

Creating Value ...



... Delivering Solutions

SWIFT CONFERENCE – 2011

Pavement Management at Hartsfield- Jackson Atlanta International Airport

Real-Time Traffic Data



Quintin B. Watkins, P.E.

Baker

**THE
LPA
GROUP**
AVIATION CONSULTANTS
A Unit of Michael Baker Corporation

Presentation Objective

- Pavement Management History
- Evaluation Data
- Real-Time Traffic Data : Surface Management Systems
- Traffic Uses

Search for Continuous Improvement

Pavement Management Evaluation History

Table 1-1 - Pavement Evaluation Program History

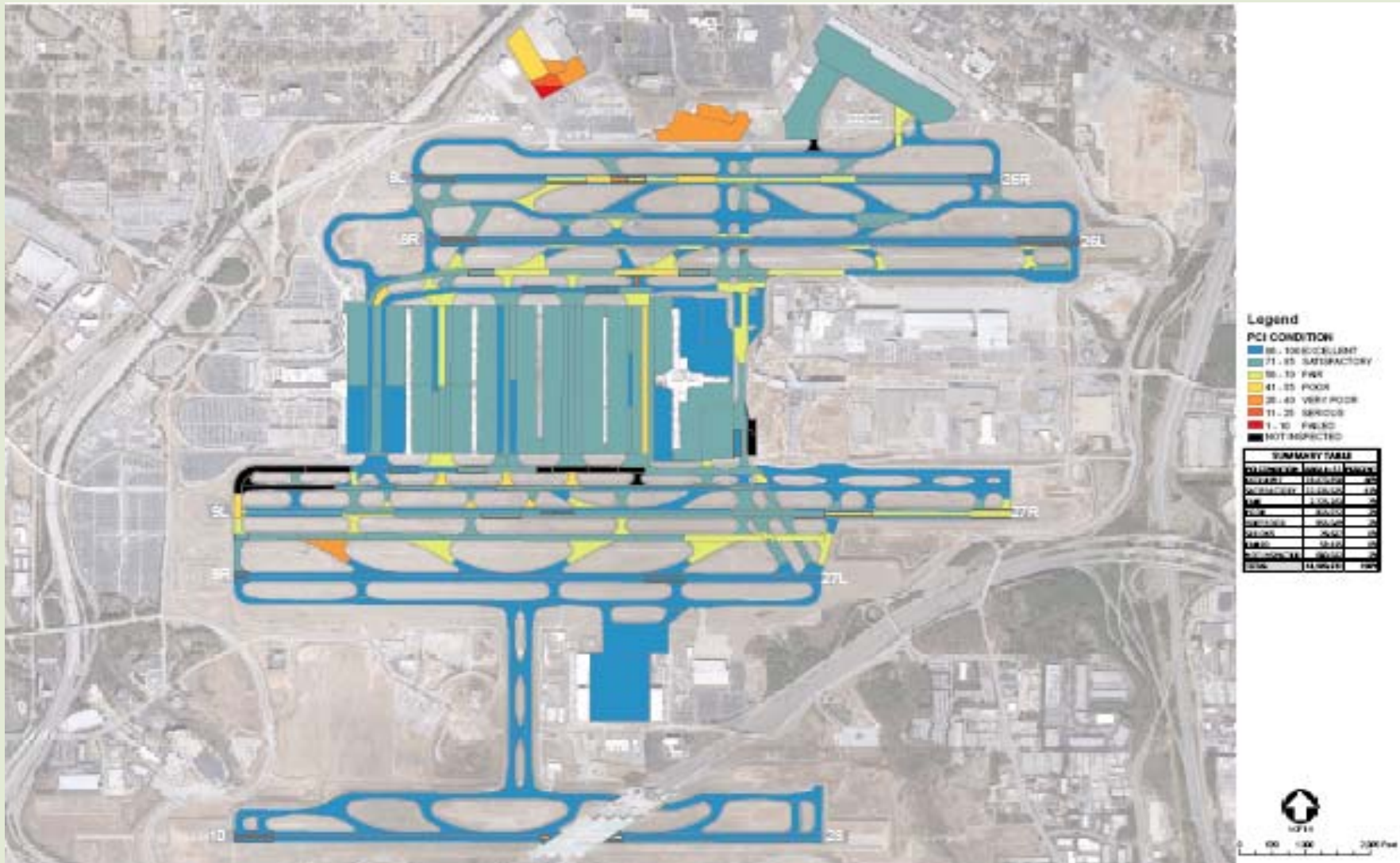
TECHNIQUE ¹	1984	1987	1991	1994	1997	2001	2004	2007	2010
Falling weight deflectometer (FWD)	X	X	X	X	X				
Falling weight deflectometer (HWD)						X	X	X	X
Rolling dynamic deflectometer (RDD)						X			
Visual condition ratings (runways)	X	X	X	X	X	X	X	X	X
Visual condition ratings (taxiways)						X	X	X	X
Photographic documentation	X	X	X	X	X	X	X	X	X
Slab numbering convention ²					X	X	X	X	X
Concrete cores and soil borings	X	X	X	X	X	X	X	X	X
Concrete materials studies			X	X	X	X	X	X	X
SEM/EDX (concrete)							X	X	X
Smoothness assessments ³					X	X	X	X	X
Video imagery (runways)						X	X	X	
Geographic information system (GIS)						X	X	X	X
MicroPAVER						X	X	X	X
Airfield Marking Audit									X

1. The techniques are described in detail in Section 2 – Investigative Procedures.

2. Aviation Consulting Engineers (ACE) retained the services of Caver Morehead Systems from Plano, Texas to establish a slab layout grid with a logical naming/numbering convention in 1995.

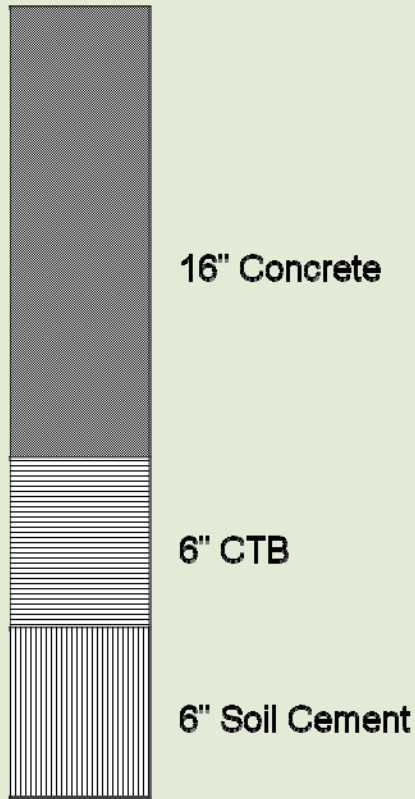
3. Pavement Smoothness Index (1997-2007), Boeing Bump Index introduced (2010).

HJATA Pavement PCI Results (2010)

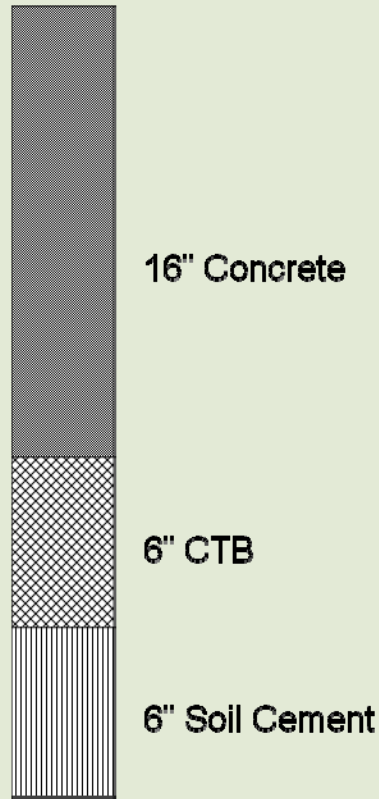


History of Design – New Runway Pavement

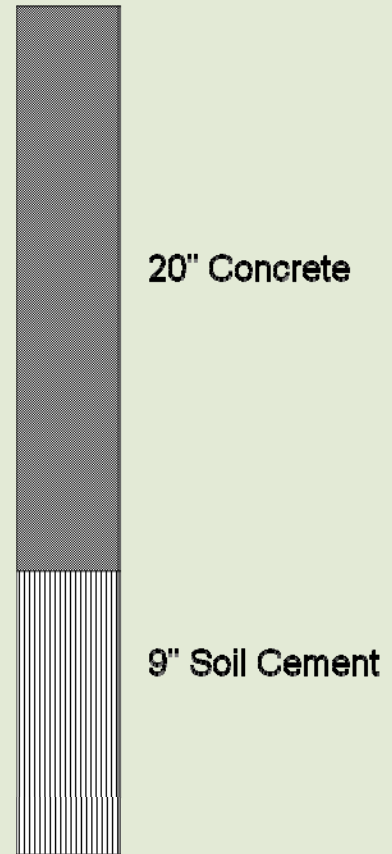
9L-27R (1974)



8L-26R (1984)

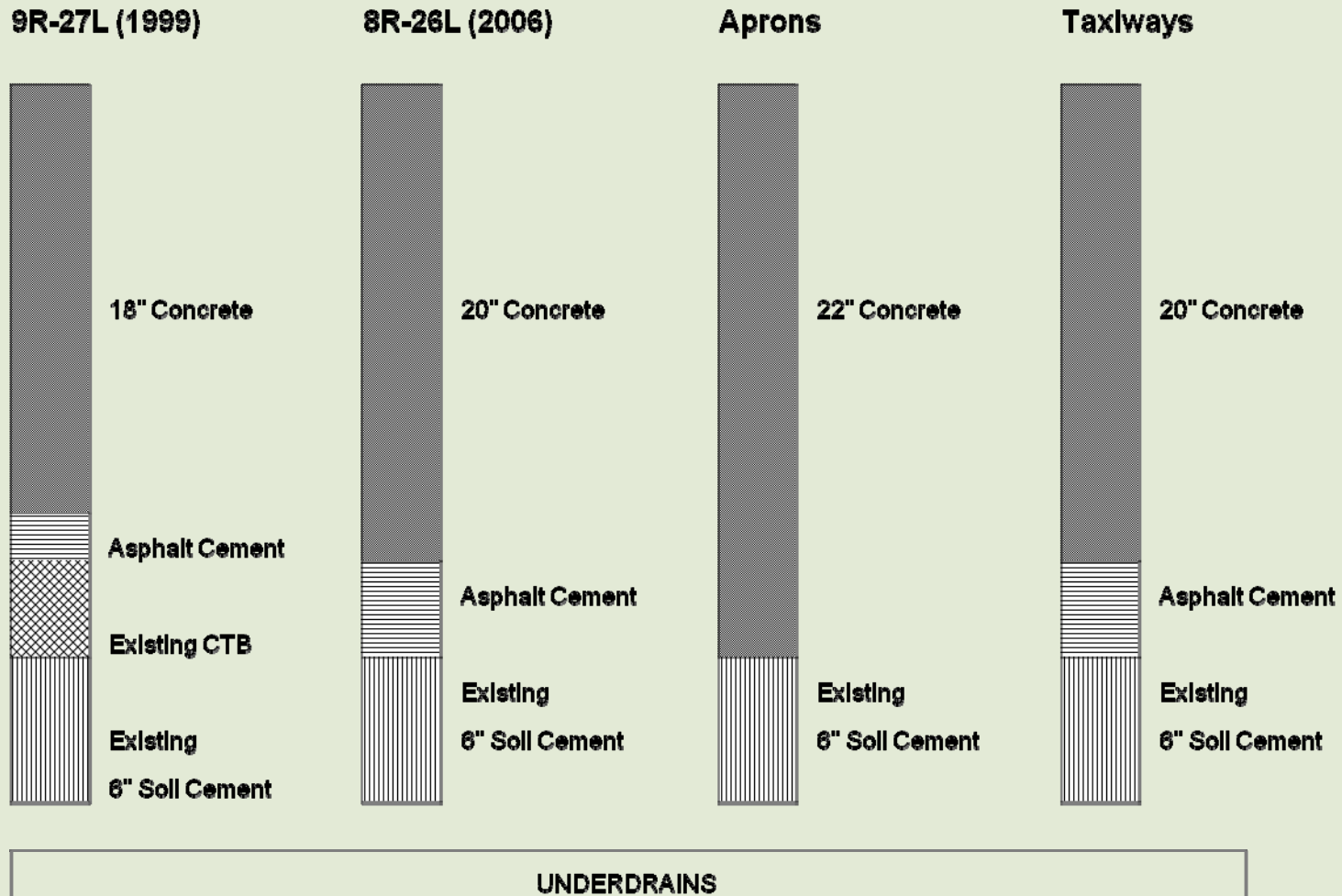


10-28 (2006)



UNDERDRAINS

History of Design – Replacement Runway Pavement

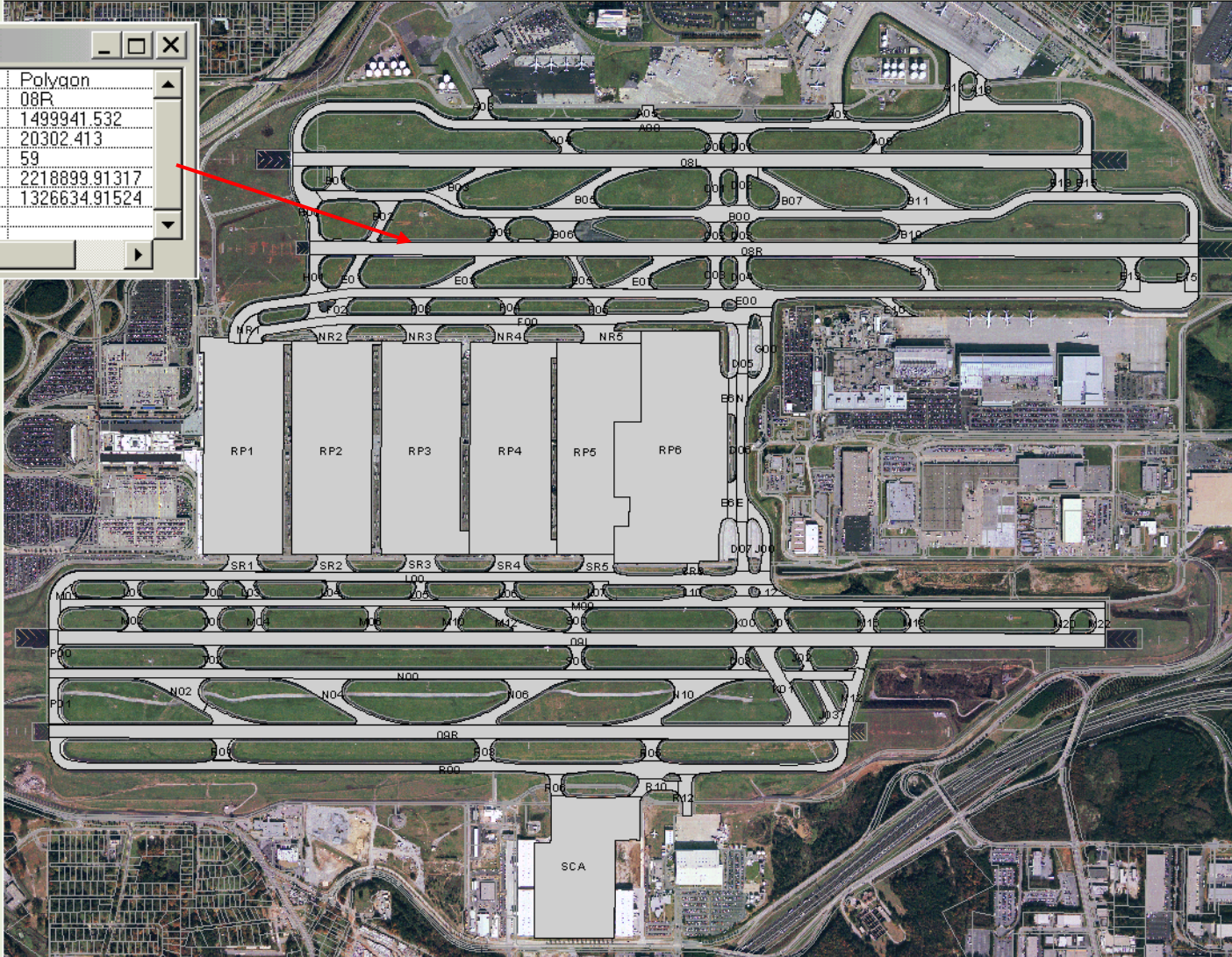


GIS Pavement Layout

Identify Results

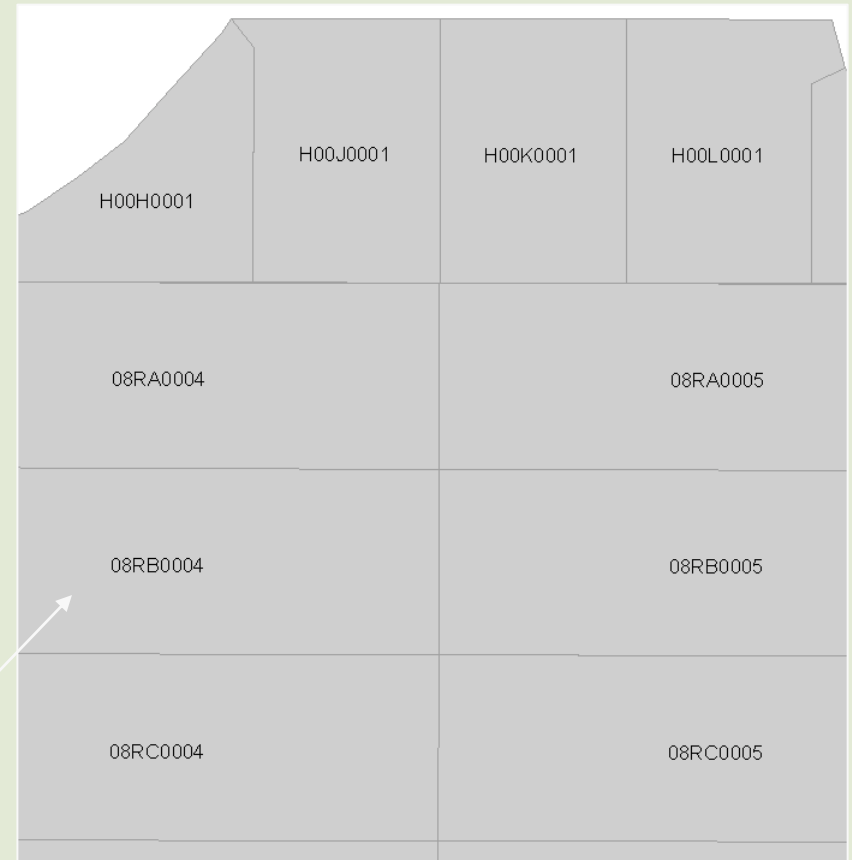
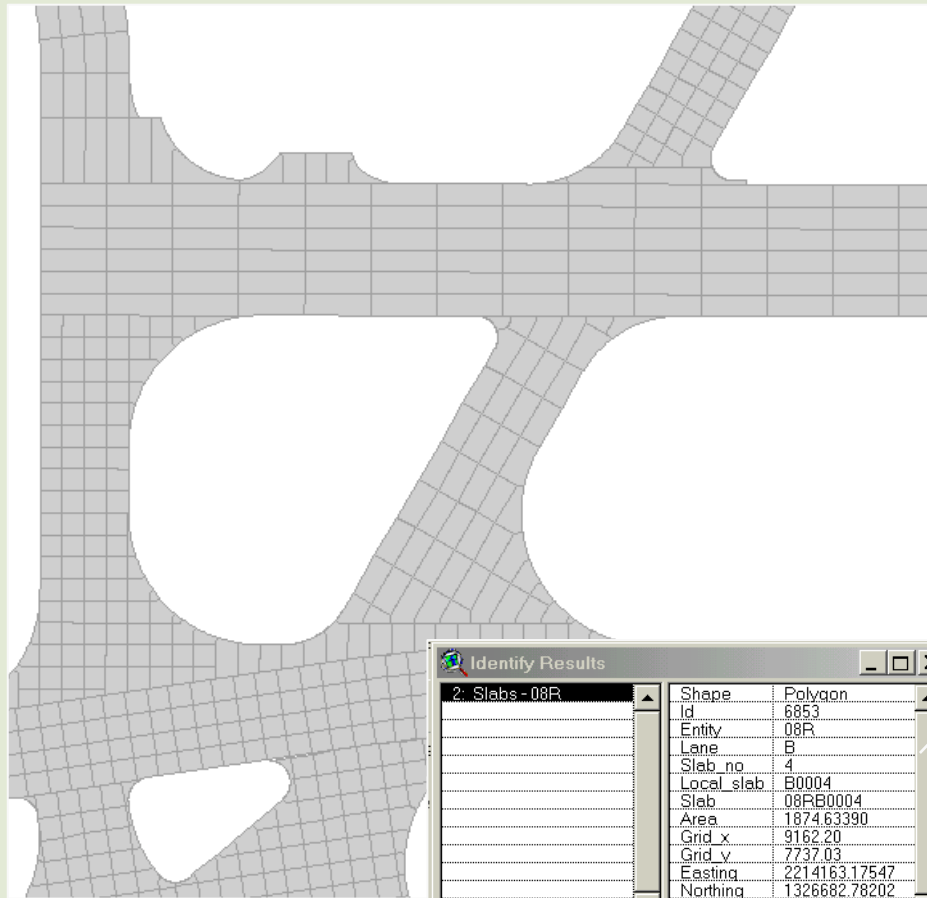
1: Pavement-08R	Shape	Polygon
	Entity	08R
	Area	1499941.532
	Perimeter	20302.413
	Id	59
	X_coord	2218899.91317
	Y_coord	1326634.91524

Clear Clear All



Slab Layout and Labels

As you zoom in to the view, individual slabs and slab labels display



Identify Results	
2: Slabs - 08R	Shape Polygon
	Id 6853
	Entity 08R
	Lane B
	Slab_no 4
	Local_slab B0004
	Slab 08RB0004
	Area 1874.63390
	Grid_x 9162.20
	Grid_y 7737.03
	Easting 2214163.17547
	Northing 1326682.78202
	Perimeter 199.980

Labels and Results

2) Inspection 2000

- Defect_Labels
- Slab_labels
- Lightning Strik
- Patch
- Loose Patch
- Crack
- Joint Damage
- Generic Point
- Generic Line
- Generic Area
- Alligator Crack
- Spall
- Pavement
- Slabs
- Old Base

Identify Results

1: Patch - Pro XRS	Shape	Polygon
2: Spall - High	Length	45
3: Crack - L	Width	1.3
	Rcvr_type	Pro XRS
	Gps_date	20000818
	Gps_time	11:27:48AM
	Gps_area	7.972
	Gps_perime	13.186

Clear Clear All

Identify Results

1: Patch - Pro XRS	Shape	PolyLine
2: Spall - High	Type	L
3: Crack - L	Severity	H
	Rcvr_type	Pro XRS
	Gps_date	20000818
	Gps_time	11:29:57AM
	Gps_length	224.696
	Gps_3dlena	225.050

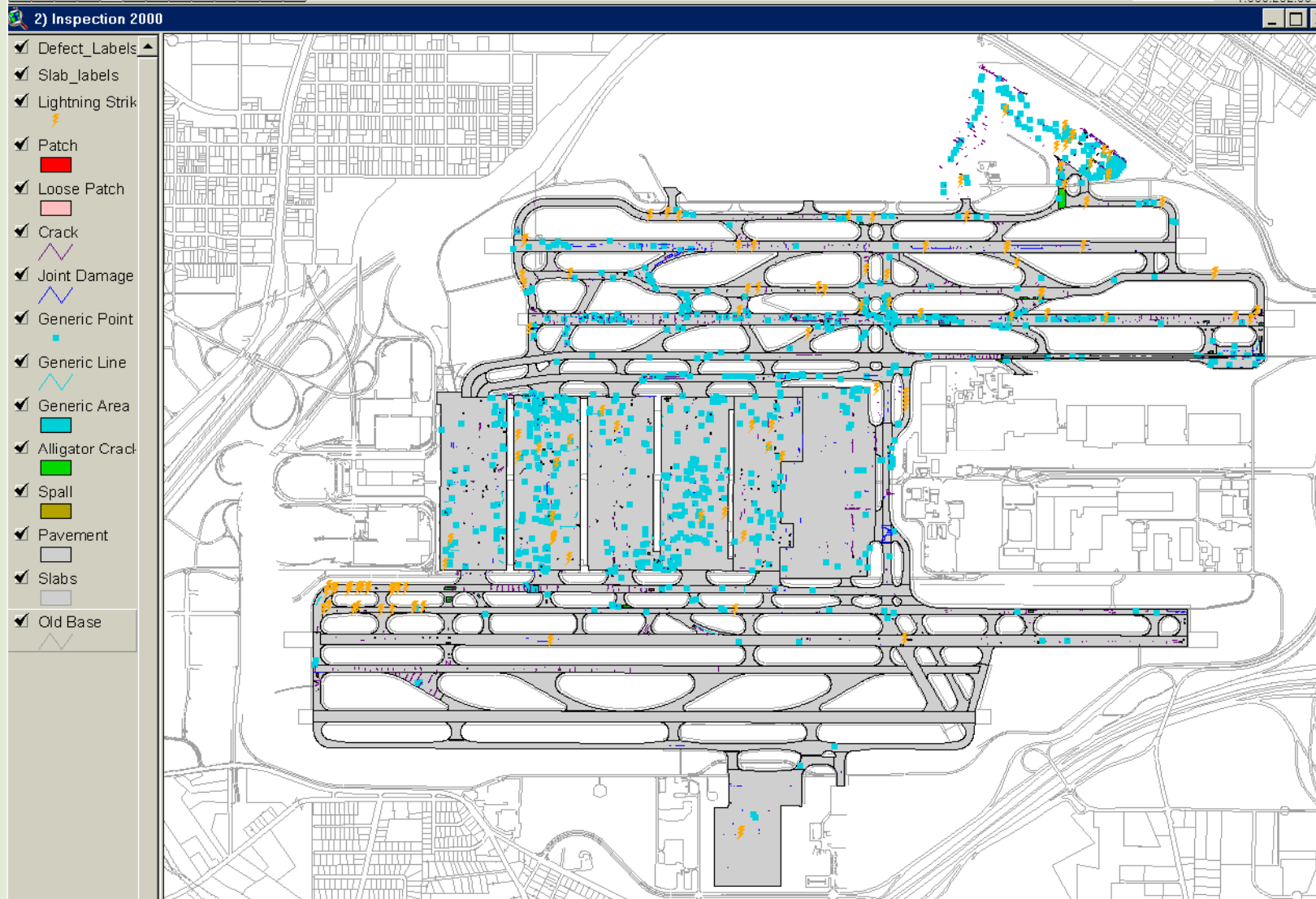
Clear Clear All

Identify Results

1: Patch - Pro XRS	Shape	Polygon
2: Spall - High	Severity	High
3: Crack - L	Length	6.0
	Width	4.0
	Rcvr_type	Pro XRS
	Gps_date	20000818
	Gps_time	11:38:02AM
	Gps_area	35.346
	Gps_perime	24.082

Clear Clear All

Pavement Condition Survey using Trimble GPS: Annually since 2000



HJAIA 5-Yr Rehabilitation & Reconstruction Plan



Pavement Evaluation Data

- Pavement Section
- Pavement Condition Index
- GIS Pavement Surveys – Annually
- The Missing Piece is Detailed Traffic Data



Airport Master Plan 20 year Traffic Projections

■ Annual Operations

- 1975 – 227,000
- 1989 – 364,000
- 1999 – 443,000
- 2009 – 586,000
- 2011 – 621,000
- 2019 – 749,000 (Projected)



■ Aircraft Types

- Regional Jets
- Narrow Body
- Wide Body



Difficult to predict where the aircraft travel on the airfield

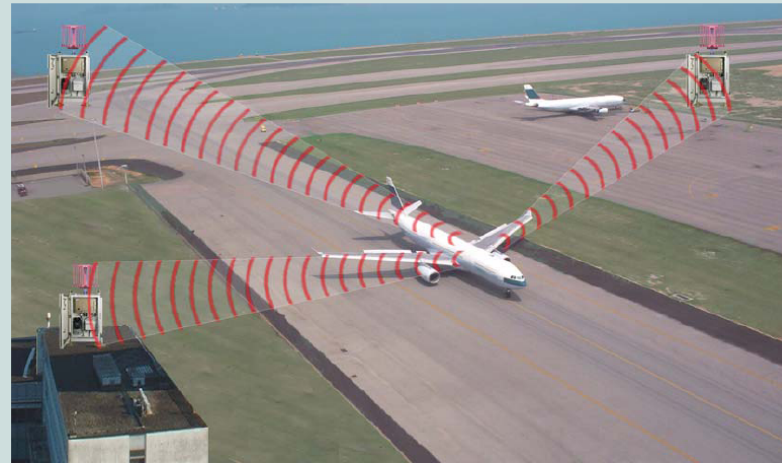
Real- Time Traffic Data: Surface Management Systems

- Why?
 - Reduce Delays
 - Reduce Emissions
- How does it work?
- Who Monitors?
 - Airport Operations
 - ATCT
 - Airlines
 - Not Engineering Department

Sensis MDS Multilateration

Mode S or Mode A/C transponder signals are detected at multiple Remote Unit (RU) sensor locations. Each signal is time-stamped and sent to the Central Processing Station (CPS), where the difference in signal arrival time at each sensor location is used to estimate the transponder location.

Data from three sensors enables the CPS to determine the location of the transponder.



Three-dimensional position estimate is calculated with data from a fourth sensor, or with altitude data obtained from an outside source (such as a Mode C altitude or an 'on ground' bit from the aircraft transponder).

During operation, the CPS receives target replies from the RUs, clusters the replies received for the same target by different RUs, and generates a TDOA position. Additional processing recovers replies corrupted by multipath interference or blockage, and then calculates an accurate two- or three-dimensional multilateration position using a Maximum Likelihood Position Estimation (MLE) algorithm. This position estimation technique makes use of all received reply information to generate the most accurate estimate.

Data Collected

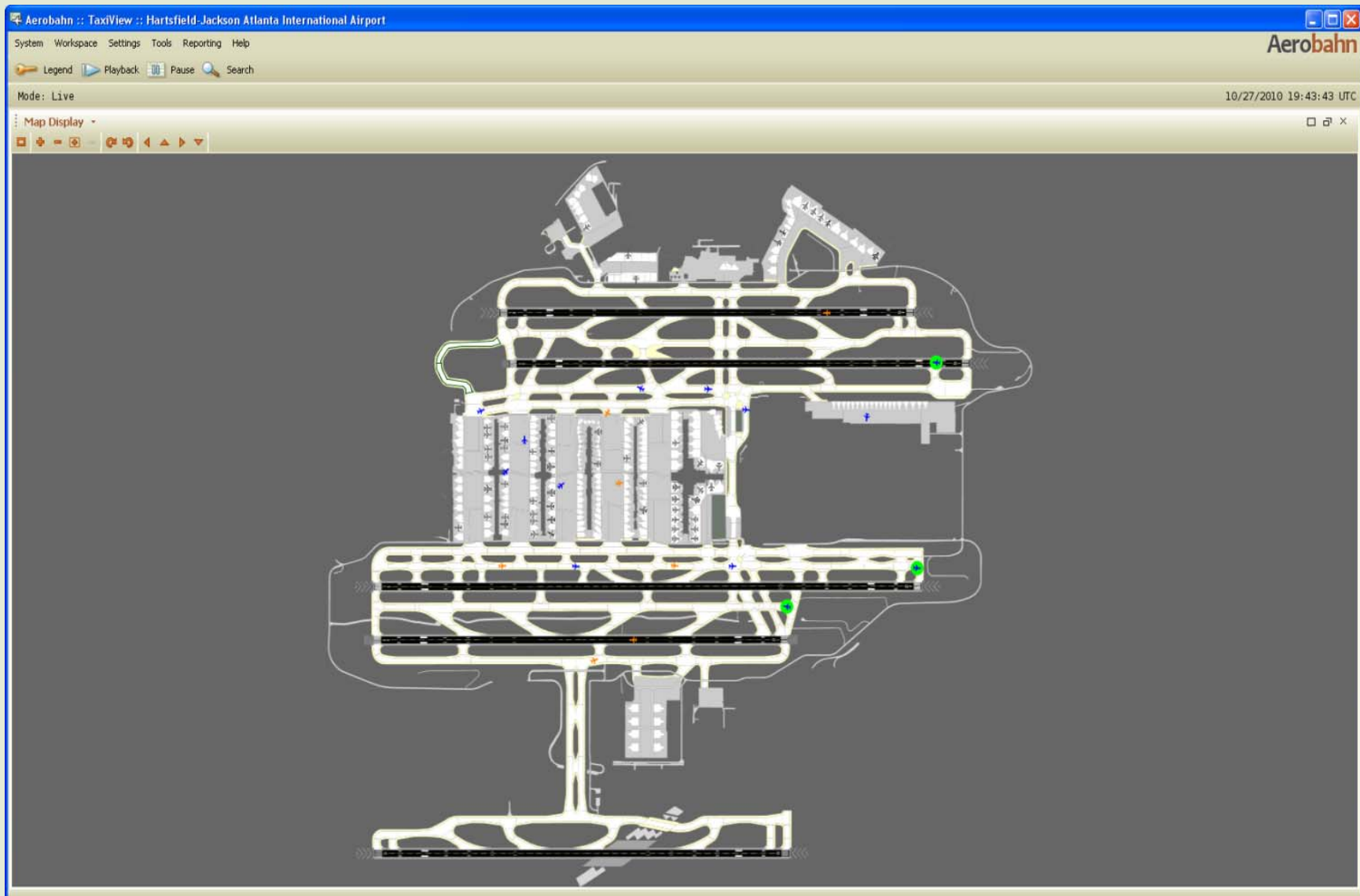
Taxiway_L_Segment_12

1-May-11

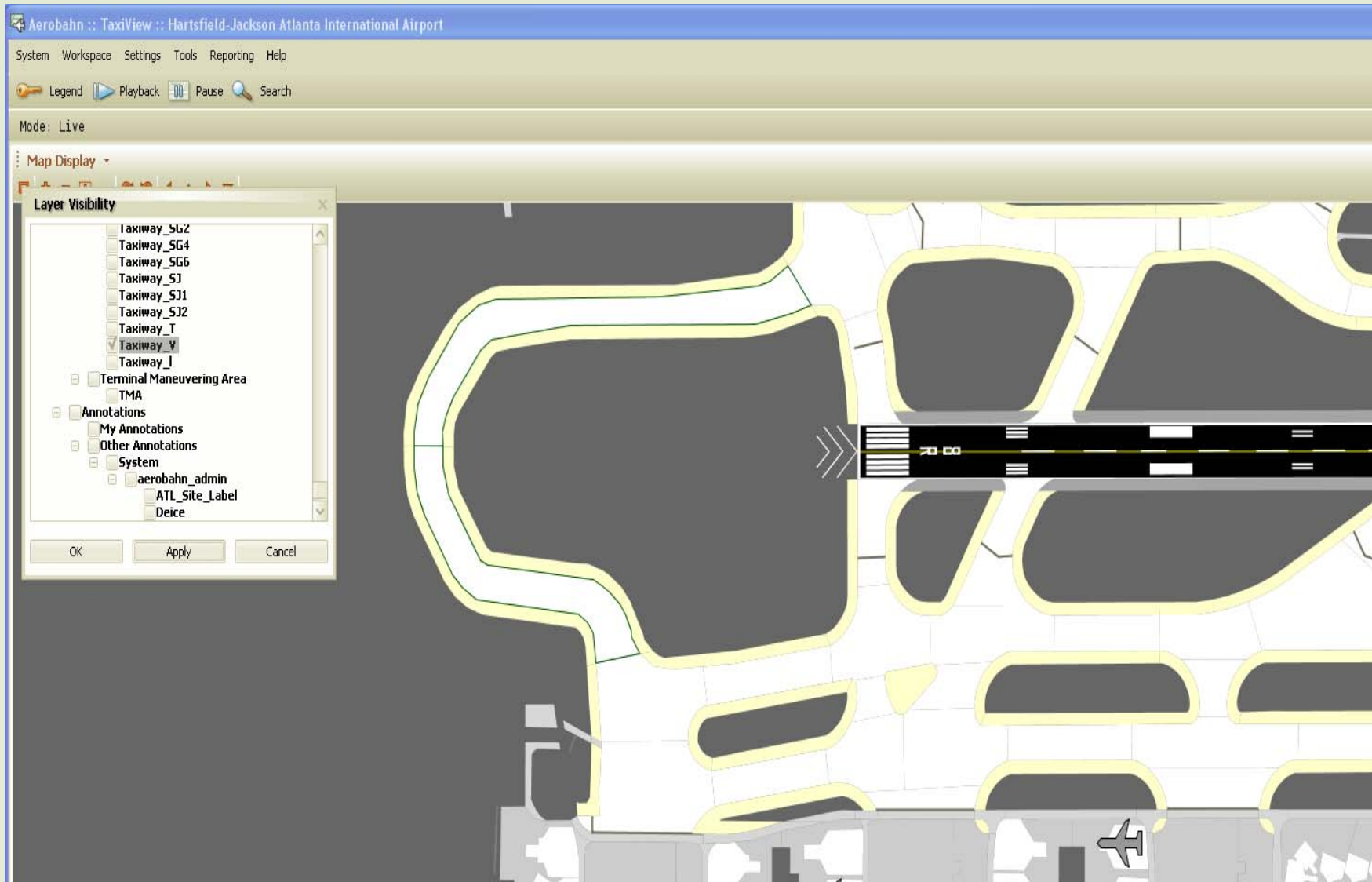
Call Sign	Carrier	Registration	Region	Time Entered	Time Exited	Occupancy Time	Direction	blade S	Model	First Fix	Flight on Origination Date	on Destination Airport	Assigned Gate
DAL001	DAL	H800W	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:21	0:00:11	Inbound	A17810	707-302	FLO	01/05/11 HKT	ATL	Gate_A0
DAL104	DAL	H800U	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	LHW	01/05/11 JFC	ATL	Gate_A00
DAL100	DAL	H800A	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14101	707-302	LHW	01/05/11 JFC	ATL	Gate_A00
DAL544	DAL	H1011	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:00	Inbound	A14200	707-302	TRM	01/05/11 LAX	ATL	Gate_T0
DAL500	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:00	Inbound	A14007	707-302	MTV	01/05/11 JFC	ATL	Gate_A12
TR410	TRJ	H10AT	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A10070	707-720	SEA	01/05/11 SEA	ATL	Gate_C0
AJQ001	AJQ	H800R	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 VLB	ATL	Gate_X00
AJQ010	AJQ	H800A	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 CAS	ATL	Gate_C02
DAL100	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 SEA	ATL	Gate_A10
DAL571	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 SAV	ATL	Gate_A0
DAL504	DAL	H800U	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 LAX	ATL	Gate_X04
DAL512	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 TLH	ATL	Gate_A0
DAL501	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 HNK	ATL	Gate_X02
DAL120	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 MAB	ATL	Gate_X0
DAL301	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 GAO	ATL	Gate_A00
DAL101	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 MCO	ATL	Gate_A1
DAL502	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 FLL	ATL	Gate_A00
AJQ002	AJQ	H800V	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 HCP	ATL	Gate_C40
DAL100	DAL	H800Q	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 CMH	ATL	Gate_X01
DAL502	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 CAE	ATL	Gate_A10
TR000	TRJ	H10AT	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A10070	707-720	SEA	01/05/11 MCO	ATL	Gate_C12
DAL300	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 ORD	ATL	Gate_X00
DAL300	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 HNV	ATL	Gate_X1
AJQ000	AJQ	H800A	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 HNH	ATL	Gate_C42
TR004	TRJ	H800AT	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A10070	707-720	SEA	01/05/11 FLL	ATL	Gate_C00
DAL100	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 FRS	ATL	Gate_X11
TR000	TRJ	H800AT	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A10070	707-720	SEA	01/05/11 HNV	ATL	Gate_C0
DAL500	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 MAF	ATL	Gate_A10
DAL100	DAL	H800W	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 HNA	ATL	Gate_X1
DAL102	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 MAB	ATL	Gate_X00
DAL000	DAL	H800L	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 MVB	ATL	Gate_X00
DAL101	DAL	H800W	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	707-302	FLO	01/05/11 FHL	ATL	Gate_A10
AJQ002	AJQ	H800A	Taxiway_L_Segment_12	01/05/11 0:20	01/05/11 0:20	0:00:10	Inbound	A14000	CL-440-2-CL0	CORNY	01/05/11 VPS	ATL	Gate_C00

- Flight /Carrier
- Registration
- Duration in Pavement Region
- Direction – Inbound/Outbound
- Aircraft Model
- Origination/Destination
- Assigned Gate

Snapshot of Airside Activity



Pavement Locations Assigned as Regions



Region Report Query

Report Parameters

Report Type

Standard Report Types My Report Types Other Report Types

- Arrival Departure Summary Grouped by Model
- Arrival Departure Summary Grouped by Parking Area
- Gate Occupancy Report
- Region Occupancy

Report Data

Data Set Name: Region Occupancy Data Set

Data Set Type: Region Occupancy

Interval: Relative Time Interval

Time Range: Yesterday

Time Zone: UTC

Callsign: _____

Registration: _____

Mode 3/A: _____

Model: _____

Direction:

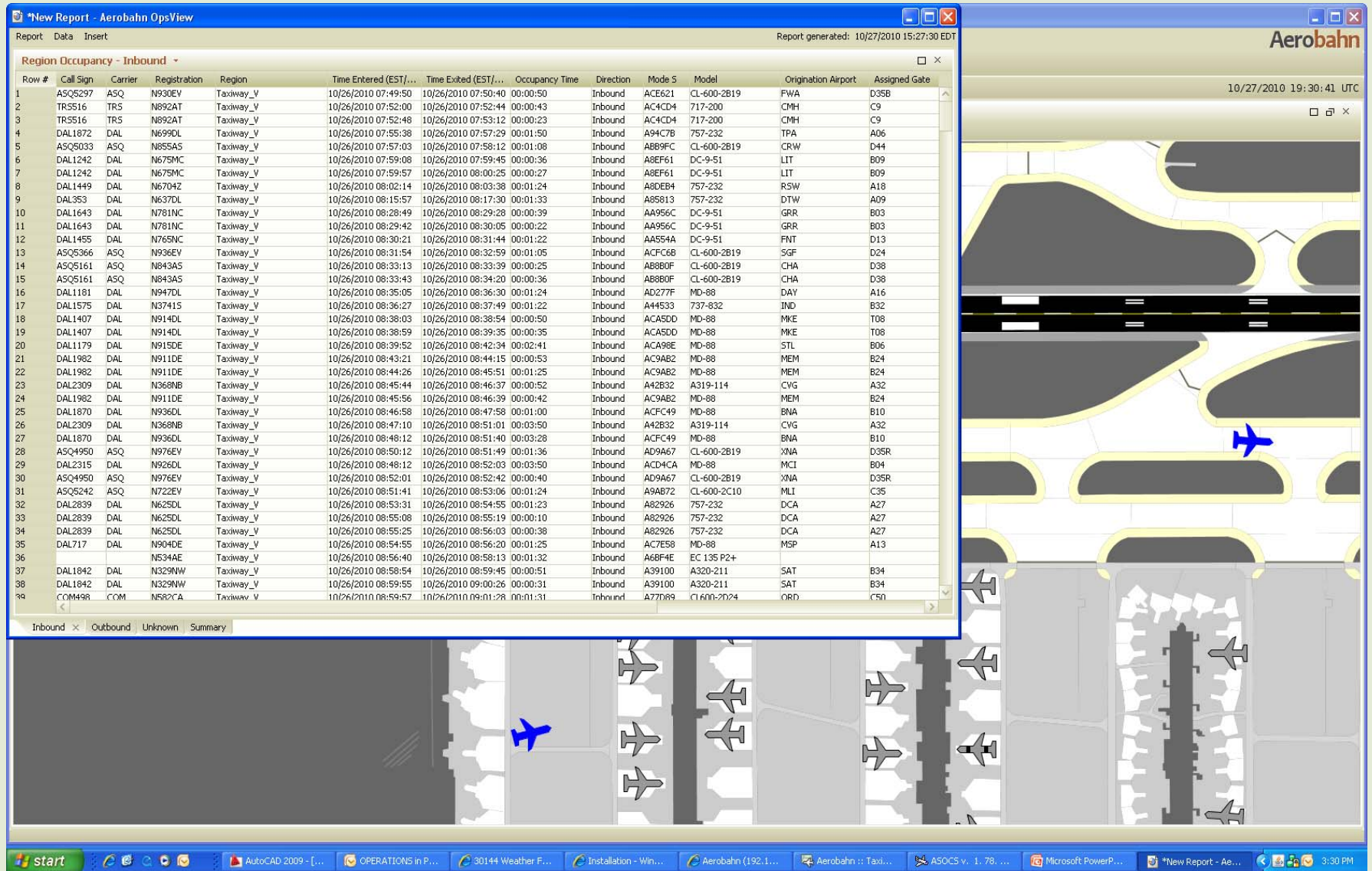
- Inbound
- Outbound
- Unknown

Region(s):

- All Regions
- Ramp
- Runway
- Deice
- Movement Area
- Gate Occupancy

Add Data Set Run Report

Region Tracking Report



Data Exportable to Excel

Region Occupancy - Inbound.csv - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

O10 10/26/2010

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8	Carrier	Registration	Region	Time Entered	Time Exited	Occupancy Time	Direction	Mode S	Model	Origination Airport	Assigned Gate	First Fix	Ship Number	Flight Origination Date	Destination Airport	Marketing Carrier	
9	ASQ	N930EV	Taxiway_V	10/26/2010 7:49	10/26/2010 7:50	0:00:50	Inbound	ACE621	CL-600-2B19	FWA	D35B	MIE	930	10/26/2010	ATL	DAL	
10	TRS	N892AT	Taxiway_V	10/26/2010 7:52	10/26/2010 7:52	0:00:43	Inbound	AC4CD4	717-200	CMH	C9	APE	742	10/26/2010	ATL		
11	TRS	N892AT	Taxiway_V	10/26/2010 7:52	10/26/2010 7:53	0:00:23	Inbound	AC4CD4	717-200	CMH	C9	APE	742	10/26/2010	ATL		
12	DAL	N699DL	Taxiway_V	10/26/2010 7:55	10/26/2010 7:57	0:01:50	Inbound	A94C7B	757-232	TPA	A06	CTY	699	10/26/2010	ATL	DAL	
13	ASQ	N855AS	Taxiway_V	10/26/2010 7:57	10/26/2010 7:58	0:01:08	Inbound	ABB9FC	CL-600-2B19	CRW	D44	SOT	855	10/26/2010	ATL	DAL	
14	DAL	N675MC	Taxiway_V	10/26/2010 7:59	10/26/2010 7:59	0:00:36	Inbound	A8EF61	DC-9-51	LIT	B09		9880	10/26/2010	ATL	DAL	
15	DAL	N675MC	Taxiway_V	10/26/2010 7:59	10/26/2010 8:00	0:00:27	Inbound	A8EF61	DC-9-51	LIT	B09		9880	10/26/2010	ATL	DAL	
16	DAL	N6704Z	Taxiway_V	10/26/2010 8:02	10/26/2010 8:03	0:01:24	Inbound	A8DEB4	757-232	RSW	A18	LAL	6704	10/26/2010	ATL	DAL	
17	DAL	N637DL	Taxiway_V	10/26/2010 8:15	10/26/2010 8:17	0:01:33	Inbound	A85813	757-232	DTW	A09	RID	637	10/26/2010	ATL	DAL	
18	DAL	N781NC	Taxiway_V	10/26/2010 8:28	10/26/2010 8:29	0:00:39	Inbound	AA956C	DC-9-51	GRR	B03	FWA	9872	10/26/2010	ATL	DAL	
19	DAL	N781NC	Taxiway_V	10/26/2010 8:29	10/26/2010 8:30	0:00:22	Inbound	AA956C	DC-9-51	GRR	B03	FWA	9872	10/26/2010	ATL	DAL	
20	DAL	N765NC	Taxiway_V	10/26/2010 8:30	10/26/2010 8:31	0:01:22	Inbound	AA554A	DC-9-51	FNT	D13	FNT	9856	10/26/2010	ATL	DAL	
21	ASQ	N936EV	Taxiway_V	10/26/2010 8:31	10/26/2010 8:32	0:01:05	Inbound	ACFC68	CL-600-2B19	SGF	D24	SGF	936	10/26/2010	ATL	DAL	
22	ASQ	N843AS	Taxiway_V	10/26/2010 8:33	10/26/2010 8:33	0:00:25	Inbound	AB880F	CL-600-2B19	CHA	D38	RMG	843	10/26/2010	ATL	DAL	
23	ASQ	N843AS	Taxiway_V	10/26/2010 8:33	10/26/2010 8:34	0:00:36	Inbound	AB880F	CL-600-2B19	CHA	D38	RMG	843	10/26/2010	ATL	DAL	
24	DAL	N947DL	Taxiway_V	10/26/2010 8:35	10/26/2010 8:36	0:01:24	Inbound	AD277F	MD-88	DAY	A16	TRIVO	947	10/26/2010	ATL	DAL	
25	DAL	N3741S	Taxiway_V	10/26/2010 8:36	10/26/2010 8:37	0:01:22	Inbound	A44533	737-832	IND	B32	BWG	3741	10/26/2010	ATL	DAL	
26	DAL	N914DL	Taxiway_V	10/26/2010 8:38	10/26/2010 8:38	0:00:50	Inbound	ACA5DD	MD-88	MKE	T08	OBK	914	10/26/2010	ATL	DAL	
27	DAL	N914DL	Taxiway_V	10/26/2010 8:38	10/26/2010 8:39	0:00:35	Inbound	ACA5DD	MD-88	MKE	T08	OBK	914	10/26/2010	ATL	DAL	
28	DAL	N915DE	Taxiway_V	10/26/2010 8:39	10/26/2010 8:42	0:02:41	Inbound	ACA98E	MD-88	STL	B06	ARG	9015	10/26/2010	ATL	DAL	
29	DAL	N911DE	Taxiway_V	10/26/2010 8:43	10/26/2010 8:44	0:00:53	Inbound	AC9AB2	MD-88	MEM	B24	DEVAC	9011	10/26/2010	ATL	DAL	
30	DAL	N911DE	Taxiway_V	10/26/2010 8:44	10/26/2010 8:45	0:01:25	Inbound	AC9AB2	MD-88	MEM	B24	DEVAC	9011	10/26/2010	ATL	DAL	
31	DAL	N368NB	Taxiway_V	10/26/2010 8:45	10/26/2010 8:46	0:00:52	Inbound	A42B32	A319-114	CVG	A32	BWG	3168	10/26/2010	ATL	DAL	
32	DAL	N911DE	Taxiway_V	10/26/2010 8:45	10/26/2010 8:46	0:00:42	Inbound	AC9AB2	MD-88	MEM	B24	DEVAC	9011	10/26/2010	ATL	DAL	
33	DAL	N936DL	Taxiway_V	10/26/2010 8:46	10/26/2010 8:47	0:01:00	Inbound	ACFC49	MD-88	BNA	B10	DRAKK	936	10/26/2010	ATL	DAL	
34	DAL	N368NB	Taxiway_V	10/26/2010 8:47	10/26/2010 8:51	0:03:50	Inbound	A42B32	A319-114	CVG	A32	BWG	3168	10/26/2010	ATL	DAL	
35	DAL	N936DL	Taxiway_V	10/26/2010 8:48	10/26/2010 8:51	0:03:28	Inbound	ACFC49	MD-88	BNA	B10	DRAKK	936	10/26/2010	ATL	DAL	
36	ASQ	N976EV	Taxiway_V	10/26/2010 8:50	10/26/2010 8:51	0:01:36	Inbound	AD9A67	CL-600-2B19	XNA	D35R	RZC	976	10/26/2010	ATL	DAL	
37	DAL	N926DL	Taxiway_V	10/26/2010 8:48	10/26/2010 8:52	0:03:50	Inbound	ACD4CA	MD-88	MCI	B04	BUM	926	10/26/2010	ATL	DAL	
38	ASQ	N976EV	Taxiway_V	10/26/2010 8:52	10/26/2010 8:52	0:00:40	Inbound	AD9A67	CL-600-2B19	XNA	D35R	RZC	976	10/26/2010	ATL	DAL	
39	ASQ	N722EV	Taxiway_V	10/26/2010 8:51	10/26/2010 8:53	0:01:24	Inbound	A9AB72	CL-600-2C10	MLI	C35	STL	722	10/26/2010	ATL	DAL	

Region Occupancy - Inbound

Ready 100%

Real-Time Data on Flight

The screenshot displays the Aerobahn TaxiView interface for Hartsfield-Jackson Atlanta International Airport. The main window shows a top-down view of the taxiway layout. A yellow airplane icon is positioned on the taxiway. A yellow data popup is visible, containing the following information:

16:34 16:31 MD88 B10
B10 DAL1942 DAWGS4 EWR
16:34 16:35 17:21 16:55
SPA
KATL.DAWGS4.SPA.J14.CREWE.J51.FAK.PHLBO2.KEWR/0142
DAL1861 DAL 9 6371
AD03B7 DAL1942 415
N938DL 16:35 16:35
16:35 000938 11

The interface includes a menu bar with options like System, Workspace, Settings, Tools, Reporting, and Help. A toolbar at the top contains icons for Legend, Playback, Pause, and Search. The status bar at the bottom shows the current mode as 'Live' and the date/time as 05/12/2011 16:38:28 UT. The bottom of the window shows the browser address bar with the URL 'Aerobahn (192.168.220.162) - Windows Internet Explorer'.

Example –Flight 894 Movement History

Aerobahn :: TaxiView :: Hartsfield-Jackson Atlanta International Airport

System Workspace Settings Tools Reporting Help

Legend Playback 100% Pause Search

Mode: Live 05/12/2011 16:44:49 UT

Selection Details

DAL894

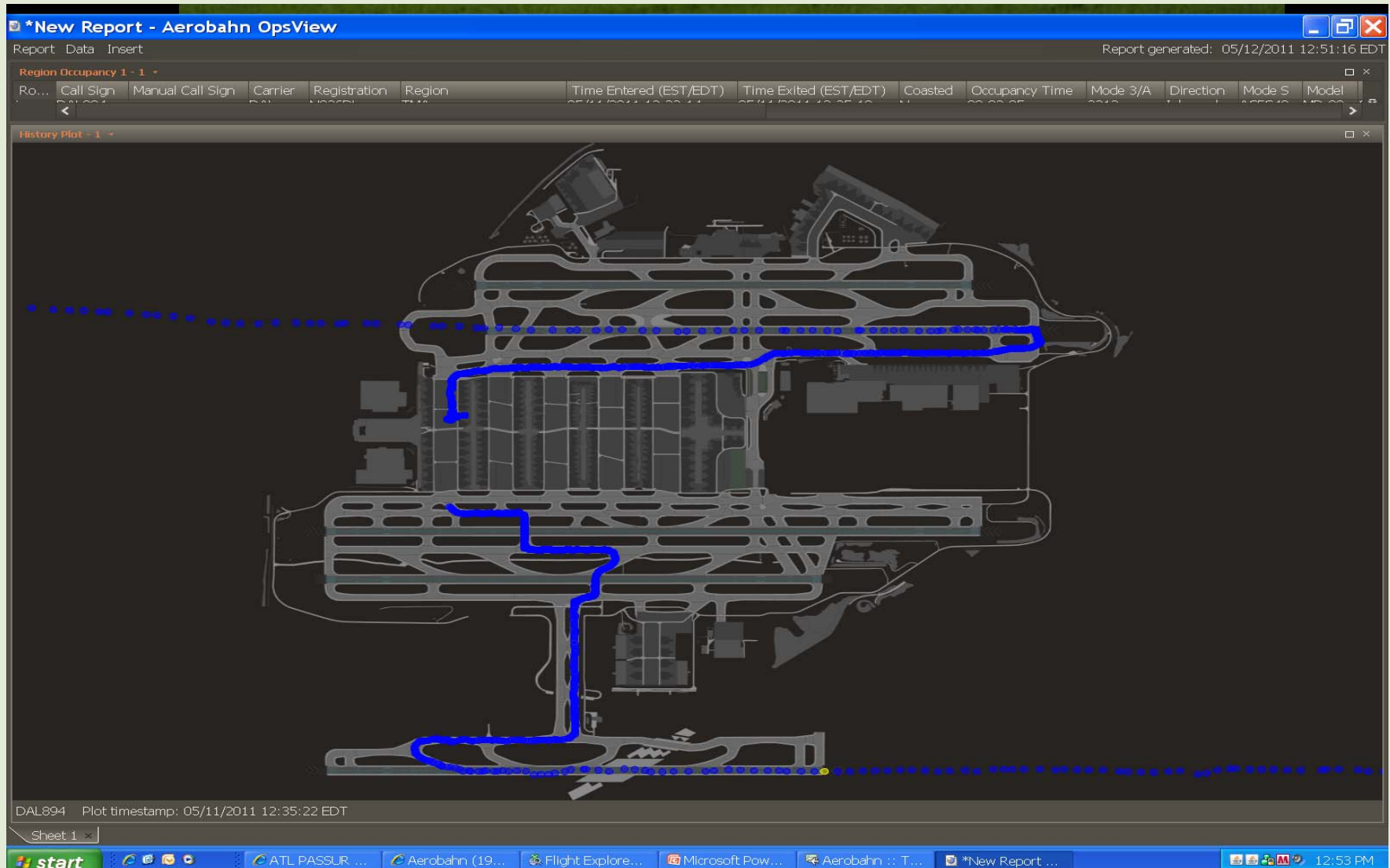
Properties Taxi Route Workflow State History ActiveRules

Region	Entry Time	Exit Time	Occ. Time	Excess Transit Time
TMA	16:37:49	16:41:04	00:03:14	00:00:00
Approach_28	16:38:45	16:41:08	00:02:23	00:00:00
10_28	16:41:08	16:41:45	00:00:37	00:00:00
Taxiway_SG6	16:41:44	16:42:03	00:00:18	00:00:00
Taxiway_SG6_Segment_1	16:41:44	16:42:04	00:00:20	00:00:00
South_Hold_Area	16:41:45	16:44:45	00:02:59	00:00:00
Taxiway_SG	16:42:03	16:42:47	00:00:44	00:00:00
Taxiway_SG_Segment_7	16:42:03	16:42:13	00:00:10	00:00:00
Taxiway_SG_Segment_8	16:42:12	16:42:40	00:00:28	00:00:00
Taxiway_SG_Segment_9	16:42:39	16:42:48	00:00:08	00:00:00
Taxiway_SC	16:42:47	16:43:47	00:01:00	00:00:00
Taxiway_SC_Segment_5	16:42:47	16:43:02	00:00:15	00:00:00
Taxiway_SC_Segment_4	16:43:01	16:43:10	00:00:08	00:00:00
Taxiway_SC_Segment_3	16:43:09	16:43:23	00:00:13	00:00:00
Taxiway_SC_Segment_2	16:43:22	16:43:30	00:00:08	00:00:00
Taxiway_SC_Segment_1	16:43:29	16:43:48	00:00:18	00:00:00
Taxiway_R	16:43:47	16:44:36	00:00:49	00:00:00
Taxiway_R_Segment_5	16:43:47	16:43:57	00:00:09	00:00:00
Taxiway_R_Segment_6	16:43:56	16:44:13	00:00:17	00:00:00
Taxiway_R_Segment_7	16:44:12	16:44:37	00:00:25	00:00:00
Taxiway_R7	16:44:36	16:44:47	00:00:11	00:00:00
Taxiway_R7_Segment_1	16:44:36	16:44:48	00:00:12	00:00:00
Movement_Area	16:41:04		00:03:44	00:00:00
Total_Taxi_Area	16:41:04		00:03:44	00:00:00
Total_Taxi_Area_incl_Gates	16:41:04		00:03:44	00:00:00
9R_27L	16:44:47		00:00:01	00:00:00
9R_27L	16:45:40	16:47:19	00:01:39	00:00:00
Taxiway_N6_Segment_1	16:47:19	16:49:46	00:02:27	00:00:00
Taxiway_N_Segment_9	16:49:46	16:49:58	00:00:12	00:00:00
Taxiway_N_Segment_8	16:49:58	16:50:34	00:00:35	00:00:00
Taxiway_N_Segment_7	16:50:34	16:51:04	00:00:30	00:00:00
Taxiway_N5_Segment_1	16:51:04	16:51:34	00:00:30	00:00:00

Map Display Details

Aerobahn (192.168.220.162) - Windows Internet Explorer

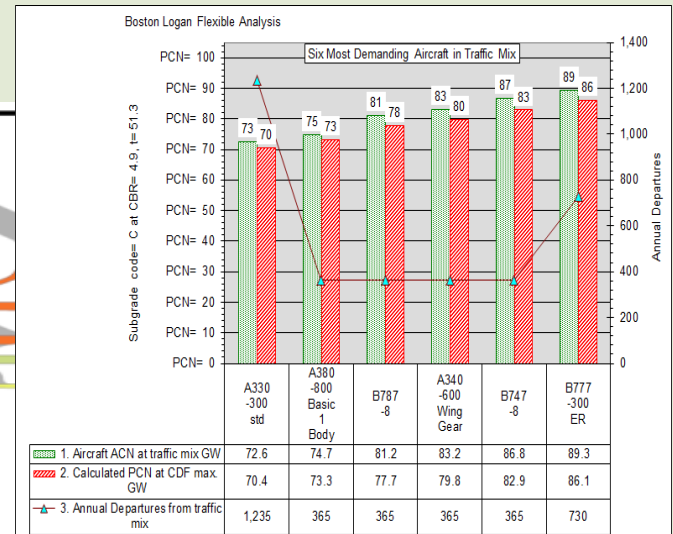
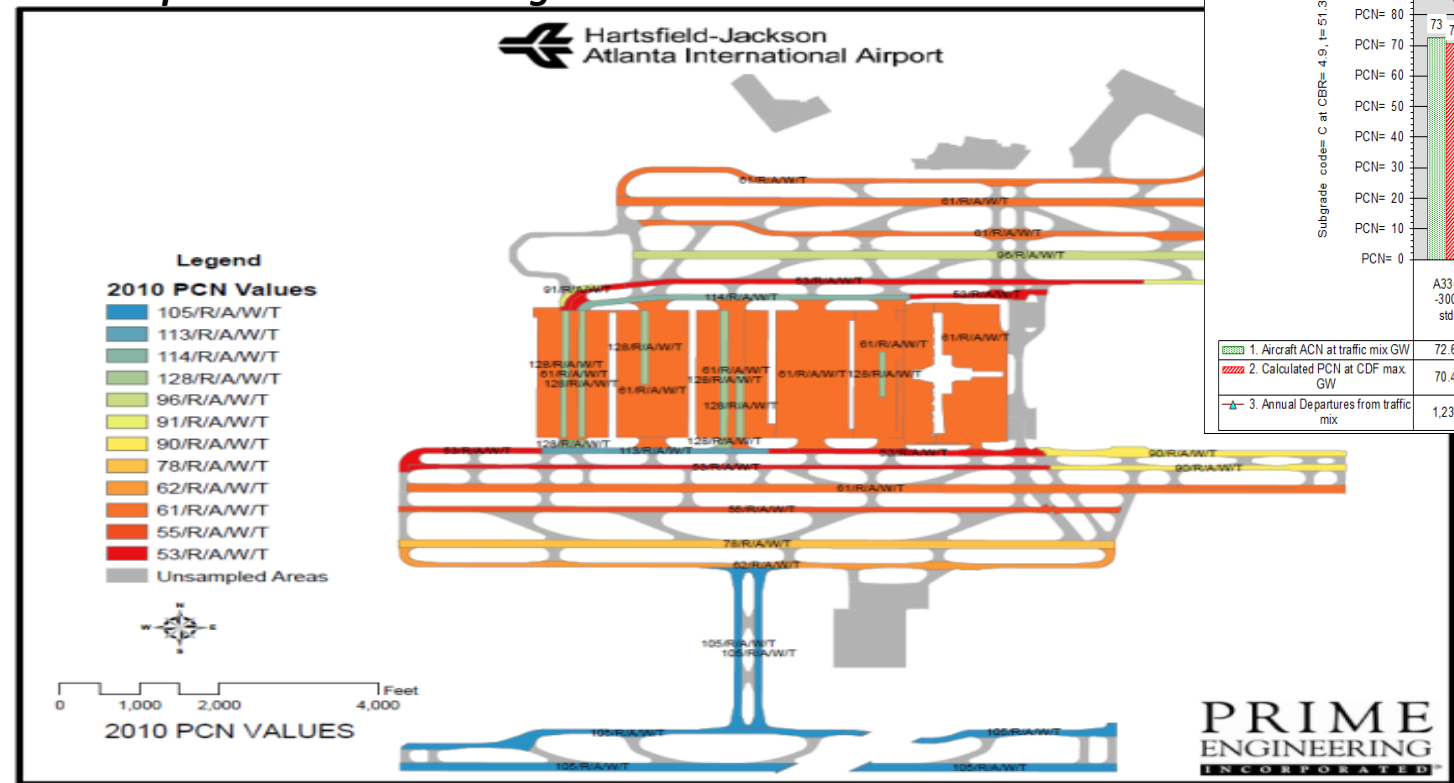
Location History Plot for Flight 894



Traffic Uses –Pavement Classification Number (PCN) Calculations

-FAA Advisory Circular 150/5300- 18B: Airport GIS – Chapter 5 requires PCN Feature Attributes for Runway, Taxiway and Apron Elements

-FAA AC 150/5335-5B : Standardized Method of Reporting Airport Pavement Strength –Technical Evaluation Method

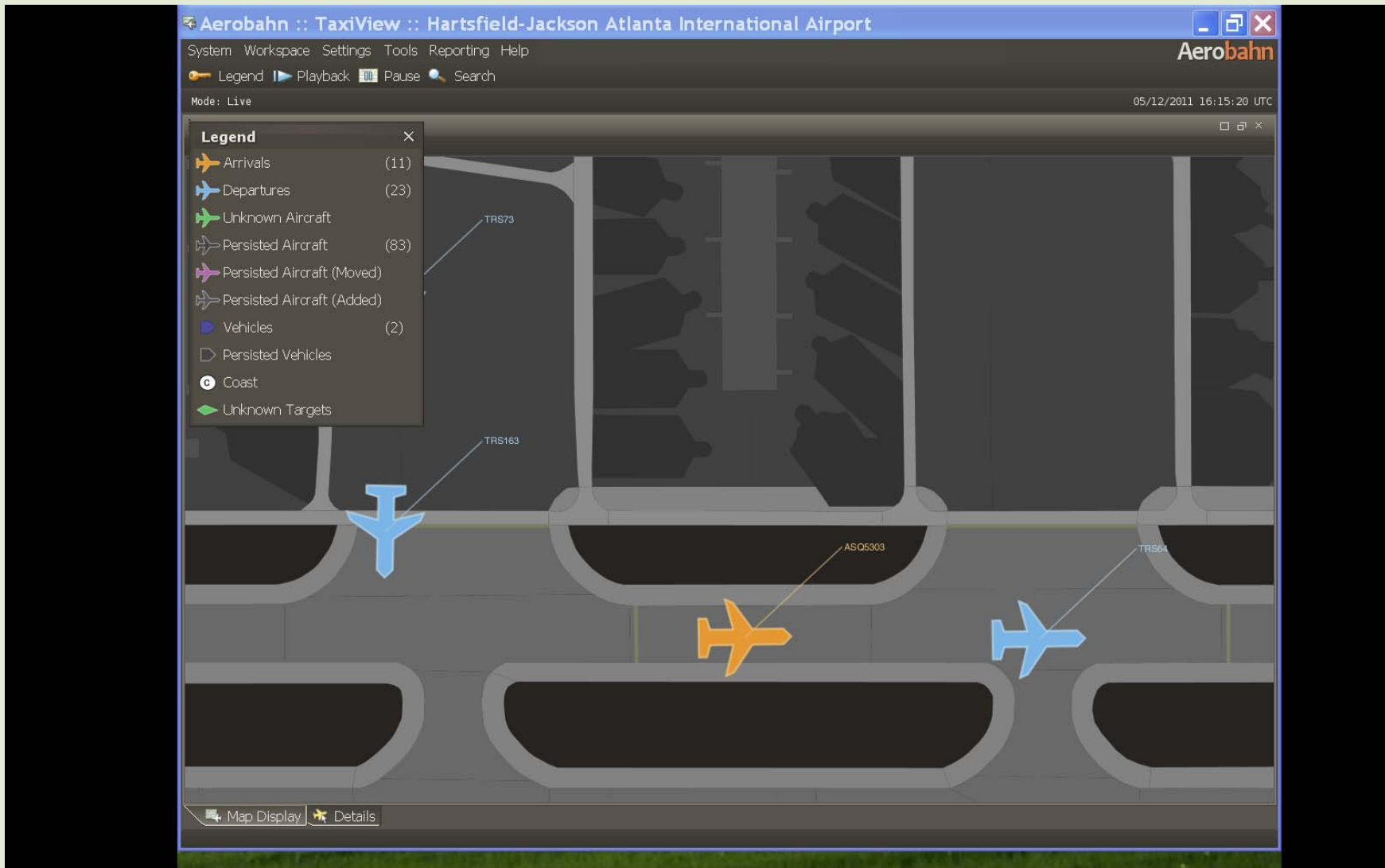


Traffic Uses – Construction Phasing Impacts

Taxiway L Reconstruction



Example – Taxiway L Segment 12



Taxiway L Segment 12 -Data Collected in 24 hrs

Taxiway_L_Segment_12

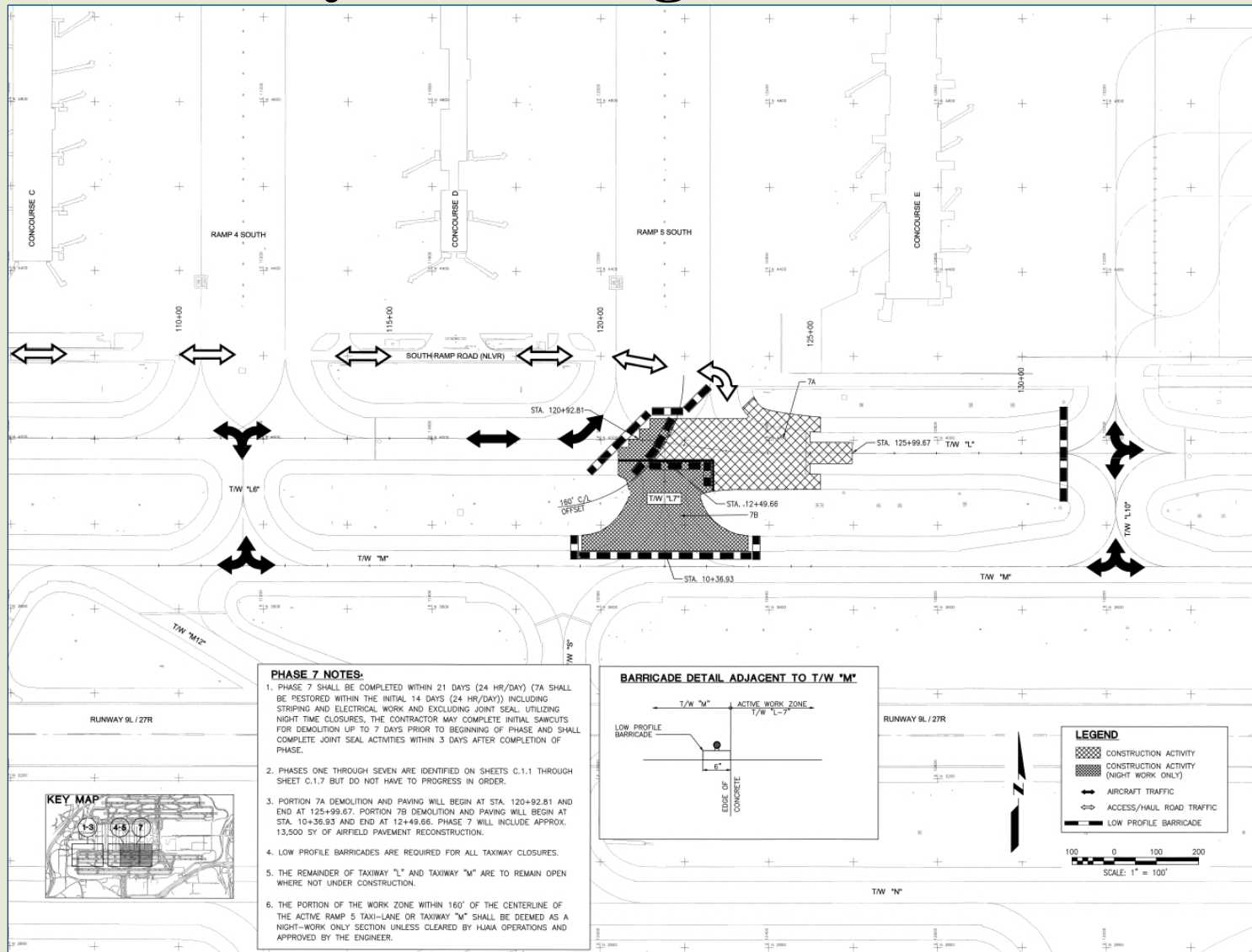
1-May-11

P

Call Sign	Carrier	Registration	Region	Time Entered	Time Exited	Occupancy Time	Direction	Mode S	Model	First Fix	Flight Origination Date	Destination Airport	Assigned Gate
DAL8821	DAL	N195DN	Taxiway_L_Segment_12	5/1/2011 0:20	5/1/2011 0:21	0:00:11	Inbound	A17B16	767-332	FLO	5/1/2011NKT	ATL	Gate_A6
DAL1684	DAL	N3756	Taxiway_L_Segment_12	5/1/2011 5:49	5/1/2011 5:49	0:00:10	Inbound	A44988	737-832	LIN	4/30/2011 SJC	ATL	Gate_A30
DAL1880	DAL	N665DA	Taxiway_L_Segment_12	5/1/2011 5:55	5/1/2011 5:55	0:00:17	Inbound	A91616	757-232	LIN	4/30/2011 SFO	ATL	Gate_A27
DAL544	DAL	N140LL	Taxiway_L_Segment_12	5/1/2011 6:07	5/1/2011 6:07	0:00:09	Inbound	A0A3B5	767-332	TRM	4/30/2011 LAX	ATL	Gate_T7
DAL2055	DAL	N660DL	Taxiway_L_Segment_12	5/1/2011 6:17	5/1/2011 6:17	0:00:08	Inbound	A8B48F	757-232	MTU	5/1/2011 SLC	ATL	Gate_A12
TRS155	TRS	N315AT	Taxiway_L_Segment_12	5/1/2011 6:23	5/1/2011 6:23	0:00:15	Inbound	A35976	737-7BD	SEA	4/30/2011 SEA	ATL	Gate_C2
ASQ5501	ASQ	N680BR	Taxiway_L_Segm								5/1/2011 VLD	ATL	Gate_B19
ASQ5316	ASQ	N849AS	Taxiway_L_Segm								5/1/2011 CSG	ATL	Gate_C52
DAL898	DAL	N138DL	Taxiway_L_Segm								4/30/2011 SEA	ATL	Gate_A19
DAL372	DAL	N984DL	Taxiway_L_Segm								5/1/2011 SAV	ATL	Gate_A3
DAL2354	DAL	N3767	Taxiway_L_Segm								4/30/2011 LAX	ATL	Gate_B24
DAL2012	DAL	N922DL	Taxiway_L_Segm								5/1/2011 TLH	ATL	Gate_A5
DAL2251	DAL	N914DL	Taxiway_L_Segm								5/1/2011 BHM	ATL	Gate_B22
DAL1225	DAL	N945DL	Taxiway_L_Segm								5/1/2011 DAB	ATL	Gate_B8
DAL1301	DAL	N949DL	Taxiway_L_Segm								5/1/2011 GSO	ATL	Gate_A28
DAL1518	DAL	N650DL	Taxiway_L_Segm								5/1/2011 MCO	ATL	Gate_A1
DAL962	DAL	N946DL	Taxiway_L_Segm								5/1/2011 FLL	ATL	Gate_A29
ASQ5532	ASQ	N919EV	Taxiway_L_Segm								5/1/2011 ECP	ATL	Gate_C40
DAL1758	DAL	N306DQ	Taxiway_L_Segm								5/1/2011 CHS	ATL	Gate_B31
DAL952	DAL	N934DL	Taxiway_L_Segm								5/1/2011 CAE	ATL	Gate_A13
TRS848	TRS	N961AT	Taxiway_L_Segment_12	5/1/2011 7:29	5/1/2011 7:29	0:00:14	Inbound	AD5FEF	717-200	DBN	5/1/2011 MCO	ATL	Gate_C12
DAL1935	DAL	N961DL	Taxiway_L_Segment_12	5/1/2011 7:29	5/1/2011 7:30	0:00:13	Inbound	AD6033	MD-88	FKN	5/1/2011 ORF	ATL	Gate_B28
DAL1949	DAL	N924DL	Taxiway_L_Segment_12	5/1/2011 7:32	5/1/2011 7:32	0:00:13	Inbound	ACCDC5C	MD-88	ISO	5/1/2011 RDU	ATL	Gate_B1
ASQ5375	ASQ	N866AS	Taxiway_L_Segment_12	5/1/2011 7:33	5/1/2011 7:33	0:00:14	Inbound	ABECA0	CL-600-2B19	LGC	5/1/2011 DHN	ATL	Gate_C42
TRS84	TRS	N954AT	Taxiway_L_Segment_12	5/1/2011 7:35	5/1/2011 7:35	0:00:13	Inbound	AD4395	717-200	ARKES	5/1/2011 FLL	ATL	Gate_C20
DAL1508	DAL	N953DL	Taxiway_L_Segment_12	5/1/2011 7:37	5/1/2011 7:37	0:00:12	Inbound	AD4022	MD-88	MGM	5/1/2011 PNS	ATL	Gate_B11
TRS96	TRS	N956AT	Taxiway_L_Segment_12	5/1/2011 7:46	5/1/2011 7:47	0:00:14	Inbound	AD4B03	717-200	FAY	5/1/2011 RDU	ATL	Gate_C6
DAL328	DAL	N948DL	Taxiway_L_Segment_12	5/1/2011 7:59	5/1/2011 7:59	0:00:14	Inbound	AD2B36	MD-88	MEI	5/1/2011 JAN	ATL	Gate_A15
DAL1460	DAL	N662DN	Taxiway_L_Segment_12	5/1/2011 8:04	5/1/2011 8:04	0:00:12	Inbound	A8BBFF	757-232	HEDLY	5/1/2011 MIA	ATL	Gate_T1
DAL1541	DAL	N919DL	Taxiway_L_Segment_12	5/1/2011 8:06	5/1/2011 8:06	0:00:13	Inbound	ACB870	MD-88	DAILY	5/1/2011 IAD	ATL	Gate_B13
DAL865	DAL	N998DL	Taxiway_L_Segment_12	5/1/2011 8:08	5/1/2011 8:08	0:00:13	Inbound	ADF0B1	MD-88	CAE	5/1/2011 MYR	ATL	Gate_B29
DAL1461	DAL	N554NV	Taxiway_L_Segment_12	5/1/2011 8:19	5/1/2011 8:19	0:00:13	Inbound	A70F88	757-251	OOD	5/1/2011 PHL	ATL	Gate_A16
ASQ4972	ASQ	N355CA	Taxiway_L_Segment_12	5/1/2011 8:23	5/1/2011 8:23	0:00:15	Inbound	A3F793	CL-600-2C10	CORKY	5/1/2011 VPS	ATL	Gate_C36

- 256 Inbound
- 94 Outbound
- 2 Tugs
- Accurate Aircraft Traffic Mix

Taxiway L Phasing – 3 Total Phases



Traffic Uses- Monitor Traffic Patterns and Prioritize Pavement Repair



Creating Value ...



... Delivering Solutions

Thank You!

Baker

**THE
LPA
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AVIATION CONSULTANTS
A Unit of Michael Baker Corporation