



# Airbus A380 Airfield Preparedness

*Prepared for:  
Citizen's Transportation Advisory Committee  
May 25, 2011*

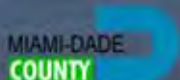


# Airbus A380 in MIA

On March 31, 2011, Lufthansa announced that it will commence daily Airbus A380 service to Miami from Frankfurt, Germany.

The airline's A380s are configured with 8 First class, 98 Business and 420 Economy seats (526 passengers in total)

This is a 59% increase in capacity over the B747-400 currently serving that route.



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# Key Figures



Wing span 261 ft 8 in




Overall length 238 ft 7 in



Height 79 ft 1 in

# Size Comparison




	<u>A380-800</u>	<u>B747-400</u>	<u>B747-8I</u>
Max. Take-off weight	560t	397t	442t
ICAO / FAA airport code	F / VI	E / V	F / VI
Wingspan	261'-8"	213'-0"	224'-5"
Length	238'-7"	229'-2"	250'-2"
Tail Height			
Ext. fuselage width	79'-1"	64'-0"	63'-6"
Seats	23'-5"	21'-4"	21'-3"
	525	417	467



# Early Development Issues

- Based on its wingspan (261') the Airbus A380 is classified by the Federal Aviation Administration (FAA) as an Airplane Design Group (ADG) VI Aircraft as per AC 150/5300-13 Airport Design.
- FAA ADG VI Aircraft Requirements:
  - Runways 200 ft wide (60 m) vs. 150 ft (45m) ADG V
  - Taxiways 100 ft wide (30 m) vs. 75 ft (23 m) ADG V
- FAA Order 5300.1F allows airports to submit Modifications of Standard (MOS) requests for review of non-standard compliance items as long as safety is not compromised.
- MIA is an Airport Reference Code ARC D-V airport, which resulted in the submittal of a Modification of Standards (MOS) for A380 operations.



# History

- Early 1990's: Airbus Industrie begins planning the design and development of a 500-seat airliner as a successor to the Boeing 747, at the time the largest commercial jetliner in service.
- Early 1994: MDAD Aviation Planning Division staff and Airbus start to work closely coordinating the development of the A380's airport design compatibility for the airplane's service at MIA.
- FAA's standards classify the A380 as a Group VI aircraft vis-à-vis the Group V for the 747, consequently requiring 100 ft. wide taxiways and 200 ft. wide runways in lieu of the 75 ft. wide taxiways and 150 ft. runways required for Design Group V airports such as MIA.



# History

- February 2003: MDAD submits preliminary Modification of Standards (MOS) request to FAA for approval.
- November 24, 2004: FAA ADO submits to MDAD FAA Headquarters determination on our MOS submittal.
- April 27, 2005: First maiden flight from Blagnac airport in Toulouse, France.
- December 6, 2006: FAA Certifies Airbus A380
- July 17, 2007: FAA approves A380 landing operations on 150-foot-wide runways taxi operations on 75-foot-wide clearing the way for A380 operations at MIA.





# History

- October 25, 2007: First commercial A380 flight by Singapore Airlines.
- February 07, 2008: MIA (First Draft) A380 Operational Plan presented to FAA Air Traffic Manager.
- March 9, 2010: MIA A380 Operational Plan approved by FAA ATC, FAA ADO, and MDAD Airside Operations.
- June 10, 2011: Lufthansa starts scheduled operations of the A380 to MIA.

# MIA FAA MOS Request

- MDAD submitted 32 individual adaptation to design standards in February 2003 in support for future A380 operations at MIA.
- Runway
  - Runway 9-27 allow design group VI A380 aircraft be permitted to operate on 150-foot wide runway with 50-foot wide shoulders.
  - Blast pad dimensions to remain at 250 X 400 feet as opposed to the ADG VI standard of 280 X 500 ft.
- Taxiway Width
  - Approval of operational procedures specific taxiway routings and procedures to keep adjacent taxiways clear/limited while the A380s land/take-off and while taxiing to/from gates.
  - Pavement and Shoulders
- Lateral Separation Standards
  - Allow the current design standards for separation to be revised to allow MIA to accommodate the A380 without requiring significant restrictions as modifications to the airfield are impossible due to space limitations.



# Current Status on Runway/Taxiway Operational Criteria

- FAA Memorandum Dated July 17, 2007
  - Approves operations by the A380 Operations on 150-foot wide Runways
  - Onboard Taxi Camera System – Not Required
  - Additional Taxiway Centerline Lighting – Not Required
- FAA Engineering Brief No. 63B
  - Allows the use of 75 - foot wide taxiways
  - Total width required – 145 feet (includes taxiway and shoulders)

# Operation

- Runway 9-27 is the preferred runway to handle the A380 at MIA due to the following:
  - Its location relative to the A380 gates (J17 and future H15)
  - Shortest taxi distances (especially in east flow arrivals – east flow is the dominant flow at MIA at 75% of the time)
  - Minimum operational disruptions
  - Most cost-effective option to accommodate the A380

# Operation

- Runway 8R-26L is designated as the contingency runway to handle the A380 at MIA in case that runway 9-27 is not available.

# Taxiway Restrictions

- Taxiway “Q” is restricted to B737-800 and smaller aircraft from “U” east (the bend) Taxiway P.
- Taxiway “M” is *restricted* to B747-400 and smaller aircraft while A380 operates on Runway 8R-26L.
- While A380 taxis on Taxiway “M”, Taxiway “N” is *restricted* to B747-400 or smaller
- Taxiway “L” is *restricted* to B747-400 and smaller aircraft while A380 operates on Runway 8R-26L.
- Taxiway “P” is closed east of Taxiway “U” when A380 is on “Q”.

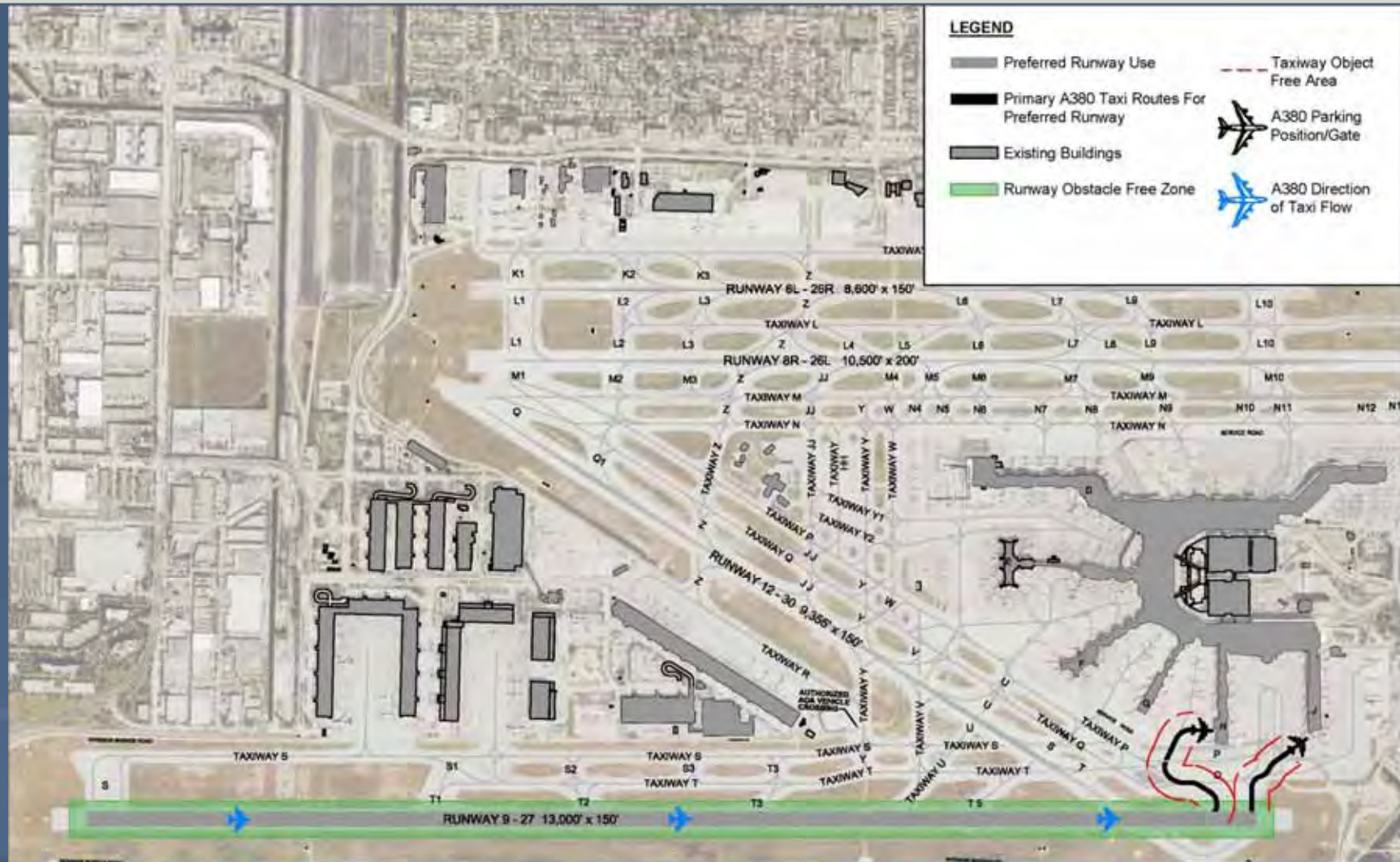


# Runway 12/30 Restrictions

Runway 12/30 will be closed (unusable) when:

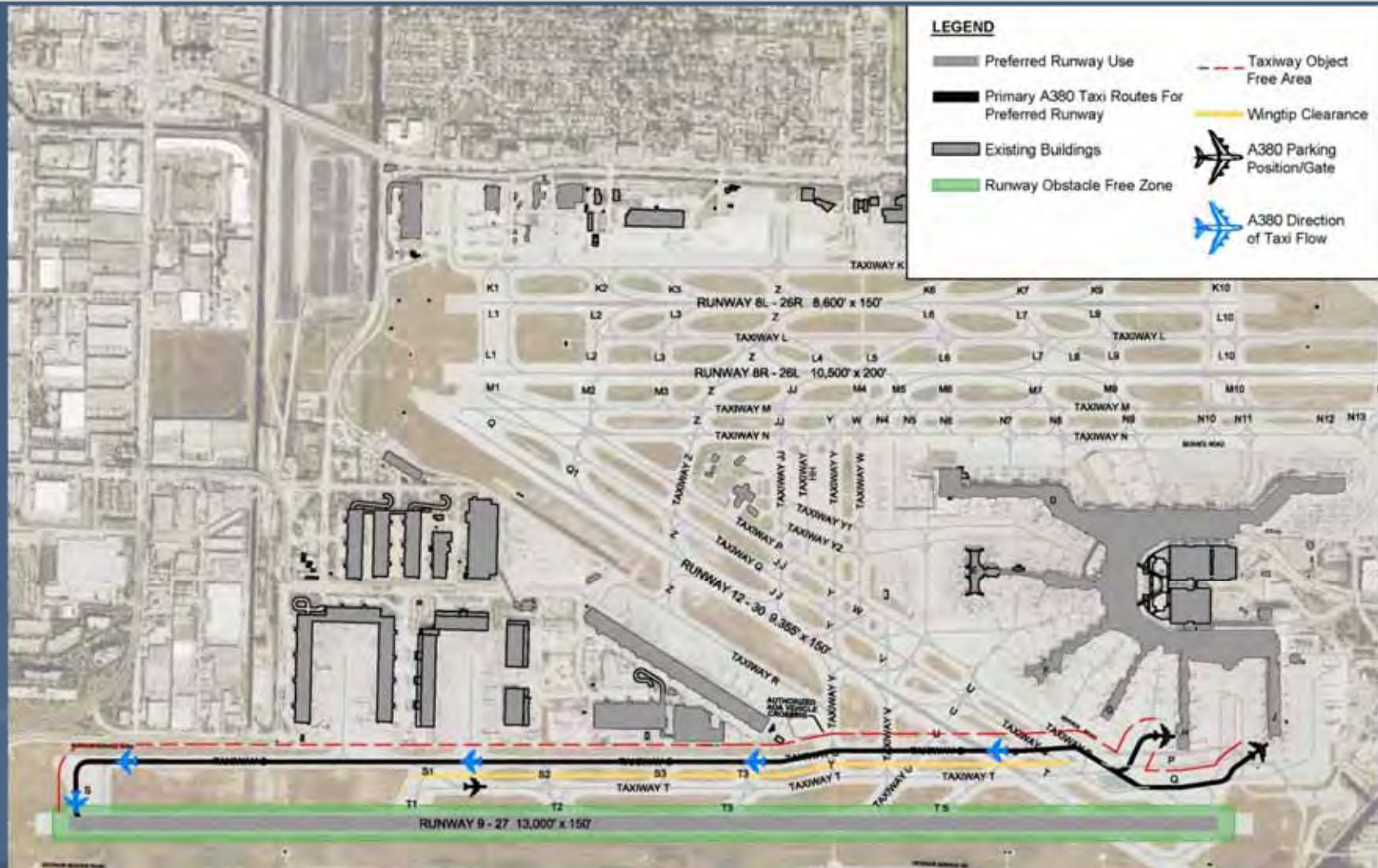
- The A380 is on taxiway “Q” until the aircraft is East of the bend.
- The A380 is on taxiway “S” between Taxiway “U” and “P” (Due to Runway Obstacle Free Zone penetrations by the tail)

# Preferred Runway Use East Flow – Runway 9 Arrivals

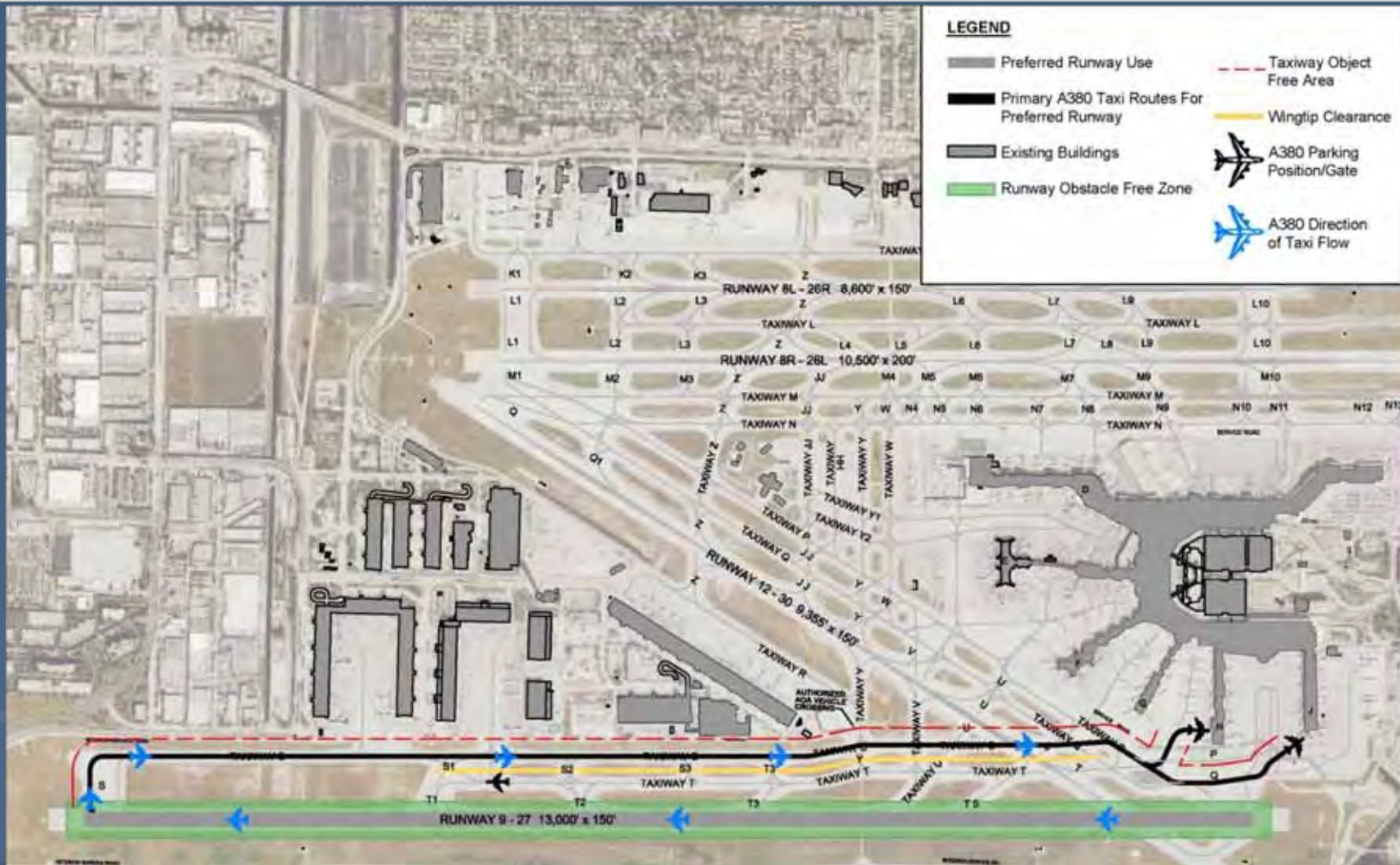




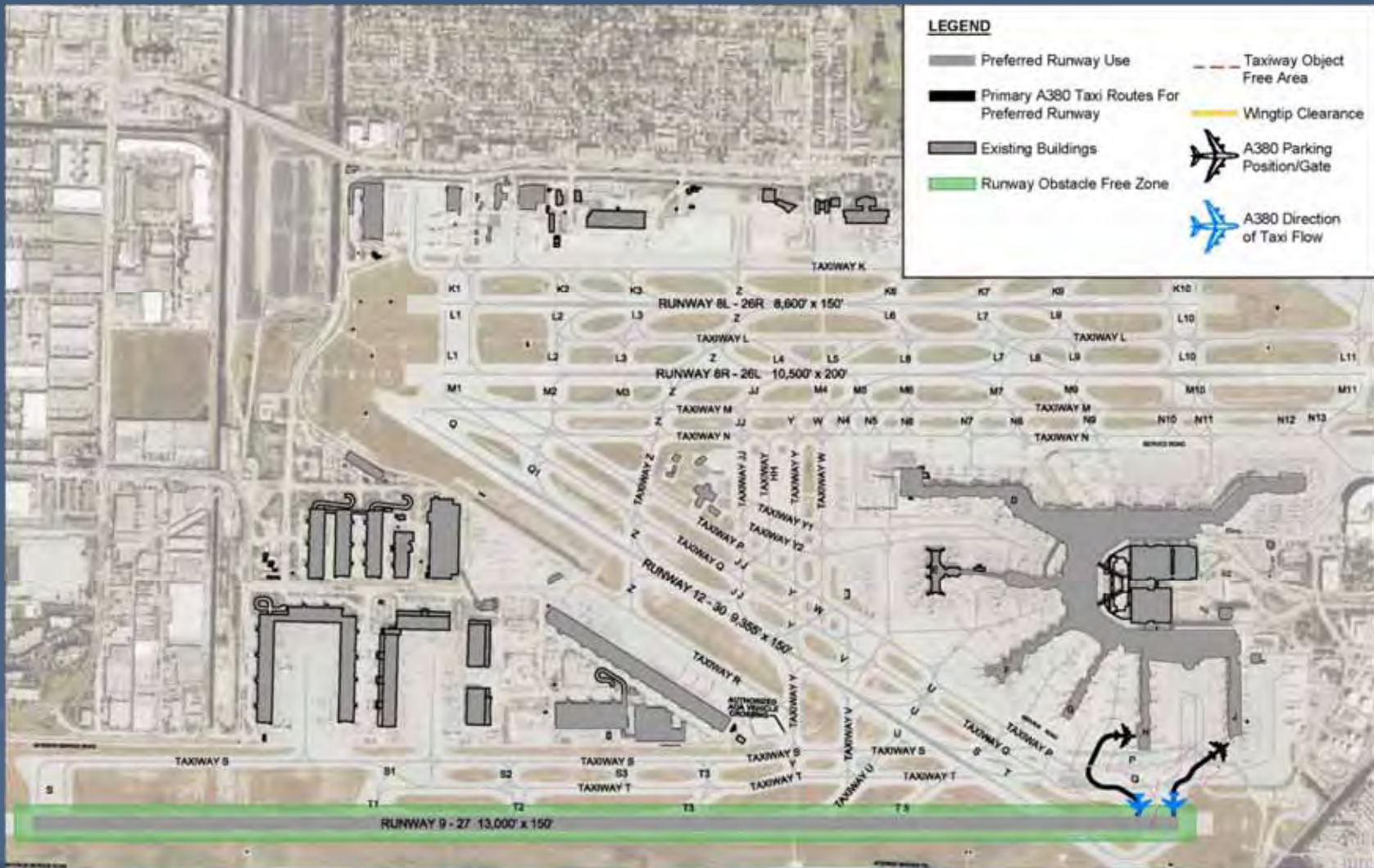
# Preferred Runway Use East Flow – Runway 9 Departures



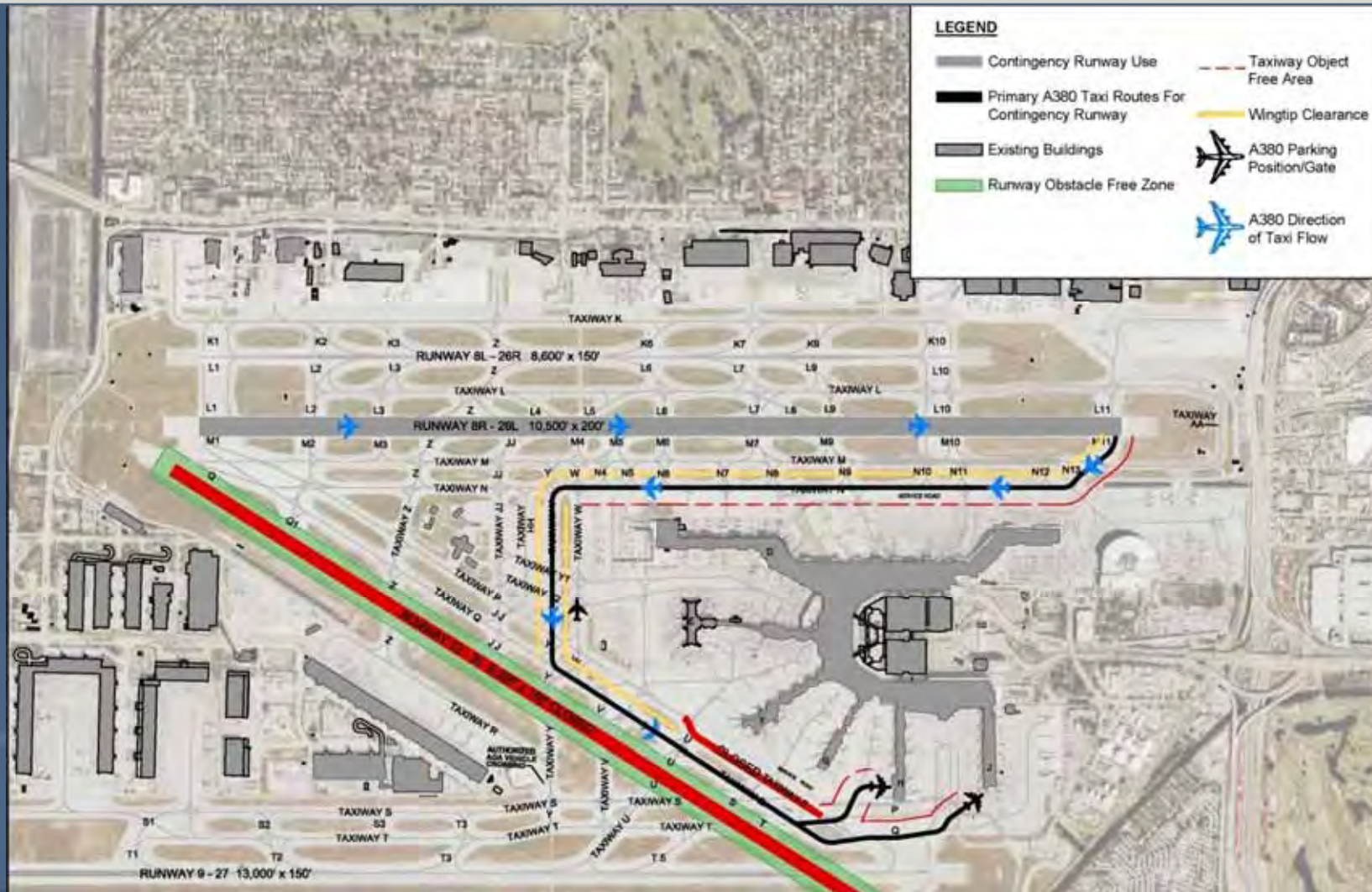
# Preferred Runway Use West Flow – Runway 27 Arrivals



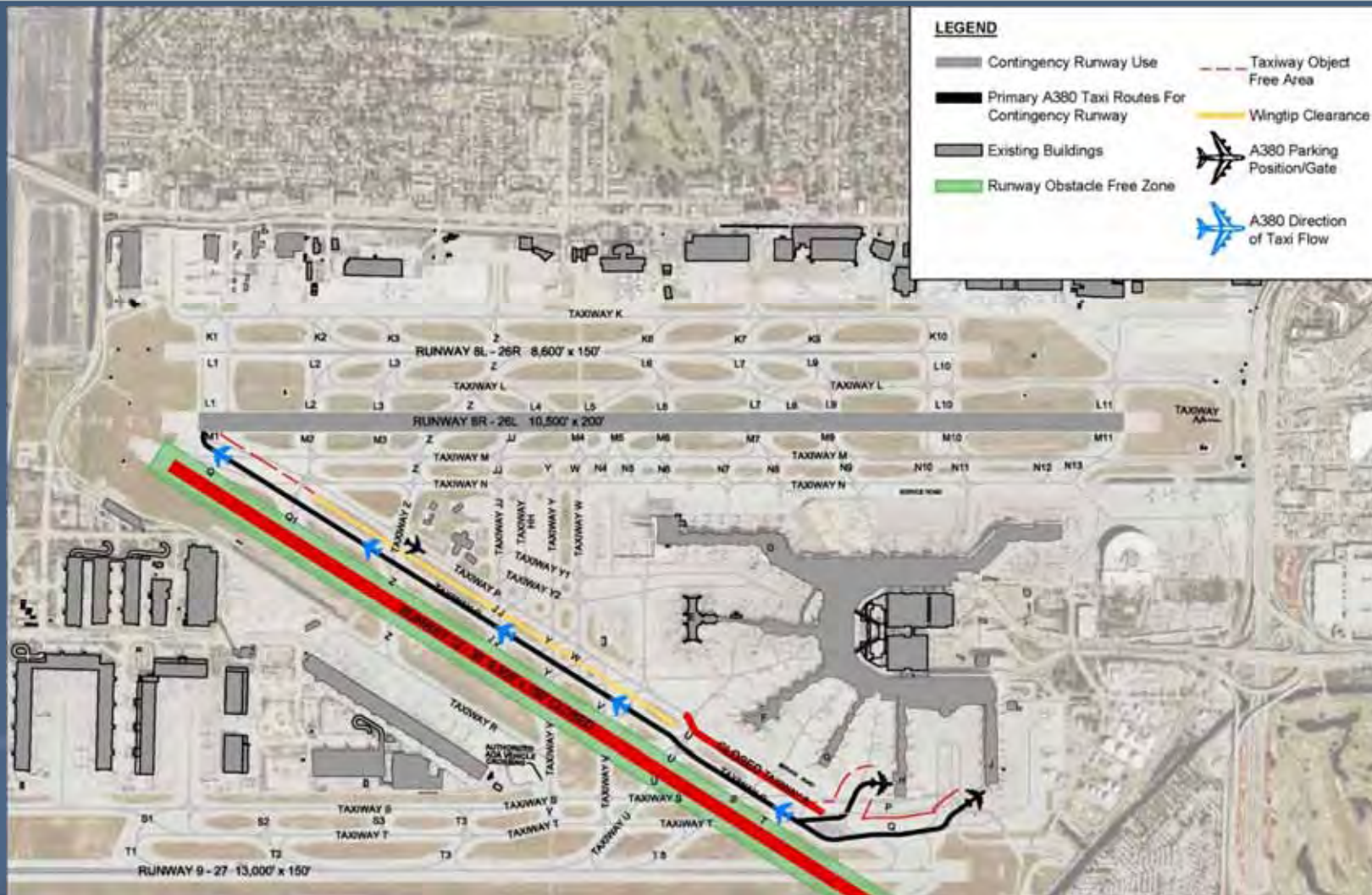
# Preferred Runway Use West Flow – Runway 27 Departures



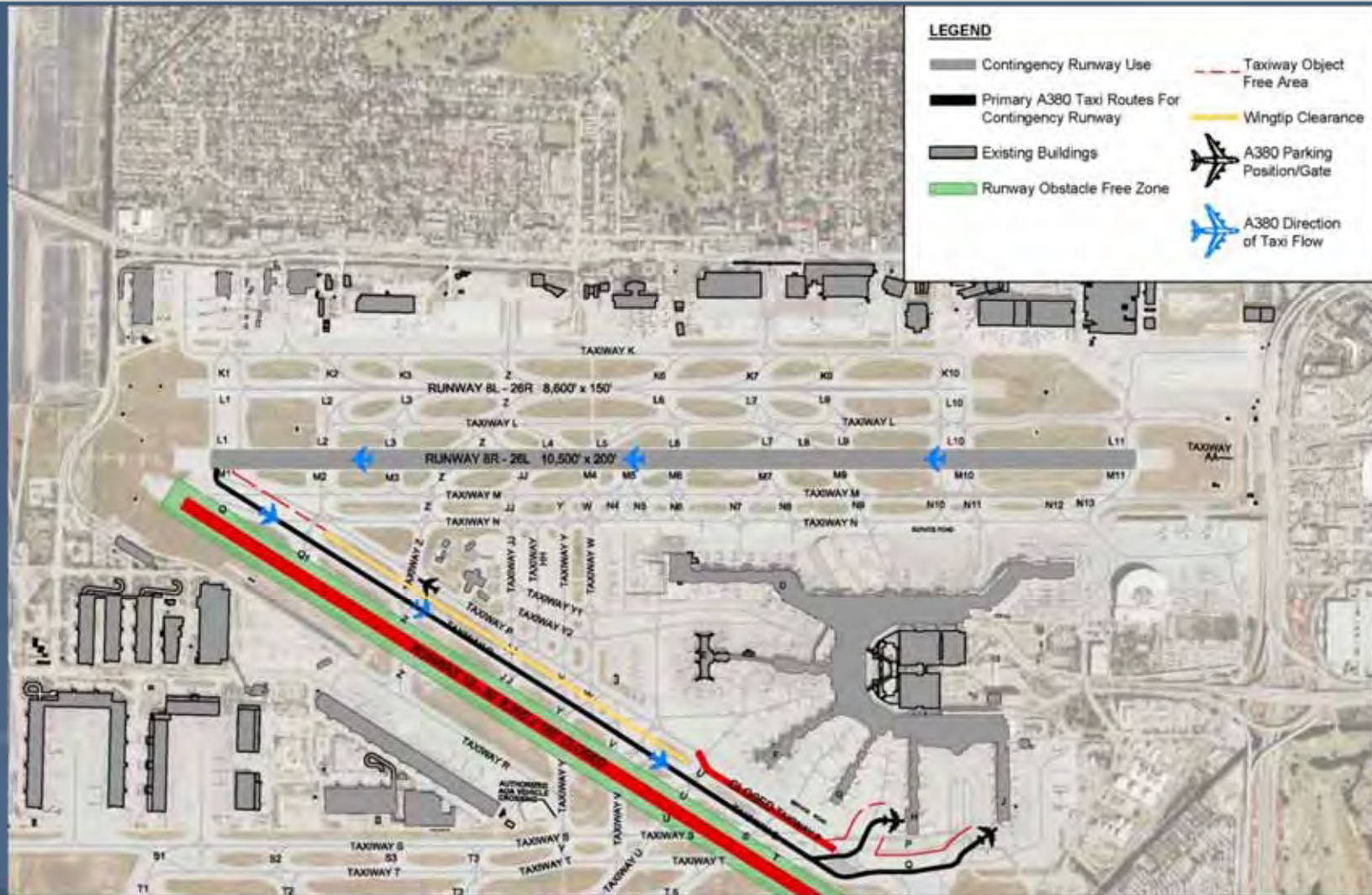
# Contingency Runway Use East Flow – Runway 8R Arrivals



# Contingency Runway Use East Flow - Runway 8R Departures



# Contingency Runway Use West Flow – Runway 26L Arrivals



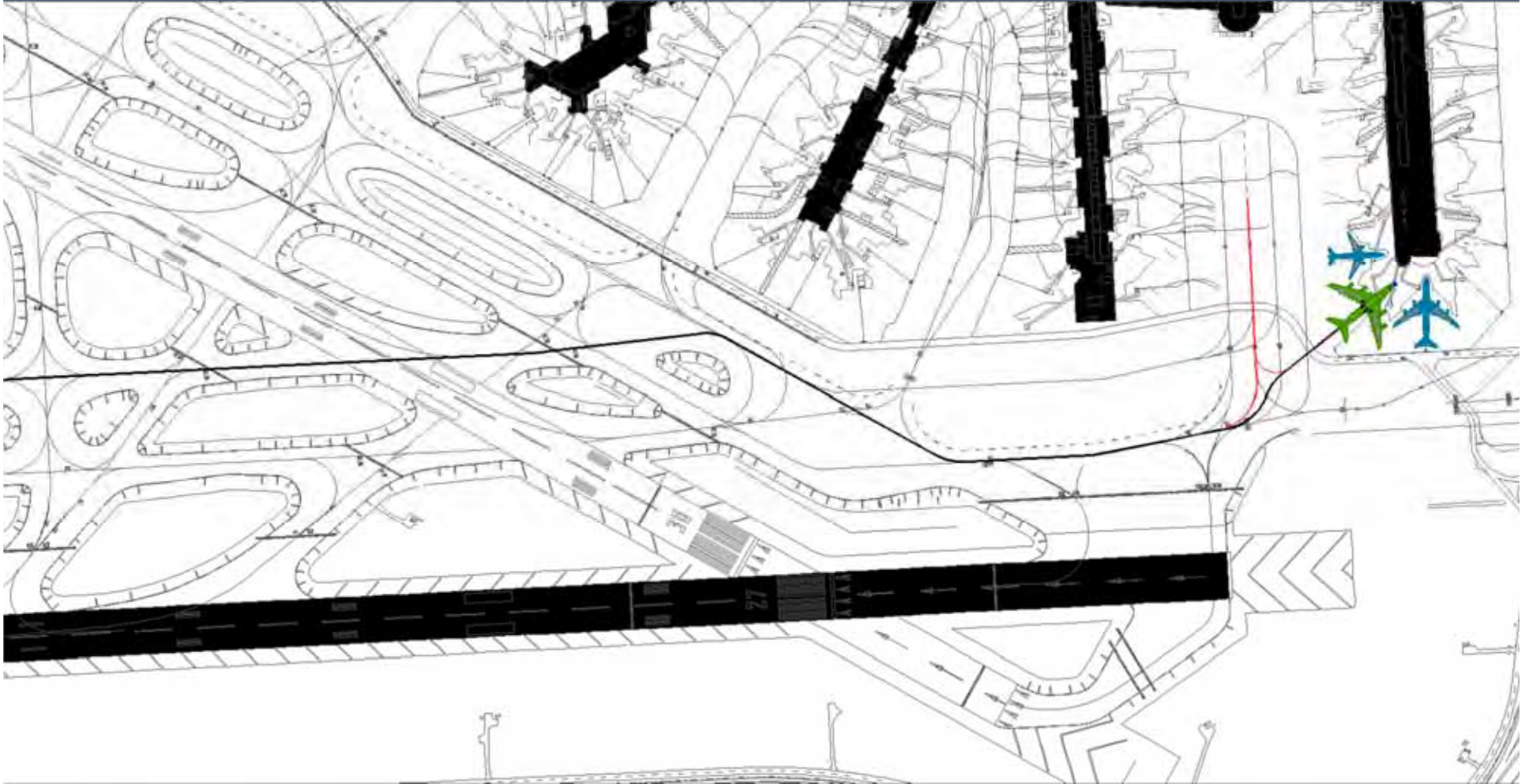


# Preferred Runway West Flow Arrival





# Preferred Runway East Flow Departure



# Contingency Runway East Flow Arrival



# Contingency Runway East Flow Departure



# Safety Considerations

- MIA FAA ATC has initiated a strict training program for controllers handling the A380 at MIA.
- MDAD will provide a “Follow-Me” Ramp Vehicle to assist the aircraft to and from the contingency Runway 8R/26L.
- FAA has mandated, and MDAD will conduct a Foreign Object Debris (FOD) check of the runways after EVERY A380 departure.
- MIA ATC will contact MIA ramp control when the aircraft is 15 miles out. MIA ramp will contact ATC 15 minutes to aircraft departure.

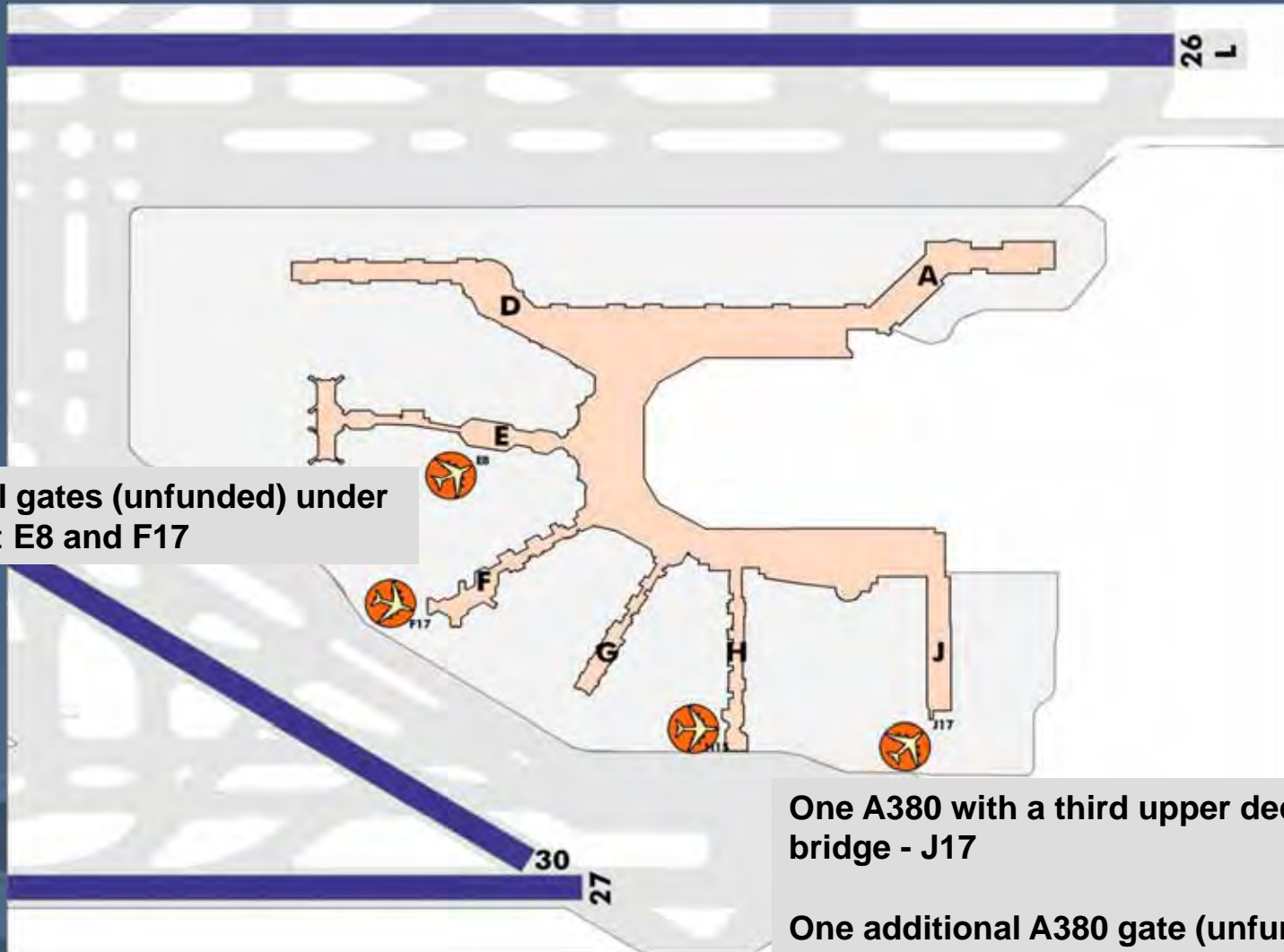


# Expected A380 Operations at MIA

- Four Airlines operating at MIA have ordered the A380:
  - Operations by Lufthansa (LH) commencing June 2011
  - British Airways (BA): Ordered 12 A380s; first delivery in 2013.
  - Air France (AF): Has taken delivery of 5 A380s total order of 12 has expressed interest in MIA although not defined their route network yet.
  - Virgin Atlantic (VS): Has ordered 6 A380;s first delivery in 2014-2015.
- Looking forward to the future (2020 and beyond) MIA could see up to a maximum of 4 carriers operate the A380 in Miami, with the possibility of one Asian-Pacific carrier.



# MIA Terminal Improvements



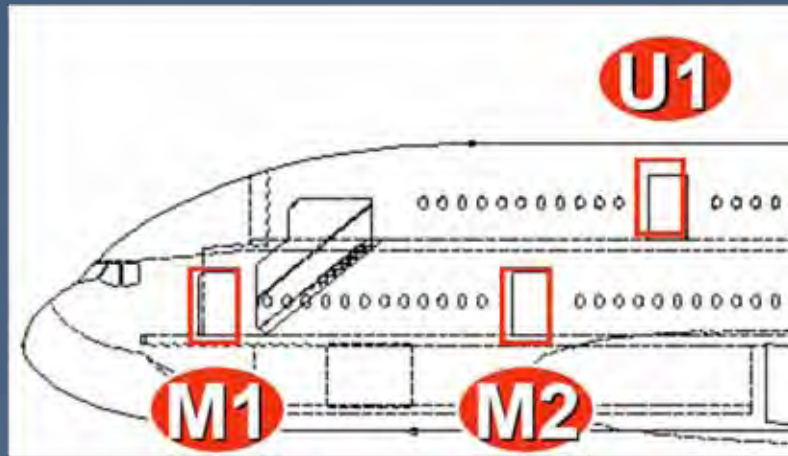
Two additional gates (unfunded) under consideration: E8 and F17

One A380 with a third upper deck access bridge - J17

One additional A380 gate (unfunded): H15

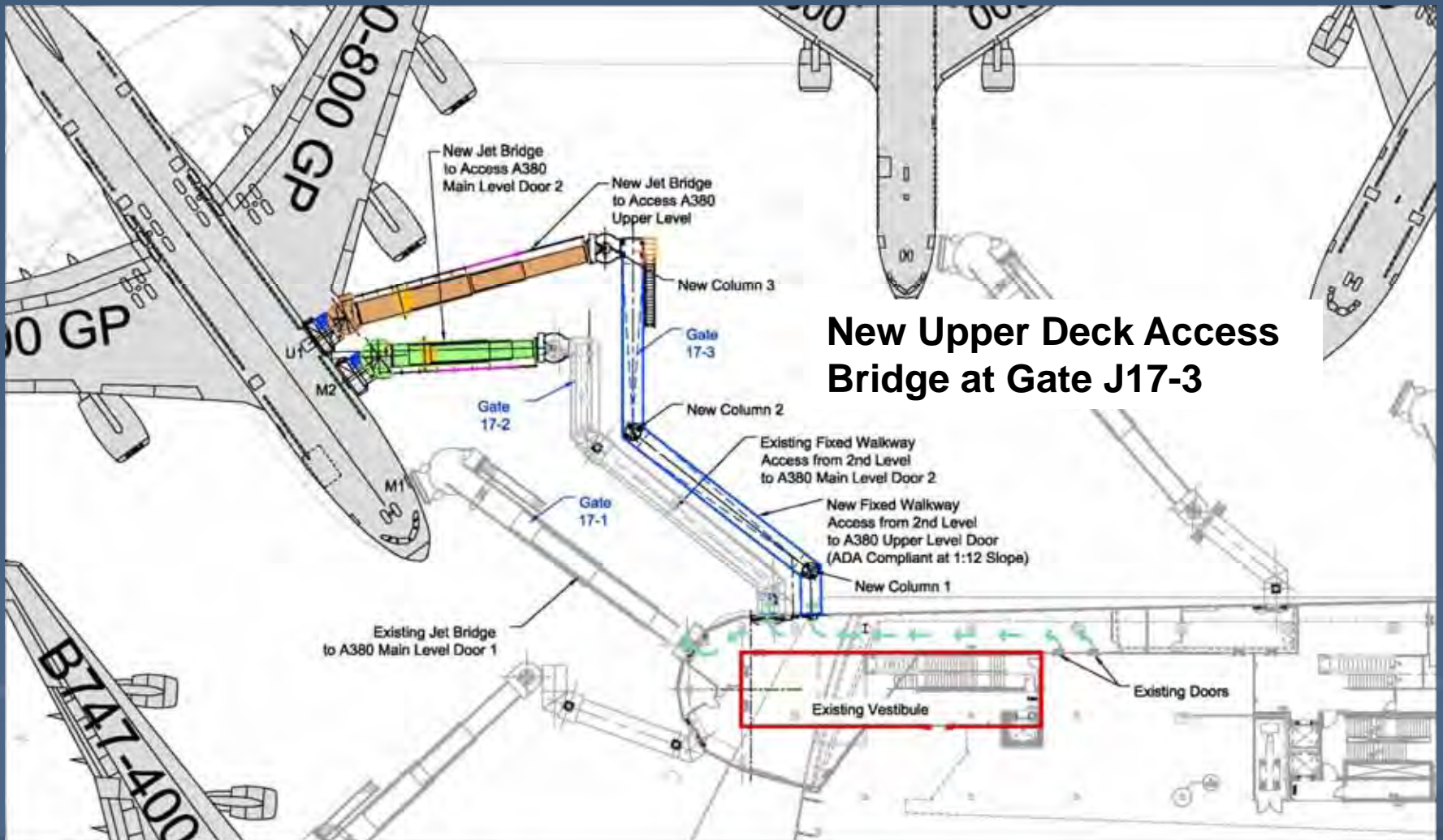
# Terminal Improvements Key Issues

- Airlines operating the A380 have a minimum requirement of two passenger boarding bridges (PBB) at doors M2 (Main Deck) and U1 (Upper Deck). This arrangement offers:



- Service and access differentiation.
- Efficient reduced efforts and simplified processes for passengers with reduced mobility access.

# MIA Terminal Improvements Concourse "J" Gate J17-3



**New Upper Deck Access Bridge at Gate J17-3**





# Terminal Improvements Key Issues



# Terminal Improvements Key Issues



# Terminal Improvements Key Issues



# Implications of EB 65s

- Widening of the shoulders reduce the storm retention swale capacity which will negatively affect runway and airfield drainage.
- The preliminary cost estimates associated with such improvements are as follow:
  - Runway 8R-26L: \$4.7 M
  - Runway 9-27: \$29.5 M
- Thus, the widening of the runways to 280 feet will be extremely costly compared





 **A380**  
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# A380 Glass Cockpit



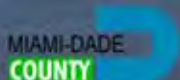
Fly-by-wire flight controls linked to side-sticks. Improved cockpit displays featuring eight 15-by-20 cm (6-by-8-inch) LCD displays: Two Primary Flight Displays, two navigation displays, one engine parameter display, one system display and two Multi-Function Displays. The MFDs are new with the A380, and provide an easy-to-use interface to the flight management system—replacing three multifunction control and display units. They include QWERTY keyboards and trackballs, interfacing with a graphical "point-and-click" display navigation system.

# Additional Information

<http://www.airbus.com>

<http://lufthansa.com/A380>

<http://www.miami-airport.com/a380.asp>

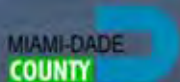


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*Thank You*

*Discussions and Q+A*



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