the Administrator of an application, the public agency is responsible for compliance with these assurances.

B. Public agency certification. The public agency hereby assures and certifies, with respect to this project that:

1. Responsibility and authority of the public agency. It has legal authority to impose a PFC and to finance and carry out the proposed project; that a resolution, motion or similar action has been duly adopted or passed as an official act of the public agency's governing body authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the public agency to act in connection with the application.

2. Compliance with regulation. It will comply with all provisions of 14 CFR part 158.

3. Compliance with state and local laws and regulations. It has complied, or will comply, with all applicable State and local laws and regulations.

Environmental, airspace and airport layout plan requirements. It will not use PFC revenue on a project until the FAA has notified the public agency that—

(a) Any actions required under the National Environmental Policy Act of 1969 have been completed;

(b) The appropriate airspace finding has been made; and

(c) The FAA Airport Layout Plan with respect to the project has been approved.

5. Nonexclusivity of contractual agreements. It will not enter into an exclusive long-term lease or use agreement with an air carrier or foreign air carrier for projects funded by PFC revenue. Such leases or use agreements will not preclude the public agency from funding, developing, or assigning new capacity at the airport with PFC revenue.

6. Carryover provisions. It will not enter into any lease or use agreement with any air carrier or foreign air carrier for any facility financed in whole or in part with revenue derived from a passenger facility charge if such agreement for such facility contains a carryover provision regarding a renewal option which, upon expiration of the original lease, would operate to automatically extend the term of such agreement with such carrier in preference to any potentially competing air carrier or foreign air carrier seeking to negotiate a lease or use agreement for such facilities.

7. Competitive access. It agrees that any lease or use agreements between the public agency and any air carrier or foreign air carrier for any facility financed in whole or in part with revenue derived from a passenger facility charge will contain a provision that permits the public agency to terminate the lease or use agreement if----

(a) The air carrier or foreign air carrier has an exclusive lease or use agreement for existing facilities at such airport; and

(b) Any portion of its existing exclusive use facilities is not fully utilized and is not made available for use by potentially competing air carriers or foreign air carriers.

8. Rates, fees and charges.

(a) It will not treat PFC revenue as airport revenue for the purpose of establishing a rate, fee or charge pursuant to a contract with an air carrier or foreign air carrier.

(b) It will not include in its rate base by means of depreciation, amortization, or any other method, that portion of the capital costs of a project paid for by PFC revenue for the purpose of establishing a rate, fee or charge pursuant to a contract with an air carrier or foreign air carrier.

(c) Notwithstanding the limitation provided in subparagraph (b), with respect to a project for terminal development, gates and related areas, or a facility occupied or used by one or more air carriers or foreign air carriers on an exclusive or preferential basis, the rates, fees, and charges payable by such carriers that use such facilities will be no less than the rates, fees, and charges paid by such carriers using similar facilities at the airport that were not financed by PFC revenue.

9. Standards and specifications. It will carry out the project in accordance with FAA airport design, construction and equipment standards and specifications contained in advisory circulars current on the date of project approval.

10. Recordkeeping and Audit. It will maintain an accounting record for audit purposes for 3 years after physical and financial completion of the project. All records must satisfy the requirements of 14 CFR part 158 and contain documentary evidence for all items of project costs.

11. Reports. It will submit reports in accordance with the requirements of 14 CFR part 158, subpart D, and as the Administrator may reasonably request.

12. Compliance with 49 U.S.C. 47523 through 47528. It understands 49 U.S.C. 47524 and 47526 require that the authority to impose a PFC be terminated if the Administrator determines the public agency has failed to comply with those sections of the United States Code or with the implementing regulations published under the Code.

[Doc. No. 26385, 56 FR 24278, May 29, 1991, as amended by Amdt. 158–2, 65 FR 34543, May 30, 2000; Amdt. 158–4, 72 FR 28851, May 23, 2007]

Source: Title 14: Aeronautics and Space, PART 158—PASSENGER FACILITY CHARGES (PFC'S), Subpart F—Reduction in Airport Improvement Program Apportionment, Appendix A to Part 158—Assurances

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ATTACHMENT A

AIRPORT CAPITAL IMPROVEMENT PROGRAM

This section contains the following information:

- Page A 2
 Airport Capital Development Program Estimated Uses of Funds
 These tables show projected 2016–2020 project expenditures of
 - These tables show projected 2016–2020 project expenditures of funds for the O'Hare Modernization Program (OMP) and the Capital Improvement Program (CIP)
- Page A 9 Airport Improvement Program (AIP) Discretionary Letter of Intent (LOI) Grant Schedules and Uses
- Page A -10 Use of AIP Entitlement Funds

Revised	Project	Project Description	Start Date	Completion Date		2016-2020	2016	2017	2018	2019	2020
ΑF	HI155 12-00	Exterior Airside Terminal Maintenance - Ph. 2 (LL. Doors)	01/20/12	06/01/16	s	1.811.214 S	1.811.214 S	ب م ,	- 5	ون	
AF	HI155 13-01	Exterior Airside Terminal Maintenance - Ph. 3 (LL Windows)	21/40/01	12/31/16	s	2.500.000 S	2.500.000 S			- S	•
ΥĿ	H-1012 12-00	NE Cargo Ph1 Development City Infrastructure Improvements	01/01/16	10/01/16	y.	10.704.777 S	S ++5°86+'L	3,211,433 \$	S		•
٨F	H4013 12-00	Taxiway NN Rehab (Grant)	03/01/16	91/10/01	s	8.500.000 S	5.950,000 \$	2.550,000 \$			
AF	H4013 12-00	NE Cargo Ph1 Utility & South Access Road Improvement	91/10/10	10/01/16	s	11.827.904 S	8.279.533 S	3.548.371 \$			
ΥĿ	00-21 F10FH	NE Cargo Ph 1 Taxilane Improvements	01/01/16	91/10/01	s.	14.741.244 S	10.318.871 S	4,422,373 \$. 5	S	•
AF	H4015 12-00	NE Cargo Ph 1 Site Prep	91/10/10	10/01/16	Ś	4.924.481 S	3,447.137 S	1,477,344 \$		· ·	
AF	1101715-00	Lynx Building Demolition & Hold Pad - Design & Construction	01/01/16	12/30/16	ŝ	16.000.000 S	8.000.000 S	8,000,000 \$		· s	•
٨F	H401815-00	Burlington Building 519 Demolition	51/15/80	12/31/16	S	3,800,000 S	3,800.000 S	· ·	.		
AF	10-11 £919H	Baggage Service (Depressed) Roadway Construction	90/05/50	06/08/13	s	1.719.539 5	1.719.539 \$	• •	·	- 5	
ЧĿ	116163 15-01	Baggage Service Road Retaining Wall Repair	04/01/16	10:01/16	ŝ	5.035.872 S	4,028,698 5	1,007,174 \$. 5	- 5	•
٨F	H6169-07-00	Airport Surface Detection Equip Model X (ASDE-X)	10/02/00	12/31/15	ŝ	115.800 S	115,800 \$	· •		• 5	
AF	10-31 521911	Runway 9R/27L Comprehensive Maintenance	+1/10/60	11/15/15	Š	2.867.232 S	2.867.232 \$, ,		- s	
AF	FI618413-00	Terminal Apron Pavement Replacement 2013	21/20/10	10/30/16	s	1.251.530 S	1,251,530	\$			•
٨F	H6187 13-00	AMC Expansion Design	01/07/13	+1/18/CI	s	386.702 S	193,351 5	\$ 155.591		•	
AF	16187 16-01	AMC Expansion - Construction	01/01/16	12/30/17	ş	20,000.000 \$	v	4,000,000 S	8.000.000 S	8.000.000 S	
AF	116191114-00	Airside Pavement Replacement 2014	12/11/13	11/30/15	ŝ	3.405.193 S	3.405.193 \$		' S	S	
٨F	116192 14-00	Runway Maintenance 2014	12/11/13	11/21/15	s	107.334 S	5 465,704 S 465,704		S	- s	•
AF	116193 14-00	Airside Service Road Rehab	12/11/13	11/21/15	s	1.804.163 \$	1.809.163 \$	- S	·	۰ د	
٩F	116195 15-00	AMC Access Road Reconstruction	03/01/15	08/31/16	s	3.000.000 \$	3.000.000 \$			- s	
٨F	11619615-00	Taxiway A&B Study U of I	\$1/10/50	\$1/10/01	Ś	405,000 \$	105,000 Solt	- S	s .	~	•
AF	11614715-00	Runway 10L-28R Comprehensive Maintenance - Design	\$1/10/10	12/30/16	6	\$ 000°+5+	154.000 \$	- S		~ ·	'
AF	H6197 16-01	Runway 10128R Rehabilitation - Construction	04/01/16	12/30/16	S	18,500.000 \$	9.250,000 \$	9.250.000 \$	S	- s	•
AF	00-51 861911	Sky Chef Bldg 511 Demolstion	01/0710	06/30/17	s	3,230,000 \$	· ~	1.615.000 \$	1.615.000 \$		
AF	117105 15-00	Cathodic Protection System for Taxiways A & B Bridges	51/10/90	10/01/16	\$	5 459°EZ3	· •	573.639 5		~	
٨F	HS016 16-00	Vehicle Replacement Program 2016	51/10/90	10/01/16	Ŷ	13.290,000 \$	6.645.000 \$	6.645.000 \$	- S	- S	ı
AF	H8073 13-00	Vehicle Equipment Acquisition 2013	01/02/12	12/31/14	s	1.263.881 \$	1.263.881 S	' S	S	. \$	
AF	11807614-00	Large Frame Aircraft Training Mock Up	10/01/15	10/30/16	ŝ	3,410,000 S	, s	2.728,000 5	682,000 S	•	
٩F	118077 14-00	Vehicle Procurement 2014A	01/02/14	11/30/15	6 9	5.602.352 \$	5,602.352 5		S	~ ·	ı
AF	HS078 14-00	Vehicle Replacement Snow Removal Equipment (Blowers)	10/01/13	10/31/15	ŝ	\$ 008.302.5	5,595,300 \$	S	S	- s	·
٩Ŀ	11807915-00	Vehicle Purchases 2015	10/01/15	10/01/16	ŝ	8.000.000 S	•	4,000,000 S	1.000.000 5	• •	
ч.	1808115-00	Vehicle Replacement Program 2015 MB/Oshkosh Units	\$1/10/90	10/30/16	v	11,613,000 \$	· ·	S	11.613.000 S	• •	
AF	CIBI	Ramp LED Lighting Program - 2018	01/01/18	81/15/21	ŝ	1.000.000 5	- 5		500,000 \$	500,000 S	
٩Ŀ	CIBI.	Ramp LED Lighting Program - 2019	61/10/10	12/31/19	÷	1.000.000 S	· •	· ·	· ·	1,000,000 \$	
AI:	TBD	Type I Marker Lightbase Replacement (R)	91/10/10	07/01/16	s	L.000.000 S	L.000.000 S			•	i
٨F	TBD	Airfield Apron Pavement Replacement 2017 - Construction	01/01/17	12/30/18	s	S.000,000 S		•	4.000,000 S	5 000'000'5	
N.	CI EL I.	Articld Apron Pavement Replacement 2018 - Construction	01/01/18	12/30/19	s	8,000,000 S	, v	- 5	4.000,000 S	4,000,000 S	
٨F	TBD	Arrfield Apron Pavement Replacement 2019 - Construction	61/10/10	02/62/21	ŝ	4.000,000 \$, v		•		1,000.000
٨F	TBD	Taxıway J Rehabilitation - Design	01/01/17	12/31/17	s	700.000 S		350,000 5	350,000 \$	- \$	•
AI ^c	081	Taxiways H. H2 Rehabilitation - Design	06/01/16	12/30/17	s	1,500,000 \$		750,000 \$	750.000 \$	- S	•
N [°]	(BD	Taxiway YY Rehabilitation - Design & Construction	61/10/10	12/31/19	s	7,000,000 S	- 5	•		5,600,000 \$	1,400,000
AF	CIBI.	Taxiways H, H2 Rehabilitation - Construction	01/0718	12/30/19	ŝ	20.000.000 5	v		8.000,000 S	S.000.000 S	1,000,000
AF	(IBT	Runway 4122R Rehabilitation and A2 Denio	61/10/10	12/31/19	ŝ	11.000.000 \$	۰ د		. 5	11.000.000 S	•
Чŗ	TBD	Runway 4R-22L Comprehensive Maintenance	01/01/17	12/30/18 1	ŝ	35.999.000 \$	s .	- S	12.500,000 S	12,500,000 \$	10,999,000
٨F	(IRI)	Taxiway T Rehabilitation - Design & Construction	01/01/18	12/31/18	s	32.000.000 \$	S		16.000.000 S	16,000,000 \$	
AF.	CIFLI	Spine Road From Montrose to T5 Design	06/01/16	21/10/90	ŝ	-100.000 S	X0,000 S	320,000 \$		S	
AF	(IBD	North Arriteld Santary Sewer Relocation	01/01/10	12/30/16	ŝ	2.930,000 \$	1,465,000 \$	1,465.000	· ·	۰ ،	

City of Chicago Chicago O'Hare International Airport O'Hare Capital Improvement Program 2016-2020

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ity of Chicago	Chicago O'Hare International Airport	"Hare Capital Improvement Program

Revised	Project	Project Description	Start Date	Completion Date		2016-2020	2016	2017	2018	5019	2020
AF	, uar	Areado Vahado Aosaes Bood and Radao - Docum & Construction	01/01/17	81/02/01		10 600 000 5			5 100 000 5	\$ 100.000 \$	
ξ		Printer - Calcular Access Model and Datage - Datagen of Collocated of	0101010	0010000	n 6	5 000 000 5					5 (100 a00
÷	11317	Purchase of Fife Department Crash Kigs	81/10/1n	07/10/00	~	< 0000000000			•		00000000
AF	(TRD	Vehicle Replacement Program 2018	01/01/18	61/08/21	'n	8,000,000 5	· ·	•	4,000,000 \$	\$ 000.000 t	•
٨F	CIBLI	Vehicle Replacement Program 2019	61/10/10	02/92/21	ŝ	4.000.000 S	~	v		, v	1.000,000
ΑF	TBD	Vehicle Replacement Program 2020	02/10/10	12/30/20	s	4,000.000 S	- S	۰. د	د	S	4.000,000
AF	CIBIT	Vehicle Replacement Proeram 2021	12/10/10	12/12/1	s	4.000.000 S	S	S	S		4.000,000
AF	CU1	INdrant Fueling System from Northeast Fuel Farm	£1/10/10	12/30/16	s	10.000,000 \$	5,000.000 S	5.000,000 S	·	\$	
					6	3 731 10 774	3 92 931 201	3 787 701 17	3 000 010 10	3 000 000 02	000.001.51
		Suboral Alfricia			^	C 0CT*+/ 9'00C	< 0/+*0CT*/01	6 000,001,10	6 mmm1010	6 000'004'4/	100.460.10
					¢					ı	
H&R	117084 13-03	Replace AHU in the H&R Plant - Construction	61/10/20	10/15/16	<u>~</u>	2.830,000 5		< 000/CI4/I	\$ 000'CIF'I	•	•
ILER	H7092 13-01	(Jutdoor Switchgear C&D & A&B in H&R - Construct	05/06/12	05/25/15	Ś	635,293 \$	635.293 S	- S		- P	
11 <i>8</i> :R	H7093 13-01	East Cooling Tower Replacement - Construction	05/25/12	04/19/14	s	1,439,494 S	\$ +6+'6(+'1		•	' S	
H&R	117096 14-01	Chillers 1.2.3.4 & 5 and South Cooling Tower-Const	04/20/13	10/21/17	s	61,149,568 \$	18.344.870 \$	18.344.870 S	24,459,827 \$		•
11& R	H7099 16-01	Replacement of (6) High Temperature Water Generators	01/01/17	06/01/21	s	14,078,473 S	, s	•	•		1-1.078173
H&R	11710113-00	T2 Concourses E&F Chilled Water Upgr - Design	01/01/17	12/51/17	Ś	600,000 S		300.000 \$	300,000 \$		
11&R	117101 13-00	Terminal 2 Concourse E&F Chilled Water Upgrades - Construction	02/10/10	03/31/21	s	2.850.000 S	•	, ,	s ، '	•	2,850,000
II&R	117102 14-00	H&R Plant Roof System Replacement	10/01/15	06/01/16	v 9	1.860.941 \$	1.860.941 S	· \$			
H&R	117103 14-00	Fire Protection for the H&R Plant - Design & Construction	10/04/12	01/02/20	s	2.856.033 S	2.856.033 S	.	S	- S	
HACR	117104 15-00	Ring & Unlity Tunnel Repairs - Design	08/24/14	09/13/16	ŝ	770.522 S	770.522 \$	- -		· s	•
II&R	H710415-01	Ring and Utility Tunnel Repair Program	90/01/15	11/30/16	s	8.820,000 \$	1.764.000 \$	1.764.000 \$	5.292,000 \$	S	
H&R	117106.15-00	Rotunda Ailli Replacement - Design	04/23/14	05/31/19	ŝ	550.000 5	137.500 \$	137,500 \$	137,500 \$	137.500	
ILER	TBD	H&R Plant Study Phase 2	01/01/18	81/16/21	s	800.000 \$	ۍ		\$ 000'00t	400'000 S	
11&1	CIEI.	Replacement of Ouarry Tile on Ground Floor of H&R Plant	91/10/10	12/30/17	S	1,000,0001	2	500,000 \$	500,000 \$	S	
H&R	CIEL.	High Temperature Water Generators Controls Upprade	01/01/17	12/30/17	Ś	3,000,000 \$	- s	1.500,000 \$	1.500.000 \$, v	
LL&R	TBD	North Chiller Replacement - Design & Construction	01/0717	07/02/17	s	4.000.000 \$		2.000,000 \$	2.000.000 S		•
H&R	TBD	1. Concourse HVAC System Upgrades - Design & Construction	01/01/18	07/02/18	Ś	24,000.000 \$	· ·	6,000,000 \$	6.000.000 S	6.000.000 S	6,000,000
H&R	CIBIT	Terminal 3 Concourses H&K Bildg 8C HVAC Upgrades	01/01/17	07/01/18	\$	30,400,000 \$	- 5	7,600,000 S	7.600.000 S	7.600.000 \$	7.600,000
HACK	1BD	Terminal I. HVAC System Upgrades - Construction	01/01/17	12/27/20	ŝ	51.720.000 \$	د	•	17.240.000 \$	17.240.000 S	17.240,000
ILER	146168 12-02	AA Baggage Roum HVAC Upgrade - Design/Post Design	07/01/12	05/06/14	\$	300.916 \$	300,916 \$	S	- s		
H&R	146168 14-03	AA Baggage Room HVAC Upgrade - Construction	11/24/13	12/31/17	~	10.065.000 \$	5.032.500 S	5,032.500 S	<u>、</u>	- s	,
		Subtotal Heating & Refrigeration			s	223.726,240 S	33.142.069 S	44.543.870 S	66,844,327 S	31,377,500 S	47,768,473
SS	H9016 14-00	TSA Advanced Surveillance Program CCTV Project	01/01/16	06/30/17	s	7.228.434 \$	1.445.687 \$	4.337.060 S	1,445,687 \$	•	
SS	1901715-00	T1 CBIS Optimization - Construction (1SA Reimbursable)	01/01/16	12/30/17	ب	21.126.585 \$	10.563.293 \$	10.563.293 S	۰ د		
SS	H9018 15-00	T1 Check Bag Resolution Area Upgr (CBRA) Const	05/01/13	05/31/16	\$	2.628,120 5	2.628.120				
SS	1901915-00	AOA Security Fence Replacement - Design & Construction	\$1/10/10	06/30/16	s	2.600.000 \$	2,600,000 \$	· s	بر	S	
SS	(BD	L Concourse Inline Baggage System - Construction	01/01/17	12/31/17	ŝ	12.000.000 S	2	6.000.000 S	6,000,000 S		•
SS	CLUL	T5 Security Door Replacement	91/10/10	12/30/16	~	545,000 \$	- S	545.000 S		- S	•
SS	TBD	T5 Optimization - Design (TSA Reimbursable)	01/01/15	06/01/16	s	620,000 S	620.000 \$	s	~		,
<u>S</u>	U81	T3 CBRA Upgrades - Construction (TSA Reimbursable)	01/01/17	71/16/21	ŝ	3.000,000 S	- 5	1.500.000 \$	1.500.000 5		
SS	CIBI	Safety & Security Proposed Projects	01/01/17	12/30/18	s	3,436,820 \$	• •	•	1,718.410 S	1.718.410 S	
SS	CIRL	T5 Optimization - Construction (TSA Reimbursable)	01/01/17	12/30/18	Ś	21.300,000 5	•	' S	10.650.000 S	10.650,000 S	
SS	(181)	T3 Recapitalization - Construction (TSA Reimbursable)	01/01/16	12/30/17	s,	25.000,000 5	' S	12.500,000 \$	12.500.000 5	- S	

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City of Chicago Chicago O'Hare International Airport O'Hare Capital Improvement Program 2016-2020

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Revised	Project	Project Description	Start Date	Completion Date	2	016-2020	2016	2017	2018	2019	2020
		Subiotal Safety & Security			5 99		17.857.099 S	35,445,353	§ 33,814,097 S	12.368.410 S	ŀ
Ϋ́Τ	00-11 80111	Restrawn Modernization - Phase 4	01/10/10	91/08/21	, v	501031 5	L800.412 S	2,700,619 5		, S	
LA.	50-11 8011H	Restroom Modernization - Phase 5	08/01/15	12/30/17		\$ 000.002.	600.000 \$	600.000	, s	, ,	ı
ΤA	11162 1-1-00	Asbestos Abatement in T.2/3	12/11/13	10/31/16	ŝ	428.716 \$		278,615	5 278.615 \$	278.615 \$	42.872
ΤA	H1165 14-00	TI Roof Repair - Design	61/10/20	11/22/16	ŝ	.163.127 S	1.163.127 S	'			
ľA	H1166 15-00	Pedestrian Tunnels-Water Infiltration - Design	12/16/14	02/15/17	s	8 155.28X	442.666 \$	442,666	· ·		
ΤA	H1168 15-00	Repaining of Exterior Vertical Surfaces at Terminal 1	03/01/16	10/01/16	\$.015.000 S	1.015.000 S	'			•
V.I.	H2013 12-00	TS Carpet Replacement	01/30/07	08/31/15	~	733.766 S	733.766 S	,	s .	, 2	ı
ΥJ	H2022 14-00	15 400 Hertz Generator System Replacement	05/24/12	10/13/15		LISS.358 S	4,155.358 S				
τA	H2024 14-00	T5 FIDs. BIDs and VM Upgrade - Design/Install	01/26/14	\$1/15/21	s	657.572 S	657.572 S	'			
ΤA	112025 14-00	T5 Landside PCC Pavement Reconstruction	11/52/14	51/02/11	s	2839,460 S	2.839.460 S		•	, ,	
ΤA	112026 14-00	T5 Type VI Gate Enhancement - Design to 30%	fl/62/20	\$1/£0/60	ŝ	621.327 S	621.327 S			. 5	
τı	112026 15-00	Terminal 5 A380 Gate Enhancement - Phase 1	\$1/10/60	08/01/16	ŝ	1,962,124 S	4,962.124 S		· ·	•• •	
ΤΛ	TBD	Terminal 5 Federal Inspection Station (FIS) Expansion - Design	01/01/12	11/16/21	s	.000,000 S	•	\$00,000	500.000 \$		
V.I.	CIBL	Ferminal 5 Federal Inspection Station (FIS) Expansion	81/10/10	61/10/10	s I:	.000.000 \$	۰ د		5.000.000 S	5.000.000 S	5.000.000
ΓA	CIAT	T5 Restroom Modernization - Design	91/0/10	71/08/21	s	350.000 S	' S	1,175,000	s 1.175.000 S	ج	
ΤΛ	CIBIT	T5 Restroom Modernization Program 2017	01/01/17	12/27/20	s S	.500.000 \$	- s	•	\$ 4,500.000 \$	4.500,000 S	4.500.000
Y.I.	CIBI	Terminal 5 Curtain Wall Regasketing - Construction	01/10/10	01/10//10	s	I.840.000 S	4.840.000 S			, S	
ΤA	TBD	15 Exterior Painting	91/10/10	12/30/17	s	6.140.000 \$		3,070,000	5 3.070.000 S		
ΥL	H1163 14-00	Miami Beach Lift Station Improvements	01/29/07	10/30/15	≁9	448.002 S	448.002 S			•	
VI.	H1167 15-00	Terminal Area Fire Main Replacement - Design	03/01/15	03/01/16	s	713.223 S	713.223 S				
τΛ	117095 12-00	Emergency Standby Power System Upgrade (Design)	01/01/13	08/01/15	s	124,366 \$	124.366 S	'	·	•	•
ΥL	11709515-01	Emergency Standby Power System Upgrade	01/01/15	03/01/17	S S	3,400.000 \$	6.680.000 \$	13.360,000	5 13.360.000 S		•
VJ.	117098 13-00	Measurement & Verification Plan - Design	68/22/13	\$1/12/50	s	159.711 5	159,711 S		· ·		ļ
ΤΛ	19015 14-00	Access Control Hardware Upgrade	10,01/15	10/30/16	s	1,157,826 S	- 5	2,078,913	\$ 2.078.913 \$	· ·	•
ΤA	TBD	Pedestrian Tunnel Repair (Engineering) - Design	06/06/15	06/01/17	ŝ	700,000 \$	-	350.000	\$ 350.000 \$		
V.I.	CIBIT	Terminal 1 Commercial Vehicle Entrance Roadway	51/10/10	51/10/01	Ś	000,000 \$	1.000.000 \$	•	· ·		
ΤA	, CIBI	Comprehensive Signage (Terminals) - Design - RFP	06/01/16	12/30/17	s	.500.000 S	· ·	500,000	\$ 500.000 \$	500,000 \$	
ΤΛ	TBD	Energy Efficient Light Project T1 LL	06/01/16	11/05/21	s	750.000 \$	- S	350,000	2 1.400.000 S	.	•
ΤΛ	UHT	Terrazzo Epoxy Overlay Program	01/01/17	07/02/17	s	.750,000 S	- s	1.400,000	\$ 350,000 \$		
Y.I.	CIBI	Measurement & Verification Short Term Plan (Controls)	01/10/10	11/05/21	s	.000,000 S	- 5	1.500.000	S 1,500.000 S	S	
Y.I.	CIBL	Measurement & Ventication - Construction	06/01/16	81/10/90	Ś	5.000,000 S	- S	1.200.000	S 2.400.000 \$	2.400.000 S	•
ΥI	ດຄຸ	Miami Beach Lift Station Improvements - Construction	01/0/10	12/30/16	5	7.750.000 \$	3.875,000 S	3.875.000	\$ '		•
ΥL	(IBI)	T1 Exterior Painting Vertical Surfaces	01/01/16	12/30/17	s	0,000,000 S	' '		S 5.000.000 S	5.000.000 \$	•
ΥL	CIBI	Terminal 2 Concourse E And F Upgrade - Final Design	01/01/10	22/82/90	ŝ	1.000.000 S	, ,		· ·	1,000,000,1	3,000,000
τA	CU1.	Terminal 2 Concourse E and P Upgrade - Construction	07/0/10	12/25/21	S o(0.000,000 S	•		۰ ،	S	60.000.000
ΤΛ	CIBI	Public Address System Upgrades - Design & Construction	91/10/10	12/30/17	s	000,000 S	' s	5.400.000	S 5,400,000 S	5.400.000 S	1,800.000
L'A	CIGIT	Pedestrian Tunnel Repair -Civil - Construction	01/01/12	81/05/21	s S	000000 S	ۍ ۰	•	5 10,000,000 S	10.000.000 \$,
ΓΛ	(IBD	Terminal Area Fire Main Replacement - Construction	01/10/10	12/30/16	۲ ۲	000,000 \$	4.000.000 S	8,000,000.8	S 8,000.000 S	- S	
ΤΛ	CIBIT	Terminal 1 Roof Replacement - Construction	81/10/18	61/05/21	\$	0.000,000 5	د		S 24,000.000 S	40.000.000 \$	16.000.000
ΤA	TBD	Santary Force Main Design	00/01/16	06:01/17	ŝ	195.000 S	. S	97.500	S 012.500 S	- s	,
		Subtotal Terminal			1HC 8	S 01-0-11	40,831,114 S	46,878,312	S 88.960,028 S	2 S19'8'0'4'	90.392.872

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Subtotal Terminal

Revised	- Project	Project Description	Start Date	Completion Date		2016-2020	2016	2017	2018	2019	2020
SI	115170 12-00	ATS Painting Structures. Stations, Bridges - Design	01/10/10	10/31/15	s	1-10,570 S	1-10.570 S	بر		- S	
TS	115170 14-01	ATS Painting Structures. Stations, Bridges - Construction	\$1/10/01	10/01/16	ŝ	12.208.000 \$	8,545,600 S	3.662.400 S			•
TS	H5174 13-00	ATS Rail Replacement	01/01/12	10/01/16	Ś	4,193,644 \$	1,258,093 \$	2.935.551 \$	S	- S	
TS	H3067 15-00	Bi-Annual Bridge & EPS Inspections	03/01/16	91/10/01	s	350,000 \$	350,000 S		, v	- 5	•
15	113068 15-00	Bessie Coleman Water Main Replacement	03/01/16	91/10/01	ŝ	3.825.000 S	1,912.500 S	1.912.500 \$, ,		•
TS	H516813-01	Bridge Rehab - Roadway and Taxiway - Construction	91/10/10	12/25/20	s	1.840.000 S		460.000 S	460,000 S	460.000 \$	460,000
ST.	115171 15-01	1-190 Dramage & Laft Station Rehab - Construction	05/01/14	04/30/16	s	1.650,000 S	1.650.000 \$			S	
S	H5173-12-00	Joint Use Consolidated Rental Car Facility & ATS Extension	11/10/60	06/30/20	s	638.478.971 S	140.000.000 \$	140.000.000 S	190.000.000 S	68.478.971 S	
TS.	H5177 15-00	T1 Commercial Vehicle Entrance Roadway	06/01/15	91/10/11	s	1.000.000 S	1.000.000 \$		S		•
TS	117107.15-00	Cathodic Protection System Maintenance Program	01/10/10	01/01/10	ŝ	840,000 S	S40,000 S	- S		- S	
ST	HS072 12-00	Parking Revenue Control System (PARCS) - Updates	10/01/07	51/67/11	s	1.032.250 S	1.032.230 \$	ب	S	- S	
I'S	CIBI.	Cab Lot Extension - Design	01/01/16	12/30/16	ŝ	500,000 \$	250,000 S	250,000 \$	S	. s	
TS	TBD	Landside Concrete Maintenance	01/01/16	12/30/16	ŝ	1.000.000 5	1.000.000 S	- s		- S	
71 XI	CIRT	Cathodic Protection Replacement 2017	01/01/12	11/15/21	s	1.000.000 \$	- S	500,000 S	500,000 S	- S	
115	CIEL	Cathodic Protection Replacement 2018	81/10/10	12/31/18	s	1.000.000 S	•	s.	500,000 S	500.000 \$	•
TS	CIBI.	Cathodic Protection Replacement 2019	61/10/10	12/31/19	ŝ	1.000.000 \$	· ·		s ,	1.000.000 S	•
TS	CIRT	Cathodic Protection Replacement 2020	01/01/20	12/30/20	ŝ	500.000 S	بەر. '	, s		- S	500,000
SI.	CIBLI.	Cathodic Protection Replacement 2021	12/10/10	12/31/21	s	500.000 S	- 5	ر ا		- 5	500.000
2	TBD	Replace Steel Roadway Light Poles Ph 2	01/01/17	12/30/17	s	1.400.000 \$		700,000 \$	700.000 S		ı
TS	CI&I.	Upper Level Roadway Steel Guardrail Replacement	01/01/16	01/05/60	ŝ	2.225,000 \$	1.112.500 S	1.112.500 \$			
SI.	(181) (181)	Bessie Coleman Watermain Replacement	06/01/17	81/10/01	s	3.800.000 S	- s		1.900.000 \$	1,400.000 \$	
TS	TBD	Landside PPC Pavement Rehabilitation	01/01/17	12/30/20	ŝ	3.300.000 \$			S		3,300.000
×	CIH.	Cab Lot Extension - Construction	01/01/17	12/30/18	Ś	8.000.000 S	' '	- S	4.000.000 \$	4,000.000 \$	
		Sulvotal Terminal Summer			v	5 517182.989	S 16F 160 602	201.532.951	S 000 090 861	76 118 971 8	0100-02-T
					,						
RSIP	0118055	Noise Mingation			Š	12,000.000 \$	6.000.000 S	6.000.000 \$	۶	s	
		Subtotal Noise Mitigation			ŝ	12.000.000 \$	6.000.000 S	6.000,000 \$	',	- S	
							,				
	110009	Implementation Costs / Planning & Other			s	45,483,290 \$	15.000.000 S	15.000.000 \$	9.000.000 \$	4.643.700 S	1,839,590
		Subtotal Implementation			s	45,483,290 S	15.000,000 S	15.000,000 S	9,000.000 S	4.643.700 S	1,839,590
		Total			6	1.778.493.000 S	429.080.246 S	410.557.172 S	477,988,452 S	278.707.196 S	182.159.934

City of Chicago Chicago O'Hare International Airport O'Hare Capital Improvement Program 2016-2020

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OMP PHASE 2A BUDGET STATUS

7/19/2016

			Paid through			
PROJECT		CWE	2015	Remaining	2016	2017
COMPONENT: RWY 9C/27C						
Substantially Completed						
Runway 9C/27C Northeast Package		\$48 328 032				
Taxiway WO Behab/Bupway 9B GS Upgrade		\$9 151 810				
Trunk Sewer System F		\$33 342 562				
Taviway WK and Enabling Projects		\$94,617,312				
North Detention Basin	\$31 884 316	\$54,017,512				
Less NE Cargo Funding	(\$9.932.954)					
	(\$5,552,554)	\$71 951 362	n			
Rupway 9C/27C - Soft Cost		\$33,232,367				
Runway 9C/27C - SIR		\$320 376				
		\$240,942,921	\$222 412 209	67 521 522	\$7 521 522	Śn
Funding		\$240,545,821	\$235,412,298	\$7,551,525	\$7,551,525	ŞU
Phase 24 Arrest at	ć221 200 425					
Phase 2A Agreement	\$231,389,435					
	\$9,151,810	4040 544 045				
Total Funding		\$240,541,245				
Management Reserve		(\$402,576)				
COMPONENT: BWY 108/28	<u></u>					
Substantially Complete						
LLWAS #15		\$965,666				•
Runway 10R/28L East Utilities & Guard Posts		\$19,000,462				
Runway 10R/28L Site Preparation		\$130,051,892				
Taxiway ZS	··· ··	\$5,390,953				
Irving Park Road Relocation		\$18,406,246				L
SATCT - Site Prep		\$7,802,055				
SATCT		\$33,270,454				
Runway 10R/28L NAVAIDS & FOTS		\$18,333,919			•	
Runway 10R/28L Paving		\$88,301,716				
Taxiway K & L		\$47,959,741				
RTR-U And SPA/Hazmat		\$6,613,073				
Runway 10R-28L Safety and Security - Pkg 1		\$10,380,053				
LLWAS #14 and #21		\$645,000				
 Design/Procurement or Additional Scope 						
ARFF# 1 Modifications		\$8,492,000				
Runway 14L-32R Decommissioning		\$9,530,300				
Daytona Beach Lift Station Relocation		\$6,698,076				
Runway 10R-28L Safety and Security - Pkg 2		\$5,000,000				
FAA S. Airfield Improvements (SMR & ASR-9)		\$18,850,000				
Runway 108/281 - Soft Cost		\$83 330 333				
Runway 108/28L - SIR		¢267 742				
FIS Review		\$4 312 563				
		\$522,710,625	\$420,400,629	\$102 220 007	\$72.254.005	\$20.066.002
		2223,710,000 CC0,011,C2C¢	y420,490,028	\$103,220,007	4,0U5 ، د ا	,00,002,0UZ
Phase 24 Agreement	¢E16 E00 000					
	\$20,216,000					
SATUL FAA Funding	\$30,216,000					
Esumated AIP Grants for EIS (75%)	32,140,195	6540 460 707				
I otai Funding		\$549,462,795				
		\$25,752,160				
COMPONENT: TWY LL						

OMP PHASE 2A BUDGET STATUS

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7/19/2016

		Paid through			
PROJECT	CWE	2015	Remaining	2016	2017
Soft Costs	\$5,779,847				
Construction	\$33,660,277				
Fuel Relocation (OFC)	\$6,697,500				
AA Relocation	<u>\$24,701,199</u>				
Total CWE	\$70,838,823	\$35,115,823	\$35,723,000	\$30,364,550	\$5,358,450
Funding					
MII Funding Agreement	\$78,338,823				
FAA AIP Grant	\$10,000,000				
Total Funding	\$88,338,823				
Management Reserve	\$17,500,000				
COMPONENT: DEFERRED SCOPE					
Bensenville Ditch East	\$16,080,750	\$0	\$0	\$0	\$0
				2016	2017
	Totals	\$689,018,749	\$146,474,530	\$110,150,078	\$36,324,452

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2020	427 ANU/01				102,566,622									2.520.346		•		23,787 769	
2019	A22 980,01	•	•		147,341,898		•	•			,	•		4,489,56		6,029,049	1,200,740	19,397,059	
2019	10.089.226	3.840.752	27,447,199	50.858,161	206,470,55	13.509.305	14,057,184	9.407,966	2.076,564	42,337,224	477,821	10.000,000		6 103,4h3		79,382,478	27,617,012	54,534,404	
2017	10.089,226	5.681.504	40,374,750	122,212,721		2:603,933		11,115,520		25,866,120	9.261,139	195,000,000		4,444,936	11.341.557	19,807,478	7,105,044	لب	
2016	472.L17.F	112,416.5	14.755.735	Ļ	ļ	Ļ	.1	_ .				30,000,000	80,000,000	2.124.542	4,410.605			•	
Project Cou (CWE)	16 709.378 IAC	11,836,467.00	82,572,665.00	48,580,882-00	272.587,827 00	21,113,238.00	14,057,184-00	20.523,486.00	2 076,564 00	00 616,502,84	10,238,960.00	00.000,000,212	00.000,000,018	00 (UC)06961	15,752,162.00	105,219,004 00	15 423,400 00	127,715,232.00	00 000 000 00
	~	5	5	~1	5	~	5	2	5	5	-	5	~	~	~	~	^	2	~
Project Decorption	Kunway 47°-270 - Sud Costs	Runway 90.270 - Master Design	Runway 90.270 - East	Runway W. 27C - Central/West 7 WY	Kunway 90.270 - WestVOK	East Arrield Lightung Control Vault (EALCV)	ADMAN For the Demotition	Reluction of ARIF #2	Ground Rua-Up Enclosure (1BD	Caviway 7/1 has furth Road	Runway 90-23C VURDME Relocation	Relocation of Airline Facultues	Fuel Lune Relocation	Centralized De-Joing Pad, Cross Field TAVs and TAV A&B - Son Cross	Centralized De-Jung Pad, Cross Field T/WS and T/W. A&B - Mayter Design	Centralized De-Joing Pad	Gross Field Taxway System	Relocation of L/W A & Is	Total 94-27C & Additional Arriteki Improvements
Punchlist Completion Date	¥2.	VN	81/12/80	8 [20]/0]	10/28/20	08/24/18	N 1750 (F)	S1/S(140)	81/21/01	07/18/18	02/11/18	NN.	4N N	VN	NN	02/18/14	02/18/19	08/22/0	
Substantial Completion Date	1240-50	06.06/15	08/21/13	81/11/80	026280	06/30/18	10.09/18	04:09/18	81/51/01	05/28/18	u2/11/18	31/10/20	81/12/0	08/27/20	08/24/17	81/02/71	12/20/18	00/08/00	
Start (NTP) Date	07/10:00	01/10/50	00/17/16	1,90-10	06/07/18	11/22/30	81,60:10	04/10/17	04/16/13	116240	05/01/17	03/26/17	21/10/80	03.01/16	06/13/16	08/25/17	08/25/17	01/1/18	

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Yearh Tolal Cumublive to Date

000/08/10/11 101/18/104/11 07/11/20/11 00/16/20/11 10/18/104/11 07/11/20/20/10/11 00/10/10/10/10/10/10/10/10/10

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Denotes Construction Project Denotes Reunbursable Agreement

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D PROJECTS	Pay-As-You-Go (Remaining OMP Airfield)												\$5,000,000	\$5,000,000		\$40,000,000	\$45,000,000	\$45,000,000	\$45,000.000	\$25,000,000						\$200.000,000	\$205,000.000
TS ON OMP AIRFIEL	Pay-As-You-Go (OMP Phase 2A)							\$50,000,000	\$70,000,000	\$65,000,000	\$45,000,000	\$5,000,000		\$235,000,000												\$0	\$235,000,000
OI GRANT RECEID	Pay-As-You-Go (OMP Phase 1)		\$20,000,000	5 20,000,000	\$20,000,000	\$20,000,000	\$20,000,000	\$20,000,000	\$20,000,000					\$140,000,000												\$0	\$140,000,000
USES OF I	Pledged to 2016F Bonds ^{1/}													\$0							\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$20,000,000	\$140,000,000	\$140,000,000
	Piedged to 2011B Bonds ^{1/ 2/}									\$20,000,000	\$20,000,000	\$45,000,000	\$40,000,000	\$125,000,000		\$20,000,000	\$20,000,000	\$20,000,000	\$20.000,000							\$80,000,000	\$205,000,000
	TOTAL		\$20,000,000	\$20,000,000	\$20,000,000	\$20,000,000	\$20,000,000	\$70,000,000	000'000'06\$	\$85,000,000	\$65,000,000	\$50,000,000	\$45,000,000	\$505,000,000		\$60,000,000	\$65,000,000	\$65,000,000	\$65,000,000	\$25,000,000	\$30,000,000	\$30,000,000	\$30,000.000	\$30,000,000	520,000,000	\$4.20,000,00C	\$925,000,000
OI GRANT RECEIPTS	OMP Phase 2A and 2B (AGL-10-01)							\$50,000,000	\$70,000,000	\$65,000,000	\$45,000,000	\$30,000,000	\$25,000,000	\$285,000,000		\$40,000,000	\$45,000,000	\$45,000,000	\$45,000,000	\$25,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$30,000,000	\$20,000,000	\$340,000,000	\$625,000,000
- 	OMP Phase 1 (AGL-06-01)		\$20,000,000	\$20,000,000	\$20,000,000	\$20.000,000	\$20,000,000	\$ 20,000,000	\$20,000,000	5 20,000,000	\$20,000,000	\$20,000,000	\$20,000,000	\$220,000,000		\$20,000,000	\$20,000,000	\$20,000,000	\$20,000,000							\$80,000,000	\$300,000,000
	Federal FV	GRANTS RECEIVED	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total Received	EUTURE GRANTS	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total Future	TOTAL

1

i

AIP Discretionary LOI Grant Schedules and Uses

· AIP discretionary grants will be used to fund OMP Airfield Projects at the Airport

NOTES

Pledged IOI Grant Revents are applied in defit service in the year after recept
 Pledge comprised of STeO million from Act. 06-01 and 443 million from Act. 10 01.

SOURCE - Chrago Department of Availon, Ricondo & Associates, Inc. October 2016 PREPARED BY: Riconcio & Associates, Inc. October 2014 A - 9

Federal FY	Aniticpated AIP Passenger Entitlements	Estimated AIP Cargo Entitlements ^{1/}	Airfield Projects - 2016-2020 CIP	Entitlements to be Applied to Airfield Projects	Other Funds
Anticipated Grants					
2016	\$6,500,000	\$5,610,949	\$107,158,470	\$12,110,949	\$95,047,521
2017	6,500,000	5,610,949	61,106,686	12,110,949	48,995,737
2018	6,500,000	5,610,949	81,310,000	12,110,949	69,199,051
2019	6,500,000	5,610,949	79,900,000	12,110,949	67,789,051
2020	6,500,000	5,610,949	37,399,000	12,110,949	25,288,051
TOTAL	\$32,500,000	\$28,054,745	\$366,874,156	\$60,554,745	\$306,319,411

* AIP entitlements will be used to fund 2016-2020 Airfield Projects at the Airport

Note:

1/ Based on 2015 Cargo Entitlement amount

SOURCE Chicago Department of Aviation, Ricondo & Associates, Inc., October 2016

PREPARED BY. Ricondo & Associates, Inc., October 2016

Attachment B

١

PFC APPLICATION NUMBER: 17-29-C-00-ORD

ATTACHMENT B -1: PROJECT INFORMATION

1. Project Title: Terminal 5 Expansion - Design Project

2. Project Number: N/A

3. Use Airport of Project: Chicago O'Hare International Airport (ORD)

- 4. Project Type
- [] Impose Only:
- [x] Concurrent:
- [] Use Only:

Link to application:

5. Level of Collection:	
[] \$1.00	[] \$4.00
[] \$2.00	[x] \$4.50
[] \$3.00	

6. Financing Plan

PFC Funds: Pay-as-you-go \$0 Bond Capital \$13,546,441 Bond Financing & Interest \$13,546,441

Subtotal PFC Funds*: \$27,092,883 If amount is over \$10 million, include cost details sufficient to identify eligible and ineligible costs.

Existing AIP Funds: Grant # Grant Funds in Project S0

Subtotal Existing AIP Funds: \$0

Anticipated AIP Funds (List Each Year Separately): Fiscal Year: Entitlement \$0 Discretionary \$0 Total \$0

Subtotal Anticipated AIP Funds: \$0

Other Funds: State Grants \$0 Local Funds: - Airport discretionary funds: \$1,776,559 Other (please specify) Subtotal Other Funds: \$1,776,559

Total Project Cost: \$ 28,869,441

For FAA Use

a. Does the project include a proposed LOI?

[]YES

[] NO

If YES, does the Region support?

[]YES

[] NO]

If YES, list the schedule for implementation:

b. For any proposed AIP discretionary funds, does the Region intend to support?
[] YES
[] NO

c. For any proposed AIP funds, is the request within the planning levels for the Region's five year CIP?

[] YES [_] NO

d. For project requesting PFC funding levels of \$4.00 and \$4.50. Is there an expectation that AIP funding will be available to pay the project costs.

[] YES

[] NO

What percentage of the total project cost is funded through AIP? List the source(s) of data used to make this finding.

e. Terminal and surface transportation projects requesting a PFC funding level of \$4.00 and \$4.50. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

- [] YES
- [] NO
- [] N/A

List the source(s) of data used to make this finding.

f. Reasonableness of cost. Project Total Cost Analysis

PFC Share of Total Cost Analysis

7. Back-up Financing Plan:

If proposed AIP discretionary funds or a proposed LOI are included in the Financing Plan, provide a Back-up Financing Plan or a project phasing plan in the event the funds are not available for the project.

N/A

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If required to use a back-up financing/phasing plan, indicate the need to obtain additional approvals to obtain an alternate source of financing. Indicate the additional PFC duration of collection required if PFC's are to be used to fund the difference. Recap any discussion from previous item regarding likelihood of public agency obtaining the funding it proposes.

8. Project Description:

Terminal 5 Expansion - Design Project

The design of the Terminal 5 Expansion (Design Project) includes design and planning efforts related to an expansion of, and set of modifications to, the International Terminal (Terminal 5 or T5) in order to increase gate¹ capacity at O'Hare International Airport (O'Hare or Airport).

The design consultant, at the direction of the Chicago Department of Aviation (CDA), and in partnership with the signatory airlines and their representatives, would perform the services needed for a complete design for the T5 extension project as defined in the Terminal 5 Concourse M Project Definition Document (see Attachment I) at Chicago's O'Hare International Airport (ORD). The design effort would be for full services from programming/concept design through bidding as well as full construction phase services anticipating a Design/Bid/Build site/civil bid package and a collaborative design and integrated project delivery building package.

The scope of work for the design consultant would include a Duc Diligence, Existing Conditions and Programming and Scope Verification project phase. During this phase, the design consultant would complete the following tasks:

- Program Validation and Supplemental Programming
- Code Analysis and Life Safety Plan
- Existing Conditions Report
- Facility Requirements Table and Demand Capacities Building Components and Areas
- Baggage Systems & Domestic Baggage Area Expansion

¹ A gate is an active aircraft parking position that is accessed through the terminal building, either via a passenger loading bridge or other means, customarily used for enplaning and deplaning passengers. The number of gates is subject to change based on the configuration of aircraft parking.

- Site Survey, Geotechnical Program and Utilities Report
- Scope of work Design Task M Extension
- Scope of work Design Task Early Site and Utility Package:
- Scope of work Design Task Conversion of Gates M1 M6 to Domestic Gates & West Wing Expansion
- Scope of work Design Task Design for Airside Bus Connection from Apron to Upper Level
- Scope of work Design Task Reconfiguration of Security Checkpoint
- Scope of work Design Task Reconfiguration and Renovation of Customs and Border Protection Areas
- Conceptual Milestone Package for Construction Manager at Risk
- Building Information Modeling

The general scope of services includes, but is not limited to, the following;

- Review of existing conditions
- Field survey support
- Geotechnical support
- Architect's opinion of probable cost
- Design standards/technical specifications, conformity and variances
- Quality Assurance/Quality Control
- Conceptual Design/Preliminary Design Phase deliverables
- Final Design Phase deliverables
- Construction Phase deliverables
- Construction packages, bidding documents, phasing plan and temporary construction deliverables
- Construction permitting
- Permitting and agreement support
- Project scheduling
- Change management
- Progress reporting
- Document management
- Technical coordination support
- Value engineering

Table 1 provides the estimated total cost of the Design Project, which consists of planning studies, survey, site investigation; and architectural/engineering design costs.²

² The costs in Table 1 include all Design Project costs, regardless of PFC eligibility. PFCs would only be used on eligible projects.

Project Element	Project Cost
Planning Studies, Survey, Site Investigation	\$902,000
Architectural / Engineering Design Costs	14,421,000
Total Design Project Cost	\$15,323,000

Table 1: Design Project Costs

SOURCE: CARE +, September 2016

Table 2 shows the calculation of the estimated PFC-eligible costs associated with the Design Project. The Design Project is estimated to be eligible in proportion to the PFC-eligibility of the construction of the Terminal 5 Expansion (Construction Project, see Attachment B-2), which is estimated to be 88.4 percent.³ Based on this calculation, this application includes a request of Impose and Use Authority for 88.4 percent of \$15.3 million, or \$13.5 million, plus an equal amount in bond financing and interest costs, for a total of approximately \$27.1 million in PFC funds for the Design Project. PFC Revenue Bonds are planned to be issued in 2017 with a 30-year term at an interest rate consistent with the market interest rate at the time of issuance. Since actual financing and interest costs equal to the Design Project's capital cost. PFC authority may be amended in the future to reflect actual financing costs once they are known.

Design Component	Total Design Costs	Estimated PFC Eligibility	Estimated PFC-Eligible Design Costs
Planning and Design	\$15,323,000	88.4%	\$13,546,441
Total Design Project Costs	\$15,323,000		\$13,546,441
PFC Impose and Use Authority Requested			
PFC PAYGO			\$0
PFC Bond Capital			13,546,441
PFC Bond Financing and Interest			13,546,441
Total PFC Impose and Use Authority Requested – Design Project			\$27,092,883

Table 2: Estimated PFC-Eligible Design Project Costs

SOURCES: CARE +, June 2016 (cost), Ricondo & Associates, Inc., October 2016 (PFC eligibility).

If applicable for terminal projects, Prior to implementation of this project, Number of ticket counters: 384

³ See Table 3 in Attachment B-2 for PFC eligibility calculation for the Construction Project.

Number of gates: 189⁴ Number of baggage facilities: 33

At completion of this project, Number of ticket counters: 384 Number of gates: 189 Number of baggage facilities: 33

Net change due to this project: Number of ticket counters: +0 Number of gates: +0 Number of baggage facilities: +0

Terminal and surface transportation projects. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

[X] YES

·[] NO

[] N/A

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Comment upon and/or Clarify Project Description. Include source citation if clarification information is not from PFC application.

If project involves the construction of a new runway or modification of an existing runway, have the requirements of Order 5200.8, with regard to runway safety areas been met? If not, is the runway grandfathered or has a modification been approve, or is there a likelihood the requirements will be met, or should the project be disapproved.

If the project involves terminal work, confirm information regarding ticket counters, gates, and baggage facilities for construction and/or rehabilitation above has been completed.

Terminal and surface transportation projects. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

[]	YES
[]	NO
ſ	1	N/A

⁴ Gate count of 189 includes 19 T5 gates. Existing T5 is typically configured with 19 or 20 gates, depending on the operational activity and size of aircraft.

9. Significant Contribution:

Before approving this application at the level of \$4.50, the FAA must find that the project "will make a significant contribution to improving air safety and security, increasing competition among air carriers, reducing current or anticipated congestion, or reducing the impact of aviation noise on people living near the airport" [49 U.S.C. 40117(b)(4)(A)]. This project would make a significant contribution to increasing competition among air carriers. The PFC Order amplifies the required information as follows:

[A]n assertion that a project enhances competition may be supported by information on the number of new operations that the project will allow, the number of new entrant airlines it will accommodate, the effect on fares at the airport, and/or other measures of increased competition. Order $5500.1 \ \text{m} \ 10-12d$.

Demand for gates at Terminal 5 and the Airport as a whole is strong and near-term solutions are needed in order to reduce delays and allow for growth and competition at the Airport.

Re-banking, along with growth in international activity through additional flights and upgauging of aircraft, has increased the demand for gates at the Airport's international facilities. **Exhibit 1** demonstrates the amplification of peak activity which has resulted in additional demand on existing gate and terminal facilities for Terminal 5. International flights are scheduled to arrive into Terminal 5 in specific banks of time. These banks are designed to allow airlines to connect passengers from international points onto domestic flights departing O'Hare. Many of these flights are scheduled to arrive into O'Hare in the late afternoon in order to allow passengers to connect on both ends of the flight. Additionally, due to the time zones involved, it is not commercially feasible for flights arriving and departing Terminal 5 in the afternoon to shift to the morning or late evening hours, as this would require departures from Europe and Asia in the overnight time period when there are no connecting flights for passengers, and where many airports are limited by curfews.

The proposed Construction Project includes the two other elements of near-term gate capacity through the combination of increasing and up-gauging the number and gauge of gates at Terminal 5 and modifying gates M1 through M6. The Terminal 5 extension would allow for additional international flights during peak periods and the accommodation of larger aircraft. The M1 through M6 modification would allow for increased gate availability at the domestic terminal through a combination of shifting some domestic narrowbody flights to M1 through M6 and backfilling the vacated gates at the domestic terminals, allowing existing airlines to maintain contiguous operations and avoid a split operation between the domestic terminals and Terminal 5. CDA expects a domestic carrier to shift from the domestic terminal to gates M1 through M6 in Terminal

5 upon completion of the proposed Construction Project. This allocation would include preferential and/or common use gates which would be determined prior to completion of construction.



Exhibit 1: Total Passenger Operations at O'Hare– Arrivals vs. Departures (Rolling 60-minute Passenger Aircraft Activity at 10-minute Intervals)

SOURCE: Innovata, October 2016.

The need for additional gates and facilities to accommodate international activity is demonstrated today at Terminal 5. A record number of foreign flag carriers are using Terminal 5 since it opened in 1993. Currently, 37 foreign flag carriers have scheduled service at the Airport, with additional airlines expressing interest. The foreign flag operations typically use Terminal 5 to arrive and depart and are often towed off the gate to allow for the loading and unloading of other flights. In addition, most in-bound U.S. flag international operations arrive at Terminal 5. The need for gates at the current facility is demonstrated by the scheduling of aircraft and the effect of peak demand periods on the existing facilities. Currently at Terminal 5, a ten minute window is assumed between one flight's departure and the next flight's arrival during peak periods. This is significantly less than the time between flights that is typically used to schedule international flights. A time of 20 to 30 minutes could be considered a moderate-toaggressive assumption as in forecasting gate demand "[a] buffer time of 15 to 20 minutes is normally used. Longer buffer times may be used at international terminals, where ontime performance is likely to be more variable. Shorter buffer times may be used in dayto-day operations on a domestic terminal."⁵ The 10 minute window allows for little cushion to accommodate unanticipated delays or changes in flight schedules.

Exhibit 2 is a ramp chart illustrating estimated gate activity for the 2016 peak day schedule (August 16, 2016) under the existing Terminal 5 gate layout. A key assumption in the gate analysis includes the time between flights. Due to the demand at Terminal 5, a 10 minute window between flights was assumed in order to accommodate the flights, which is less than industry standard. Flights with lengthy time on the ground are assumed to be towed off the gate when needed and placed on remote hardstand positions in order to accommodate other flights at Terminal 5. Even with the utilization of remote hardstands, the 2016 peak day schedule could not be accommodated on the existing gate layout when a more standard time between flights of 30 minutes was assumed. By reducing the time between flights to 10 minutes, all flights in the 2016 peak day schedule were able to be accommodated in the analysis, as illustrated in Exhibit 2. Using the 10 minute window assumption in the gating analysis, 8 flights in the 2016 peak day schedule required the use of remote hardstands. While the gating analysis demonstrates high demand for gates at Terminal 5, actual activity at Terminal 5 on and around August 16, 2016 also demonstrates that demand at Terminal 5 exceeds the gate capacity. Hardstand parking positions were used for four international operations on August 16, 2016 and throughout the week of August 14 to August 20, 2016, hardstands were used for international flight between four and seven operations a day.

⁵ Airport Cooperative Research Program, Transportation Research Board of the National Academies, *ACRP Report* 25: Airport Passenger Terminal Planning and Design, Volume 1: Guidebook, 2010.

Exhibit 3 is a ramp chart illustrating estimated gate activity for the anticipated 2025 design day flight schedule under the existing Terminal 5 gate layout. In this exhibit, a 30 minute window assumption was applied, which is reasonable for terminal planning as a buffer time for international flights.⁶ A domestic carrier was assumed to utilize Gates M1 to M6 at Terminal 5, which is consistent with CDA's plan, and international arriving flights for American, United, Frontier and other international partners were assumed to utilize Gates M7 to M21 at Terminal 5. All international departures for American, United, Frontier, Lufthansa, All Nippon Airways, Japan Airlines, Air Berlin, and Iberia are assumed to occur at domestic gates, as is done today. The international flights of all other airlines in 2025 are assumed to arrive and depart from Terminal 5. Flights in 2025 with lengthy ground times are towed when needed and placed on remote hardstand positions in order to accommodate other flights. As shown, with the 30 minute window assumptions, 15 flights in the 2025 design day flight schedule required the use of remote hardstands. Despite this utilization of remote hardstands, 9 additional gates would be required to accommodate the flights in the 2025 design day flight schedule when a 30 minute window was assumed between flights. Continuing with the 10 minute window currently allowed would result in only 6 additional gates being required. Therefore, a minimum of 6 gates is necessary to accommodate the 2025 design day flight schedule and an additional 3 gates (for a total of 9 additional gates) are required to satisfy the additional demand at a more typical buffer time of 30 minutes between flights. In addition, seven remote hardstand positions would be required to accommodate flights with lengthy ground times that were towed off of their arrival gates to accommodate other flights.

Ibid.












Larger aircraft at Terminal 5 place additional demand on the gate facilities. **Exhibit 4** shows the historical schedule of international arriving seats per operation. The average seats per arrival increased approximately 17.5 percent between 2010 and 2016, which is a reflection of larger aircraft serving international destinations.



Exhibit 4: Annual International Arrival, Average Seat per Operation

NOTE: Reflects 2016 full year scheduled activity, as of October 7, 2016.

SOURCE: Innovata, October 2016.

As a result of increasing aircraft size, as indicated by the recent increasing trend in average seats per international operation, demand on the terminal frontage increases due to the larger aircraft parking at the facility. The Terminal 5 extension is necessary to not only accommodate additional operations at peak hours, but also to accommodate larger aircraft that are utilizing the facility and requiring more space than a flight operated with 'a smaller aircraft.

As noted above, demand for gates at the entire Airport is strong and near-term solutions are needed in order to reduce delays and allow for growth and competition at the Airport. Until recently, 2004 and 2007 were years of peak annual activity at the Airport for operations and passengers, respectively. Annual operations declined from 2005 through 2009 following high oil prices and an economic recession. Following a slight rebound in annual activity in 2010 and 2011, annual activity remained relatively flat as airlines practiced capacity discipline and focused on revenue growth. The annual scheduled passenger operations in 2016 (841,170) are still below the 961,443 scheduled passenger operations in 2004. However, as shown in **Table 3**, the peaking characteristics of the airline's schedules have changed, creating higher peak demand periods than experienced in 2004 or 2007. This "re-banking" is a result of O'Hare's primary air carriers United Airlines and American Airlines restructuring their schedules in 2015 to facilitate connecting efficiencies during peak travel periods. While the scheduled annual passenger

operations have decreased approximately 12.5 percent, the peak 15-minute period has increased approximately 11.1 percent.

			Peak Day,			Peak day,		
	Annual Operations	Operations	Arr.	еак но. <u>Dep.</u>	ır <u>Total</u>	rea Arr.	Dep.	Total
2004 Passenger			•					
Aircraft Activity 2007 Passenger	961,443	2,753	108	111	208	44	43	72
Aircraft Activity 2015 Passenger	919,386	2,630	106	112	191	41	47	69
Aircraft Activity	853,367	2,700	131	136	228	55	69	80
Aircraft Activity	841,170	2,525	122	117	194	' 55	69	80

Table 3: Peak Passenger Aircraft Activity

NOTES:

Peak day based on scheduled activity: July 30, 2004, August 24, 2007, July 30, 2015, August 16, 2016.

¹⁷ Rolling 60-minute activity analyzed at 10-minute intervals. Peak hour activity for arrivals, departures, and total activity does not occur in the same hour.

²⁷ Rolling 15-minute activity analyzed at 5-minute intervals. Peak hour activity for arrivals, departures, and total activity does not occur in the same hour.

SOURCES: Innovata, October 2016 (schedule information); Ricondo & Associates, Inc., October 2016 (calculations).

Exhibit 5 demonstrates the amplification of peak activity which has resulted in additional demand on existing gate and terminal facilities for the entire Airport. Multiple projects have been proposed and/or are being undertaken in order to address current near-term gate inefficiencies and demand for additional gates. One project, not a part of this PFC application, is the extension of existing Concourse L. The project, being funded by American Airlines, is extending the concourse by approximately five gates to address near term gate need for use by larger regional jets and to locate those flights close to connecting mainline operations. The Concourse L Extension is scheduled to be completed in 2018.





SOURCE: Innovata, October 2016.

In the City of Chicago (the City)'s business judgment, the City's success in accommodating new domestic and international carriers, and providing for service expansion by all existing carriers at the Airport, would be enhanced by offering reconfigured international terminal facilities that fit airlines' needs. PFCs are properly allocated to projects that, in the reasonable business judgment of the airport sponsor, would remove obstacles to the possibility of new and expanded competitive service at O'Hare.

The City believes that the addition of new gates and the reconfiguration of existing gates on Concourse M is a necessary and desirable step to achieving greater competition airport-wide among existing carriers, as well as to accommodate new carriers. The proposed Design Project and Construction Project (collectively, the Project) allows for

Revised 8/31/2010

the reconfiguring of gates to accommodate larger aircraft for international flights, while also increasing the number of total gates at the Airport by nine gates.⁷

The proposed Project would increase the number of gates with access to T5's Federal Inspection Services (FIS) facility, the only FIS facility at O'Hare, which would allow O'Hare to accommodate additional demand for international flights. Also, the addition of a second gate that can accommodate Airbus A380 (A380) aircraft is important for O'Hare as a major noncoastal international hub in order to continue to attract foreign flag carriers by offering gates that accommodate all of their aircraft types. The reconfiguration of gate M11 to accommodate A380 aircraft was completed in July 2016. The proposed Project includes the reconfiguration of a second gate, Gate M19, to accommodate A380 aircraft greater flexibility in their fleet mix. As of July 2016, 13 airlines operate A380 aircraft on 119 routes to 56 global destinations.⁸ Airlines currently serving O'Hare that operate A380 aircraft elsewhere are Air France, Asiana Airlines, British Airways, Emirates Airline, Etihad Airways, Korean Air, Lufthansa, and Qatar Airways.

There is also potential for domestic carriers to utilize some of the common-use international gates on Concourse M for domestic flights during early morning and late evening peak periods, when international gate demand is low.

If any of the domestic carriers that currently serve the Airport relocated to T5, the exclusive-use gates in the domestic terminals would be available for use by existing or new carriers on a preferential or common-use basis, thereby increasing the opportunity for competition at the Airport.

The proposed Project also has the ability to reduce current or anticipated congestion. The Airport has the highest average taxi-in delay of any U.S. large hub airport. Detail on average taxi-in delay at O'Hare is provided in Section 10 (Project Objective). Although taxi-in delays are not exclusive to delays caused by gate availability, it does capture delays experienced by aircraft waiting for gates at the terminal or at a holdpad position. The addition of gates is anticipated to improve gate capacity and potentially reduce existing operational delays, including taxi-in delays.

The contribution of the proposed Project is further demonstrated in Section 10 (Project Objective) and Section 11 (Project Justification).

⁷ Nine gates are being constructed on the extended M concourse. Due to a combination of adding and reconfiguring gates, the net impact of the Project increases the number of T5 gates from either 19 or 20 gates, depending on parking configuration, to 28 gates.

⁸ Innovata schedule data (accessed July 20, 2016).

FOR FAA USE
Air safety. Part 139 [] Other (explain)
Certification Inspector concur. Yes [] No [] Date
Air security. Part 107 [] Part 108 [] Other (explain)
CASFO concur. Yes [] No [] Date
Competition. Competition Plan [] Other (explain)
Congestion. Current [] or Anticipated []
LOI [] FAA BCA [] FAA Airport Capacity Enhancement Plan
Other (explain)
Noise. 65 LDN [] Other (explain)

Project does not qualify under "significant contribution " rules.

Quantitative and qualitative analysis of significant contribution option chosen by public agency. If analysis is based on a source other than this PFC application, list the source(s) of data and attach the relevant documentation used to make this finding.

How does this project address the deficiency sited by the public agency?

If competition is the chosen option, provide the FAA's analysis of any barriers to competition at the airport.

10. Project Objective:

As a distinct requirement of the PFC program, PFC projects must meet one or more of the objectives of §158.15(a) of the regulation. Specifically, PFC projects must:

(1) preserve or enhance safety, security, or capacity of the national air transportation system;
 (2) reduce noise or mitigate noise impacts resulting from an airport; or
 (3) furnish opportunities for enhanced competition between or among air carriers.

O'Hare is a significant airport in the national transportation system, ranking first in operations and second in enplanements among U.S. airports in 2015. Activity at O'Hare has a significant impact on the national air transportation system. The Project would increase gate capacity and has the potential to reduce delays associated with aircraft waiting for gates. By adding additional gates at the Airport, the proposed Project would reduce delays within the national air transportation system, preserve capacity, and furnish opportunities for enhanced competition between or among air carriers. The addition of

gates would require additional passenger processing facilities, including an additional baggage claim device and a security inspection area of increased capacity.

Space constraints at the existing facility result in congestion in terminal areas and delays for inbound and outbound aircraft. Additional operations and larger aircraft will present additional challenges in accommodating traffic at O'Hare. By expanding Concourse M to increase the number and size of gates in T5 and reconfiguring gates M1 through M6, CDA would enhance O'Hare's ability to accommodate increased operations and increased passengers, as well as provide existing and new carriers access to Airport facilities. The 18 new passenger loading bridges included in the Project would provide access to the terminal for the reconfigured gates. The number of gates and the current configurations of the gates at O'Hare would continue to be a constraint on the ability for O'Hare to accommodate demand if the efficiencies that the proposed Project is intended to create are not realized.

The Airport has the highest average taxi-in delay of any U.S. large hub airport.⁹ It is important to note that taxi-in delay does not included the unimpeded taxi-in time, which is the estimated time for an aircraft under optimal operating conditions (when congestion, weather, or other delay factors are not significant). In 2015 the average taxi-in delay at O'Hare was approximately 6.9 minutes per arriving aircraft. This compares to the next highest airport, Dallas Fort Worth International, with an average of approximately 5.7 minutes and an average of approximately 3.0 minutes for the 35 airports with significant activity.¹⁰ Taxi-in delay includes delay experienced taxiing on the airfield after landing on the runway as well as time waiting for a gate. Taxi-in delay does not include the estimated unimpeded time associated with taxiing to the gate. While taxi-in delay is not exclusive to delays caused by gate availability, time spent waiting for gates at the terminal or at a holdpad position is captured in the average taxi-in delay of 6.9 minutes per arriving aircraft at O'Hare. Data on delay associated specifically with waiting for gates is not available. Adding gates is anticipated to improve gate capacity and potentially reduce existing operational delays, including taxi-in delays.

By the addition of non-exclusive use gates at the Airport, the Project would furnish opportunities for enhanced competition between or among air carriers. An obstacle to new competition at O'Hare is the lack of available gates for new and existing domestic and international carriers (discussed in Section 11 [Project Justification]). Currently, there are 19 aircraft gates at T5 and 189 aircraft gates in the Airport. The proposed addition of

⁹ FAA Aviation System Performance Metrics (ASPM), accessed August 30, 2016. Taxi-In Delay is the sum of minutes of Taxi-In Delay of one minute or more, divided by all arrivals. Taxi-In Delay equals actual Taxi-In Time minus Unimpeded Taxi-In Time (FAA Aviation System Performance Metrics definition).

¹⁰ FAA ASPM Operational Evolution Partnership 35 airports.

gates would allow O'Hare to accommodate anticipated demand for additional gates. Demand for the existing gates at T5 is 115 operations per weekday, as estimated in the July 2015 schedule.

Various forecasts exist for future activity at the Airport. These include the existing Terminal Area Forecast (TAF), prior TAFs, the activity used in the analysis associated with the O'Hare Modernization Program (OMP) Environmental Impact Statement (EIS) and subsequent Re-Evaluation, and activity forecasts prepared for financial analysis purposes. A future design day flight schedule, which accounts for current and projected air carrier scheduling trends and aircraft fleet mixes, was needed for the purpose of assessing facility needs at T5. A planning forecast was prepared by Ricondo & Associates in November 2015 to guide the development of this design day flight schedule that can be used to assess demand on facilities throughout the Airport and, specifically, facilities at T5.

Although forecasted activity levels vary, there is a consistent underlying projection of long-term upward activity growth at O'Hare. The planning forecast projects approximately 41.5 million enplaned passengers to occur in 2020, the first year following the completion of the Construction Project. This activity level is approximately 9.6 percent higher than the activity level of 37.9 million enplaned passengers in Federal Fiscal Year (FFY) 2020 in the 2015 TAF (published January 2016). The 41.5 million compares to FFY 2025 in the 2015 TAF and FFY 2012 in the 2002 TAF (published March 2003) used in the 2005 OMP EIS.

The current planning forecast demonstrates a need for additional gates and facility capabilities. However, the need for the Terminal 5 Expansion is not specifically linked to the activity levels in the current planning forecast. Today's use of terminal facilities demonstrates a need for additional processing capabilities in T5 and a demand for gates that has intensified relative to annual demand levels due to an increase in the airline banking structure and an upgauging of airline fleets. Current and previous TAF forecasts, along with CDA's planning forecast demonstrate increasing activity over time. For planning purposes, a design day schedule was developed for 2025 in order to assess demand at the airport on a terminal-basis. The demand for gates in the 2025 design day schedule is forecast to be 265 daily operations.¹¹ An expanded facility is needed to accommodate this increase in demand. This compares to the scheduled daily operations for Terminal 5 in 2016 of 110.¹² Additional information on the projected demands at Terminal 5 is included in Section 11, Project Justification.

¹¹ Ricondo & Associates, Inc., Terminal 5 Concourse M Extension Project Definition Document, August 2016.

¹² Schedule activity for August 16, 2016 (Source: Innovata).

Moving airlines out of the Airport's domestic terminals and into T5, as planned by CDA, would provide an opportunity to use the domestic terminal gates vacated by those airlines, which are currently being leased on an exclusive use basis, for additional service by existing and/or new carriers at O'Hare on a non-exclusive use basis in the future. Thus, regardless of the new occupants of the T5 gates, the proposed Project would increase the number of gates available to both existing and new carriers at the Airport.

The proposed Project includes the reconfiguration of a second gate, gate M19, to accommodate A380 aircraft, which would increase the range of aircraft that carriers can use to serve the Airport and allow those airlines with A380 aircraft greater flexibility in their fleet mix. The proposed Project also increases the number of gates that can access the FIS facility, used by U.S. Customs and Border Protection (CBP) for processing arriving international passengers.

Additionally, the Project would enhance baggage and passenger processing. The baggage processing capabilities would be improved, with the addition of a non-FIS baggage claim device. Enhanced security capacity and efficiency would be provided with the expansion of the TSA screening checkpoint, which is planned to accommodate lane(s) for $Pre\checkmark$ eligible passengers. Existing passenger security screening lanes underserve the existing demand and lack sufficient TSA $Pre\checkmark$ dedicated lanes at T5. T5 currently has no dedicated TSA $Pre\checkmark$ security screening lanes; however, four foreign flag carriers serving O'Hare have enrolled in the $Pre\checkmark$ program, and more are expected to follow. Additional passenger security screening lane(s) would provide additional security screening capacity and help to reduce delays caused by long lines occurring during peak periods at T5. Renovations and reconfiguration of FIS Primary and Secondary Inspection areas would enlarge queuing areas and provide additional or relocated CBP functional spaces that would support the anticipated passenger activity.

FOR FAA USE

- ____ Safety, Preserve [] Enhance []
- ____ Security, Preserve [] Enhance []
- Capacity, Preserve [] Enhance []

Furnish opportunity for enhanced competition between or among air carriers at the airport

Mitigate noise impacts resulting from aircraft operations at the airport Project does not meet any PFC objectives (explain)

Finding

Current deficiency. List the source(s) of data used to make this finding if it is not a part of the PFC application.

Address adequacy of issues.

11. Project Justification:

The proposed Project would furnish opportunities for enhanced competition between or among air carriers at O'Hare. By extending Concourse M to increase the number and size of gates at T5, the Project would increase the Airport's ability to accommodate increased operations and increased passengers, both domestic and international. The proposed Project would allow new and existing air carriers to start and expand operations.

The proposed Project increases the number of gates that can access the FIS facility, used by U.S. Customs and Border Protection (CBP) for processing arriving international passengers. Baggage processing capabilities would also be increased, with the addition of a domestic baggage claim device. Enhanced security capacity and efficiency would be provided with the expansion of the TSA screening checkpoint, which is planned to accommodate lane(s) for Prev eligible passengers. In addition, renovations to and reconfiguration of FIS Primary and Secondary Inspection areas would enlarge queuing areas and provide additional or relocated CBP functional spaces that would support the anticipated passenger activity.

Existing passenger security screening lanes underserve the existing demand and lack sufficient TSA Pre \checkmark dedicated lanes at T5. T5 currently has no dedicated TSA Pre \checkmark security screening lanes; however, four foreign flag carriers serving the Airport have enrolled in the Pre \checkmark program, and more are expected to follow. Additional passenger security screening lane(s) would provide additional security screening capacity and help to reduce delays caused by long lines occurring during peak periods at T5.

Existing facility constraints produce congestion in terminal areas and delays for inbound and outbound aircraft. O'Hare will be challenged to accommodate additional operations and larger aircraft. The number of gates and the current configurations of the gates at O'Hare will continue to be a constraint in the Airport's ability to accommodate demand if the efficiencies that the Project is intended to create are not realized.

Exhibit 6 shows the total number of domestic and international gates and hardstands at the Airport prior to the proposed beginning of construction of the Project and after construction is complete. As a result of the proposed Project, the 189 existing gates at O'Hare would be increased to 198. The number of hardstands (four) would remain the same, but the hardstands would be relocated as a part of the Project.

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Revised 8/31/2010

Exhibit 6: Airport-wide Gates



NOTE: Numbers of post-T5 Expansion gates does not include additional gates on Terminal 3 being completed separately from the T5 Expansion project.

SOURCE: Ricondo & Associates, Inc., July 2016.

The current gate configuration does not provide optimal scheduling of aircraft, as the smaller gate sizes are not compatible with capacity demand. The proposed Project would increase the linear feet of gate frontage from approximately 4,220 feet to approximately 6,090 feet. In addition to expanding facilities, certain gates would be reconfigured and upgauged, resulting in an increase of the average gauge of gates. **Exhibit 7** depicts O'Hare's gate count prior to and after construction of the proposed Project by ADG classification. The number of ADG-VI gates at the Airport would increase from 4 to 8. The number of ADG-V gates would increase from 19 to 21. The number of ADG-IV gates would decrease from 24 to 20, as the 4 existing ADG-IV gates in T5 are all being reconfigured as part of the proposed Project. ADG-III gates would increase from 89 to 96, and the number of ADG-II and ADG-I gates would remain unchanged.

· Exhibit 7: Airport-wide Gate Gauge



NOTE: Numbers of post-T5 Expansion gates does not include additional gates on Terminal 3 being completed separately from the T5 Expansion project.

SOURCE: Ricondo & Associates, Inc., July 2016.

Growth in international traffic and the evolution of how airlines are operating drive the need for the expansion of T5 and gate reconfiguration. International flights and passengers are expected to grow through 2025, and air carriers are transitioning flights from smaller aircraft to larger aircraft and retiring ADG-IV aircraft. Larger aircraft results in more passengers per flight and the need for larger gates. **Table 4** shows the 2015 and forecast 2025 arriving international Air Traffic Movements (ATMs) by aircraft size. As shown, an increase in total ATMs and a general upgauging of aircraft type are both forecasted.

	2015		202	Percentage	
Arriving ATMs by ADG	ATMs	Percent Total	ATMs	Percent Total	Change (2015 -2025)
III (Boeing 737-800) or smaller	21	27%	28	30%	33%
IV (Boeing 767-200)	12	15%	3	3%	-75%
V (Airbus 340-500)	43	55%	59	63%	37%
VI (Airbus 380-800)	2	3%	4	4%	100%
Total	78	100%	94	100%	21%

Table 4: Terminal 5 Design Day Activity

NOTE: Does not include domestic arriving ATMs in 2025.

SOURCE: Ricondo & Associates, Inc., August 2016.

The 19 gates and 4 hardstands in T5 today are the vast majority (19 out of 37) of the nonexclusive use gates currently at O'Hare. If domestic carriers that currently serve the Airport relocated to T5, as planned by CDA, exclusive use gates in the domestic terminals would then be available for use by existing or new carriers on a non-exclusive use basis. Thus, the total number of non-exclusive use gates at the Airport would increase by a minimum of nine as a result of the proposed Project, with the potential to increase by more if domestic airlines with existing leases choose to relocate to T5. The increased number of non-exclusive use gates airport-wide beyond those being added to T5 as part of the proposed Project would additionally contribute to increased competition amongst existing and new carriers at the Airport.

Additionally, if the Project is not pursued and the additional A380 aircraft-compatible gate is not added at T5, there is not another location at the Airport that can accommodate a second A380 aircraft; the Airport does not have available common-use gates in its domestic terminals to convert existing gates into gates compatible with A380 aircraft. This limits the types of aircraft existing and new carriers can use on flights to the Airport. The reconfiguration of gates to accommodate an additional A380 aircraft, thus increasing competition to international markets.

Other current initiatives to increase gate capacity include the construction of five new gates at Terminal 3 by extending Concourse L and the potential relocation of non-hubbing domestic airlines from Terminal 3 to Terminal 2 in order to reduce inefficiencies and passenger inconvenience caused by fragmented and unconsolidated gates. Long-term planning to deliver major expansion of terminal and gate capacity at O'Hare is underway; however, near-term capacity is needed to accommodate existing demand while potential redevelopment of the central terminal area is being considered. In coordination with the long-term planning, the extended Concourse L and the proposed Terminal 5 Expansion are short-term projects. Concourse L is expected to increase gate availability and the proposed Project is expected to increase gate capacity and opportunities for enhanced competition amongst air carriers. The Project is being considered in the overall planning to increase gate capacity, but it has independent utility and, as stated, a more near-term timeframe. It is somewhat similar although smaller than the Terminal 6 project evaluated in the 2005 OMP EIS.

The proposed Project is a reasonable and cost-effective way to increase gate capacity. The Project balances the timing of improvements between need and costs, focusing on trying to reuse existing facilities where possible, and it provides timely delivery of additional near-term capacity to alleviate anticipated capacity constraints and to facilitate the phasing of the broader terminal area development program. Several alternative plans to increase gate capacity were considered by CDA, and the proposed Terminal 5 Expansion added the most capacity of all of the alternatives considered. The Project was also one of the most cost-effective on a gate-by-gate basis, as it utilizes certain elements that already exist, including baggage claim and other existing facilities, which otherwise would have to be fully constructed if an entirely new facility was to be constructed.

Table 5 shows examples of current and recently completed construction projects involving the addition of gates at other U.S. airports, many of which far exceed the cost per additional gate for the proposed Project, in part because more extensive construction was required to add gate capacity than what is required in the Project.

Airport	Project Name	Facility <u>Type</u>	Opening Year	Project Costs	New Narrow Body Gates	New Wide Body Gates	Renovated Gates	Additional SQ FT.	Cost per Additional Gate ^{2/}
LAX	Midfield Satellite Concourse - Phase 1/31	International	2019	\$1,600,000,000	0	12	n a.	800.000	\$133,333,333
LAX	Tom Bradley International Terminal	International	2013	\$1,500,000,000	3	15	n.a.	1,179,000	\$83,333,333
HOU	International Concourse	International	2015	\$156,000,000	5	0	na	280,000	\$31,200,000
IAH	Terminal C-North	Domestic	2017	\$185,000,000	11	2 4/	n a	270,000	\$14,230,769
DEN	Concourse C Extension	Domestic	2014	\$48,700,000	5	0	4	39,000	\$9,740,000

Table 5: Sample of Recent and Future Terminal Projects at U.S. Airports

NOTES:

1/ Costs include total project, including entry halls, processing facilities and land access projects as applicable.

2/ Excludes renovated gates and gates at IAH that are able to accommodate wide-body aircraft.

3/ Anticipated \$10 million in AIP funding, \$5.96 Million in Pay-as-you-go PECs, \$738.904 in Department Funds, and an additional \$819.767 in Future Senior Bond Proceeds.

4/ At least two of the 11 narrow-body gates are anticipated to support wide-body aircraft.

SOURCES: City and County of Denver, Colorado For and On Behalf of Its Department of Aviation, Airport System Subordinate Revenue Bonds 2013 Series A (DEN); City of Houston, Texas, Airport System Special Facilities Revenue Bonds (United Airlines, Inc. Terminal Improvement Projects), Series 2015 B (IAH); Houston Business Journal, Southwest Reveals New Design Plan for Hobby International Terminal (HOU); Department of Airports of the City of Los Angeles, California, Los Angeles International Airport Subordinate Revenue Bonds 2016 Series A (LAX); LAX is Happening, New Tom Bradley International Terminal Project Overview. LAX is Happening, New Tom Bradley International Terminal Fun Facts,

https://www.lawa.org/uploadedFiles/LAXDev/News_for_LAXDev/TBIT%20Fun%20Facts.pdf (LAX), accessed October 2016.

The Project also would minimize the impact to air carriers during its execution, including consideration of the duration that gates need to be taken out of service for passenger loading bridge and fuel pit work. Demolishing two buildings east of Concourse M would allow for implementation of new apron pavements before three gates at the east end of Concourse M need to be relocated. The newly-constructed pavement would allow for the relocation of existing hardstand positions such that they can remain operational throughout the construction process. Moreover, the three gates requiring relocation would be able to be provided south of the construction zone for the concourse extension and connected to the existing portion of Concourse M using passenger loading bridge fixed sections. Sequencing the program in this manner would allow for existing aircraft gate and hardstand capacity to be maintained throughout the construction process.

FOR FAA USE Define how the project accomplishes PFC Objective(s)

Explain how project is cost-effective compared to other reasonable and timely means to accomplish this objective(s)

Based on informed opinion or published FAA guidance, specify how the cost of the project is reasonable compared to the capacity, safety, security, noise and/or competition benefits attributable to the project. Include citation for any documents that are not a part of this PFC application.

If analysis is based on a source other than this PFC application, list the source(s) of data and attach the relevant documentation used to make this finding.

Discuss any non-economical benefits which are not captured above.

Project Eligibility:

Indicate project eligibility by checking the appropriate category below.

- [] Development eligible under AIP criteria (paragraph _____ of Order 5100.38__ or PGL ____);
-] Planning eligible under AIP criteria (paragraph of Order 5100.38 or PGL);

] Noise compatibility planning as described in 49 U.S.C. 47505;

[] Noise compatibility measures eligible under 49 U.S.C. 47504.

[] Project approved in an approved Part 150 noise compatibility plan;

Title and Date of Part 150

[] Project included in a local study.

Title and Date of local study:

[] Terminal development as described in 49 U.S.C. 40117(a)(3)(C);

[] Shell of a gate as described in 49 U.S.C 40117(a)(3)(F) (air carrier

percentage of annual boardings _____;

[] PFC Program Update Letter _____

] Project does not meet PFC eligibility (explain).

If analysis is based on a source other than this PFC application, list the source(s) of data and attach the relevant documentation used to make this finding.

Are any work elements or portions of the overall project ineligible? Provide associated costs.

12. Estimated Project Implementation Date (Month and Year): November 2016 Estimated Project Completion Date (Month and Year): December 2017

For FAA Use

For Impose and Use or Use Only projects, will the project begin within 2 years of PFC application Due date (120-day)?



For Impose Only project, will the project begin within 5 years of the charge effective date or PFC application Due date, whichever is first?

[] Yes [_] No

Is this project dependent upon another action to occur before its implementation or completion. Explain

13. For an Impose Only project, estimated date Use application will be submitted to the FAA (Month and Year):

For FAA Use

Is the date within 3 years of the estimated charge effective date or approval date, whichever is sooner.

[] Yes [] No

Which actions are needed before the use application can be submitted? What is the estimated schedule for each action?

14. Project requesting PFC funding levels of \$4.00 and \$4.50:

a. Can project costs be paid for from funds reasonably expected to be available through AIP funding.

[] YES

[X] NO

b. If the FAA determines that the project may qualify for AIP funding, would the public agency prefer that the FAA approve

[X] the amount of the local match to be collected at a \$4.50 PFC level, or

[] the entire requested amount at a \$3.00 PFC level.

c. Terminal and surface transportation projects. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

[X] YES

[] NO

[] N/A

15. List of Carriers Certifying Agreement: United Airlines List of Carriers Certifying Disagreement: Recap of Disagreements: Public Agency Reasons for Proceeding:

16. List of Comments Received from the Public Notice: None List of Parties Certifying Agreement: Recap of Disagreements: Public Agency Reasons for Proceeding:

For FAA Use

Provide an analysis of each issue/disagreement raised by the air carriers and/or the public. Provide citations for any documents not included in the PFC application that are relied on by the FAA for its analysis.

If a Federal Register notice is published, discuss and analyze any new issues raised. (If the comments from the consultation are repeated, state that.)

ADO/RO Recommendation:

Does the ADO/RO find the total costs of this project to be reasonable? Did the ADO/RO use comparable projects to make this finding? If so, list projects.

If the amount requested if over \$10 million, was the level of detail sufficient to identify eligible and ineligible costs. Summarize ineligible costs.

Is the duration of collection adequate for the amount requested?

ADO/RO RECOMMENDATION:

[] Partially Approve. Summarize findings from earlier in the Attachment B discussing issues that lead to determination.

[] Disapprove. Summarize findings from earlier in the Attachment B discussing issues that lead to determination.

Application Reviewed by:

Name

Routing Symbol

Item(s) reviewed.

Item(s) reviewed

Name

Routing Symbol

Date

Date

Revised 8/31/2010

ATTACHMENT B-1a: SCHEDULE FOR TERMINAL 5 EXPANSION – DESIGN PROJECT

ATTACHMENT B-1b: COST ESTIMATE FOR TERMINAL 5 EXPANSION – DESIGN PROJECT

ATTACHMENT B-1a: TERMINAL 5 EXPANSION – DESIGN PROJECT SCHEDULE

		Completion	Duration
AGINAY	Start Date	Date	(months)
Design Procurement	15-Jul-16	22-Nov-16	4
Sitework Design	23-Nov-16	05-Apr-17	4
Facility Design	23-Nov-16	27-Dec-17	13
30% Facility Design	11-May-17		
SOURCE: CARE +, October 2016.			

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ATTACHMENT B-1b: DETAILED COST ESTIMATES - TOTAL PROJECT COSTS

Termina	5	Expansion	-Design
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TOTAL Cost Summary	Direct Construction Cost	%	Cost
Planning Studies, Survey, Site Investigation	180,260,000	0.5%	\$902,000
Architectural / Engineering Design Costs	180,260,000	8.0%	\$14,421,000
Planning and Cost Subtotal			\$15,323,000

Source: Care+, September 2016.

Prepared by: CARE+, June 2016; Ricondo & Associates, Inc., October 2016.

PFC APPLICATION NUMBER: 17-29-C-00-ORD

ATTACHMENT B-2: PROJECT INFORMATION

1. Project Title: Terminal 5 Expansion - Construction Project

2. Project Number: N/A

3. Use Airport of Project: Chicago O'Hare International Airport (ORD)

- 4. Project Type
- [x] Impose Only:
- [] Concurrent:
- [] Use Only:

Link to application:

5.	Level	of	Collection:
∽.		U 1	conconon.

[] \$1.00	[]\$4.00
[] \$2.00	[x] \$4.50
[] \$3.00	

6. Financing Plan

PFC Funds: Pay-as-you-go \$0 Bond Capital \$174,501,823 Bond Financing & Interest \$174,501,823

Subtotal PFC Funds*: \$349,003,646 If amount is over \$10 million, include cost details sufficient to identify eligible and ineligible costs.

Existing AIP Funds: Grant # Grant Funds in Project \$0

Subtotal Existing AIP Funds: \$0

Anticipated AIP Funds (List Each Year Separately): Fiscal Year: Entitlement \$0 Discretionary \$0 Total \$0

Subtotal Anticipated AIP Funds: \$0

Other Funds: State Grants \$0 Local Funds: - Airport discretionary funds: \$22,885,177 Other (please specify) Subtotal Other Funds: \$22,885,177

Total Project Cost: \$371,888,823.

For FAA Use

- a. Does the project include a proposed LOI?
- []YES

[] NO

If YES, does the Region support?

[]YES

[] NO

If YES, list the schedule for implementation;

b. For any proposed AIP discretionary funds, does the Region intend to support?
 YES

c. For any proposed AIP funds, is the request within the planning levels for the Region's five year CIP?
[] YES
[] NO

d. For project requesting PFC funding levels of \$4.00 and \$4.50:

Is there an expectation that AIP funding will be available to pay the project costs. [] YES

้ 1 NO

What percentage of the total project cost is funded through AIP? List the source(s) of data used to make this finding.

e. Terminal and surface transportation projects requesting a PFC funding level of \$4.00 and \$4.50. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

] YES

[] NO [] N/A

List the source(s) of data used to make this finding.

f. Reasonableness of cost. Project Total Cost Analysis

PFC Share of Total Cost Analysis

7. Back-up Financing Plan:

If proposed AIP discretionary funds or a proposed LOI are included in the Financing Plan, provide a Back-up Financing Plan or a project phasing plan in the event the funds are not available for the project.

N/A

For FAA Use

If required to use a back-up financing/phasing plan, indicate the need to obtain additional approvals to obtain an alternate source of financing. Indicate the additional PFC duration of collection required if PFC's are to be used to fund the difference. Recap any discussion from previous item regarding likelihood of public agency obtaining the funding it proposes.

8. Project Description:

Terminal 5 Expansion – Construction Project

The construction of the proposed Terminal 5 Expansion (Construction Project) includes an expansion of, and set of modifications to, the international terminal (Terminal 5 or T5) in order to increase gate¹ capacity at the Airport. The following information provides the general project elements.

The Construction Project includes: an expansion of the east concourse of T5, which includes the addition of approximately 279,000 square feet of gross floor area; the addition of net nine aircraft parking positions (as shown in **Exhibit 1**, which includes a terminal layout and gate count by area for both the existing T5 and T5 upon completion of the Construction Project) and installation of associated passenger loading bridges; and the extension of sterile corridors feeding the Federal Inspection Services (FIS) facility. The expansion of Concourse M includes new holdrooms, concession space, airline premium lounge(s), airline operations space, a supplemental ramp control facility, an FIS sterile corridor system, and building systems. In addition, the Construction Project includes the existing terminal apron by approximately 1.48 million square feet.² Hydrant fueling, gate power, and pre-conditioned air would be provided. The Construction Project includes the relocation of a perimeter fence and guard post, a new blast fence, the replacement of the triturator building, the installation of a snow melter area, relocated cargo storage, and other associated projects.

A gate is an active aircraft parking position that is accessed through the terminal building, either via a passenger loading bridge or other means, customarily used for enplaning and deplaning passengers. The number of gates is subject to change based on the configuration of aircraft parking.

² The 1.48 million square feet includes some replacement of existing apron as well as replacement of auto pavement with aircraft apron.





SOURCE: Ricondo & Associates, Inc., October 2016.

The proposed Construction Project also includes the reconfiguration of gates on the west concourse of T5 in order to accommodate domestic airlines, as well as modification of gate M18 to accommodate larger aircraft. T5 gates M1 through M6 would be modified to accommodate eight narrowbody aircraft, which had previously been accommodated in the domestic terminals. Existing passenger loading bridges would be modified and new passenger loading bridges would be added to provide access to T5 from the reconfigured gates.

Existing T5 facilities would also be modified to accommodate existing and anticipated passenger processing needs resulting from the continued upgauging of aircraft (which creates higher passenger loads at peak times), and the continued increase in international activity anticipated. Modifications to systems include the following: the expansion of the security screening checkpoint and the modification of the baggage system, ticket counter lobby facilities, and FIS inspection areas; the creation of a transfer bus station, providing airside bussing between T5 and the domestic terminal area³; and the addition of a supplemental ramp control facility.

³ In order for passengers who have connecting flights in other terminals to remain in secure areas while traveling between T5 and the domestic terminals, bussing between T5 and the domestic terminals (and therefore a transfer

Exhibits 2-4 are layout drawings of the Construction Project. Exhibit 2 shows the existing conditions of T5. Exhibit 3 shows the planned aircraft parking layout resulting from the Construction Project. Exhibit 4 presents a comprehensive airside site plan of the Construction Project. The Construction Project as described in this document and shown in Exhibits 2 through 4 is preliminary and subject to change.

Additional information on the proposed Construction Project is provided under the subheading **Construction Project Components**. Also, the Terminal 5 Concourse M Extension Project Definition Document is included in **Attachment I**. This document includes detailed descriptions and exhibits related to the proposed Construction Project.

Table 1 provides the estimated total cost of the proposed Construction Project, which consists of civil work; terminal expansion construction and related costs; existing terminal improvements, including terminal interior upgrades, passenger loading bridge relocations, and new passenger loading bridges; and management and administration.⁴ The total estimated cost of the Construction Project is \$197,387,000.⁵ More detailed cost estimates for this project are included in **Attachments B-2b,c,d**.

Project Element	Project Cost
Terminal Expansion Construction	\$138,360,000
Civil Work	36,190,000
Existing Terminal Improvements	
Terminal Interior Upgrades	3,410,000
Passenger Loading Bridge Relocations	300,000
New Passenger Loading Bridges	2,000,000
Subtotal Direct Construction Cost	180,260,000
Management and Administration (9.5% of construction)	17,127,000
Total Project Cost	197,387,000

Table 1: Construction Project Costs

SOURCE: CARE +, June 2016.

bus station at T5) would be necessary. In the absence of airside bussing, connecting passengers would have to exit the secure area in order to use the landside ATS to travel between T5 and the domestic terminals. The bussing operations are still in the planning phase.

The costs in Table 1 include all Construction Project costs, regardless of PFC eligibility. PFCs would only be used on eligible projects.

The total project cost estimate for the Terminal 5 Expansion is \$266,800,000, which includes \$197,387,000 in construction costs, in addition to \$15,323,000 in design costs (see Attachment B-1) and \$54,090,000 in contingencies. The contingencies are not included in this application. If costs increase, the City of Chicago would amend this PFC application in the future to include additional PFC-eligible costs; any remaining costs that are not PFC eligible would be paid for with airport discretionary funds.







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Table 2 shows the calculation of the estimated PFC-eligible costs associated with the new terminal space being added as part of the Concourse M expansion portion of the proposed Construction Project. The eligible proration percentage calculation is 84.3 percent, which is applied to the terminal expansion construction costs, less the high cost 100% eligible items, which include passenger loading bridges, elevators, and escalators. Including the 100 percent eligibility of these high cost items, it is estimated that approximately 85.3 percent of the total terminal expansion construction cost is PFC-eligible.

Table 3 shows the calculation of an estimated PFC-eligible portion of the proposed Construction Project. In addition to the 85.3 percent of total terminal expansion construction cost that is PFC-eligible, 100 percent of the costs of Civil Work related to the expansion are estimated to be eligible. Some of the improvements to the existing terminal, including New Passenger Loading Bridges and Passenger Loading Bridge Relocations being installed in the existing concourse, are also estimated to be 100 percent PFC eligible. The Terminal Interior Upgrades to the existing T5, which include both PFC-eligible (baggage claim installation and addition of security lane) and PFC noneligible (ticket counter reconfiguration) components, have not been itemized in the cost estimate and are therefore estimated to have the same PFC-eligibility as the terminal expansion construction cost (85.3 percent eligible), an estimate that would be amended upon design to reflect actual PFC-eligibility of the Terminal Interior Upgrades. The Management and Administration cost is estimated to be eligible in proportion to the PFCeligibility of the total construction costs, which is 88.4 percent. As shown in Table 3, it is estimated that 88.4 percent of the total Construction Project costs is PFC-eligible. Based on these calculations, this application is for Impose Only Authority for 88.4 percent of the total Construction Project costs, which is \$174.5 million, plus an equal amount in bond financing and interest costs, for a total of approximately \$349.0 million in PFC funds for the proposed Construction Project. PFC Revenue Bonds are planned to be issued in 2017 with a 30-year term at an interest rate consistent with the market interest rate at the time of issuance. Since actual financing and interest costs are not yet known, this application assumes financing and interest costs equal to the proposed Construction Project's capital cost. PFC authority may be amended in the future to reflect actual financing costs once they are known.

Terminal 5 Expansion Space (by Type)	Square Feet
PFC Eligible Areas:	
Hold Rooms	50,300
Sterile Corridors	48,700
Circulation	33,400
Apron Level Operations Space	48,880
Public Restrooms	7,000
PFC Eligible Area Square Footage Total [A]	188,280
PFC Ineligible Areas:	
Airline Lounge	25,600
Concessions	8,400
Supplemental Ramp Control Facility	1,000
PFC Ineligible Area Square Footage Total [B]	35,000
PFC Prorated Areas:	
Mechanical, Electrical, and Plumbing	55,820
PFC Prorated Areas Square Footage Total [C]	55,820
Total Terminal 5 Expansion Space	279,100
PFC Eligible Proration % [A/(A+B)]	84.3%
High Cost 100% PFC Eligible Items:	
Passenger Loading Bridges	5,000,000
Elevators	640,000
Escalators	2,600,000
High Cost 100% PFC Eligible Items Total [D]	8,240,000
High Cost 100% PFC Ineligible Items:	
N/A	
High Cost 100% PFC Ineligible Items Total [E]	-
Terminal Expansion Construction Cost	138,355,142
Less High Cost 100% PFC Eligible Items	(8,240,000)
Terminal Expansion Construction Cost Less High Cost PFC Eligible Items	130,115,142
x PFC Eligible Proration %	84.3%
PFC Eligible Expansion Construction Cost (Excluding High	
Cost PFC Eligible Items)	\$109,719,092
Plus High Cost 100% PFC Eligible Items	8,240,000
PFC Eligible Terminal Expansion Construction Cost	\$117,959,092
PFC Eligibility Percentage of Total Terminal Expansion	
Construction Cost	85.3%

Table 2: Terminal 5 Expansion – Construction Space and PFC Eligibility

SOURCES: Ricondo & Associates, Inc., Terminal 5 Concourse M Extension Project Definition Document, August 2016 (square footage); Ricondo & Associates, Inc., August 2016 (PFC eligibility).

Construction Component	Total Construction Costs	Estimated PFC Eligibility	Estimated PFC-Eligible Construction Costs
Terminal Expansion Construction	\$138,360,000	85.3%	\$117,963,234
Civil Work	36,190,000	100.0%	36,190,000
Existing Terminal Improvements			
Terminal Interior Upgrades	3,410,000	85.3%	2,907,304
Jet Bridge Relocations	300,000	100.0%	300,000
New Jet Bridges	2,000,000	100.0%	2,000,000
Total Construction Costs	\$180,260,000	88.4 %	\$159,360,539
Management and Administration	17,127,000		\$15,141,284
Total Construction Project Costs	\$197,387,000		\$174,501,823
PFC Impose Authority Requested			
PFC PAYGO			\$0
PFC Bond Capital			174,501,823
PFC Bond Financing and Interest			174,501,823
Total PFC Impose Authority Requested – Construction Project			\$349,003,646

Table 3: Estimated PFC-Eligible Construction Project Costs

SOURCES: CARE +, June 2016 (cost), Ricondo & Associates, Inc., October 2016 (PFC eligibility).

<u>Construction Project Components</u>: The proposed Construction Project consists of the construction of the following components:

Concourse M Expansion

The preliminary design of the expansion of Concourse M includes an addition of approximately 279,000 square feet of gross floor area spread between a lower level (consisting of airline operations space, a sterile passenger circulation corridor that ties into the existing apron-level corridor beneath Concourse M, and supporting infrastructure) and an upper level (consisting of passenger holdrooms, queuing and circulation areas, restrooms, and concessions).

Addition of Gates/Passenger Loading Bridges

The proposed Construction Project adds new gates, upgauges existing gates, and reconfigures existing gates, which results in increasing the number of T5 gates from 19 to 28.⁶ The Construction Project includes the installation of two new passenger loading bridges on the existing concourse, and the relocation of three existing passenger loading bridges already located on the west concourse of T5, allowing for domestic airlines to

⁶ Existing T5 is typically configured with 19 or 20 gates, depending on the operational activity and size of aircraft.

accommodate three narrowbody and five large regional jets.⁷ The existing passenger loading bridges at existing gates M19, M20 and M21 would be removed, as the gates are being relocated to extend the terminal to accommodate the additional gates. Sixteen passenger loading bridges would be installed for the new international common-use gates. In total, 18 new passenger loading bridges⁸ would be installed as part of the Construction Project.

Apron/Hardstands

As part of the proposed Construction Project, the four existing hardstand⁹ positions at T5 would be relocated from an area east of T5 to an area immediately north of the extended T5 concourse. The Construction Project also includes the removal of the existing pavement and the construction of additional apron surrounding the new gates and the relocated hardstands.

Table 4 presents gates and hardstands by maximum aircraft size prior to beginning the Construction Project and after the Construction Project is complete.

4	Quantity		
	Existing		
Maximum Aircraft	Configuration #1	Configuration #2	Proposed
Embraer 175W	-	-	3
Boeing 737-800W	1	2	-
Boeing 737-900W	_	-	5
Boeing 767-300ER	4	7	-
Boeing 747-400 .	9	6	7 .
Boeing 777-300ER	1	1	6
Boeing 777-9X	-	-	2
Boeing 747-8	3	3	3
Airbus A380-800	1	1	2
Total Gates	19	20	28
Total Remote Hardstands (Boeing 777-300ER)	4	4	4

Table 4: Terminal 5 Gates

SOURCE: Ricondo & Associates, Inc., July 2016.

⁷ It is anticipated that domestic airline(s) would sign preferential leases on eight gates at T5; however, leases have yet to be negotiated. The remaining gates on Concourse M after the expansion would be common use. Leases on gates at T5 would be negotiated prior to construction completion.

⁸ Because the existing passenger loading bridges at existing gates M19, M20, and M21, are not being reused, the net increase in T5's passenger loading bridges is 15, from 21 passenger loading bridges currently to 36 passenger loading bridges after the proposed Construction Project is complete.

⁹ A hardstand is a paved area for parking airplanes that is remote from the terminal building. Hardstands can be used for repairs and overnight parking, as well as for enplaning and deplaning passengers.

Modifications to Existing T5

The design also includes modifications to check-in counter space, the addition of screening lane(s) for the Transportation Security Administration (TSA) $Pre \checkmark$ program, and an additional non-FIS baggage claim in T5.

Reconfiguration of Ticket Counters: Modifications to existing Concourse M to accommodate current airline and passenger use patterns would also occur, including changing existing preferential-use ticket counters to a combination of preferential-use and common-use ticket counters. Domestic airlines would need adequate ticket counter space to process their passengers in T5, which is not currently available. It is anticipated that some existing ticket counter space would either be converted to common-use facilities or transferred to domestic airlines in order to use as preferential-use to accommodate the needs of all airlines. The allocation of ticket counter space would be determined in the future, prior to construction completion.

Expansion of Security Screening: The proposed Construction Project includes expansion of the TSA screening checkpoint to accommodate lane(s) for Pre \checkmark eligible passengers. A letter from TSA supporting this expansion is included in this application as Attachment B-2e.

Additional Baggage Carousel: The Construction Project includes the addition of a non-FIS baggage claim in existing Concourse M. There would be two non-FIS baggage claims after the proposed Construction Project is completed: one existing and one to be added as part of the Construction Project. Space formerly used by TSA to recheck baggage for domestic connections is being repurposed to reinstall a second non-FIS baggage carousel in T5. (TSA is accommodating the rescreening of baggage at its primary screening area in T5.) The second baggage carousel is included in the project costs.

The Construction Project cost presented includes all construction and administration costs necessary for the completion of the proposed Construction Project. PFC revenue would be used for the PFC-eligible portion of the project.

The proposed Construction Project is anticipated to respond to existing and future demand at the Airport by addressing the needs listed below.

- Provide the opportunity to alleviate delays at passenger security screening and accommodate TSA Pre ✓.
- Reduce congestion and delays that result from existing gate and terminal capacity limitations.

- Perform terminal and gate changes necessary to accommodate the airlines' continued trend in upgauging.
- Meet the continued growth in passenger and operational activity.
- Meet the continued growth in international activity.
- Enable new entrants and growth of non-hub domestic airlines and new entrants, including low-cost carriers such as Spirit, JetBlue, Frontier, and Alaska.
- Accommodate additional use of Airplane Design Group (ADG)-VI aircraft such as the Boeing 747-8 and Airbus A380 (A380).
 - Airlines currently serving O'Hare that operate A380 elsewhere are Air France, Asiana Airlines, British Airways, Emirates Airline, Etihad Airways, Korean Air, Lufthansa, and Qatar Airways.
- Alleviate anticipated capacity constraints associated with airline consolidation, changes in activity/scheduling, and individual carrier growth, addressing recent changes such as:
 - Recent hub re-banking by United Airlines and American Airlines, the #1 and #2 busiest carriers in operation at O'Hare.
 - Airline recent past consolidation, including United-Continental Airlines; American Airlines-US Airways; and Delta-Northwest Airlines.
- Remain competitive in response to similarly evolving competing connecting hubs and international gateways.
- Create operational resiliency and improve operational flexibility across the terminal facilities.

Additional information on items listed above is included in Sections 9, 10, and 11.

The proposed Terminal 5 Expansion would occur within the area designated on the O'Hare Modernization Program (OMP) Environmental Impact Statement (EIS) Approved Airport Layout Plan (ALP) as Terminal 6. Terminal 6, as shown on the ALP, is located immediately east of existing T5, and was anticipated to have 15 aircraft gates, 570,000 square feet of terminal area, and 2,162,633 square feet of new apron area. The proposed Construction Project adds a net of nine gates to the Airport, or 40 percent less than the approved Terminal 6; approximately 280,000 square feet of terminal space or 51 percent less than Terminal 6; and approximately 1,400,000 square feet of new apron area or 35 percent less apron area.

Enabling and Concurrent Projects: Enabling projects that are not included in this PFC application but are related to the proposed Construction Project (to prepare the site for construction) include the demolition of the former Lynx Cargo Building and the former Sky Chef Flight Kitchen and rough grading work. These two buildings are within the

footprint of the Construction Project. A concurrent project that is also independent of the Construction Project and not included in this PFC application is the TSA Checked Baggage Inspection System (CBIS) optimization project. In addition, American Airlines is constructing gates at Terminal 3 by extending Concourse L. These gates are separate from those added as part of the Terminal 5 Expansion and further support the demand for additional gate facilities at the Airport.

Additional information on the Construction Project can be found in the Terminal 5 Concourse M Extension Project Definition Document in **Attachment I**.

If applicable for terminal projects, Prior to implementation of this project, Number of ticket counters: 384 Number of gates: 189¹⁰ Number of baggage facilities: 33

At completion of this project, Number of ticket counters: 384 Number of gates: 198 Number of baggage facilities: 34

Net change due to this project: Number of ticket counters: +0 Number of gates: +9 Number of baggage facilities: +1

Terminal and surface transportation projects. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

[X] YES

[] NO

] N/A

FOR FAA USE

Comment upon and/or Clarify Project Description. Include source citation if clarification information is not from PFC application.

If project involves the construction of a new runway or modification of an existing runway, have the requirements of Order 5200.8, with regard to runway safety areas been met? If not, is the runway grandfathered or has a modification been approve, or is there a likelihood the requirements will be met, or should the project be disapproved.

¹⁰ Gate count of 189 includes 19 T5 gates. Existing T5 is typically configured with 19 or 20 gates, depending on the operational activity and size of aircraft. Nine gates are being constructed on the extended M concourse. Due to a combination of adding and reconfiguring gates, the net impact of the Terminal 5 Expansion increases the number of T5 gates from either 19 or 20 gates, depending on parking configuration, to 28 gates.
If the project involves terminal work, confirm information regarding ticket counters, gates, and baggage facilities for construction and/or rehabilitation above has been completed.

Terminal and surface transportation projects. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

[] YES [] NO [] N/A

9. Significant Contribution:

Before approving this application at the level of \$4.50, the FAA must find that the project "will make a significant contribution to improving air safety and security, increasing competition among air carriers, reducing current or anticipated congestion, or reducing the impact of aviation noise on people living near the airport" [49 U.S.C. 40117(b)(4)(A)]. This project would make a significant contribution to increasing competition among air carriers. The PFC Order amplifies the required information as follows:

[A]n assertion that a project enhances competition may be supported by information on the number of new operations that the project will allow, the number of new entrant airlines it will accommodate, the effect on fares at the airport, and/or other measures of increased competition. Order $5500.1 \ \text{mm} \ 10-12d$.

Demand for gates at Terminal 5 and the Airport as a whole is strong and near-term solutions are needed in order to reduce delays and allow for growth and competition at the Airport.

Re-banking, along with growth in international activity through additional flights and upgauging of aircraft, has increased the demand for gates at the Airport's international facilities. **Exhibit 5** demonstrates the amplification of peak activity which has resulted in additional demand on existing gate and terminal facilities for T5. International flights are scheduled to arrive into T5 in specific banks of time. These banks are designed to allow airlines to connect passengers from international points onto domestic flights departing O'Hare. Many of these flights are scheduled to arrive into O'Hare in the late afternoon in order to allow passengers to connect on both ends of the flight. Additionally, due to the time zones involved, it is not commercially feasible for flights arriving and departing T5 in the afternoon to shift to the morning or late evening hours, as this would require departures from Europe and Asia in the overnight time period when there are no connecting flights for passengers, and where many airports are limited by curfews.



Exhibit 5: Total Passenger Operations at O'Hare– Arrivals vs. Departures (Rolling 60-minute Passenger Aircraft Activity at 10-minute Intervals)

SOURCE: Innovata, October 2016.

The Construction Project includes two elements of near-term gate capacity through the combination of increasing and up-gauging the number and gauge of gates at Terminal 5 and modifying gates M1 through M6. The Terminal 5 extension would allow for additional international flights during peak periods and the accommodation of larger aircraft. The M1 through M6 modification would allow for increased gate availability at the domestic terminal through a combination of shifting some domestic narrowbody flights to M1 through M6 and backfilling the vacated gates at the domestic terminals, allowing existing airlines to maintain contiguous operations and avoid a split operation between the domestic terminals and Terminal 5. Chicago Department of Aviation (CDA) expects a domestic carrier to shift from the domestic terminal to gates M1 through M6 in Terminal 5 upon completion of the proposed Construction Project. This allocation would include preferential and/or common use gates which would be determined prior to completion of construction.

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The need for additional gates and facilities to accommodate international activity is demonstrated today at Terminal 5. A record number of foreign flag carriers are using Terminal 5 since it opened in 1993. Currently, 37 foreign flag carriers have scheduled service at the Airport, with additional airlines expressing interest. The foreign flag operations typically use Terminal 5 to arrive and depart and are often towed off the gate to allow for the loading and unloading of other flights. In addition, most in-bound U.S. flag international operations arrive at Terminal 5. The need for gates at the current facility is demonstrated by the scheduling of aircraft and the effect of peak demand periods on the existing facilities. Currently at Terminal 5, a ten minute window is assumed between one flight's departure and the next flight's arrival during peak periods. This is significantly less than the time between flights that is typically used to schedule international flights. A time of 20 to 30 minutes could be considered a moderate-toaggressive assumption as in forecasting gate demand "[a] buffer time of 15 to 20 minutes is normally used. Longer buffer times may be used at international terminals, where ontime performance is likely to be more variable. Shorter buffer times may be used in dayto-day operations on a domestic terminal."¹¹ The 10 minute window allows for little cushion to accommodate unanticipated delays or changes in flight schedules.

Exhibit 6 is a ramp chart illustrating estimated gate activity for the 2016 peak day schedule (August 16, 2016) under the existing Terminal 5 gate layout. A key assumption in the gate analysis includes the time between flights. Due to the demand at Terminal 5, a 10 minute window between flights was assumed in order to accommodate the flights, which is less than industry standard. Flights with lengthy time on the ground are assumed to be towed off the gate when needed and placed on remote hardstand positions in order

¹ Airport Cooperative Research Program, Transportation Research Board of the National Academics, *ACRP Report* 25⁻ Airport Passenger Terminal Planning and Design, Volume 1: Guidebook, 2010.

to accommodate other flights at Terminal 5. Even with the utilization of remote hardstands, the 2016 peak day schedule could not be accommodated on the existing gate layout when a more standard time between flights of 30 minutes was assumed. By reducing the time between flights to 10 minutes, all flights in the 2016 peak day schedule were able to be accommodated in the analysis, as illustrated in Exhibit 6. Using the 10 minute window assumption in the gating analysis, 8 flights in the 2016 peak day schedule required the use of remote hardstands. While the gating analysis demonstrates high demand for gates at Terminal 5, actual activity at Terminal 5 on and around August 16, 2016 also demonstrates that demand at Terminal 5 exceeds the gate capacity. Hardstand parking positions were used for four international operations on August 16, 2016 and throughout the week of August 14 to August 20, 2016 hardstands were used for international flight between four and seven operations a day.

Exhibit 7 is a ramp chart illustrating estimated gate activity for the anticipated 2025 design day flight schedule under the existing Terminal 5 gate layout. In this exhibit, a 30 minute window assumption was applied, which is reasonable for terminal planning as a buffer time for international flights.¹² A domestic carrier was assumed to utilize Gates M1 to M6 at Terminal 5, which is consistent with CDA's plan, and international arriving flights for American, United, Frontier and other international partners were assumed to utilize Gates M7 to M21 at Terminal 5. All international departures for American, United, Frontier, Lufthansa, All Nippon Airways, Japan Airlines, Air Berlin, and Iberia are assumed to occur at domestic gates, as is done today. The international flights of all other airlines in 2025 are assumed to arrive and depart from Terminal 5. Flights in 2025 with lengthy ground times are towed when needed and placed on remote hardstand positions in order to accommodate other flights. As shown, with the 30 minute window assumptions, 15 flights in the 2025 design day flight schedule required the use of remote hardstands. Despite this utilization of remote hardstands, 9 additional gates would be required to accommodate the flights in the 2025 design day flight schedule when a 30 minute window was assumed between flights. Continuing with the 10 minute window currently allowed would result in only 6 additional gates being required. Therefore, a minimum of 6 gates is necessary to accommodate the 2025 design day flight schedule and an additional 3 gates (for a total of 9 additional gates) are required to satisfy the additional demand at a more typical buffer time of 30 minutes between flights. In addition, seven remote hardstand positions would be required to accommodate flights with lengthy ground times that were towed off of their arrival gates to accommodate other flights.

12 Ibid.













Larger aircraft at Terminal 5 place additional demand on the gate facilities. **Exhibit 8** shows the historical schedule of international arriving seats per operation. The average seats per arrival increased approximately 17.5 percent between 2010 and 2016, which is a reflection of larger aircraft serving international destinations.

Exhibit 8: Annual International Arrival, Average Seat per Operation



NOTE: Reflects 2016 full year scheduled activity, as of October 7, 2016.

SOURCE: Innovata, October 2016.

As a result of increasing aircraft size, as indicated by the recent increasing trend in average seats per international operation, demand on the terminal frontage increases due to the larger aircraft parking at the facility. The Terminal 5 extension is necessary to not only accommodate additional operations at peak hours, but also to accommodate larger aircraft that are utilizing the facility and requiring more space than a flight operated with a smaller aircraft.

As noted above, demand for gates at the entire Airport is strong and near-term solutions are needed in order to reduce delays and allow for growth and competition at the Airport. Until recently, 2004 and 2007 were years of peak annual activity at the Airport for operations and passengers, respectively. Annual operations declined from 2005 through 2009 following high oil prices and an economic recession. Following a slight rebound in annual activity in 2010 and 2011, annual activity remained relatively flat as airlines practiced capacity discipline and focused on revenue growth. The annual scheduled passenger operations in 2016 (841,170) are still below the 961,443 scheduled passenger operations in 2004. However, as shown in **Table 5**, the peaking characteristics of the airline's schedules have changed, creating higher peak demand periods than experienced in 2004 or 2007. This "re-banking" is a result of O'Hare's primary air carriers United Airlines and American Airlines restructuring their schedules in 2015 to facilitate

connecting efficiencies during peak travel periods. While the scheduled annual passenger operations have decreased approximately 12.5 percent, the peak 15-minute period has increased approximately 11.1 percent.

		······································		Peak Day,			Peak day,	2/
	Annual	Peak Daily	1	Peak Hour	1	Pe	ak 15-minu	tes
· · · · · · · · · · · · · · · · · · ·	Operations	Operations	Arr.	Dep.	Total	Arr.	Dep.	Total
2004 Passenger								
Aircraft								
Activity	961,443	2,753	108	111	208	44	43	72
2007 Passenger								
Aircraft								
Activity	919,386	2,630	106	112	191	41	47	69
2015 Passenger								
Aircraft								
Activity	853,367	2,700	131	136	228	55	69	80
2016 Passenger								
Aircraft								
Activity	841,170	2,525	122	117	194	55	69	80

Table 5: Peak Passenger Aircraft Activity

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NOTES: Peak day based on scheduled activity: July 30, 2004, August 24, 2007, July 30, 2015, August 16, 2016.

¹⁷ Rolling 60-minute activity analyzed at 10-minute intervals. Peak hour activity for arrivals, departures, and total activity does not occur in the same hour.

²⁷ Rolling 15-minute activity analyzed at 5-minute intervals. Peak hour activity for arrivals, departures, and total activity does not occur in the same hour.

SOURCES: Innovata, October 2016 (schedule information); Ricondo & Associates, Inc., October 2016 (calculations).

Exhibit 9 demonstrates the amplification of peak activity which has resulted in additional demand on existing gate and terminal facilities for the entire Airport. Multiple projects have been proposed and/or are being undertaken in order to address current near-term gate inefficiencies and demand for additional gates, beyond the T5 expansion. One project, not a part of this PFC application, is the extension of existing Concourse L. The project, being funded by American Airlines, is extending the concourse by approximately five gates to address near term gate need for use by larger regional jets and to locate those flights close to connecting mainline operations. The Concourse L Extension is scheduled to be completed in 2018.



Exhibit 9: Total Passenger Operations at Terminal 5– Arrivals vs. Departures (Rolling 60-minute Passenger Aircraft Activity at 10-minute Intervals)

SOURCE: Innovata, October 2016.

In the City of Chicago (the City)'s business judgment, the City's success in accommodating new domestic and international carriers, and providing for service expansion by all existing carriers at the Airport, would be enhanced by offering reconfigured international terminal facilities that fit airlines' needs. PFCs are properly allocated to projects that, in the reasonable business judgment of the airport sponsor, would remove obstacles to the possibility of new and expanded competitive service at O'Hare.

The City believes that the addition of new gates and the reconfiguration of existing gates on Concourse M is a necessary and desirable step to achieving greater competition airport-wide among existing carriers, as well as to accommodate new carriers. The proposed Construction Project allows for the reconfiguring of gates to accommodate larger aircraft for international flights, while also increasing the number of total gates at the Airport by nine gates.¹³

The proposed Construction Project would increase the number of gates with access to T5's FIS facility, the only FIS facility at O'Hare, which would allow O'Hare to accommodate additional demand for international flights. Also, the addition of a second gate that can accommodate A380 aircraft is important for O'Hare as a major noncoastal international hub in order to continue to attract foreign flag carriers by offering gates that accommodate all of their aircraft types. The reconfiguration of gate M11 to accommodate A380 aircraft was completed in July 2016. The proposed Construction Project includes the reconfiguration of a second gate, Gate M19, to accommodate A380 aircraft, which increases the range of aircraft that carriers can use to serve the Airport and allows those airlines with A380 aircraft greater flexibility in their fleet mix. As of July 2016, 13 airlines operate A380 aircraft on 119 routes to 56 global destinations.¹⁴ Airlines currently serving O'Hare that operate A380 aircraft elsewhere are Air France, Asiana Airlines, British Airways, Emirates Airline, Etihad Airways, Korean Air, Lufthansa, and Qatar Airways.

There is also potential for domestic carriers to utilize some of the common-use international gates on Concourse M for domestic flights during early morning and late evening peak periods, when international gate demand is low.

If any of the domestic carriers that currently serve the Airport relocated to T5, exclusiveuse gates in the domestic terminals would be available for use by existing or new carriers

¹³ Nine gates are being constructed on the extended M concourse. Due to a combination of adding and reconfiguring gates, the net impact of the Construction Project increases the number of T5 gates from either 19 or 20 gates, depending on parking configuration, to 28 gates.

¹⁴ Innovata schedule data (accessed July 20, 2016).

on a preferential or common-use basis, thereby increasing the opportunity for competition at the Airport.

The proposed Construction Project also has the ability to reduce current or anticipated congestion. The Airport has the highest average taxi-in delay of any U.S. large hub airport. Detail on average taxi-in delay at O'Hare is provided in Section 10 (Project Objective). Although taxi-in delays are not exclusive to delays caused by gate availability, it does capture delays experienced by aircraft waiting for gates at the terminal or at a holdpad position. The addition of gates is anticipated to improve gate capacity and potentially reduce existing operational delays, including taxi-in delays.

The contribution of the proposed Construction Project is further demonstrated in Section 10 (Project Objective) and Section 11 (Project Justification).

Certification Inspector concur. Yes [] No [] Date Air security. Part 107 [] Part 108 [] Other (explain) CASFO concur. Yes [] No [] Date Competition. Competition Plan [] Other (explain) Congestion. Current [] or Anticipated [] LOI [] FAA BCA [] FAA Airport Capacity Enhancement Plan [] Other (explain)	FOR FAA USE
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Other (explain)	
	Other (explain)
Noise. 65 LDN [] Other (explain)	Noise. 65 LDN [] Other (explain)

Project does not qualify under "significant contribution " rules.

Quantitative and qualitative analysis of significant contribution option chosen by public agency. If analysis is based on a source other than this PFC application, list the source(s) of data and attach the relevant documentation used to make this finding.

How does this project address the deficiency sited by the public agency?

If competition is the chosen option, provide the FAA's analysis of any barriers to competition at the airport.

10. Project Objective:

As a distinct requirement of the PFC program, PFC projects must meet one or more of the objectives of §158.15(a) of the regulation. Specifically, PFC projects must:

(1) preserve or enhance safety, security, or capacity of the national air transportation system; (2) reduce noise or mitigate noise impacts resulting from an airport; or (3) furnish opportunities for enhanced competition between or among air carriers.

O'Hare is a significant airport in the national transportation system, ranking first in operations and second in enplanements among U.S. airports in 2015. Activity at O'Hare has a significant impact on the national air transportation system. The Construction Project would increase gate capacity and has the potential to reduce delays associated with aircraft waiting for gates. By adding additional gates at the Airport, the proposed Construction Project would reduce delays within the national air transportation system, preserve capacity, and furnish opportunities for enhanced competition between or among air carriers. The addition of gates would require additional passenger processing facilities, including an additional baggage claim device and a security inspection area of increased capacity.

Space constraints at the existing facility result in congestion in terminal areas and delays for inbound and outbound aircraft. Additional operations and larger aircraft will present additional challenges in accommodating traffic at O'Hare. By expanding Concourse M to increase the number and size of gates in T5 and reconfiguring gates M1 through M6, CDA would enhance O'Hare's ability to accommodate increased operations and increased passengers, as well as provide existing and new carriers access to Airport facilities. The 18 new passenger loading bridges included in the Construction Project would provide access to the terminal for the reconfigured gates. The number of gates and the current configurations of the gates at O'Hare would continue to be a constraint on the ability for O'Hare to accommodate demand if the efficiencies that the design of the Terminal 5 Expansion (Design Project, see Attachment B-1) and the Construction Project (collectively, the Project) is intended to create are not realized.

The Airport has the highest average taxi-in delay of any U.S. large hub airport.¹⁵ It is important to note that taxi-in delay does not include the unimpeded taxi-in time, which is the estimated time for an aircraft under optimal operating conditions (when congestion, weather, or other delay factors are not significant). In 2015 the average taxi-in delay at O'Hare was approximately 6.9 minutes per arriving aircraft. This compares to the next highest airport, Dallas Fort Worth International, with an average of approximately 5.7

¹⁵ FAA Aviation System Performance Metrics (ASPM), accessed August 30, 2016. Taxi-In Delay is the sum of minutes of Taxi-In Delay of one minute or more, divided by all arrivals. Taxi-In Delay equals actual Taxi-In Time minus Unimpeded Taxi-In Time (FAA Aviation System Performance Metrics definition).

minutes and an average of approximately 3.0 minutes for the 35 airports with significant activity.¹⁶ Taxi-in delay includes delay experienced taxiing on the airfield after landing on the runway as well as time waiting for a gate. Taxi-in delay does not include the estimated unimpeded time associated with taxiing to the gate. While taxi-in delay is not exclusive to delays caused by gate availability, time spent waiting for gates at the terminal or at a holdpad position is captured in the average taxi-in delay of 6.9 minutes per arriving aircraft at O'Hare. Data on delay associated specifically with waiting for gates is not available. Adding gates is anticipated to improve gate capacity and potentially reduce existing operational delays, including taxi-in delays.

By the addition of non-exclusive use gates at the Airport, the proposed Construction Project would furnish opportunities for enhanced competition between or among air carriers. An obstacle to new competition at O'Hare is the lack of available gates for new and existing domestic and international carriers (discussed in Section 11 [Project Justification]). Currently, there are 19 aircraft gates at T5 and 189 aircraft gates in the Airport. The proposed addition of gates would allow O'Hare to accommodate anticipated demand for additional gates. Demand for the existing gates at T5 is 115 operations per weekday, as estimated in the July 2015 schedule.

Various forecasts exist for future activity at the Airport. These include the existing Terminal Area Forecast (TAF), prior TAFs, the activity used in the analysis associated with the OMP EIS and subsequent Re-Evaluation, and activity forecasts prepared for financial analysis purposes. A future design day flight schedule, which accounts for current and projected air carrier scheduling trends and aircraft fleet mixes, was needed for the purpose of assessing facility needs at T5. A planning forecast was prepared by Ricondo & Associates in November 2015 to guide the development of this design day flight schedule that can be used to assess demand on facilities throughout the Airport and, specifically, facilities at T5.

Although forecasted activity levels vary, there is a consistent underlying projection of long-term upward activity growth at O'Hare. The planning forecast projects approximately 41.5 million enplaned passengers to occur in 2020, the first year following the completion of the Construction Project. This activity level is approximately 9.6 percent higher than the activity level of 37.9 million enplaned passengers in Federal Fiscal Year (FFY) 2020 in the 2015 TAF (published January 2016). The 41.5 million compares to FFY 2025 in the 2015 TAF and FFY 2012 in the 2002 TAF (published March 2003) used in the 2005 OMP EIS. The current planning forecast demonstrates a need for additional gates and facility capabilities. However, the need for the Terminal 5 Expansion is not specifically linked to the activity levels in the current planning forecast.

¹⁶ FAA ASPM Operational Evolution Partnership 35 airports.

Today's use of terminal facilities demonstrates a need for additional processing capabilities in T5 and a demand for gates that has intensified relative to annual demand levels due to an increase in the airline banking structure and an upgauging of airline fleets. Current and previous TAF forecasts, along with CDA's planning forecast demonstrate increasing activity over time. For planning purposes, a design day schedule was developed for 2025 in order to assess demand at the airport on a terminal-basis. The demand for gates in the 2025 design day schedule is forecast to be 265 daily operations.¹⁷ An expanded facility is needed to accommodate this increase in demand. This compares to the scheduled daily operations for Terminal 5 in 2016 of 110.¹⁸ Additional information on the projected demands at Terminal 5 is included in Section 11, Project Justification.

Moving airlines out of the Airport's domestic terminals and into T5, as planned by CDA, would provide an opportunity to use the domestic terminal gates vacated by those airlines, which are currently being leased on an exclusive use basis, for additional service by existing and/or new carriers at O'Hare on a non-exclusive use basis in the future. Thus, regardless of the new occupants of the T5 gates, the proposed Construction Project would increase the number of gates available to both existing and new carriers at the Airport.

The proposed Construction Project includes the reconfiguration of a second gate, gate M19, to accommodate A380 aircraft, which would increase the range of aircraft that carriers can use to serve the Airport and allow those airlines with A380 aircraft greater flexibility in their fleet mix. The proposed Construction Project also increases the number of gates that can access the FIS facility, used by U.S. Customs and Border Protection (CBP) for processing arriving international passengers.

Additionally, the Construction Project would enhance baggage and passenger processing. The baggage processing capabilities would be improved, with the addition of a non-FIS baggage claim device. Enhanced security capacity and efficiency would be provided with the expansion of the TSA screening checkpoint, which is planned to accommodate lane(s) for $Pre \checkmark$ eligible passengers. Existing passenger security screening lanes underserve the existing demand and lack sufficient TSA $Pre \checkmark$ dedicated lanes at T5. T5 currently has no dedicated TSA $Pre \checkmark$ security screening lanes; however, four foreign flag carriers serving O'Hare have enrolled in the $Pre \checkmark$ program, and more are expected to follow. Additional passenger security screening lane(s) would provide additional security screening capacity and help to reduce delays caused by long lines occurring during peak periods at T5. Renovations to and reconfiguration of FIS Primary and Secondary Inspection areas would enlarge queuing areas and provide additional or relocated CBP functional spaces that would support the anticipated passenger activity.

¹⁷ Ricondo & Associates, Inc., Terminal 5 Concourse M Extension Project Definition Document, August 2016.

¹⁸ Schedule activity for August 16, 2016 (Source: Innovata).

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	Safety,	Preserve []	Enhance	[]	ĺ
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- ____ Security, Preserve [] Enhance []
- ___ Capacity, Preserve [] Enhance []

<u>Furnish opportunity for enhanced competition between or among air carriers at the</u>

Mitigate noise impacts resulting from aircraft operations at the airport Project does not meet any PFC objectives (explain)

Finding

Current deficiency. List the source(s) of data used to make this finding if it is not a part of the PFC application.

Address adequacy of issues.

11. Project Justification:

The proposed Construction Project would furnish opportunities for enhanced competition between or among air carriers at O'Hare. By extending Concourse M to increase the number and size of gates at T5, the Construction Project would increase the Airport's ability to accommodate increased operations and increased passengers, both domestic and international. The Construction Project would allow new and existing air carriers to start and expand operations.

The Construction Project increases the number of gates that can access the FIS facility, used by U.S. Customs and Border Protection (CBP) for processing arriving international passengers. Baggage processing capabilities would also be increased, with the addition of a domestic baggage claim device. Enhanced security capacity and efficiency would be provided with the expansion of the TSA screening checkpoint, which is planned to accommodate lane(s) for Pre \checkmark eligible passengers. In addition, renovations to and reconfiguration of FIS Primary and Secondary Inspection areas would enlarge queuing areas and provide additional or relocated CBP functional spaces that would support the anticipated passenger activity.

Existing passenger security screening lanes underserve the existing demand and lack sufficient TSA Pre \checkmark dedicated lanes at T5. T5 currently has no dedicated TSA Pre \checkmark security screening lanes; however, four foreign flag carriers serving the Airport have enrolled in the Pre \checkmark program, and more are expected to follow. Additional passenger security screening lane(s) would provide additional security screening capacity and help to reduce delays caused by long lines occurring during peak periods at T5.

Existing facility constraints produce congestion in terminal areas and delays for inbound and outbound aircraft. O'Hare will be challenged to accommodate additional operations and larger aircraft. The number of gates and the current configurations of the gates at O'Hare will continue to be a constraint in the Airport's ability to accommodate demand if the efficiencies that the Construction Project is intended to create are not realized.

Exhibit 10 shows the total number of domestic and international gates and hardstands at the Airport prior to beginning the Construction Project and after the Construction Project is complete. As a result of the Construction Project, the 189 existing gates at O'Hare would be increased to 198. The number of hardstands (four) would remain the same, but the hardstands would be relocated as a part of the Construction Project.



Exhibit 10: Airport-wide Gates

NOTE: Numbers of post-T5 Expansion gates does not include additional gates on Terminal 3 being completed separately from the T5 Expansion project.

SOURCE: Ricondo & Associates, Inc., July 2016.

The current gate configuration does not provide optimal scheduling of aircraft, as the smaller gate sizes are not compatible with capacity demand. The Construction Project would increase the linear feet of gate frontage from approximately 4,220 feet to approximately 6,090 feet. In addition to expanding facilities, certain gates are being reconfigured and upgauged, resulting in an increase of the average gauge of gates. **Exhibit 11** depicts O'Hare's gate count prior to and after the Construction Project by ADG classification. The number of ADG-VI gates at the Airport would increase from 4 to 8. The number of ADG-V gates would increase from 19 to 21. The number of ADG-IV gates would decrease from 24 to 20, as the 4 existing ADG-IV gates in T5 are all being reconfigured as part of the Construction Project. ADG-III gates would increase from 89 to 96, and the number of ADG-II and ADG-I gates would remain unchanged.



Exhibit 11: Airport-wide Gate Gauge

NOTE: Numbers of post-T5 Expansion gates does not include additional gates on Terminal 3 being completed separately from the T5 Expansion project.

SOURCE: Ricondo & Associates, Inc., July 2016.

Growth in international traffic and the evolution of how airlines are operating drive the need for the expansion of T5 and gate reconfiguration. International flights and passengers are expected to grow through 2025, and air carriers are transitioning flights from smaller aircraft to larger aircraft and retiring ADG-IV aircraft. Larger aircraft results in more passengers per flight and the need for larger gates. **Table 6** shows the 2015 and forecast 2025 arriving international Air Traffic Movements (ATMs) by aircraft size. As shown, an increase in total ATMs and a general upgauging of aircraft type are both forecasted.

	201	5	202	25	Percentage
Arriving ATMs by ADG	ATMs	Percent Total	ATMs	Percent Total	Change (2015 -2025)
III (Boeing 737-800) or smaller	21	27%	28	30%	33%
IV (Bocing 767-200)	12	15%	3	3%	-75%
V (Airbus 340-500)	43	55%	59	63%	37%
VI (Airbus 380-800)	2	3%	4	4%	100%
Total	78	100%	94	100%	21%

Table 6: Terminal 5 Design Day Activity

NOTE: Does not include domestic arriving ATMs in 2025.

SOURCE: Ricondo & Associates, Inc., August 2016.

The 19 gates and 4 hardstands in T5 today are the vast majority (19 out of 37) of the nonexclusive use gates currently at O'Hare. If domestic carriers that currently serve the Airport relocated to T5, as planned by CDA, exclusive use gates in the domestic terminals would then be available for use by existing or new carriers on a non-exclusive use basis. Thus, the total number of non-exclusive use gates at the Airport would increase by a minimum of nine as a result of the Construction Project, with the potential to increase by more if domestic airlines with existing leases choose to relocate to T5. The increased number of non-exclusive use gates airport-wide beyond those being added to T5 as part of the Construction Project would additionally contribute to increased competition amongst existing and new carriers at the Airport.

Additionally, if the Construction Project is not pursued and the additional A380 aircraftcompatible gate is not added at T5, there is not another location at the Airport that can accommodate a second A380 aircraft; the Airport does not have available common-use gates in its domestic terminals to convert existing gates into gates compatible with A380 aircraft. This limits the types of aircraft existing and new carriers can use on flights to the Airport. The reconfiguration of gates to accommodate an additional A380 aircraft, compatible gate would make the Airport more accessible to carriers flying A380 aircraft, thus increasing competition to international markets.

Other current initiatives to increase gate capacity include the construction of five new gates at Terminal 3 by extending Concourse L and the potential relocation of nonhubbing domestic airlines from Terminal 3 to Terminal 2 in order to reduce inefficiencies and passenger inconvenience caused by fragmented and unconsolidated gates. Long-term planning to deliver major expansion of terminal and gate capacity at O'Hare is underway; however, near-term capacity is needed to accommodate existing demand while potential redevelopment of the central terminal area is being considered. In coordination with the long-term planning, the extended Concourse L and the Terminal 5 Expansion are short-term projects. Concourse L is expected to increase gate availability and the Construction Project is expected to increase gate capacity and opportunities for enhanced competition amongst air carriers. The Construction Project is being considered in the overall planning to increase gate capacity, but it has independent utility and, as stated, a more near-term timeframe. It is somewhat similar although smaller than the Terminal 6 project evaluated in the 2005 OMP EIS.

The Construction Project is a reasonable and cost-effective way to increase gate capacity. The Construction Project balances the timing of improvements between need and costs, focusing on trying to reuse existing facilities where possible, and it provides timely delivery of additional near-term capacity to alleviate anticipated capacity constraints and to facilitate the phasing of the broader terminal area development program. Several airlines have been in ongoing discussions with CDA to determine how best to provide incremental increases in domestic and international gate capacity. Several alternative plans to increase gate capacity were considered by CDA, and the Terminal 5 Expansion added the most capacity of all of the alternatives considered. The Construction Project was also one of the most cost-effective on a gate-by-gate basis, as it utilizes certain

elements that already exist, including baggage claim and other existing facilities, which otherwise would have to be fully constructed if an entirely new facility was to be constructed.

Table 7 shows examples of current and recently completed construction projects involving the addition of gates at other U.S. airports, many of which far exceed the cost per additional gate for the Construction Project, in part because more extensive construction was required to add gate capacity than is required in the Construction Project.

Airport	Project Name	Facility Type	Opening Year	Project Costs ¹⁷	New Narrow body Gates	New Wide body Gates	Renovated Gates	Additional SQ FT	Cost per Additional Gate ^{2/}
LAX	Midfield Satellite Concourse – Phase 1 ³⁷ Tom Bradley International	International	2019	\$1,600,000,000	0	12	n.a.	800,000	\$133.333.333
LAX	Terminal	International	2013	\$1,500,000,000	3	15	n a.	1,179,000	\$83,333,333
HOU	International Concourse	International	2015	\$156,000,000	5	0	n a.	280,000	\$31,200,000
ІЛН	Terminal C-North	Domestic	2017	\$185.000.000	11	2 4/	n.a	270,000	\$14,230,769
DEN	Concourse C Extension	Domestic	2014	\$48,700.000	5	0	4	39,000	\$9,740,000

Table 7: Sample of Recent and Future Terminal Projects at U.S. Airports

NOTES.

1/ Costs include total project, including entry halls, processing facilities and land access projects as applicable.

2/ Excludes renovated gates and gates at IAH that are able to accommodate wide-body aircraft.

3/ Anticipated \$10 million in AIP funding, \$5.96 Million in Pay-as-you-go PFCs, \$738.904 in Department Funds, and an additional \$819.767 in Future Senior Bond Proceeds.

4/ At least two of the 11 narrow-body gates are anticipated to support wide-body aircraft.

SOURCES: City and County of Denver, Colorado For and On Behalf of Its Department of Aviation, Airport System Subordinate Revenue Bonds 2013 Series A (DEN): City of Houston, Texas, Airport System Special Facilities Revenue Bonds (United Airlines, Inc. Terminal Improvement Projects), Series 2015 B (IAH), Houston Business Journal, Southwest Reveals New Design Plan for Hobby International Terminal (HOU); Department of Airports of the City of Los Angeles, California, Los Angeles International Airport Subordinate Revenue Bonds 2016 Series A (LAX), LAX is Happening, New Tom Bradley International Terminal Project Overview. LAX is Happening, New Tom Bradley International Terminal Fun Facts,

https://www.lawa.org/uploadedFiles/LAXDev/News_for_LAXDev/TBIT%20Fun%20Facts.pdf (LAX), accessed October 2016.

The Construction Project also minimizes the impact to air carriers during its execution, including consideration of the duration that gates need to be taken out of service for passenger loading bridge and fuel pit work. Demolishing two buildings east of Concourse M allows for implementation of new apron pavements before three gates at the east end of Concourse M need to be relocated. The newly-constructed pavement allows for the relocation of existing hardstand positions such that they can remain operational throughout the construction process. Moreover, the three gates requiring relocation are able to be provided south of the construction zone for the concourse extension and connected to the existing portion of Concourse M using passenger loading bridge fixed sections. Sequencing the program in this manner allows for existing aircraft gate and hardstand capacity to be maintained throughout the construction process.

FOR FAA USE Define how the project accomplishes PFC Objective(s)

Explain how project is cost-effective compared to other reasonable and timely means to accomplish this objective(s)

Based on informed opinion or published FAA guidance, specify how the cost of the project is reasonable compared to the capacity, safety, security, noise and/or competition benefits attributable to the project. Include citation for any documents that are not a part of this PFC application.

If analysis is based on a source other than this PFC application, list the source(s) of data and attach the relevant documentation used to make this finding.

Discuss any non-economical benefits which are not captured above.

Project Eligibility:

Indicate project eligibility by checking the appropriate category below.

[] Development eligible under AIP criteria (paragraph of Order 5100.38 or PGL);

] Planning eligible under AIP criteria (paragraph of Order 5100.38 or PGL);

] Noise compatibility planning as described in 49 U.S.C. 47505;

Noise compatibility measures eligible under 49 U.S.C. 47504.

[] Project approved in an approved Part 150 noise compatibility plan;

Title and Date of Part 150:

[] Project included in a local study.

Title and Date of local study:

[] Terminal development as described in 49 U.S.C. 40117(a)(3)(C);

[] Shell of a gate as described in 49 U.S.C 40117(a)(3)(F) (air carrier ______, percentage of annual boardings _____);

PFC Program Update Letter

Project does not meet PFC eligibility (explain)

If analysis is based on a source other than this PFC application, list the source(s) of data and attach the relevant documentation used to make this finding.

Are any work elements or portions of the overall project ineligible? Provide associated costs.

12. Estimated Project Implementation Date (Month and Year): August 2017 Estimated Project Completion Date (Month and Year): September 2019

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For Impose and Use or Use Only projects, will the project begin within 2 years of PFC application Due date (120-day)?

] Yes

] No

For Impose Only project, will the project begin within 5 years of the charge effective date or PFC application Due date, whichever is first?

] Yes] No

Is this project dependent upon another action to occur before its implementation or completion. Explain

13. For an Impose Only project, estimated date Use application will be submitted to the FAA (Month and Year):

January 2017

The City intends to submit the Use application for the Terminal 5 Expansion - Construction Project immediately upon completion of ALP, airspace, and environmental approval, as required in Attachment G.

For FAA Use

Is the date within 3 years of the estimated charge effective date or approval date, whichever is sooner.

] Yes] No

Which actions are needed before the use application can be submitted? What is the estimated schedule for each action?

14. Project requesting PFC funding levels of \$4.00 and \$4.50:

a. Can project costs be paid for from funds reasonably expected to be available through AIP funding.

[] YES

[X] NO

b. If the FAA determines that the project may qualify for AIP funding, would the public agency prefer that the FAA approve

[X] the amount of the local match to be collected at a \$4.50 PFC level, or

[] the entire requested amount at a \$3.00 PFC level.

c. Terminal and surface transportation projects. The public agency has made adequate provision for financing the airside needs of the airport, including runways, taxiways, aprons, and aircraft gates.

[X] YES

[] NO

[] N/A

15. List of Carriers Certifying Agreement: United AirlinesList of Carriers Certifying Disagreement: Recap of Disagreements:Public Agency Reasons for Proceeding:

16. List of Comments Received from the Public Notice: None List of Parties Certifying Agreement: Recap of Disagreements: Public Agency Reasons for Proceeding:

For FAA Use

Provide an analysis of each issue/disagreement raised by the air carriers and/or the public. Provide citations for any documents not included in the PFC application that are relied on by the FAA for its analysis.

If a Federal Register notice is published, discuss and analyze any new issues raised. (If the comments from the consultation are repeated, state that.)

ADO/RO Recommendation:

Does the ADO/RO find the total costs of this project to be reasonable? Did the ADO/RO use comparable projects to make this finding? If so, list projects.

If the amount requested if over \$10 million, was the level of detail sufficient to identify eligible and ineligible costs. Summarize ineligible costs.

Is the duration of collection adequate for the amount requested?

ADO/RO RECOMMENDATION:

[] Partially Approve. Summarize findings from earlier in the Attachment B discussing issues that lead to determination.

[] Disapprove. Summarize findings from earlier in the Attachment B discussing issues that lead to determination.

Application Reviewed by:

NameRouting SymbolDateItem(s) reviewed.

ATTACHMENT B-2a: SCHEDULE FOR TERMINAL 5 EXPANSION – CONSTRUCTION PROJECT

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ATTACHMENT B-2b,c,d: DETAILED COST ESTIMATES FOR TERMINAL 5 EXPANSION – CONSTRUCTION PROJECT

ATTACHMENT B-2e: LETTER FROM TRANSPORTATION SECURITY ADMINISTRATION

ATTACHMENT B-2a: TERMINAL 5 EXPANSION – CONSTRUCTION PROJECT SCHEDULE

	· · · · · · · · · · · · · · · · · · ·	Completion	Duration
AGUNIGY	Start Data	Data	(months)
Procure Construction Manager at Risk	07-Jun-16	10-May-17	11
Procure Sitework Construction	6-Apr-17	15-Aug-17	• 4
Sitework Construction	16-Aug-17	26-Dec-18	15
Procure Facility Construction	28-Dec-17	2-Mar-18	2
Facility Construction	5-Mar-18	3-Apr-19	13
Tenant Build-Out	21-Nov-18	7-Jun-19	6
Commissioning	04-Mar-19	16-Sep-19	6
Gate Swap	12-Jul-19	16-'Sep-19	2
Operational Facility		16-Sep-19	
SOURCE: CARE +, October 2016.			

ATTACHMENT B-2b: DETAILED COST ESTIMATES -TOTAL PROJECT COSTS

Terminal 5 Expansion -Construction				
Civil Work	Units	UOM	Unit Price	Cost
Relocate Fence	2,883	ĹΕ	\$55.00	\$160,000
Relocate Post 10 Complete	1	LS	\$750,000.00	\$750.000
Utility Relocations and Temp Services	1	LS	\$3,000,000,00	\$3,000,000
Pavement Removal Terminal Foot Print	22,036	SY	\$30.00	\$670,000
Mass Excavation	134,428	· CY	\$30.00	\$4,040,000
PCC Pavement	134,428	SY	\$170.00	\$22,860,000
Storm Sewer 36"	2,512	LF	\$400.00	\$1,010,000
Water 16"	2,000	LF	\$1,000.00	\$2,000,000
Sanitary 8"	1,000	LF	. \$700.00	\$700,000
Fueling	1	LS	S1,000,000.00	\$1,000,000
Civil Work Sub Total				\$36,190,000
Terminal Construction and Related	Units	UOM	Unit Price	Cost
Terminal Complete	1	LS	\$138,355,140	\$138,355,140
Terminal Cost Sub Total				\$138,360,000
Existing Terminal Improvements	Units	UOM	Unit Price	Cost
Terminal Interior Upgrades	1	LS	\$3,400,987.00	\$3,410,000
Jet Bridge Relocations	· 2	EA	\$150,000.00	\$300,000
New Jet Bridges	2	EA	\$1,000,000.00	\$2,000,000
Existing Terminal Improvements Cost Sub	Total			\$5,710,000
TOTAL Cost Summary			%	Cost
Civil Work				\$36,190,000
Terminal Complete				\$138,360,000
Existing Terminal Improvements				\$5,710,000
Direct Cost Sub Total				\$180,260,000
		, , , , , , , , , , , , , , , , , , , ,		
QAMT		180,260,000	1.5%	\$2,704,000
Program Management		180,260,000	1.0%	\$1,803,000
Construction Management		180,260,000	6.0%	\$10.817,000
Driver Escort Costs, Security, Police, Misc.		180,260,000	1.0%	\$1,803,000
Administration Cost Subtotal				\$17,127,000
·····	TOTAL	Project Cost		\$197,387,000

Source: Care+, September 2016.

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Prépared by: CARE+, June 2016; Ricondo & Associates, Inc., October 2016.

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ATTACHMENT B-2c: DETAILED COST ESTIMATES - CIVIL WORK

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CIVIL PAY ITEM UNIT COST BREAKDOWNS:

Pay Item Name.	Unit of Measure	: Unit Cost									
75' TAXIWAY PAVEMENT WITH TWO 37 5' SHOULDERS			_								
PORTLAND CEMENT CONCRETE - HIGH EARLY SIRENGTH, REINFORCED, 19 5-INCH DEPTH	SQ YD	105									
IBITUMINOUS BASE COURSE, 6"	sQ YD	34									
ASPHALT TREATED PERMEABLE BASE, 6" I MAE GYADILITED GLIDGEAADE 41"	a vo	16	A THE AND			1000		Cost Pvt + Cost	Composite Unit Cost /		
	a no	2	75		Area 51	5 133 333 C	41 667	5 175 000	210	Itor fost = Total fost / Pavement Area	ſ
			2	2		*	- contra]
150' RUNWAY PAVEMENT WITH TWO 37.5' SHOULDERS											
PORTLAND CEMENT CONCRETE - HIGH EARLY STRENGTH, REINFORCED, 19 5-INCH DEPTH	SQ YD	105									
BITUMINOUS BASF COURSE, 6"	SQ YD	34									
ASPHALT TREATED PERMEABLE BASE. 6"	5Q YD	16						Cost Pvt + Cost	Composite Unit Cost /		
LIME STABILIZED SUBGRADE, 12"	SQ YD	5	Width LF	Length LF	Area SY	Cost Put Co	ost Shoulders	Shoulders	SY		
TOTAL	sq yb	160	150	100	1667	\$ 266,667 \$	41,667	5 308,333	185	Unit Cost = Total Cost / Pavement Area	
									•		
SHOULDER PAVEMENT - TWO 37.5' SHOULDERS											
HMA SURFACE COURSE, 3*	SQ YD	18									
HMA BINDER COURSE. 4"	SQ YD	19									
RECYCLED BASE COURSE, 20"	SQ YD	13	Width LF	Length LF	Area SY	ð	ost Shoulders				
TOTAL	SQ YD	50	75	100	833	\$	41,667 <	Used in Taxiway an	d Runway composite un	t costs above	
81' TAYIMAY DAVEMENT WITH TWO AN' SUOLI (TEES											
	00.00	101									
PURITANU LEMENT LUNCKETE - HIGH EAKLT STKENGTH, KEINI UKLEU, 19 S-INCH UEPTH	n ns	ទ្ឋ ;									
	an ng	¥. ;									
ASPHALI I REALED PERMEABLE BASE, 6	20,02	1 ²					:	Cost Pvt + Cost	Composite Unit Cost /		
	21.12		Width L	Length LF	Area SY	COST PVT CC	ost shoulders	Shoulders			ſ
TOTAL	SQ YD	99	82	100	116	\$ 145//8/ \$	44'444	190,222	50Z	Unit Cost = Total Cost / Pavement Area	7
CHOILIDER PAVEMENT - TWO AD' CHOILIDERS											
	0 A D	•									
HMA RINDER COLLECE A"	2	2 P	_								
RECYCLED BASE COURSE 20"	u, u,	; 	Width IF	Length LE	Area SV	č	set Shoulders				
TOTAL	0X 05	3	80	100	889	<u>ا</u> م	44.444	Used in Taxiwav co	mosite unit cost above		[
	ŗ					·]
APRON PAVEMENT											
PORTLAND CEMENT CONCRETE - HIGH EARLY STRENGTH, REINFORCED, 19 5-INCH DEPTH	SQ YD	105									
BITUMINOUS BASE COURSE, 6"	SQ YD	34									
ASPHALT TREATED PERMEABLE BASE, 6"	ay da	16									
LIME STABILIZED SUBGRADE, 12"	SQ YD	5									
TOTAL	SQ YD	160									
			_								
TAXIWAY/APRON REMOVAL											
PAVEMENT REMOVAL - TAXIWAYS, P.C.C. FULL DEPTH	sq yb	25									
AIRSIDE ALLESS KUAD											
HMA SURFACE COURSE, 2"	SQ YD	16									
HMA BINDER COURSE, 3"	SQYD	<u>_</u>									
BITUMINOUS BASE COURSE, 6"	SQ YD	34									
AGGREGATE, 10"	SQ YD	16									

Source CARE+, July 2016

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TOTAL

ATTACHMENT B-2d: DETAILED COST ESTIMATES - TERMINAL EXPANSION CONSTRUCTION

T-5 Extension

O'Hare International Airport, Chicago

Master Plan Cost Estimate

*This document is an excerpt of a Faithful & Gould estimate received April of 2016. Some information has been added or removed to suit owner program needs, however the baseline estimate has not been altered.

		CONSTRUCTION COST SUMM	ARY
		GFA	300,840
SYSTEM	DESCRIPTION	T-5 Large	
A10	FOUNDATIONS	\$4,293,471	· · · · · · · · · · · ·
A20	BASEMENT CONSTRUCTION	\$0	
B10	SUPERSTRUCTURE	\$19,919,665	
B20	EXTERIOR CLOSURE	\$7,157,360	
B30	ROOFING	\$3,998,743	
C10	INTERIOR CONSTRUCTION	\$3,280,399	
C20	STAIRCASES	\$257,568	
C30	INTERIOR FINISHES	\$7.596.974	
D10	CONVEYING SYSTEMS	\$3,477,168	
D20	PLUMBING	\$4,842,922	
D30	HVAC .	\$20,985,997	
D40	FIRE PROTECTION	\$1.937.169	
D50	ELECTRICAL	\$19,371,689	
D60	COMMUNICATIONS	\$4,842,922	
E10	EQUIPMENT	*0 000 e15	
E20	FURNISHINGS"	\$3,220,015	
F10		56,331,880	
F20	SELECTIVE BOILDING DEMOLITION	3030,000	
G10		\$788,534	
620		\$375.620	
G40		\$313,020	
640		5214,040	
710	CONSTRAINED SITE/PHASING	\$285.768	
TOTAL		\$114 592 996	
MARK U	P	¢174,002,000	
	General Conditions/Permit/Insurance	\$17,173,833	
	Overhead/Fee/Profit	\$6 588 340	
SUBTOT	AL CONSTRUCTION	\$138,355,169	· · · · · · · · · · · · · · · · · · ·
CONTINU	GENCIES/ESCALATION		
	Scope, Design & Pricing Contingency	By Owner	
	Escalation	\$0	
	Construction Contingency	By Owner	
TOTAL (CONSTRUCTION COST	\$138,355,169	
		GFA 300,840	
		Cost/sf \$581 88	
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	-	I-5 Large Extension Concourse M						
Master Pla	an Cost Esti	mate			GFA	300,840		
CSI CODE		DESCRIPTION	QTY	UNIT	COST	ESTD COST	SUB TOTAL	TOTAL COST
-	A10	FOUNDATIONS						
-	A1010	STANDARD FOUNDATIONS & SLAB-ON-GRADE Type of Foundation Bell caissons 30' gnd Caisson. 36" diameter, 6'6" bell, 30' deep Pile caps. 42" x 42" x 36" Grade beams, GB 14, 12" X 66". 2450 if Vertical insulation Elevator Pit Escalator Pit	262 356 61 488 89 7,200 8 8	EA CY SF EA EA	\$5.688 \$1.020 \$1.020 \$4 \$5.366 \$5.366	1,490,246 363,578 498,443 30,908 42,928 42,928		
		<u>Slab-on-grade</u> Apron Level 4 Ramps to concourse, incl. handrails SUBTOTAL	138.000 4.000	SF SF	S11 S86	1,481,016 343,424	\$4,293,471	
	A2010	BASEMENT CONSTRUCTION	None					
		SUBTOTAL					\$0	
.		TOTAL - FOUNDATIONS						\$4,293,471
-	B10	SUPERSTRUCTURE	-					
	B1010	UPPER FLOOR CONSTRUCTION Concourse level Roof level at mechanical space SUBTOTAL	138,000 24,840	SF SF	\$64 39 \$64 39	8.886.096 1.599.497	\$10.485,593	
	B1020	ROOF CONSTRUCTION Roof Construction including Beams, Metal Deck and Light Weight Concrete Roof Roof to mechanical space SUBTOTAL	113,160 24,840	SF SF	\$75 12 \$37 56	8,501.032 933.040	\$9.434.072	
-		TOTAL - SUPERSTRUCTURE						\$19,919,665
F	820	EXTERIOR CLOSURE	-					
-	B2010	EXTERIOR WALLS Apron Level CMU Painled wall Apron level Aluminum Window Wall with 1" insulated Glass, 6' high Aluminum cladding & back-up, incl soffit Mechanical roof walls. Metal panel & back-up 14'8" high, 2 story area Doors, lower level	35,208 14,400 39,192 32,362 8	SF SF SF EA	\$37 56 \$107 32 \$64 39 \$51 51 \$4 292 80	1,322,483 1,545,408 2,523,651 1,667,083 34,342		
		Doors, upper level	10	EA	\$6.439 20	64,392		
		SUBTOTAL					\$7,157,360	
F		TOTAL - EXTERIOR CLOSURE						\$7,157,360
	B30	ROOFING	1					· · · · · · · · · · · · · · · · · · ·
	B3010	ROOF COVERINGS Membrane Roofing with 3" Rigid insulation	138.000	SF	\$28 98	3,998,743		
							\$3,998,743	
		I UTAL - ROOFING	. 1				· · · · ·	\$3,998,743
	<u>C10</u> C1010	INTERIOR CONSTRUCTION PARTITIONS/DOORS/MILLWORK CMU partitions - apron level Doors Solid partitions - concourse level Glass partitions Doors	126.364 24 18.900 5.460 5	SF EA SF EA EA	\$19 32 53,219 60 \$19 32 \$69 76 \$3,219 60	2,441,049 77,270 365,103 380,879 16,098		
		SUBTOTAL TOTAL · INTERIOR CONSTRUCTION					\$3,280,399	\$3,280,399

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				GFA	300.840		
	DESCRIPTION	οτγ	UNIT		EST'D COST	SUB TOTAL	TOTAL COST
C20	STAIDCASES			1			1
C2010	STAIR CONSTRUCTION & FINISHES M-Extension	6	EA	\$42,928 00	257.568		
	SUBTOTAL						
	TOTAL -STAIRCASES					\$257,568	\$2!
C 20							
<u>C30</u>	IN TERIOR FINISHES						
C3020	FLOOR/WALL/CEILING FINISHES Floor Finishes						
	VCT to sterile corridor	38,000	SF	S6 44	244,690		
	Terrazzo to Circulation	50,000	SF	\$27 90	1.395.160		
	Carpet to Holdroom	68,000	SE	• \$4 29	291 910		1.
	Concessions - terrazzo	9,000	SF	S27 90	251,129		
	Sealed concrete to Airline support	68,000	SF	\$2 15	145,955		
	Sealed concrete to mechanical space	25,000	SF	\$2 15	53,660		
	Restroom tile - apron level	3,610	SF	\$18 24	65,862		
	Restroom tile - concourse level	11.230	SF	S18 24	204,885		
		300.840			0		
	Ceiling Finishes	28.000	65	67.51	295 471		
	Sterile corridor - 4x2 ACT	50,000	SE	57 51	205,471		
	Boarding Ramp - DW, painted	12.000	SF	\$15 02	180.298		
	Holdroom - 4X2 metal ACT	68 000	SF	\$16 10	1,094,664		
	Concessions - Exposed ceiling	9.000	SF	S O OO	0		
	Airline support - 50% exposed/50% ACT	68,000	SF	\$6 44 \$0 00	437.866		
	Mecahanical space - exposed structure	16.000	SF	\$0 00 \$0 00	0		
	Restroom - DW, painted	14,840	SF	\$15 02	222.968		
		300,840			0		
	Wall Finishes	202.020	65	*1.00	277 120		
	Apron Level	292,838	SF	\$129	48 680		
	Column cladding concourse level	262	EA	\$5,366 00	1,405,892		
	SUBTOTAL						
						\$7,596,974	\$7.5
	TOTAL - INTERIOR PINISHES						_ ,,
D10	CONVEYING						
D1010	ELEVATORS/ESCALATORS/MOVING WALKWAYS						
	Elevators	8	EA	\$85,856 00	686,848		
	Escalators	8	EA	\$348,790.00	2,790,320		
	SUBTOTAL						
	TOTAL - CONVEYING					\$3,477,168	\$3,4
D20	PLUMBING						
D20							
210	M-Extension						
	SUBTOTAL						
	TOTAL , DI LIMPING	300.840	SF	\$16.10	4,842,922	\$4,842,922	54.8
	IOTAL - PLOMBING						
<i>D</i> 30	HVAU						
D30	HVAC, GENERALLY						
	Allowance for HVAC work						
	SUBTOTAL						
		300.840	GSF	\$69 76 .	20.985.997	\$20,985.997	\$20.9
	I UTAL - HVAC						320,3
D40	FIRE PROTECTION						
D40							
040	Allowance for Fire Suppression Work			.			
			1				1
	SUBTOTAL	200.0.10	COL	.	1 007 100	B4 017 100	

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	T-5 Large Extension Concourse M						
				GFA	300,840		7074
	DESCRIPTION	QTY	UNIT	COST	COST	TOTAL	COST
D50	ELECTRICAL						
D5010	SERVICE & DISTRIBUTION/LIGHTING & POWER M-Extension	300,840	GSF	S64 39	19,371,689		
	SUBTOTAL					\$19,371,689	
D5030	COMMUNICATION/FA & SECURITY SYSTEMS M-Extension	300,840	GSF	S16 10	4,842.922		
	SUBTOTAL					\$4,842,922	
	TOTAL - ELECTRICAL						\$24,214,
E20	FURNISHINGS						
D1010	FIXED & MOVABLE FURNISHINGS ¹⁷ M-Extension						
	SUBTOTAL	300.840	SF	\$10 73	3,228,615	\$3.228.615	
	TOTAL - FURNISHINGS						\$3,228,
F10	SPECIAL CONSTRUCTION						
F10	SPECIAL CONSTRUCTION						
	Pedestrian Loading Bridge Allowance for Foundation for Rotunda	10 10	EA LS	\$536,600 00 \$42,928 00	5,366,000 429,280		
	Allowance for Utilities connection	10	LS	\$53.660 00	536.600		
	SUBTOTAL					\$6,331,880	
	TOTAL - SPECIAL CONSTRUCTION						\$6.331
							[
F20	SELECTIVE BUILDING DEMOLITION		ĺ				i i
F2010	BUILDING ELEMENTS DEMOLITION Allowance for demolilion of rotunda at concourse end and adaption						
	SUBTOTAL	1	LS	\$536 600 00	536 600	\$536.600	
	TOTAL - SELECTIVE BUILDING DEMOLITION			•••••••••			\$536,
G	SITE DEVELOPMENT						
G10	SITE PREP / DEMOLITION Demo exisiting Apron 21" thick and crushed onsite includes sawcutting - for structure	5.878	СҮ	\$ 134 15	788.534		
	SUBTOTAL	!				788,534	
G20	SITE IMPROVEMENTS		-				
	New Fuel pit	9	EA	\$96.588 00	869.292		
	SUBTOTAL					869,292	
G30	CIVIL MECHANICAL UTILITIES Allowance for modifying existing sever lines	1	LS	\$375,620 00	375,620		,
	SUBTOTAL					375,620	
G40	ELECTRICAL UTILITIES Allowance for modifying existing electrical utility lines Reroute ComEd ductbank	1	LS LS	\$214,640 00 By Owner	214.640		
	SUBTOTAL					214,640	
Z10	CONSTRAINED SITE/PHASING	0 25%		\$114,307,199 53	285,768		
	SUBTOTAL					285,768	
	TOTAL - SITE DEVELOPMENT						\$2.533

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		GFA 300.840					
				UNIT	ESTD	SUB	TOTAL
	DESCRIPTION	QTY	UNIT	COST	COST	TOTAL	COST
237							
38							
39	MARK UP	I					
Pa0							
41	GENERAL COND / PERMIT / INS.	10 500					
242	General Conditions	12 50%		\$114,592,966,93	14,324,121		
243	Insurance & bond	1 50%		\$128,917,088,61	1,933,756		
244	Permit	0 70%		\$130,850,844 76	915.956		
245	SUBTOTAL	1				17 179 039	
40	SUBIOTAL					17,173,033	1
248							
240		5.00%		6121 766 900 67	6 599 340		
250	Overneau a proniviee	5 00%		3131,700,000 57	0.566.540		
251	SUBTOTAL				-	6 588 340	
252	SOBIOTAL					0,000,040	'I
253	TOTAL - MARK UP	A	l.	· · · · · · · · · · · · · · · · · · ·	··		\$23 762 1
254		1					1
255							
256	CONTINGENCIES						
257	00111110211020						
258	SCOPE, DESIGN & PRICING CONTINGENCY						
259	BY OWNER	0 00%			o		
260							
261					\		
262	SUBTOTAL					\$0)
263			1				
264	CONSTRUCTION CONTINGENCY						
265	BY OWNER	0 00%			0		· ·
266							
267	SUBTOTAL					\$0	
268							
:69	TOTAL - CONTINGENCIES/ESCALATION						
70		1 [\$139 355 160	i @130.366.1

NOTE Unit costs include escalation at 4 percent per annum to mid-point of construction, assumed start June 2017 17 Faithful & Gould (F&G) is retained by CARE- to perform conceptual estimating on an on-call basis. When F&G receives concept drawings, they begin by taking off the gross areas of the building and then create a standard structure of building systems for a typical building of the same type. Once this is complete F&G uses their proprietary database of historical costs from similar projects to establish a per unit cost and calculate a conceptual estimate from these units. Typical costs included in the unit cost for furnishings on similar projects would be hold-room searing and counters in public spaces. The furnishings estimate is not meant to be divided into details below the total square foot price until further design definition can provide details to support those decisions SOURCES Faithful & Gould, April 2016, CARE+, October 2016

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From: "Allison, Bob" <<u>Bob.Allison@tsa.dhs.gov</u>> Date: October 13, 2016 at 12:43:22 PM CDT To: "jonathan.Leach@cityofchicago.org" <jonathan.Leach@cityofchicago.org>, "jeffrey.redding@cityofChicago.org" <jeffrey.redding@cityofChicago.org> Cc: "Huber, Andrew" <<u>andrew.huber@tsa.dhs.gov</u>>, "Oleferchik, Elizabeth" <<u>Elizabeth.Oleferchik@tsa.dhs.gov</u>> Subject: Terminal 5 Expansion Project

Johnathan and Jeff:

As discussed on October 6, 2016, I understand that the City of Chicago Department of Aviation (CDA) is pursuing Passenger Facility Charge (PFC) funding via the Federal Aviation Administration (FAA) to design and build an expansion to the International Terminal, Terminal 5. The TSA understands that the FAA is seeking TSA approval and concurrence with this proposed project. The TSA does support the expansion and redesign of the existing security screening checkpoint. The TSA support for this initiative is provided with the full understanding from all interested parties that TSA bears no financial obligation, either implicitly or explicitly. The TSA will further review and approve the design plan for the TSA security checkpoint to ensure that it meets operational requirements.

Please let me know if you have any questions.

Thank you,

Bob Allison Acting Federal Security Director

This e-mail, and any attachments thereto, is intended only for use by the addressee(s) named herein and may contain legally privileged and/or confidential information. If you are not the intended recipient of this e-mail (or the person responsible for delivering this document to the intended recipient), you are hereby notified that any dissemination, distribution, printing or copying of this e-mail, and any attachment thereto, is strictly prohibited. If you have received this e-mail in error, please respond to the individual sending the message, and permanently delete the original and any copy of any e-mail and printout thereof.

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Attachment C

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ATTACHMENT C

CONSULTATION INFORMATION

The section contains the following information:

- Page C 2 The June 27, 2016 letter and distribution list that provided notification to the air carriers and foreign air carriers at Chicago O'Hare International Airport as required by 14 CFR Part 158.
- Page C 16 Letters from carriers acknowledging receipt of the notification letter.
- Page C 24 Proof that, on July 28, 2016, in the *Chicago Sun-Times*, the City provided Public Notice as required by 14 CFR Part 158.
- Page C 25 Proof that Public Notice was provided on the Department of Aviation website. This posting ran from July 28, 2016 through August 27, 2016.
- Page C 26 The full text of the Public Notice.
- Page C 29 A copy of the sign-in sheet from the Air Carrier Consultation Meeting held on July 28, 2016.
- Page C 30 Meeting materials distributed at the Air Carrier Consultation Meeting held on July 28, 2016.
- Page C 41 The court-reported transcript of the contents of the consultation meeting.
- Page C 58 Note on the City's post-consultation period decision to apply for Impose Only Authority for Terminal 5 Expansion construction.
- Page C 59 Letter received from air carrier certifying agreement following the carrier consultation meeting.

No public comments were received for the Terminal 5 Expansion project.



CHICAGO DEPARTMENT OF AVIATION CITY OF CHICAGO

June 27, 2016

<Contact>

Re: Passenger Facility Charge (PFC) Application 16-28-C-00-ORD Chicago O'Hare International Airport (O'Hare)

<Salutation>:

In accordance with Section 158.23 of Federal Aviation Regulations (FAR) Part 158, the City of Chicago (City) hereby provides written notice of its intent to file an application with the Federal Aviation Administration for authority under provisions of the United States Code (49 USC § 40117) to impose a passenger facility charge, and to use passenger facility charge revenue, for a new project at O'Hare International Airport (O'Hare). This notice includes information pursuant to section 128.23 of FAR Part 158 and is provided to all air carriers and foreign air carriers having a significant business interest at O'Hare.

The City will hold a meeting to present the project to air carriers and foreign air carriers operating at O'Hare on **Thursday**, **July 28**, **2016**. The City will accept carrier comments, and certifications of agreement or disagreement with the proposed project, until August 27, 2016.

Application to Impose a PFC and Use PFC Revenue for New Project at O'Hare

Section 158.23(a)(1). Description of Projects

The City intends to file an application to impose a PFC and to use PFC revenue for the following project at O'Hare:

International Terminal Expansion

This project includes a set of modifications to the International Terminal (T5) to increase gate

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capacity at O'Hare. Specifically, it includes the design and construction of an extension of the east concourse anticipated to accommodate approximately 10 new parking positions, the reconfiguration of gates on the west concourse, modifications in the existing terminal facilities to accommodate the increased activity, and an extension of the terminal apron. Upon completion, T5 is anticipated to have 28 gates, including parking positions for 2 Airplane Design Group (ADG) VI aircraft, 18 ADG-V aircraft, 8 parking positions for ADG-III and regional jet aircraft, and 4 ADG-V hardstand parking positions¹. Additional information regarding the scope of the project is included in the exhibit to this letter and will be presented at the meeting on July 28, 2016.

The total amount of PFC revenue currently estimated to be associated with this proposed impose and use application is \$425,420,000 million (\$212,710,000 million of capital funding authority, with an equal amount of financing authority). Of the total capital authority, \$32,450,000 is estimated to be project planning and design costs and \$185,970,000 is estimated to be used for project construction costs. While the City intends at this time to apply for both design and construction costs, the City may elect to modify the application to address only the design component of the project. Also, the total amount of this PFC Application is subject to refinement based on the PFC eligibility of certain components. The City anticipates that this entire amount will be approved for a PFC at the \$4.50 level as the International Terminal Expansion will increase competition among the air carriers.

Section 158.23 (a)(2). The PFC Level, Effective Date, Expiration Date and Total Revenue

PFC Level: \$4.50 per enplaned passenger at O'Hare

Charge Effective Date: February 1, 2039

Estimated Charge Expiration Date²: January 1, 2042

Estimated Total PFC Revenue: \$6,976,028,985

The above proposed charge expiration date and total PFC revenue reflect the current and pending impose approval and the total amount of PFC revenue as modified only by this proposed impose and use application.

Section 158.23(a)(3). Request that a Class of Carriers not be Required to Collect PFCs.

The following is information required specifically for the proposed impose and use application above.

(i) <u>Class Designation</u>: Air Taxi

¹ Reflects current plans. Subject to change.

² Expiration date estimated based on an annual collection of approximately \$150 million, rounded to the nearest month.

(ii)/(iii) <u>Names of Known Carriers Belonging to Class Identified in this Section and</u> <u>Estimated Number of Annual Enplaned Passengers</u>:

<u>Carrier</u>	2014 Enplanements
Averitt Air, Inc.	1
Better Living Aviation, Inc.	9
Flexjet Llc	110
Ultimate Charters LLC	155
Total	275 Source: ACAIS Database, Accessed June 2, 2016.

(iv) Reasons for Requesting that Carriers Identified in this Section Not be Required to <u>Collect the PFC</u>: The number of passengers enplaned annually by this class of carriers represents fewer than one percent of total enplanements at O'Hare. The estimated annual PFC revenue from these carriers would be approximately \$1,207 as compared to the estimated PFC revenue of \$148,571,433 from all other carriers. In accordance with Section 158.11 of FAR Part 158, the City may request of the FAA in its application for authority to impose PFCs, and in its application for authority to use PFCs, that collection of PFCs by any class of air carriers or foreign air carriers not be required if the number of passengers enplaned by the carriers in this class constitutes no more than one percent of the total number of passengers enplaned annually at the airport at which the PFC is imposed. This is the case with the class of carriers identified herein.

This is the same class that was already approved for exemption by FAA (See June 28, 1993 Record of Decision, p.26). Information on known carriers belonging to the class has been updated to reflect the Department of Transportation (DOT) Air Carrier Activity Information System Report for calendar year 2014, the most recent report available to the City.

Section 158.23(a)(4). Date and Location of Air Carrier Consultation Meeting.

The City will hold a meeting to present the project to air carriers and foreign air carriers operating at O'Hare:

Date: Thursday, July 28, 2016 Time: 11:00AM Conference Room 1 Aviation Administration Building 10510 West Zemke Road, 2nd Floor Chicago, IL 60666

If you or a representative are unable to attend the meeting and would like to review information to be provided at the meeting, please call Reshma Soni at (773) 686-7635 or email Reshma.Soni@cityofchicago.org to receive the package electronically or through the mail.

In accordance with Section 158.23(c)(1) of FAR Part 158, please provide a written acknowledgment that you have received this notice to the address below, or by sending an email to Reshma.Soni@cityofchicago.org. The last page of this notice can be used to send written acknowledgement of receiving the notice.

Reshma Soni Chief Financial Officer City of Chicago, Department of Aviation 10510 West Zemke Rd. Chicago, IL 60666

Sincerely,

Dinger S. Grans

Ginger S. Evans Commissioner

ADDITIONAL INFORMATION

Application to Impose a PFC and Use PFC Revenue for a New Project at O'Hare

International Terminal Expansion

Project Description:

This project includes a set of modifications to the International Terminal (T5) to increase gate capacity at O'Hare. It includes the extension of the east concourse of T5, which includes the addition of approximately 265,000 square feet of gross floor area, 10 parking positions, and extension of sterile corridors feeding the Federal Inspection Services (FIS) facility. Aircraft parking positions are anticipated on the north, east and south sides of the extended concourse. The concourse extension includes holdrooms, concessions, airline premium lounge(s), airline operations, supplemental ramp control facility, FIS sterile corridor system, and building systems. Existing T5 facilities will also be modified to accommodate additional activity. These modifications include, but are not limited to, the expansion of the security screening checkpoint and modification of baggage system, ticket counter lobby facilities, FIS inspection areas; creation of an airside transfer bus station, and the addition of a supplemental ramp control facility. In addition, the project includes the expansion of the existing terminal apron by approximately 1,477,000 square feet. Hydrant fueling is anticipated to be provided at the terminal and hardstand parking positions. The expansion project includes the relocation of perimeter fence and guard post, new blast fence, replacement triturator building, installation of snow melter, relocated cargo storage, and other associated projects.

The project also includes the design and reconfiguration of gates on the west concourse of T5 gates to accommodate traffic currently accommodated in the domestic terminals. T5 gates M1 through M6 will be modified to accommodate eight narrow-body aircraft. Jet bridges will be modified and added along with interior renovations.

The PFC application will be limited to the PFC-eligible portion of the above project.

PFC AUTHORITY PROPOSED

Project Description	Proposed Amount Pay-Go	Proposed Amount Bond Capital	Proposed Amount Financing & Interest	Proposed Amount TOTAL
International Terminal Expansion Design Costs	\$0	\$32,450,000	\$32,450,000	\$64,900,000
International Terminal Expansion Construction Costs	\$0	\$185,970,000	\$185,970,000	\$371,940,000
Total	\$0	\$212,710,000	\$212,710,000	\$425,420,000

PFC TIMELINE

Air Carrier Notification Distributed	June 27, 2016
Air Carrier Consultation Meeting	July 28, 2016
Air Carrier Comment Due	August 27, 2016
Proposed Date of Submission of Draft Application to FAA	September 2, 2016

Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

Name (print)

Name (sign)/Date

Air Carrier Name



Averitt Express 7526 South State Road Burbank, IL 60459

Flexjet 26180 Curtiss Write Parkway Cleveland, OH 44143

Charter Air Transport 218 Jackson St Maitland, FL 32751

Gerald Wigmore Trans States Airlines 11495 Navaid Road Suite 340 Bridgeton, MO 63044

Allegiant Air PO Box 371477 Las Vegas, NV 89137

Ameristar Jet Center 4400 Glen Curtis Dr Addison, TX 75001

Avjet Corporation 4301 Empire Avenue Burbank, CA 91505

Compass Airlines 7500 Airline Drive Suite 130 Minneapolis, MN 55450

Endeavor Air d/b/a Delta Connection 7500 Airline Drive Minneapolis, MN 55450 Better Living Aviation 130 S. Clow International Parkway Suite B Bollingbrook, IL 60490

Ultimate Jetcharters 6061 West Airport Drive North Canton, OH 44720

Air Choice One 1436 Perrine Rd. Building E Farmington, MO 63640

Alaska Airlines PO Box 68900 SEAPZ Seattle, WA 98168-0900

Amanda Zhang American Airlines 4333 Amon Carter Blvd. MD 5317 Ft. Worth, TX 76155-2664

Atlas Air 516 Express Center Dr Chicago, IL 60666

Chautauqua Airlines d/b/a American Connection 8909 Purdue Rd Suite 300 Indianapolis, IN 46268

Blaine Peters Delta Air Lines, Inc. 1030 Delta Boulevard Atlanta, GA 30354-1989

Bill Buchholz American Eagle 4333 Armon Carter Blvd. MD 5494 Fort Worth, TX 76155 Lisa Walker Express Jet Airlines 990 Toffie Terrace Atlanta, GA 30354

GoJet Airlines LLC 11495 Navaid Road Suite 303 Bridgeton, MO 63044

Robert Stone Mesa Airlines 410 N. 44th Street Suite 700 Phoenix, AZ 85008

PSA Airlines 3400 Terminal Dr. Vandalia, OH 45377

Shuttle America Corporation 8909 Purdue Rd Indianapolis, IN 46268

Kathleen Barrett Spirit Airlines, Inc. 2800 Executive Way Miramar, FL 33025

Swift Air 2406 South 24th Street Suite E-102 Phoenix, AZ 85034

Peter Froehlich United Airlines 233 South Wacker Drive 11th Floor HDQOU Chicago, IL 60606

Vision Air 2705 Airport Drive N. Las Vegas, NV 89030 Frontier Airlines 7001 Tower Rd Denver, CO 80249

David Barger JetBlue Airways Corporation 27-01 Queens Plaza North Long Island, NY 11101

Miami Air International 5000 NW 36th St Suite 307 Miami, FL 33122

Republic Airlines, Inc 8909 Purdue Rd Indianapolis, IN 46268

Seth Thompson SkyWest Airlines 444 South River Road St. George, UT 84790

Sun Country Airlines 1300 Mendota Heights Road Mendota Heights, MN 55120

Air Georgian 2450 Derry Road East Mississauga ON L5S 1B2 Canada

Virgin America 555 Airport Blvd Suite 400 Burlingame, CA 94010

Mersiha Hodzic AER Lingus Chicago O'Hare International Airport P.O. Box 66034 Chicago, IL 60666 Felipe Juarez Aeromexico 3663 N. Sam Houston Parkway East Suite 500 Houston, TX 77032

Ms. Angelisa Taylor Air Canada YUL 1232, C.P. 1400 Succ. Aeroport Dorval AC H4Y 1H4 Canada

Sery Mutawi Royal Jordanian Chicago O'Hare International Airport P.O. Box 66170 Chicago, IL 60666

Lauda Motion Concord Business Park #2 Building F, Office 10 A-2320 Schwechat Austria

Austrian Airlines Hegelgasse 21 3. Floor/ Top 8 1010 Vienna Austria

Mr. Pat Dickings Cathay Pacific Airways 550 West 6th Avenue - Suite 500 Vancouver, British Columbia V5Z 4S2 Canada

Alitalia Airlines Plaza Almerico da Schio, 3, 00054 Fiumichino, (RM) Italy

Nermin Voloder Copa Airlines Chicago O'Hare International Airport P.O. Box 66191 Chicago, IL 60666

Emirates 5600 Mannheim RD Chicago, IL 60666 Air Berlin Saatwinkler Damm 42-43 D-13627 Berlin Germany

Air Canada Rouge YUL 1232, C.P. 1400 Succ. Aeroport Dorval AC H4Y 1H5 Canada

Osamu Kawabata All Nippon Airways Co., Ltd. 21250 Hawthorne Blvd. Suite 200 Torrance, CA 90503

Asiana Airlines Continental Towers #3 Suite 1010 1701 Golf Road Rolling Meadows, IL 60008

Maureen McLafferty British Airways Chicago O'Hare International Airport P.O. Box 66177 Chicago, IL 60666

Terry Hoffman Cayman Airways, Ltd. Chicago O'Hare International Airport P.O. Box 66017 Chicago, IL 60666

Marie Tempe Air France NYC.BG/PFC 125 W 55th St New York, NY 10019

Volaris Av. Antonio Dovalí Jaime No. 70 13th Floor, Tower B, Colonia Zedec Santa Fe C.P. 01210 Mexico City Mexico

Faheem Haque Etihad Airways 600 Fifth Avenue - 20th Floor New York, NY 10020 Ke Xu Hainan Airlines 9709 3rd Avenue NE Suite 200 Seattle, WA 98115

Dan Yanagihara Japan Airlines International Chicago O'Hare International Airport P.O. Box 66078 Chicago, IL 60666

KLM Royal Dutch Airlines Mr. Peter Hartman Amsterdamseweg 55 1182 GP Amstelveen The Netherlands

Isabelle Hermann Lufthansa German Airlines Chicago O'Hare International Airport P.O. Box 66143 Chicago, IL 60666

Mr. Sebastian Mikosz LOT Polish Airlines 17 Stycznia 39 00-906 Warsaw Poland

Charlotte Thyneberg SAS Chicago O'Hare International Airport P.O. Box 66258 Chicago, IL 60666

Markus Augstburger Swiss Chicago O'Hare International Airport P.O. Box 66203 Chicago, IL 60666

TAG Aviation 20 Chemin des Papillons 1215 Geneva 15 Airport Switzerland

Virgin Atlantic Airways Ltd 75 North Water St Norwalk, CT 6854 Milton G. Uribe Iberia Airlines P.O. Box 66601 Chicago, IL 60666

Jazz Air LP 310 Goudey Dr. Halifax International Airport Enfield, Nova Scotia B2T 1E4 Canada

Jong-Sueng Lee Korean Airlines Chicago O'Hare International Airport P.O. Box 66259 Chicago, IL 60666

Jude Crasto Air India 33 N. Dearborn Suite 2425 Chicago, IL 60602-3101

Qatar Airways 1430 K Street Floor 10 Washington, DC 20005

(Air Canada) Air Canada YUL 1232, C.P. 1400 Succ. Aeroport Dorval AC H4Y 1H4 Canada

Alma Hayes TACA International Airlines Chicago O'Hare International Airport P.O. Box 66474 Chicago, IL 60666

Turkish Airlines 455 North Cityfront Plaza Drive Suite 2560 Chicago, IL 60611

Michael Perkins WestJet 22 Aerial Place NE Calgary AB Canada T2E 3J1 Aerodynamics 114 Townpark Drive Suite 500 Kennesaw, GA 30144

EVA Airways 11301 E Irving Paark Rd Franklin Park, IL 60131

Icelandair 1900 Crown Colony Drive Floor 1 Quincy, MA 2169

Sunwing Airlines 27 Fasken Drive Toronto ON M9W 1K6 Canada

Omni Air P.O. Box 582527 Tulsa, OK 74158

Chartright Air 2450 Derry Road East Hangar #6 Mississauga ON L5S 1B2 Canada

Global Jet Luxembourg PO Box 3087 L-1030 Luxembourg

Hi Fly Latino Coelho nr 1 Hi Fly Building 1050-132 Lisbon Portugal

SF Airlines Hangshan 4th road No. 1111 Shenzhen 518128 P.R. China China Eastern Airlines
 55 S Lake Ave
 #120
 Pasadena, CA 91101

Finnair PO Box 15, 01053 Finnair Finland

Luis Fernando Abarca Avianca 8333 N.W. 53rd Terrace Suite 100 Miami, FL 33166

Air Alsie Lufthavnsvej 3 6400 Sonderborg Denmark

Bahamasair Holding LTD P.O. Box N 4881 Nassau, N.P. The Bahamas

Eastern Airlines 4200 NW 36th Street Miami, FL 33166

Hawaiian Airline P.O. Box 30008 Honolulu, HI 96820

KaiserAir P.O. Box 2626 Airport Station Oakland, CA 94614

Southwest Airlines P.O. Box 36647-1CR Dallas, TX 75235 Tradewind Aviation 5 Juliano Drive Oxford, CT 6478

Xtra Airways 121 Alhambra Plaza Suite 1700 Coral Gables, FL 33134

Joe Gabbert PO Box 66294 AMF O'Hare Chicago, IL 60666

Sandra Widerborg United Airlines 233 South Wacker Drive 11th Floor HDQOU Chicago, IL 60606

.

Vistajet 52 Charles St London W1J5EU England

David Woodcock PO Box 661125 Chicago, IL 60666

Ovidio Sanchez PO Box 661125 Chicago, IL 60666



July 8, 2016

VIA E-MAIL and U.S. MAIL (773) 686-7635

Ms. Reshma Soni Chief Financial Officer City of Chicago – Department of Aviation 10510 West Zemke Road Chicago, IL 60666

ORD – Passenger Facility Charge Consultation Meeting Notice

Dear Ms. Soni:

United Airlines, Inc. hereby acknowledges receipt of the City of Chicago's Notice of its intent to impose and use \$425.42 million of PFCs for International Terminal Expansion, dated June 27, 2016.

It is our understanding that these acknowledgements are required to retain United's right to certify its approval or disapproval of proposed PFC projects. We further understand that an airline consultation meeting has been scheduled for July 28, 2016 to discuss the proposed PFC application in greater detail. United plans to attend the July 28, 2016 PFC consultation meeting.

Sincerely,

Sandra M. Widerborg Director – Corporate Real Estate

Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

Mike DeGirolumo Name (print)

3

Much P. Julium 7-1-16 Name (sign)/Date

Ultimate Jetchurters LLC Air Carrier Name

Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

<u>– DANCI FER</u> Name (print) Christopher 7/11/16 Name (sign)/Date

Dirit いこう INC Air ier Name

Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

BARBARA RAJSKA-KULIG Name (print)

7/6/2016 Name (sign)/Date

ł

SH AIRLINES

Air Carrier Name

7

Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

Pekka Vähähyyppä Name (print) July 5,2016 0 Name (sign)/Date

Air Carrier Name

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Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

(MAN GUOFZNG Name (print) 275422016 Name (sign)/Date EASTERN AIRLINE CHINA Air Carrier Name ς.

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Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

40 hez Name (print)

lo Name (sign)/Date

Hay TQC: VOI Air Carrier Name

Notice of Intent of Application to Impose and Use a Passenger Facility Charge (PFC) at Chicago O'Hare International Airport

Acknowledged Receipt of Air Carrier Consultation Meeting Notice:

Mickey Bowman Name (print)

7/6/2016 Name (sign)/Date

Aerod

Air Carrier Name

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: v :	CLASSIFIEDS 312.321.2343	Public Notices
	Public Notices Public Notices Public Notices	penses incurred by the C
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	137 Pulaski Ave CALUMET CITY, ILLINOIS building located at or on the tinuing hazard to the surround above described Property is de-ling community and to the public	Division of Inspectional Sen 670 Wentworth Avenue
	P.I.N. 30-17-200-005-0000 molished, repaired, or enclosed, at large no longer exists, the and unless any and all garbage, building shall be demolished, re	Calumet City, Illinois 60409 (708) 891-8120
把	is found and deemed by the City debris, and other hazardous paired, or enclosed, and an of Calumet City, pursuant to noxious, or unhealthy substan-gerbage, debris, or other haz	NOTICE TO DEMOLISH
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	City of Chicago, Illinois	60409 P.I.N. 30-20-408-036-00
	Proposed Application to Federal Aviation Administration	of Calumet City, pursual
	For Authority to Impose a Passenger Facility Charge (PFC) and to Use PFC Revenue for a New Project at Chicago O'Hare International Airport	Municipal code, 65 ILCS
	In accordance with Title 14 Code of Federal Regulations (CFR) 158.24, the City of Chicago here-	vacant building and continue
	by provides monce of its intent to life an application with the Federal Aviation Administration for authority under provisions of the United States Code (49 U.S.C. 40117) to impose a Passenger Eacility Charge (FEC) and to use PEC structure for provident of Others Liferantices	hazard to the surrounding
	(O'Hare). This Public Notice is effective July 28, 2016. Public comments, if any are required to be submitted to the City of Chicago no later than August 27 2016. Comments may be mailed to	large. Unless the open and v
. 💼	Reshma Soni, Chief Financial Officer, City of Chicago, Department of Aviation, 10510 West Zemke Road, Chicago, IL 60666 (see item viii).	building located at or or above described Property i
	The following information is provided in accordance with 14 CFR 158.24(b)(1): (i) A description of the project the public agency is considering for funding by PFCs:	and unless any and all gar
•	International Terminal Expansion This project includes an expansion and set of modifications to the International Terminal (T5) in	noxious, or unhealthy sub
	order to increase gate capacity at O'Hare. The following information provides the general project elements. The terminal expansion includes: an extension of the east concourse of T5, which in-	from the Property by the c
	aircraft parking positions and installation of associated passenger loading bridges; and the ex- tansion of starile confider (associated passenger loading bridges; and the ex-	cial owner or owners of any trust having title to the Proj
	expansion includes holdrooms, concessions, airline premium tounge(s), airline operations, a sup- plemental rame control facility, an FIS sterile condor system, and building systems in addition	or any lien-holder or lien-hc of record, within thirty (30)
1	the project includes the expansion of the existing terminal apron by approximately 1.48 million square leet. Hydrant fueling is anticipated to be provided at the terminal and hardstand aircraft	following the date of this N so that an immediate and
	parking positions. The expansion project includes the relocation of a perimeter fence and guard post, a new blast fence, the replacement of the triturator building, the installation of a snow	Ing community and to the surre
	melter, relocated cargo storage, and other associated projects. The project also includes the reconfiguration of gates on the west concourse of T5 in order to ac-	building shall be demolished
Fig.	gate M18 to accommodate larger aircraft. T5 gates M1 through M6 will be modified to accom- gate M18 to accommodate larger aircraft. T5 gates M1 through M6 will be modified to accom-	garbage, debris, or other
	passenger loading bridges will be added to provide access to the terminal for the reconfigured oates. Existing 15 facilities will also be modified to access to the terminal for the reconfigured	substances or materials shi removed by the City of Cal
:	from the terminal expansion and modification of existing gates. Modifications to systems include the following; the expansion of the security screening checkpoint and the modification of the bag-	City. Any and all costs an penses incurred by the C
	gage system, ticket counter lobby facilities, and FIS inspection areas; the creation of a transfer bus station, providing airside bussing between T5 and the domestic terminal area; and the addi-	demolition, repair, and/or c
	Upon completion, the International Terminal is anticipated to have 28 gates. These gates are an- ticipated to include 2 pater that can accompanded a size of the area as the Alder A200 000 and	the property.
-	that can accommodate Boeing 747-8 size aircraft 15 that can accommodate Boeing 747-400 size aircraft and 8 narrowhody gates that can accommodate Boeing 747-400	
	800W and Embraer 175W depending on the gate. The International Terminal will also have four hardstand aircraft parking positions, that can accommodate aircraft as large as the Boeing 747-	Rublic Noticos
	400 aircraft. The project includes design, construction, and administrative services.	Public Notices
	(ii) A oner justilication for each project the public agency is considering for funding by PFCs: This project is designed to furnish opportunities for enhanced competition between or among air another at Others.	PU
	 carriers at Onare. By extending Concourse in to Increase the number and size of gates in the International Terminal, O'Hare is Increasing its ability to accommodate increased operations and increased opesances. The International Terminal Comparison with a fully and an extent of the second operations. 	NOTICE OF
	ers to start and expand operations, which will be challenging without the expansion of the termi- nal and the modification of existing facilities. The project increases the number of patter the termi-	In accordance with Chapter 4-60-0 as notice by the Chicago Departmen
	access the FIS facility, which is utilized by U.S. Customs and Border Protection (CBP) for proc- essing arriving international passengers. Baggage processing capabilities will also be in-	the following epplications have bee alcoholic liquor as follows:
	ereased, with the addition of a domestic baggage claim device. Enhanced security capacity and efficiency can be provided with the expansion of the Transportation Security Administration	Applicant: Name of Business:
	(TSA) screening checkpoint, which is planned to accommodate two additional lanes for Pre? eli- gible passengers. In addition, renovation and reconfiguration of FIS Primary and Secondary In-	Type of Liquor License:
	spection areas will enlarge queuing areas and provide additional or relocated CBP functional spaces that will support the anticipated passenger activity.	Any objection to the granting of the lit
ξ.,	gates at the International Terminal accommodated 115 departures per day. Demand for the ex- panded terminal on average weekday in init 2025 is forecast to be 255 daily departures.	City Hall, Room 805, 12; Objections to this application must be
	cility constraints produce congestion in terminal areas and delays for inbound and outbound air- craft. O'Hare will be challenged to accommodate additional operations and larger already the	by the Department of Business Affair date the application was filed for all t
:	number and adaptability of the gates at O'Hare will continue to be unable to accommodate de- mand it the efficiencies that the International Terminal Expansion is intended to create are not	the objection must be cited,
	realized. A more detailed project justification is available to the public upon request.	Northeast Illin Railrc
	(iii) The PFC Level for each project: \$4.50 per enplaned passenger	C Not
	(iv) The estimated total PFC revenue the public agency will use for each project: \$425,420,000	Great
	(v) The proposed charge effective date for the application or notice of intent: February 1, 2039	D/B/A Metra, has awarded
• •	(w) The estimated charge expiration date for the application or notice of intent: January 1, 2042 (vii) The estimated total PEC revenue the public general will entret for the preferation	or Bids / Request for Proc er than \$40,000.00:
I	of intent: \$425,420,000 (\$212,710,000 for capital costs and \$212,710,000 for linearling costs)	July 18th, 2
	(viii) The name of and contact information for the person within the public agency to whom com- ments should be sent:	Q09685 Progress Q23565 MidAmo
	Reshma Soni Chief Finencial Officer	Q39367 Vermeer- Q59501 American
	City of Chicago, Department of Aviation	Q59502 Chicagol
	10510 West Zemke Road	II Q71025 Bellwood

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The project also includes the reconfiguration of gatas on the west concourse of T5 in order to accommodate traffic memby accommodated in the comesic terminals, as well as modification of gata M18 to accommodate larger and and T5 gatas M1 through M6 will be modified to accommodate eight narrowbody arctaft Existing passenger loading bridges will be modified, and new passenger loading bridges will be added to provide access to the leminal for the reconfigured gatas M1 through M6 will also be modified to accommodate adding and and will be modified to the leminal for the reconfigured expansion and modification of existing dates. Modification to systems include the following the expansion of the expansion and modification of a straing dates. Modification to systems include the following the expansion of the inscript screench and the addition of a straing bridges will be bagage system, toket courser loabilities, and FIS area, and the addition of a supplemental ramp control facility.

Upon completon, the international Terminal is anticipated to have 28 gales. These gales are anticipated to include 2 gales that can accommodate Boeing 747-6 size

City of Chicago, Illinois Department of Aviation

Proposed Application to Federal Aviation Administration For Authority to Impose a Passenger Facility Charge (PFC) and to Use PFC Revenue for a New Project at Chicago O'Hare International Airport

Notice and Opportunity for Public Comment

In accordance with Title 14 Code of Federal Regulations (CFR) 158.24, the City of Chicago hereby provides notice of its intent to file an application with the Federal Aviation Administration for authority under provisions of the United States Code (49 U.S.C. 40117) to impose a Passenger Facility Charge (PFC) and to use PFC revenue for a new project at O'Hare International Airport (O'Hare). This Public Notice is effective July 28, 2016. Public comments, if any, are required to be submitted to the City of Chicago no later than August 27, 2016. Comments may be mailed to Reshma Soni, Chief Financial Officer, City of Chicago, Department of Aviation, 10510 West Zemke Road, Chicago, IL 60666 (see item viii).

The following information is provided in accordance with 14 CFR 158.24(b)(1):

(i) A description of the project the public agency is considering for funding by PFCs:

International Terminal Expansion

This project includes an expansion and set of modifications to the International Terminal (T5) in order to increase gate capacity at O'Hare. The following information provides the general project elements. The terminal expansion includes: an extension of the east concourse of T5, which includes the addition of approximately 279,000 square feet of gross floor area; the addition of 9 aircraft parking positions and installation of associated passenger loading bridges; and the extension of sterile corridors feeding the Federal Inspection Services (FIS) facility. The concourse expansion includes holdrooms, concessions, airline premium lounge(s), airline operations, a supplemental ramp control facility, an FIS sterile corridor system, and building systems. In addition, the project includes the expansion of the existing terminal apron by approximately 1.48 million square feet. Hydrant fueling is anticipated to be provided at the terminal and hardstand aircraft parking positions. The expansion project includes the relocation of a perimeter fence and guard post, a new blast fence, the replacement of the triturator building, the installation of a snow melter, relocated cargo storage, and other associated projects.

The project also includes the reconfiguration of gates on the west concourse of T5 in order to accommodate traffic currently accommodated in the domestic terminals, as well as modification of gate M18 to accommodate larger aircraft. T5 gates M1 through M6 will be modified to accommodate eight narrowbody aircraft. Existing passenger loading bridges will be modified, and new passenger loading bridges will be added to provide access to the terminal for the reconfigured gates. Existing T5 facilities will also be modified to accommodate additional activity anticipated from the terminal expansion and modification of existing gates. Modifications to systems include the following: the expansion of the security screening checkpoint and the modification of a transfer bus station, providing airside bussing between T5 and the domestic terminal area; and the addition of a supplemental ramp control facility.

Upon completion, the International Terminal is anticipated to have 28 gates. These gates are anticipated to include 2 gates that can accommodate aircraft as large as the Airbus A380-800, 3 that can accommodate Boeing 747-8 size aircraft, 15 that can accommodate Boeing 747-400 size aircraft, and 8 narrowbody gates that can accommodate aircraft such as the Boeing 737-800W

and Embraer 175W depending on the gate. The International Terminal will also have four hardstand aircraft parking positions that can accommodate aircraft as large as the Boeing 747-400 aircraft.

The project includes design, construction, and administrative services.

(ii) A brief justification for each project the public agency is considering for funding by PFCs:

This project is designed to furnish opportunities for enhanced competition between or among air carriers at O'Hare. By extending Concourse M to increase the number and size of gates in the International Terminal, O'Hare is increasing its ability to accommodate increased operations and increased passengers. The International Terminal Expansion will allow new and existing air carriers to start and expand operations, which will be challenging without the expansion of the terminal and the modification of existing facilities. The project increases the number of gates that can access the FIS facility, which is utilized by U.S. Customs and Border Protection (CBP) for processing arriving international passengers. Baggage processing capabilities will also be increased, with the addition of a domestic baggage claim device. Enhanced security capacity and efficiency can be provided with the expansion of the Transportation Security Administration (TSA) screening checkpoint, which is planned to accommodate two additional lanes for Pre✓ eligible passengers. In addition, renovation and reconfiguration of FIS Primary and Secondary Inspection areas will enlarge queuing areas and provide additional or relocated CBP functional spaces that will support the anticipated passenger activity.

On an average weekday in the airport's peak month (July) of operations in 2015, the existing 20 gates at the International Terminal accommodated 115 departures per day. Demand for the expanded terminal on an average weekday in July 2025 is forecast to be 265 daily departures. Facility constraints produce congestion in terminal areas and delays for inbound and outbound aircraft. O'Hare will be challenged to accommodate additional operations and larger aircraft. The number and adaptability of the gates at O'Hare will continue to be unable to accommodate demand if the efficiencies that the International Terminal Expansion is intended to create are not realized.

A more detailed project justification is available to the public upon request.

(iii) The PFC Level for each project:

\$4.50 per enplaned passenger

(iv) The estimated total PFC revenue the public agency will use for each project:

\$425,420,000

(v) The proposed charge effective date for the application or notice of intent:

February 1, 2039

(vi) The estimated charge expiration date for the application or notice of intent:

January 1, 2042

(vii) The estimated total PFC revenue the public agency will collect for the application or notice of intent:

\$425,420,000 (\$212,710,000 for capital costs and \$212,710,000 for financing costs)

(viii) The name of and contact information for the person within the public agency to whom comments should be sent:

Reshma Soni Chief Financial Officer City of Chicago, Department of Aviation 10510 West Zemke Road Chicago, IL 60666

Reshma.Soni@cityofchicago.org (773) 686-7635 phone

Chicano O'Hare International Airrort	Sign-In Sheet		
Curreago O nace mentangung An Polo Passenger Facility Charge Air Carrier Consultation Meeting July 28, 2016 Airport Administration Building, 2nd Floor			
NAME	AFFILIATION	PHONE #	EMAIL
Amy Hauson	FAA	hset-hle-tha	ame hansone faz.gov
2 Mille Brown	FAA	247-294-7195	mi keij boun e taa gev
, Sabelle Hermann	LH/0S	773-686-7689	Isabelle . hermann odl. 4. DE
5 JOE UNDREAT 5 BLAINE PETERS	ARR	773-686-16/4 612-805-4656	JABBERT & APT-OJA. COM BLAINE, PETERS & DELTA. Can
Sapha Lui & Char, A	NA N	F12 435-263) Suplea. M. wind schora ? waited. con
7 TOM TRIANDES	JWT	6303026599	Therawhos Q Juit corporated. Com
· PAMELA J. KOHL	ARR	773-686.7674	PKOHL & APCR-ORD.COM
· KRISTINA WOODWARD	RICHUSCIALS	R. 312.600011	K-worwth P Ricenso. Can
10 Barbara Rayska-Kulica	Lon	(312)593-7741	B. raj she Kuiig @ let. www
"Reshma Joni	<u>CDA</u>	(173)686-7635	reshind won C city of chicago ora
12 MARIA HICKS	RILONDO & AG	x 312-606-061)	M - HICKS & RICONDO.COM
13 New hight	CDA	773.613.14	jourthan lead O city things. My
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Chicago O'Hare International Airport Passenger Facility Charge Program

Air Carrier Consultation Meeting

Thursday, July 28, 2016

Agenda

Introduction and Opening Remarks

Review of Proposed Project and PFC Authority

Review of Detailed Financial Plan

Review of PFC Timeline

Adjournment

Application to Impose a PFC and Use PFC Revenue for a New Project at O'Hare

International Terminal Expansion

Project Description:

This project includes an expansion of, and set of modifications to, the International Terminal (Terminal 5 or T5) in order to increase gate capacity at O'Hare International Airport (O'Hare or Airport). The following information provides the general project elements. The International Terminal Expansion (Project) includes: an extension of the east concourse of T5, which includes the addition of approximately 279,000 square feet of gross floor area; the addition of nine aircraft parking positions and installation of associated passenger loading bridges; and the extension of sterile corridors feeding the Federal Inspection Services (FIS) facility. The Project includes an expansion of Concourse M which will include new holdrooms, concession space, airline premium lounge(s), airline operations space, a supplemental ramp control facility, an FIS sterile corridor system, and building systems.

In addition, the Project includes the expansion of the existing terminal apron by approximately 1.48 million square feet. Hydrant fueling is anticipated to be provided at the terminal and hardstand aircraft parking positions. The Project includes the relocation of a perimeter fence and guard post, a new blast fence, the replacement of the triturator building, the installation of a snow melter, relocated cargo storage, and other associated projects.

The Project also includes the reconfiguration of gates on the west concourse of T5 in order to accommodate traffic currently accommodated in the domestic terminals, as well as modification of gate M18 to accommodate larger aircraft. T5 gates M1 through M6 will be modified to accommodate eight narrowbody aircraft. Existing passenger loading bridges will be modified and new passenger loading bridges will be added to provide access to T5 from the reconfigured gates. Existing T5 facilities will also be modified to accommodate additional activity anticipated as a result of the Project. Modifications to systems include the following: the expansion of the security screening checkpoint and the modification of the baggage system, ticket counter lobby facilities, and FIS inspection areas; the creation of a transfer bus station, providing airside bussing between T5 and the domestic terminal area; and the addition of a supplemental ramp control facility.

Exhibits 1-3 are layout drawings of the Project. Exhibit 1 shows the existing conditions of the International Terminal. Exhibit 2 shows the planned aircraft parking layout resulting from the Project. Exhibit 3 presents a comprehensive airside site plan of the Project. The Project as described in this document and shown in Exhibits 1 through 3 is preliminary and subject to change.







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Major Project Components

Concourse M Expansion

The preliminary design of the expansion of Concourse M includes an addition of approximately 279,000 square feet of gross floor area spread between a lower level (consisting of airline operations space, a sterile passenger circulation corridor that ties into the existing apron-level corridor beneath Concourse M, and supporting infrastructure) and an upper level (consisting of passenger holdrooms, queuing and circulation areas, restrooms, and concessions).

Addition of Gates/Passenger Loading Bridges

The Project will add new gates, upgauge existing gates, and reconfigure existing gates, which results in increasing the number of T5 gates from 19 to 28.¹ The Project includes the installation of two new passenger loading bridges on the existing concourse, and the relocation of two existing passenger loading bridges, allowing for airlines currently providing service in the Airport's domestic terminals to accommodate three narrowbody and five large regional jets.² The existing passenger loading bridges at existing gates M19, M20 and M21 will be removed, as the gates are being relocated to extend the terminal to accommodate the additional gates. Sixteen passenger loading bridges will be installed for the new international common-use gates. In total, 18 new passenger loading bridges will be installed as part of the Project.³

Apron/Hardstands

The four existing hardstand positions at T5 will be relocated as part of the Project. The Project will also include the removal of the existing pavement and the construction of additional apron surrounding the new gates and the relocated hardstands.

Table 1 presents gates and hardstands by maximum aircraft size prior to beginning the Project and after the Project is complete.

¹ Existing T5 is typically configured with 19 or 20 gates, depending on the operational activity and size of aircraft. ² It is anticipated that airlines currently providing service in the Airport's domestic terminals will sign preferential leases on eight gates at T5; however, leases have yet be negotiated. The remaining gates on Concourse M after the expansion will be common use. ³ Because the existing passenger loading bridges at existing gates M19, M20, and M21, are not being reused, the net

³ Because the existing passenger loading bridges at existing gates M19, M20, and M21, are not being reused, the net increase in T5's passenger loading bridges is 15, from 21 passenger loading bridges currently to 36 passenger loading bridges after the Project is complete.

Maximum Aircraft	Quantity		
	Existing		Proposed
	Configuration #1	Configuration #2	
Embraer 175W	-	-	3
Boeing 737-800W	1	2	-
Boeing 737-900W	-	-	5
Boeing 767-300ER	4	7	-
Boeing 747-400	9	6	7
Boeing 777-300ER	1	1	8
Boeing 747-8	3	3	3
Airbus A380-800	1	1	2
Total Gates	19	20	28
Total Remote Hardstands (Boeing 777-300ER)	4	4	4
SOURCE: Ricondo & Associates. Inc., July 2016.			<u> </u>

Table 1: International Terminal Gates

Modifications to Existing T5

The design also includes modifications to check-in counter space, two additional screening lanes for the Transportation Security Administration (TSA) Pre \checkmark program, and an additional non-FIS baggage claim in T5.

Reconfiguration of Ticket Counters: Modifications to existing Concourse M to accommodate current airline and passenger use patterns will also occur, including changing existing preferential-use ticket counters to a combination of preferential-use and common-use ticket counters. With the relocation from the Airport's domestic terminals to Terminal 5, airlines providing currently providing service to the Airport's domestic terminals will need adequate ticket counter space to process their passengers, which is not currently available. It is anticipated that some existing ticket counter space will either be converted to common-use facilities or transferred to the relocated airlines in order to use as preferential-use to accommodate the needs of all airlines.

Expansion of Security Screening: The Project includes expansion of the TSA screening checkpoint to accommodate two additional lanes for Pre \checkmark cligible passengers.

Additional Baggage Carousel: The Project includes the addition of a non-FIS baggage claim in existing Concourse M. There will be two non-FIS baggage claims after the Project is completed: one existing and one to be added as part of the Project. Space formerly used by TSA to recheck baggage for domestic connections is being repurposed to reinstall a second non-FIS baggage carousel in T5. (TSA is accommodating the rescreening of baggage at its primary screening area in T5.) The second baggage carousel is included in the project costs.

The Project cost presented includes all design, construction, and administration costs necessary for the completion of the Project. PFC revenue will be used for the PFC-eligible portion of the project.

Project Objective/Justification:

The objective of the Project is to enhance capacity of the national air transportation system by adding additional gates, an additional baggage claim device, and a security inspection area of increased capacity. The Project will also furnish opportunities for enhanced competition between or among air carriers.

Space constraints at the existing facility result in congestion in terminal areas and delays for inbound and outbound aircraft. Additional operations and larger aircraft will present additional challenges in accommodating traffic at O'Hare. By expanding Concourse M to increase the number and size of gates in T5 and reconfiguring gates M1 through M6, Chicago Department of Aviation is enhancing O'Hare's ability to accommodate increased operations and increased passengers, as well as provide existing and new carriers access to Airport facilities. The 18 new passenger loading bridges included in the Project will provide access to the terminal for the reconfigured gates. The number of gates and the current configurations of the gates at O'Hare will continue to be a constraint on the ability for O'Hare to accommodate demand if the efficiencies that the Project is intended to create are not realized.

A barrier to new competition at O'Hare is the lack of available gates for new and existing domestic and international carriers. Currently, there are 19 aircraft gates at T5 and 190 aircraft gates at O'Hare. The addition of gates will allow O'Hare to accommodate anticipated demand for additional gates. Demand for the existing gates at T5 is 115 departures per weekday, as estimated in the July 2015 design day schedule, while demand for the expanded terminal during the same period in 2025 is forecast to be 265 daily departures.⁴ An expanded facility is needed to accommodate this increase in demand.

By moving airlines out of the Airport's domestic terminals and into T5, there is an opportunity to use exclusive use gates vacated by those airlines for additional service by existing and/or new carriers at O'Hare. The Project includes the reconfiguration of a second gate, gate M19, to accommodate Airbus A380 aircraft, which increases the range of aircraft that carriers can use to serve the Airport and allows those airlines with Airbus A380 aircraft greater flexibility in their fleet mix. The Project also increases the number of gates that can access the FIS facility, used by U.S. Customs and Border Protection (CBP) for processing arriving international passengers.

Additionally, baggage processing capabilities will be enhanced, with the addition of a non-FIS baggage claim device. Enhanced security capacity and efficiency will be provided with the expansion of the TSA screening checkpoint, which is planned to accommodate two additional lanes for $\text{Pre}\checkmark$ eligible passengers. Existing passenger security screening lanes underserve the existing demand and lack sufficient TSA $\text{Pre}\checkmark$ dedicated lanes at Terminal 5. Terminal 5 currently has no dedicated TSA $\text{Pre}\checkmark$ security screening lanes; however, four foreign flag carriers serving O'Hare have enrolled in the $\text{Pre}\checkmark$ program, and more are expected to follow. Additional passenger security screening lanes will provide additional security screening capacity and help to reduce delays caused by long lines occurring during peak periods at Terminal 5. Renovations and reconfiguration of FIS Primary and

⁴ Ricondo & Associates, Inc., Draft Terminal 5 M Extension Project Project Definition Document, July 2016.

Secondary Inspection areas will enlarge queuing areas and provide additional or relocated CBP functional spaces that will support the anticipated passenger activity.

Table 2 provides the estimated total cost of the International Terminal Expansion project.

Project Element	Project Cost
Civil Work	\$36,190,000
Terminal Construction	138,360,000
Terminal Interior Upgrades	3,410,000
Passenger Loading Bridge Relocations	300.000
New Passenger Loading Bridges	2,000,000
Subtotal Direct Construction Cost	180,260,000
Planning, Design, and Administration (18% of construction)	32,450,000
Total Project Cost (Excluding Contingencies)	212,710,000
Design Contingency (20% of construction)	36,060,000
Construction Contingency (10% of construction)	18,030,000
Total Project Cost	\$266,800,000

Table 2: International Terminal Expansion Project Costs

SOURCE: CARE +, June 2016.

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Detailed Financing Plan:

PFC Funds: Pay-as-you-go \$ 0 Bond Capital \$212,710,000 Bond Financing & Interest \$212,710,000

Subtotal PFC Funds: \$425,420,000

Existing AIP Funds: \$0

Subtotal Existing AIP Funds: \$0

Anticipated AIP Funds			
Fiscal Year:	Entitlement \$0	Discretionary \$0	Total \$0

Subtotal Anticipated AIP Funds: \$0

Other Funds:

State Grants \$0 Local Funds \$0 Other (please specify) - Future PFC Funding \$54,090,000⁵

Subtotal Other Funds: \$54,090,000

Total Project Cost: \$479,510,000

⁵ The project cost estimate includes \$36,060,000 in design contingency and \$18,030,000 in construction contingency (\$54,090,000 in total contingency), which have not been applied for in this PFC application. If design and/or construction contingencies are needed, the majority, if not all, of the costs is estimated to be PFC-eligible and the City will amend this PFC application in the future to include all PFC-eligible costs. Remaining costs that are not PFC eligible will be paid for with airport discretionary funds.

PFC AUTHORITY PROPOSED

Project Description	Proposed Amount Pay-Go	Proposed Amount Bond Capital	Proposed Amount Financing & Interest	Proposed Amount TOTAL
International Terminal Expansion Design Costs	\$0	\$32,450,000	\$32,450,000	\$64,900,000
International Terminal Expansion Construction Costs	\$0	\$180,260,000	\$180,260,000	\$360,520,000
Total	\$0	\$212,710,000	\$212,710,000	\$425,420,000

PFC TIMELINE

Air Carrier Notification DistributedJune 27, 2016Air Carrier Consultation MeetingJuly 28, 2016Air Carrier Comment DueAugust 27, 2016Proposed Date of Submission of Application to FAASeptember 2, 2016

1 2 CITY OF CHICAGO DEPARTMENT OF AVIATION 3 4 5 In the Matter of: 6 CHICAGO O'HARE INTERNATIONAL AIRPORT PASSENGER FACILITY CHARGE PROGRAM 7 AIR CARRIER CONSULTATION MEETING 8 TRANSCRIPT OF PROCEEDINGS had in the 9 10 above-entitled matter at Chicago O'Hare International Airport, Airport Administration Building, 10510 Zemke 11 Road, Chicago, Illinois, on Thursday, the 28th day of 12 July, 2016, commencing at 11:04 a.m. 13 14 PRESENT: 15 MS. RESHMA SONI Chief Financial Officer Chicago Department of Aviation 16 17 MR. JONATHAN LEACH Chief Operating Officer Chicago Department of Aviation 18 19 MR. MATTHEW J. DANAHER Director of Airline & Industry Relations 20 Chicago Department of Aviation 21 MR. MATT RUFFRA, via telephone MS. MARIA E. HICKS 22 MS. KRISTINA L. WOODWARD Ricondo & Associates 23 24

Page 2 PRESENT: (Continued) 1 2 MS. AMANDA ZANG, via telephone American Airlines 3 MR. JOE GABBERT 4 MS. PAMELA J. KOHL APCR, LLC 5 MR. BLAINE PETERS 6 Delta Air Lines 7 MS. AMY HANSON Environmental Specialist 8 MR. MIKE BROWN Airports Planner 9 Federal Aviation Administration 10 MR. TOM TRIANTOS J.A. Watts, Inc. 11 MS. BARBARA RAJSKA-KULIG 12 LOT Polish Airlines 13 MS. ISABELLE HERMAN Station Manager 14 Lufthansa German Airlines 15 MS. SANDRA WIDERBORG United Airlines 16 17 18 19 20 21 22 23 24

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1	Page 3 MS. SONI: Thank you, everyone, for joining us
2	today. We are going through the PFC Consultation
3	Meeting regarding the T5 Expansion Project,
4	International Terminal, also known as T5.
5	We have passed around a document going over
6	what we will be talking about today: The detailed
7	plan on financing, the proposed project, the
8	PFC authority, the timeline, and we've also forwarded
9	those documents, as well, to those on the phone.
10	I will turn it over to Jon to discuss the
11	details of the project for the International Terminal
12	Expansion.
13	And Jon is going through the PowerPoint
14	presentation.
15	MR. LEACH: Okay. Good morning, everybody.
16	Again, Jon Leach with the Chicago Department of
17	Aviation.
18	I'm going to walk through the project scope
19	for the T5 Expansion.
20	For those on the phone, I'll tell you what
21	slide I'm on.
22	We're going to start on Slide 2 here. The
23	Overview of the Project Scope.
24	The scope of this project is to expand

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1	Page 4 Terminal 5 by roughly 1,000 feet to the east, and
2	increase the overall gate frontage by approximately
3	25 percent.
4	The total floor area calculated on this is
5	about 280,000 square feet of new space. And we'll
6	get through some of those functions later in the
7	presentation.
8	It adds an additional A380 gate, and also
9	upgauges a lot of the existing wide body
10	international capable gates.
11	As part of this, we're also going to
12	replace the four hardstands that are at the
13	International Terminal, which sit in the footprint of
14	the actual terminal expansion itself.
15	Another component of the project is to
16	reconfigure Gates M1 through M6 to accommodate
17	potential domestic use. So in other words, we'd
18	reconfigure those to accommodate some narrow body and
19	regional aircraft.
20	And finally, M18 will get upgraded as well,
21	or there's some modifications to make that capable of
22	a 747-3.
23	The next slide.
24	Here you see the existing configuration.

1	Page 5 Later in the presentation, there is a table
2	which summarizes the gate counts.
3	But generally speaking, it's accepted that
4	T5 either accommodates 19 or 20 aircraft, depending
5	on who's there and the configurations.
6	And you see the four hardstands on the
7	east.
8	Also shown is the L-shaped building which
9	we commonly refer to as Lynx, Sky Chef to the north
10	of that, and Burlington just to the west of Sky Chef.
11	Those buildings all sit in the way, and are currently
12	in demolition.
13	Next slide.
14	So Slide 5 depicts the overall aircraft
15	parking layout for the T5 Expansion, as well as the
16	relocated hardstands.
17	When we go through this, we generally say
18	we're adding nine parking positions with the
18 19	we're adding nine parking positions with the expansion plus the upgauge to M18 shown over here.
18 19 20	we're adding nine parking positions with the expansion plus the upgauge to M18 shown over here. (Indicating.)
18 19 20 21	<pre>we're adding nine parking positions with the expansion plus the upgauge to M18 shown over here. (Indicating.) There we go. Slide 5 has a better</pre>
18 19 20 21 22	<pre>we're adding nine parking positions with the expansion plus the upgauge to M18 shown over here. (Indicating.) There we go. Slide 5 has a better color-coded aspect of that. But these are all of the</pre>
18 19 20 21 22 23	<pre>we're adding nine parking positions with the expansion plus the upgauge to M18 shown over here. (Indicating.) There we go. Slide 5 has a better color-coded aspect of that. But these are all of the aircraft that will be able to park on the expansion.</pre>

1	Page 6 Slide 6 highlights some of the other
2	project elements. We focused on some of the
3	hardstands. We do need to relocate Post 11.
4	We've got parking or staging for airline
5	equipment up there on the north, adjacent to the
6	ATS facility.
7	We're showing portions of the ramp that are
8	conflicted by the Runway Protection Zone for 22 Left.
9	And I believe that's actually going to be where we
10	may do snow piling.
11	Over on the west side of the terminal, what
12	I mentioned before, the M1 through M6 modifications.
13	You see the changes to the terminal over there to
14	accommodate, potentially, domestic carrier usage.
15	And then from M7 to M18, that reflects the
16	significant upgrades we're making to the gates, at
17	least the gauge that they can handle for
18	international traffic.
19	Next slide.
20	This is just a rendering. This was shown
21	at the announcement the other week. This does have
22	some debate on what this will look like. And through
23	the design process, that will evolve.
24	The application and/or the design task

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1	Page 7 order out on the street contemplates up to three
2	levels of the terminal.
3.	Another pretty picture on Slide 8 there.
4	Next slide.
5	All right. This was the table I was
, 6	referring to previously. On the left here, you've
7	got a table showing the two configurations of the
8	existing terminal and the total gate counts that can
9	be achieved in those configurations. Generally
10	speaking, 19 to 20 gates.
11	The 737 and the 767 capability will get
12	upgraded as we move into the proposed
13	reconfiguration.
14	We move from, at best, 20 gates on T2, with
15	an extra 737 position, to 28 positions.
16	I'm sorry, on T5. Not T2. T5.
17	The four hardstands remain the same.
18	You do see significant upgrades. Starting
19	with the 777s, we go from 3 positions to 8.
20	747-8 remains equal at 3.
21	And the 380 positions move from the 1 gate
22	we have at M11, today, to 2.
23	And then these positions here, the
24	Embraer 175 and the 737 are to accommodate those

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1	Page 8 potential domestic operations on Terminal 5.
2	So we have the domestic capability, as well
3	as the upgauge to some of the existing international
4	aircraft positions.
5	Next slide.
6	In addition to expanding the building,
7	we're looking at the scope of the project. It
8	contemplates additional improvements to the check-in
9	hall to accommodate the potential domestic airline
10 .	relocation and overall demand.
11	The scope also contemplates improvements to
12	passenger screening. That needs to be further
13	studied.
14	There could be an expansion to
15	Checkpoint 10, as well as during the design process,
16	we may look at other areas in the terminal which,
17	perhaps, could accommodate some screening lanes.
18	The project will add a second domestic bag
19	claim to the terminal to accommodate that potential
20	additional domestic use, as well as any pre-cleared
21	flights.
22	And then the concourse extension, as I
23	mentioned earlier, may be up to three levels,
24	depending on the final design. But generally

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1	Page 9 speaking, we'll have an apron level for airline
2	support facilities and operational space.
3	The lower level of that will connect to the
4	FIS, keeping a sterile corridor. The extension will
5	have room for passenger holdrooms, concessions,
6	airline lounges, and mechanical and utility space.
7	Slide 11.
8	The estimated cost for the terminal
9	expansion is \$267 million. That's both design and
10	construction.
11	The demolition of the existing structures
12	that I mentioned at the beginning, meaning Lynx,
13	Sky Chef, and Burlington, is not included in that
14	267 million. That was funded on a prior MII. And as
15	I mentioned, that work is underway.
16	MS. KOHL: Can it be part of this project?
17	MR. LEACH: What?
18	MS. KOHL: Can it be funded by PFCs, now that
19	you've chosen to use the area in this manner?
20	MR. LEACH: Can it? I guess we had not
21	contemplated that as part of the application. I
22	mean, at the time that we received the approval to
23	demo it, we get that we were still thinking about
24	what uses we'd have for it. We can chat internally

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1	about that.
2	The timeline here is to complete this
3	project within 36 months, more or less, from the
4	start of design.
5	To that end, we issued a task order for
6	design to our preexisting pool of architects earlier
7	this month. July 15, to be exact.
8	The demo to the existing structures, which
9	we touched upon, was started last month with
10	Lynx demo underway and remediation and Sky Chef
11	continuing.
12	We'd like to issue a notice to proceed to
13	the design team in September. The design team will
14	have two primary tasks. One, to put together a
15	sitework package to get started right away, and that
16	will be, really, to replace the hardstands on the
17	east where the existing Lynx footprint is. And up by
18	Sky Chef, so that we can take away the hardstands
19	that are currently utilized by the terminal. And
20	we'd need that work to begin in the spring, summer of
21	2017 in order to meet our schedule.
22	And then building construction would start
23	in 2018, with a completion date of 2019.
24	It's anticipated for the building

1	Page 11 construction, we will utilize a Construction Manager
2	At-Risk, a CM At-Risk, to complete the project.
3	Next slide.
4	Overall Project Benefits. I think we've
5	touched on a number of these, but we'll reiterate
6	them.
7	Again, this increases the number of gates
8	in Terminal 5 by 8 or 9, depending on the count, the
9	configuration. But it also increases the size of the
10	gates for international capacity.
11	The sort of sub-bullets here are important.
12	An average weekday in last year's peak month of
13	operations, the 20 gates at T5 accommodated
14	115 departures a day.
15	Our 10-year forecast shows we need to meet
16	265 departures per day. So we are building to meet
17	that anticipated demand.
18	We add another 380 gate to the terminal.
19	We then have domestic terminal gates
20	potentially to be vacated by other airlines,
21	providing us the opportunity to use those gates from
22	any airline that relocates over to Terminal 5 for
23	existing or new carriers to utilize.
24	And then increases the number again,

1	Page 12 T5, as we sit here today, is our only FIS facility,		
2	and it increases the amount of gates that can utilize		
3	that. In other words, additional international		
4	capability.		
5	Next slide. Oh, that's it.		
6	MS. SONI: Thank you, Jon.		
7	MS. HERMANN: Did you have something that the		
8	Airbus gates were included in there with the Boeings?		
9	MR. LEACH: Yes.		
10	MS. HERMANN: They just weren't outlined?		
11	MR. LEACH: Yes.		
12	MS. HERMANN: I figured. Okay. I just wanted		
13	to make sure.		
14	MS. WIDERBORG: You said there were going to be		
15	modifications to the existing bag system as well? Or		
16	just I wrote		
17	MR. LEACH: Just the domestic bag claim.		
18	MS. WIDERBORG: Is that the only thing on the		
19	baggage that you're anticipating?		
20	MR. DANAHER: There's an optimization program		
21	that's been approved that's going to go into effect		
22	soon.		
23	MR. LEACH: A separate optimization program with		
24	funding by the TSA. So that's ongoing. That's not		

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1	Page 13
2	We're just counting things that are
3	included in this scope.
4	But there are no more additional bag claims
5	to be added, other than the domestic one.
6	MR. TRIANTOS: No extra carriage or take-away
7	belts or anything that would move down from the end
8	of building now that you're proposing? No increase
9	in the capacity?
10	MR. LEACH: That, I think, we need to go through
11	as a part of the design process.
12	I mean, the designer we put together a
13	planning and development document for the designer to
14	take a look at. They've got to confirm some of those
15	assumptions in there. We may very well, through the
16	design phase, determine that those bag belts aren't
17	long enough, and we're going to have to think about
18	those modifications.
19	MR. TRIANTOS: Okay.
20	MR. LEACH: But that needs to be confirmed by
21	the designer.
22	MS. SONI: So just to recap the Air Consultation
23	Notice that was sent out at the end of June, the
24	project name is the International Terminal Expansion.

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1	Page 14 Our PFC collection levels remain at \$4.50.
2	Our Charge Effective Date was at
3	February 1, 2039.
4	Our Estimated Charge Expiration Date would
5	be January 1, 2042.
6	To walk through a little bit of the detail
7	of the project costs, if you'd turn to page 9 of the
8	handout.
9	Our total PFC funds, as Jon mentioned, are
10	266.8 million.
11	This is comprised of 180.3 million of
12	Direct Construction Costs.
13	32.5 million of Planning, Design, and
14	Administration.
15	Totaling the 212.7, as mentioned in the
16	letter.
17	There's an additional 54.1 million for
18	Contingency.
19	This is a preliminary amount and, thus, has
20	not been included in the PFC application request.
21	If needed, we will make an amendment to the
22	application to include it.
23	Including that amount, it comes out to
24	266.8 million.

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1	Page 15 If you turn to page 10, this is the	
2	Detailed Financing Plan for the project.	
3	As mentioned in the notice that went out,	
4	our Bond Capital would be 212.7 million.	
5	Bond Financing & Interest would be	
6	212.7 million.	
7	And total, we are looking at PFC funding of	
8	425.4 million.	
9	54.09 million is linked to design, out of	
10	this amount.	
11	And the 32.5 million that we had on the	
12	other page for capital, plus the 32.5 million for	
13	financing.	
14	360 million is construction. That is the	
15	180.3 million of capital plus the 180.3 million of	
16	financing, which totals up to the 425.4.	
17	Our timeline is on page 11.	
18	MS. KOHL: Excuse me, can I just ask what is the	
19	54,090 on the bottom of page 10 that would bring the	
20	total project cost of 479? Is that the additional	
21	MS. SONI: Contingencies.	
22	MS. KOHL: contingencies?	
23	MS. SONI: That's the contingencies.	
24	MS. KOHL: Okay, thank you.	

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	Page 16
1	MS. SONI: So the Notification was distributed
2	on June 27. Dated June 27.
3	Consultation Meeting is being held today,
4	July 28.
5	Air Carrier Comments are due by August 27.
6	And our Proposed Date of Submission of the
7	Application to FAA is September 2.
8	If there are any comments to submit, please
9	submit it to me. And my information was included in
10	the notification that went out.
11	MS. HERMANN: Is that just the acknowledgement
12	you wanted? Or additional comments?
13	MS. SONI: Any additional comments.
14	Any questions?
15	(No response.)
16	MS. SONI: Well, thank you for coming. And we
17	look forward to discussing this further with you.
18	Thank you.
19	(Meeting adjourned at 11:23 a.m.)
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3	REPORTER'S CERTIFICATE
4	
5	I, Laura L. Kooy, do hereby certify that I
6	reported in shorthand the proceedings of said hearing
7	as appears from my stenographic notes so taken and
8	transcribed under my direction.
9	IN WITNESS WHEREOF, I do hereunto set my
10	hand this 31st day of July, 2016.
11	
12	Jana 2. Kory
13	
14	Notary Public
15	CSR LICENSE NO. 084-002467
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NOTE ON CITY'S POST-CONSULTATION PERIOD DECISION TO APPLY FOR IMPOSE ONLY AUTHORITY FOR TERMINAL 5 EXPANSION CONSTRUCTION

At the time of the air carrier notification and public notice for the Terminal 5 Expansion (the Project), the City intended to apply for authority to impose a passenger facility charge (PFC) and use PFC revenue for design and construction of the Project. Impose and Use authority for the entirety of the Project (i.e. design and construction) is what was presented at the Air Carrier Consultation Meeting on July 28, 2016. Subsequently, the City has separated design from construction and is therefore requesting Impose and Use authority for the design portion of the Project and Impose Only authority for the construction portion of the Project at this time. The City will submit an application for the PFC Use authority on Project construction once the necessary regulatory approvals are complete. There have been no changes to the Project scope and plan of finance.



VIA E-MAIL and U.S. MAIL (773) 686-7635

August 26, 2016

Ms. Reshma Soni Chief Financial Officer City of Chicago – Department of Aviation 10510 West Zemke Road Chicago, IL 60666

RE: Airline Response to the Notice from Chicago O'Hare International Airport to Impose and Use Passenger Facility Charge Revenues (PFC's) for International Terminal Expansion at ORD.

Dear Ms. Soni:

United Airlines appreciates the opportunity to comment on the referenced application to be filed by the City of Chicago ("City") with the Federal Aviation Administration ("FAA") to impose and use PFCs pursuant to the Federal Aviation Regulation ("FAR") Title 14, CFR, Part 158 at Chicago O'Hare International Airport ("Airport").

United hereby submits its written Certification of Agreement/Disagreement as to the project referenced in the City's notice of June 27, 2016 as presented and discussed at the consultation meeting on July 28, 2016.

It is our understanding that PFC eligible projects, by stature, are those that preserve or enhance the safety, capacity, or security of the national air transportation system; reduce airport noise or mitigate noise impacts ' or enhance competition among air carriers. Further, we understand that the regulations include assurances with respect to Rates, Fees and Charges (15-13 Assurance 8) (c) Notwithstanding the limitation provided in subparagraph (b), with respect to a project for terminal development, gates and related area, or a facility occupied or used by one or more carriers or foreign air carriers on an exclusive or preferential basis, the rates, fees, and charges, payable by such carriers that use such facilities will not be less than the rates, fees and charges paid by such carriers using similar facilities at the airport that were not financed by PFC revenue.

Project: International Terminal Expansion Cost: \$425,420,000 PFC Funding: \$425,420,000 Position: Conditional Certification of Agreement

Comments:

United supports the International Terminal expansion, but does not necessarily agree that PFCs are the best source of funding for this project. However, United has no disagreement provided that such action has no negative operational impact to the signatory carriers, and the rates, fees, and charges, payable by such carriers that use the International Terminal will not be less than the rates, fees and charges paid by such carriers using similar facilities at the airport that were not financed by PFC revenue.

This concludes United's comments and certification of agreement/disagreement regarding the City's proposed PFC application.

Sincerely,

Peter Froehlich Managing Director, Corporate Real Estate United Airlines, Inc.

CC: FAA Great Lakes Region FAA/ADO S. Widerborg – UA CRE 1111

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ATTACHMENT D

REQUEST TO EXCLUDE CLASS OF CARRIERS

This section contains the following information:

Page D - 2 Excerpt from the Notification Letter on June 27, 2016 that updated the carrier class to be exempted from charging a PFC at O'Hare International Airport.

Section 158.23(a)(3). Request that a Class of Carriers not be Required to Collect PFCs.

The following is information required specifically for the proposed impose and use application above.

- (i) <u>Class Designation</u>: Air Taxi
- (ii)/(iii) <u>Names of Known Carriers Belonging to Class Identified in this Section and</u> Estimated Number of Annual Enplaned Passengers:

<u>Carrier</u>	2014 Enplanements
Averitt Air, Inc.	1
Better Living Aviation, Inc.	9
Flexjet Llc	110
Ultimate Charters LLC	155

Total

275 Source: ACAIS Database.

Accessed June 2, 2016.

(iv)

Reasons for Requesting that Carriers Identified in this Section Not be Required to Collect the PFC: The number of passengers enplaned annually by this class of carriers represents fewer than one percent of total enplanements at O'Hare. The estimated annual PFC revenue from these carriers would be approximately \$1,207 as compared to the estimated PFC revenue of \$148,571,433 from all other carriers. In accordance with Section 158.11 of FAR Part 158, the City may request of the FAA in its application for authority to impose PFCs, and in its application for authority to use PFCs, that collection of PFCs by any class of air carriers or foreign air carriers not be required if the number of passengers enplaned by the carriers in this class constitutes no more than one percent of the total number of passengers enplaned annually at the airport at which the PFC is imposed. This is the case with the class of carriers identified herein.

This is the same class that was already approved for exemption by FAA (See June 28, 1993 Record of Decision, p.26). Information on known carriers belonging to the class has been updated to reflect the Department of Transportation (DOT) Air Carrier Activity Information System Report for calendar year 2014, the most recent report available to the City.

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ATTACHMENT G: AIRPORT LAYOUT PLAN (ALP), AIRSPACE, AND ENVIRONMENTAL FINDINGS

ALL PROJECTS FOR WHICH <u>IMPOSE AND USE OR USE AUTHORITY</u> IS REQUESTED IN THE APPLICATION MUST BE LISTED UNDER EACH TYPE OF FINDING BELOW.

I. ALP Findings

1. Current ALP approval date: September 20, 2005 List proposed project(s) shown on this ALP:

2. List proposed project(s) not required to be shown on an ALP:

Terminal 5 Expansion – Design Project

*****FOR FAA USE Public agency information confirmed? YES [] PARTIALLY [] NO [] For each project which the ADO/RO disagrees with the public agency's finding, discuss the reason(s) for the FAA's nonconcurrance below.

- II. <u>Airspace Findings</u>
 - FAA Airspace finding date (repeat as necessary): List proposed project(s) covered by this finding:
 - 2. List proposed project(s) not required to have an airspace determination

Terminal 5 Expansion – Design Project

- III. Environmental Findings
 - 1. List proposed project(s) which are categorically excluded from the requirement for formal environmental review:

Terminal 5 Expansion – Design Project; CATEX letter, dated October 6, 2016, is attached to this Attachment G

- Date of FAA environmental record of decision: (repeat as necessary) List proposed project(s) covered by this finding:

*****FOR FAA USE Public agency information confirmed? YES [] PARTIALLY [] NO [] For each project which the ADO/RO disagrees with the public agency's finding, discuss the reason(s) for the FAA's nonconcurrance below.

Application Reviewed by:

Name

Routing Symbol

Date



of Transportation Federal Aviation Administration Great Lakes Region Illinois, Indiana, Michigan, Minnesota, North Dakota, Ohio, South Dakota, Wisconsin Chicago Airports District Office 2300 East Devon Avenue, Suite 201 Des Plaines, Illinois 60018

October 6, 2016

Mr. Aaron Frame Deputy Commissioner Chicago Department of Aviation 10510 W. Zemke Road PO BOX 66142 Chicago, IL 60666

Dear Mr. Frame:

The purpose of this letter is to notify you that the proposed Terminal 5 Extension Design was reviewed in accordance with the National Environmental Policy Act (NEPA).

Under NEPA, the Federal Aviation Administration is required to take into account environmental considerations when authorizing or approving major actions. Based on the review of the actions described above, the undersigned has determined that the proposed actions are specifically categorically excluded. They fall within the specific items identified in FAA Order 1050.1F, Chapter 5. Advisory and Emergency Actions and Categorical Exclusions and are normally categorically excluded from the requirement for formal environmental assessment when extraordinary circumstances are not present:

5-6.1.0 *Issuance of grants that do not imply a project commitment, such as airport planning grants, and grants to states participating in the state block grant program.*

Please note that this transmittal is a notification that this project was cleared environmentally only. This is not a notice of final project approval or funding availability.

Please feel free to contact me with any questions or concerns at (847) 294-7354.

Sincerely,

Any b. Hanson

Amy B. Hanson Environmental Specialist

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ATTACHMENT I

ADDITIONAL INFORMATION

This section contains the following information:

Page I - 2 The Terminal 5 Concourse M Extension Project Definition Document, prepared by Ricondo & Associates, Inc. for the City of Chicago in August 2016.

O'Hare International Airport

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Terminal 5 Concourse M Extension Project Definition Document

PREPARED FOR:

 City of Chicago – Department of Aviation

PREPARED BY: RICONDO & ASSOCIATES, INC.



CONFIDENTIAL – DRAFT – PREDECISIONAL
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1. Introduction and Overview

Long-term planning to deliver major expansion of terminal and gate capacity at Chicago O'Hare International Airport (ORD or the Airport) is underway; however, additional near-term capacity is needed to facilitate continuous traffic growth in an efficient manner while also providing long-term flexibility for redevelopment of existing passenger terminals. Consequently, several very short-term terminal projects are being planned in coordination with the long-term planning effort, including:

- Relocation of non-hubbing domestic airlines from Terminal 3 (T3) to Terminal 2 (T2) to better utilize existing terminal and landside processing capacity
- Construction of five new gates on Concourse L at Terminal 3 (T3)
- Terminal 5 (T5) Concourse M extension

This Project Definition Document (PDD) addresses the Terminal 5 Concourse M Extension (the Project). The PDD has been developed to provide guidance to the Design Team concerning the Project's goals and objectives as well as the programmatic facility requirements for airside, terminal, and landside improvements. Further, the PDD conveys operational considerations that are important for delivering the desired improvements to near-term facility capacity and capabilities, improving passenger and tenant satisfaction, maintaining ongoing Terminal 5 (T5) operations during construction, and safeguarding future operational resiliency for long-term development. Ultimately, the Design Team, in collaboration with the City of Chicago Department of Aviation (CDA) and its stakeholders, will refine the Project's program using guidance provided by the PDD.

The PDD is organized into the following sections:

- Section 1: Introduction and Overview provides a synopsis of the Project goals, objectives and scope.
- Section 2: Basis of Design describes the activity level used to derive the Project's functional program requirements.
- Section 3: Existing Conditions describes the Project site and building conditions, including on-going planning and previously announced/approved projects related to or changing T5's current condition.
- Section 4: Indicative Concepts describes representative concepts that accommodate the Project's program and convey considerations that should be given to operational resiliency and passenger experience as part of detailed design.
- Section 5: Project Implementation describes enabling works that will be undertaken by others to

prepare areas of the site for the Project and the recommended framework for developing the detailed phasing plan for the Project.

• Section 6: Additional Considerations identifies key issues related to the Project that are currently being addressed by the CDA.

1.1 Overview of the Airport and Terminal 5

Chicago O'Hare International Airport is one of the busiest airports in the world by the number of takeoffs and landings and the number of passengers. American Airlines and United Airlines operate connecting passenger hubs from ORD and together represent the largest share of the Airport's passenger and operations traffic. The Airport has direct service to more than 200 destinations, including 60 foreign destinations. ORD is the primary airport serving the Chicago metropolitan area, with Chicago Midway International Airport serving as a secondary airport. Both airports are operated by the CDA.

Exhibit 1.1-1 shows an aerial view of the Airport. The Airport is located approximately 18 miles northwest of the Chicago Loop and is connected to Chicago by train using the Chicago Transit Authority (CTA) Blue Line, which operates 24 hours a day. Transit time between the Loop and the Airport is approximately 40 minutes. Additionally, the Airport is connected to the regional rail network (Metra's North Central Service linking downtown Chicago to Antioch via ORD) and served by a variety of regional bus companies.

There are four terminals connected to nine concourses and 189 gates¹:

- **Terminal 1** accommodates United Airlines, a portion of United Express (regional) operations, and Lufthansa and All Nippon Airways, both of which are Star Alliance member airlines alongside United Airlines. Terminal 1 supports 50 gates on Concourses B and C.
- **Terminal 2** accommodates United Express, Air Canada, and Delta Air Lines. Terminal 2 supports approximately 43 gates on Concourses E and F.
- **Terminal 3** accommodates American Airlines, domestic airlines un-affiliated with the American and United Airlines hubs, and select American Airlines partners, including Oneworld Alliance members Air Berlin, Iberia, and Japan Airlines as well as codeshare partner Alaska Airlines. Terminal 3 supports 76 gates on Concourses G, H, K, and L.

For purposes of this PDD, a gate is defined as an active parking position that is accessed through the terminal building either via a passenger loading bridge or through other means.



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Terminal 5 accommodates all international arrivals—excluding flights originating at airports with a U.S. Customs and Border Protection (CBP) Preclearance facility—and departures for all foreign flag airlines other than those specifically listed above. Terminal 5 is the only terminal with a CBP Federal Inspection Services (FIS) facility and supports 20 gates on Concourse M. While predominately used for international activity, Terminal 5 is also capable of accommodating domestic flights and has done so sporadically since it opened in 1993.

As shown in Exhibit 1.1-1, Terminal 5 is physically located in a separate area from Terminals 1, 2, and 3, all of which are located contiguously in the central terminal area. Intra-airport transportation is provided by the Airport Transit System (ATS), which is a 2.5-mile-long landside automated people mover that operates 24 hours a day. The ATS connects all four terminals, the CTA Blue Line station, and surface car parking facilities located outside of the terminal areas. The ATS is in the process of being extended in order to facilitate access between all passenger terminals and the new Multimodal Facility currently under construction. When complete, the Multimodal Facility will accommodate a consolidated rental car facility, public parking, and connections to off-Airport shuttles, regional buses, and the Metra station. The Airport does not currently provide an airside shuttle service between the central terminal area and Terminal 5; however, select airlines fund a shuttle bus between Terminal 3 and Terminal 5 for their passengers only to transfer from a domestic flight to an onward international departure.

Upon opening, Terminal 5 immediately strengthened ORD's position as a mid-continent international gateway and connecting hub. Past planning and environmental studies have considered further terminal and gate expansions in the areas immediately adjacent to Terminal 5. Most notably, proposed Terminal 6, which was included as part of the World Gateway Program (approved in 2002) and the follow-on O'Hare Modernization Program (approved in 2005), included additional aircraft gates to the east of Terminal 5.

In 2015, the Airport accommodated 74.1 million passengers, of which approximately 6.8 million passengers used Terminal 5. Several recent projects have improved the capacity, capability, and service levels of Terminal 5, including:

- Automated Passport Control Terminal 5 was the first U.S. airport to offer the Automated Passport Control (APC) program. Since implementing the APC program, Terminal 5 offers several alternatives to streamline FIS clearance for arriving international passengers, including: Global Entry, 1-Stop, and Mobile Passport Control (MPC).
- Concessions Expansion In 2014, Westfield Concession Management opened its redevelopment of the Terminal 5 concession program at a cost of approximately \$26 million, which included 16,000 square feet of additional space created for concessions, relocating the predominant share of concessions to the airside, and shifting the Transportation Security Administration (TSA) security screening checkpoint to create a walk-through duty-free shop experience.
- Airbus A380 Gate Reconfiguration Gate M11 was modified to support A380 operations using dual passenger loading bridges.

More detailed descriptions of Terminal 5's terminal apron capabilities and the internal functional arrangement of the terminal building are provided in Section 3 of this PDD.

1.2 Project Goals and Objectives

The overriding goal for the Terminal 5 Concourse M Extension project is to reduce congestion and delays that result from gate and terminal capacity limitations by expanding and modifying Terminal 5. The Project will provide incremental capacity and independent utility to accommodate short-term growth while ongoing planning studies explore longer-term terminal expansion and redevelopment opportunities. The principal objectives for the Project, as listed below, are independent of the outcome of these ongoing planning studies.

- Extend Concourse M to accommodate eight net additional widebody aircraft gates
- Accommodate the relocation of domestic non-hubbing airline(s) from the central terminal area to T5 alongside forecast growth in international activity
- Create operational resiliency and improve operational flexibility to relocate airlines and aircraft between the central terminal area and T5
- Balance the timing of improvements between needs and costs, emphasizing the reuse of existing facilities where possible
- Provide timely delivery of additional near-term capacity to alleviate anticipated capacity constraints associated with projected airline activity growth

An associated goal for the Project is to minimize the impact for all airlines during the execution of the Project, including consideration of the duration that gates need to be taken out of service to facilitate construction activities.

1.3 Program Scope

Ricondo & Associates developed an aviation activity forecast in late 2015 along with Design Day Flight Schedules (DDFSs) representative of an average weekday during the busiest month of activity at the Airport to be used to support facility planning. The activity basis for the Project is the DDFS representative of 2025 demand for airline activity proposed to operate from T5.

Changes to the T5 site as a result of the Project can be identified by comparing **Exhibit 1.3-1**, which illustrates the Pre-Phase site condition, to **Exhibit 1.3-2**, which illustrates the site condition upon the Completion Phase. The Pre-Phase site condition represents site conditions following completion of enabling projects to demolish the former Lynx Cargo Building and former Sky Chef Flight Kitchen. Both enabling projects began in summer 2016.





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The Project includes the following components and considerations:

- Airside
 - New pavement, aircraft parking aprons, remote aircraft parking stands, service roads, and apron taxilanes
 - Reconfigured existing aircraft parking positions at Gates M1–M6 to provide eight regional jet and narrowbody aircraft gates and associated passenger loading bridges
 - Extension of Concourse M to the east to provide eight net new widebody aircraft parking positions and associated passenger loading bridges, including a second A380 gate position served by dual passenger loading bridges
 - Ancillary equipment for new aircraft gates and remote aircraft parking stands, including hydrant fueling systems and on-gate deicing provisions.
 - New triturator building
 - New Guard Post 11 and perimeter fence
 - New blast fence
 - Hydrant Fueling System
 - Terminal 5 and Concourse M
 - Check-in hall reconfigurations to accommodate additional airline activity
 - Expansion of the TSA screening checkpoint to accommodate two additional lanes and allow introduction of expedited screening (TSA Pre√) lanes to be used by eligible passengers
 - Provisions for additional airline exclusive-use facilities including premium lounge(s), customer service facilities, and operational areas (e.g., offices) to accommodate additional airline activity
 - Expansion of domestic bag claim to further expand capability to accommodate widebody aircraft arrivals from CBP Pre-clearance airports and additional domestic non-hubbing airline activity at T5
 - Extension of Concourse M to provide gate lounges to support eight net new widebody aircraft parking positions, an expanded sterile corridor system to provide access between new gates and the FIS, and associated passenger circulation, amenity, and building support system areas
 - Modifications to airline outbound bag makeup to accommodate additional airline activity and increased flight operations resulting from the addition of aircraft parking positions
 - Renovating and reconfiguring FIS Primary and Secondary Inspection areas to enlarge queuing areas and to provide additional or relocated CBP functional spaces
 - Relocation of Gate M5 segregated holdroom (refugee holdroom) capabilities
 - An airside transfer bus station and associated vertical circulation
 - A supplemental ramp control facility

- Landside
 - Minor adjustments to the curbsides and associated allocation to optimize capacity and functionality

1.3.1 RELATED AIRPORT PROJECTS

Several planned or ongoing projects are outside the scope of this PDD. However, the projects listed below (and described in additional detail in Section 3.2) are related to or help facilitate the Terminal 5 Concourse M Extension project.

- Terminal 5 Checked Baggage Inspection System improvements
- Site and ancillary building demolition
- Extension and upgrades to the Airport Transit System (ATS)Parking capacity improvements
- New hotel development
- Centralized Deicing Pad

1.3.2 OUTSTANDING ISSUES

This PDD defines the scope and relationship of the Project's program elements in relation to stated goals and objectives listed in Section 1.2. High-level planning criteria used to develop the scale and types of facilities described for the Project are consistent with stakeholder input for the long-term terminal area development program. As part of design phase efforts, programming refinement in collaboration with the Project's stakeholders, including CDA, airlines that currently operate from T5 as well as those proposed to relocate to Terminal 5, the concession program developer (Westfield), and federal agencies (e.g., CBP and TSA) should be undertaken to refine and validate the PDD program.

1.4 Implementation Strategy

Several enabling works that began in summer 2016 and are being undertaken by others will prepare areas of the site for the Project. The condition resulting from these enabling works is referred to as the Pre-Phase. Enabling projects, described in detail in Section 5.2, include demolition of the former Lynx Cargo Building, demolition of the former Sky Chef Flight Kitchen, and rough grading work to prepare both sites to a construction ready state.

The Project itself is currently envisioned to involve three phases; however the final construction phasing will be determined by the designer and construction manager. As currently envisioned, the Project's implementation strategy can summarily be described by the following:

- Pre-Phase (by others) The first phase of the Project implementation is the Pre-Phase condition, which represents the enabling projects that will be implemented before Phase 1 of the Project's construction work can begin east of the existing Terminal 5 hardstand positions on the site of the former Lynx Cargo Building and former Sky Chef Flight Kitchen.
- **Phase 1** Construction of new apron pavement, demolition of existing taxiway connector pavement, installation of two blast fences, construction of the new triturator building, widening of existing roadway, and construction of the relocated Guard Post 11 building and associated queuing lanes.
- **Phase 2** Construction of the terminal extension, the remaining section of new apron pavement, and installation of the remaining blast fence sections. Prior to Phase 2 construction, Gates M18 through M21 should be repositioned and the airline cargo storage area should be relocated. The Airfield Operations Area (AOA) fence should also be realigned to maximize available landside work area. The relocated Guard Post 11 can then become the active airside access point.
- Completion Phase The Project becomes active along with the corresponding relocated Gate M18 and new widebody Gates M19 through M27. The gates on the west end of Terminal 5 Concourse M are repositioned to accommodate regional jet and narrowbody aircraft and renumbered accordingly.

2. Basis of Design

2.1 Aeronautical Demand

2.1.1 ANNUAL PASSENGER FORECASTS OVERVIEW

Ricondo & Associates an aviation activity forecast in late 2015 to guide facility planning for the Airport. The forecast considered industry and economic changes that are likely to affect future Airport activity, including:

- Recent hub re-banking by American Airlines and United Airlines
- Airline consolidation
- Growth of non-hub domestic airlines, including low-cost carriers, at the Airport
- Evolution of competing connecting hubs and international gateways

Preparation of the forecast was not constrained by the condition of the Airport's infrastructure. In addition, Ricondo & Associates prepared future Design Day Flight Schedules (DDFSs) representative of an average weekday during the busiest month of activity at the Airport to be used to support facility planning. The activity basis for the Project is the DDFS representative of 2025 demand for airline activity proposed to operate from T5. **Table 2.1-1** summarizes the overall Airport forecast for enplaned passengers in 2025 compared to actual 2015 enplaned passenger statistics.

2.1.2 COMMERCIAL PASSENGER AIRCRAFT OPERATIONS FORECAST

A commercial passenger aircraft operations forecast was developed to accompany the enplaned passenger forecasts. Historical trends pertaining to domestic and international passenger operations at the Airport were analyzed separately. Airline-specific assumptions were developed regarding future average aircraft size, load factor performance, and completion rates considering industry and airport-specific trends. Assumptions were then applied to forecasts of passenger growth, resulting in airline-specific passenger operations in an unconstrained environment (assuming no airside or landside constraints). **Table 2.1-2** compares the overall Airport annual passenger aircraft operations forecast for 2025 to actual 2015 data.

ENPLANED PASSENGERS	2015	2025
Domestic		
O&D	16.3 M	20.2 M
Transfer	14.9 M	18.3 M
Sub-total	31.2 M	38.5 M
International		
O&D	3.0 M	3.8 M
Transfer	2.9 M	3.7 M
Sub-total	5.9 M	7.5 M
Total		
O&D	19.3 M	24.0 M
Transfer	17.8 M	22.0 M
Total	37.1 M	46.0 M

Table 2.1-1: Overall Airport Enplaned Passenger 2025 Forecast

NOTE Totals may not add due to rounding.

SOURCE Ricondo & Associates, Inc., analysis, January 2016

PREPARED BY. Ricondo & Associates, Inc., June 2016.

Table 2.1-2: Overall Airport Commercial Aircraft Operations 2025 Forecast

	2015	2025
Passenger Aircraft Operations		
Domestic	769,300	812,000
International	90,100	101,200
Total	859,400	. 913,200
Passengers per Operation		
Domestic	81	95
International	130	148
Combined Average	86	100

NOTE. Totals may not add due to rounding.

SOURCE. Ricondo & Associates, Inc., analysis, January 2016.

PREPARED BY Ricondo & Associates, Inc., June 2016.

2.1.3 FLEET MIX FORECAST

Aircraft seat configurations were maintained in the forecast for existing airline fleets and configurations for airlines that have announced or are in the process of reconfiguring aircraft seats were informed by those plans. Existing airline fleets were analyzed for incumbent and entrant airlines.

The future fleet mix takes into account current order books for all airlines based on:

- Publicly available orders (sourced from press releases, manufacturer data, airline 10K filings, etc.) that were evenly distributed by year after considering the order size and publicly stated delivery dates.
- Best-fit delivery assumptions that were used when specific delivery schedules were not available.

Aircraft retirements were assumed to occur when aircraft age reached 25 years and were rounded up to a maximum age of 30 years². The distribution of aircraft orders year-to-year was based on replacement aircraft delivery schedules and an estimated number of entries/retirements for a particular fleet type in a single year.

Aircraft gauge increased over the forecast period with the retirement of 50-seat regional jets. The growth rate in average seats for hub airlines was 1.4 percent compound annual growth rate (CAGR), which is the same growth rate observed for the period 2015–2025 based on the aircraft orders/retirements analysis. Similar fleet assumptions were used for non-hub airlines. **Table 2.1-3** summarizes the overall annual fleet mix forecast for the Airport.

-	DOM		INTERNA	TIONAL					
SEAT CAPACITY RANGE	2015	2025	2015	[.] 2025					
0-50	34.9%	20.4%	11.7%						
51-100	23.6%	27.0%	19.4%	24.1%					
101–140	10.1%	16.2%	4.0%	3.9%					
141–178	27.5%	16.1%	19.1%	21.0%					
179–200	3.2%	18.6%	4.3%	6.6%					
201–250	0.4%	1.6%	12.7%	14.4%					
250-300		0.2%	18 9%	21.4%					
301+	0.3%		10.0%	8.6%					

SOURCE: Ricondo & Associates, Inc., analysis, November 2015.

PREPARED BY Ricondo & Associates, Inc , June 2016.

² Source: http://www.airfleets.net was used as the primary source of individual airframe age.

2.1.4 2025 DESIGN DAY FLIGHT SCHEDULE

The DDFS was developed to correlate with the annual enplaned passenger forecast. The July 2015 schedule reflective of the average day in the peak month was used as the baseline for developing future DDFSs associated with future annual activity volumes. The DDFS represents the activity of an average weekday in the peak month (AWDPM) that correlates to an annual commercial passenger forecast. Flight information for airlines proposed to operate from T5 was extracted from the overall Airport's 2025 DDFS, which included information on a flight-by-flight basis for time of aircraft arrival or departure, operating airline, aircraft type, domestic/international designation, points of origin and destination (airport codes), seat capacity, load factor, and originating/terminating passenger percentages. Terminal facility needs are principally assessed on the basis of peak hour passenger demand (the hour in the day that has the greatest passenger activity) and flight scheduling patterns (how the airlines distribute their flights), rather than on annual activity (the total passengers a terminal processes for the year).

T5 2025 Design Day Flight Schedule

Table 2.1-4 summarizes data, pertaining to peak annual, design day, and peak hour operations, derived from analysis of the 2025 DDFS for airlines proposed to operate from T5; passenger activity is similarly summarized in **Table 2.1-5**.

Table 2.1-4: Terminal 5 Aircraft Operations – 2015 and 2025										
			2015				2025			
	INTERM	ATIONAL			INTERM	NATIONAL				
	U.S. FLAG	FOREIGN FLAG	DOMESTIC	COLLECTIVE ^{1/}	U.S. FLAG	FOREIGN FLAG	DOMESTIC	COLLECTIVE		
Annual Operations	29,010	43,592		72,602	32,272	54,279	. 39,060	125,611		
Design Day Operations	40	75		115	45	- 94	126	265		
Peak Hour Operations										
Arrivals	8	9		12	⁵ 8	9	7	18		
Departures	0	6		6	0	6	6	9		

SOURCE Ricondo & Associates, Inc., analysis, January 2016.

PREPARED BY. Ricondo & Associates, Inc., June 2016

			2015 ·				2025	
	INTERN	ATIONAL			INTERN	ATIONAL		
,	U.S. FLAG	FOREIGN FLAG	DOMESTIC	COLLECTIVE ^{1/}	U.S. FLAG	FOREIGN FLAG	DOMESTIC	COLLECTIVE ^{1/}
Total Airport Annual Passengers		74.	1 Million			92.	0 Million	
Annual Passengers								
Enplaned Passengers	0	1,860,000	0	1,860,000	20,530	2,300,490	1,909,690	4,230,710
Deplaned Passengers	2,170,400	2,483,650	0	4,654,050	2,839,890	3,153,020	1,909,690	7,902,600
Precleared	0	254,670	0	254,670		252,240		252,240
Design Day								
Enplaned Passengers	0	6,580	0	6,580		8,110	6,280	14,390
Deplaned Passengers	7,140	9,850	0	17,000	9,360	12,500	6,260	28,120
Precleared	0	1,010	0	1,010		1,000		1,000
Design Day Peak Hour				·				
Enplaned Passengers	0	1,150	0	1,150		1,270	660	1,630
Deplaned Passengers	1,630	1,990	0	2,640	1,770	2,260	690	3,630
Precleared	0	360	· 0	360		360	0	360

Table 2.1-5: Terminal 5 Passenger Activity - 2015 and 2025

NOTE:

1/ T5 airlines as a group. The total peak represents the combined overall peak and is different to the addition of individual component peaks

SOURCE Ricondo & Associates, Inc., analysis, January 2016.

PREPARED BY Ricondo & Associates, Inc., June 2016.

Exhibit 2.1-1 and **Exhibit 2.1-2** represent the diurnal pattern of activity for domestic passengers and international passengers, respectively, who are arriving and departing from T5. The discrepancy between arriving and departing international passengers reflects U.S. flag airline international operations wherein their flights arrive at T5 to deplane passengers for FIS clearance, but the aircraft are towed to the central terminal area for departure.



NOTE: Flights arriving at Terminal 5 but towed to the central terminal area for departure are not shown

SOURCE: Ricondo & Associates, Inc , analysis, January 2016

PREPARED BY: Ricondo & Associates, Inc., June 2016

2.2 Airfield Requirements

2.2.1 DESIGN AIRCRAFT

Determination of the design aircraft enables planners and engineers to design an airfield to accommodate the operational requirements of the fleet currently or expected to operate at the Airport, while simultaneously complying with national safety standards for separation and geometric design. The Airplane Design Group (ADG) of the design aircraft is used to determine the required separation between runways, taxiways, and fixed or movable objects. The Taxiway Design Group (TDG) of the design aircraft governs the taxiway width and fillet design.

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, defines the design aircraft as "the most demanding aircraft with at least 500 annual operations that operates, or is expected to operate, at the Airport." The O'Hare Airport Layout Plan (ALP), approved by the FAA in September 2005, lists the existing critical design aircraft as the Boeing B747-400, an ADG-V/TDG-6 aircraft. The future critical design aircraft is listed as the Airbus A380, an ADG-VI/TDG-7 aircraft.

The existing Terminal 5 apron and International Taxilane were initially constructed to accommodate ADG-V aircraft, prior to the existence of ADG-VI aircraft. Various constraints, including taxiway separation and apron depth, prohibit improvements to the existing Terminal 5 area in order to achieve full ADG-VI standards. ADG-VI aircraft currently operate in the vicinity of Terminal 5 under FAA-approved Modifications to Standards (MTS).

Due to the constraints associated with ADG-VI/TDG-7 standards, the Project should be designed to accommodate ADG-V/TDG-6 aircraft. A MTS for ADG-VI/TDG-7 aircraft to operate within the newly constructed portions of taxilane and apron associated with the Project is not anticipated. However, it is expected that ADG-VI/TDG-7 operations could continue to be accommodated on the portions of existing Terminal 5 apron and existing International Taxilane already operating under approved MTS.

2.2.2 TAXILANE DESIGN

The existing International Taxilane was constructed when geometric taxiway design was based on ADG. However, ADGs are defined by wingspan and tail height, which may not correlate to the ground maneuvering characteristics of an aircraft. As a result, the FAA implemented TDG in 2014. TDGs determine taxiway/taxilane width, shoulder width, fillet characteristics, and taxiway/taxilane centerline radii based on the main gear width and cockpit-to-main-gear distance of an aircraft.

The change in criteria for the geometric design of taxiway/taxilane pavement means that some elements of the existing International Taxilane between Taxiways D2 and D6 do not conform to current design standards. However, the proposed portion of the International Taxilane associated with the Project (east of Taxiway D6) should meet full ADG-V/TDG-6 standards as outlined in FAA AC 150/5300-13A, Change 1, *Airport Design*.

The proposed new portion of the International Taxilane, along with crossover Taxiways D7 and D8 connecting International Taxilane with Taxiway D, should be designed to ADG-V/TDG-6 standards. The new taxilane and crossover taxiways should be 75 feet in width and constructed of Portland cement concrete (PCC) with stabilized shoulders of 30 feet in width and constructed of bituminous pavement.

The new portion of the International Taxilane should begin east of the intersection of the existing International Taxilane with existing Taxiway D6. In order to meet ADG-V separation standards, the taxilane should continue parallel to Taxiway D at the current taxiway-to-taxilane separation standard of 267 feet. A 214-foot-wide taxilane safety area and 276-foot-wide taxilane object-free area (OFA), both centered on the taxilane centerline, should also be provided.

Proposed crossover Taxiways D7 and D8 should also conform to ADG-V/TDG-6 standards. The centerline of Taxiway D7 should be located perpendicular to the International Taxilane and Taxiway D at the centerline location of previous Taxiway D7, prior to its closure. The centerline of Taxiway D8 should be located 324 feet east of Taxiway D7, providing for ADG-VI separation between the two crossover taxiways.

The FAA has set forth the method to determine appropriate taxiway fillets. Curves and intersections should be designed for cockpit-over-centerline steering to enable rapid movement of aircraft traffic with minimal risk of aircraft excursions from the pavement surface. FAA AC 150/5300-13A, Change 1, *Airport Design*, dictates that pavement fillets at taxiway intersections should be designed for the entire selected TDG and must accommodate all aircraft of lesser TDGs. Therefore, new pavement fillets associated with the Project must accommodate all TDG-6 and smaller aircraft. The FAA provides standard fillet dimensions for taxiway intersections with standard angles of 30, 45, 60, 90, 120, 135, and 150 degrees. Where standard angles are not feasible, turning movements must be modeled using computer-aided design (CAD) software to ensure that the design group taxiway edge safety margin is maintained.

2.2.3 PAVEMENT DESIGN

All aircraft pavement associated with the Project, including the proposed apron areas and International Taxilane extension, should be designed to accommodate all ADG-V/TDG-6 aircraft at maximum gross takeoff weight (MGTOW) in accordance with the most current version of all applicable FAA ACs, as well as be presented to the CDA for review and comment, since there has been some deviation from standard FAA pavement design on recent airfield projects associated with the O'Hare Modernization Program (OMP). The FAA standard documents that should be referenced include:

- FAA AC 150/5300-13A, Change 1, Airport Design
- FAA AC 150/5370-10G, Standards for Specifying Construction of Airports
- FAA AC 150/5320-6E, Airport Pavement Design and Evaluation
- FAA AC 150/5360-13, Planning and Design Guidelines for Airport Terminal Facilities

A preliminary pavement design thickness for the Project has been developed for use in computing earthwork quantities. The final pavement design thickness should be based on traffic figures provided by the CDA. Final

design should include confirmation of the preliminary pavement design thickness based on final traffic forecasts and relevant geotechnical information.

During the detailed design phase, details for all pavement connections to existing airfield pavements should be developed. The CDA will provide available as-built information at pavement intersections. Additional information on existing pavements, if needed, must be requested by the consultant.

2.2.3.1 Lighting, Signage, and Markings

All airfield lights, signs, and markings associated with the Project should be designed in accordance with the most current version of all applicable FAA ACs and CDA standards. These standards are included in the following documents:

- FAA AC 150/5340-30E, Design and Installation Details for Airport Visual Aids
- FAA AC 150/5340-18F, Standards for Airport Sign Systems
- FAA AC 150/5340-1L, Standards for Airport Markings

2.2.4 TERMINAL (CONTACT) AIRCRAFT GATE REQUIREMENTS

The following sections outline the aircraft gate requirements, including aircraft types to be accommodated and passenger loading bridge (PLB) specifications, necessary for the successful design and implementation of the Project.

2.2.4.1 Aircraft Gate Requirements

All contact gate areas included as part of the Project should be designed to accommodate ADG-III through ADG-V aircraft with passenger loading bridge (PLB) enplaning/deplaning capabilities, with the exception of Gate M19, which should additionally be capable of enplaning/deplaning ADG-VI aircraft via PLB. Existing Gate M11 already accommodates ADG-VI aircraft. **Table 2.2-1** outlines the aircraft types that should be accommodated for each ADG.

In addition to the above requirements for enplaning/deplaning passengers via PLB, the designer should also verify that the gate areas are capable of parking smaller regional jet type aircraft. While PLB enplaning/deplaning capabilities for these smaller aircraft types may prove difficult, the designer should provide the ability to service these aircraft where possible and verify the ability to enplane/deplane the aircraft with portable or aircraft stairs.

Aircraft parking should provide a 25-foot minimum clearance to any part of an aircraft located at an adjacent gate. The 25-foot clearance requirement should be maintained for any aircraft movements into or out of the gate area.

Table 2.2-1: Airplane Design Group Fleet Mix									
ADG-III	ADG-IV	ADG-V	ADG-VI						
Boeing B737 MAX (All Variants)	Boeing B757 (All Variants)	Boeing B747-400/400ER	Airbus A380-800						
Airbus A319/320/321 NEO	Boeing B767 (All Variants)	Boeing B777 (All Variants)							
		Boeing B787 (All Variants)	,						
		Airbus A330 (All Variants)							
		Airbus A340-300/500/600							
		Airbus A350 (All Variants)							

SOURCE FAA AC 150/5300-13A, Change 1, Airport Design, February 2014. Chicago Department of Aviation, June 2016; Ricondo & Associates, Inc , June 2016.

PREPARED BY: Ricondo & Associates, Inc., June 2016

2.2.4.2 Multiple Aircraft Ramp System

A typical Multiple Aircraft Ramp System (MARS) gate is capable of servicing either one large aircraft or two smaller aircraft. For widebody gates designed for ADG-VI aircraft, the typical MARS gate configuration for the Project would be capable of handling either one ADG-VI aircraft or two ADG-III aircraft. Dual loading bridges should be provided to provide dual bridge loading capability to ADG-VI aircraft or single bridge loading capability to each ADG-III aircraft parked at the MARS gate.

For widebody gates designed for ADG-V aircraft, the typical MARS gate configuration for the Terminal 5 M Extension Project would be capable of handling two ADG-V aircraft at adjacent gates or three ADG-III aircraft. This configuration would utilize three of four available loading bridges.

In all MARS configurations, a 25-foot minimum clearance to adjacent aircraft should be provided.

2.2.4.3 Passenger Loading Bridge Requirements

Each gate connected to the new terminal building extension should be capable of providing dual passenger loading bridges where possible. However, dual passenger loading bridges at Gates M23 and M24 may not be feasible. All bridges should be capable of servicing ADG-III through ADG-V aircraft. One gate, conceptually identified as Gate M19, should also be able to service ADG-VI (A380) aircraft.

For gates equipped with dual loading bridges:

- Single widebody aircraft: One loading bridge should be capable of servicing door L1 (1st door, left side), while the second loading bridge should be capable of servicing door L2 (2nd door, left side) of the parked aircraft simultaneously. For Gate M19, a loading bridge should be capable of servicing the upper level door of ADG-VI (A380) aircraft.
- Single narrowbody aircraft: One loading bridge should be capable of servicing door L1.

• Dual narrowbody aircraft: One loading bridge should be capable of servicing door L1 of the first parked aircraft, while the second loading bridge should be capable of servicing door L1 of the second parked aircraft simultaneously.

For gates equipped with a single loading bridge:

- Single widebody aircraft: The loading bridge should be capable of servicing both doors L1 and L2.
- Single narrowbody aircraft: The loading bridge should be capable of servicing door L1.

2.2.4.4 Hydrant Fueling System

Hydrant fueling capability is required at all new gates constructed as part of the Project. This requirement for all new gates constructed at the Airport is outlined in the 2005 FAA Record of Decision (ROD) for the 2005 O'Hare Modernization (OM) Environmental Impact Statement (EIS).

Each hydrant fueling system should be capable of servicing ADG-III through ADG-V aircraft, with the exception of Gate M19, which should also be able to service ADG-VI aircraft. Where possible, hydrant fueling systems should also be capable of servicing regional jet type aircraft.

Two hydrant fueling pits should be provided at each gate, one to service fuel receptacles located on the left side/left wing of parked aircraft and one to service fuel receptacles located on the right side/right wing of parked aircraft. Hydrant fueling pits should be placed no more than 40 feet from fuel receptacles on the entire range of parked aircraft to be accommodated. Hydrant fueling pits should be located away from the landing gear, fuselage, and engine nacelles of parked aircraft.

All hydrant fueling systems should be designed in accordance with the most current version of all applicable FAA ACs, CDA standards, and industry recommendations. These standards are included in the following documents:

- FAA AC 150/5230-4B, Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports
- National Fire Protection Association (NFPA) 407, Standard for Aircraft Fuel Servicing

2.2.4.5 Visual Docking Guidance System

Each Visual Docking Guidance System (VDGS) should be capable of servicing ADG-III through ADG-V aircraft, with the exception of one gate (conceptually identified as Gate M19) which should also be able to service ADG-VI aircraft. The current VDGS at Terminal 5 is the Safedock A-VDGS T2-18 manufactured by Safegate Group.

2.2.4.6 Potable Water

Each potable water cabinet (PWC) system should be capable of servicing ADG-III through ADG-V aircraft, with the exception of Gate M19, which should also be able to service ADG-VI aircraft. The current PWC system at Terminal 5 is the SI-3000 manufactured by Semler Industries.

2.2.4.7 Preconditioned Air

Preconditioned air capability is required at all new gates constructed as part of the Project. This requirement for all new gates at the Airport is outlined in the 2005 FAA ROD for the 2005 OM EIS.

2.2.4.8 Ground Power

Ground power capability is required at all new gates constructed as part of the Project. This requirement for all new gates at the Airport is outlined in the 2005 FAA ROD for the 2005 OM EIS.

2.2.4.9 Closed-Circuit Television

The entire Airport is served by strategically located security cameras that are part of a broader closed-circuit television (CCTV) that is managed and monitored by the CDA Security Division and O'Hare Communications Center (OCC). Many of these cameras are placed on buildings, including the terminals. CCTV would need to be incorporated into the new project area, and the CDA should be consulted for the placement of these during the design and construction processes.

2.2.4.10 Apron/Gate Lighting

All apron/gate lighting systems should be designed in accordance with the most current version of all applicable FAA ACs, CDA standards, and industry recommendations. These standards are currently included in: Illuminating Engineering Society (IES) RP-37-15, *Outdoor Lighting for Airport Environments*.

2.2.4.11 Other Gate Requirements

The 2005 FAA ROD for the 2005 OM EIS encourages the use of electric ground service equipment (GSE) at all gate areas. Where feasible, the designer should consider the installation of charging stations for electric GSE at new gate areas included as part of the Project.

2.2.5 REMOTE AIRCRAFT STAND PROVISIONING

The following sections outline the remote stand requirements, including aircraft types to be accommodated, necessary for the successful design and implementation of the Project.

2.2.5.1 Remote Stand Requirements

All remote stands included as part of the Project should be designed to accommodate ADG-III through ADG-V aircraft in a "tail first" parking configuration. Remote parking for ADG-VI aircraft will not be accommodated within the limits of this Project site, but rather at another location of the airfield. The CDA is currently in the process of identifying a suitable remote stand area for ADG-VI aircraft.

Remote stands should provide a 25-foot minimum clearance to any part of an aircraft located at an adjacent stand. The 25-foot clearance requirement should be maintained for any aircraft movements into or out of the stand.

2.2.5.2 Lighting

All remote stand apron lighting systems should be designed in accordance with the most current version of all applicable FAA ACs, CDA standards, and industry recommendations. These standards are currently included in: Illuminating Engineering Society (IES) RP-37-15, *Outdoor Lighting for Airport Environments*.

· 2.2.6 APRON SERVICE ROAD

A 26-foot-wide apron service road should be provided connecting relocated Guard Post #11 with the existing apron service road near Gate M19. The road should be located entirely outside of the 276-foot-wide taxilane OFA and accommodate all vehicle traffic regularly expected to utilize the road. Aircraft should be parked so that no part of the aircraft overhangs any part of the apron service road. All apron service road markings should be designed in accordance with the most current version of all applicable FAA ACs and CDA standards. These standards are currently included in: FAA AC 150/5340-1L, *Standards for Airport Markings*.

2.2.7 AIRSIDE ACCESS GATE

All airside access gates should be designed in accordance with all applicable FAA ACs, CDA standards, and TSA standards.

2.2.8 PERIMETER FENCING

The perimeter fencing system must meet or exceed the TSA and the FAA requirements for securing the airfield. There are four fence standards in use at the Airport: Type A, Type B, Type C, and Type D. In general, Type A and Type B fences meet CDA standards for installation to secure the Aircraft Operations Area (AOA). Type C fence is used along Airport boundaries to separate the general public from the Airport landside facilities. Type D fence is mainly used to secure the AOA for temporary, short durations at those locations requiring a security fence to cross closed aircraft pavement.

Fence Types A and B have identical characteristics, except for the total height of the fence. Type A fence is 10 feet tall and is used in locations where the AOA is adjacent to areas accessible by the general public. Type B fence is 8 feet tall and is used in locations where the AOA is adjacent to areas requiring security clearance to enter. Type D (temporary) fencing is 10 feet tall and is attached securely to temporary concrete barrier sections.

Type A fencing should be used for the permanent AOA fence as part of the Project, while Type D fencing is acceptable for temporary installations during construction phases.

2.2.9 BLAST FENCE

Blast fences should be sited in areas where it is anticipated that engine jet blast from taxiing aircraft may pose a hazard to individuals, vehicles, ground service equipment, or other objects. Blast fence dimensions (height, depth, etc.) should be designed to appropriately mitigate any adverse effects of engine jet blast from the entire range of aircraft expected to utilize airfield pavements associated with the Project. Blast fences should be designed in accordance with all applicable FAA ACs, CDA standards, and industry recommendations.

2.2.10 AIRCRAFT DEICING

During weather conditions requiring the application of de/anti-icing fluid, aircraft are serviced at the gate by ground handlers contracted by the airlines. Excess de/anti-icing fluid applied at the gates is collected by the Airport's stormwater detention system and is treated by the Metropolitan Water Reclamation District (MWRD) of Greater Chicago. Provisions for aircraft deicing at the gate should be provided for contact gate positions M19 through M27 in addition to remote aircraft stand positions 101 through 104. Stormwater is collected and routed to the Airport's South Basin. Stormwater is then routed via the Tunnel and Reservoir Plan to the Metropolitan Water Reclamation District Stickney Plant.

A Centralized Deicing Pad is currently in the design phase under a separate project to provide off-gate deicing.

2.3 Terminal Space Requirements

This section discusses the terminal facility requirements analysis that contributed to the design basis for the Project. Typical functions supporting airlines, agencies, and terminal tenants proposed to operate from T5 were analyzed in order to identify facility deficiencies that could constrain the ability to achieve the Airport's level of service (LOS) objectives at activity levels derived from the 2025 DDFS. The analysis addressed the following functions:

- Check-in
- TSA security screening checkpoint(s)
- Baggage screening for explosives (EDS)
- Airline outbound bag and rechecked bag make-up
- Pre-boarding holdrooms
- Premium lounges (clubs)
- In-terminal commercial concessions
- Federal Inspection Services facilities (separately addressed by the CDA)
- Domestic and Customs and Border Protection (CBP) Precleared bag claim
- Supplemental Ramp Control facility
- Airside Transfer Bus facility
- Airline ramp operations offices

2.3.1 TERMINAL PLANNING CRITERIA

Sources used to develop the terminal planning criteria for the Project included Airport-specific information gained from recent surveys conducted with the Airport's airlines; TransSolutions, *Terminal 5 Capacity Analysis*, January 2015; and published industry and federal agency guidelines, including:

- Airport Cooperative Research Program, Report 25, Airport Passenger Terminal Planning and Design, Volume 1: Guidebook, 2010.
- International Air Transport Association, Airport Development Reference Manual, 10th Edition, 2014.
- Transportation Security Administration, Checkpoint Design Guide, Revision 5.1, May 7, 2014.
- Transportation Security Administration, *Planning Guidelines and Design Standards for Checked Baggage Inspection Systems*, November 27, 2009.
- U.S. Customs and Border Protection, *Airport Technical Design Standard*, Signature Version, June 2012.

The planning criteria used comprise three categories:

- Attributes pertaining to passenger behavior that include when they show up at the terminal ahead of the scheduled time of departure, the number of bags checked, and the preferred check-in methods
- Operating parameters defining the types of services, transaction times, and sequence of services that are offered by service providers
- LOS standards defining acceptable wait times for passengers needing a particular service and the amount of space provided for passengers waiting in queue for service

2.3.1.1 Passenger Attributes

Passenger attributes pertaining to travel party size, travel class, passport/visa, and show-up profiles were organized around the following airline groupings:

- Domestic airline proposed to be relocated to T5
- U.S. flag and foreign flag international airlines; only deplaning passengers at T5
- Foreign flag international airlines deplaning/enplaning passengers at T5

Attributes for passengers traveling internationally were further defined according to geographic markets.

Travel Party Size

Table 2.3-1 lists planning criteria pertaining to travel party size, which represents the number of passengers sharing the same reservation code and conducting transactions as a group.

Travel Class and Passport/Visa

Table 2.3-2 lists passenger attributes pertaining to travel class, passport nationality, and visa type. Travel class principally influences check-in channel eligibility and LOS criteria applied to different channels. Passport nationality and visa type principally influence the inspection time experienced by passengers within the FIS.

Show-up Profiles

Show-up profiles shown in **Table 2.3-3** and **Table 2.3-4** represent the amount of time originating passengers arrive at the terminal before their scheduled flight departure. Show-up profiles vary depending on the type of travel (domestic or international), class of service, whether or not the passenger checks baggage, and the time of day. Show-up profiles are also affected by airline flight close-out times, which refer to the latest time an airline should accept checked baggage prior to scheduled departure time. Two close-out times were used in the analysis:

- Domestic Departure: 30 minutes before scheduled departure time
- International Departure: 40 minutes before scheduled departure time

2.3.1.2 Operating Parameters

Operating parameters pertain to the sequence of activities (processes) engaged by passengers prior to enplaning or after deplaning a flight, activity processing times, and rules for facility use. Operating parameters and LOS criteria, discussed in Section 2.3.1.3, are the principle considerations that are correlated against demand to derive facility requirements.

Passenger Processing Sequences

Exhibit 2.3-1 and **Exhibit 2.3-2** illustrate the typical activity sequence for departing (enplaning) and arriving (deplaning) passengers, respectively. Computer simulation models used in the analysis incorporate the illustrated activity sequences to develop demand at each activity, recognizing the affects upstream activities have on demand downstream.

Activity Processing Times

Processing times refer to the amount of time passengers need to complete airline transactions or regulatory inspections prior to enplaning or after deplaning (e.g., the amount of time acquiring boarding passes and baggage tags at self-serve check-in kiosks or the time to clear CBP inspections). Activity processing times are discussed in Section 2.4 in conjunction with the applicable activity.

			:	Table	2.3-1: Tra	wel Party	Size				
		ğ	OMESTIC			FOREIG	N FLAG IN	ITERNATIO	NAL		HUB AIRLINES
PARTY SIZE	UNITS	MOQ	I		AN S/C	AM	EU	ASIA	ME	OTHER	DEPLANEMENTS ONLY
1	percent	74.0%	22	8.6% 79	.0% 82	3 %0.	82.0%	75.0%	26.0%	78.6%	76%
2	percent	19.0%	H	5.5% 15	.0% 14	.0%	14.0%	15.0%	21.0%	15.5%	18%
m	percent	4.0%		2.6% 3	.0% 3	.0%	3.0%	4.0%	17.0%	2.6%	3%
4	percent	2.0%		2.2% 2	.0% 1	.0%	1.0%	4.0%	18.0%	2.2%	2%
ъ	percent	1.0%	0	0.6% 1	0 %0	%0;	0.0%	1.0%	12.0%	. 0.6%	, 1%
9	percent	0.0%	Ū	0.5% 0	0 %0	.0%	0.0%	1.0%	6.0%	0.5%	%0
Average Party (Pax only)	ratio	1.37		1.30 1	.31 1	.23	1.23	1.39	2.57	1.30	1.3
DTES: cronyms used in the table: DOM-Domestic INT-I	nternational	CAN-Cana	qa	S/C AM-Sout	h/Central Ame	IICa	EU-E	urope	ME-MI	ddle East	
DURCES: TransSolutions, <i>Terminal 5</i> CC tEPARED BY: Ricondo & Associates, In	<i>apacity Analys</i> c , June 2016.	is, January 201	5, Ricondo	& Associates, Ir	ıc. , analysıs, Ja	nuary 2016					
			F	able 2.3-2:	Travel Clas	s and Pas	ssport T ₎	/pes			,
		DOMEST	Ŋ			FOREIGN	FLAG INT	ERNATION	AL		
TRAVEL CLASS		DOM	INT	DEPLANEM	ENTS ONLY	S/C A	M	EUA	VSIA	ME OTI	HER DEPLANEMENTS (
Economy	ercent	80%	85%		5%	%06	Ĩ	30% 8	30%	72% 85	% 85%
Business	ercent	20%	15%	-	5%	10%	(N	5 %03	20%	28% 15	% 15%
PASSPORT TYPE											
U.S. Citizen p	ercent	52%	52%	U	%0	10%	7	E %0t	35% .	20% 52	% 52%
Visa Waiver (ESTA) p	ercent	19%	19%	N	5%	7%	7	15% 2	20%	5% 19	% 19%
Lawful Permanent Resident p	ercent	%9	%9	1	%0	3%		5%	5%	5% (% 6%
Non-Visa Waiver	ercent	23%	23%		5%	80%		7 %01	40%	70% 23	% 23%
DTES											
ronyms used in the table.											
DOM-Domestic INT-I	nternational	CAN-Cana	Ida	S/C AM-Sout	h/Central Ame	пса	EU-E	urope	ME-MI	ddle East	

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STD-Scheduled Time for Departure

SOURCE: TransSolutions, Terminal 5 Capacity Analysis, January 2015

PREPARED BY Ricondo & Associates, Inc., June 2016.

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ITERNATIONAL PASSENCIERS CHECKED BAGS MUVILES PRIOR 10 STOP ¹ Distribution CHECKED BAGS Distribution Checked bads 313 118% 18% 18% Images Images Images 313 118% 18% 18% Images Im	FIETANTIONAL PASSINGERS CECKED BAGS MUNUTES PROK TO STO ^V DISTRIBUTION CUMURITY 313 118% 118% 315 118% 118% 210 03% 118% 211 03% 118% 212 03% 118% 213 03% 118% 210 03% 118% 211 03% 210% 212 03% 210% 213 03% 210% 210 03% 210% 211 03% 210% 211 03% 210% 211 03% 210% 211 03% 210% 212 03% 210% 213 04% 04% 214 04% 04% 215 05% 04% 216 05% 04% 217 04% 04% 218 04% 04% <			Table 2.3-4: Pas	ssenger Show-up Profile—International
315 1.8% 1.8% 300 2.0% 3.8% 0.0% 285 0.0% 3.8% 0.0% 210 0.3% 4.0% 0.0% 210 0.3% 4.0% 0.0% 210 0.3% 4.0% 0.0% 210 0.3% 1.18% 0.0% 210 3.3% 0.0% 0.0% 210 3.3% 1.18% 0.0% 210 9.3% 2.10% 0.0% 210 9.3% 2.13% 0.0% 118% 2.13% 0.0% 0.0% 210 9.3% 2.13% 0.0% 118% 2.13% 0.0% 0.0% 120 9.3% 2.13% 0.0% 121 13.1% 0.0% 0.0% 128 1.18% 2.13% 0.0% 128 1.18% 0.0% 0.0% 129 1.18% 0.0% 0.0% 129	315 18% 18% 300 20% 38% 20% 38% 90% 210 03% 41% 220 03% 41% 210 03% 118% 210 03% 118% 220 33% 118% 221 33% 118% 221 33% 118% 221 33% 118% 221 33% 118% 221 33% 118% 221 33% 118% 235 210% 00% 136 118% 210% 138 210% 00% 138 210% 00% 138 210% 00% 138 210% 00% 138 210% 00% 138 22% 00% 150 118% 00% 160 118% 00% 160 00%	ITERNATIONAL PASSENGERS MINUTES PRIOR TO STD ^{1/}	CHECKEE) BAGS CUMULATIVE	Departing International Passengers
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	icheduled Time for Departure	0	0.0%	100.0%	
		cheduled Time for Departure			

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Facility Use

The basis for airline use of terminal facilities can be mostly categorized as:

- Exclusive-use basis: facilities cannot be used by another airline without the permission of the airline granted exclusive use
- Preferential use basis: grants priority use to an airline but other airlines are allowed access during periods when facilities are not needed by the airline granted priority use
- Common use: allows use by any airline as needed

Historical precedents for airline use and lease of T5 facilities³ were used to develop terminal facility requirements for the Project, generally conforming to the following:

- Ticket counters
 - Domestic airline: preferential use
 - Foreign flag airlines: preferential/common use
- Aircraft gates and holdrooms
 - Domestic airline: preferential use
 - Foreign flag airlines: common use
- Domestic and CBP Precleared Bag Claim: common use
- Outbound Bag Make-Up:
 - Domestic and U.S. flag international airlines: preferential use
 - Foreign flag airlines: common use
- Airline club rooms, offices, and operations/maintenance spaces: exclusive use

2.3.1.3 Level of Service

LOS refers to the Airport's criteria for acceptable wait times experienced by passengers waiting to engage in an activity, as well as the amount of space provided to passengers waiting in queue. **Table 2.3-5** lists the LOS standard framework for the design of terminal facilities as recommended by the International Air Transport Association (IATA) in its *Airport Development Reference Manual*, 10th edition, and the specific LOS criteria applied to this Project. IATA's LOS framework can be summarily described as follows:

• **Overdesign (A/B):** facilities resulting in underutilized spaces with nearly no delays; high maintenance and construction cost relative to facility utilization

The Airline Use and Lease Agreement currently expires in 2018. It is anticipated that use of Terminal 5 space and facilities will be nonexclusive in the future with the exception of airline club rooms and space for airline operations/offices.

- **Optimum Design (C):** facilities that provide adequate space and reasonable delays; cost of maintenance and construction is equitable to facility utilization
- **Suboptimum Design (D):** a facility that meets one but not both space and time LOS variables; facility should consider improvements
- **Suboptimum Design (E):** facilities resulting in breakdown with unacceptable delays; strongly suggest improvements to an over utilized facility

SPACE STANDARDS FOR WAITING AREAS					WAITING TIME STANDARDS FOR PROCESSING FACILITIES				
UNITS			(ft ² /pax)				Minutes		
PASSENGER TERMINAL PROCESSOR	IATA. Airport Development Reference Manual, 10th edition		T 5 M Extension	IATA. Airport Development Reference Manual, 10th edition			T 5 M Extension		
ADRM 9th Edition	<u>A</u> B	С	DE		A B	С	DE		
ADRM 10th Edition	Over Dening in	Optimum	Suboptimum		(C) بریدی ۱۳ (G):دو:(C	Optimum	Suboptimum		
Check-ın									
Self-Service Boarding	> 19.4	14.0-19.4	<14.0	14.0	<0	0-2	>2	5	
Bag Drop Desk	> 19 4	14.0-19.4	<14.0	14.0	<0	0-5	>5	5	
Check-ın Desk	>194	14.0-19 4	<14 0	14.0	<10	10-20	> 20	20	
Security Checkpoint	>129	10.8-12 9	<108	10.8	< 5	5-10	>10	20	
Boarding Gate Lounge									
Seating	> 18.3	16.2-18 3	<16 2	18.0					
Standing	>129	10.8-12 9	<10 8	12.0					
Baggage Claim Area	r.								
Narrowbody	> 18.3	16.2-18 3	<16 2	16.0	<0	0-15	>15	20	
Widebody	> 18.3	16.2-18.3	<16.2	16.0	<0	0-25	> 25	20	

Table	2.3-5:	Level-of-Service	Framework

SOURCE International Air Transport Association, Airport Development Reference Manual, 10th Edition, March 2014 PREPARED BY Ricondo & Associates, Inc., June 2016.

Under IATA's framework, Optimum Design LOS C represents an acceptable LOS characterized by reasonable wait times and adequate queuing space during peak activity. Optimum Design LOS C equates to good service at reasonable cost. While remaining generally consistent with IATA's LOS guidelines, the LOS standard prescriptions used to define the terminal facility requirements for this Project have been tailored for the Project, for example, in most cases, LOS wait times conform to federal agency guidelines even though they would be considered suboptimum per IATA's guidelines.

2.3.2 TERMINAL FACILITY PROGRAM

Table 2.3-6 summarizes the terminal facility program for the Project, which was developed using computer modeling and spreadsheet analyses to correlate planning criteria against passenger activity levels derived from the 2025 DDFS for Terminal 5. Peak demand analyses of terminal facilities separately used by enplaning/originating and deplaning/terminating passengers determined the additional facilities that would

be needed to maintain LOS standards during peak demand periods. The table groups the facility program by three building zones:

- West Concourse refers to the concourse zone associated with Gates M1–M6. Program elements under this section mostly pertain to building improvements to accommodate the relocation of a domestic airline to T5.
- Head House and Central Concourse—Head House generally refers to the central part of the building housing functions not directly associated with aircraft boarding areas; and Central Concourse refers to the concourse zone associated with Gates M7–M13. Program elements under this section mostly pertain to building improvements to accommodate the relocation of a domestic airline to T5 and the Airside Transfer Bus station.
- East Concourse refers to the concourse zone associated with Gates M14–M27, including the Concourse M extension.

	UNITS	EXISTING	REQUIREMENT
West Concourse			•
Holdrooms ^{1/}	sq ft	15,035	13,680
Concessions	sq ft	-	6,270
Airline Premium Lounge 2/	sq ft	-	8,000
Airlines Customer Support ^{2/}	sq ft		7,000
Airline Support Bag Claim Area ^{2/}	sq ft		1,800
Airline Operational Support 2/	sq ft	11,500	17,000
Terminal Head House			
Check in	Positions	149	120
Screening Checkpoint Lanes	Lanes	7	9
Make-up	Staged Carts	108	127
Domestic Claim Device 3/	Device	2	2
Explosive Detection Systems (EDS	Units	6	6
East Concourse (new)			
Holdroom	sq ft		36,800
Concessions	sq ft		6,850
Airline Lounge 5/	sq ft		Note 5
Refugee Holding ^{4/}	sq ft		4,450
Supplemental Ramp Control Facility ^{2/}	sq ft		500
Airlines Operational and Support 5/	sq ft		Note 5

Table 2.3-6: Terminal Facility Program

NOTES:

1/ Narrowbody Aircraft at M1 to M5; M6 is shared with M7.

2/ Preliminary area requirements based on representative airline facilities; program to be confirmed during design phase.

3/ After Terminal 5 CBIS Optimization project is complete

4/ Relocate enclosed holdroom from Gate M5

5/ Area need and requirement to be confirmed during design phase

SOURCE Ricondo & Associates, Inc , analysis, June 2016

PREPARED BY: Ricondo & Associates, Inc., June 2016

The terminal program formed the basis for developing indicative concepts to accommodate the forecast activity level at the LOS prescribed by the Airport. Detailed programming conducted in conjunction with the Project stakeholders should be necessary as part of the Project's detailed design phase. The terminal facility program lists several major areas for improvements, including:

- Ticket counter lobby modifications to accommodate domestic airlines' operations relocated to T5
- Expansion of the TSA screening checkpoint to accommodate two additional lanes for Pre√ eligible passengers
- Provisions for airline exclusive-use facilities including premium lounge, customer service, and operational offices to accommodate domestic airlines' operations
- Expansion of domestic bag claim to accommodate a domestic airline's operations
- Provisions to further expand domestic bag claim capabilities to support widebody aircraft arrivals from CBP Preclearance airport
- Concourse extension relating to the addition of eight net new widebody aircraft gate positions, including airline premium lounge(s), airline operations, supplemental ramp control facility, FIS sterile corridor system, and building systems
- Modifications to airline outbound bag make-up to support domestic airlines' operations relocated to T5 and increased flight operations resulting from the addition of aircraft gate positions
- Relocation of segregated holdroom capabilities at Gate M5 (Refugee Holding Area)
- An airside connector bus station
- A supplemental ramp control facility
- Renovating and reconfiguring FIS Primary and Secondary Inspection areas to enlarge queuing areas and to provide additional or relocated CBP functional spaces

2.4 Terminal Facilities Gap Analysis

This section discusses in detail the terminal facilities gap analysis that was conducted to determine terminal facility requirements. This information is provided to facilitate subsequent efforts to refine the terminal facility program as part of the detailed design phase.

2.4.1 CHECK-IN

Passenger demand for check-in facilities was modeled using computer simulation to correlate demand against applicable planning criteria, such as show-up profiles and processing rates, to determine the number and types of check-in units needed to maintain the Airport's prescribed LOS standard for check-in wait times. **Table 2.4-1** lists the minimum aggregate number of preferential use and common use in-line counter positions needed by airlines departing from T5 based on the 2025 DDFS. The minimum aggregate number of check-in units represents the sum of domestic airline positions and positions needed collectively for shared use (preferential and common use consistent with historical precedence) by foreign flag airlines. **Exhibit 2.4-1** illustrates the diurnal aggregate requirements for in-line counter positions.

Table 2.4-1: Aggregate Check-in Unit Requirements									
	UNITS	T5 INVENTORY	AGGREGATE	DOMESTIC	FOREIGN FLAG				
eck-in									
Peak Hour Originating Passengers ^{1/}	рах		1,271	656	1,271				
Peak Hour Check-In Demand	рах		1,210	559	868				
Kiosk									
Required - Units	positions	. 8	15	· 12	3				
Area per Kiosk	sq ft		100	100	100				
Total Area	sq ft		1,500	1,200	300				
In-Line Agents and Bag Drops									
Required - Units	positions	149	120	14	. 106				
Area per Position	sq ft		290	290	290				
Total Area	sq ft		32,770	2,030	30,740				

1/ At schedule time of departure

SOURCE: Ricondo & Associates, Inc , analysis, June 2016 PREPARED BY: Ricondo & Associates, Inc , June 2016





The T5 ticket counter inventory should be sufficient to accommodate the peak period activity demand at check-in. Check-in planning criteria used in the analysis included:

- Passenger attributes for percentage of passengers checking bags and checked bags per passenger, as well as check-in channel preferences
- Operating parameters, including check-in channel options and sequence, activity transaction rates, and rules for assigning common use check-in positions
- LOS criteria, including maximum wait times to engage an activity and space provided for passengers waiting to engage an activity

Check-in Channel Preferences

Exhibit 2.4-2 illustrates the different check-in channel options and the sequence of activities associated with each channel. Check-in channel options include:

- Channels used by passengers not checking bags include bypass passengers who have acquired boarding passes prior to arriving at the terminal and passengers using kiosks to only acquire boarding passes or make reservation changes
- Channels used by passengers checking bags include:
 - Two-step check-in: Passengers use self-serve kiosks to acquire boarding passes and bag-tags and then proceed to bag-drop counters where airline agents accept the bags
 - Full-service agent check-in for premium passengers, passengers unable to use kiosks or needing special assistance, such as minors travelling alone, and large travel groups



PREPARED BY Ricondo & Associates, Inc , June 2016.

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Checked Bags and Check-In Channel Preference

Table 2.4-2 lists the proportion of passengers checking bags and the average number of bags checked by these passengers. No U.S. flag airline supports international passenger check-in at T5; consequently, the table information should be used to determine the volume of bags at international bag claim. Table 2.4-3 lists the distribution of originating passengers among the different check-in channel options.

Table 2.4-2: Passengers with Checked Bags									
		U.S. I AIRL	FLAG INES		FOREIGN I	LAG INTI	RNATION		S
CHECKED BAGGAGE	UNITS	DOM	INT ^{1/}	CAN	S/C AM	EU	ASIA	ME	OTHER
Pax Not Checking Bags	percent	65%	11%	11%	11%	11%	11%	5%	11%
Pax Checking Bags	percent	35%	89%	89%	89%	89%	89%	95%	89%
Checked Bags per Passenger Checking a Bag									
1	percent	84%	63%	75%	20%	63%	40%	30%	63%
2	percent	14%	27%	15%	70%	27%	40%	60%	27%
3	percent	2%	10%	10%	10%	10%	20%	10%	9%
Av. Checked Bags per Pax Checking a Bag	ratio	1.1	1.3	1.2	1.7	1.3	1.4	1.6	1.3

NOTE:

Acronyms used in the table:

DOM-Domestic INT-International CAN-Canada S/C AM-South/Central America

EU-Europe ME-Middle East

1/ No U S flag airline supports passenger check-in at T5; consequently, the table information would only be used to determine the volume of bags from deplaning passengers at international bag claim

SOURCES. TransSolutions, Terminal 5 Capacity Analysis, January 2015, Ricondo & Associates, Inc., 2016 (benchmark compiled from DCA 2013, DEN 2014, LAX 2014, MIA 2014, IAH 2015, MSP 2015), United Airlines, March 2016. PREPARED BY' Ricondo & Associates, Inc., June 2016

Table 2.4-3:	Check-in Channel Preferences
	· · · · · · · · · · · · · · · · · · ·

			FOREIGN FLAG INTERNATIONAL AIRLINES						
CHANNELS	UNITS	DOM AIRLINE	CAN	S/C AM	EU	ASIA	ME	OTHER	
Kiosks (not checking bags)	percent	52%	11%	0%	5%	10%	5%	3%	
Kiosks with Bag Drop (two-step process)	percent	13%	51%	30%	40%	20%	25%	40%	
Offsite/Online (not checking bags)	percent	13%	13%	5%	5%	5%	0%	9%	
Offsite/Online with Bag Drop	percent	15%	15%	5%	10%	5%	0%	5%	
Full Service Agent	percent	7%	10%	60%	40%	60%	70%	43%	

SOURCES TransSolutions, Terminal 5 Capacity Analysis, January 2015; Ricondo & Associates, Inc., 2016 (benchmark compiled from DCA 2013, DEN 2014, LAX 2014, MIA 2014, IAH 2015, MSP 2015), United Airlines, March 2016

PREPARED BY: Ricondo & Associates, Inc., June 2016

Check-in Activity Rates and Level of Service

Table 2.4-4 lists the transaction times and LOS wait time goals for passengers using in-terminal check-in facilities.

PROCESSING RATES	UNITS	DOMESTIC AIRLINES	FOREIGN FLAG INTERNATIONAL AIRLINES
Kiosks (not checking bags)	minutes	2	2
Kiosks with Bag Drop (two-step process)	minutes	3	3 .
Bag Drop	minutes	2	2
Full Service Agent	minutes	4	4
LOS Maximum Wait Times			
Kiosks (not checking bags)	minutes	<5	<5
Kiosks with Bag Drop (two-step process)	minutes	<5	<5
Bag Drop	minutes	<10	<10
Full Service Agent	minutes	15	20
Area per Passenger in Queue	sq ft	14	14

Table 2.4-4: Check-in Processing Rates and Level of Service Maximum Wait Time Goals

SOURCES TransSolutions, *Terminal 5 Capacity Analysis*, January 2015, International Air Transport Association, *Airport Development Reference Manual*, 10th Edition, 2014, Ricondo & Associates, Inc., 2016(benchmark compiled from DCA 2013, DEN 2014, LAX 2014, MIA 2014, IAH 2015, MSP 2015); United Airlines, March 2016

PREPARED BY: Ricondo & Associates, Inc., June 2016

Assignment of Common Use Check-in Positions

The analysis used historical precedents to determine airline occupancy time for in-line ticket counter positions; however, the minimum number of positions that were assigned to an airline were recalculated to achieve the LOS criteria for check-in at activity levels derived from the 2025 DDFS. Three separate classes of check-in channels were provided airlines known to offer premium channels. The analysis assumed premium check-in positions would serve standard check-in passengers during periods of inactivity from premium passengers.

Check-in position requirements supporting the domestic airline relocated to T5 were similarly calculated. Assignments of domestic counter positions were assumed to be on a preferential-use basis.

Check-in Equipment

The Airport provides T5 check-in positions with common-use equipment at all gates and some check-in positions. Common-use terminal equipment (CUTE) supporting check-in include: computer hardware/software, dynamic and static information displays, casework, weight scales, and self-service kiosks.

Use of airline proprietary check-in equipment at the domestic airline check-in positions should be determined as part of detailed planning and design phases.

Indicative Check-In Lobby Confiruation

Exhibit 2.4-3 overlays the space requirements for check-in positions over a plan view of the existing T5 check-in lobby. The primary components that are illustrated in the exhibit include:

- Self-Serve Kiosks—Devices where passengers acquire boarding passes and/or baggage tags if selftagging is in use. Self-service kiosks may be arranged parallel, perpendicular, or at an angle to the baggage conveyor, depending on airline preference and space available for passenger queuing.
- **Check-in Queue**—Holding area for passengers waiting to transact at check-in counters range in depth depending on LOS criteria for square footage per passenger in queue. The exhibit shows a 28-foot-deep ticketing queue, which is needed to achieve LOS C. Ticketing queues are typically defined by queue stanchions with serpentine lanes spaced four to five feet between each queue stanchion lane.
- **Bag Drop and Full-Service Counter Area**—Where passengers give their checked baggage to an airline agent to be loaded on the conveyor belt. A single check-in counter position is 6 feet wide (counter work area and baggage scale) and 16 feet deep from check-in counter face to the back wall or back of the conveyor. The agent checks passengers' identification and weighs and tags passengers' bag(s). Either the agent or passengers load the bag onto the conveyor belt. If self-bag tagging is in use, then the agent checks passengers' IDs and assists passengers with loading their bags on the conveyor belt.
- **Transaction Area**—Standing area for passengers transacting at check-in counters and primary cross aisle for passengers circulating between/in front of check-in counters. The transaction area is typically 8 feet deep from face of check-in counter to ticketing queue boundary.
- Main Circulation Corridor—A main circulation corridor for passengers and non-passengers moving between ticketing queues and other terminal functions. Minimum dimensions for main circulation corridors should conform to local building codes.

2.4.2 DOMESTIC AND CUSTOMS AND BORDER PROTECTION PRECLEARED BAG CLAIM

Passenger demand from deplaning domestic and CBP Precleared flights at bag claim were correlated against LOS criteria and operating parameters using spreadsheet models. **Exhibit 2.4-4** illustrates the rolling 20-minute diurnal profile for flights at claim and passengers waiting to claim bags. Three different peak demand profiles, derived from the 2025 DDFS, should be considered in determining bag claim requirements:

- Domestic airline simultaneous flights at bag claim: 2 Boeing 739 and 1 CRJ 900
- Preclearance airlines simultaneous flights at bag claim: 1 Airbus 330-300, 1 EMB-175, and 1 CRJ 900
- Collective airlines simultaneous flights at bag claim: 1 Airbus 333-200, 1 Boeing 739, 1 EMB-175, and 1 CRJ 900

AUGUST 2016

O'HARE INTERNATIONAL AIRPORT

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Drawing NVORD/2016_T2_T5 Short Term/04-Working/03-Drawings&Models/AutoCAD/0815201A/2-4-3 dwg Layout, 0.4-3, Aug.15, 2016, 5.35pm

Terminal 5 Concourse M Extension Project

¹ Project Definition Document



The collective airlines' peak generates the highest demand from a combination of domestic and preclearance passengers simultaneously using bag claim. Domestic and preclearance bag claim capacity is principally determined by the amount of retrieval area, which is defined as a 12-foot band surrounding a bag claim device provided for passengers waiting to claim their checked bags. Since it is preferable for passengers claiming bags to be able to retrieve bags from a single device, at least one device should be sized to accommodate an Airbus 330-300⁴ flight arrival.

Table 2.4-5 provides the LOS that would be experienced by passengers during the peak 20-minute demand period from different-sized claim carousels. The analysis is predicated on the last bag delivery occurring within 20 minutes of flight arrival. The addition of another 138 linear feet claim carousel would accommodate the overall peak demand for domestic bag claim; however, to achieve LOS for the largest CBP Precleared flight arrival, at least one claim carousel providing 195 linear feet of presentation is needed.

Later in the document, Section 2.4.7 discusses requirements resulting from an alternate operating condition where preclearance flight arrivals are able to use one of the claim units located inside the FIS for either international flight arrivals or preclearance flight arrivals.

Aircraft selected based on flight with greatest number of terminating passengers

	COLLECTIVE PEAK		CBP PRECLEARED PEAK		DOMESTIC PEAK	
	CLAIM 1	CLAIM 2	CLAIM 1	CLAIM 2	CLAIM 1	CLAIM 2
ln ft	138	195	138	195	138	195
	2,118	2,815	2,118	2,815	2,118	2,815
	16.2	16.2	16.2	16.2	16.2	,16.2
	130	170	130	170	· 130	170
	3	1	2	1	3	0
35%	106.	165	44		137	0
89%				199		
80%	85	132	35	160	110	0
рах	25	21	60	17.5	19.2	0
sq ft / pax						
LOS Grade 1/	А	А	А	С	А	N/A
	In ft 35% 89% 80% pax sq ft / pax LOS Grade ^{1/}	COLLECT CLAIM 1 In ft 138 2,118 16.2 130 3 35% 106. 89% 85 80% 85 pax 25 sq ft / pax 25 sq ft / pax A	COLLECTUPEAK CLAIM 1 CLAIM 2 In ft 138 195 2,118 2,815 16.2 16.2 130 170 35% 106. 165 89% 85 132 pax 25 21 sq ft / pax 25 21 LOS Grade ^{1/} A A	COLLECTIVE PEAK CLAIM 1 CLAIM 1 CLAIM 2 CLAIM 1 In ft 138 195 138 2,118 2,815 2,118 16.2 16.2 16.2 16.2 130 130 170 130 130 3 1 2 35 35% 106. 165 44 89% 85 132 35 pax 25 21 60 sq ft / pax 4 A A LOS Grade ^{1/1} A A A	COLLECTIVE PEAK PEAK CLAIM 1 CLAIM 2 CLAIM 1 CLAIM 2 In ft 138 195 138 195 2,118 2,815 2,118 2,815 16.2 16.2 16.2 16.2 16.2 16.2 16.2 16.2 130 170 130 170 130 170 35% 106. 165 44 199 80% 85 132 35 160 pax 25 21 60 17.5 54 16.2 16.2 LOS Grade ^{1//} A A A C 199	COLLECTIVE PEAKDOMESTCLAIM 1CLAIM 2CLAIM 1CLAIM 2CLAIM 1In ft1381951381951382,1182,1182,8152,1182,8152,11816.216.216.216.216.21301701301701303121335%1061654413789%13235160110pax25216017.519.2sq ft / pax4AACA

Table 2.4-5: Domestic and Customs and Border Protection Precleared Bag Claim Requirements

Indicative Domestic/ Customs and Border Protection Precleared Bag Claim Space Requirements

Exhibit 2.4-5 overlays the space requirements for domestic/CBP Precleared bag claim over a plan view of the existing T5 preclearance bag claim space. The space adjacent to the existing domestic/precleared bag claim unit is discussed in Section 3.2 – Related Projects. The primary components of the bag claim space include:

- **Baggage Claim Device and Retrieval Area**—Area allocated for a single claim unit, includes the equipment area and clearance between the equipment and adjoining devices, walls, or general circulation corridors. The following clearances were used to calculate a single baggage claim unit area:
 - Minimum of 12 feet clear from the face of the device for passengers to retrieve their baggage.
- **General Circulation**—Main circulation corridor for passengers and non-passengers moving between baggage claim devices and other terminal functions. It is recommended that the existing depth be maintained and free of any fixed obstructions to accommodate cross circulation for passengers and non-passengers.



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The additional baggage claim device requires an offload area within the Secure Information Display Area (SIDA) for general baggage cart circulation, parking baggage carts while they are being offloaded, the work aisle, and the offload conveyor. Ideally, two separate inbound conveyors should be designed to feed a bag claim unit supporting widebody aircraft.

2.4.2.1 Security Screening Checkpoints

T5 currently operates two separate security screening checkpoints: the seven-lane main checkpoint used by passengers and crews and a single-lane vendor checkpoint that exits cleared users between Gates M12 and M13. As part of detailed design, the single-lane vendor checkpoint should be studied to determine the extent of modifications needed to be able to screen airline crews using the vendor checkpoint.

Passenger demand at the main checkpoint was modeled using computer simulation to correlate demand against applicable planning criteria, such as processing rates and percentage of passengers eligible for TSA Pre√, to determine the number and types of screening lanes that would be needed to maintain the Airport's prescribed LOS standard for screening wait times. Demand at the security screening checkpoint was modeled using a consolidated checkpoint configuration, and it assumes passengers complete their check-in transactions within the prescribed LOS wait times. Planning criteria used to analyze the checkpoint were as follows:

- TSA Pre✔ eligibility:
 - Domestic flights: 30% of originating passengers
 - Foreign flag airline flights: 0% of originating passengers⁵
- Screening Rates
 - Standard screening lane: 120 passengers per hour, per lane
 - TSA Pre 🖌 🖌 ane: 250 passengers per hour, per lane

The combined queue area to be provided for passengers waiting for standard and TSA Pre \checkmark should be sized to hold the number of passengers that would accumulate based on transaction time and LOS for wait time. Planning criteria for determining queue area are as follows:

- LOS Wait Time:
 - Standard screening lane: 20 minutes
 - TSA Pre✔ lane: 10 minutes
- Area per passenger in queue: 10.8 square feet per passenger

T5 airlines are in discussions with TSA to increase TSA Preveligibility for its passengers

Exhibit 2.4-6 illustrates the diurnal pattern of demand from passengers using the main checkpoint, and **Exhibit 2.4-7** illustrates the utilization of the required lanes throughout the day to achieve LOS. Exhibit 2.4.6 illustrates efficiencies gained from TSA staffing a single checkpoint from the morning through mid-afternoon compared to a separate checkpoint for screening domestic airline passengers. **Table 2.4-6** lists the screening lane requirements and queue area for the main checkpoint.



Acronyms used in the table:

DOM-Domestic Airline FFC-Foreign Flag Carrier

SOURCE. Ricondo & Associates, Inc., analysis, June 2016

PREPARED BY: Ricondo & Associates, Inc., June 2016

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SOURCE Ricondo & Associates, Inc , analysis, June 2016 PREPARED BY Ricondo & Associates, Inc , June 2016

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Table 2.4-6: Passenger Security Screening Checkpoint Requirements

TSA CHECKPOINT	UNITS	T5 INVENTORY	COLLECTIVE REQUIREMENT
Peak Hour Originating Passengers ^{1/}	рах		1,271
Peak 20-minute Demand Basis	рах		960
Standard Screening Lane	lanes	7	7
TSA Pre Screening Lanes	lanes	0	2
Total Screening Lanes	lanes	7	9
Total Aggregate Queue Area	sq ft	4,500	2,160

NOTE:

1/ At scheduled time of departure

SOURCE. Ricondo & Associates, Inc , analysis, June 2016 PREPARED BY: Ricondo & Associates, Inc , June 2016

Indicative Passenger Security Screening Lane Requirements

Exhibit 2.4-8 overlays the space requirements for two additional lanes over a plan view of the existing main checkpoint.

2.4.3 CONCOURSES

The Project addresses the T5 west concourse (Gates M1–M6), central concourse (Gates M7–M13), and the east concourse, including the extension (Gates M14–M27). Most passengers differentiate their terminal experiences between pre-security, which is mostly characterized by anxieties over queuing and processing times at the checkpoints, and post-security, when passengers with discretionary time before or between flights are more receptive to service and product offerings. Contemporary concourse planning has evolved to consider all the different types of functions and services that comprise a concourse more holistically. This has led to more dynamic environments with intermixing of commercial programs and services, varied seating areas and styles, and new airline boarding technologies and procedures for passengers. Holistically developing commercial programs and holdroom spaces offer opportunities to successfully reallocate traditionally dedicated seating areas to be integrated with desirable commercial programs.

The layouts of passenger concourses are, for the most part, determined by the following program elements:

- CBP sterile corridor systems
- holdrooms
- commercial areas (news and gifts, retail, food and beverage, and other services)
- airline premium clubs
- restrooms
- passenger conveyance and circulation corridors
- airline customer service counters and offices
- base building facilities

Holdrooms

The area requirement for a gate holdroom is based on the design aircraft for the gate position. The holdroom area requirement comprises seating and standing areas for passengers, airline agent check-in podiums, and boarding/deplaning queuing spaces and aisles; however, it does not include elements of the CBP sterile corridor system. **Table 2.4-7** provides the Airport's guidelines for sizing holdrooms, and **Table 2.4-8** lists the design aircraft basis for the T5 gates and corollary holdroom size, including the following modified and new gate positions:

- West concourse modifications to align to new and repositioned passenger loading bridges for narrowbody aircraft gate positions
- East concourse modifications and extension to accommodate widebody aircraft on gate positions M18 through M27, including a very large widebody aircraft position (M19)



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Table 2.4-7: Holdroom Sizing Guideline								
ATTRIBUTES	HOLDROOM CLASSIFICATION	UNITS	AREA PER GATE					
Holdroom	·····							
Small RJ Aircraft (e.g., CRJ-200 or E145)	А	sq ft	960					
Large RJ Aircraft (e.g., CRJ-900 or E175)	В	sq ft	1,280					
Small Narrowbody Aircraft (e.g., A319 or 737-700)	C '	sq ft	1,910					
Medium Narrowbody Aircraft (e.g., A320 or 737-800)	D	sq ft	2,460					
Large Narrowbody Aircraft (e.g., A321 or 757-200)	E	sq ft	2,770					
Small Widebody Aircraft (e.g., 767-300 or 787-8)	· F	sq ft	3,100					
Medium Widebody Aircraft (e.g., 777-200 or 787-9)	G	sq ft	4,320					
Large Widebody Aircraft (e.g., 777-300)	н	sq ft	4,600					
Very Large Widebody Aırcraft (e.g., 747-400)	Ι	sq ft	5,550					

SOURCES International Air Transport Association, Airport Development Reference Manual, 10th Edition, TransSolutions, Terminal 5 Capacity Analysis, January 2015; Ricondo & Associates, Inc., analysis, July 2015

PREPARED BY[.] Ricondo & Associates, Inc , June 2016

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Table 2.4-8: Holdroom Space Requirements

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	.	LARGEST MARKED		REQUIRED	EXISTING GATE
CONCOURSE	GATE	AIRCRAFT	GATE CLASS	HOLDROOM AREA	AREA
М	1	ERJ175	В	1,280	
М	2A	ERJ175	В	1,280	
M	2B	ERJ175	В	1,280	8,830
Μ	3A	737-900	D	2,460	
Μ	3B	737-900	D	2,460	
M	4	737-900	D	2,460	2,135
М	5	737-900	D	2,460	4,070
Μ	6	737-900	D	2,460	4,060
М	7	747-400	Ι	5,550	
М	8	747-400	Ι	5,550	5,890
М	9	747-400	Ι	5,550	4,070
М	10	747-400	Ι	5,550	5 005
Μ	11	A380	Ι	5,550	5,885
М	12	747-400	Ι	5,550	5 6 5 5
М	13	747-400	Ι	5,550	5,625
М	15	747-400	Ι	5,550	6.245
М	16	747-400	Ι	5,550	6,345
М	17	747-400	1	5,550	4 2 2 5
Μ.	18	747-400	I	5,550	4,305
M	19	A380	Ι	5,550	2.425
М	20	777-300	Н	4,600	2,405
М	21	777-300	н	4,600	
М	22	777-300	Н	4,600	
М	23	777-300	н	4,600	
М	24	777-300	H	4,600	
М	25	777-300	Н	4,600	
М	26	777-300	Н	4,600	
М	27	777-300	Н	4.600	

SOURCE. Ricondo & Associates, Inc , analysis, June 2016

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PREPARED BY: Ricondo & Associates, Inc., June 2016

Airside Commercial Concession Program

The current T5 airside concession program, comprising 27,120 square feet post-security (excluding storage), was opened in 2014 by Westfield Concession Management. It includes 10,680 square feet of duty-free stores adjacent to the security screening checkpoint; a large food court, which composes the majority of the 9,100 square feet of food and beverage space; and 7,335 square feet of specialty and convenience retail shops.

- **Central Concourse:** Roughly spanning from Gate M6 through Gate M13, the central concourse is the space through which nearly all departing passengers would walk. While the Project does not intend for modifications to the concession program, it recognizes potential impacts on the current concession program from expansion of the checkpoint and the addition of an airline premium lounge, among other improvements. For informational purposes, it is estimated that, in 2025, passenger demand in the central concourse could support approximately 10,000 square feet of food and beverage concessions, 11,000 square feet of retail, and 9,000 square feet of duty-free.
- West Concourse: Passengers in the west concourse primarily would be flying domestically and on shorter stage lengths; hence, relative to other Terminal 5 passengers, there would be more demand for food and beverage and less/no demand for specialty retail or duty-free. The retail program could be as basic as one convenience retail shop plus one or two "wall-hugger" units. It is estimated that, in 2025, passenger demand in the west concourse could support 4,800 square feet of food and beverage concessions and 1,470 square feet in retail.
- **East Concourse:** It is assumed that the passengers departing from this zone would be on international flights. It is estimated that, in 2025, passenger demand in the east concourse could support 3,600 square feet of food and beverage concessions, 2,500 square feet of retail, and 750 square feet of duty-free.
- **Concession Storage and Back of House Facilities:** The space program for concession storage, offices, and other back-of-house facilities located at the departure concourse, mezzanine, and ramp (apron) levels should be determined during detailed design phase.

Airline Premium Lounges

The Project should provide white box shell spaces for two new airline premium lounges. The lounge spaces should be designed as a "white box" for the tenant's design and build-out. Base building elements to be provided for the tenant's design within the white box space include mechanical, electrical, plumbing, and fire protection systems, vertical conveyance—where applicable, and building services to support a full kitchen and restroom facilities.

- **New Premium Lounge—Domestic Airline:** A new premium airline lounge should be provided to support the domestic airline proposed to operate flights from the west concourse. Preliminarily, the lounge would require approximately 8,000 square feet. The location of the lounge would ideally:
 - Minimize the number of passengers walking past their gate to use the lounge
 - Have exposure to exterior views of the airfield
 - Have back-of-house access for services

 New Premium Lounge—International Airline: A new premium lounge space should be provided as part of the east concourse extension with the capability to enplane passengers directly from the lounge space using a passenger loading bridge. The size for the lounge space should be determined as part of detailed planning and design.

Restrooms

The east concourse extension should include new restroom facilities accessible to enplaning and deplaning passengers, including facilities for passengers transiting between an arrival aircraft and the FIS. Walking distance to restroom facilities should not exceed 300 feet. **Table 2.4-9** provides a preliminary basis for calculating the total public restroom fixtures to support the east concourse extension's holdroom areas based on the 2025 DDFS level of passenger activity.

AIRCRAFT	GATES	EQA I	NDEX
380-800	1	3.6	3.6
777-300	8	2.8	22 4
Total Equivalent Aircraft ((EQA)		26
Passenger Utilization			50%
Number of Male Fixtures			13
Male to Female Ratio			1.25
Total Number of Fixtures			30

SOURCE Airport Cooperative Research Program 130, *Guidelines for Airport Terminal Restrooms Planning and Design*, 2015, PREPARED BY Ricondo & Associates, Inc., June 2016.

Passenger Conveyance and Circulation Corridors

The east concourse extension should include passenger conveyance, including moving walkways, escalators, and elevators. Walking distances between major passenger activities, for example, between central concession areas to boarding gates, or from deplaning gates to the FIS, exceeding 1,000 feet should be provided moving walkways. Level changes that are required for passengers to access services or activities or to enplane/deplane aircraft should be assisted with ramps or escalators, and options to use elevators. Elevators ideally should have a flow-through design, i.e., opposite side exit from entrance. To the extent possible, separate elevators should be provided for back-of-house use.

The widths of circulation corridors at the departure level should be designed to accommodate bidirectional flows that could occur in the future. Design of corridors should consider building codes, placement of passenger conveyance systems, and use of electric carts to transport older passengers and those with disabilities. The sterile corridor system should be designed for single directional flows, and wheelchairs used to transport older passengers and those with disabilities. The disposition of the existing west concourse

sterile corridor system should be determined during detailed design phase in collaboration with the airlines and the Airport.

Airline Customer Service Counters and Offices

The space program for airline service counters and offices located at the departure concourse, mezzanine, and ramp (apron) levels should be determined during detailed design phase.

Base Building Facilities

Base building facilities required to support the Project modifications and extension to T5 should be determined during detailed design phase. Such facilities include: Mechanical, Electrical & Plumbing (MEP) and Fire Protection systems, exit stairs, loading docks, and other building and back-of-house support, storage, and office areas.

2.4.4 AIRSIDE TRANSFER BUS STATION

The Project includes facility improvements to support an Airside Transfer Bus. The Airport does not currently provide an airside shuttle between the central terminal area and T5. The Airside Transfer Bus is intended as a service for passengers who arrive in the central terminal area as a domestic passenger and are departing on a flight from Terminal 5. The bus would collect passengers at a number of pick-up locations before dropping off at Terminal 5. This would allow passengers who have undergone screening at their origin airport to avoid exiting to the landside at their arrival terminal, having to use the ATS to travel to T5 and going through the T5 security screening checkpoint to re-enter the airside. Conversely, domestic and precleared passengers without checked bags or connecting to a code-share airline would be able to ride the Airside Transfer Bus to the central terminal. It is not envisioned that passengers exiting the FIS would re-enter the T5 concourse to ride the Airside Transfer Bus to the central terminal; rather, they would use the ATS.

The preferred location for the T5 airside connector bus station is in the proximity of Gate M8. **Exhibit 2.4-9** and **Exhibit 2.4-10** illustrate an indicative concept layout for the station at Apron Level and Upper (concourse) Level, respectively. The exhibits were based on bus vehicle characteristics similar to Cobus Model 3000, which should be validated as part of detailed design.

2.4.5 SUPPLEMENTAL RAMP CONTROL FACILITY

The Terminal 5 aircraft parking apron and International Taxilane, which is used to access the parking positions, comprise a non-movement area controlled by the International Gate Coordinator (IGC). The existing ramp control tower experiences limited views of certain terminal ramp areas, particularly towards the end of the east concourse extension, which will likely be exacerbated by the extension of the east concourse and new aircraft parking apron and taxilanes along the north side of the concourse extension. The option for utilizing cameras should be explored; however, the size of the existing ramp control facility may be too limited to support additional personnel or equipment. **Exhibit 2.4-11** provides a plan of the existing ramp control facility. The requirement for a supplemental ramp control facility should be investigated further as part of the design process and included in the overall program if required.

AUGUST 2016

Ramp Level

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 NORTH
 0
 150 ft

 Drawing N/ORD/2015_T2_T5 Short Termi04-Working\03-0r.nwings&ModelsVatoCAD\08152016/2 4-9 dwg_Layout! Layout1_Aug 15, :016, 5 42pm

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AUGUST 2016

[Preliminary Draft for Discussion Purposes Only]



Concourse Level

Drawing: N IORDi2018 T2, T5 Short Termi04-Workingi03-Drawings&More/siAutoCADi08152016i2 4-10 dwg. Layout: Layout Layout 1, 2016, 5-43pm

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2.4.6 BAGGAGE HANDLING SYSTEMS

This section discusses the requirements for TSA Explosive Detection System (EDS) units and airline outbound baggage make-up facilities. Domestic/Precleared bag claim and International Bag Claim are discussed in Section 2.4.2.

TSA Explosive Detection System

Computer modeling was used to derive the demand basis for calculating EDS unit requirements. Criteria for determining unit requirements conform to the TSA's *Planning Guidelines and Design Standards for Checked Baggage Inspection Systems* (November 27, 2009), including redundancy (n+1). The throughput rate used for EDS was 600 bags per hour.

EDS Bag demand consists of bags inducted at check-in (agent and bag-drop positions) and at FIS airline recheck counters. **Exhibit 2.4-12** illustrates the diurnal bag induction pattern from T5 check-in positions and airline recheck counters. **Exhibit 2.4-13** correlates collective bag volumes to centralized EDS unit requirements. **Table 2.4-10** summarizes the demand basis and corollary requirements for centralized EDS units in accordance with TSA planning guidelines. The existing T5 inventory of six EDS units should be capable of accommodating the collective airlines' EDS requirement based on TSA design guidelines.



NOTES:

Acronyms used in the table:

DOM-Domestic Airline FFC-Foreign Flag Carrier

SOURCE: Ricondo & Associates, Inc., analysis, June 2016

PREPARED BY. Ricondo & Associates, Inc., June 2016



SOURCE Ricondo & Associates, Inc., analysis, June 2016 PREPARED BY: Ricondo & Associates, Inc., June 2016.

Table 2.4-10: Explosive Detection Systems Requirements

	UNITS	INVENTORY	COLLECTIVE	DOMESTIC	INTERNATIONAL	TRANSFER
Peak 10-minute Bags	bag		462	44	208	324
Bag Screening Facility Capacity	bags/10- minutes		600	200	400	500
Surge Factor ¹	percent		9%	30%	14%	10%
Bag Screening Device Requirement	each	6	6	2	4	5

NOTES

1/ At scheduled time of departure

2/ Includes n+1 device based on TSA guidelines

SOURCE: Ricondo & Associates, Inc , analysis, June 2016 PREPARED BY: Ricondo & Associates, Inc , June 2016

Airline Outbound Bag Make-Up

Outbound baggage make-up facilities are used by airlines for temporary holding and loading of checked baggage onto baggage carts for delivery to departing aircraft. These facilities are located downstream of TSA checked baggage screening systems and are used to handle all originating passenger baggage and connecting passenger baggage. Bags unloaded from a non-CBP Precleared flight must be screened at a TSA EDS facility prior to being transferred onto an onward flight.

Airline outbound baggage make-up facilities comprise the baggage make-up equipment, areas for staging and loading baggage carts, and baggage cart drive (circulation) aisles. Outbound baggage make-up devices can be configured to use run-out piers that extend directly from the baggage conveyance and sortation system or carousel units that allow baggage to continuously circulate and provide for higher storage capacity and greater staging area for carts. Carousels can be flat-plate units or slope-plate units. Slope-plate units provide greater capacity; however, flat-plate units are preferred by some airlines because they provide better ergonomics for workers. Carts can be staged either perpendicular to make-up devices or parallel, if the aisles between devices have sufficient width.

Exhibit 2.4-14 illustrates the configuration of the T5 outbound bag make-up facility. The make-up facility consists of 27 run-out piers. Each pier supports active staging for four bag carts. Two bag-tag re-encoding stations are located along the east and west sides of the facility. Piers are assigned to the airlines operating from T5 as follows:

- Thirteen piers (52 cart positions) are assigned to U.S. flag international airlines for sorting recheck bags from FIS for delivery to aircraft departing from the central terminal complex. After make-up, most bags are delivered directly to the aircraft.
- The remaining 14 piers (56 cart positions) are assigned to foreign flag airlines.
- One pier is used for interline connections.
- Two piers are used for bags processed after close-out time.

Table 2.4-11 and **Table 2.4-12** list the typical planning criteria for determining the number of cart positions and staging period for carts by the domestic airline relocated to T5 and the foreign flag airlines with departures from T5. Outbound make-up requirements for U.S. flag international airlines were assumed to remain the same for this analysis. The following exhibits illustrate the requirements for cart staging positions for the different airline segments operating from T5.

- **Exhibit 2.4-15**: Collective shared-use foreign flag airline make-up bag carts
- Exhibit 2.4-16: Preferential-use domestic airline relocated to T5
- **Exhibit 2.4-17**: Aggregate diurnal pattern of demand for cart staging positions, representing the sum of shared foreign flag airlines, preferential domestic airline, and preferential U.S. flag international airlines' cart staging requirements



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Table 2.4-11: Outbound Bag Flight Make-up Periods

BAG MAKE-UP	UNITS	DOMESTIC AIRLINE	FOREIGN FLAG INTERNATIONAL
Flight Make-up Duration	minutes	150	180
Flight Close-out (pre-departures)	minutes	30	30
Cart Staging Profile (prior to departure)			
50%	minutes	150-90	
100%	minutes	90-30	180-40

SOURCES⁻ International Air Transport Association, *Airport Development Reference Manual*, 10th Edition, 2014, Ricondo & Associates, Inc., 2016(benchmark compiled from DCA 2013, DEN 2014, LAX 2014, MIA 2014, IAH 2015, MSP 2015)

PREPARED BY Ricondo & Associates, Inc., June 2016.

Table 2.4-12: Outbound Bag Make-up Cart Staging Schedule by Aircraft Design Group

AIRCRAFT DESIGN GROUP	UNITS	CARTS
Aircraft Group II	carts	Up to 2
Aircraft Group III	carts	Up to 3
Aircraft Group IV	carts	Up to 4
Aircraft Group $V^{1/}$	carts	Up to 4
Aircraft Group VI ^{+'}	carts	Up to 4

NOTES:

1/ Based on existing assignment of one pier per flight

SOURCES. International Air Transport Association, Airport Development Reference Manual, 10th Edition, 2014; CICATEC Inc., 75 Spring 2016 Bag Makeup Allocations, 2016

PREPARED BY. Ricondo & Associates, Inc., June 2016.



SOURCE Ricondo & Associates, Inc., analysis, June 2016 PREPARED BY: Ricondo & Associates, Inc., June 2016



SOURCE: Ricondo & Associates, Inc , analysis, June 2016. PREPARED BY. Ricondo & Associates, Inc , June 2016



Table 2.4-13 summarizes the individual airline groups and aggregate requirements for staged cart positions. A net additional 19 cart staging positions would be required to accommodate the relocated domestic airline in the existing make-up facility.

Table 2.4-13: Cart Staging Requirements								
	UNITS	T5 INVENTORY	T5 AGGREGATE	U.S. FLAG INTERNATIONAL	FOREIGN FLAG INTERNATIONAL	DOMESTIC AIRLINE		
Outbound Bag Make-Up								
Demand Basis Peak 10-Minute Flights in Make-up	operations		31	9	14	12		
Staged Carts	carts	108	127	52	54	21		

PREPARED BT RICORDO & ASSOCIATES, INC., JUNE 2016

Indicative Outbound Bag Make-up Requirements

Exhibit 2.4-18 overlays the space requirements for outbound bag make-up over a plan view of the airline bag room. The requirements accommodate additional departing flights from foreign flag airlines; current number of cart staging positions for U.S. flag international airlines; and the relocation of a domestic airline to T5. Alternative concepts are discussed in Section 4.2.



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2.4.7 FEDERAL INSPECTION SERVICES FACILITY MODIFICATIONS

The design team should refer to the separate program document prepared by Landrum and Brown, which describes renovation and reconfiguration of the Federal Inspection Services Facility (FIS) Primary Inspection Hall and Secondary Inspection areas to enlarge queuing areas and provide additional or relocated CBP functional spaces.

The aviation forecast has since been updated from the time that the Landrum and Brown report was completed. As information to the Design Team, the comparison of the archival 2015 flight schedule for international flight arrivals to the forecast 2025 DDFS shows peak hour demand from deplaning passengers entering the FIS increasing from 2,880 passengers to 3,142 passengers, respectively. The impact on FIS requirements are reported in **Table 2.4-14**, which compares FIS facility inventories against those needed to achieve the Airport's LOS (as indicated on the Table) for the various FIS areas used to process passengers for entry into the U.S. Summarily, the principal facility deficits are:

• Additional Automated Passport Control (APC) kiosks will be needed to accommodate the higher peak hour demand; as well as, higher APC usage resulting from CBP programs to expand APC eligibility to include additional visa categories.

• Exit Control positions should be centralized and one additional position added to accommodate the higher peak hour demand.

Exhibit 2.4-19 illustrates baggage claim utilization correlating to the 2025 DDFS for international, preclearance and domestic flight arrivals. Baggage claim utilization refers to the amount of time bags from an arriving flight occupy a claim unit, which was assumed to be 20 minutes, regardless of aircraft size. The exhibit depicts the condition where domestic and preclearance flight arrivals share two claim devices and international flight arrivals exclusively use the nine claim units located in the FIS. As previously described in Section 2.4.2, this condition requires simultaneous use of one device by domestic and preclearance flight arrivals. Considering the variability of transoceanic flight schedules, this condition has the potential for different levels of congestion experienced by passengers using a shared claim unit depending on the actual arrival time of a precleared flight.

Alternately, **Exhibit 2.4-20** illustrates the condition where the two claim devices located outside of the FIS would be used for domestic flight arrivals, and one claim unit located in the FIS can be switched, by means of moveable wall partitions and controlled doors, for use at separate times for either international flight arrivals or preclearance flight arrivals. This condition would not require simultaneous use of any device by domestic and preclearance flight arrivals; and the large 240 long claim units in the FIS are better able to accommodate multiple flight arrivals.

	Unit	Inventory	Requirement
Port of Entry (CBP)			
Peak 10 Minute Arriving Flights	units		4
Peak 10 Minute Deplaning Passengers	рах		1,062
Peak 60 Minute FIS Demand	рах		3,142
Global Entry Kiosks	units	14	6
Demand Basis (peak 10 minute)	рах		42
APC Kiosks	units	68	92
Demand Basis (peak 10 minute)	рах		594
Officer Podium Positions	positions	14	17
Demand Basis (peak 10 minute)	рах		396
Inspection Booth (APC Triage, Non APC)	positions	46	37
Demand Basis (peak 10 minute)	рах		320
Bag Claim Carousels (avg 240 In ft each)	devices	9	8
Peak Passengers Accumulated	рах		919
Peak Bags Accumulated	bags		349
Exit Control Positions	positions	4	5
Demand Basis (peak 10 minute)	рах		653

 Table 2.4-14: Federal Inspection Service Facility Requirements

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PREPARED BY Ricondo & Associates, Inc , June 2016

SOURCE: Ricondo & Associates, Inc., analysis, June 2016.

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54:00:00 53:00:00 22:00:00 57:00:00 50:00:00 Preclearance Arrival 10:00[:]61 00:00:81 HE . 41 Exhibit 2.4-20: Bag Claim Utilization – Convertible Preclearance/International 00:00:71 T M J0:00:91 E total Π 00:00:ST ced 14:00:00 .CDI ۵ I J3:00:00 Con 1 Π International Arrival 12:00:00 6 -8) E 00:00:77 10:00:0T (15**4**4) 00:00:60 (S.2.) 2.4 1992. 1875 | 00:00:80 00:00:70 370 00:00:90 00:00:50 Domestic Arrival 00:00:40 03:00:00 SOURCE RIcondo & Associates, Inc., analysis, June 2016. PREPARED BY Ricondo & Associates, Inc, June 2016 00:00:20 00:00:10 00:00:00 Domestic Claim 1 Domestic Claim 2 FIS Claim 6 FIS Claim 8 FIS Claim 9 FIS Claim 1 FIS Claim 3 FIS Claim 4 FIS Claim 5 FIS Claim 2 FIS Claim 7

2.5 Landside Requirements

2.5.1 TERMINAL ACCESS ROADWAYS REQUIREMENTS

An aerial view of the Terminal 5 landside elements are shown **Exhibit 2.5-1**. Sections of the access roadways have been numbered, as shown on **Exhibit 2.5-2** for purposes of the LOS analysis. **Table 2.5-1** summarizes the calculated roadway Level of Service for the Terminal 5 access roads in 2025. The roadway level of service for all roads used to access and circulate around Terminal 5 are LOS A or B in 2025 as currently provided. No additional landside roadway work should be required.

2.5.2 TERMINAL CURBSIDE REQUIREMENTS

The allocations of the existing curb length for different vehicle categories are shown in **Exhibit 2.5-3** and **Exhibit 2.5-4**. **Table 2.5-2** presents the calculated requirements for the Terminal 5 curbs with a domestic airline relocated Terminal 5 and the relocation of commercial services from the curbs to the new Multimodal Transportation Facility (MMF). Table 2.5-2 show that the Lower Level Curbs have more than sufficient capacity to provide LOS B or better in 2025, however the Upper Level Curb requires a short extension from the existing 544 feet to 688 feet to provide the desired LOS C.

An option to increase the capacity of the upper level curb by removing the existing planters and making a slight extension to the drop off area is shown in **Exhibit 2.5-5**, and the lower level curb allocations following the relocation of the commercial services to the MMF are shown in **Exhibit 2.5-6**.





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	Table 2.5-1: Roadway Level of Service							
LINK	ROADWAY DESCRIPTION	ROADWAY CLASS	2025					
3	Lower Level Terminal 5 Inner Curbside	Terminal Curbside	А					
13	Lower Level Terminal 5 Outer Curbside	Terminal Curbside	А					
17	Interstate 190-Eastbound to Bessie Coleman Drive / Terminal 5	Secondary Access Roadway	А					
18	Terminal 5 Entry Roadway	Secondary Access Roadway	В					
19	Terminal 5 Parking Entry	Ramp	А					
20	Lower Level Terminal 5 Curbside Entry	Secondary Access Roadway	В					
21	Upper Level Terminal 5 Curbside	Terminal Curbside	· A					
22	Terminal 5 Parking Exit	Ramp	А					
23	Recirculation Road at Terminal 5	Ramp	А					

SOURCE: Ricondo & Ássociates, Inc., analysis, June 2016 PREPARED BY: Ricondo & Associates, Inc., June 2016

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	Table 2.5-2: Terminal Cu	rb Requirements	
		LOWER LEVEL OUTER CURB	LOWER LEVEL INNER CURB
Curbside utilization	165%	56%	96%
Curbside level of service (LOS)	D	А	В
Required length for optimal LOS C	688	400	208
Required length for optimal LOS D	526	348	159
Existing Curbside Length Available	544	709	283
Roadway volume/capacity (V/C)	0.38	0.16	0.35
Roadway level of service (LOS)	А	А	A

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SOURCE: Ricondo & Associates, Inc., analysis, June 2016. PREPARED BY Ricondo & Associates, Inc., June 2016

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3. Existing Conditions

3.1 Terminal 5 Overview

3.1.1 AIRSIDE INFRASTRUCTURE AND OPERATIONS

This section provides a description of the applicable regulations governing T5 airside operations and existing airside infrastructure.

3.1.1.1 Part 77

Federal Aviation Regulation (FAR) Part 77 governs the evaluation and identification of objects that may pose as a hazard to air navigation. The regulations define the dimensions and orientation of imaginary surfaces surrounding an airport, the location and elevation of which are based on the airport's runways. The FAR Part 77 surfaces generally extend outward and upward from the runway. Anything penetrating these surfaces is considered an obstruction. Though obstructions are not prohibited, they must be analyzed and incorporated into established United States Standard Terminal Instrument Procedures (TERPS) for aircraft arriving and departing the Airport. If an object is considered an obstruction to the FAR Part 77 surfaces, it may adversely affect the ability for runways to operate during low visibility conditions. **Exhibit 3.1-1** depicts the Part 77 surfaces in the vicinity of Terminal 5.

3.1.1.2 Ramp Control

The Terminal 5 aircraft parking apron and International Taxilane, which is used to access the parking positions, are a non-movement area controlled by the International Gate Coordinator (IGC).⁶ IGC and the O'Hare Air Traffic Control Tower coordinate specific access points to transfer aircraft between the non-movement and movement areas. IGC operates from a ramp tower located at the southwest corner of the Terminal 5 concourse. **Exhibit 3.1-2** depicts the non-movement area boundary and location of the ramp control tower.

3.1.1.3 Aircraft Parking

Terminal 5 is capable of accommodating aircraft ranging in size from regional jets to the Airbus A380-800. 18 to 21 aircraft can park at the concourse and an additional three to five aircraft parked at hardstands to the east of the concourse. The variability in the number of aircraft that can be accommodated is caused by dependencies that result from the gauge of aircraft being parked at each position. **Exhibit 3.1-3** depicts the location of the parking positions and **Exhibit 3.1-4** details the aircraft gauge for each position.

⁶ The O'Hare Air Traffic Control Tower issues clearance to/from Gates M1, M2, and M3 due to their proximity to Taxiway B.



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3.1.1.4 Aircraft Servicing

Aircraft servicing is carried out at each gate position by ground handlers contracted by the airlines. The range of services offered includes inflight provisioning, waste disposal, cargo handling, and fueling.

In-Flight Provisioning

In-flight provisioning is carried out at each gate position by ground handlers contracted by the airlines. Service vehicles may be pre-positioned outside of the aircraft parking envelope prior to an aircraft's arrival, or access each gate via the tail of stand service road.

Waste Disposal

Aircraft's lavatory tanks are emptied at the gate by ground handlers contracted by the airlines using a selfpowered truck and transported to a triturator facility located at the northeast corner of the Terminal 5 concourse. The location of the triturator is depicted in **Exhibit 3.1-5**.

Cargo

Aircraft carrying cargo are unloaded at the gate by ground handlers contracted by the airlines. After unloading, the cargo is transported to cargo facilities located at the airport via a network of airside service roads. Additionally, a cargo storage area that can be used for staging purposes is located at the northeast corner of the Terminal 5 concourse. **Exhibit 3.1-6** depicts the location of the cargo storage area.

Fueling

Aircraft are fueled at each gate position through an underground piping system. A series of underground hydrant pits located in the vicinity of each position are connected to the aircraft by a mobile dispenser, such as a hydrant service cart, which transfers the fuel to the aircraft. **Exhibit 3.1-7** depicts the location of the hydrant pits.

3.1.1.5 Aircraft Deicing

During weather conditions requiring the application of de/anti-icing fluid aircraft are serviced at the gate by ground handlers contracted by the airlines. Excess de/anti-icing fluid applied at the gates is collected by the airport's storm water detention system and is treated by the Metropolitan Water Reclamation District (MWRD) of Greater Chicago.

Remote de/anti-icing facilities are located at existing hardstand positions M24 and M25. However, these facilities are limited to regional jets and generally serve only operations from the domestic terminals.

3.1.1.6 Ground Service Equipment (GSE) Staging/Storage

GSE equipment is generally stored and prepositioned outside of the aircraft parking envelope prior to an aircraft's arrival. However, limited space is available to store additional equipment in the airline cargo staging area or east of the hardstand positions.





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3.1.1.7 Snow Removal Operations

Currently snow removal at Terminal 5 is managed by the CDA via contracts with several different private firms. Snow equipment is staged at several locations around the terminal, including east of hardstand positions M24 and M25 and north of existing Concourse L, around the AT&T building. During snow events the CDA coordinate with Terminal 5 ramp control to close Gate M1 and one or more of the hardstand positions to push and pile the snow. A mobile snow melter is then placed over the top of dual surface drains (that are connected into the Airport's storm water collection system) and the snow loaded in for melting. Stormwater resulting from snow-melting operations flows to the south basin and then off-Airport to the MWRD.

3.2 Related Projects

Several projects that are either in progress or planned will affect Terminal 5 and its surrounding areas. These projects are not directly linked to the Project described in this PDD.

3.2.1 TERMINAL 5 CHECKED BAGGAGE INSPECTION SYSTEM OPTIMIZATION

The T5 Checked Baggage Inspection System (CBIS) Optimization Project will allow rechecked bags after clearing the FIS to be introduced directly into the T5 CBIS. Terminal spaces located adjacent to the domestic/precleared bag claim device that are currently being used to manually inspect rechecked bag, will be cleared and architectural finishes installed to match the adjacent bag claim area. The design for adding a second bag claim carousel and inbound feed is shown on the T5 CBIS Optimization Project drawings, the decision regarding its installation is pending.

3.2.2 SITE AND ANCILLARY BUILDING DEMOLITION

Refer to Section 5.2 for a description of enabling projects generally involving site clearance east of the existing Terminal 5 hardstand positions on the site of the former Lynx Cargo Building and former Sky Chef Flight Kitchen (both vacant).

3.2.3 EXTENSION AND UPGRADES TO THE AIRPORT TRANSIT SYSTEM

Ongoing capacity-enhancing capital improvements at the Airport should have an impact on the passenger volumes using the ATS in the future. Notably, the opening of the Multimodal Facility in the northeast corner of the Airport and the concentration of rental car, public parking, and hotel, motel, and off-Airport parking shuttles at the facility should result in different demand patterns on curbside and close-in parking facilities in the future. These changes should result in increased ridership on the ATS from the Multimodal Facility to Terminal 5 as all rental car riders, additional remote public parkers, and hotel, motel, and off-Airport parking riders should use the ATS to access the passenger terminals. As a result, capacity enhancements to the ATS system, including additional rolling stock acquisitions, signalization system upgrades, and station expansions, may become necessary as a result of these demand shifts as well as overall growth in passenger activity.



3.2.4 PARKING GARAGE

Increased activity at Terminal 5, particularly among O&D passengers, could create additional demand for close-in public parking spaces adjacent to Terminal 5. A possible location for additional public parking is the Parking Lot D location or sites immediately east of the parking lot. Increased parking capacity would augment the current provision in Lot D both in terms of proximity and amenities. The demand for additional structured capacity would necessarily consider public parking in the Multimodal Facility well as need for expanding current Terminal 5 parking options.

3.2.5 NEW HOTEL DEVELOPMENT

The CDA is moving forward with plans to develop an approximately 350-room full-service hotel property within walking distance to Terminal 5. This property should contain on-site restaurant(s), banquet and conference facilities, and boutique shopping as well as offer excellent convenience to Terminal 5 as well as the other, passenger terminal and CTA Blue Line via the ATS. The precise location of the hotel is yet to be determined but, given the desire to maximize walkability to the Terminal and ATS, will likely be on Parking Lot D or sites immediately east of the parking lot. Additional planning for the hotel is expected to take place in summer 2016.

3.2.6 CENTRALIZED DEICING PAD

Though the 2005 OM EIS assumed that aircraft deicing operations would continue to occur at existing and future gates prior to aircraft departure, the CDA and airlines serving the Airport identified a need for a portion of departing aircraft to be deiced away from the gate areas in order to mitigate arrival delays.

The centralized deicing pad will afford the airlines an opportunity to prioritize the use of gate and ramp areas for enplaning/deplaning rather than deicing. During the portion of the year where aircraft deicing operations are not taking place, the centralized deicing pad will be available to stage aircraft away from the gate during normal operations and irregular operations.

Currently in the planning and design phase, the centralized deicing pad is anticipated to be located on the west portion of the airfield between Runways 9R-27L and 10L-28R. This affords access to both the north and south airfields along with access to/from the east portion of the airfield. Approximate dimensions of the pad are 1,000 feet by 2,150 feet with a layout capable of staging up to 12 ADG-III aircraft simultaneously.

3.3 Existing Terminal Configuration

3.3.1 FUNCTIONAL SPACE ARRANGEMENT

Terminal 5 comprises four building floor levels housing approximately 1,258,550 square feet in total, including the T5 ATS platform. The following exhibits illustrate the arrangement of spaces on each floor of the terminal building:

- **Exhibit 3.3-1**—Lower Level is also referred to as the Baggage Level. The FIS facility, CBP Precleared bag claim, Meeter/Greeter lobby, and the building's loading dock are located on this level. Baggage Level is below the adjacent apron grade but at the same level as the arrivals roadway. The arrivals roadway ramps down to the Baggage Level as it approaches the terminal building. Escalators/elevators located within the building lobby provide direct access to the ATS platform.
- Exhibit 3.3.-2—Apron Level principally houses the FIS sterile corridor system, which connects aircraft arrival gates to the Lower Level FIS facility; airline operations spaces; and the T5 baggage handling space. The baggage handling space is essentially located above the Lower Level FIS facility and below the check-in lobby, which facilitates handling of both outbound (departing) and inbound (arriving) bags. The T5 ATS platform is approximately at the equivalent level of the T5 Apron level in terms of the terminal building section, in other words the ATS station is vertically located above the Lower (Baggage) Level and below the Upper (Ticket) Level.
- **Exhibit 3.3-3**—Upper Level is also referred to as the Ticket Level. This level houses facilities utilized by enplaning passengers including: Check-in lobby, airline ticket offices, TSA security screening checkpoint, commercial concessions, airline premium clubs and holdrooms. The Ticket Level is at the same level as the elevated departure roadway. Escalators/elevators located within the building lobby provide direct access to the ATS platform.
- **Exhibit 3.3-4**—Mezzanine Level has limited public access. This level houses various Airport and tenant offices, mechanical penthouses and the ramp control tower.







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3.3.2 TERMINAL SPACE INVENTORY

Table 3.3-1 provides a space inventory summary by major space categories and floor levels. The following section describes the types of spaces and activities accounted for within each space category.

	Table 3.3	-1: Terminal	Space Invento	ory		
Т5	UNITS	LOWER	APRON	UPPER	MEZZANINE	SUBTOTAL
Airline Facilities	sq ft	31,749	162,182	132,618	2,006	328,600
Department of Homeland Security (DHS)	sq ft	215,319	56,159	29,471	639	301,600
Commercial Program	sq ft	4,098	, O	34,996	0	39,100
Airport & Other Agency	sq ft	13,247	40,391	7,396	6,412	67,400
Building Services	sq ft	39,173	74,744	10,705	70,849	195,500
Other Common	sq ft	46,409	23,064	149,510	4,641	223,600
Total	sq ft	350,000	356,500	364,700	84,500	1,155,800 ¹

NOTE

1/ Actual floor areas, not inclusive of major floor openings

SOURCE⁻ Ricondo & Associates, Inc., analysis, June 2016

PREPARED BY Ricondo & Associates, Inc., June 2016

3.3.2.1 Airline Facilities

The areas leased to airlines for outbound/inbound passenger and baggage processing include:

- **Check-In**: space dedicated to passenger processing for obtaining boarding passes and checking baggage.
- **Airline Ticket Office**: back-of-house office space dedicated to airline personnel for administrative functions associated with the check-in process
- **Airline Office and Operations**: space on the secure side of the terminal dedicated to airline personnel for administrative and operational functions
- **Baggage Service Office**: space dedicated to airline personnel for addressing issues related to checked baggage
- **Holdrooms**: space dedicated to airlines for passengers awaiting aircraft boarding and disembarkation; space includes seating/standing area, circulation to/from the gate door and gate processing equipment (i.e., agent desk and boarding pass reader podium).
- Airline Club Room: club space provided to an airline's premium passengers.
- **Baggage Makeup**: device(s) and associated work areas for loading outbound checked bags onto baggage carts or baggage containers for delivery to the aircraft

• **Baggage Claim**: baggage claim device(s) and associated inbound baggage handling system feeds for inbound checked baggage presentation and pickup

3.3.2.2 Department of Homeland Security

Transportation Security Administration

The area dedicated to the TSA for screening passengers and baggage prior to aircraft boarding. These areas may include:

- Security Screening Checkpoint: space to conduct security screening of passengers and their carryon possessions prior to such passengers entering the sterile or secured area; includes screening equipment, queuing area, and manual search areas or rooms
- **TSA Office**: office space dedicated to the TSA personnel for administrative and operational functions
- **Checked Baggage Screening**: dedicated area for baggage conveyance and baggage screening rooms to conduct security screening of outbound checked bags; includes enclosed and non-enclosed rooms, EDS, checked baggage resolution area (CBRA), baggage conveyance and right-of-ways

U.S. Customs and Border Protection

The area dedicated to the CBP for screening international passengers entering the United States, including:

- Federal Inspection Services Facility: space dedicated for international arriving passengers and baggage for primary, inspection, international baggage claim, secondary inspection, and baggage recheck
- **Customs and Border Protection Office**: space dedicated to CBP personnel for administrative and operational functions

3.3.2.3 Commercial Program

The commercial area(s) leased to venders for merchandise, retail, or food and beverage sales. These areas may include:

- Concessions Office: space for administrative and operational functions
- **Concessions Storage**: space for concessionaires to store merchandise for sale

3.3.2.4 Airport and Other Agency

The areas include space for Airport staff administration and operations, as well as other spaces not leased by the airlines, such as:

Administration and Executive: space used by Airport personnel for administrative and operational
 functional

- Operations and Maintenance: space used by Airport staff for functions related to maintain building systems
- **Police**: space used by the Airport police organization for administrative and operational functions
- **Miscellaneous**: all other spaces used by Airport personnel, or third-party contractors handling Airport or airline-related operations, maintenance, or special works. There areas include office, conference room, storage, and other miscellaneous spaces

3.3.2.5 Building Services

The areas dedicated to loading docks, mechanical, electrical, plumbing, communication, life safety operations, and function within the passenger terminal facilities.

3.3.2.6 Other Common

These areas include commons spaces within the terminal facility, including:

- **Circulation:** the areas dedicated to secure, non-secure, and egress circulation of passengers throughout the passenger terminal facilities
- **Vertical Circulation:** the stairs, escalators and elevators used for secure, non-secure, and egress circulation of passengers and employees throughout the passenger terminal facilities
- **Restrooms:** the areas dedicated to restrooms provided at the Airport under the provisions of the governing building code standards.
- Unassigned: these areas include vacant or currently unassigned spaces within the terminal facility
- Automated Train Station: Airport ATS platform

3.3.3 PASSENGER FLOWS

All international flights arriving at the Airport, excluding some flights from CBP Preclearance airports, are processed at the T5 FIS. While all international flights deplane at T5, many airlines, particularly the U.S. flag airlines tow the aircraft to their respective terminals in the central terminal complex for enplaning and departures. The passenger flows accommodated within T5 are as follows:

- Enplaning passengers comprise passengers originating their international flight segment at T5 and entering T5 from the landside or transported directly to Concourse M by an airline operated airside shuttle bus. The former are required to clear TSA security screening at the T5 checkpoint, while the latter have cleared TSA security screening at another location.
- Deplaning international passengers are required to clear the FIS prior to entering the U.S. This
 represents the majority of deplaning passengers, who after exiting the FIS are able to access the T5
 landside and ATS for onward ground transportation travel; or re-enter the T5 concourse to connect to
 an onward flight segment. The latter category of passengers may be required to check-in with their
 onward airline, depending on code share arrangement, and all passengers re-entering the T5
 concourse would necessarily have to clear the T5 TSA security screening checkpoint.

Deplaning passengers arriving from a CBP Preclearance airport are accommodated in the same manner as a U.S. domestic deplaning passenger. Since this category of passengers enplane and deplane flights at the same concourse level, they are more easily able to transfer to onward flights within the same terminal or use an airside transfer bus to shuttle between the central terminal area and T5, which would not require exiting the secure concourse. The exception to this would be passengers needing to claim a checked bag, for example, a passenger transferring between non code share airlines would have to claim and check their bags with the onward airline and be rescreened by TSA prior to re-entering the concourse.

One purpose for the Project is to relocate a domestic airline from the central terminal complex to T5, which introduces new domestic passenger flows that are, as previously noted, the same as Deplaning passengers arriving from a CBP Preclearance airport.

The following exhibits illustrate the preceding passenger flows as they are currently accommodated on the different terminal floor levels,

Exhibit 3.3-5 illustrates the passenger flows accommodated on Upper (Ticket) Level for enplaning passengers departing on either a domestic or international flight. Enplaning passenger flows originate at this level from passengers dropped off on the departure curb or ascending from the ATS station and parking connector bridge. The exhibit also illustrates flows for deplaning passengers arriving from a domestic airport or a CBP Preclearance airport. Deplaning passengers exit the secure concourse north of Gate M6 then use an escalator or elevator to descend to the Lower (Baggage) Level and arrivals curb services. Domestic and CBP Preclearance bag claim is located at the western end of Meeter/Greeter lobby. Alternatively, after exiting the secure concourse, arriving passengers not claiming baggage or using arrivals curbs, can proceed to separate escalators and elevators to descend to the ATS station level to access either the ATS station platform or parking facilities beyond the ATS station.

Exhibit 3.3-6 illustrates the passenger flow accommodated on the Apron Level, which is limited to the sterile corridor system connecting the concourse arrival gates to the FIS located one level below the Apron Level. Deplaning passengers disembark the aircraft and descend down ramps systems into the Apron Level sterile corridor system. One additional level change is required to descend to FIS located on the Lower (Baggage) Level. Except for the sterile corridor system, functions at this level are associated with baggage handling and operations spaces.





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Exhibit 3.3-7 illustrates the passenger flows accommodated on the Lower (Baggage) Level. The sterile corridor system is continued from the point where passengers descend to the Baggage Level from the Apron Level and then enter the FIS. Passengers processing through the FIS utilize traditional inspection channels or passengers without checked baggage can use "One Stop" processing, which allows them to bypass baggage claim and exit control inspection using an express corridor that connects them directly to the Meeter/Greeter lobby. The exhibit illustrates the point where deplaning CBP Preclearance and domestic passengers descending from the Upper (Ticket) Level secure concourse exit point arrive at Baggage Level and their bag claim devices. From the Baggage Level, passengers can exit directly to the arrivals curb or ascend one floor to the ATS station and connector bridge to parking facilities.



Terminal 5 Concourse M Extension Project Project Definition Document
4. Indicative Concepts

4.1 Terminal Complex Site Plan

The following sections outline the preferred concept for terminal complex site plan.

4.1.1 AIRSIDE SITE PLAN

Exhibit 4.1-1 illustrates the conceptual airside site plan anticipated upon the completion of the Project. The airside site plan may further be refined during the design phase.

4.1.1.1 Project Limits

Exhibit 4.1-2 illustrates the project limits for the Project. The project limits are inclusive of the areas necessary for site preparation, demolition of existing facilities and construction of new pavement areas, buildings, and facilities associated with the Project.

The proposed extents of new apron and taxilane pavements are included in Exhibit 4.1-2. Actual extents of new pavements should be determined during the design phase.

4.1.1.2 Fencing

Exhibit 4.1-3 illustrates the perimeter fencing plan and blast fences for the Project. Type A fencing should be used for the permanent AOA fence as part of the Project, while Type D fencing is acceptable for temporary installations during construction phases. Fence standards should be provided by the CDA and must be approved by the CDA, TSA, and FAA.



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4.1.1.3 Building Restriction Line

Airspace and imaginary surface development constraints in close proximity to the conceptual extents of the Terminal 5 M Extension Project are depicted in **Exhibit 4.1-4.** These development constraints include, but are not limited to:

- Runway 22L Runway Protection Zone (RPZ) and Taxiway/Taxilane object-free areas (OFAs)
- Runway 22L TERPS Precision Obstacle Clearance Areas
- Runway 4R TERPS Departure Initial Climb Area (ICA)
- 14 CFR Part 77 Imaginary Surfaces

All facilities and parked aircraft constructed as part of the Terminal 5 M Extension Project should be designed to remain clear of these areas. Any additional development constraints will be identified

4.1.1.4 Non-Movement Area Boundary

The non-movement area boundary associated with the Project is depicted in **Exhibit 4.1-5**. The north/south segment of the movement area boundary line is located at the edge of the Object-Free Area (OFA) for Taxiways B and EE, 160 feet from taxiway centerline. The east/west segment of the movement area boundary line is located 167 feet from the Taxiway D centerline to accommodate the 167-foot OFA for B747-8 and A380 movements along Taxiway D.

The non-movement area side of the boundary includes the International Taxilane and apron areas not under the control of FAA Air Traffic Control. All aircraft parking positions at Terminal 5 are located in the nonmovement area.

4.1.1.5 Apron Service Roads

Conceptual service roads associated with the Project are depicted in **Exhibit 4.1-6**.

The existing tail of stand apron service road should be continued east to intersect the existing airfield service road that continues south past the Runway 22R approach area. A tail of stand service road should also continue around proposed Gates M23 through M27. Service road access should also be provided to the relocated airline cargo storage area and triturator north of the hardstand parking area.

All service roads associated with the Project should be located outside of all taxilane and taxiway OFAs, with the exception of service road sections that cross taxilane/taxiway pavement.

4.1.1.6 Aircraft Parking Layout

The conceptual aircraft parking layout anticipated at the completion of the Project is depicted in **Exhibit 4.1-7**. An alternate MARS configuration layout is depicted in **Exhibit 4.1-8**. The proposed parking layout includes 28 contact gates and 4 hardstand positions. Maximum aircraft gauge is depicted on the exhibit. The parking layout will be further refined during the design phase.











4.1.1.7 Passenger Loading Bridges

Passenger loading bridges (PLB) required for conceptual contact gates depicted in **Exhibit 4.1-9** are shown below in **Table 4.1-1.** As shown 17 PLBs will remain in their existing positions, 2 PLBs should be relocated, and 18 new PLB will be required to accommodate the conceptual aircraft parking layout.

Each gate connected to the new terminal building extension, should be capable of providing dual passenger loading bridges, if possible. Planning efforts to date indicate that this might not be possible at conceptual Gates M23 and M24.

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	M13	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	то
EXISTING	1	1	1	1	1										17
RELOCATED															2
A 1714/						2	2	2	2	7	1	1	2	2	18

4.1.1.8 Hydrant Fueling Pits

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Exhibit 4.1-10 depicts the conceptual hydrant fueling pit locations for the contact gates and hardstands associated with the Project.

At depicted, at least two hydrant fueling pits should be provided for each contact gate and hardstand position to accommodate fueling from receptacles on both the right and left sides of parked aircraft. Hydrant fueling pits should be located no further than 40 feet from the fueling receptacle of parked aircraft.

4.1.1.9 Taxilane and Apron Lighting, Signage, and Markings

Exhibit 4.1-11 depicts typical lighting, signage, and markings associated with the Terminal 5 M Extension Project.

Airfield lighting should consist of above-ground taxiway edge lighting for the south edge of the proposed extension of the International Taxilane between Taxiways D6 and D7, and Taxiways D7 and D8. Taxiway edge lighting should also be provided for Taxiways D7 and D8. No taxiway or taxilane centerline lighting is anticipated to be required for this project. Additional airfield lighting requirements may be specified during the design phase.







Airfield signage should consist of Type 2 lighted location and directional signs at appropriate taxiway/taxilane intersections and at any other location to reduce pilot confusion. Additional airfield signage requirements may be specified during the design phase.

Airfield markings should, at a minimum, include centerline markings, edge markings, shoulder markings, nonmovement area boundary lines, painted location signs, painted directional signs, and any other airfield markings specified during the design phase.

Contact gate markings should include a red safety envelope, yellow lead-in lines with stop bars for each aircraft type, yellow jet bridge docking circle, yellow jet bridge safety envelope, and white vehicle parking areas. Remote stand markings should include yellow lead-in lines with stop bars for each aircraft type. Additional gate/stand markings will be refined during the design phase

4.2 Indicative Terminal Concepts

Indicative terminal concepts were developed to accommodate the terminal facility program described in Section 2.3, Terminal Facility Requirements. The indicative concepts convey considerations pertaining to operational resiliency and passenger experience that should be discussed with Project stakeholders as part of detailed design. **Exhibit 4.2-1**, **Exhibit 4.2-2**, **Exhibit 4.2-3**, and **Exhibit 4.2-4** generally illustrate and identify the Project program elements in relation to the existing T5 floor plan levels. The following discussion of the indicative terminal concepts were organized around the major Project program objectives, namely, provide Upper Level and Apron Level space modifications to accommodate the relocation of a domestic airline to T5; and extend Concourse M to accommodate eight (net new) widebody aircraft .









4.2.1 DOMESTIC AIRLINE RELOCATION FACILITY CONCEPTS

Indicative terminal concepts to accommodate the relocation of a domestic airline to T5 include:

- TSA security screening checkpoint expansion
- Domestic and CBP Preclearance baggage claim
- Airline outbound bag make-up
- West Concourse modifications

TSA Security Screening Checkpoint Expansion

Exhibit 4.2-5 illustrates the existing checkpoint configuration. Two options were developed to accommodate two additional screening lanes for the TSA Pre \checkmark program, which is not currently supported at T5.

Exhibit 4.2-6 illustrates an option to retain the existing checkpoint entrance and accommodate additional lanes by expanding the checkpoint footprint to incorporate some airline offices. The checkpoint lanes under this option would all be reoriented perpendicular to the current lane orientation to accommodate the queue requirement and number of lanes.

Exhibit 4.2-7 illustrates an option that relocates the checkpoint entrance and queue area to allow the addition of the two lanes. The footprint of the checkpoint is expanded similar to the preceding option to be able to accommodate the relocated checkpoint entrance and queue space. Relocating the checkpoint entrance would require modifications to the check-in counters and associated baggage take-away conveyor.

Both options similarly expand the footprint of the checkpoint and affect the same airline offices. Both options also retain the same exit directly leading to the commercial program core, although Exhibit 4.2-6 requires a switchback turn to retain the existing checkpoint exit and could encounter challenges to maintaining checkpoint operations while reorienting lane directions.

Both options are able to retain public access to the public restroom facilities and the non-secure corridor that leads to the vendor checkpoint (near Gate M13).









Domestic and CBP Preclearance Bag Claim

Exhibit 4.2-8 illustrates the addition of a second bag claim carousel in remodeled space resulting from the T5 CBIS Optimization Project (refer to Section 3.2- Related Projects). The second bag claim carousel is shown matching the current size of the existing carousel. The exhibit also illustrates an extended claim unit to accommodate widebody CBP Preclearance international flights. The front building façade would have to be extended below the elevated section of the ATS track to support the extension of the bag claim carousel. While thought was given to construct a separate and larger device in the building expansion below the ATS tracks, the difficulty of providing a baggage conveyor path from the existing bag room to the expansion area is problematic.

Exhibit 4.2.9 and **Exhibit 4.2.10** illustrate an alternate option to modify the westernmost international bag claim carousel for use by either CBP Preclearance flights or international flights. As illustrated by the exhibits, passengers deplaning from a precleared flight would be directed by signage to use the Gate M7 ramp to descend to the Apron Level sterile corridor leading to the convertible bag claim carousel. A new corridor would lead from the claim carousel to the Meeter/Greeter Lobby and arrivals curb. While a precleared flight was deplaning, the west concourse sterile corridor would be unavailable to international arriving flights. Signage should be provided to direct passengers to the nearest restroom facilities located adjacent the domestic/preclearance bag claim carousels,

Airline outbound bag make-up

The Project program increases the capacity of outbound bag make-up to maintain the current needs of foreign flag airline departures from T5; recheck bag make-up for airlines deplaning at T5—but departing from the central terminal complex; and the relocation of a domestic airline to T5. Based on the outbound bag make up gap analysis, a net additional 19 cart staging positions would be required to accommodate the relocated domestic airline if it conducted outbound bag make-up operations in the existing make-up facility.

Exhibit 4.2-11 illustrates a concept to replace a number of the existing run-out piers used for make-up with carousel units. The concept increases the density of cart staging positions within the existing footprint used for outbound bag make-up and improves clearances to provide bypass lanes for tug cart movement. Carousels provide higher storage capacity for bags waiting to be loaded into bag carts and containers. Other options can be explored including the construction of remote outbound bag make-up areas under or adjacent to the west concourse for the domestic airline use. Conversely, additional make up areas under the new east concourse extension could be designed to relocate some foreign flag airline bag make-up operations to accommodate the domestic airline backfilling piers currently used by foreign flag airlines.

Lower Level

[Preliminary Draft for Discussion Purposes Only]



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Terminal 5 Concourse M Extension Project

Project Definition Document

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O'HARE INTERNATIONAL AIRPORT

[Preliminary Draft for Discussion Purposes Only]



Terminal 5 Concourse M Extension Project Project Definition Document

O'HARE INTERNATIONAL AIRPORT

AUGUST 2016





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Terminal 5 Concourse M Extension Project

Project Definition Document



West Concourse Modifications

The Project program to accommodate domestic airline operations on the west concourse addresses holdrooms, airline clubs, commercial program, circulation corridors, and operations spaces. **Exhibit 4.2-12** and **Exhibit 4.2-13** illustrate the viability for fitting the space requirements within the existing T5 footprint, albeit with the displacement of existing airlines from their current club locations. Alternatively, **Exhibit 4.2-14** illustrates multiple options for expanding the west concourse footprint, which is afforded by the closure of the service road passing under Gates M1B and M2A and the decrease in aircraft parking ramp depth required to accommodate the domestic airline narrowbody aircraft fleet. As part of detailed design, the airline stakeholder's qualitative preferences, particularly pertaining to premium club locations and the extent of sterile corridor system to be retained should be defined.

Gate M5 is currently provisioned to allow full segregation of the holdroom from the adjacent concourse. This capability should be relocated to another holdroom to be identified during the detailed design phase.

4.2.2 EAST CONCOURSE EXTENSION

The Project program for the east concourse extension provides facilities needed to accommodate widebody international air service. Concourse facilities include holdrooms, airline clubs, commercial program, circulation corridors, CBP sterile corridors, and operations spaces. While the initial purpose for the concourse extension is to support widebody aircraft, the aircraft parking ramp should designed using Multiple Aircraft Ramp Systems (MARS) principles to accommodate a range of aircraft from ADG III to ADG V for most aircraft positions. The design should therefore safeguard potential use of the concourse for other than international widebody air service, such as, future narrowbody domestic operations, which would result in bidirectional passenger flows at the concourse departure levels and additional gate positions along the length of the concourse extension.

The design of the sterile corridor system that connects each gate to the FIS is a key decision that affects the building section and space plan of the concourse extension. Indicative concepts were developed to illustrate the implications from placing sterile corridors at the Apron Level to be consistent with the existing T5 design, or, alternatively, provide for sterile corridors at the Mezzanine Level above the existing Upper (Holdroom) Level.

Exhibit 4.2-15 and **Exhibit 4.2-16** illustrate the spatial implications from an Apron Level sterile corridor system at the Apron Level and Holdroom Level, respectively. The indicative concept plans represent approximately 300,000 total square feet of building over two floor levels. At Apron Level, operational spaces are divided by the sterile corridor and ramp system, which is similar to conditions along the existing concourse. The sterile corridors and ramps also block any ability to cross beneath the concourse to access opposite sides of the apron.

O'HARE INTERNATIONAL AIRPORT

[Preliminary Draft for Discussion Purposes Only]



Apron Level

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Terminal 5 Concourse M Extension Project Project Definition Document

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Terminal 5 Concourse M Extension Project Project Definition Document





Exhibit 4.2-17, **Exhibit 4.2-18**, and **Exhibit 4.2-19** illustrate the spatial implications to each floor level of the concourse from a Mezzanine Level sterile corridor system. The indicative concept plans represent approximately 300,000 total square feet of building over three floor levels and illustrates the flexibility created for space planning the Apron Level without constraints imposed by the sterile corridors and ramps. The indicative concept plan uses escalators and elevators to transport deplaning passengers to the Mezzanine Level sterile corridors to maximize holdroom views to the airfield, which would otherwise be blocked if ramps were used. An airline premium club located on the Mezzanine Level could provide access for boarding purposes to nearly all new gate positions that are part of the extension. Drawbacks for Mezzanine Level sterile corridors are the additional level changes experienced by deplaning passengers along the way to the FIS and costs for maintaining vertical conveyance equipment compared to fixed ramps.



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5. Project Implementation

5.1 Overview

Several enabling works will be undertaken by others to prepare areas of the site for the Project. The enabling works, referred to as the Pre-Phase, should begin summer 2016. Enabling projects, described in detail in Section 5.2, include demolition of the former Lynx Cargo Building as well as the former Sky Chef Flight Kitchen and rough grading work to prepare both sites to be construction ready. Finally, not included as part of the Project, but done under a separate contract at roughly the same time period will be the expansion of the ATS Maintenance and Storage Facility on the east side of the existing building, including roadway construction on the east side of the complex. These separate but concurrent projects are discussed in the context of the conceptual construction phasing and maintenance of operations of the Project described in Section 5.3.

The Project itself is currently envisioned to involve three phases, however the final construction phasing will be determined the designer and construction manager. As currently envisioned, the Project's implementation strategy can summarily be described by the following:

- **Phase 1:** In Phase 1, construction is anticipated to start on the first section of the new apron pavement. This should include the reconstruction of Taxiway D7 east of Taxiway D6 and the construction of new Taxiway D8 further to the east. A portion of the existing Lynx Cargo apron will also be demolished including the existing but closed stub taxiway. Spine Road will be permanently closed to allow construction of the new apron pavement. Two new sections of blast fence will be installed on the new apron pavement and a new triturator building will be built on the northeast corner of the apron. The existing landside roadway south of the ATS Maintenance and Storage Facility will be widened to allow for construction of relocated Guard Post 11 and its associated queuing lane. Existing Guard Post 11 will remain active throughout Phase 1 while relocated Guard Post 11 is under construction.
- **Phase 2:** In Phase 2, construction is anticipated to include the Terminal 5 M Extension building, remaining sections of new apron pavement, and the remaining sections of blast fence. Before construction begins on the Terminal 5 M Extension building, existing Gates M18, M19, M20, and M21 will be relocated and a temporary fixed bridge section(s) will be built to accommodate the relocated gates. Existing hardstand positions M22, M23, M24, and M25 will be relocated to the east to apron pavement completed in Phase 1. The existing triturator building will be demolished as well as the remaining portion of the airside service road south of the relocated hardstands. The airline cargo storage area will be relocated to the northern portion of the new apron. Relocated Guard Post 11 will

become the active airside access point and cargo container trucks will utilize the new landside queuing lane at the relocated guard post.

Completion Phase: In the Completion Phase, the Terminal 5 M Extension building and new corresponding gates and hardstand positions become active. The existing gates on the west end of Terminal 5, Gates M1, M2, M3, M4, and M5, are realigned to accommodate primarily narrow body aircraft and renumbered as Gates M1A, M1B, M1C, M2, M3, M4, M5, and M6. Airside service roads will be realigned accordingly to accommodate the new taxilane around the Terminal 5 M Extension.

5.2 Enabling Projects

The first phase of the Terminal 5 M Extension Project implementation is the Pre-Phase condition. This outlines the enabling projects that will be required before Phase 1 construction work can begin east of the existing Terminal 5 hardstand positions on the site of the vacant Lynx Cargo and former Sky Chef Flight Kitchen buildings. A graphic depiction of the Pre-Phase condition is shown on **Exhibit 5.2-1**.

Before enabling projects work begins, the AOA fence must be realigned. The existing AOA is defined by AOA fence and buildings, including the perimeter of the former Lynx Cargo building. The AOA fence will be realigned around the site of the former Lynx Cargo building to allow enabling work to be completed landside. The realigned AOA fence will tie-in to the existing AOA fence on the southwest corner of the former Lynx Cargo building site and continue east to tie-in with the existing AOA fence behind the Runway 22L threshold. The realignment of the AOA fence will result in the conversion of the former Lynx Cargo building site to landside area.

Work preparing the site of the former Lynx Cargo Building to be a construction ready site should begin in summer 2016. This site encompasses the plot of land east of the existing Terminal 5 hardstand positions, north of the airside service road which runs parallel to Taxiway D, west of Spine Road, and south of Old Cargo Road. This work should include the demolition of the former Lynx Cargo Building.

Work preparing the site of the former Sky Chef Flight Kitchen to be construction ready will is anticipated to begin in late summer 2016. This area encompasses the site east of the Police – CPD building, north of Old Cargo Road, west of Spine Road, and south of the ATS Maintenance and Storage Facility. This project includes the demolition of the Sky Chef Flight Kitchen.

All work in the Pre-Phase condition should occur landside and would not impact aircraft or vehicle operations airside. Guard Post 11 remains active in its current location as an airside access point to the Terminal 5 apron.



5.3 Construction Staging and Maintenance of Operations

The conceptual construction phasing and maintenance of operations of the Project consist of three distinct phases, which are described in detail below. Refinements made during the design phase will most likely require sub-phasing.

5.3.1 PHASE 1

Phase 1 construction work should begin on the construction ready site prepared in the Pre-Phase condition. It includes construction of new apron pavement, demolition of existing taxiway connector pavement, the installation of two blast fences, construction of the new Triturator Building, widening of the existing roadway south of the ATS Maintenance and Storage Facility and construction of the new Guard Post 11 building and associated queuing lane. A graphic depiction of Phase 1 conditions is shown on **Exhibit 5.3-1**.

In Phase 1 the portion of AOA fence that runs parallel to the north/south airside service road east of the existing hardstand positions should be shifted west to construct new apron pavement. This will allow for the majority of work in Phase 1 to be completed as landside work. Airside work in Phase 1 includes the reconstruction of Taxiway D7 on the southeast corner of the existing Terminal 5 and construction of new Taxiway D8 approximately 324 feet to the east of Taxiway D7. The existing taxiway that connects the former Lynx apron to Taxiway D will be demolished. Close coordination with the CDA and the O'Hare Air Traffic Control Tower will be required for the construction of these airside projects in order to organize the necessary airfield closures.

All other construction work in Phase 1 should occur as landside work. Not included as part of this Project, but done under a separate contract at roughly the same time period will be the expansion of the ATS Maintenance and Storage Facility on the east side of the existing building, including roadway construction on the east side of the complex. To the south of the ATS Maintenance and Storage Facility, relocated Guard Post 11 and its associated queuing lane should be constructed as part of the Project well as the widening of a portion of the existing landside access roadway. The relocated queuing lane will serve as the landside cargo container truck staging area when the new Guard Post 11 becomes active.

Construction of new apron pavement should occur on the construction ready sites prepared in the Pre-Phase condition on the sites of the former Lynx Cargo building and former Sky Chef Flight Kitchen, requiring the permanent closure of Spine Road from the intersection of Old Cargo Road south to the Airport Maintenance Complex. Two sections of blast fence should also be installed on the new apron pavement.

Existing Guard Post 11 should remain active throughout the duration of Phase 1. Due to the extents of new apron pavement being construction in Phase 1, the cargo container truck staging area should be relocated to the southeast of the existing Guard Post 11 airside access gate.



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5.3.2 PHASE 2

Phase 2 should start upon the completion of Phase 1 and includes the construction of the Terminal 5 Concourse M Extension, the remaining section of new apron pavement, and installation of the remaining blast fence sections. Prior to Phase 2 construction, four aircraft contact gates and the airline cargo storage area will be relocated. The AOA fence should also be realigned to allow the building construction to occur as landside work. Relocated Guard Post 11 will become the active airside access point. A graphic depiction of Phase 2 conditions is shown on **Exhibit 5.3-2**.

In Phase 2, existing Gates M18, M19, M20, and M21 should be relocated to allow for construction of the Terminal 5 M Extension. Repositioned aircraft should be aligned west to east with aircraft tails perpendicular to the International Taxilane. Gate M18 should be restriped to accommodate aircraft up to Boeing B747-400ER and utilize the existing Gate M18 PLB. Relocated Gates M19 and M20 should be striped to accommodate aircraft up to Boeing B767-300ERW which currently park at existing Gates M20 and M21. The Gate M20 and M21 PLBs should be relocated to service relocated Gates M19 and M20. A temporary fixed bridge section(s) should be built from the end of the existing Gate M19 doorway. PLBs for repositioned Gates M19, M20, and M21 should be attached to the temporary fixed section bridge. Repositioned Gate M21 should be striped to a Boeing B737-900ER. Hardstand positions M22, M23, M24, and M25 should be relocated onto new apron pavement completed in the Phase 1. New taxilane markings should be painted extending International Taxilane to the east and north to accommodate the repositioned hardstand gates.

An airside service road currently passes underneath the Terminal 5 building between existing Gates M2 and M3. This service road has a grade change with retaining walls on both sides. In Phase 2, both retaining walls should be demolished and the surface grade will be elevated to match existing apron elevation. This will allow for the accommodation of proposed Gate M1C.

The existing AOA fence should be realigned to allow the construction work area for the Terminal 5 M Extension to occur as landside work. A new AOA fence should tie-in to the southeast corner of existing Terminal 5 and extend around the landside construction work area, shown in Exhibit 5.3-2, to connect with the existing AOA fence near relocated Guard Post 11. From relocated Guard Post 11 the AOA fence should continue around the new apron pavement constructed in Phase 1 before tying-in with the existing AOA fence that runs parallel to Spine Road. Airside service roads should be realigned to maintain efficient vehicular maneuvering on the Terminal 5 apron. The airline cargo storage area should be relocated to the north end of the new apron and be accessed via the realigned airside service roads. Demolition of the existing airside service road to the south of the repositioned hardstand positions should occur and will require coordination with CDA and the O'Hare Air Traffic Control to coordinate the necessary airfield closures.



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Within the boundaries of the landside construction work area, construction should begin on the Terminal 5 M Extension building in addition to the demolition of the existing triturator. A temporary access road from Old Cargo Road will allow access to the landside construction work area. The contractor staging area should be located on the site of the old airline cargo storage area. The remaining section of new apron pavement should be constructed on the north side of the landside construction work area and the remaining sections of blast fence should be installed. The blast fence should be located around the perimeter of new pavement constructed in Phase 2 and will connect with the blast fence sections installed in Phase 1.

5.3.3 COMPLETION PHASE

In the Completion Phase, the Terminal 5 M Extension should become operational with Gates M19 through M27. The gates on the west end of Terminal 5 should be relocated to accommodate primarily narrow body aircraft and renumbered. A graphic depiction of the Completion Phase is depicted in **Exhibit 5.3-3**.

The AOA fence should be realigned to complete the last section of apron pavement. The apron pavement used temporarily as part of the landside work area in Phase 2 should be return to the airside. Relocated Guard Post 11 should remain the permanent access point, with the queueing area utilized as the landside staging area for cargo container trucks. The apron pavement to the west of Gate M27 should become the airline cargo storage area in addition to the portion of airline cargo storage area in the northeast corner of the new apron near the triturator. A location for a snow melter and a snow piling area are designated on the southeast corner of the new apron. The airside service roads should be realigned to account for the new taxilane around the Terminal 5 M Extension and hardstand positions as shown in Exhibit 5.3-3.

Gates M19 through M27 should become active during the Completion Phase. The gates on the west end of Terminal 5 (M1, M2, M3, M4, and M5) should be relocated to accommodate primarily narrow body aircraft and be renumbered as Gates M1A, M1B, M1C, M2, M3, M4, M5, and M6. Relocated Gates M1A and M1B should use the existing PLBs from existing Gates M1 and M2. The existing Gate M1 PLB should remain in its existing location and the existing Gate M2 PLB be relocated towards existing Gate M1. A new PLB should connect to the rotunda near Gate M1B to accommodate repositioned Gate M1C. The Gate M3 PLB should be relocated to the south end of the Gate M3 hold room to accommodate relocated Gate M2. A new PLB should be installed at the existing Gate M4 hold room to accommodate relocated Gate M3. Repositioned Gates M4, M5, and M6 would all utilize the existing PLBs at their respective gates.



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6. Additional Considerations

6.1 Additional Considerations

6.1.1 TAXIWAY LL PHASE 2 PROJECT

Completion of the Taxiway LL project is considered to be necessary to support airfield taxi flows in and out of the Terminal 5 Concourse M Extension project. This project is split into two phases with the first phase having been completed in July 2016. Phase 2, however cannot be built until the O'Hare Airline Fuel Committee completes the Direct Fuel Feed Project that provided hydrant fuelling to the remaining aircraft parking positions at Terminals 2 and 3 while also removing both the Super Fuel Satellite located between Taxiways EE and GG and the Truck Fuel Fill Stand located between Taxiways D4 and Y.

Design of the Direct Fuel Feed Project is complete. Construction phasing of the project is challenging and, expensive so progress has been very slow. The current estimated timeframe for the removal of the Super Fuel Satellite and the Truck Fuel Fill Stand is approximately five years. It is anticipated that ongoing discussions between the CDA, airlines, and other stakeholders will take place alongside design of the Project.

6.1.2 ADG-VI HARDSTAND POSITIONS

An existing hardstand/remote parking position for a single A380 aircraft is provided in an angled configuration at Gate M24A. However, this hardstand position will be demolished as part of site preparation for the Project.

Site constraints and FAA requirements preclude siting an A380 hardstand position at any of the remote parking positions (101 - 104) included as part of the Project. The Airport is currently in the process of identifying a future location for an ADG-VI hardstand once the existing hardstand is demolished. The current preferred option for an A380 hardstand is in the vicinity of the 28R Pad.