

Appendix D

Air Quality Analysis

Appendix D - Air Quality

To evaluate the effect of the Construction Component and the Departure Procedures Component of the Proposed Project, air pollutant and pollutant precursor emission inventories were prepared. Emission inventories provide an indication of the potential change in the levels of these compounds by providing an estimate of total emissions generated by a Proposed Action. For this Environmental Assessment (EA), the emission inventories were prepared for carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur oxides (SO_x), particulate matter 10 microns or less in size (PM₁₀) and particulate matter 2.5 microns or less in size (PM_{2.5}).

Construction Component

Inventories related to the construction activities that would occur with the Construction Component of the Proposed Project (the 500 foot extension of Runway 9L-27R) were prepared using the US Environmental Protection Agency's (USEPA's) NONROAD2005 model (June 2006), documentation/databases prepared by the USEPA in support of the NONROAD model, and the USEPA's MOBILE6.2 motor vehicle emission rate model. The MOBILE6.2 input parameters for the calculation of motor vehicle emission factors included the following:

- Reid vapor pressure of 7.0,
- stage II refueling program,
- inspection and maintenance program,
- anti-tampering program, and
- low altitude location.

The construction-related emission inventories were prepared for sources directly affected by implementation of the Proposed Construction Components. These sources are off-road construction equipment and on-road construction equipment/motor vehicle activity.

The main construction activities for the Construction Component of the Proposed Project are:

- material staging,
- on- and off- site activities related to fill material (and the transport of the material), and
- paving.

To calculate emissions that would result from these construction activities, an estimate of daily equipment requirements was prepared for the general construction activity listed above. Specific equipment requirements were then assigned to each activity. The types of equipment included haul (dual tandem) trucks, excavators, loaders, soil compactors, and pavers. Emission factors from the NONROAD model were applied to the anticipated equipment work output (horsepower-hours of expected equipment use). The equipment, emission factors, horsepower, and equipment load factors assumptions used in the analysis are provided in **Attachment I** to this Appendix.

Estimates of emissions attributable to construction-related employee vehicle trips were also evaluated. The differences in total miles traveled each year for this activity varies depending on the level

and type of construction activity that would occur. The emission factors used to evaluate the employee-related trips were obtained from MOBILE6.2 using rates representative of travel on local roadways. Use of these rates should result in conservatively high estimates of emissions attributable to construction-related employee vehicle trips (because some trips would occur on interstate highways).

Liquefied asphalt cement and asphalt concrete would be applied to the taxiway shoulders. Asphalt is considered an evaporative source of VOC. The asphalt paving will be performed using a hot mix asphalt (HMA) concrete, which produces a negligible quantity of VOCs. However, application of prime and tack coats (liquefied asphalt) between paving lifts can produce considerable VOC emissions.

The two basic types of liquefied asphalt are cutback and emulsified. Cutback asphalt is a blending of asphalt cement with heavy residual oils, kerosene-type solvents, or naphtha and gasoline solvents and results in significant VOC emissions. Emulsified asphalt relies on water evaporation or ionic bonding of the emulsion and the aggregate surface and produces significantly less VOC emissions. The EPD has regulations for limiting the use of cutback asphalt during ozone season. Because of this limitation, exclusive use of emulsified asphalt was assumed. VOC emissions for paving operations were calculated based on data from the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO), Emission Inventory Improvement Program, Asphalt Paving, Chapter 17, Volume III, October 1998.

Table D-1 presents the estimated annual construction emissions for the Proposed Project.

Table D-1						
Construction-Related Emissions Inventory (tons per year)						
Year	Pollutant or Pollutant Precursor					
	CO	VOC	NO_x	SO_x	PM10	PM2.5
2009	1.68	0.31	2.96	0.01	0.10	0.10
2010	5.17	0.97	8.81	0.04	0.30	0.30

Source: KB Environmental Sciences

To estimate the increase in aircraft-related air pollutant and pollutant precursors with the extension to Runway 9L-27R, an estimate of the additional taxi-related emissions that would occur was prepared using data from the Federal Aviation Administration (FAA's) Emissions and Dispersion Modeling System (EDMS - Version 5.1). For this purpose, it was only necessary to evaluate the number of departures of those aircraft forecast to depart from Runway 27R (because none of the other aircraft operating at the airport would be affected). These aircraft and the number of forecast 2010 and 2015 departures are provided in **Table D-2**. For the purpose of the analysis, it was assumed that the aircraft would taxi at a speed of 17 miles-per-hour (an additional 20 seconds of taxi time with the runway extension).

**Table D-2
Aircraft Fleet Mix/Number of Departures - Runway 27R**

Category	NOMS Aircraft	EDMS Aircraft	Assigned Engine	Number of Annual Departures	
				2010	2015
Passenger - Air Carrier	B712, B717	B717-200	BR700-715A1-30	17,775	17,187
	B735	B737-500	CFM56-3C-1	675	0
	B737	B737-700	CFM56-7B22	11,726	13287
	B738	B737-800	CFM56-7B26	9,811	17710
	B744, B747	B747-400	CF6-80C2B5F 1862 M39	630	840
	B752, B757	B757-200	PW2037	19,675	20618
	B763, B767	B767-300	CF6-80C2B7F 1862M39	9,172	9182
	B764	B767-400	CF6-80C2B8FA 1862M39	1,942	2240
	B772	B777-200	Trent 892	1,499	2435
	A318	A318-100 Series	CFM56-5B8/P SAC	2	2
	A319	A319-100 Series	CFM56-5B6/P	390	624
	A320	A320-100 Series	V2500-A1	930	1477
	A321	A320-200 Series	CFM56-5B3/2P DAC-II	90	143
	A332	A330-200 Series	CF6-80E1A3 Standard	185	2592
	A343	A340-300 Series	CFM56-5C4	213	213
	DC93	DC9-30	JT8D-7 Series Reduced Emissions	12	0
	DC94	DC9-40	JT8D-11	12	0
	MD82	MD-82	JT8D-217C Environmental Kit (E_Kit)	510	392
	MD81	MD-81	JT8D-217C Environmental Kit (E_Kit)	20	16
	MD83	MD-83	JT8D-219 Environmental Kit (E_Kit)	260	198
MD88	MD-88	JT8D-219 Environmental Kit (E_Kit)	21,484	16345	
MD90	MD-90	V2525-D5	97	74	
	Not applicable	A340-300 Series	CFM56-5C4	0	555
Passenger - Commuter	CL65, CRJ1	Bombardier CRJ-100	CF34-3A1 LEC II	705	715
	CRJ2	Bombardier CRJ-200	CF34-3B	20,253	20558
	CRJ7	Bombardier CRJ-700	CF34-8C1	6,563	6662
	CRJ9	Bombardier CRJ-900	CF34-8C5 LEC	1,707	1733
	E135	Embraer ERJ135	AE3007A1/3 Type 3 (reduced emissions)	95	56
	E145, E45X	Embraer ERJ145	AE3007A1E Type 3	1,157	684
	E175	Embraer ERJ 175	CF34-8E5 LEC	7	4
	E170	Embraer ERJ170	CF34-8E5 LEC	3,118	3679
	E190	Embraer ERJ190	CF34-10E	106	125

**Table D-2
Aircraft Fleet Mix/Number of Departures - Runway 27R**

Category	NOMS Aircraft	EDMS Aircraft	Assigned Engine	Number of Annual Departures	
				2010	2015
Cargo - Air Carrier	AN12	Antonov 12 Cub	T56 Series I	4	6
	B742	B747-200	CF56-50E2 Low Emissions Fuel Nozzle	205	308
	B721	B727-100	JT8D-7 Series Reduced Emissions	23	0
	B722, B72Q	B727-200	JT8D-17R	335	0
	B744, B747	B747-400	CF6-80C2B5F 1862 M39	226	339
	B752, B757	B757-200	PW2037	54	75
	B762	B767-200	CF6-80A	37	55
	B763	B767-300	CF6-80C2B7F 1862M39	5	8
	A306	A300B4-600 Series	PW4158 Reduced Smoke	17	17
	A310	A310-200 Series	CF6-80A3	11	11
	DC10, MD10	MD-10-1	CF6-6D	36	36
	DC87	DC8-70	CFM56-2-C5	47	24
	MD11	MD-11	CF6-80C2D1F 1862M39	340	567
	B772	B777-200	Trent 892	74	223
	Cargo - General Aviation	BE20, BE30, BE40	Raytheon Beechjet 400	JT15D-5, -5A, -5B	26
BE58		Raytheon Beech Baron 58	TIO-540-J2B2	32	32
C310		Cessna 310	TIO-540-J2B2	2	2
MU2		Mitsubishi MU-2	TPE331-10	127	197
P180, PA31		Piaggio P.180 Avanti	PT64-66	2	3
C560, C56X, CL60		Cessna 560 Citation V	JT15D-5, -5A, -5B	197	197
MU30		Mitsubishi MU-300 Diamond	JT15D-4 series	3	3
C208		Cessna 208 Caravan	PT61-114A	101	101
LJ25, LR25		Bombardier Learjet 25	CJ610-6	34	34
C750, EA50		Cessna 750 Citation X	AE3007C Type 2	3	3
		Gulfstream V-SP	BR700-710A1-10	1	1
H25B		Hawker HS-125 Series 700	TFE731-3	3	3
L35, LJ35, LJ45, LR35		Bombardier Learjet 35A-36A (C-21A)	TFE731-2-2B	71	71
General Aviation	AC68, AC90, B350, BE10, BE20, BE30, BE33, BE36, BE40, BE55, BE57, BE58,	Raytheon Beech Baron 58	TIO-540-J2B2	163	163

**Table D-2
Aircraft Fleet Mix/Number of Departures - Runway 27R**

Category	NOMS Aircraft	EDMS Aircraft	Assigned Engine	Number of Annual Departures	
				2010	2015
	BE60, DV42				
	BE90, BE9L,	Raytheon King Air 90	PT6A-28	32	32
	C310, C335, C340, C414, C421, C441	Cessna 414	TIO-540-J2B2	30	30
	P180, PA23, PA24, PA28, PA31, PA32, PA34, PAY1, PAY2, PAYE	Piper Pa-32 Cherokee Six	TIO-540-J2B2	62	75
	C150, C172	Cessna 172 Skyhawk	O-320	75	75
	C25A, C500, C501, C525, C550, C560, C56X, C650, CL60, MU30	Cessna 560 Citation V	JT15D-5, -5A, -5B	200	200
	FA10, FA20, FA50	Dassault Falcon 2000	PW206B Annular	181	181
	GALX	Israel IAI-1126 Galaxy	PW306A Annular	113	113
	C750,	Cessna 750 Citation X	AE3007C Type 2	14	14
	F2TH, F900	Dassault Falcon 2000	PW206B Annular	11	11
	GLEX, GLF2, GLF3, GLF4	Gulfstream IV-SP	TAY Mk611-8	34	34
	GLF5	Gulfstream V-SP	BR700-710A1-10	15	15
	H25B, H25C	Hawker HS-125 Series 700	TFE731-3	33	33
	LJ31, LJ35, LJ45, LJ55, LJ60, PRM1, SBR1, WW24	Bombardier Learjet 35A-36A (C-21A)	TFE731-2-2B	107	107
Total				133,907	143,687

Departure Procedures Component

As part of the analysis related to Energy (see Section 5.11 - Natural Resources and Energy Supply of this EA), it is forecast that the additional departure headings would result in delay reductions on Runway 8R and Runway 27R of 1.5 and 1.0 minutes, respectively. These data, the number of aircraft forecast to depart from these two runways, and data from the EDMS were used to estimate the decrease in air pollutant and pollutant precursors that would occur with the Proposed Departure Procedures Component.

The aircraft fleet and the number of departures forecast from Runway 27R in the years 2010 and 2015 are provided in **Table D-2** (above). The aircraft fleet and number of departures forecast from Runway 8R are provided in **Table D-3**.

**Table D-3
Aircraft Fleet Mix/Number of Departures - Runway 8R**

Category	NOMS Aircraft	EDMS Aircraft	Assigned Engine	Number of Average Annual Departures	
				2010	2015
Passenger - Air Carrier	B712, B717	B717-200	BR700-715A1-30	9,013	8238
	B735	B737-500	CFM56-3C-1	345	0
	B737	B737-700	CFM56-7B22	7,467	8461
	B738	B737-800	CFM56-7B26	4,099	7006
	B744, B747	B747-400	CF6-80C2B5F 1862 M39	14	18
	B752, B757	B757-200	PW2037	7,265	7170
	B763, B767	B767-300	CF6-80C2B7F 1862M39	2,849	2871
	B764	B767-400	CF6-80C2B8FA 1862M39	555	600
	B772	B777-200	Trent 892	141	212
	A318	A318-100 Series	CFM56-5B8/P SAC	10	16
	A319	A319-100 Series	CFM56-5B6/P	2,617	3974
	A320	A320-100 Series	V2500-A1	1,577	2383
	A321	A320-200 Series	CFM56-5B3/2P DAC-II	153	231
	A332	A330-200 Series	CF6-80E1A3 Standard	9	113
	DC93	DC9-30	JT8D-7 Series	302	0
	DC94	DC9-40	JT8D-11	302	0
	DC95	DC9-50	JT8D-17	208	0
	MD82	MD-82	JT8D-217C	1,336	966
	MD81	MD-81	JT8D-217C	13	10
	MD83	MD-83	JT8D-219	167	127
MD88	MD-88	JT8D-219	13,753	10444	
MD90	MD-90	V2525-D5	62	47	
	A340-300 Series	CFM56-5C4	0	18	
Passenger - Commuter	CL65, CRJ1	Bombardier CRJ-100	CF34-3A1 LEC II	820	832
	CRJ2	Bombardier CRJ-200	CF34-3B	23,573	23927
	CRJ7	Bombardier CRJ-700	CF34-8C1	7,639	7754
	CRJ9	Bombardier CRJ-900	CF34-8C5 LEC	1,987	2017
	E135	Embraer ERJ135	AE3007A1/3 Type 3	166	98
	E145, E45X	Embraer ERJ145	AE3007A1E Type 3	2,029	1199
	E175	Embraer ERJ 175	CF34-8E5 LEC	12	7
	E170	Embraer ERJ170	CF34-8E5 LEC	4,199	4954
	E190	Embraer ERJ190	CF34-10E	143	168
Cargo - Air Carrier					
	B721	B727-100	JT8D-7 Series	10	0
	B722, B72Q	B727-200	JT8D-17R	148	0

**Table D-3
Aircraft Fleet Mix/Number of Departures - Runway 8R**

Category	NOMS Aircraft	EDMS Aircraft	Assigned Engine	Number of Average Annual Departures	
				2010	2015
	B752, B757	B757-200	PW2037	694	971
	B762	B767-200	CF6-80A	185	278
	B763	B767-300	CF6-80C2B7F 1862M39	27	41
	A306	A300B4-600 Series	PW4158	421	421
	A310	A310-200 Series	CF6-80A3	273	273
	DC10, MD10	MD-10-1	CF6-6D	405	405
	DC87	DC8-70	CFM56-2-C5	262	131
	DC93	DC9-30	JT8D-7 Series	9	0
	DC94	DC9-40	JT8D-11	130	0
	MD11	MD-11	CF6-80C2D1F 1862M39	167	278
	B772	B777-200	Trent 892	90	269
Cargo - General Aviation	BE20, BE30, BE40	Raytheon Beechjet 400	JT15D-5, -5A, -5B	118	118
	BE58	Raytheon Beech Baron 58	TIO-540-J2B2	147	147
	C310	Cessna 310	TIO-540-J2B2	9	9
	MU2	Mitsubishi MU-2	TPE331-10	587	587
	P180, PA31	Piaggio P.180 Avanti	PT64-66	15	15
	C210	Cessna 210 Centurion	TIO-540-J2B2	139	139
	C560, C56X, CL60	Cessna 560 Citation V	JT15D-5, -5A, -5B	307	307
	MU30	Mitsubishi MU-300 Diamond	JT15D-4 series	5	5
	C208	Cessna 208 Caravan	PT61-114A	253	253
	LJ25, LR25	Bombardier Learjet 25	CJ610-6	139	139
	C750, EA50	Cessna 750 Citation X	AE3007C Type 2	26	26
	F2TH	Dassault Falcon 2000	PW206B Annular	4	4
	GLEX, GLF5	Gulfstream V-SP	BR700-710A1-10	7	7
	H25B	Hawker HS-125 Series 700	TFE731-3	23	23
L35, LJ35, LJ45, LR35	Bombardier Learjet 35A-36A (C-21A)	TFE731-2-2B	589	589	
General Aviation	AC68, AC90, B350, BE10, BE20, BE30, BE33, BE36, BE40, BE55, BE57, BE58, BE60, DV42	Raytheon Beech Baron 58	TIO-540-J2B2	199	199
	BE90, BE9L,	Raytheon King	PT6A-28	39	39

**Table D-3
Aircraft Fleet Mix/Number of Departures - Runway 8R**

Category	NOMS Aircraft	EDMS Aircraft	Assigned Engine	Number of Average Annual Departures	
				2010	2015
		Air 90			
	C310, C335, C340, C414, C421, C441	Cessna 414	TIO-540-J2B2	36	36
	P180, PA23, PA24, PA28, PA31, PA32, PA34, PAY1, PAY2, PAYE	Piper Pa-32 Cherokee Six	TIO-540-J2B2	75	75
	C150, C172	Cessna 172 Skyhawk	O-320	92	92
	C25A, C500, C501, C525, C550, C560, C56X, C650, CL60, MU30	Cessna 560 Citation V	JT15D-5, -5A, -5B	312	312
	FA10, FA20, FA50	Dassault Falcon 2000	PW206B Annular	277	277
	GALX	Israel IAI-1126 Galaxy	PW306A Annular	69	69
	C750,	Cessna 750 Citation X	AE3007C Type 2	43	43
	F2TH, F900	Dassault Falcon 2000	PW206B Annular	35	35
	GLEX, GLF2, GLF3, GLF4	Gulfstream IV-SP	TAY Mk611-8	108	108
	GLF5	Gulfstream V-SP	BR700-710A1-10	48	48
	H25B, H25C	Hawker HS-125 Series 700	TFE731-3	104	104
	LJ31, LJ35, LJ45, LJ55, LJ60, PRM1, SBR1, WW24	Bombardier Learjet 35A-36A (C-21A)	TFE731-2-2B	337	337
Total				99,788	101,070

Attachment I to Appendix D - Air Quality

Hartsfield-Jackson Atlanta International Airport
Runway 9L-27R Extension, Modified Departure Procedures, and Associated Projects EA

Runway 27R Extension - Material Staging

Assumptions:

Start Date	April 1, 2010
End Date	May 31
Number of Work Days	61 days
Number of Work Hours/Day	8 hours

Calculations:

Amount of Soil Cement (Finished Product)	22,842	cubic yards
Amount of Concrete (Finished Product)	9,278	cubic yards
Total Amount of Material to Be Staged ^a	32,120	cubic yards
Raw Product Delivered/Day	527	cubic yards

Number of Haul Trucks Required/Day					
Capacity of Haul Truck	10	cubic yards	Amount of Fill Material/Haul Truck/Day	48	cubic yards
Distance to/from Supply (one-way)	15	miles	Number of Haul Trucks Required/Day	11	trucks
Average Travel Speed	30	mph			
Time to Load Truck at Supply Source	20	minutes			
Time to Unload Truck at Airport	20	minutes			

^a Capacity of Quarry and Airport Placement Sites Identified on Construction Activities/Equipment Assignments Sheet

^b The following percentages of the amount of the finished product are assumed to require staging
 - Concrete consists of 13% cement, 64% aggregate, 17% water, 7% air voids (77% requires staging)
 - Soil Cement consists of 15.4% cement (maximum for clay soils)

Hartsfield-Jackson Atlanta International Airport
Runway 9L-27R Extension, Modified Departure Procedures, and Associated Projects EA

Extend Runway 27R 500 Feet - Fill

Area 1 - Outside the Runway Safety Area

Assumptions:

Start Date	August 17, 2009
End Date	September 13, 2009
Number of Fill Work Days	28 days
Number of Work Hours/Day	10 hours
Amount of Fill Material Required	40,000 cubic yards
Number of Quarry Work Sites/Day ^a	2 quarry sites
Number of Airport Work Sites/Day	1 airport sites

Calculations:

Amount of Fill Material/Day	1,429 cubic yards
-----------------------------	-------------------

Number of Haul Trucks Required/Day			
Capacity of Haul Truck	10 cubic yards	Amount of Fill Material/Haul Truck/Day	80 cubic yards
Distance Between Quarry and Airport (one-way)	15 miles	Number of Haul Trucks Required/Day	18 trucks
Average Travel Speed	30 mph		
Time to Load Truck at Quarry	5 minutes		
Time to Dump Truck at Airport	10 minutes		

^a Capacity of Quarry and Airport Placement Sites Identified on Construction Activities/Equipment Assignments Sheet

Equipment Assignment This Project Task	Equipment Type	Number of Pieces of Equipment Each Work Site	Number of Pieces of Equipment This Work Task
At Quarry	Excavator	1	2
	Loaders	2	4
At Airport Placement Site	Motor Grader	1	1
	Soil Compactor	2	2
	Roller	2	2
	Water Truck (Summer Only)	1	1
	Dozer	2	2
Haul Trucks		18	18

Hartsfield-Jackson Atlanta International Airport
 Runway 9L-27R Extension, Modified Departure Procedures, and Associated Projects EA

Extend Runway 27R 500 Feet - Fill

Area 2 - Inside the Runway Safety Area

Assumptions:

Start Date	March 15, 2010
End Date	June 2, 2010
Number of Fill Work Days	80 days
Number of Work Hours/Day	10 hours
Amount of Fill Material Required	165,000 cubic yards
Number of Quarry Work Sites/Day ^a	1 quarry sites
Number of Airport Work Sites/Day	1 airport sites

Calculations:

Amount of Fill Material/Day	2,063 cubic yards
-----------------------------	-------------------

Number of Haul Trucks Required/Day			
Capacity of Haul Truck	10 cubic yards	Amount of Fill Material/Haul Truck/Day	60 cubic yards
Distance Between Quarry and Airport (one-way)	15 miles	Number of Haul Trucks Required/Day	34 trucks
Average Travel Speed	30 mph		
Time to Load Truck at Quarry	20 minutes		
Time to Dump Truck at Airport	20 minutes		

^a Capacity of Quarry and Airport Placement Sites Identified on Construction Activities/Equipment Assignments Sheet

Equipment Assignment This Project Task	Equipment Type	Number of Pieces of Equipment Each Work Site	Number of Pieces of Equipment This Work Task
At Quarry	Excavator	1	1
	Loaders	2	2
At Airport Placement Site	Motor Grader	1	1
	Soil Compactor	2	2
	Roller	2	2
	Water Truck (Summer Only)	1	1
	Dozer	2	2
Haul Trucks		34	34

Hartsfield-Jackson Atlanta International Airport
Runway 9L-27R Extension, Modified Departure Procedures, and Associated Projects EA

Runway 27R Extension - Paving - Area 1 Outside RSA

Assumptions:

Start Date	April 29, 2010
End Date	June 1, 2010
Number of Days to Install Soil Cement	12 days
Number of Days to Install PCC Paving	14 days
Number of Days to Install HMA Paving	3 days
Number of Work Hours/Day	10 hours
Amount of Soil Cement to be Installed	33,600 square yards
Amount of PCC Paving to be Installed	33,600 square yards
Amount of HMA Paving to be Installed	2,000 tons
Thickness of Soil Cement	9 inches
Thickness of PCC Paving	20 inches
Thickness of Asphalt	6 inches

Calculations:

Runway Extension

Amount of Soil Cement Installed/Day	2,800 square yards
	700 cubic yards
Amount of PCC Paving Installed/Day	2,400 square yards
Amount of PCC Paving Installed/Day	1,333 cubic yards
Amount of HMA Paving Installed/Day	667 tons

Number of Haul Trucks Required/Day - Soil Cement			
Capacity of Ready Mix Truck	10 cubic yards	Amount of Material/Haul Truck/Day	130 cubic yards
Distance Between Batch Plant and Placement Site (one-way)	1 mile	Number of Haul Trucks Required/Day	5 trucks
Average Travel Speed	20 mph		
Time to Load Truck at Batch Plant	20 minutes		
Time to Dump Truck at Placement Site	20 minutes		

Number of Haul Trucks Required/Day - Concrete			
Capacity of Ready Mix Truck	10 cubic yards	Amount of Material/Haul Truck/Day	130 cubic yards
Distance Between Batch Plant and Placement Site (one-way)	1 mile	Number of Haul Trucks Required/Day	10 trucks
Average Travel Speed	20 mph		
Time to Load Truck at Batch Plant	20 minutes		
Time to Dump Truck at Placement Site	20 minutes		

Number of Haul Trucks Required/Day - Asphalt			
Capacity of Asphalt Truck	18 tons	Amount of Material/Haul Truck/Day	154 tons
Distance Between Batch Plant and Placement Site (one-way)	5 miles	Number of Haul Trucks Required/Day	4 trucks
Average Travel Speed	20 mph		
Time to Load Truck at Batch Plant	20 minutes		
Time to Dump Truck at Placement Site	20 minutes		

Equipment Assignment This Project Task	Equipment Type	Number of Pieces of Equipment Each Day Each Work Site
Concrete	Batch Plant	1
	Loader	2
	Slip Form Paver	1
Asphalt	Spreader	1
	Vibratory Roller	2
	Rubber Tire Roller	1
Soil Cement	Stabilizer	2
	Smooth Drum Roller	1
	Compactor	1
	Motorgrader	2
	Water Truck	1
Haul Trucks	Soil Cement	5
	Concrete	10
	Asphalt	4

Hartsfield-Jackson Atlanta International Airport
Runway 9L-27R Extension, Modified Departure Procedures, and Associated Projects EA

Runway 27R Extension - Paving - Area 2 Inside RSA

Assumptions:

Start Date	May 14, 2010
End Date	June 10, 2010
Number of Days to Install Soil Cement	8 days
Number of Days to Install PCC Paving	7 days
Number of Days to Install HMA Paving	5 days
Number of Work Hours/Day	10 hrs
Amount of Soil Cement to be Installed	16,700 square yards
Amount of PCC Paving to be Installed	16,700 square yards
Amount of HMA Paving to be Installed	4,000 tons
Thickness of Soil Cement	9 inches
Thickness of PCC Paving	20 inches
Thickness of Asphalt	6 inches

Calculations:

Runway Extension

Amount of Soil Cement Installed/Day	2,783 square yards
	696 cubic yards
Amount of PCC Paving Installed/Day	2,386 square yards
Amount of PCC Paving Installed/Day	1,325 cubic yards
Amount of HMA Paving Installed/Day	800 tons

Number of Haul Trucks Required/Day - Soil Cement			
Capacity of Ready Mix Truck	10	cubic yards	Amount of Material/Haul Truck/Day
Distance Between Batch Plant and Placement Site (one-way)	1	mile	Number of Haul Trucks Required/Day
Average Travel Speed	20	mph	
Time to Load Truck at Batch Plant	20	minutes	
Time to Dump Truck at Placement Site	20	minutes	

Number of Haul Trucks Required/Day - Concrete			
Capacity of Ready Mix Truck	10	cubic yards	Amount of Material/Haul Truck/Day
Distance Between Batch Plant and Placement Site (one-way)	1	mile	Number of Haul Trucks Required/Day
Average Travel Speed	20	mph	
Time to Load Truck at Batch Plant	20	minutes	
Time to Dump Truck at Placement Site	20	minutes	

Number of Haul Trucks Required/Day - Asphalt			
Capacity of Asphalt Truck	18	tons	Amount of Material/Haul Truck/Day
Distance Between Batch Plant and Placement Site (one-way)	5	miles	Number of Haul Trucks Required/Day
Average Travel Speed	20	mph	
Time to Load Truck at Batch Plant	20	minutes	
Time to Dump Truck at Placement Site	20	minutes	

Equipment Assignment This Project Task	Equipment Type	Number of Pieces of Equipment Each Day Each Work Site
Concrete	Batch Plant	1
	Motor Grader	1
	Loader	2
Asphalt	Spreader	1
	Vibratory Roller	2
	Rubber Tire Roller	1
Soil Cement	Stabilizer	2
	Smooth Drum Roller	1
	Compactor	1
	Motorgrader	1
	Water Truck	1
Haul Trucks	Soil Cement	5
	Concrete	10
	Asphalt	5

