

Appendix 1

Initial Characterization Testing
Hartsfield-Jackson Atlanta International Airport
Cheyenne Regional Airport
Phoenix Sky Harbor International Airport



Department of Civil Engineering

University of Toronto TORONTO CANADA M5S 1A4

TEST REPORT ON CHEYENNE, PHOENIX, AND ATLANTA AIRPORT CONCRETE CORES FOR VECTOR CORROSION TECHNOLOGIES INC.

**Professor R. D. Hooton
Olga Perabetova
Ursula Nytko**

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Table of Contents

Introduction	2
Atlanta	
Density, Absorption, and Voids in Hardened Concrete	3
Rate of Absorption	4
Coefficient of Linear Thermal Expansion of Concrete	9
Total Alkali Profile Test	10
Cheyenne	
Density, Absorption, and Voids in Hardened Concrete	18
Rate of Absorption	19
Coefficient of Linear Thermal Expansion of Concrete	21
Total Alkali Profile Test	22
Phoenix	
Density, Absorption, and Voids in Hardened Concrete	26
Rate of Absorption	27
Coefficient of Linear Thermal Expansion of Concrete	29
Total Alkali Profile Test	30

Report for Vector Airport Cores January 2007

Concrete cores from three airports - Cheyenne, Wyoming, Phoenix Sky Harbor and Atlanta Hartsfield (Area 1 and Area 2) were obtained in 2005 during initial coring prior to lithium treatments. Cores had been wrapped in wet cloth and sealed in plastic for shipment.

Cores were subjected to four different tests.

1. Standard Test Method for Density, Absorption, and Voids in Hardened Concrete ASTM C 642
2. Standard Test Method for Measurement of Rate of Absorption of Water by Hydraulic Cement Concretes ASTM C 1585
Prior to the test specimens were kept in environmental containers at temperature of 50 deg. C and relative humidity of 80 % during for 3 days. Then each sample was kept separately in sealed container for 15 days. During absorption measurement upper surface of samples was covered with plastic sheet according to standard procedure.
3. Test Method for Coefficient of Linear Thermal Expansion of Concrete CRD-C 39-81
The specimens were tested in a saturated condition. Prior to the test they were immersed in water for several days.
4. Measurement of the Alkali Content of Concrete Using Hot-Water Extraction by Marc-Andre Berube*. The method was modified to obtain total alkali content. (only Na₂O_{eq}. Values shown in this summary report)
All cores were 4" (100mm) diameter and of different lengths.

Note: all data has been included in average values reported. In a few case, for example the ASTM C 642 results for the Atlanta, Area 2, Zone 4 core appear to differ from the other results and a case could be made for removing these values. Alternately, it is possible that the concrete is different at that core location.

*Berube, M.A., Frenette, J., Rivest, M., Vezina, D., "Measurement of the Alkali Content of Concrete Using Hot-Water Extraction", Cement, Concrete, and Aggregates, CCAGDP, Vol.24, No.1, June 2002, pp.28-36.

Atlanta

Density, Absorption, and Voids in Hardened Concrete ASTM C 642

Sample ID	Oven Dry Mass A (g)	Saturated Mass after Immersion B (g)	Saturated Mass after Boiling C (g)	Suspended Mass D (g)	Absorption after Immersion %	Absorption after Immersion and Boiling %	Bulk Density (Dry) G1 g/cm3	Bulk Density after Immersion g/cm3	Bulk Density after Immersion and Boiling g/cm3	Apparent Density g2 g/cm3	Volume of Permeable Pore Space (Voids) %
Atlanta Airport											
Area 1 Zone 1	943.67	984.73	986.86	567.62	4.35	4.58	2.25	2.35	2.35	2.51	10.30
Area 1 Zone 2	950.27	991.95	992.98	579.21	4.39	4.49	2.30	2.40	2.40	2.56	10.32
Area 1 Zone 3	949.69	990.79	992.63	577.83	4.33	4.52	2.29	2.39	2.39	2.55	10.35
Area 1 Zone 4	913.15	954.48	957.3	555.54	4.53	4.83	2.27	2.38	2.38	2.55	10.99
Area 1 Averages					4.40	4.61	2.28	2.38	2.38	2.54	10.49
Area 2 Zone 1	967.72	1005.79	1006	587.88	3.93	3.96	2.31	2.41	2.41	2.55	9.16
Area 2 Zone 2	984.87	1025.44	1022.6	601.29	4.12	3.83	2.34	2.43	2.43	2.57	8.96
Area 2 Zone 3	970.77	1011.95	1011.37	588.38	4.24	4.18	2.30	2.39	2.39	2.54	9.60
Area 2 Zone 4	946.28	996.09	995.6	574.11	5.26	5.21	2.25	2.36	2.36	2.54	11.70
Area 2 Averages					4.39	4.30	2.30	2.40	2.40	2.55	9.85

Summary for Rate of Absorption ASTM C 1585

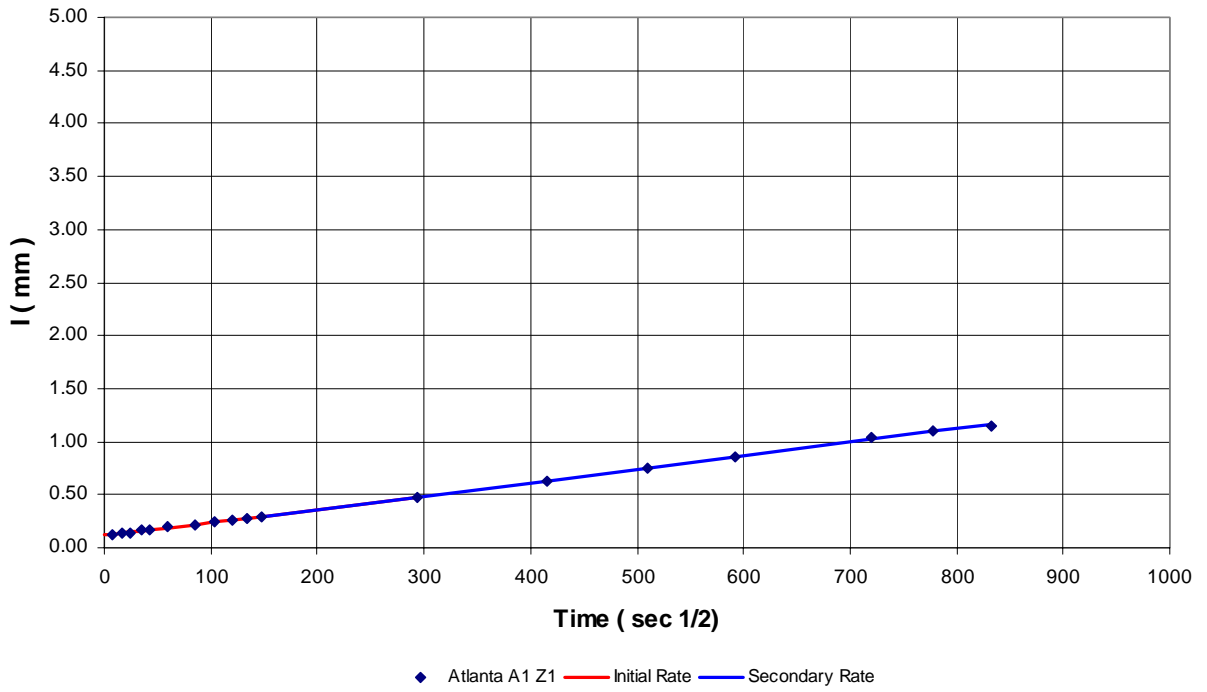
Atlanta Area 1

Absorption	Initial Rate of Absorption		Secondary Rate of	
	R	Si (mm/s ²)	R	Ss(mm/s ²)
Atlanta A 1 Z 1	0.99	11.87 x 10 ⁻⁴	1.00	12.81 x 10 ⁻⁴
Atlanta A 1 Z 2	0.97	11.32 x 10 ⁻⁴	1.00	10.45 x 10 ⁻⁴
Atlanta A 1 Z 3	0.99	14.43 x 10 ⁻⁴	1.00	13.26 x 10 ⁻⁴
Atlanta A 1 Z 4	0.98	15.02 x 10 ⁻⁴	1.00	11.09 x 10 ⁻⁴

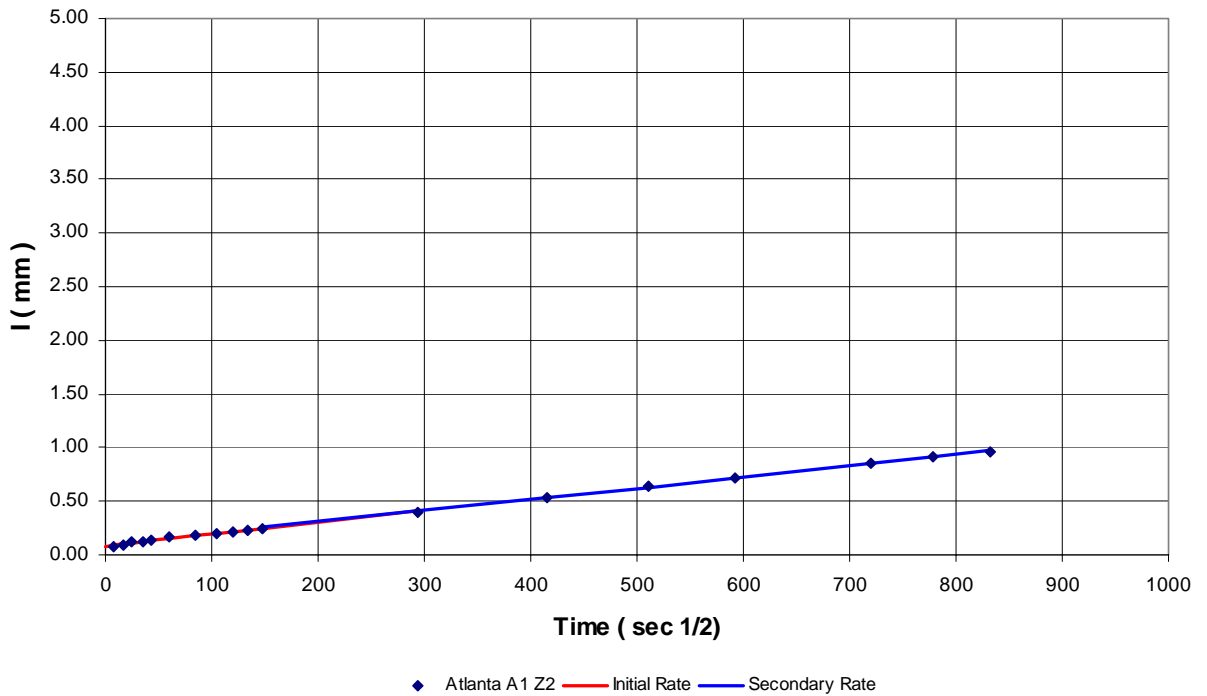
Atlanta Area 2

Absorption	Initial Rate of Absorption		Secondary Rate of	
	R	Si (mm/s ²)	R	Ss (mm/s ²)
Atlanta A 2 Z 1	0.99	8.62 x 10 ⁻⁴	1.00	6.03 x 10 ⁻⁴
Atlanta A 2 Z 2	1.00	10.53 x 10 ⁻⁴	1.00	12.16 x 10 ⁻⁴
Atlanta A 2 Z 3	0.93	4.44 x 10 ⁻⁴	1.00	7.80 x 10 ⁻⁴
Atlanta A 2 Z 4	0.96	7.01 x 10 ⁻⁴	0.97	4.10 x 10 ⁻⁴

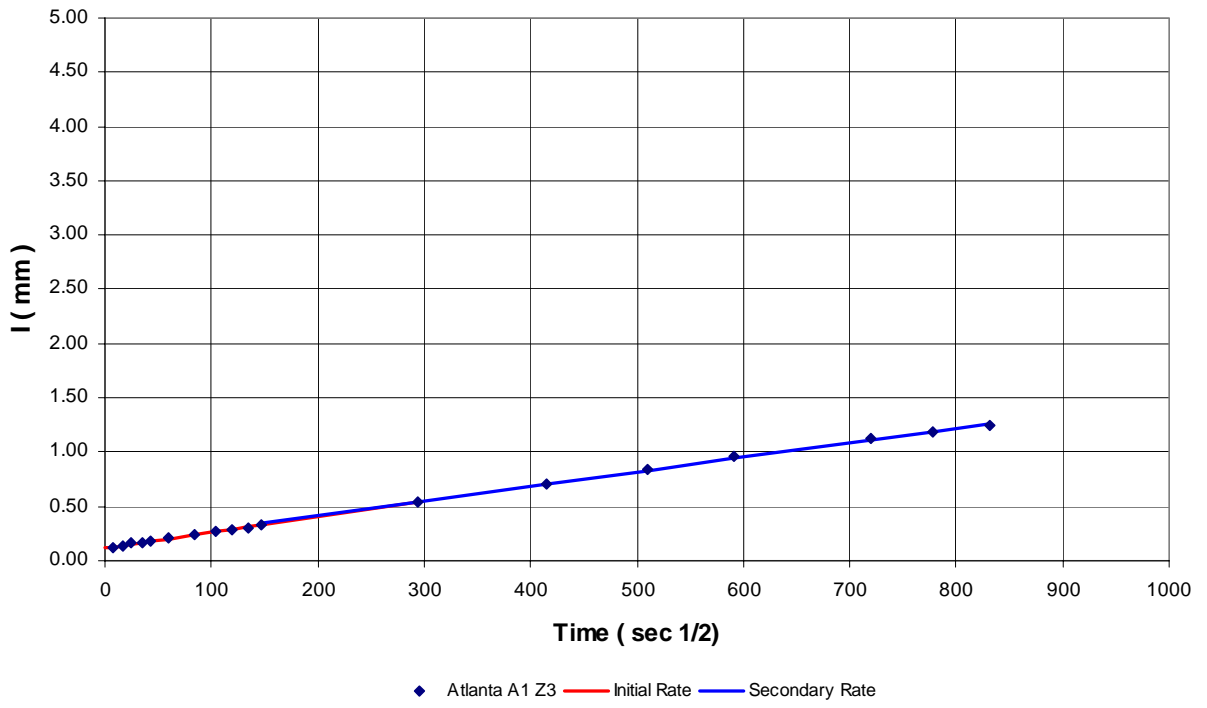
Atlanta Concrete Core A1 Z1



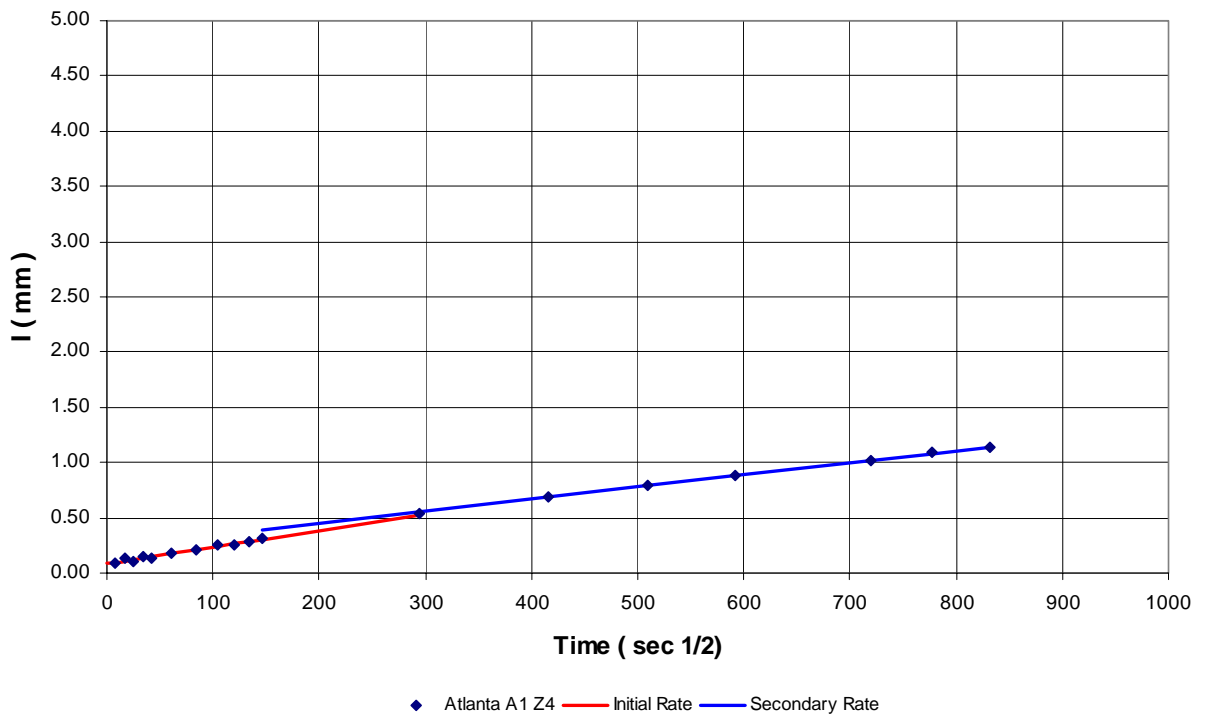
Atlanta Concrete Core A1 Z2

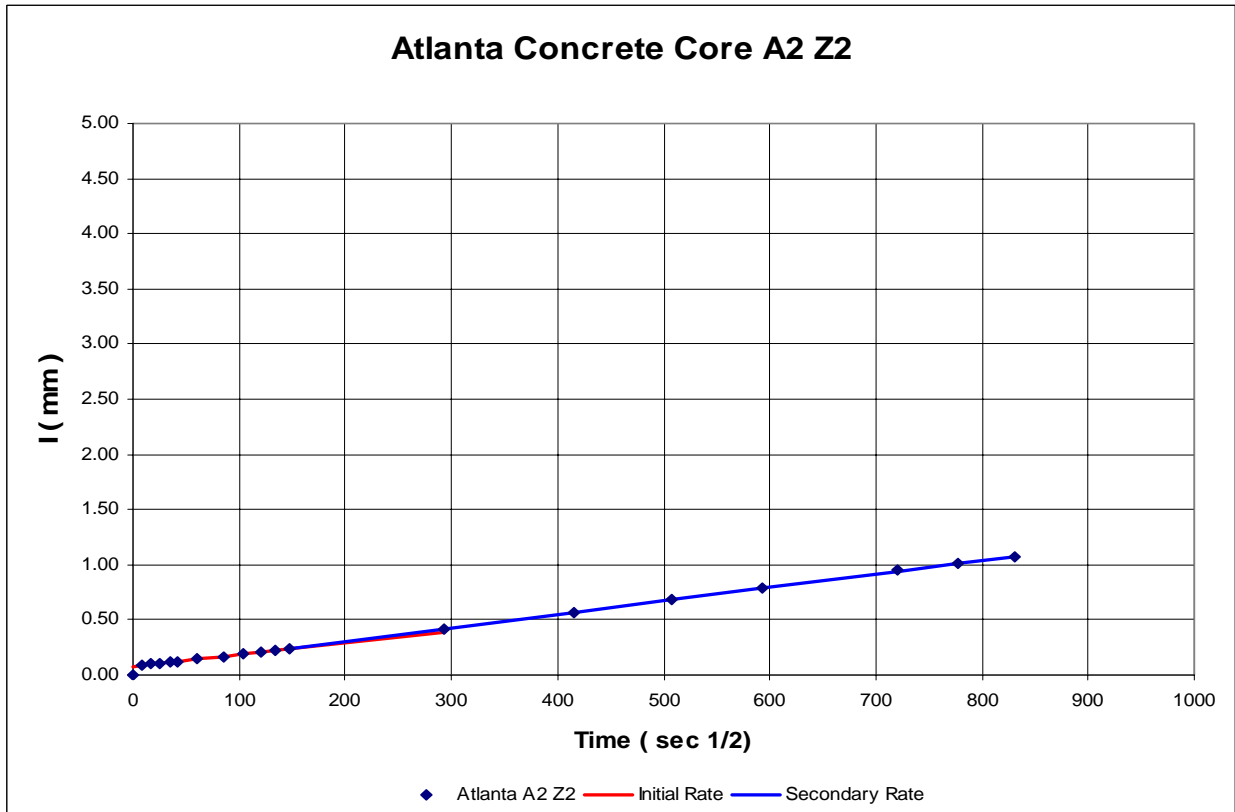
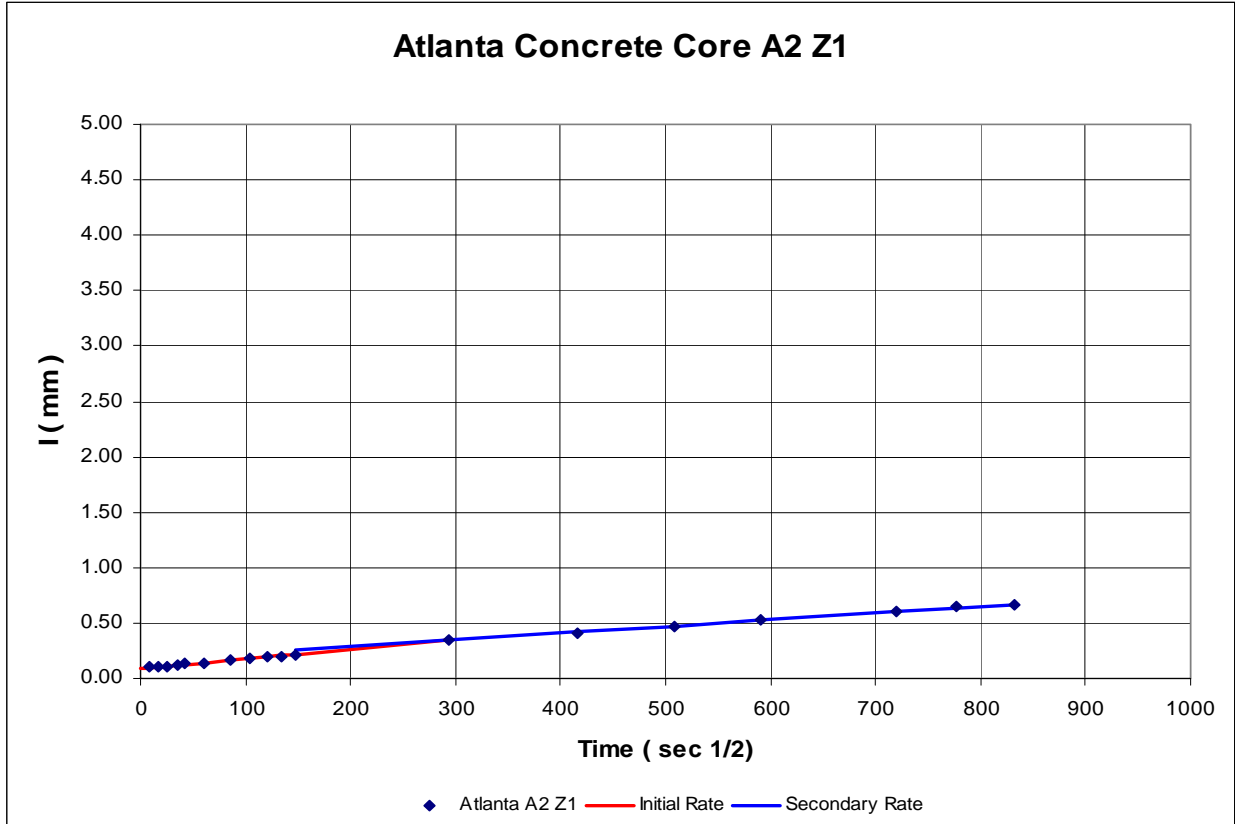


Atlanta Concrete Core A1 Z3

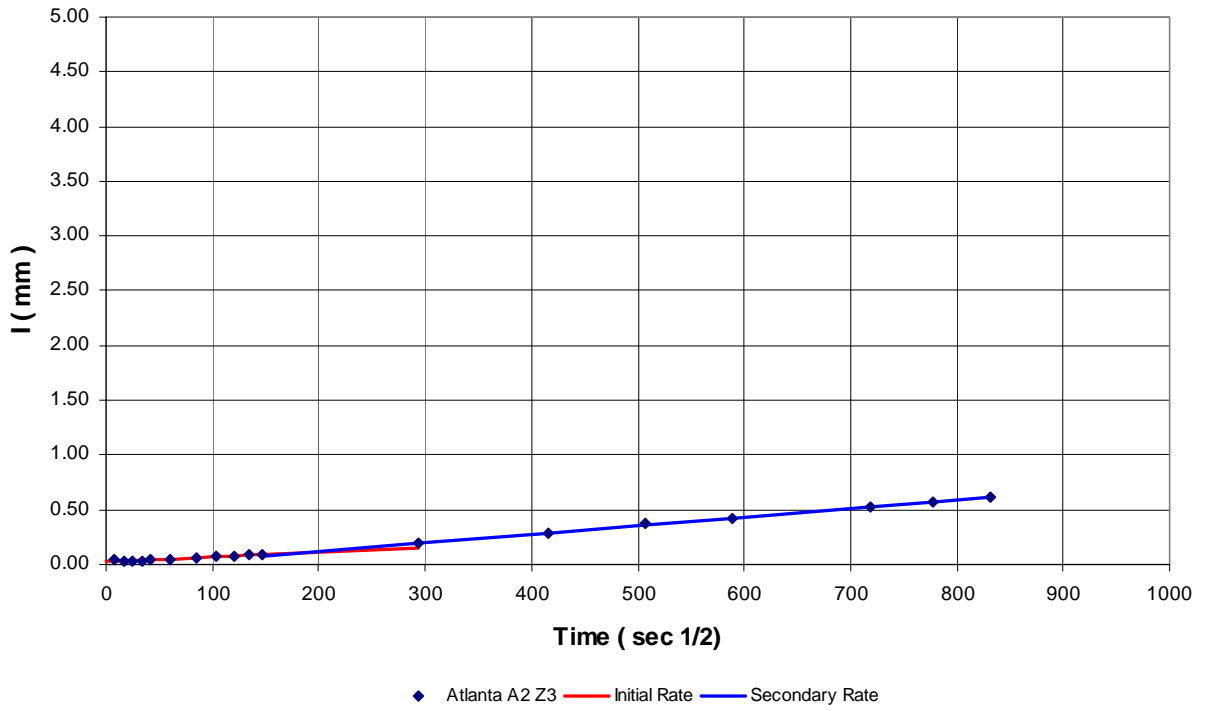


Atlanta Concrete Core A1 Z4

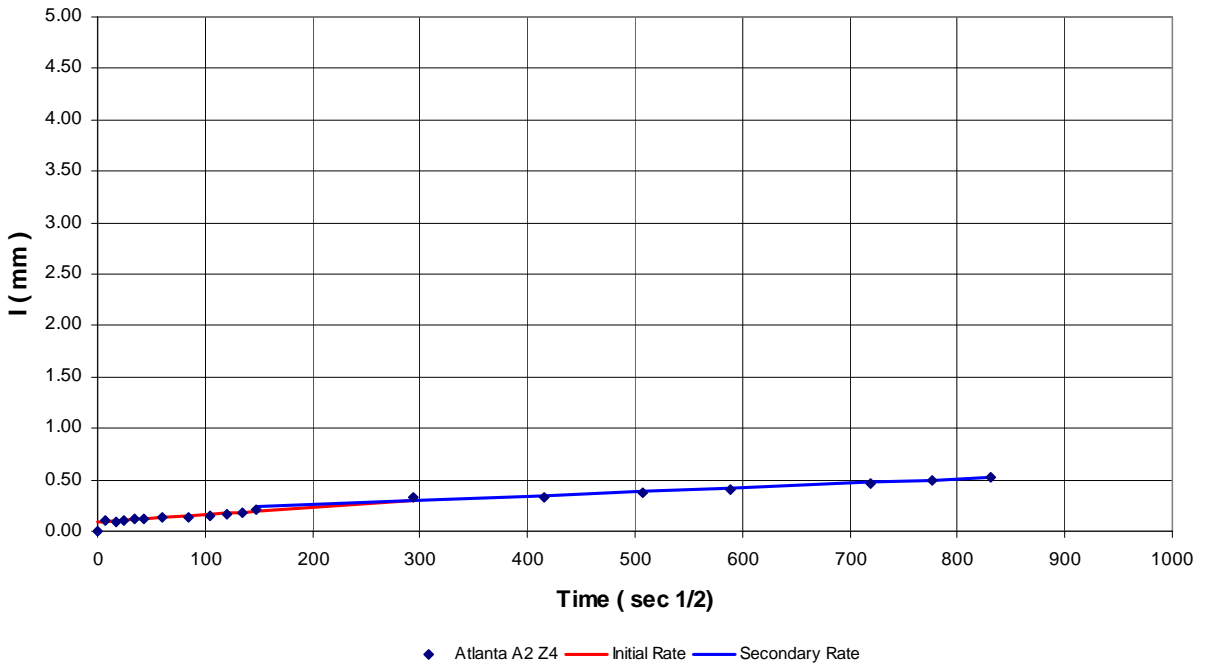




Atlanta Concrete Core A2 Z3



Atlanta Concrete Core A2 Z4



CRD-C 39-81

Test Method for Coefficient of Linear Thermal Expansion of Concrete

Coefficient of Linear Thermal Expansion of Atlanta Airport Concrete

Sample ID	Avg. Length (mm)	Gauge Length G (mm)	Reading at 5°C	Reading at 60°C	Coefficient of linear thermal expansion	
					°C ⁻¹	10 ⁻⁶ /°C
Atlanta Airport						
Area 1 Zone 1	244.3	204.3	-13.075	-12.872	1.80E-05	18.0
Area 1 Zone 2	284.0	244.0	-4.090	-3.937	1.14E-05	11.4
Area 1 Zone 3	276.3	236.3	-11.035	-10.863	1.32E-05	13.2
Area 1 Zone 4	280.3	240.3	-6.777	-6.637	1.06E-05	10.6
Averages					1.17E-05	11.7
Area 2 Zone 1	280.0	240.0	-7.907	-7.752	1.18E-05	11.8
Area 2 Zone 2	281.7	241.7	-5.427	-5.206	1.66E-05	16.6
Area 2 Zone 3	279.0	239.0	-7.996	-7.794	1.53E-05	15.3
Area 2 Zone 4	283.0	243.0	-4.968	-4.748	1.65E-05	16.5
Averages					1.61E-05	16.1

Total Alkali Profile Test

Atlanta Area 1 Zone 1

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	96.6345	2.0006	185.48	0.50	1.30	0.15	0.000022	0.000058	0.000007	0.0511	0.2252	0.0047	0.28
6.096	240	105.3046	2.0028	193.28	0.60	1.70	0.11	0.000026	0.000075	0.000005	0.0606	0.2912	0.0034	0.36
9.144	360	98.3852	2.0153	183.88	0.60	2.20	0.10	0.000025	0.000093	0.000004	0.0585	0.364	0.003	0.43
12.192	480	104.3528	2.0498	194.55	0.50	1.90	0.09	0.000022	0.000084	0.000004	0.0506	0.3261	0.0028	0.38
15.240	600	99.7392	1.9871	202.77	0.30	1.40	0.06	0.000016	0.000073	0.000003	0.0358	0.2831	0.0022	0.32
18.288	720	98.3950	1.9847	183.17	0.50	1.70	0.07	0.000021	0.000073	0.000003	0.0491	0.2832	0.0021	0.33
21.336	840	105.7129	2.0395	190.65	0.70	1.80	0.07	0.000029	0.000075	0.000003	0.0671	0.2924	0.002	0.36
24.384	960	99.5811	1.9602	182.44	0.50	1.70	0.07	0.000021	0.000072	0.000003	0.0486	0.2803	0.0021	0.33

Atlanta Area 1 Zone 2

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	104.7868	2.0355	189.59	0.80	2.10	0.16	0.000033	0.000087	0.000007	0.0767	0.3412	0.0047	0.42
6.096	240	104.6095	2.0099	189.27	0.80	2.00	0.16	0.000034	0.000084	0.000007	0.0775	0.3285	0.0047	0.41
9.144	360	103.2008	2.0358	196.94	0.30	1.40	0.12	0.000014	0.000064	0.000006	0.0318	0.2514	0.0039	0.29
12.192	480	94.4982	1.9776	182.56	0.30	1.30	0.12	0.000013	0.000058	0.000005	0.0307	0.2258	0.0037	0.26
15.240	600	99.1775	2.0463	191.75	0.30	1.10	0.08	0.000014	0.000050	0.000004	0.0312	0.1941	0.0025	0.23
18.288	720	103.8057	2.0466	192.91	0.50	1.50	0.05	0.000022	0.000065	0.000002	0.0501	0.2547	0.0015	0.31
21.336	840	111.5704	2.0465	204.36	0.50	1.50	0.06	0.000023	0.000068	0.000003	0.0521	0.2652	0.0019	0.32
24.384	960	105.6544	1.9943	185.35	0.60	1.00	0.08	0.000024	0.000040	0.000003	0.0551	0.1559	0.0022	0.21

Atlanta Area 1 Zone 3

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	100.3976	2.0328	180.00	0.70	1.80	0.14	0.000027	0.000070	0.000005	0.063	0.2749	0.0038	0.34
6.096	240	104.6090	2.0475	188.54	0.70	1.90	0.08	0.000029	0.000078	0.000003	0.066	0.3038	0.0023	0.37
9.144	360	100.3656	2.0409	186.51	0.70	2.00	0.08	0.000030	0.000084	0.000003	0.068	0.3292	0.0024	0.40
12.192	480	104.8329	2.0348	189.57	0.50	1.70	0.07	0.000021	0.000071	0.000003	0.0479	0.2761	0.002	0.33
15.240	600	98.6311	2.0117	179.01	0.50	1.60	0.06	0.000020	0.000064	0.000002	0.0459	0.2493	0.0017	0.30
18.288	720	109.1338	2.0495	181.20	0.80	2.00	0.09	0.000028	0.000070	0.000003	0.0647	0.2743	0.0022	0.34
21.336	840	107.8560	2.0115	191.26	0.40	1.40	0.07	0.000017	0.000058	0.000003	0.0381	0.2264	0.002	0.27
24.384	960	102.7132	2.0384	185.97	1.40	1.50	0.07	0.000057	0.000061	0.000003	0.1315	0.2389	0.0020	0.37

Atlanta Area 1 Zone 4

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	95.7681	2.0042	167.79	0.60	1.60	0.08	0.000022	0.000057	0.000003	0.0496	0.2242	0.0020	0.28
6.096	240	106.2903	2.0030	190.28	0.50	1.30	0.03	0.000021	0.000055	0.000001	0.0482	0.2126	0.0009	0.26
9.144	360	105.0483	2.0082	177.52	0.50	1.50	0.04	0.000018	0.000054	0.000001	0.0415	0.2111	0.0010	0.25
12.192	480	104.4704	2.0030	184.47	0.50	1.50	0.01	0.000020	0.000060	0.000000	0.0459	0.2336	0.0003	0.28
15.240	600	104.6108	2.0075	185.78	0.50	1.50	0.00	0.000020	0.000061	0.000000	0.0465	0.2365	0.0000	0.28
18.288	720	96.6336	2.0038	184.71	0.50	1.30	0.00	0.000022	0.000057	0.000000	0.0505	0.2229	0.0000	0.27
21.336	840	108.8832	2.0095	188.00	0.60	1.60	0.00	0.000024	0.000063	0.000000	0.0543	0.2457	0.0000	0.30
24.384	960	106.6192	2.0040	199.98	0.40	1.40	0.00	0.000019	0.000065	0.000000	0.0429	0.2544	0.0000	0.30

Atlanta Area 2 Zone 1

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	105.5318	2.0084	178.97	2.00	2.50	0.12	0.000073	0.000091	0.000004	0.1682	0.3565	0.0031	0.53
6.096	240	106.6841	2.0089	180.42	1.00	1.70	0.04	0.000037	0.000062	0.000001	0.0844	0.2434	0.0010	0.33
9.144	360	102.1979	2.0044	180.94	0.70	1.30	0.02	0.000027	0.000051	0.000001	0.0632	0.1992	0.0005	0.26
12.192	480	95.5554	2.0018	178.71	0.70	1.30	0.00	0.000029	0.000054	0.000000	0.0669	0.2106	0.0000	0.28
15.240	600	104.3882	2.0003	182.17	0.70	1.40	0.00	0.000027	0.000054	0.000000	0.0626	0.2123	0.0000	0.27
18.288	720	109.1320	2.0016	185.19	0.80	1.40	0.01	0.000030	0.000053	0.000000	0.0699	0.2075	0.0003	0.28
21.336	840	96.0021	2.0019	175.55	0.70	1.40	0.01	0.000028	0.000056	0.000000	0.064	0.217	0.0003	0.28
24.384	960	105.6544	2.0034	191.84	0.90	1.50	0.01	0.000039	0.000065	0.000000	0.0891	0.2517	0.0003	0.34

Atlanta Area 2 Zone 2

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	99.3950	2.0023	172.38	1.60	2.60	0.18	0.000058	0.000095	0.000007	0.1341	0.3696	0.0046	0.51
6.096	240	90.2719	2.0018	170.19	1.00	1.80	0.14	0.000040	0.000072	0.000006	0.0918	0.2803	0.0039	0.38
9.144	360	98.3855	2.0022	179.55	0.90	1.80	0.12	0.000036	0.000073	0.000005	0.0839	0.2846	0.0034	0.37
12.192	480	100.8306	2.0003	175.85	0.90	1.90	0.11	0.000034	0.000071	0.000004	0.0776	0.2779	0.0029	0.36
15.240	600	109.1845	2.0042	184.75	0.90	2.00	0.10	0.000034	0.000075	0.000004	0.078	0.2941	0.0026	0.37
18.288	720	94.4997	2.0000	163.41	1.10	2.10	0.08	0.000038	0.000072	0.000003	0.0872	0.2822	0.0019	0.37
21.336	840	94.1778	2.0086	175.04	0.90	1.80	0.05	0.000036	0.000072	0.000002	0.0833	0.2826	0.0014	0.37
24.384	960	103.8054	2.0001	178.48	1.10	2.00	0.04	0.000041	0.000075	0.000001	0.0945	0.2912	0.0010	0.39

Atlanta Area 2 Zone 3

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	92.9080	2.0048	175.92	1.30	3.10	0.12	0.000054	0.000128	0.000005	0.1238	0.5006	0.0035	0.63
6.096	240	100.3023	2.0094	175.99	1.00	2.10	0.08	0.000038	0.000079	0.000003	0.0866	0.3085	0.0021	0.40
9.144	360	96.6343	2.0016	184.08	0.80	1.70	0.06	0.000035	0.000074	0.000003	0.0804	0.2897	0.0018	0.37
12.192	480	104.6403	2.0075	187.02	0.80	1.90	0.06	0.000033	0.000078	0.000002	0.0755	0.3041	0.0017	0.38
15.240	600	94.7549	2.0013	165.26	1.00	2.20	0.09	0.000035	0.000078	0.000003	0.081	0.3023	0.0022	0.39
18.288	720	105.3035	2.0079	190.33	0.80	2.00	0.05	0.000034	0.000085	0.000002	0.0779	0.3303	0.0015	0.41
21.336	840	105.7112	2.0095	182.74	0.90	2.40	0.05	0.000034	0.000092	0.000002	0.0793	0.3588	0.0013	0.44
24.384	960	95.3492	2.0020	174.29	0.90	2.40	0.04	0.000035	0.000095	0.000002	0.0816	0.3691	0.0011	0.45

Atlanta Area 2 Zone 4

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	104.0323	2.0089	192.21	1.90	2.90	0.16	0.000083	0.000127	0.000007	0.1918	0.4964	0.0049	0.69
6.096	240	90.2716	2.0027	173.88	1.00	2.10	0.09	0.000042	0.000088	0.000004	0.096	0.3419	0.0026	0.44
9.144	360	105.0493	2.0040	179.34	1.00	2.20	0.09	0.000037	0.000082	0.000003	0.0853	0.3181	0.0023	0.41
12.192	480	109.1320	2.0099	172.38	1.20	2.60	0.10	0.000038	0.000082	0.000003	0.0869	0.3191	0.0022	0.41
15.240	600	109.1845	2.0042	176.75	1.00	2.30	0.10	0.000034	0.000078	0.000003	0.0775	0.3024	0.0024	0.38
18.288	720	103.2007	2.0016	176.82	1.00	2.20	0.10	0.000037	0.000081	0.000004	0.0846	0.3156	0.0026	0.40
21.336	840	104.3881	2.0070	180.31	1.10	2.20	0.09	0.000042	0.000083	0.000003	0.0957	0.3246	0.0024	0.42
24.384	960	108.8821	2.0062	182.70	1.20	2.50	0.10	0.000044	0.000092	0.000004	0.1016	0.3588	0.0026	0.46

Summary of Alkali Content of Atlanta (Area 1) Concrete

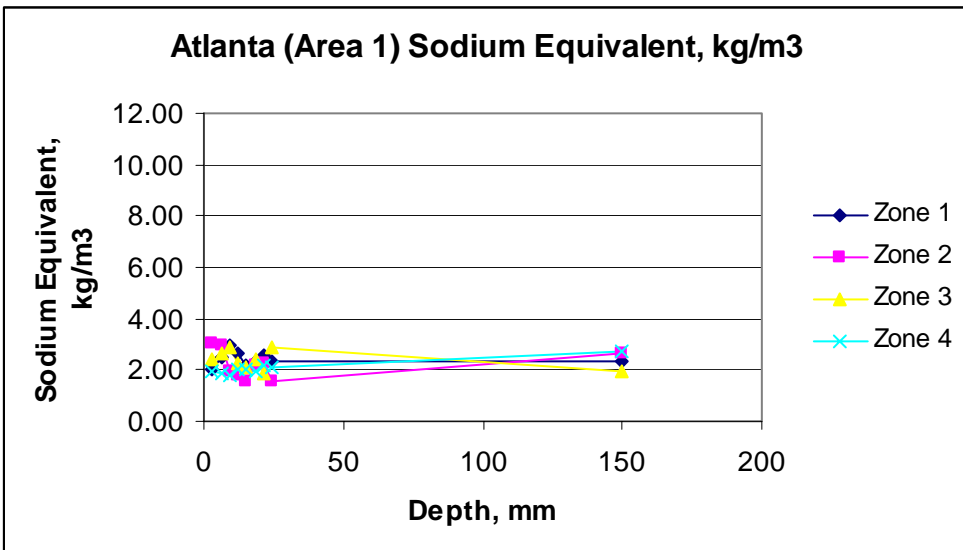
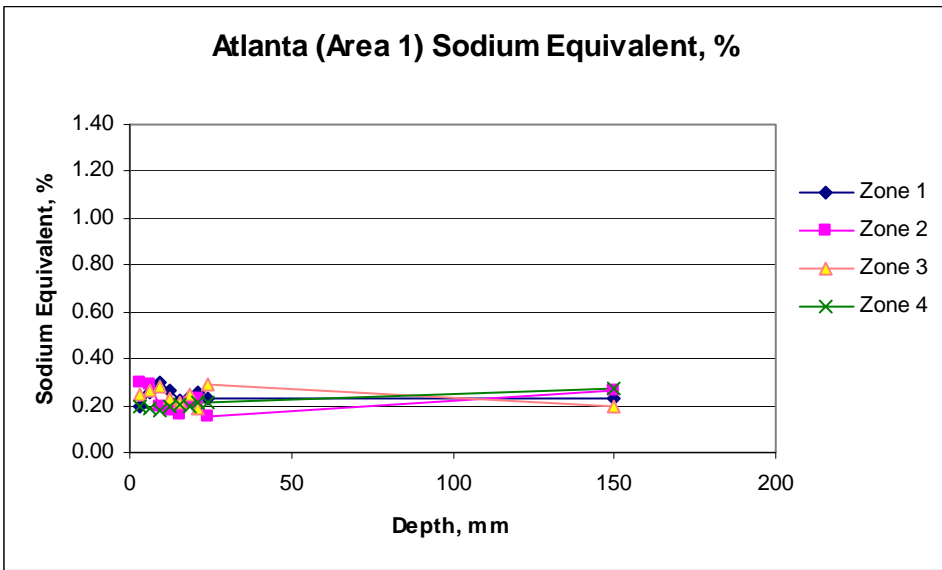
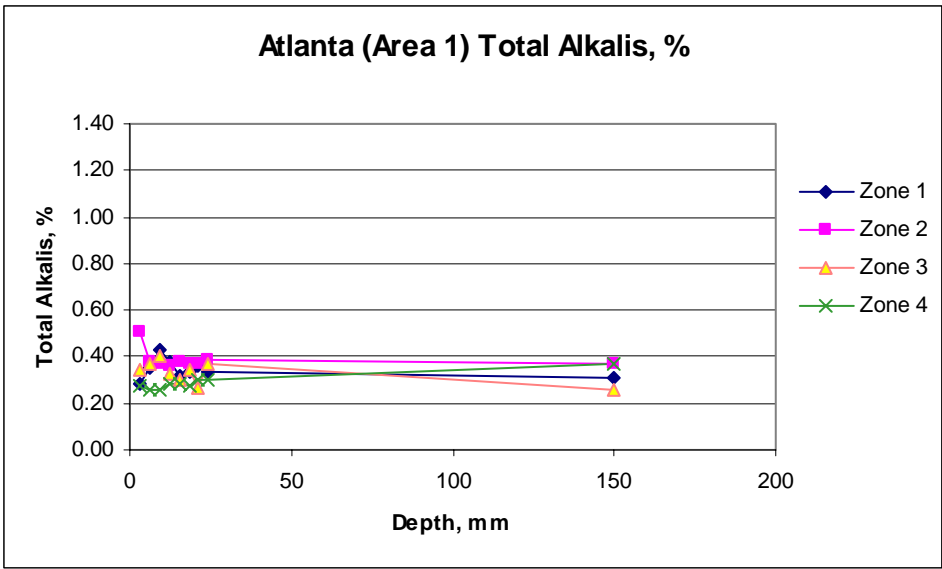
Depth mm	Atlanta (Area 1) Total Alkalis, %				Atlanta (Area 1) Sodium Equivalent, %				Atlanta (Area 1) Sodium Equivalent, kg/m ³			
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 1	Zone 2	Zone 3	Zone 4	Zone 1	Zone 2	Zone 3	Zone 4
3.048	0.28	0.51	0.34	0.28	0.20	0.30	0.24	0.20	1.99	3.01	2.44	1.97
6.096	0.36	0.38	0.37	0.26	0.25	0.29	0.27	0.19	2.52	2.94	2.66	1.88
9.144	0.43	0.37	0.40	0.25	0.30	0.20	0.28	0.18	2.98	1.97	2.85	1.80
12.192	0.38	0.36	0.33	0.28	0.27	0.18	0.23	0.20	2.65	1.79	2.30	2.00
15.240	0.32	0.37	0.30	0.28	0.22	0.16	0.21	0.20	2.22	1.59	2.10	2.02
18.288	0.33	0.37	0.34	0.27	0.24	0.22	0.25	0.20	2.35	2.18	2.45	1.97
21.336	0.36	0.37	0.27	0.30	0.26	0.23	0.19	0.22	2.59	2.27	1.87	2.16
24.384	0.33	0.39	0.37	0.30	0.23	0.16	0.29	0.21	2.33	1.58	2.89	2.10
150.00	0.31	0.37	0.26	0.37	0.23	0.27	0.20	0.27	2.30	2.65	1.95	2.69
Averages	0.34	0.39	0.33	0.29	0.24	0.22	0.24	0.21	2.44	2.22	2.39	2.07

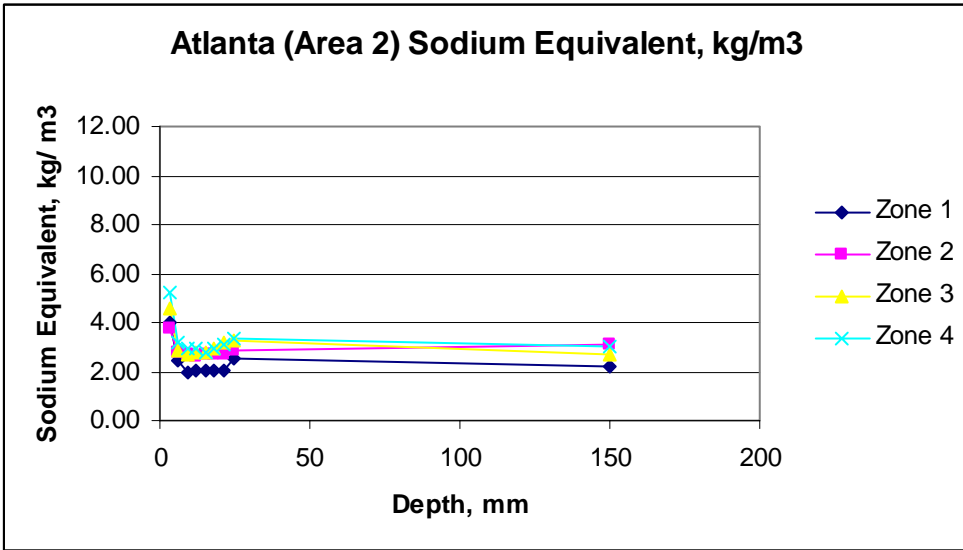
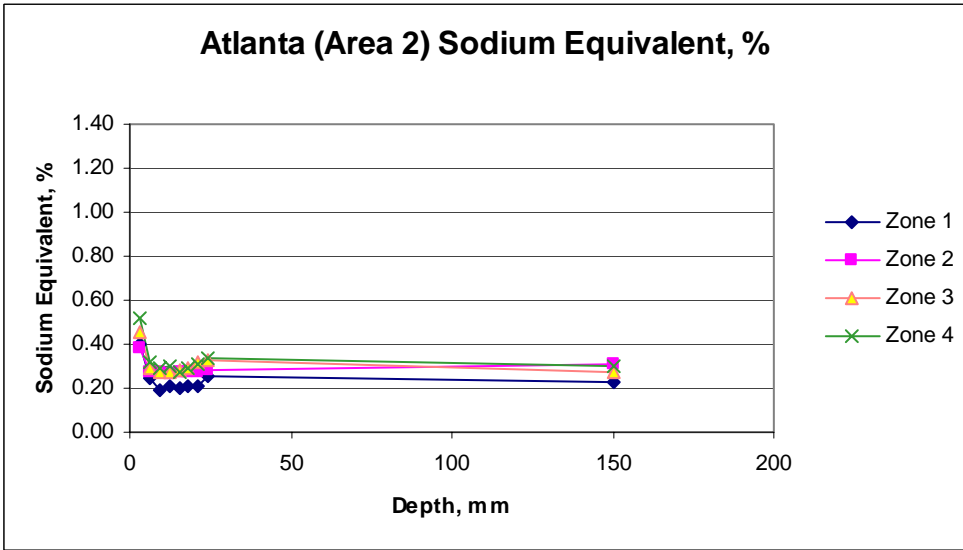
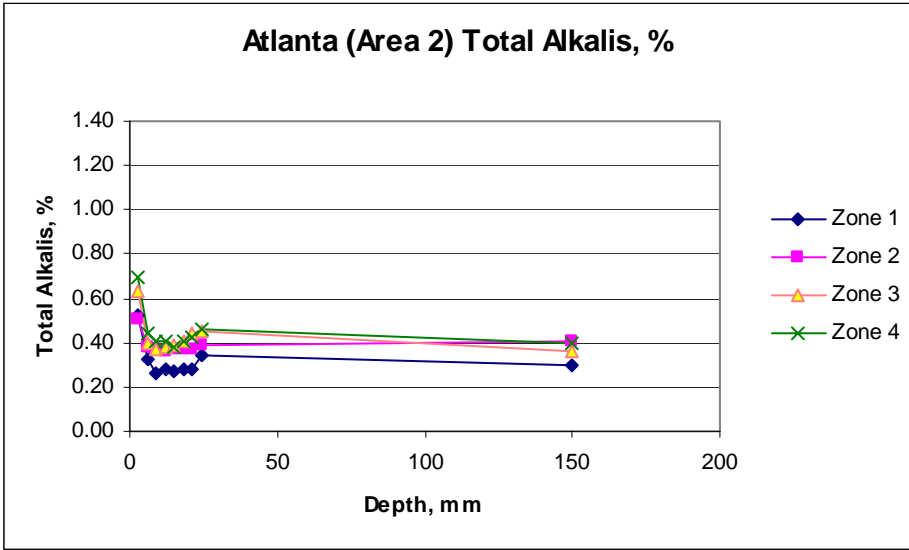
Depth mm	Atlanta (Area 1) Sodium Equivalent, p/cy			
	Zone 1	Zone 2	Zone 3	Zone 4
3.048	3.36	5.08	4.11	3.32
6.096	4.25	4.95	4.48	3.17
9.144	5.02	3.32	4.80	3.04
12.192	4.47	3.02	3.87	3.37
15.240	3.74	2.68	3.54	3.41
18.288	3.97	3.67	4.13	3.32
21.336	4.37	3.82	3.15	3.64
24.384	3.93	2.66	4.87	3.54
150.00	3.88	4.47	3.29	4.54
Averages	4.11	3.74	4.03	3.48

Summary of Alkali Content of Atlanta (Area 2) Concrete

Depth mm	Atlanta (Area 2) Total Alkalis, %				Atlanta (Area 2) Sodium Equivalent, %				Atlanta (Area 2) Sodium Equivalent, kg/m ³			
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 1	Zone 2	Zone 3	Zone 4	Zone 1	Zone 2	Zone 3	Zone 4
3.048	0.53	0.51	0.63	0.69	0.40	0.38	0.45	0.52	4.03	3.77	4.53	5.18
6.096	0.33	0.38	0.40	0.44	0.24	0.28	0.29	0.32	2.45	2.76	2.90	3.21
9.144	0.26	0.37	0.37	0.41	0.19	0.27	0.27	0.29	1.94	2.71	2.71	2.95
12.192	0.28	0.36	0.38	0.41	0.21	0.26	0.28	0.30	2.05	2.60	2.76	2.97
15.240	0.27	0.37	0.39	0.38	0.20	0.27	0.28	0.28	2.02	2.72	2.80	2.77
18.288	0.28	0.37	0.41	0.40	0.21	0.27	0.30	0.29	2.06	2.73	2.95	2.92
21.336	0.28	0.37	0.44	0.42	0.21	0.27	0.32	0.31	2.07	2.69	3.15	3.09
24.384	0.34	0.39	0.45	0.46	0.25	0.29	0.32	0.34	2.55	2.86	3.24	3.38
150.00	0.30	0.41	0.36	0.40	0.22	0.31	0.27	0.30	2.24	3.07	2.69	3.00
Averages	0.32	0.39	0.42	0.45	0.24	0.29	0.31	0.33	2.38	2.88	3.08	3.27

Depth mm	Atlanta (Area 2) Sodium Equivalent, p/cy			
	Zone 1	Zone 2	Zone 3	Zone 4
3.048	6.79	6.36	7.64	8.74
6.096	4.12	4.66	4.88	5.41
9.144	3.28	4.57	4.57	4.96
12.192	3.46	4.39	4.65	5.00
15.240	3.41	4.58	4.72	4.66
18.288	3.48	4.60	4.98	4.93
21.336	3.48	4.54	5.32	5.21
24.384	4.29	4.82	5.47	5.69
150.00	3.78	5.18	4.53	5.06
Averages	4.01	4.85	5.19	5.52





Cheyenne

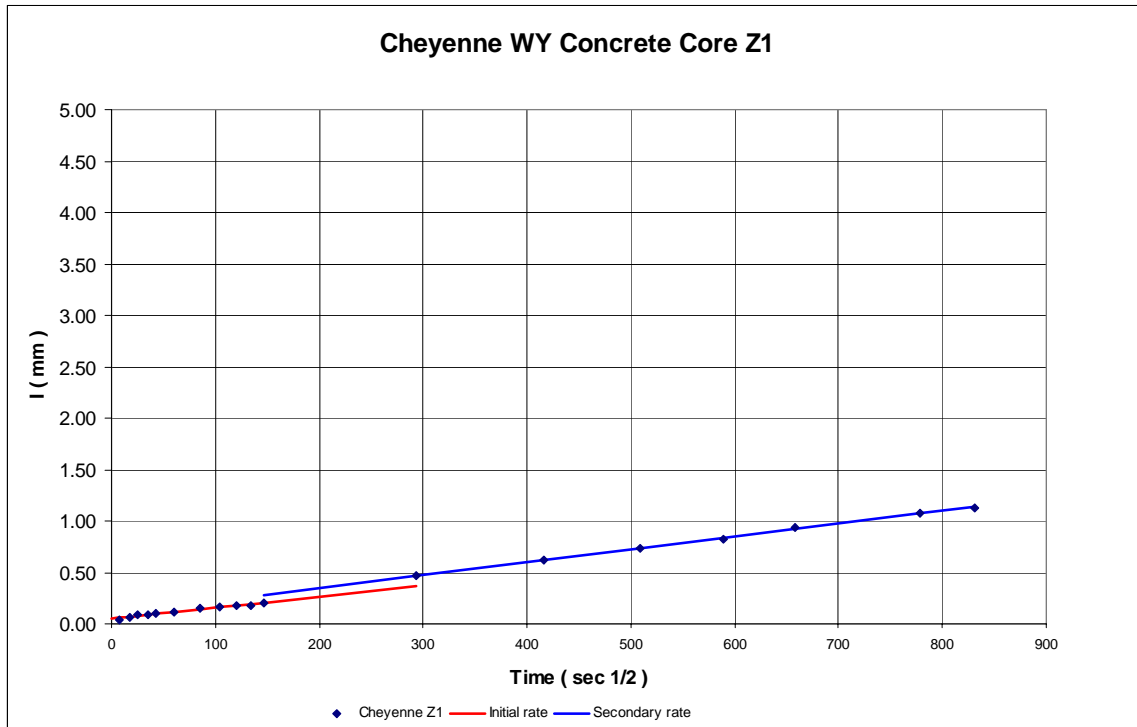
Density, Absorption, and Voids in Hardened Concrete ASTM C 642

Voids and Density of Cheyenne Airport Concrete

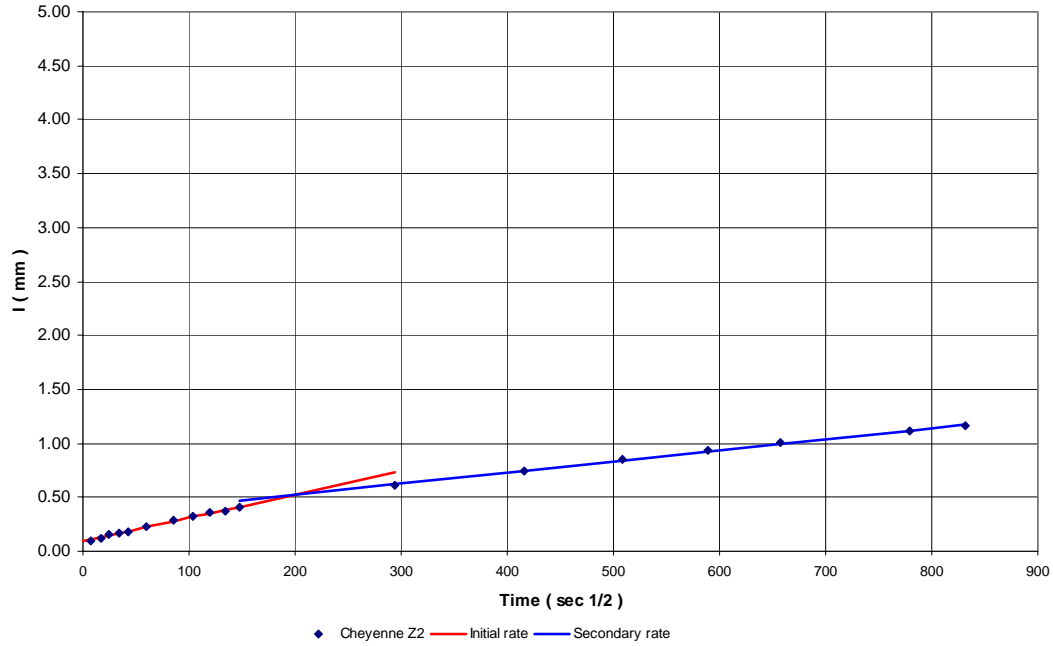
Sample ID	Oven Dry Mass A (g)	Saturated Mass after Immersion B (g)	Saturated Mass after Boiling C (g)	Suspended Mass D (g)	Absorption after Immersion %	Absorption after Immersion and Boiling %	Bulk Density (Dry) g1 g/cm3	Bulk Density after Immersion g/cm3	Bulk Density after Immersion and Boiling g/cm3	Apparent Density g2 g/cm3	Volume of Permeable Pore Space (Voids) %
Cheyenne Airport											
Zone 1	943.14	999.84	1005.02	574.70	6.01	6.56	2.19	2.32	2.34	2.56	14.38
Zone 2	935.00	988.49	994.18	569.48	5.72	6.33	2.20	2.33	2.34	2.56	13.93
Zone 3	970.52	1021.95	1028.31	592.98	5.30	5.95	2.23	2.35	2.36	2.57	13.27
Averages					5.68	6.28	2.21	2.33	2.35	2.56	13.86

Summary for Rate of Absorption ASTM C 1585

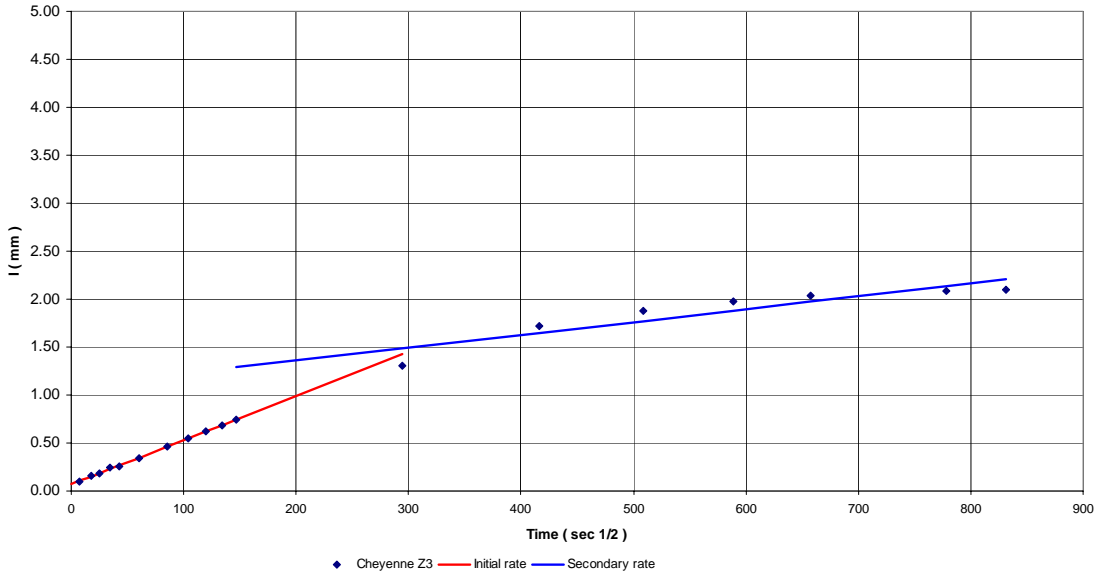
	Initial Rate of Absorption		Secondary Rate of Absorption	
	R	Si (mm/s ²)	R	Ss(mm/s ²)
Cheyenne Z 1	0.97	10.74 x 10 ⁻⁴	1.00	12.52 x 10 ⁻⁴
Cheyenne Z 2	0.99	21.87 x 10 ⁻⁴	1.00	10.26 x 10 ⁻⁴
Cheyenne Z 3	1.00	46.05 x 10 ⁻⁴	0.84	13.44 x 10 ⁻⁴



Cheyenne WY Concrete Core Z2



Cheyenne WY Concrete Core Z3



CRD-C 39-81**Test Method for Coefficient of Linear Thermal Expansion of Concrete**

Coefficient of Linear Thermal Expansion of Cheyenne Airport Concrete

Sample ID	Avg. Length (mm)	Gauge Length, G (mm)	Reading at 5°C	Reading at 60°C	Coefficient of linear thermal expansion	
					°C ⁻¹	10 ⁻⁶ /°C
Cheyenne Airport						
Zone 1	250.0	210.0	-7.749	-7.527	1.93E-05	19.3
Zone 2	251.3	211.3	-6.632	-6.416	1.86E-05	18.6
Zone 3	251.3	211.3	-6.345	-6.132	1.83E-05	18.3
Averages					1.87E-05	18.7

Total Alkali Profile Test

Cheyenne Zone 1

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	107.8529	2.0365	194.77	1.10	1.60	0.16	0.000047	0.000068	0.000007	0.108	0.2663	0.0048	0.38
6.096	240	99.0829	2.0128	181.07	0.70	0.80	0.08	0.000029	0.000033	0.000003	0.0656	0.1271	0.0023	0.19
9.144	360	105.6545	2.0095	195.16	0.50	0.90	0.06	0.000022	0.000040	0.000003	0.0512	0.1563	0.0019	0.21
12.192	480	95.6480	2.0219	188.42	0.50	0.70	0.06	0.000023	0.000032	0.000003	0.0528	0.1253	0.0019	0.18
15.240	600	90.2723	2.0351	187.08	0.50	0.70	0.06	0.000024	0.000033	0.000003	0.0547	0.1299	0.002	0.19
18.288	720	105.0514	2.0108	187.48	0.50	0.70	0.09	0.000020	0.000029	0.000004	0.0471	0.1119	0.0026	0.16
21.336	840	102.1365	2.0181	192.29	0.50	0.70	0.06	0.000022	0.000031	0.000003	0.0514	0.122	0.0019	0.18
24.384	960	100.2923	2.0336	186.22	0.70	0.90	0.05	0.000030	0.000038	0.000002	0.068	0.1483	0.0015	0.22

Cheyenne Zone 2

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	106.6191	2.0462	195.11	1.40	2.40	0.16	0.000061	0.000104	0.000007	0.1393	0.4048	0.0048	0.55
6.096	240	99.1773	2.0499	188.39	0.70	1.10	0.06	0.000030	0.000048	0.000003	0.0701	0.1867	0.0018	0.26
9.144	360	104.6081	2.0142	195.88	0.70	1.10	0.05	0.000032	0.000050	0.000002	0.073	0.1944	0.0016	0.27
12.192	480	98.3948	2.0405	193.96	0.50	1.30	0.06	0.000023	0.000061	0.000003	0.0539	0.2374	0.002	0.29
15.240	600	99.5805	1.9564	179.54	0.70	1.60	0.09	0.000029	0.000065	0.000004	0.0658	0.255	0.0026	0.32
18.288	720	94.4741	2.0192	180.04	0.70	1.60	0.09	0.000030	0.000068	0.000004	0.0682	0.2644	0.0027	0.34
21.336	840	100.7047	1.9717	186.47	0.70	1.80	0.09	0.000030	0.000078	0.000004	0.07	0.3054	0.0027	0.38
24.384	960	105.7131	2.0425	199.50	0.70	1.80	0.07	0.000032	0.000083	0.000003	0.0739	0.3223	0.0022	0.40

Cheyenne Zone 3

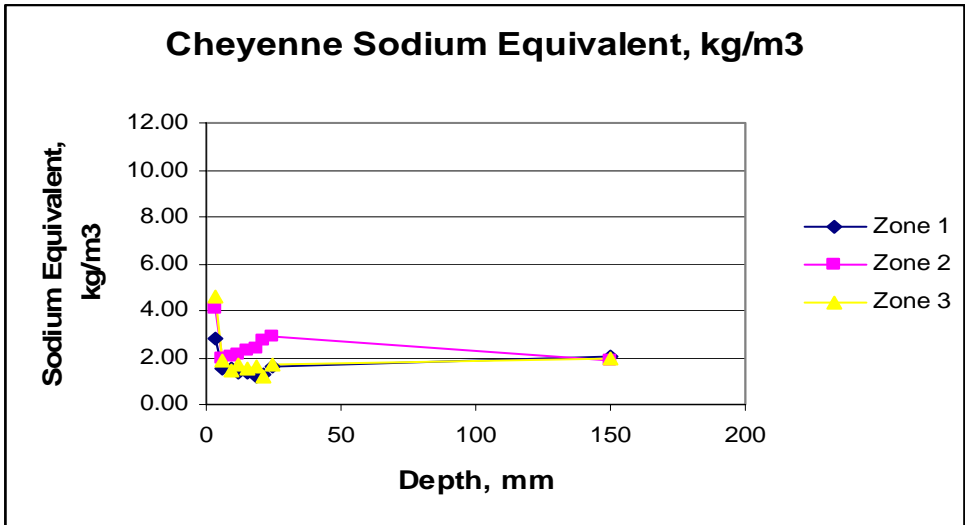
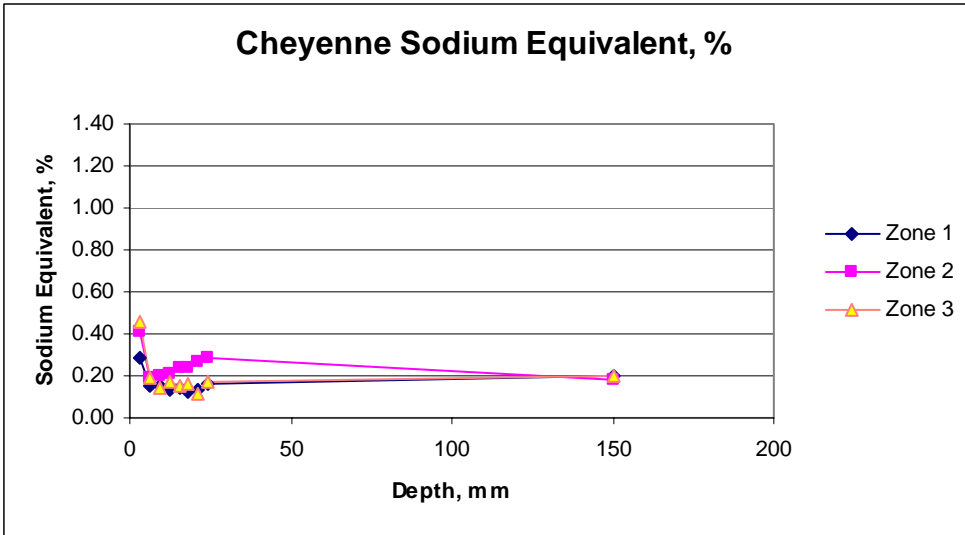
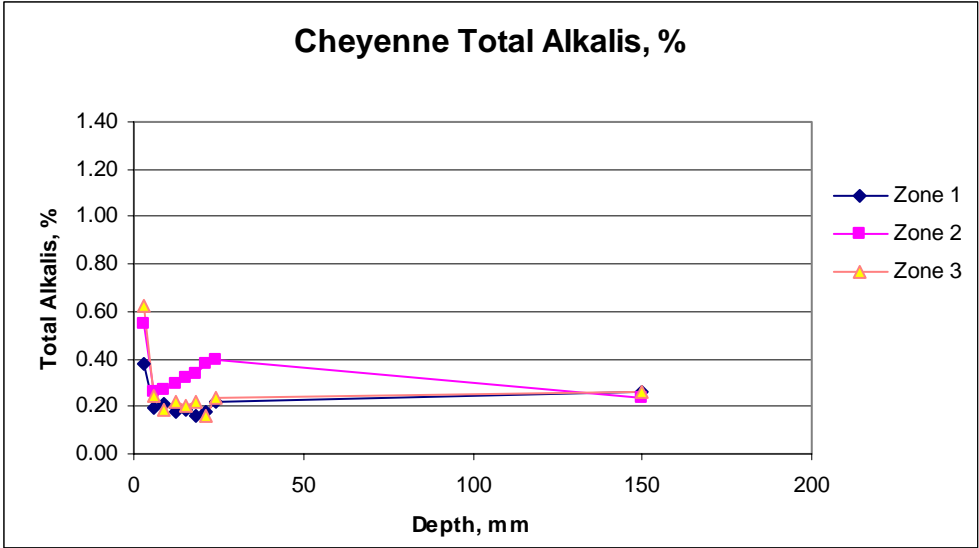
Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	94.4988	2.0448	183.07	1.60	2.70	0.18	0.000069	0.000117	0.000008	0.1594	0.4561	0.0055	0.62
6.096	240	104.6101	2.0049	193.82	0.70	1.00	0.09	0.000031	0.000044	0.000004	0.0716	0.1735	0.0028	0.25
9.144	360	111.0263	2.0158	201.40	0.60	0.70	0.07	0.000027	0.000031	0.000003	0.0619	0.1224	0.0022	0.19
12.192	480	98.3850	2.0098	190.81	0.70	0.80	0.06	0.000032	0.000037	0.000003	0.074	0.1435	0.0019	0.22
15.240	600	90.2725	2.0209	172.96	0.60	0.90	0.07	0.000025	0.000037	0.000003	0.0565	0.1436	0.002	0.20
18.288	720	109.1338	2.0375	193.16	0.60	1.00	0.07	0.000025	0.000041	0.000003	0.0569	0.1608	0.0020	0.22
21.336	840	100.8306	2.0006	187.40	0.40	0.70	0.06	0.000017	0.000030	0.000003	0.0398	0.1181	0.0018	0.16
24.384	960	107.8556	2.0021	200.81	0.50	1.00	0.06	0.000023	0.000046	0.000003	0.0534	0.1811	0.0019	0.24

Summary of Alkali Content of Cheyenne Concrete

Depth mm	Cheyenne Total Alkalis, %			Cheyenne Sodium Equivalent, %			Cheyenne Sodium Equivalent, kg/m ³		
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3
3.048	0.38	0.55	0.62	0.28	0.41	0.46	2.83	4.06	4.60
6.096	0.19	0.26	0.25	0.15	0.19	0.19	1.49	1.93	1.86
9.144	0.21	0.27	0.19	0.15	0.20	0.14	1.54	2.01	1.42
12.192	0.18	0.29	0.22	0.14	0.21	0.17	1.35	2.10	1.68
15.240	0.19	0.32	0.20	0.14	0.23	0.15	1.40	2.34	1.51
18.288	0.16	0.34	0.22	0.12	0.24	0.16	1.21	2.42	1.63
21.336	0.18	0.38	0.16	0.13	0.27	0.12	1.32	2.71	1.18
24.384	0.22	0.40	0.24	0.17	0.29	0.17	1.66	2.86	1.73
150.00	0.26	0.24	0.26	0.20	0.18	0.20	2.04	1.84	2.00
Averages	0.22	0.34	0.26	0.16	0.25	0.20	1.65	2.47	1.96

Depth mm	Cheyenne Sodium Equivalent, p/cy		
	Zone 1	Zone 2	Zone 3
3.048	4.77	6.84	7.75
6.096	2.51	3.25	3.13
9.144	2.60	3.39	2.40
12.192	2.28	3.54	2.84
15.240	2.36	3.94	2.54
18.288	2.04	4.08	2.74
21.336	2.22	4.57	1.98
24.384	2.79	4.82	2.91
150.00	3.43	3.11	3.37
Averages	2.78	4.17	3.30



Phoenix

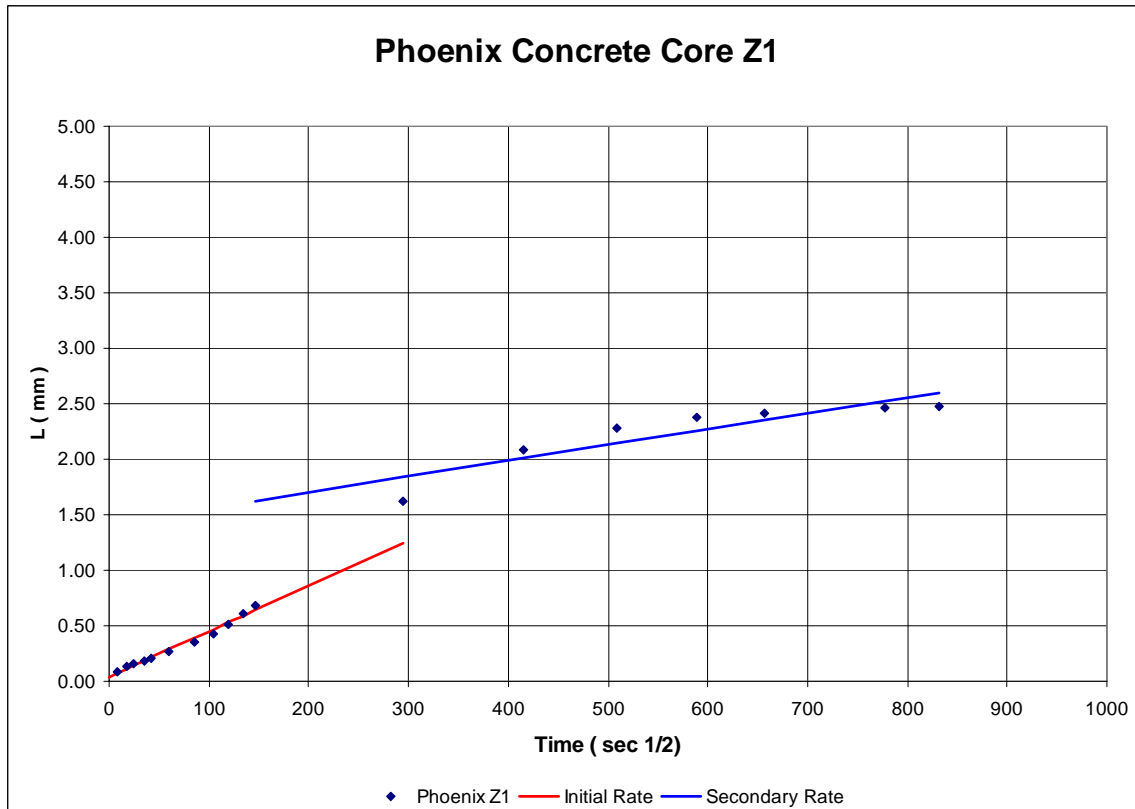
Density, Absorption, and Voids in Hardened Concrete ASTM C 642

Voids and Density of Phoenix Airport Concrete

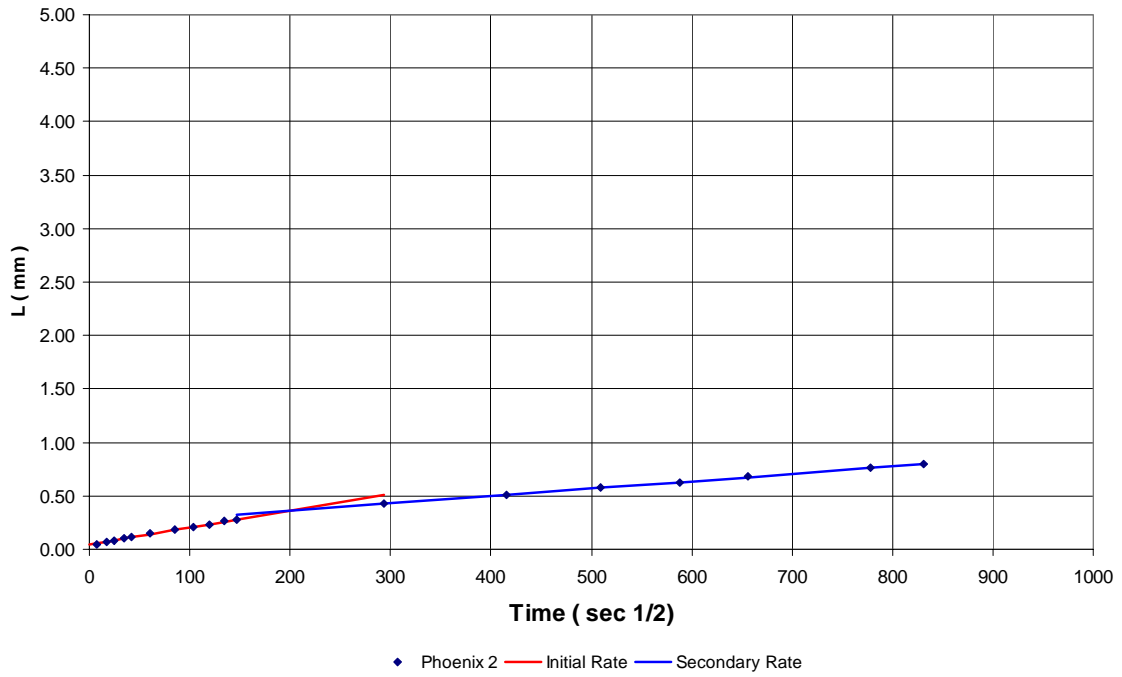
Sample ID	Oven Dry Mass A (g)	Saturated Mass after Immersion B (g)	Saturated Mass after Boiling C (g)	Suspended Mass D (g)	Absorption after Immersion %	Absorption after Immersion and Boiling %	Bulk Density (Dry) g1 g/cm3	Bulk Density after Immersion g/cm3	Bulk Density after Immersion and Boiling g/cm3	Apparent Density g2 g/cm3	Volume of Permeable Pore Space (Voids) %
Phoenix Airport											
Zone 1	959.14	1014.91	1021.05	597.32	5.81	6.45	2.26	2.40	2.41	2.65	14.61
Zone 2	947.78	1005.86	994.18	587.22	6.13	4.90	2.33	2.47	2.44	2.63	11.40
Zone 3	966.5	1021.98	1028.31	600.14	5.74	6.40	2.26	2.39	2.40	2.64	14.44
Averages					5.89	5.92	2.28	2.42	2.42	2.64	13.48

Summary for Rate of Absorption ASTM C 1585

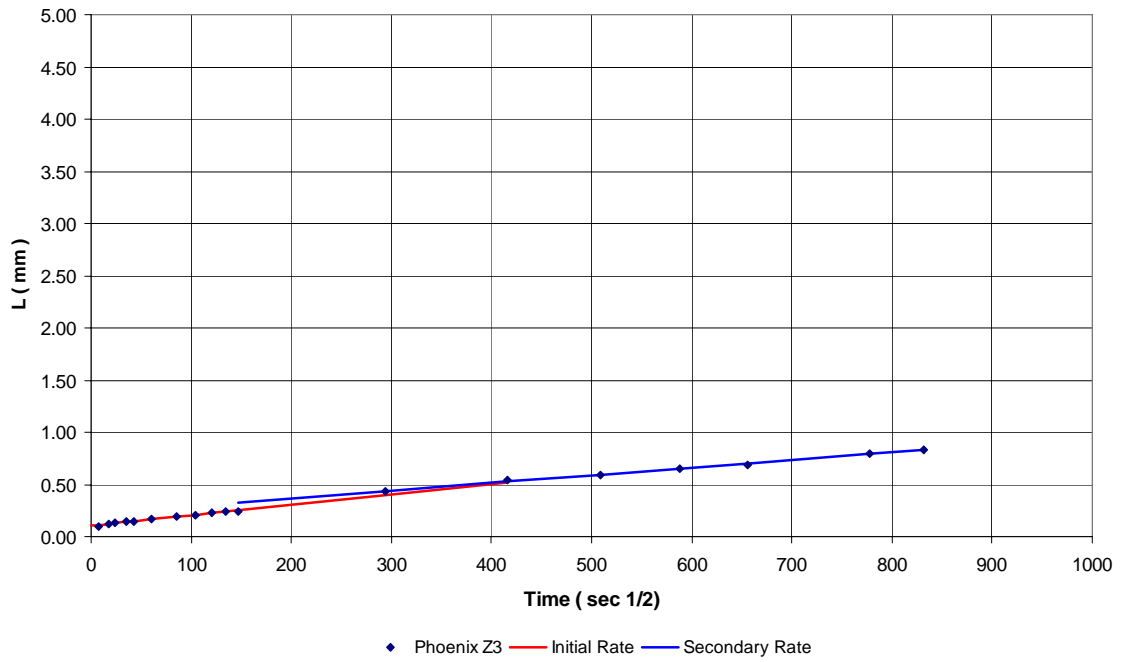
	Initial Rate of Absorption		Secondary Rate of Absorption	
	R	Si (mm/s ²)	R	Ss(mm/s ²)
Phoenix Z 1	0.99	41.03 x 10 ⁻⁴	0.81	14.27 x 10 ⁻⁴
Phoenix Z 2	1.00	15.75 x 10 ⁻⁴	1.00	6.84 x 10 ⁻⁴
Phoenix Z 3	0.99	10.01 x 10 ⁻⁴	1.00	7.31 x 10 ⁻⁴



Phoenix Concrete Core Z2



Phoenix Concrete Core Z3



CRD-C 39-81**Test Method for Coefficient of Linear Thermal Expansion of Concrete**

Coefficient of Linear Thermal Expansion of Phoenix Airport Concrete

Sample ID	Avg. Length (mm)	Gauge Length G (mm)	Reading at 5°C	Reading at 60°C	Coefficient of linear thermal expansion	
					°C ⁻¹	10 ⁻⁶ /°C
Phoenix Airport						
Zone 1	280.7	240.7	-3.435	-3.205	1.73E-05	17.3
Zone 2	277.7	237.7	-8.183	-7.959	1.71E-05	17.1
Zone 3	281.3	241.3	-6.222	-6.009	1.60E-05	16.0
Averages					1.68E-05	16.8

Total Alkali Profile Test

Phoenix Zone 1

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	102.7120	2.0211	195.20	3.70	2.80	0.13	0.000169	0.000128	0.000006	0.3894	0.4997	0.0042	0.89
6.096	240	108.8831	1.9894	198.40	2.20	1.90	0.06	0.000099	0.000085	0.000003	0.2277	0.3334	0.0019	0.56
9.144	360	95.7769	2.0390	186.71	1.60	1.50	0.05	0.000071	0.000067	0.000002	0.1641	0.2609	0.0016	0.43
12.192	480	102.1997	1.9733	192.08	1.20	1.20	0.03	0.000055	0.000055	0.000001	0.1257	0.2132	0.001	0.34
24.384	960	104.6098	1.9692	199.15	0.70	1.20	0.03	0.000034	0.000058	0.000001	0.0773	0.2247	0.001	0.30

Layers are lost due to the initial wrong direction of grinding

Phoenix Zone 2

Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	104.2470	1.9769	191.32	4.40	3.20	0.20	0.000194	0.000141	0.000009	0.4457	0.5497	0.0062	1.00
6.096	240	111.0247	2.0334	194.24	5.80	4.00	0.15	0.000237	0.000164	0.000006	0.5459	0.6384	0.0043	1.19
9.144	360	103.8050	1.9983	185.08	6.30	4.20	0.11	0.000256	0.000171	0.000004	0.5893	0.6662	0.0031	1.26
12.192	480	104.8612	2.0079	181.00	3.00	2.30	0.07	0.000114	0.000087	0.000003	0.2616	0.3401	0.0019	0.60
15.240	600	102.1998	2.0447	184.05	2.10	1.90	0.06	0.000084	0.000076	0.000002	0.1933	0.2966	0.0017	0.49
18.288	720	95.5562	2.0061	182.63	1.70	1.60	0.04	0.000074	0.000069	0.000002	0.1697	0.2708	0.0012	0.44
21.336	840	96.1072	2.0343	179.77	1.70	1.80	0.05	0.000070	0.000074	0.000002	0.1608	0.2887	0.0014	0.45
24.384	960	106.6187	1.9957	180.25	2.20	2.50	0.06	0.000081	0.000092	0.000002	0.1867	0.3597	0.0015	0.55

Phoenix Zone 3

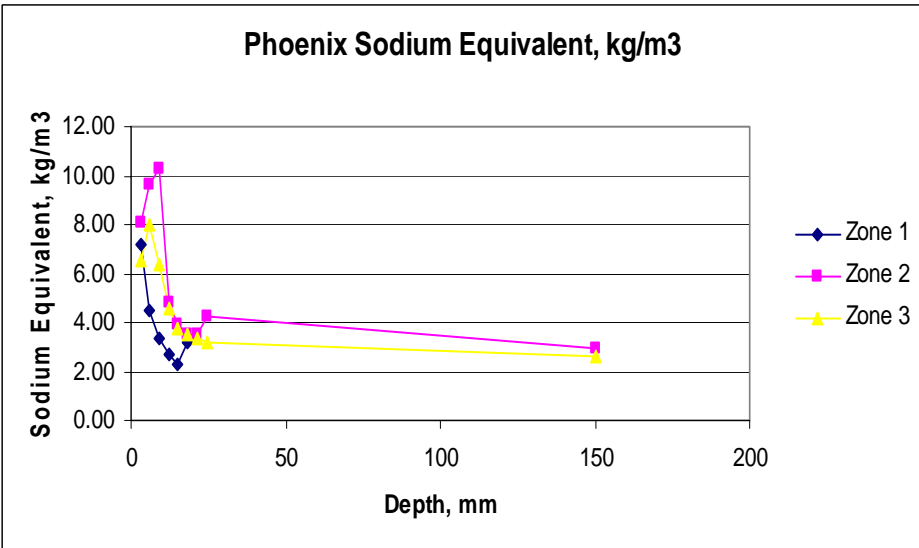
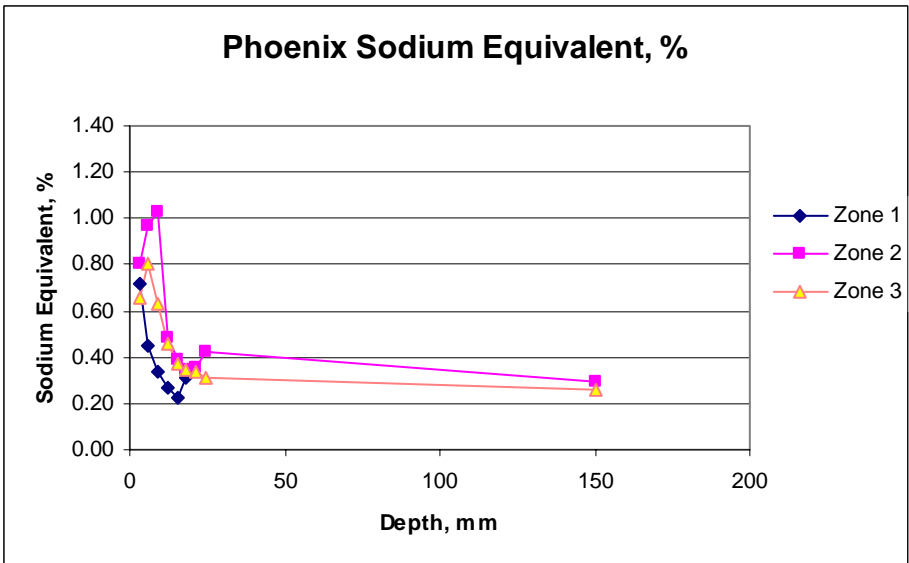
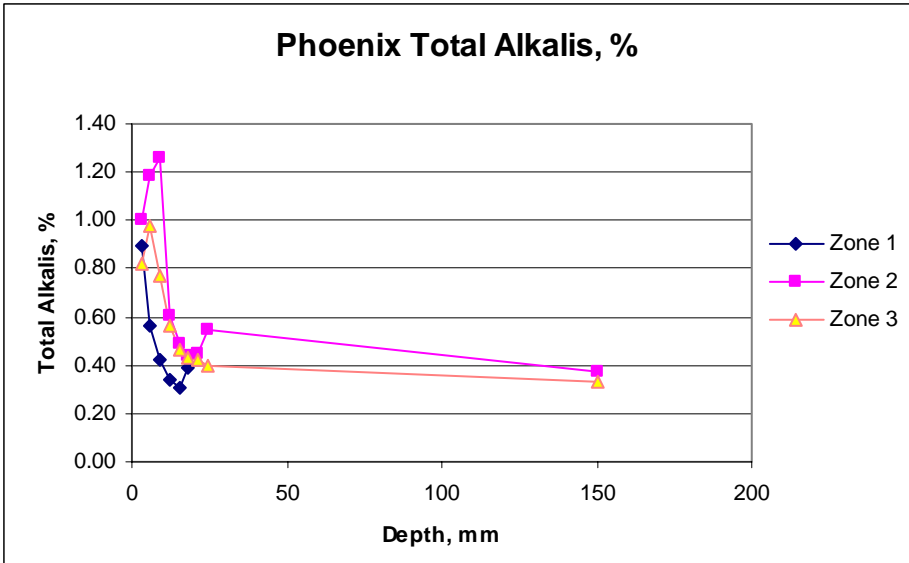
Acid Soluble Alkalis

Depth (mm)	Depth (1000th in)	Large Beaker Mass (g)	Sample Mass (g)	Filtered Mass (g)	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
					Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
3.048	120	113.4283	2.0082	199.46	3.50	2.80	0.18	0.000150	0.000120	0.000008	0.3449	0.4678	0.0054	0.82
6.096	240	104.7886	2.0232	191.50	4.80	3.00	0.12	0.000206	0.000129	0.000005	0.4732	0.5014	0.0036	0.98
9.144	360	101.1105	2.0283	182.01	4.00	2.60	0.08	0.000160	0.000104	0.000003	0.3669	0.4044	0.0022	0.77
12.192	480	120.1457	2.0288	208.54	2.70	1.70	0.04	0.000118	0.000074	0.000002	0.2706	0.2889	0.0012	0.56
15.240	600	112.8512	1.9751	193.21	2.20	1.60	0.02	0.000090	0.000065	0.000001	0.2059	0.2539	0.0006	0.46
18.288	720	109.1844	2.0121	194.16	1.90	1.50	0.00	0.000080	0.000063	0.000000	0.1846	0.2471	0.0000	0.43
21.336	840	92.7116	2.0029	182.12	1.70	1.40	0.05	0.000076	0.000062	0.000002	0.1745	0.2437	0.0016	0.42
24.384	960	122.6266	2.0179	219.54	1.40	1.30	0.03	0.000067	0.000062	0.000001	0.1546	0.2435	0.0010	0.40

Summary of Alkali Content of Phoenix Concrete

Depth mm	Phoenix Total Alkalis, %			Phoenix Sodium Equivalent, %			Phoenix Sodium Equivalent, kg/m ³		
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3
3.048	0.89	1.00	0.82	0.72	0.81	0.65	7.18	8.07	6.53
6.096	0.56	1.19	0.98	0.45	0.97	0.80	4.47	9.66	8.03
9.144	0.43	1.26	0.77	0.34	1.03	0.63	3.36	10.28	6.33
12.192	0.34	0.60	0.56	0.27	0.49	0.46	2.66	4.85	4.61
15.240	0.30	0.49	0.46	0.23	0.39	0.37	2.25	3.89	3.73
18.288	***	0.44	0.43	***	0.35	0.35	***	3.48	3.47
21.336	***	0.45	0.42	***	0.35	0.33	***	3.51	3.35
24.384	***	0.55	0.40	***	0.42	0.31	***	4.23	3.15
150.00	0.39	0.37	0.33	0.31	0.29	0.26	3.14	2.91	2.62
Averages	0.49	0.71	0.57	0.38	0.57	0.46	3.84	5.65	4.65

Depth mm	Phoenix Sodium Equivalent, p/cy		
	Zone 1	Zone 2	Zone 3
3.048	12.11	13.61	11.00
6.096	7.54	16.28	13.54
9.144	5.66	17.32	10.67
12.192	4.48	8.18	7.76
15.240	3.79	6.55	6.29
18.288	***	5.86	5.85
21.336	***	5.91	5.65
24.384	***	7.14	5.31
150.00	5.30	4.91	4.41
Averages	6.48	9.53	7.83



Appendix 2

Petrographic Evaluation Cheyenne Regional Airport

EXECUTIVE SUMMARY

Three cores taken from The Cheyenne Airport were received for petrographic evaluation in April 2006. The cores have a diameter of 4 inches (10 cm). The purpose of the investigation was to determine the condition of the concrete in the cores, and if deterioration had occurred, to determine the cause. Petrographic evaluation was done following ASTM C 295. The extent of deterioration was determined using the Damage Rating Index Method, Grattan-Bellew 1995.

The mean damage rating index (DRI) of the three cores is 62. This would correspond to an expansion of ~0.09% which indicates that the concrete should exhibit considerable cracking. Evidence of alkali-silica reaction was observed in all three cores indicating that this was the cause of the deterioration. The coarse aggregate consists of granodiorite and quartzite. The quartzite is potentially alkali-silica reactive. Chert, a potentially reactive material occurs in the fine aggregate. The cement paste is dense and uncarbonated. The air content of the concrete is 2-3%.

It is probable that expansion and cracking of the concrete in the pavements will continue for the foreseeable future provided the alkali content of the concrete remains high enough to sustain the reaction. It is recommended that the alkali content of the concrete in the cores should be measured.

INTRODUCTION

Three cores taken from The Cheyenne Airport were received for petrographic evaluation on April 19th 2006. The cores have a diameter of 4 inches (10 cm). The labeling of the cores is shown in Table 1.

Table 1: Core location and labeling.

Core Location	Core Label	Length of Core in inches (cm)
Zone1 IN	Z1-IN	10.5 (26.7 cm)
Zone2 IN	Z2-IN	10.5
Zone3 IN	Z3-IN	10.5

The purpose of the investigation was to determine the condition of the concrete in the cores and if deterioration had occurred to determine the cause. Petrographic evaluation was done following ASTM C 295. The extent of deterioration was determined using the Damage Rating Index Method, Grattan-Bellew 1995. Note asphalt was found adhering to the base of all three cores.

METHODOLOGY

Determination of the DRI's

The cores were sawn in two axially to provide a flat surface for polishing. After polishing, the surfaces of the cores were coated with uranyl acetate. This is absorbed preferentially by alkali-silica reaction gel, which fluoresces when viewed in ultra violet light. This aids in the identification of alkali silica gel in the concrete. The appearance of the polished cores is shown in Figure 1. The polished cores were examined under a stereo-binocular microscope and the numbers of features, indicative of damage due mainly to alkali-silica reaction (ASR), were measured. Weighting factors shown in Table 2, were applied to the raw data to reflect the significance of the damage features to the overall deterioration of the concrete, Grattan-Bellew 1995, Rivard et al., 2002. The Damage Rating Index provides a measure of the extent of damage to the concrete due, primarily, to alkali-silica reaction (ASR), but other causes of concrete deterioration, e.g., alkali-carbonate reaction (ACR), frost action, or sulfate attack, expansion of periclase (MgO) in the cement paste, may also contribute to the index.

Petrographic thin sections were prepared from selected pieces of the cores these were used to determine the composition of the coarse and fine aggregates and the condition of the cement paste.

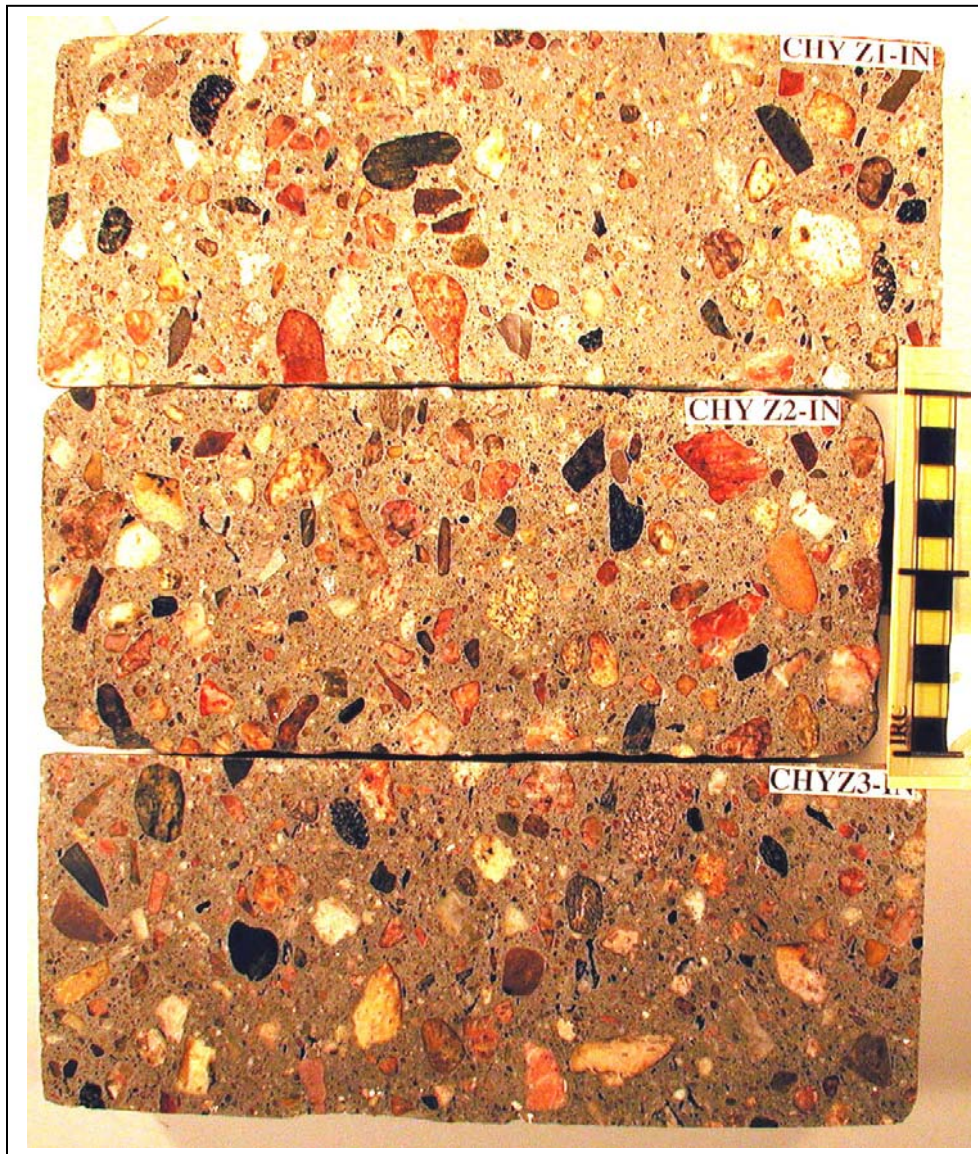


Fig. 1: Polished surfaces of cores showing the size, shape and distribution of coarse aggregate in the concrete.

RESULTS

Damage Rating Indices (DRI's)

The chart of the DRI' s of the cores from Cheyenne is shown in Figure 2.

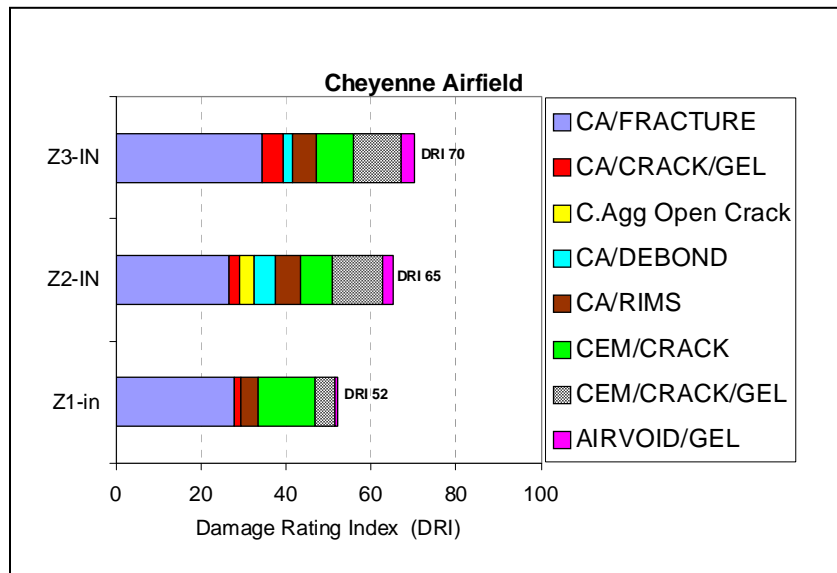
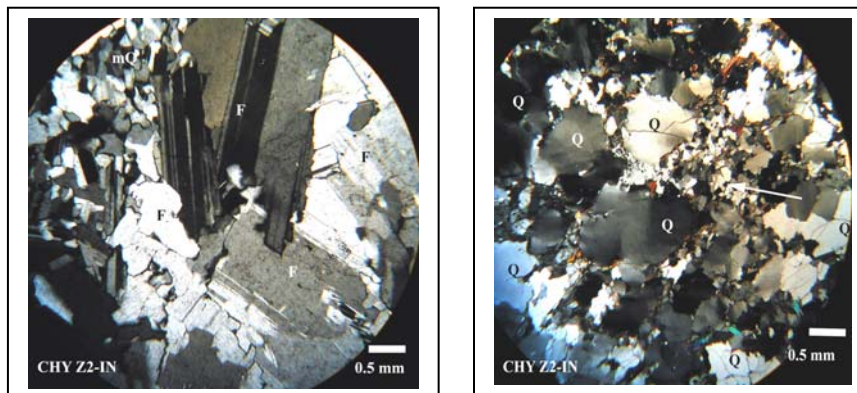


Fig.2: Chart showing DRI's of the cores.

The mean DRI of the three cores of 62 is indicative of a moderate degree of deterioration due to alkali-silica reaction (ASR). All three cores exhibit cracking with gel in the cement paste and in the coarse aggregate particles, confirming that ASR is the main cause of the deterioration. In addition some of the air voids are filled with gel.

Coarse Aggregates

The coarse aggregate in the cores is gravel consisting dominantly of sub-angular to sub-rounded particles of granodiorite, and quartzite, Figure 3.



(a)

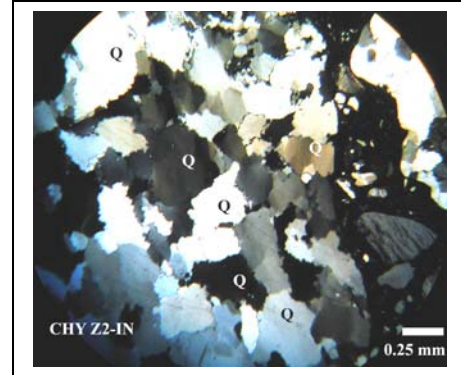
(b)

Fig. 3: Thin sections viewed between crossed polarizers.

a). Granodiorite. Feldspar (F), micro-crystalline quartz (mQ)

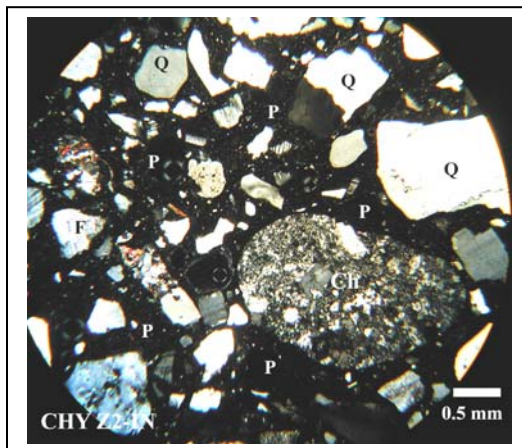
b). Quartzite with micro-crystalline quartz. Quartz (Q), arrow points to micro-crystalline quartz.

Fig 3 c: Thin section viewed between crossed polarizers showing the serrated edges of the quartz grains in quartzite. Quartz (Q)

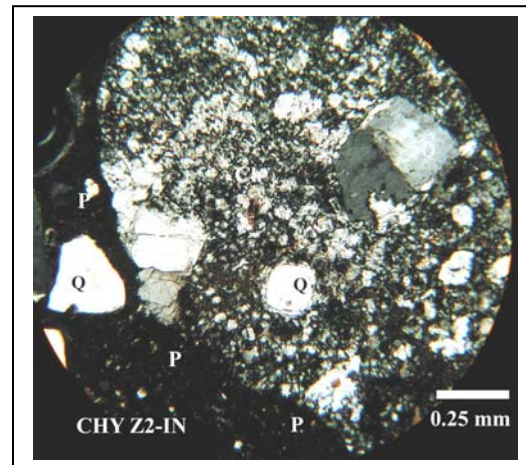


Fine Aggregate

The fine aggregate, in the cores is angular to sub-angular with a size range of 25 μ m to 3 mm. It is composed of grains of quartz, feldspar, (hornblende) chert and assorted rock fragments, Figure 4. Both the chert particles and the quartzite particles are potentially alkali-silica reactive.



(a)



(b)

Fig.4: Thin sections viewed between crossed polarizers.

a). Fine aggregate showing the size shape and distribution of aggregate particles in the dark cement paste (P). Quartz (Q), feldspar (F), chert (Ch).

b). Enlarged view of chert particle showing it to consist of occasional quartz grains in a matrix of micro-crystalline quartz.

Cement Paste

The cement paste is dense and uncarbonated. The air content of the concrete is estimated, visually, at 2 to 3%. The air voids are mostly empty, but are occasionally lined alkali-silica gel.

Features Indicative of Alkali-Silica Reaction (ASR)

Reaction rims were observed around some aggregate particles, and occasional some air voids were filled with gel, Figure 5 a & b. Gel was also observed filling cracks in the aggregates and in the cement paste, Figure 5 c.

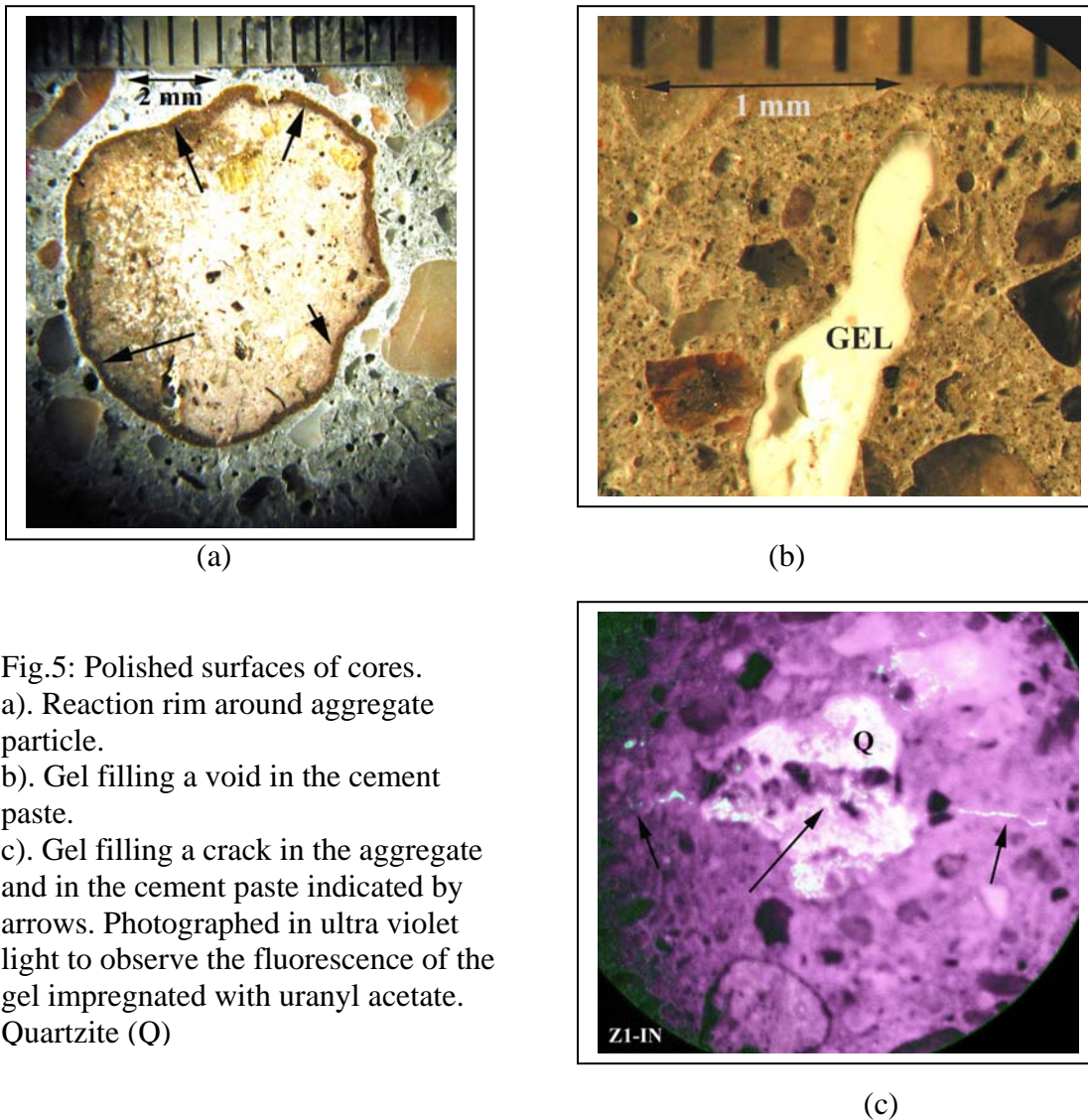


Fig.5: Polished surfaces of cores.
 a). Reaction rim around aggregate particle.
 b). Gel filling a void in the cement paste.
 c). Gel filling a crack in the aggregate and in the cement paste indicated by arrows. Photographed in ultra violet light to observe the fluorescence of the gel impregnated with uranyl acetate. Quartzite (Q)

DISCUSSION

In the conclusions of this report, it is assumed that the cores that were examined are representative of the concrete in the pavement. The particles of chert and quartzite are potentially reactive. Evidence of ASR in the form of gel filling cracks in the coarse

aggregates and in the cement paste and some air voids is common confirming that ASR had occurred in the concrete.

The mean DRI of 62 is indicative of a moderate degree of deterioration of the concrete in the pavement. An estimate of the amount of expansion that has occurred in the concrete can be obtained from equation 1 that was derived from measurements of laboratory concretes affected by ASR.

$$\text{Expansion \%} = 1.45 \times 10^{-3} \cdot \text{DRI} \quad \text{Eqn. 1.}$$

The estimated expansion corresponding to the mean DRI of 62 is 0.09%, that of core Z1-IN with a DRI of 52 is 0.075 and of core Z3-IN with a DRI of 70 is 0.102%. An expansion of 0.1% is significant. It is expected that the concrete from where the cores were taken would should some degree of cracking.

Forecast for the Future

In large dams, for which there is most documentation, expansion has been found to continue more or less indefinitely (50 years+). It is therefore probable that expansion and cracking of the pavements will continue, at least for the next 25 years, provided the alkali content of the concrete remains high enough to sustain the reaction. The Canadian Standards guidance for the avoidance of ASR, A23.1 Appendix B5.2.3 states that "In general, it has been found that when alkali-silica reactive aggregates are used in concrete containing less than 3.0 kg/m³ of total alkali expressed as Na₂O equivalent, deleterious expansion will not take place." It is strongly recommended that the alkali contents of a number of cores be determined, to aid in forecasting of the future durability and serviceability of the concrete pavements.

CONCLUSIONS

- The aggregates in the concrete cores from all three zones is potentially reactive.
- The mean damage rating index (DRI), of cores is 62 with an estimated expansion of ~0.094% indicates that the concrete should have cracked.
- In most of the cores there is evidence of alkali-silica reaction (ASR) in the form of reaction rims around some aggregate particles and of gel filling cracks in the coarse aggregates and in the cement paste and in some air voids.
- The air content of the concrete is estimated to be 2 to 3%
- Expansion and cracking of the concrete represented by these cores will likely continue for the foreseeable future.

RECOMMENDATIONS

It is strongly recommended that the alkali content of some of the cores be measured to determine if it is still high enough (>3 kg/m³) to sustain the reaction.

REFERENCES

1. ASTM C 856-88, Standard Practice for Petrographic Examination of Hardened Concrete. 1988 ASTM Annual Book of ASTM Standards, Section 4, Construction, Vol. 4.02 Concrete and Aggregates, pp. 402-414.
2. Grattan-Bellew, P.E., "Laboratory Evaluation of Alkali-Silica Reaction in Concrete from Saunders Generating Station," ACI Materials Journal 92, March-April 1995.
3. Rivard, P., Fournier, B, Ballivy, G., 2002 "The Damage Rating Index Method for Affected Concrete-A Critical Review of the Petrographic Features of Deterioration and Evaluation Criteria." Cement Concrete & Aggregates, V 24, No. 2, pp. 81-91.
4. Appendix B, CSA A23.1, clause B5.2.3 Reduced alkali content. CSA A23.1-04/A23.2-04 Concrete Materials and methods of concrete construction/ Methods of test and standard practices for concrete. Canadian Standards Association 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6, p145.

Appendix 3

Petrographic Evaluation Phoenix Sky Harbor International Airport

EXECUTIVE SUMMARY

Six cores taken from The Phoenix Airport were received for petrographic evaluation in April 2006. The cores have a diameter of 4 inches (10 cm). The purpose of the investigation was to determine the condition of the concrete in the cores and if deterioration had occurred to determine the cause. Petrographic evaluation was done following ASTM C 295. The extent of deterioration was determined using the Damage Rating Index Method, Grattan-Bellew 1995. The damage rating index of the top portion of the core from Zone 1 is 127 that corresponds to an estimated expansion of 0.18%. Considerable cracking of the concrete would be expected with such high expansion. The damage rating index of the bottom portion of the core from Zone 1 is 50 that corresponds to an estimated expansion of 0.07%. Cracking of concrete is normally observed when expansion exceeds ~0.04%. It is not known why the damage rating index of the upper portion of the core from Zone 1 is so much higher than that of the other cores. The mean damage rating index of the cores from Zones 2 & 3 is 34 ± 7 that corresponds to an estimated expansion of 0.05%. Features indicative of damage due to alkali silica reaction were observed in all the cores except that from the top of the core from Zone 3.

The coarse aggregate in the cores is gravel consisting dominantly of particles of basalt, chert, chalcedony, silicified tuff and sandstone. The chert and chalcedony are potentially alkali-silica reactive as is the sandstone.

The fine aggregate, in the cores is angular to sub-angular with a size range of 15 μm to 4 mm. It is composed of grains of quartz, feldspar, chert and assorted rock fragments. The chert is potentially alkali-silica reactive.

The cement paste is dense. There is only a small amount of carbonation. The air content of the concrete is estimated, as 3 to 4%.

The expansion and deterioration of the concrete in the pavements may be expected to continue for the foreseeable future provided the alkali content of the pore solution is high enough to sustain alkali-silica reaction. It is recommended that the alkali content of some cores be measured.

The validity of the results of this investigation depend on how representative of the concrete in the pavements are the cores that were evaluated.

INTRODUCTION

Six cores taken from The Phoenix Airport were received for petrographic evaluation on April 19th 2006. The cores have a diameter of 4 inches (10 cm). The labeling of the cores is shown in Table 1.

Table 1: Core location and labeling.

Core Location	Core Label	Length of Core in inches (cm)
Zone1 Part 1	Z1-P1	14.5 (36.8)
Zone1 Part 2	Z2-P2	5 (12.7)
Zone2 Part 1	Z2-P1	13 (33)
Zone 2 Part 2	Z2-P2	6 (15)
Zone 3 Part 1	Z3-P1	7 (18)
Zone 3 Part 2	Z3-P2	12 (30)

The purpose of the investigation was to determine the condition of the concrete in the cores and if deterioration had occurred to determine the cause. Petrographic evaluation was done following ASTM C 295. The extent of deterioration was determined using the Damage Rating Index Method, Grattan-Bellew 1995.

METHODOLOGY

Determination of the DRI's

The cores were sawn in two axially to provide a flat surface for polishing. After polishing, the surfaces of the cores were coated with uranyl acetate. This is absorbed preferentially by alkali-silica reaction gel, which fluoresces when viewed in ultra violet light. This aids in the identification of alkali silica gel in the concrete. The appearance of the polished cores is shown in Figure 1. The polished cores were examined under a stereo-binocular microscope and the numbers of features, indicative of damage due mainly to alkali-silica reaction (ASR), were measured. Weighting factors shown in Table 2, were applied to the raw data to reflect the significance of the damage features to the overall deterioration of the concrete, Grattan-Bellew 1995, Rivard et al., 2002. The Damage Rating Index provides a measure of the extent of damage to the concrete due, primarily, to alkali-silica reaction (ASR), but other causes of concrete deterioration, e.g., alkali-carbonate reaction (ACR), frost action, or sulfate attack, expansion of periclase (MgO) in the cement paste, may also contribute to the index.

Petrographic thin sections were prepared from selected pieces of the cores these were used to determine the composition of the coarse and fine aggregates and the condition of the cement paste.

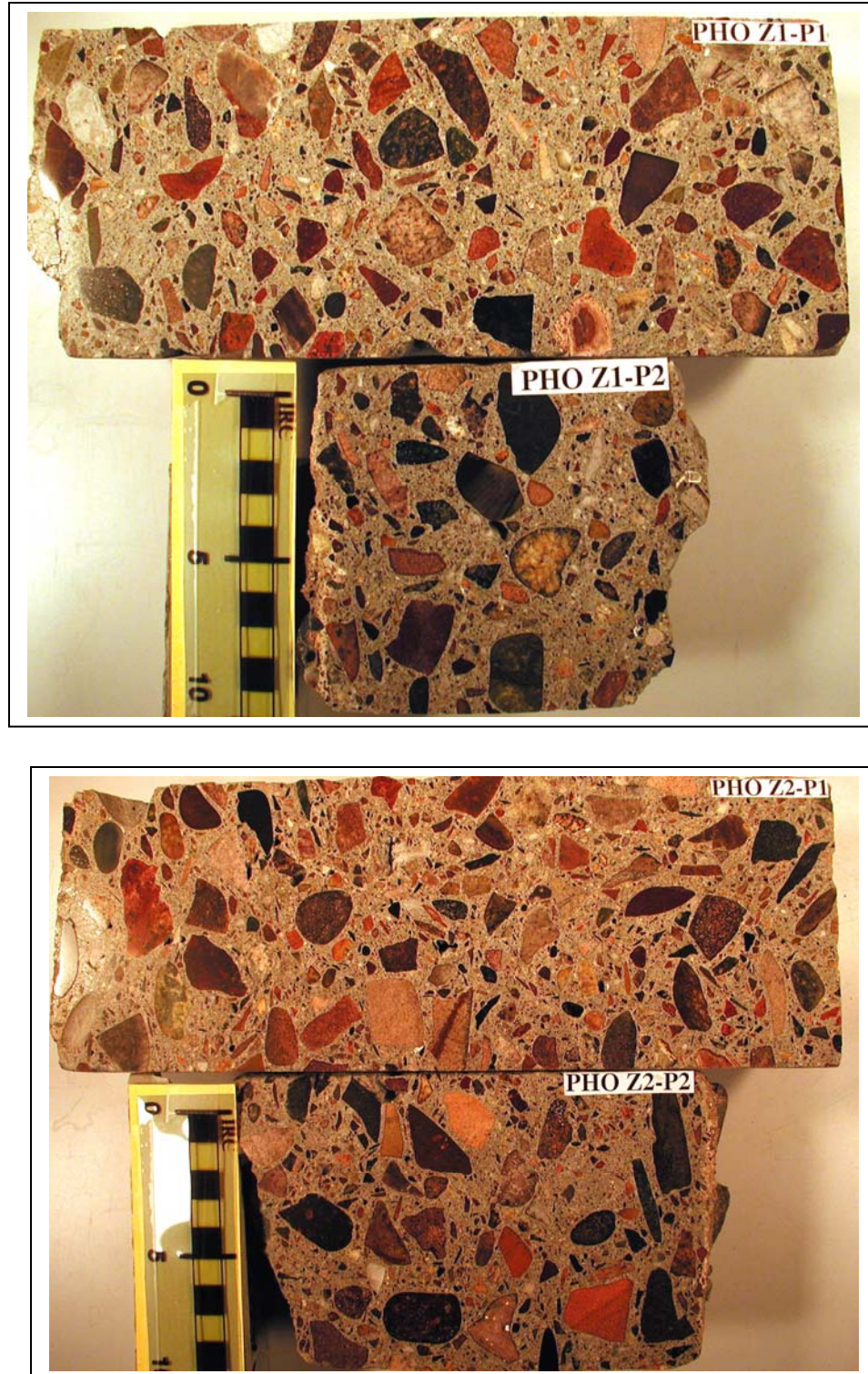


Fig. 1: Polished surfaces of cores showing the size, shape, color and distribution of the coarse aggregate particles in the concrete



Fig.1 continued: Photograph of polished surfaces showing the size, shape, color and distribution of the coarse aggregate in the concrete.

RESULTS

Damage Rating Indices (DRI's)

The chart of the DRI's of the cores from Cheyenne is shown in Figure 2. In each of the 3 zones, core P1 is the top portion of the core and P2 the bottom portion of the core. Judging by the DRI's it appears that cores Z3-P1 and Z3-P2 might have been interchanged? The mean DRI of all the cores excepting Z1-P1 is 37. Cores with DRI's of greater than ~50 are usually considered to be of significant deterioration of the concrete due to alkali-silica reaction (ASR) provided that there is evidence of ASR in the cores. The mean DRI of 37 for most of the cores is an indicator of marginal reactivity. In contrast, the DRI of core Z1-P1, of 127 is an indicator of significant deterioration due to ASR.

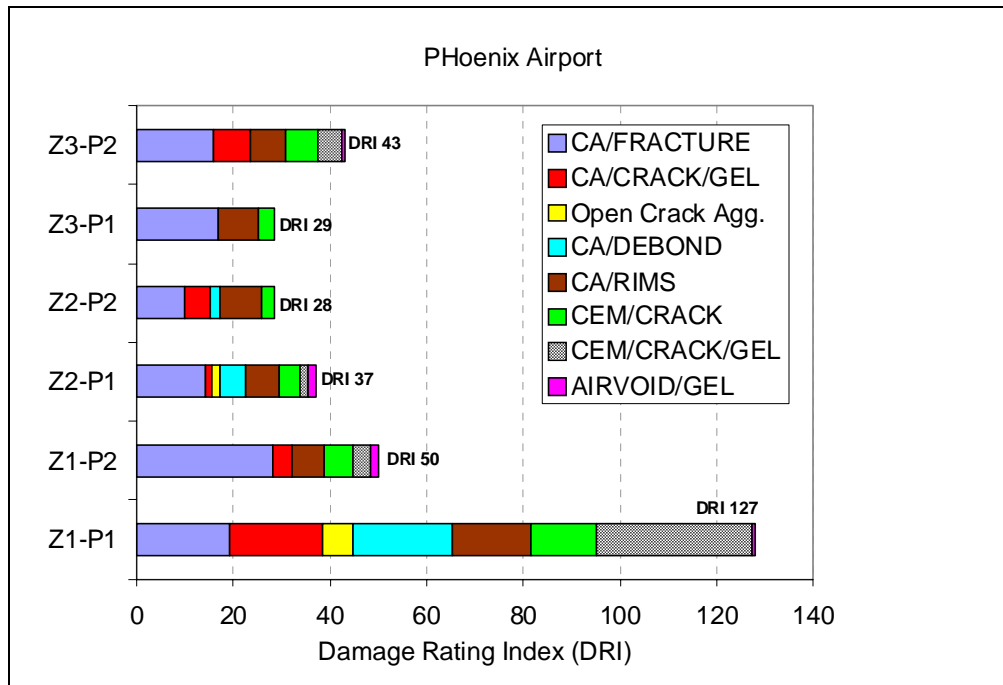


Fig.2: Chart showing the damage rating indices (DRI's) of the cores.

Coarse Aggregates

The coarse aggregate in the cores is gravel consisting dominantly of sub-rounded particles of basalt, chert, chalcedony, silicified tuff and sandstone, Figure 3. The chert and chalcedony are potentially alkali-silica reactive as is the sandstone. Sandstones such as this with quartz overgrowths around the original sand grains are typically reactive.

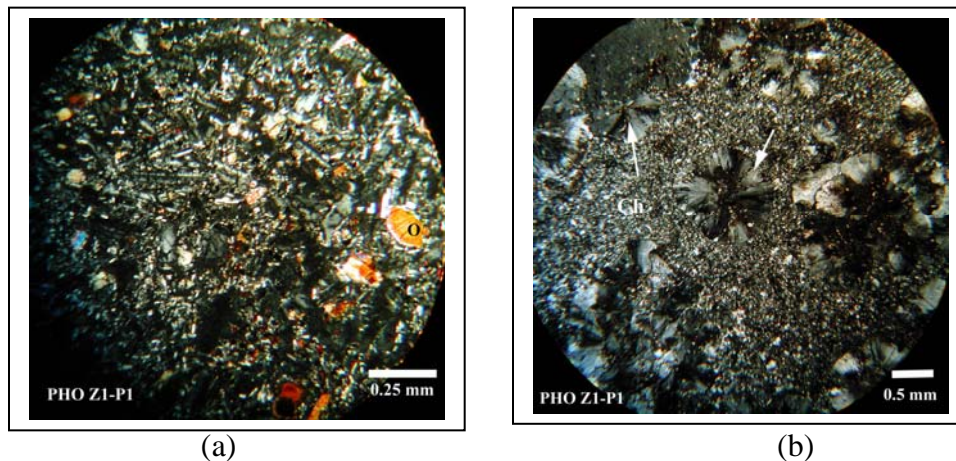


Fig 3: Photographs of thin sections viewed between crossed polarizers.
 a). Basalt consisting of feldspar laths with large crystals of olivine (O).
 b). Chert and chalcedony indicated by arrows.

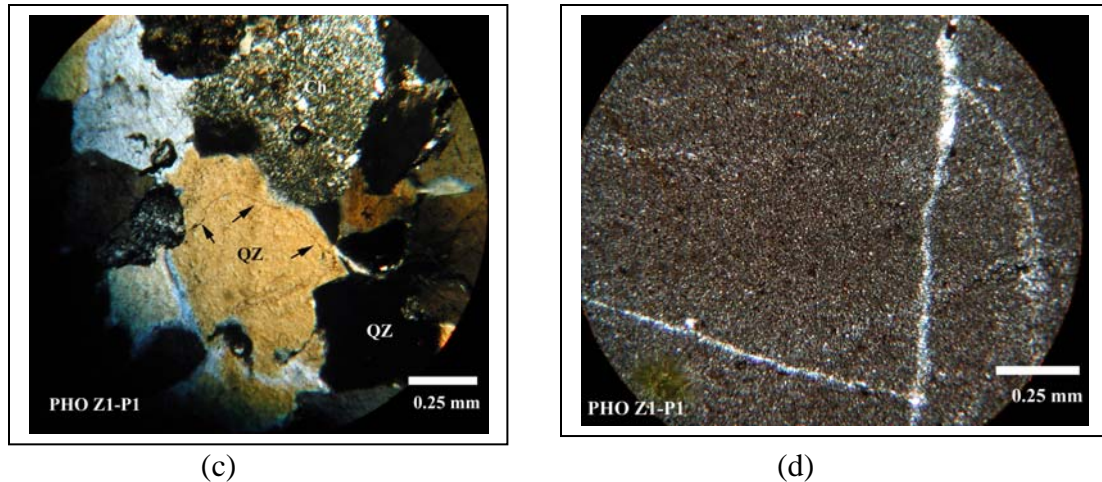


Fig. 3 continued:

c). Sandstone consisting of quartz grains QZ with overgrowths. The boundary between the original grain and the overgrowth is marked by inclusions indicated by arrows.

d). Photograph of thin section viewed between crossed polarizers showing the fine texture of silicified tuff.

Fine Aggregate

The fine aggregate, in the cores is angular to sub-angular with a size range of 15 μm to 4 mm. It is composed of grains of quartz, feldspar, chert and assorted rock fragments, Figure 4.

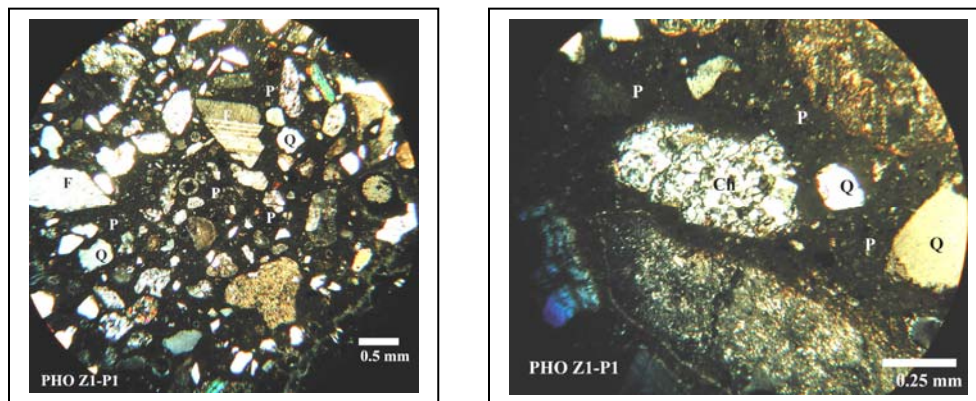


Fig.4: Thin sections viewed between crossed polarizers.

a).General view of the fine aggregate in the dark cement paste matrix.

b). Chert particle (CH) in the fine aggregate.

Feldspar (F), quartz (Q), cement paste (P)

Cement Paste

The cement paste is dense. There is only a small amount of carbonation, Figure 5a. The air content of the concrete is estimated, visually, at 3 to 4%. The air voids are mostly empty, but are occasionally lined with ettringite ($6 \text{ CaO} \cdot \text{Al}_2\text{O}_3 \cdot 3\text{SO}_3 \cdot 32 \text{ H}_2\text{O}$), Figure 5b.

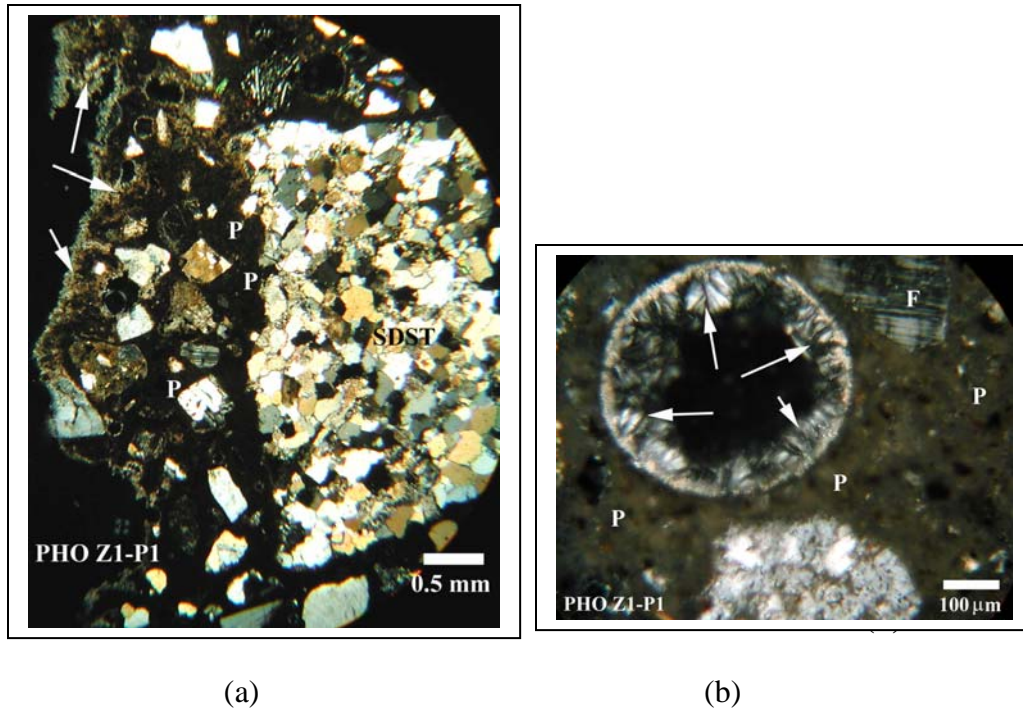
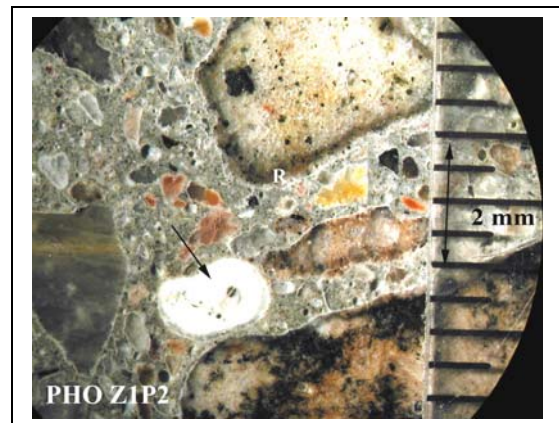


Fig. 5: Thin sections viewed between crossed polarizers.
 a). Sandstone particle (SDST) near edge of core showing dark, uncarbonated cement paste adjacent to the sandstone and yellowish carbonated paste close to the surface.
 b). Ettringite needles, indicated by arrows lining an air void in the cement paste (P)

Features Indicative of Alkali-Silica Reaction

Reaction rims were observed around some aggregate particles, and very occasional air voids were filled with gel, Figure 6a. A minor amount of gel was observed filling cracks in coarse aggregate particles, Figure 6b. Some cracks, without gel were observed in the cement paste Figure 6c

Figure 6a: Polished section of core showing an air void filled with gel, indicated by an arrow and a reaction rim (R) around a particle of coarse aggregate.



6b: Polished surface impregnated with uranyl acetate viewed in ultra violet light showing fluorescence of gel filling a crack in the cement paste and in an aggregate particle. Note the dark reaction rim around a coarse aggregate particle.

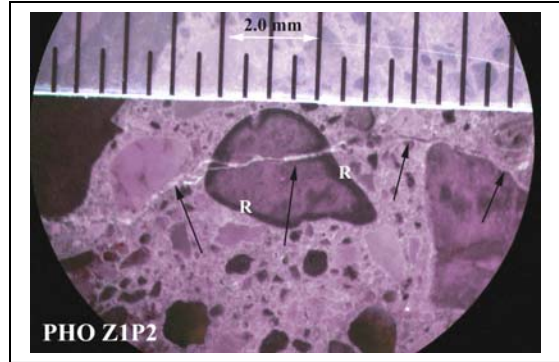
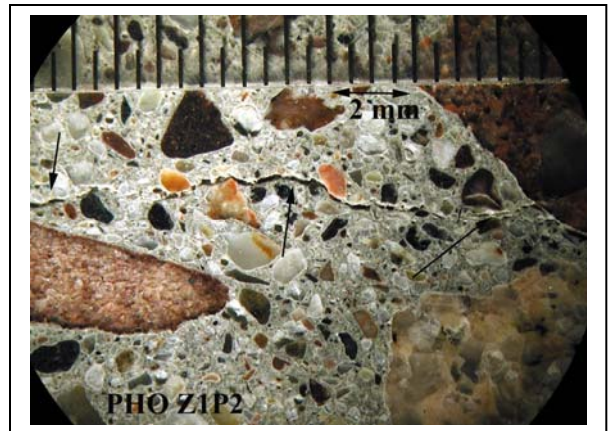


Fig. 6c: A crack in the cement paste, indicated by arrows



DISCUSSION

In the conclusions of this report, it is assumed that the cores that were examined are representative of the concrete in the pavement. The particles of chert, chalcedony and sandstone with quartz overgrowths are all potentially alkali-silica reactive (ASR). Evidence of ASR in the form of gel filling cracks in the coarse aggregates and in the cement paste and occasional air voids is common confirming that ASR had occurred in the concrete. Core Z1-P1 with a DRI of 127 shows evidence of significant deterioration due to ASR. The mean DRI of the remaining cores of 37 is indicative of only marginal ASR. Only core Z3-P1 shows no evidence of ASR.

An estimate of the amount of expansion that has occurred in the concrete can be obtained from equation 1 that was derived from measurements of laboratory concretes affected by ASR.

$$\text{Expansion \%} = 1.45 \times 10^{-3} \cdot \text{DRI} \quad \text{Eqn. 1.}$$

The estimated expansion of core Z1-P1 with a DRI of 127 is 0.18%, that of core Z1-P2 with a DRI of 50 is 0.07% and that of core Z2-P2 with a DRI of 28 is 0.04%. Cracking of concrete usually occurs when expansion exceeds ~0.04%. It is expected that all the concrete represented by these cores would exhibit some degree of cracking. It is not

evident why the upper portion of core Z1-P1 should show significantly more deterioration than the lower portion, (core Z1-P2). Possibly the alkali content of the concrete used in the upper portion was higher or the surface may have been contaminated so as to raise the pH of the pore solution. The mean DRI of the cores from Zones 2 & 3 is 34 ± 7 . The estimated equivalent expansion is 0.05% which indicates that there would be cracking in the concrete.

Forecast for the Future

In large dams, for which there is most documentation, expansion has been found to continue more or less indefinitely (50 years+). It is therefore probable that expansion and cracking of the pavements will continue, at least for the next 25 years, provided the alkali content of the concrete remains high enough to sustain the reaction. The Canadian Standards guidance for the avoidance of ASR, A23.1 Appendix B5.2.3 states that "In general, it has been found that when alkali-silica reactive aggregates are used in concrete containing less than 3.0 kg/m^3 of total alkali expressed as Na_2O equivalent, deleterious expansion will not take place." It is strongly recommended that the alkali contents of a number of cores be determined, particularly Z1-P1 and Z1-P2 in order to improve the forecasting of the future durability and serviceability of the concrete pavements.

CONCLUSIONS

- The aggregate in the concrete cores from zone 1 is potentially reactive.
- The aggregates from the cores from zones 2 & 3 are marginally reactive.
- The mean damage rating index (DRI), of cores from zones 2 & 3 is 43 with an estimated expansion of ~0.06% indicates that the concrete should have cracked.
- The DRI of 127 from the upper portion of the core from zone 1 indicates that the concrete should exhibit significant deterioration. The estimated expansion is 0.18%
- In most of the cores there is evidence of alkali-silica reaction (ASR) in the form of reaction rims around some aggregate particles and of gel filling cracks in the coarse aggregates and in the cement paste and in occasional air voids.
- The air content of the concrete is estimated to be 3 to 4%
- Expansion and cracking of the concrete represented by these cores will likely continue for the foreseeable future.

RECOMMENDATIONS

It is strongly recommended that the alkali content of some of the cores from Areas be measured to determine if it is still high enough ($>3 \text{ kg/m}^3$) to sustain the reaction and to determine if there is a difference in the alkali contents of cores Z1-P1 and Z1-P2.

REFERENCES

1. ASTM C 856-88, Standard Practice for Petrographic Examination of Hardened Concrete. 1988 ASTM Annual Book of ASTM Standards, Section 4, Construction, Vol. 4.02 Concrete and Aggregates, pp. 402-414.
2. Grattan-Bellew, P.E., "Laboratory Evaluation of Alkali-Silica Reaction in Concrete from Saunders Generating Station," ACI Materials Journal 92, March-April 1995.
3. Rivard, P., Fournier, B, Ballivy, G., 2002 "The Damage Rating Index Method for Affected Concrete-A Critical Review of the Petrographic Features of Deterioration and Evaluation Criteria." Cement Concrete & Aggregates, V 24, No. 2, pp. 81-91.
4. Appendix B, CSA A23.1, clause B5.2.3 Reduced alkali content. CSA A23.1-04/A23.2-04 Concrete Materials and methods of concrete construction/ Methods of test and standard practices for concrete. Canadian Standards Association 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6, p145.

Appendix 4

Petrographic Evaluation Hartsfield-Jackson Atlanta International Airport

EXECUTIVE SUMMARY

Eight cores taken from The Atlanta Airport were received for petrographic evaluation In April 2006. The cores have a diameter of 4 inches (10 cm). The purpose of the investigation was to determine the condition of the concrete in the cores and if deterioration had occurred to determine the cause. Petrographic evaluation was done following ASTM C 295. The extent of deterioration was determined using the Damage Rating Index Method, Grattan-Bellew 1995.

Evidence of alkali-silica reaction was found in most of the cores. The concrete from Area 1 with a mean damage rating index (DRI) of 14 and an estimated expansion of only 0.02%, would not be expected to exhibit significant cracking, as this is usually not observed at expansions of less than ~0.04%. The concrete from Area 2 with a mean DRI of 37 and an estimated expansion of 0.05% would be expected to exhibit some cracking. The difference between the mean damage ratings of the cores from Areas 1 & 2 is probably due to the differences in the ages of the concretes. Concrete from Area 1 was cast in the 1980's, that from Area 2 in the 1970's.

The coarse aggregates in the concrete from Areas 1 and 2 consist of muscovite granite. Some of the quartz crystals in the granite exhibit undulatory extinction that is frequently associated with alkali-silica reaction. Some microcrystalline quartz that is potentially reactive was also observed in some of the granite particles.

The fine aggregates in all the cores are composed mainly of particles of quartz, feldspar and biotite with a minor amount of rock fragments. Some of the quartz grains exhibit high undulatory extinction that is often associated with reactivity. The coarse and fine aggregates in the concrete from Areas 1 & 2 would be rated as marginally reactive.

The cement paste is mostly dense and uncarbonated. The air content of the concrete in the cores from both areas is estimated at 3 to 4%.

Some cracking of the concrete, particularly that from Area 2, would be expected. Expansion and cracking of the concrete may be expected to continue for the foreseeable future provided that the alkali content remains high enough to sustain the reaction. It is recommended that the alkali content of the concrete of some cores be measured. The concrete from Area 1 will with time show the same deterioration that is now observed in that from Area 2.

INTRODUCTION

Eight cores taken from The Atlanta Airport were received for petrographic evaluation on April 19th 2006. The cores have a diameter of 4 inches (10 cm). The labeling of the cores is shown in Table 1.

Table 1: Core location and labeling.

Core Location	Core Label	Length of Core in inches (cm)
Area 1 Zone 1	A1-Z1	15.5 (39.5)
Area 1 Zone 2	A1-Z2	16.5 (42)
Area 1 Zone 3	A1-Z3	15.5 (40)
Area 1 Zone 4	A1-Z4	17 (43)
Area 2 Zone 1	A2-Z1	15.5 (40)
Area 2 Zone 2	A2-Z2	15.5 (40)
Area 2 Zone 3	A2-Z3	16 (40.5)
Area 2 Zone 4	A2-Z4	15.75 (40)

The purpose of the investigation was to determine the condition of the concrete in the cores and if deterioration had occurred to determine the cause. Petrographic evaluation was done following ASTM C 295. The extent of deterioration was determined using the Damage Rating Index Method, Grattan-Bellew 1995.

METHODOLOGY

Determination of the DRI's

The cores were sawn in two axially to provide a flat surface for polishing. After polishing, the surfaces of the cores were coated with uranyl acetate. This is absorbed preferentially by alkali-silica reaction gel, which fluoresces when viewed in ultra violet light. This aids in the identification of alkali silica gel in the concrete. The appearance of the polished cores is shown in Figure 1. The polished cores were examined under a stereo-binocular microscope and the numbers of features, indicative of damage due mainly to alkali-silica reaction (ASR), were measured. Weighting factors shown in Table 2, were applied to the raw data to reflect the significance of the damage features to the overall deterioration of the concrete, Grattan-Bellew 1995², Rivard et al., 2002³. The Damage Rating Index provides a measure of the extent of damage to the concrete due, primarily, to alkali-silica reaction (ASR), but other causes of concrete deterioration, e.g., alkali-carbonate reaction (ACR), frost action, or sulfate attack, expansion of periclase (MgO) in the cement paste, may also contribute to the index.

Petrographic thin sections were prepared from selected pieces of the cores these were used to determine the composition of the coarse and fine aggregates and the condition of the cement paste.

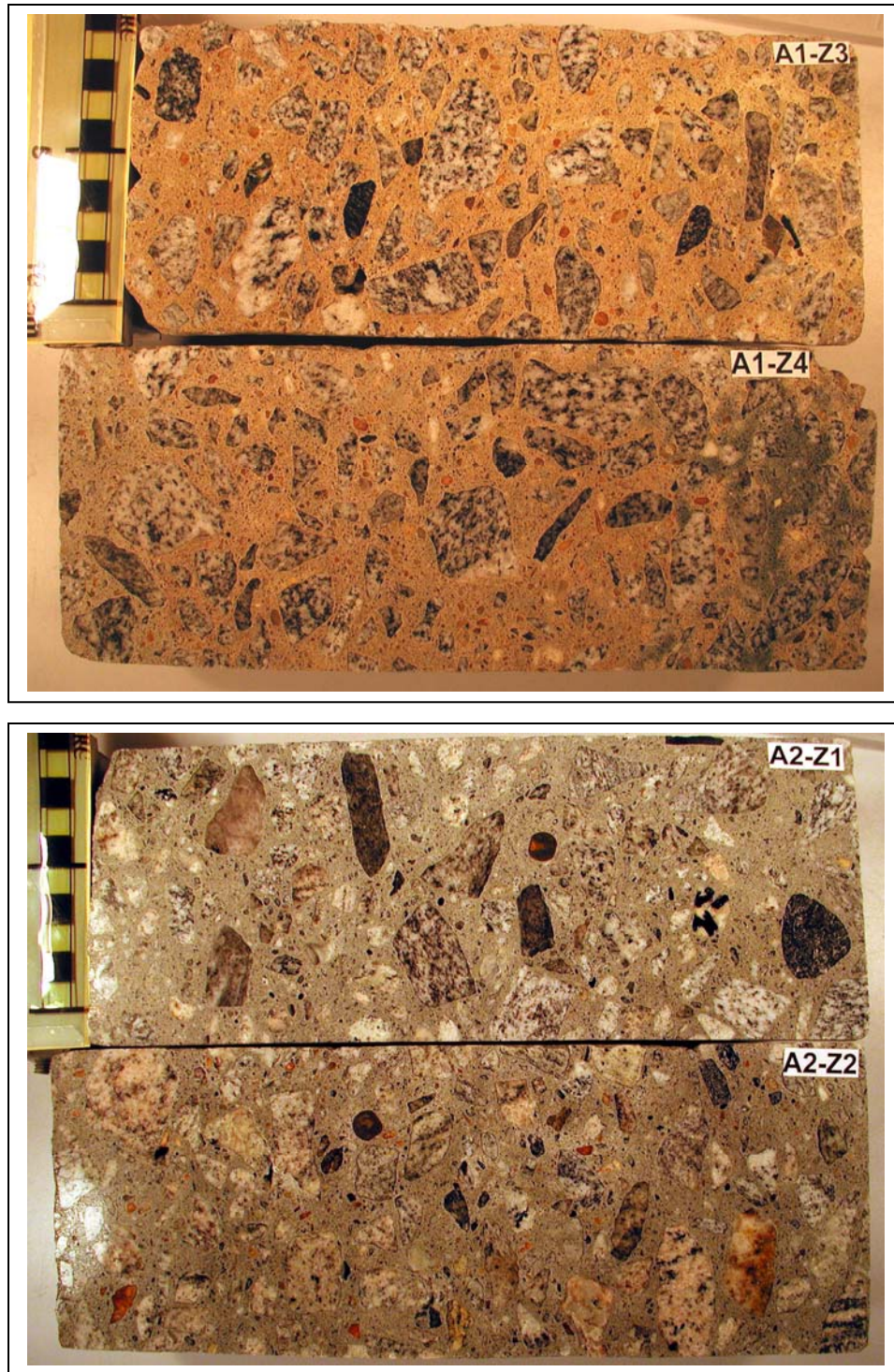


Fig.1: Polished surfaces of cores showing the size, shape and distribution of the coarse aggregates.

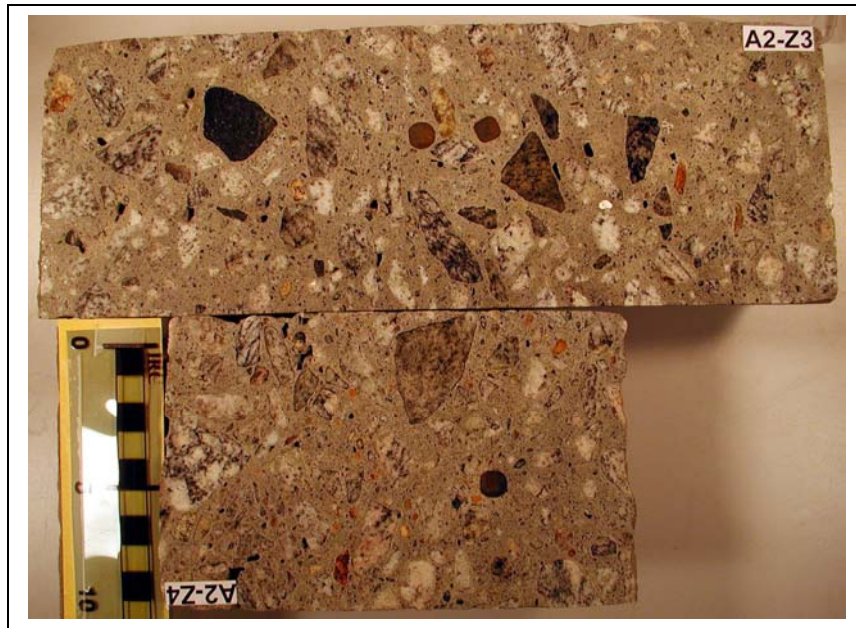


Fig.1 continued: Polished surfaces of cores showing the size, shape and distribution of the coarse aggregates.

RESULTS

Damage Rating Indices (DRI's)

The chart of the DRI's of the cores from Atlanta is shown in Figure 2.

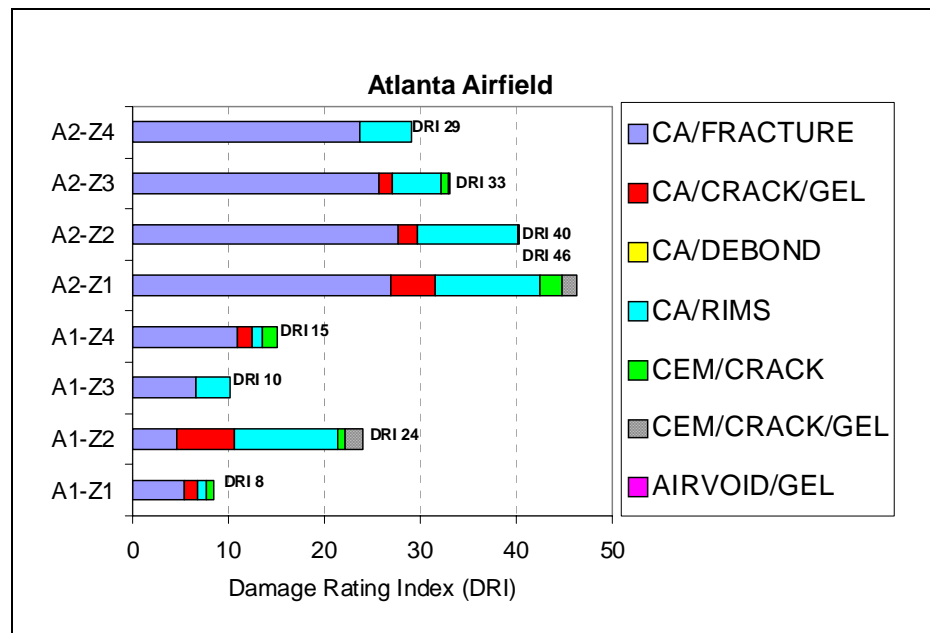


Fig.2: Chart showing DRI's of the cores.

The cores may be divided into two groups based on the mean DRI'S and age of the concrete, the Area 1 cores with a mean DRI of 14 ± 7 that date from the 80's and the Area 2 cores with a mean DRI of 37 ± 8 that date from the 70's. Usually, cores with DRI's of greater than ~ 50 are considered to be indicative of significant deterioration due to alkali-silica reaction (ASR) provided features indicative of ASR, such as gel in cracks are present in the concrete.

Although the mean DRI of the cores from Area 1 is only 14 all the cores with the exception of A1-Z3 have some gel filling cracks in the aggregates and in the case of core A1-Z2 with a DRI of 24, gel filling occasional cracks in the cement paste. Some minor amount of cracking would probably be expected in the concrete from where core A1-Z2 was taken.

The cores from Area 2 with a mean DRI of 37 show significantly more deterioration than those from Area 1. There is significantly more cracking of the coarse aggregates in these cores than in those from Area 1. Gel was observed filling cracks in the aggregates and to a lesser extent in the cement paste of all the cores except A2-Z4. More cracking would be expected in the concrete represented by the cores from Area 2.

Coarse Aggregates

The coarse aggregate in the cores from Areas 1 and 2 consists of 100% biotite granite. The granite is composed of feldspar, quartz and biotite with a minor amount of hornblende, Figure 3a. Such aggregate is usually non-reactive or marginally reactive depending on the amount of micro-crystalline quartz in the rock. Some of the quartz crystals show high undulatory extinction that may be associated with reactivity. A small amount of micro-crystalline quartz was also observed, Figure 3b.

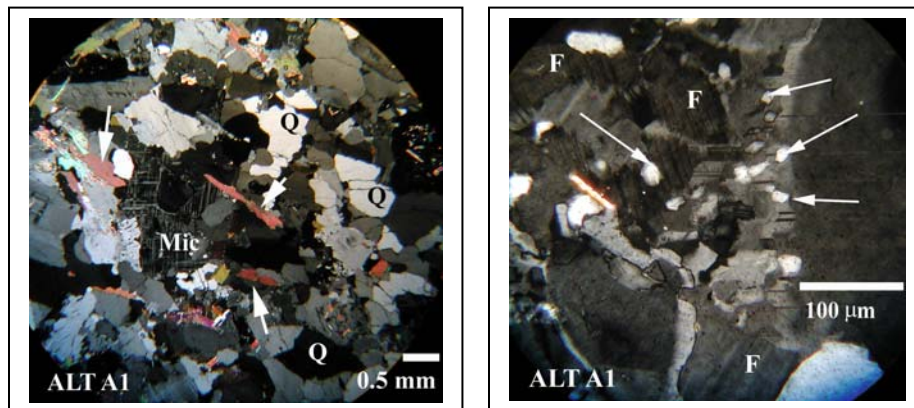


Fig. 3: Thin sections viewed between crossed polarizers.

a). Biotite granite.

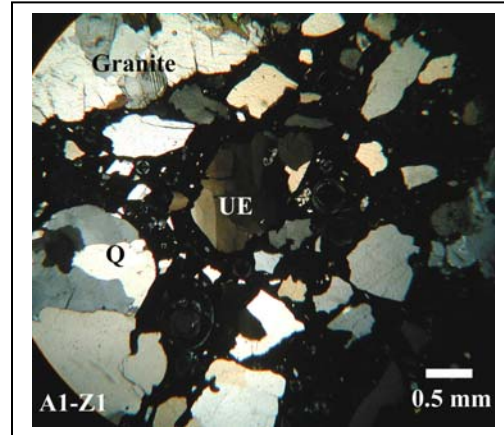
b). micro-crystalline quartz in the granite.

Quartz (Q), Feldspar (F), Microcline feldspar (Mic); white arrows in (a) point to biotite crystals, in (b) to grains of micro-crystalline quartz.

Fine Aggregate

The fine aggregate, in the cores from areas 1 & 2, is angular to sub-angular and has a maximum size of ~ 4 mm (0.16 inches) and a minimum size of ~ 0.25 mm (0.01 inches). It is composed mainly of particles of quartz, feldspar and biotite with a minor amount of rock fragments. Some of the quartz grains exhibit high undulatory extinction that is often associated with reactivity, Figure 4a.

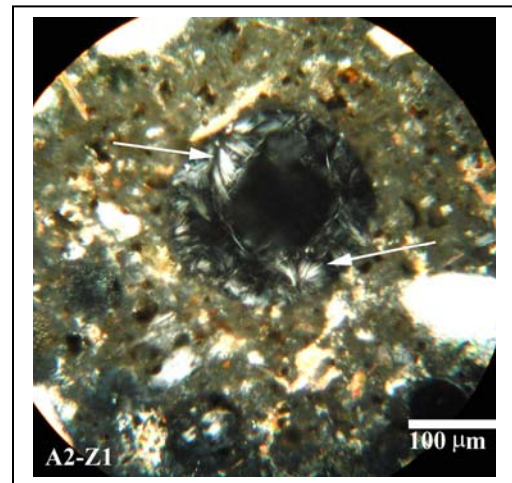
Fig 4a: Thin section of fine aggregate viewed between crossed polarizers showing particles of quartz (Q) and granite in a matrix of dark cement paste. One quartz grain in the center of the micrograph shows high undulatory extinction (UE).



Cement Paste

The cement paste is dense, and for the most part, uncarbonated. The air content is estimated to be in the range of 3 to 4%. The air voids are mostly empty, but are occasionally lined with ettringite ($6 \text{ CaO} \cdot \text{Al}_2\text{O}_3 \cdot 3\text{SO}_3 \cdot 32 \text{ H}_2\text{O}$), Figure 4b.

Fig. 4b: Ettringite fibers, indicated by white arrows lining a large air void in the cement paste.



Features Indicative of Alkali-Silica Reaction

Reaction rims were observed around some granite particles, Figure 4c, and a minor amount of gel was observed filling cracks in coarse aggregate particles, Figure 4d.

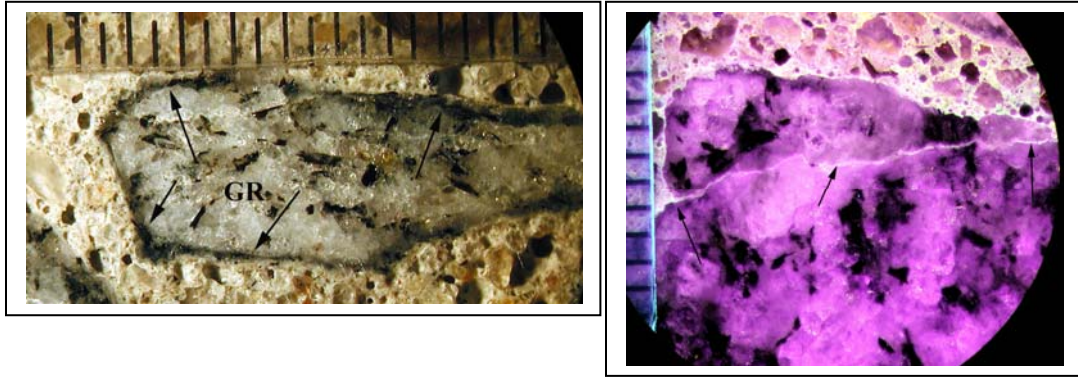


Fig 4c: Photograph of polished surface of core showing a dark reaction rim, indicated by arrows, around a granite particle (GR). Scale divisions in 0.5 mm.

Fig 4d: Photograph of polished surface of core viewed in ultra violet light showing gel, indicated by arrows, filling a crack in granite coarse aggregate. Scale divisions in 0.5 mm.

DISCUSSION

The conclusions from this investigation assume that the cores are representative of the concrete in the pavement. Granitic coarse aggregate is usually non-reactive. However, in some instances the presence of a small amount of micro-crystalline quartz (a potentially reactive mineral) at the grain boundaries of the quartz and feldspar crystals can result in some degree of reactivity. In addition the observation of quartz grains with high undulatory extinction angles often appears to be associated with reactivity. Quartz grains with high undulatory extinction were observed in both the coarse and fine aggregates. This coupled with the presence of a small amount of micro-crystalline quartz at the grain boundaries of the coarse aggregate indicates that the aggregates would be marginally reactive. This is confirmed by the damage rating indices, particularly of cores from area 2 with a mean DRI of 37. Usually, DRI's of over ~50 are considered to be indicative of significant deterioration due to alkali-silica reaction (ASR). Core A2-Z1 has a DRI of 46 and shows evidence of ASR in the form of cracks in the aggregates and in the cement paste filled with gel.

Since the coarse and fine aggregates from areas 1 & 2 are essentially identical, the differences between the DRI's of cores from area 1 with a mean DRI of 14 and those from area 2 with a mean DRI of 37 are probably due to the ages of the concretes. Cores from area 1 were cast in the 1980's while those from area 2 were cast in the 1970's. Possibly there may also have been differences in the alkali content of the concrete from the 1970's and from the 1980's due to differences in the alkali content of the cements used. An estimate of the amount of expansion that has occurred to date may be obtained from equation 1 that was derived from measurements of laboratory concrete prisms.

$$\text{Expansion \%} = 1.45 \times 10^{-3} \cdot \text{DRI} \quad \text{Eqn. 1.}$$

Taking the ~ 20 year-old core A1-Z2 with a DRI of 24 the estimated total expansion is 0.0348% which translates to $1.74 \times 10^{-3}\%$ /year. The estimated expansion of a 30 year-old core would be 0.0522% that corresponds to a DRI of 36. (Equation 1). This is less than the mean DRI of 37 obtained for the area 2 cores cast in the 1980's. The differences may be due to differences in the alkali content of



the concretes. The estimated expansion of core A2-Z1 with a DRI of 46 is 0.067%. Cracking is usually observed in concrete when expansion exceeds ~0.04%. No cracks were visible at the surface

Fig.5: Core A1-Z2 showing a crack crossing the grooved surface, indicated by arrows and extending about 2 inches (50 mm) into the concrete.

of the cores from area 2. However, a crack extending about 2 inches into the concrete was observed in core A1-Z2, Figure 5. The cause of this crack is unknown.

Forecast for the Future

In large dams, for which there is most documentation, expansion has been found to continue more or less indefinitely (50 years+). It is therefore probable that expansion and cracking of the pavements will continue, at least for the next 25 years, provided the alkali content of the concrete remains high enough to sustain the reaction. The Canadian Standards guidance for the avoidance of ASR, A23.1 Appendix B5.2.3 states that "In general, it has been found that when alkali-silica reactive aggregates are use in concrete containing less than 3.0 kg/m^3 of total alkali expressed as Na_2O equivalent, deleterious expansion will not take place." It is strongly recommended that the alkali contents of the cores from areas 1 & 2 be determined in order to improve the forecasting of the future durability and serviceability of the concrete pavements.

CONCLUSIONS

- The aggregates in the concrete cores from areas 1 & 2 are marginally potentially reactive.
- The mean damage rating index (DRI), of cores from area 2, of 37 with an estimated expansion of ~0.05% indicates that the concrete should have cracked.
- In the cores from area 2 there is evidence of alkali-silica reaction (ASR) in the form of reaction rims around some granite particles and of gel filling cracks in the coarse aggregates and in the cement paste.
- The mean damage rating index of the cores from area 1 is only 14, with an estimated expansion of ~0.02%. With such a low expansion a significant amount of cracking due to alkali-silica reaction would not be expected. However, gel was

observed filling some cracks in the coarse aggregate and in the cement paste of core A1-Z2. Some gel filling cracks in the coarse aggregates was also observed in cores A1-Z1 and A1-Z4.

- A crack was observed at the surface of core A1-Z2 extending about 2 inches into the concrete. The cause of this crack is unknown.
- Expansion and cracking of the concrete in areas 1 & 2 will likely continue for the foreseeable future.

RECOMMENDATIONS

It is strongly recommended that the alkali content of cores from Areas 1 & 2 be measured to determine if it is still high enough ($>3 \text{ kg/m}^3$) to sustain the reaction.

REFERENCES

1. ASTM C 856-88, Standard Practice for Petrographic Examination of Hardened Concrete. 1988 ASTM Annual Book of ASTM Standards, Section 4, Construction, Vol. 4.02 Concrete and Aggregates, pp. 402-414.
2. Grattan-Bellew, P.E., "Laboratory Evaluation of Alkali-Silica Reaction in Concrete from Saunders Generating Station," ACI Materials Journal 92, March-April 1995.
3. Rivard, P., Fournier, B, Ballivy, G., 2002 "The Damage Rating Index Method for Affected Concrete-A Critical Review of the Petrographic Features of Deterioration and Evaluation Criteria." Cement Concrete & Aggregates, V 24, No. 2, pp. 81-91.
4. Appendix B, CSA A23.1, clause B5.2.3 Reduced alkali content. CSA A23.1-04/A23.2-04 Concrete Materials and methods of concrete construction/ Methods of test and standard practices for concrete. Canadian Standards Association 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6, p145.

Appendix 5

Lithium and Alkali Profiles
Hartsfield-Jackson Atlanta International Airport
Cheyenne Regional Airport
Phoenix Sky Harbor International Airport



Department of Civil Engineering

University of Toronto TORONTO CANADA M5S 1A4

TEST REPORT ON 3-YEAR LITHIUM PENETRATION INTO TREATED SECTIONS AT ATLANTA, CHEYENNE, AND PHOENIX AIRPORT PAVEMENTS

FOR VECTOR CORROSION TECHNOLOGIES INC.

IPRF Project 01-G-002-03-10

**Professor R. D. Hooton
& Olga Perebatova**

February 18, 2009

Table of Contents

<u>Section</u>	<u>Page</u>
1. Background	3
2. Test Methods	3
3. Results	3
3.1. Atlanta	4
3.2. Cheyenne	8
3.3. Phoenix	10
4. Discussion and Summary	12
5. References	12
Appendix A: Tabular Alkali Profile Data for Atlanta Cores	13
Appendix B: Tabular Alkali Profile Data for Cheyenne Cores	17
Appendix C: Tabular Alkali Profile Data for Phoenix Cores	19

Lithium Profiles on Airport Cores February 2009

1. Background

Concrete cores from three airports - Cheyenne, Wyoming, Phoenix Sky Harbor and Atlanta Hartsfield (ATL) (Area 1 and Area 2) were obtained by Vector in 2008 from sections previously topically treated with lithium solutions in 2005 and 2006. Alkali profiles (Na, K, and Li) were performed on the top surfaces of the cores and results are compared to similar profiles obtained in 2005 during initial coring prior to lithium treatments, as previously reported [1]. Cores had been wrapped in wet cloth and sealed in plastic for shipment to the University of Toronto. One zone (Zone 1 at ATL and Zone 2 elsewhere) received a single application of lithium solution (nominal application rate of 4.5 gal/1000ft²), and the other treated zone (Zone 3) received three applications of lithium solution at 6 month intervals. Dates of coring and of lithium applications are provided in Table 1.

Table 1
Dates of Coring and Lithium Treatments

Dates	Atlanta Runway 9L	Cheyenne Taxiway Bravo	Phoenix Terminal Ramp
Initial Coring	Nov. 11, 2005	July 19, 2005	Sept. 2005
First Treatment	Jan. 21, 2006	Aug. 6, 2005	Sept. 22, 2005
Second Treatment (Zone 3)	Sept. 22, 2006	Apr. 21, 2006	March 10, 2006
Third Treatment (Zone 3)	Dec. 6, 2006	Sept. 22, 2006	Sept. 28, 2006
Final Coring	Oct. 24, 2008	Aug. 28, 2008	Nov. 6, 2008

2. Test Methods

The cores (they ranged in diameter from 93 to 100 mm) were photographed and the top 70 mm was cut off and used to obtain the alkali profiles. Using a procedure similar to that used in ASTM C1556 for chloride profiles, These top slices were then mounted in a vise on a milling machine fitted with a specialty 50 mm diameter diamond tipped cutting head. The bit was rotated at 320 rpm, with the bit feed rate across the core surface set at 90 mm/min, to mill off concrete layers of approximately 1 mm. Concrete powder samples were collected from each layer. Cores from the Atlanta runway had saw cut grooved surfaces to a depth of ~4mm, so all layers obtained above the lower depth of grooves were mixed together to obtain one sample. To cut down on the cost of testing, not all samples were tested, with analyses performed on layers of about 3 mm depth. To obtain a background level, the core slices were inverted and a layer was obtained at 70 mm depth.

After powder samples were obtained, they were digested in nitric acid and heated to improve rate of dissolution. Once the concrete had dissolved, the solutions were vacuum filtered to remove any insoluble solid particulates (from the aggregate). The filtered solutions were then analysed using a flame photometer (calibrated with known standards), with separate determinations made for acid-soluble lithium (Li), sodium (Na), and potassium (K) on each sample.

3. Results

The results for lithium penetration profiles in per cent by mass of concrete are presented graphically for each of the airports. For the purposes of comparison, some of the 2005 results [1] are also reported here in addition to the 2008 test results. In addition, graphs showing profiles of molar ratios of lithium to sodium plus potassium are also presented. This was thought to be useful, as the dose of lithium required to mitigate deleterious expansions due to alkali-silica reaction is typically taken as that required to obtain a $[Li]/([Na]+[K])$ molar ratio of 0.74, when used as an ingredient in new concrete [2]. It has also been suggested that approximately half of that dose will become bound during cement hydration reactions, therefore when used in topical applications on existing ASR-affected concrete, a molar ratio of 0.37 should be sufficient. However, acid soluble values are reported here and it is possible that the aggregates may contain some water insoluble sodium and potassium.

3.1. Atlanta (ATL)

Cores were obtained from the Atlanta Hartsfield (ATL) 9L runway on October 24, 2008. The lithium concentrations in % by mass of concrete are shown in Figures 1 to 4 for each Zone and Area cored. At ATL, two separate areas of the runway were treated, and in each area, Zone 1 received one lithium treatment while Zone 3 received 3 treatments. Raw data are provided in Appendix A. The pavement surfaces had transverse saw cut grooves. The surfaces of the cores were noted to be visibly cracked.

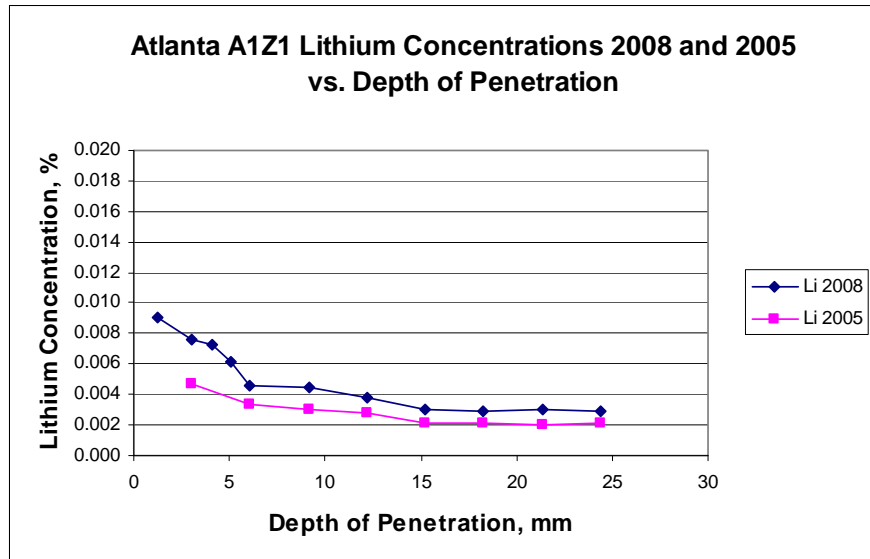


Figure 1. Lithium profiles for Atlanta Area 1, Zone 1 that received one lithium treatment in 2005.

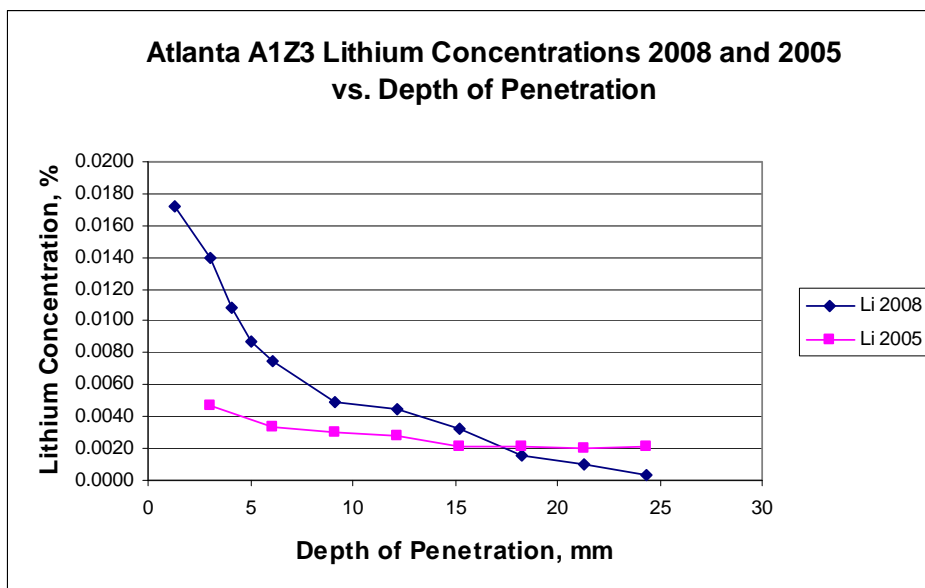


Figure 2. Lithium profiles for Atlanta Area 1, Zone 3 that received three lithium treatments in 2005 and 2006.

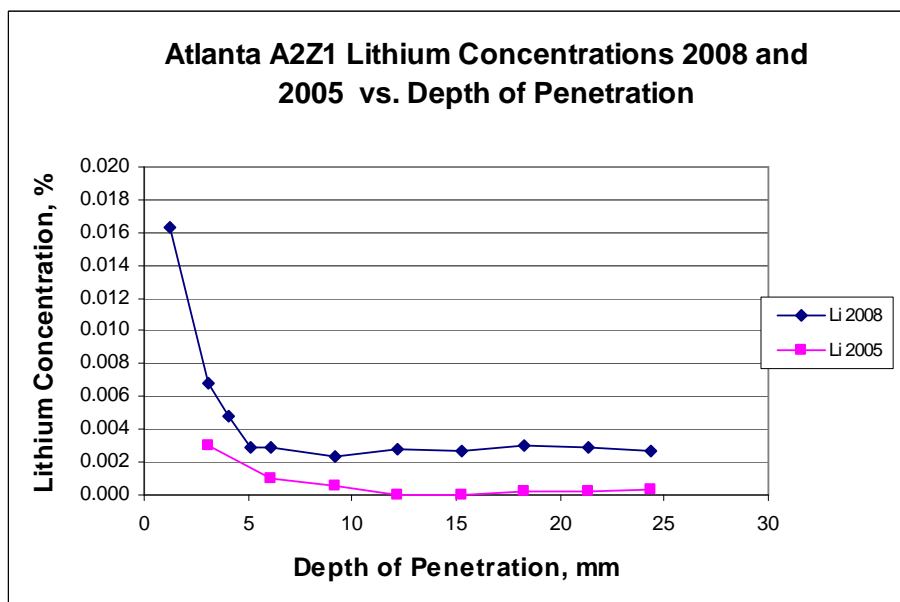


Figure 3. Lithium profiles for Atlanta Area 2, Zone 1 that received one lithium treatment in 2005.

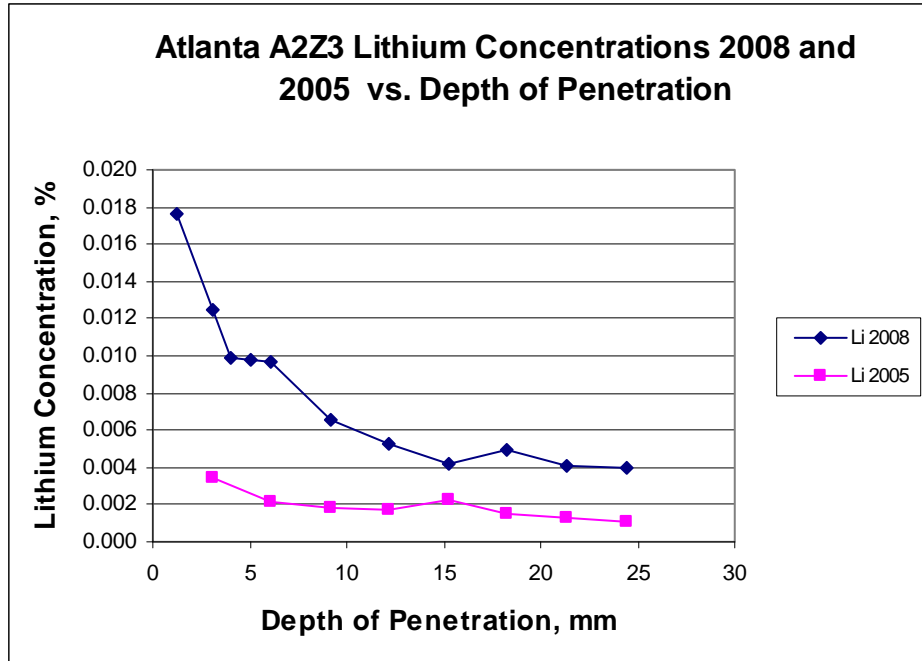


Figure 4. Lithium profiles for Atlanta Area 2, Zone 3 that received three lithium treatments in 2005 and 2006.

From these figures, it is clear that multiple lithium treatments have approximately tripled the depth of penetration (Zones 3: 15-18 mm) over one application (Zone 1: 5-6 mm). To determine whether sufficient lithium has penetrated to mitigate further ASR damage, the molar ratios of lithium to sodium plus potassium are plotted in Figures 5 to 8. Note that the average alkali loading of the cores in Area 1 was 1.92 and 2.26 kg/m³ Na₂Oeq. for Zones 1 and 3 respectively. The average alkali loading of the cores in Area 2 was 2.35 and 3.23 kg/m³ Na₂Oeq. for Zones 1 and 3 respectively, with Zone 3 alkali loading being much higher than other areas (as also found in 2005 core tests)..

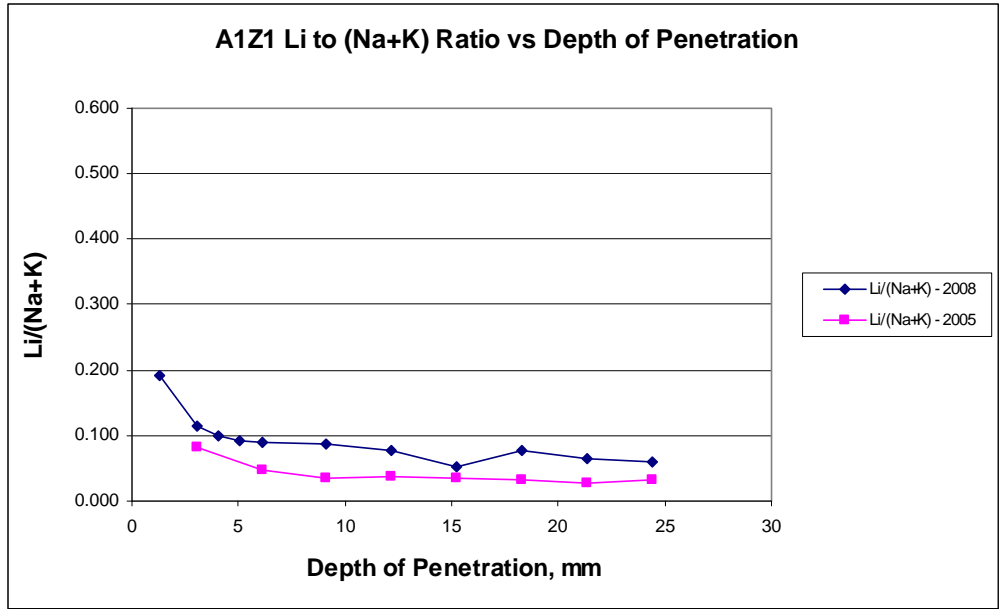


Figure 5. Lithium to sodium plus potassium molar ratio profiles for Atlanta Area 1, Zone 1 that received one lithium treatment in 2005.

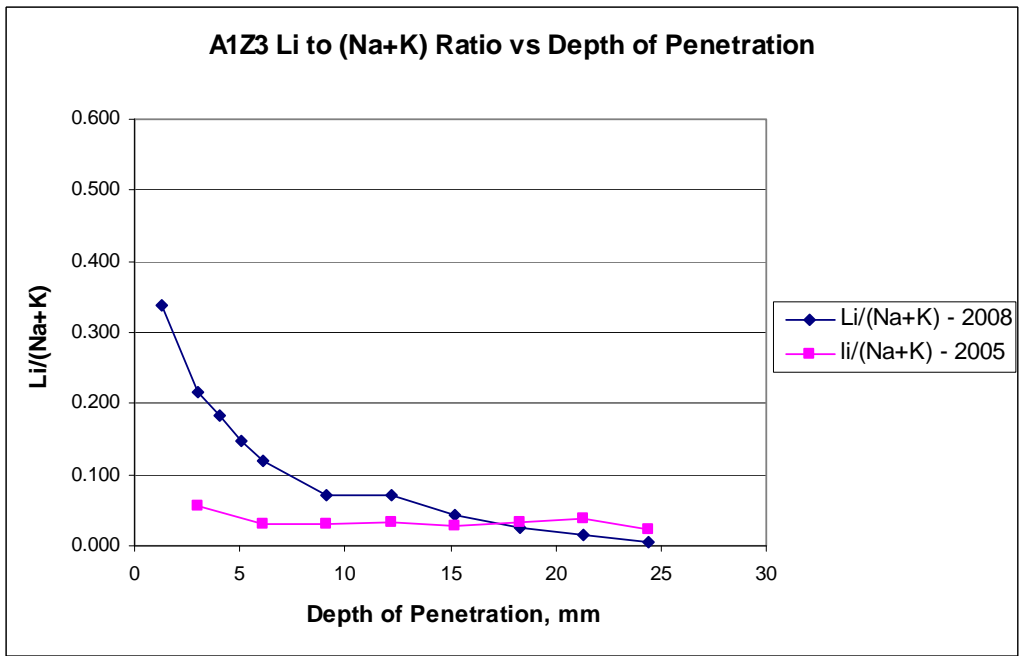


Figure 6. Lithium to sodium plus potassium molar ratio profiles for Atlanta Area 1, Zone 3 that received three lithium treatments in 2005 and 2006.

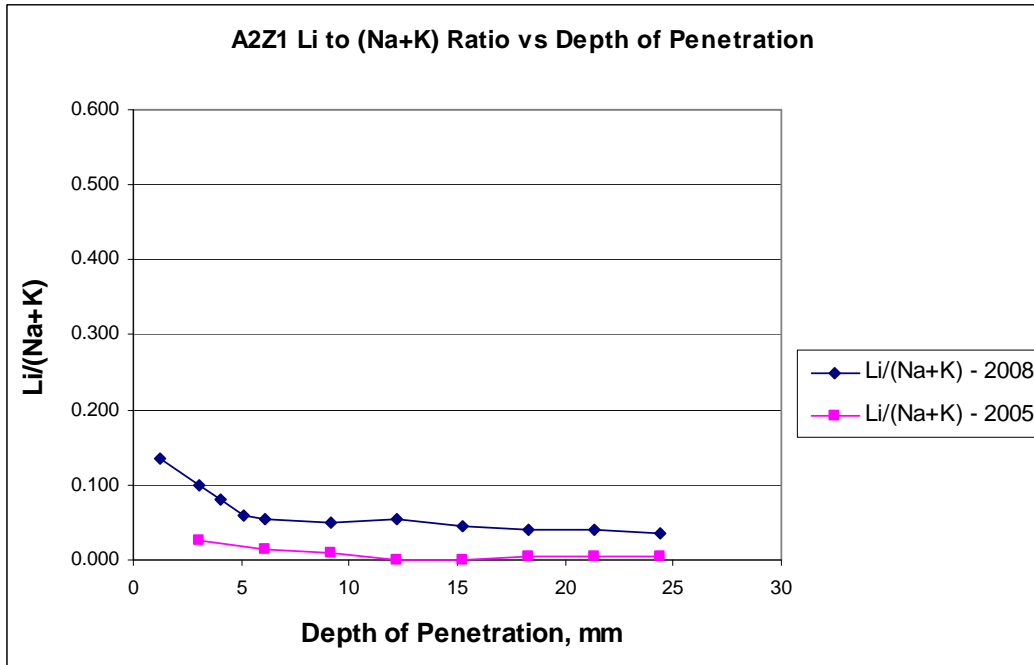


Figure 7. Lithium to sodium plus potassium molar ratio profiles for Atlanta Area 2, Zone 1 that received one lithium treatment in 2005.

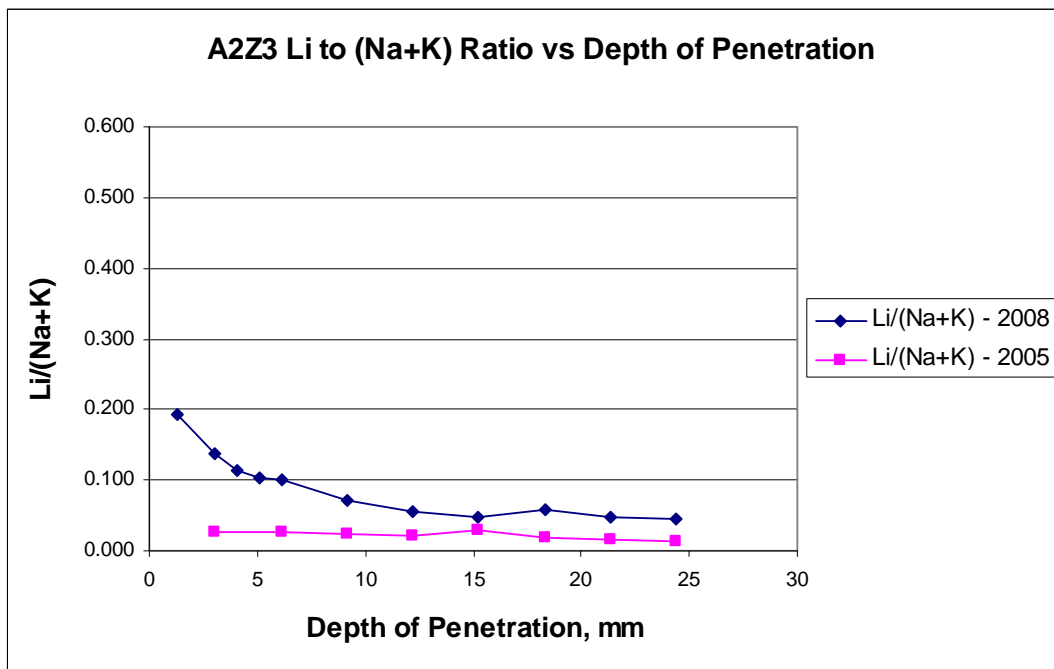


Figure 8. Lithium to sodium plus potassium molar ratio profiles for Atlanta Area 2, Zone 3 that received three lithium treatments in 2005 and 2006.

3.2 Cheyenne

Initial cores prior to lithium treatments were obtained from the Cheyenne, Wyoming taxiway Bravo in July 2005 as previously reported [1]. A second set of cores was taken on August 28, 2008 after 3 years. The lithium concentrations in % by mass of concrete are shown in Figures 9 and 10 for Zone 2 (one lithium application) and Zone 3 (multiple lithium applications) respectively. The core surfaces were noted to be visually cracked. Raw data are provided in Appendix B.

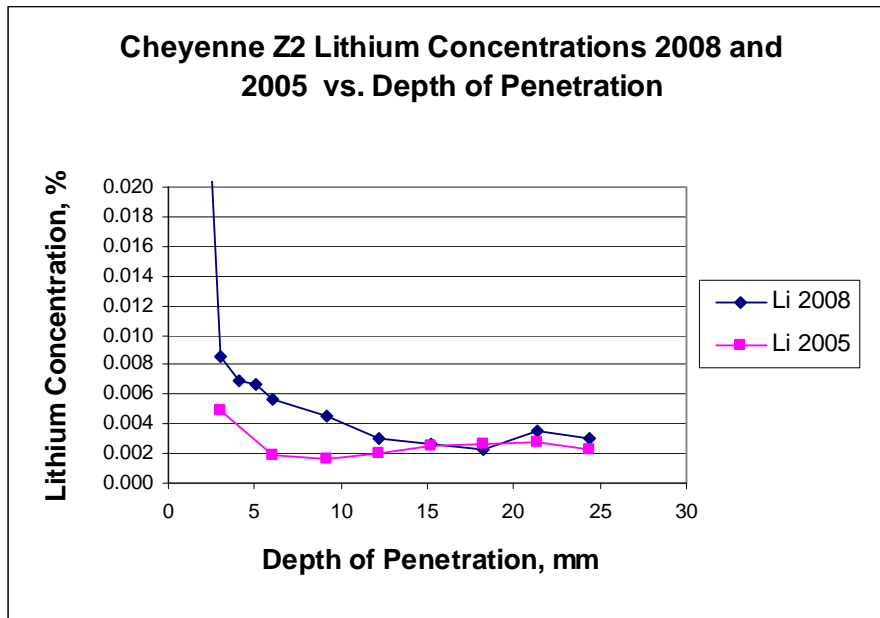


Figure 9. Lithium profiles for Cheyenne, Zone 2 that received one lithium treatment in 2005 (2008 Max value was 0.050% at 1.27 mm)

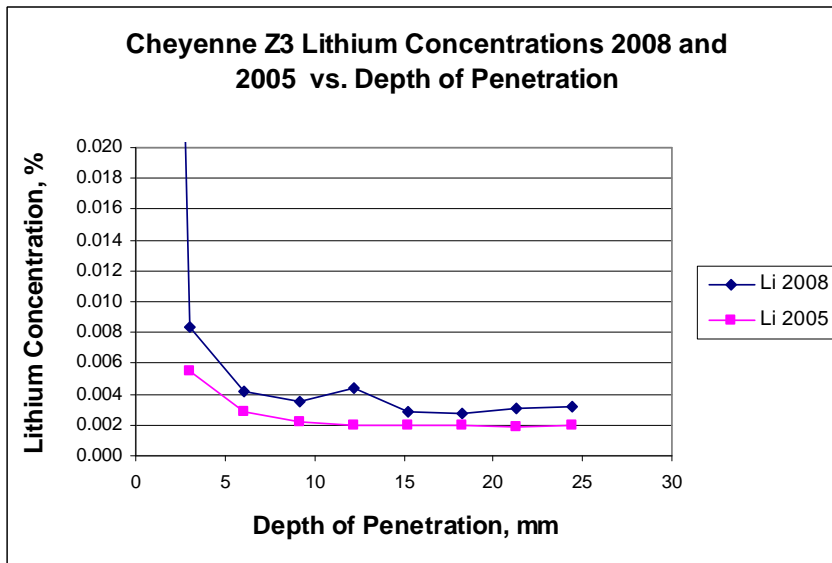


Figure 10. Lithium profiles for Cheyenne, Zone 3 that received multiple lithium treatment in 2005 (2008 Max value was 0.096% at 1.27 mm).

From these figures, multiple lithium treatments did not affect the depth of penetration (Zones 3: 3 mm) over one application (Zone 2: 3 mm). To determine whether sufficient lithium has penetrated to mitigate further ASR damage, the molar ratios of lithium to sodium plus potassium are plotted in Figures 11 to 12. Note that the average alkali loading of the cores was 1.51 and 2.23 kg/m³ Na₂O_{eq}. for Zones 1 and 3 respectively.

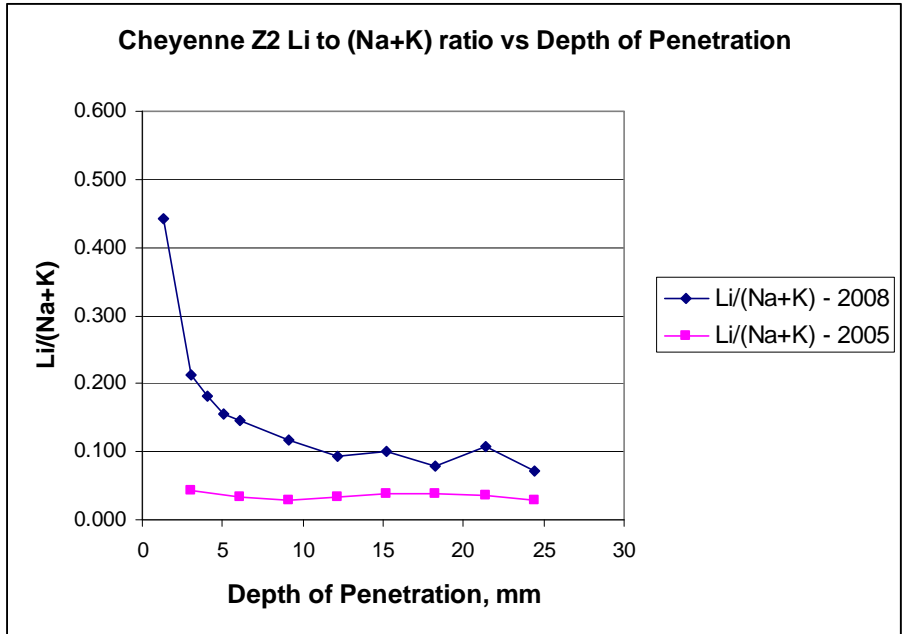


Figure 11. Lithium to sodium plus potassium molar ratio profiles for Cheyenne Zone 2 that received one lithium treatment in 2005.

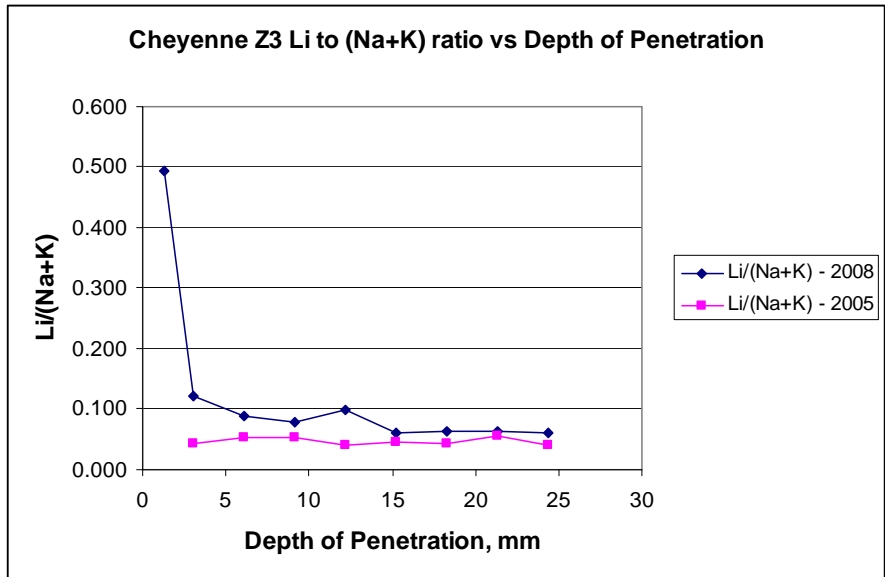


Figure 12. Lithium to sodium plus potassium molar ratio profiles for Cheyenne Zone 3 that received multiple lithium treatments in 2005 and 2006.

3.3 Phoenix

Initial cores prior to lithium treatments were obtained from the terminal ramp at Phoenix Sky Harbor in Sept. 2005. A second set of cores was taken on Nov. 6, 2008. The lithium concentrations in % by mass of concrete are shown in Figures 13 to 14 for Zone 2 (one lithium application) and Zone 3 (multiple lithium applications) respectively. Raw data are provided in Appendix C.

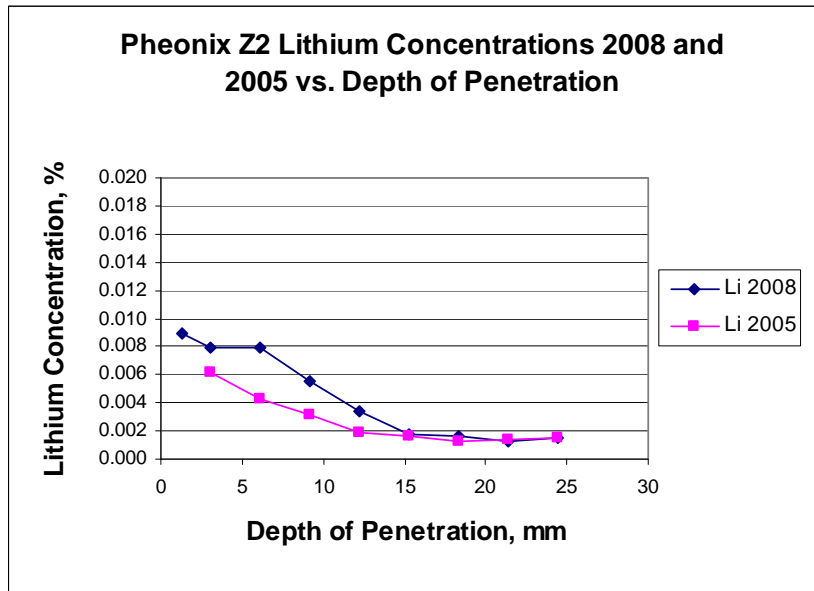


Figure 13. Lithium profiles for Phoenix, Zone 2 that received one lithium treatment in 2005.

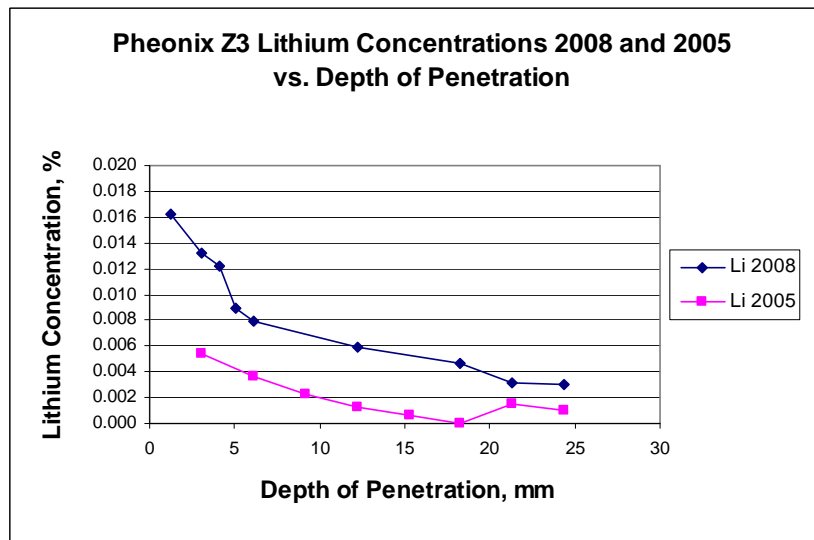


Figure 14. Lithium profiles for Phoenix, Zone 3 that received multiple lithium treatments in 2005 and 2006.

From these figures, it is clear that multiple lithium treatments have increased the depth of penetration (Zone 3: 21 mm) over one application (Zone 2: 14 mm). To determine whether sufficient lithium has penetrated to mitigate further ASR damage, the molar ratios of lithium to sodium plus potassium are plotted in Figures 15 to 16. Note that the average alkali loading of the cores was 3.82 and 2.96 kg/m³ Na₂Oeq. for Zones 1 and 3 respectively.

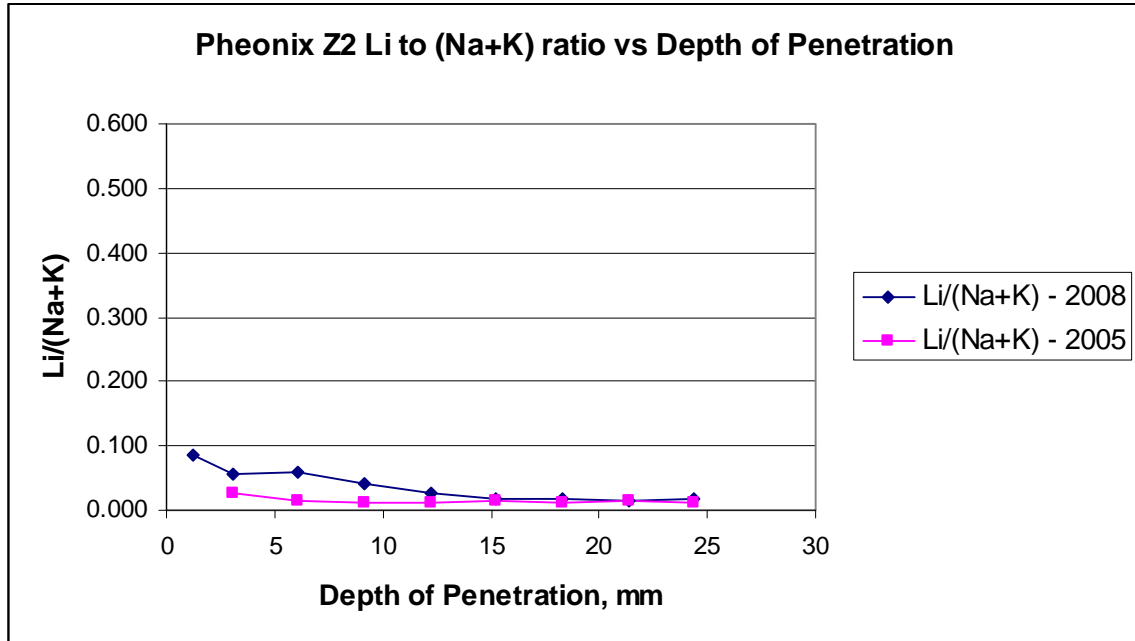


Figure 15. Lithium to sodium plus potassium molar ratio profiles for Phoenix Zone 2 that received one lithium treatments in 2005.

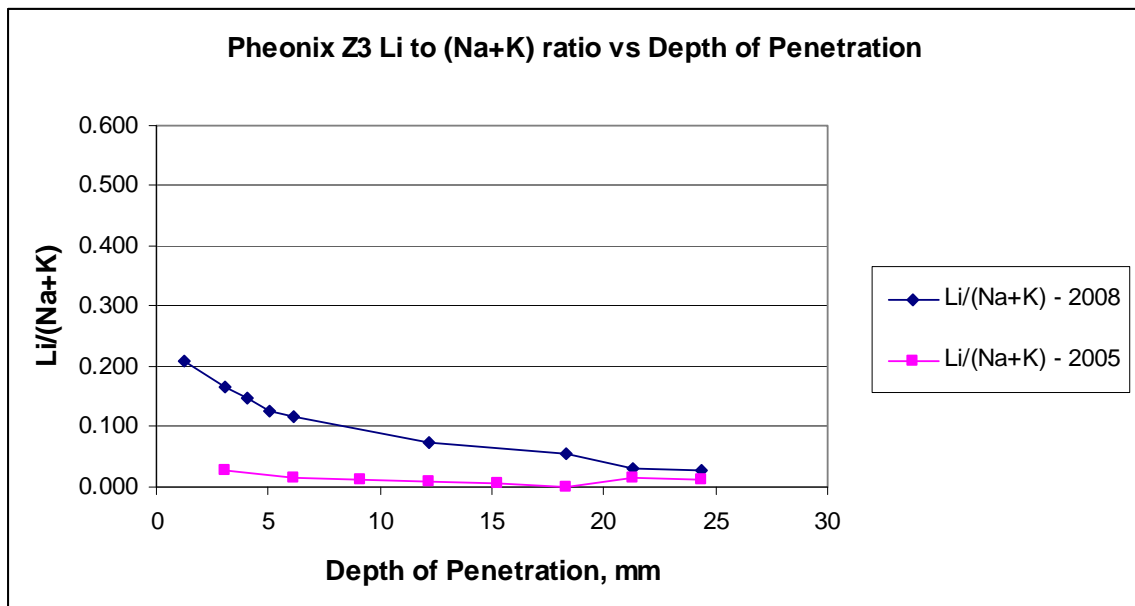


Figure 16. Lithium to sodium plus potassium molar ratio profiles for Phoenix Zone 3 that received three lithium treatments in 2005 and 2006.

4. Discussion and Summary

For the Atlanta and Phoenix concretes, three applications of lithium nitrate solution increased the concentration and depth of lithium penetration after 3 years exposure. However at Cheyenne, lithium only penetrated about 3 mm with either one or three applications.

As another means of comparison, the depths of penetration to an arbitrary chosen 100 ppm lithium concentration were:

Atlanta, Area 1 was 3 mm for one application and 6 mm for 3 applications.

Atlanta, Area 2 was 3 mm for one application and 7.5 mm for 3 applications.

Cheyenne was 3 mm for one application and 3 mm for 3 applications.

Phoenix was 6 mm for one application and 6 mm for 3 applications.

It is clear that the lithium to sodium plus potassium molar ratios do not reach values of 0.37 at any depth (but keeping in mind that acid-soluble and not water-soluble alkali values were measured) and use of this value as a criteria for mitigating ASR does not appear to be appropriate. However, determining a more appropriate value is beyond the scope of this study.

5. References

1. Hooton, R.D., Perebatova, O., and Nytko, U., "Test Report On Cheyenne, Phoenix, and Atlanta Airport Concrete Cores," University of Toronto Dept. of Civil Engineering Report, Jan. 2007.
2. Folliard, K., Thomas, M.D.A., Fournier, B., Kurtis, K.E., and Ideker, J., "Interim Recommendations for the Use of Lithium to Mitigate or Prevent Alkali-Silica Reaction (ASR)", FHWA Report FHWA-HRT-06-073, July 2006, 94 pp.

Appendix A

Atlanta: Total Alkali Profile Tests (2008 Cores)

Atlanta Area 1 Zone 1, 2008														
Acid Soluble Alkalis														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
(mm)	(1000th in	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	100.2842	2.0054	204.16	0.40	0.90	0.25	0.000021	0.000047	0.000013	0.0477	0.1818	0.0091	0.24
3.048	120	112.9262	2.0345	200.75	0.80	1.40	0.25	0.000035	0.000060	0.000011	0.0794	0.2357	0.0076	0.32
4.064	160	106.1788	2.0444	202.15	0.80	1.40	0.22	0.000038	0.000066	0.000010	0.0864	0.2563	0.0072	0.35
5.080	200	95.8821	2.0012	179.22	0.80	1.50	0.21	0.000033	0.000062	0.000009	0.0766	0.2436	0.0061	0.33
6.096	240	120.1423	2.0442	198.15	0.60	1.30	0.17	0.000023	0.000050	0.000006	0.0527	0.1935	0.0045	0.25
9.144	360	111.5577	2.0043	179.52	0.70	1.50	0.19	0.000024	0.000051	0.000006	0.0546	0.1984	0.0045	0.26
12.192	480	108.9938	2.0210	187.76	0.60	1.20	0.14	0.000023	0.000047	0.000005	0.0538	0.1824	0.0038	0.24
15.240	600	109.1464	2.0166	189.59	0.60	1.50	0.11	0.000024	0.000060	0.000004	0.0550	0.2334	0.0031	0.29
18.288	720	116.6618	2.0177	199.72	0.40	0.90	0.10	0.000016	0.000037	0.000004	0.0379	0.1445	0.0029	0.19
21.336	840	103.6472	2.0311	181.88	0.50	1.20	0.11	0.000019	0.000046	0.000004	0.0443	0.1803	0.0030	0.23
24.384	960	106.9857	2.0132	189.84	0.50	1.20	0.10	0.000021	0.000049	0.000004	0.0473	0.1926	0.0029	0.24
Background		107.6767	2.0136	205.03	0.60	1.50	0.03	0.000029	0.000073	0.000001	0.0667	0.2828	0.0010	0.35

Atlanta Area 1 Zone 3, 2008														
Acid Soluble Alkalis														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
(mm)	(1000th in)	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	103.2275	2.0066	194.30	0.40	1.20	0.54	0.000018	0.000054	0.000025	0.0418	0.2124	0.0172	0.27
3.048	120	103.6374	2.0279	202.03	0.50	1.40	0.41	0.000024	0.000068	0.000020	0.0558	0.2649	0.0139	0.33
4.064	160	106.6513	2.0090	201.26	0.50	1.30	0.33	0.000024	0.000061	0.000016	0.0542	0.2388	0.0109	0.30
5.080	200	104.5003	2.0338	195.37	0.50	1.40	0.28	0.000022	0.000063	0.000013	0.0514	0.2440	0.0088	0.30
6.096	240	104.2336	2.0524	192.09	0.50	1.60	0.25	0.000021	0.000068	0.000011	0.0492	0.2671	0.0075	0.32
9.144	360	103.9943	2.0170	198.66	0.50	1.60	0.15	0.000023	0.000075	0.000007	0.0540	0.2929	0.0049	0.35
12.192	480	106.8047	2.0117	192.33	0.50	1.60	0.15	0.000021	0.000068	0.000006	0.0489	0.2653	0.0045	0.32
15.240	600	105.0771	2.0140	189.45	0.50	2.00	0.11	0.000021	0.000084	0.000005	0.0482	0.3268	0.0032	0.38
18.288	720	107.6551	2.0449	197.44	0.50	1.40	0.05	0.000022	0.000061	0.000002	0.0505	0.2397	0.0015	0.29
21.336	840	104.7727	2.0277	197.80	0.50	1.50	0.03	0.000023	0.000069	0.000001	0.0528	0.2684	0.0010	0.32
24.384	960	101.6481	2.0008	195.35	0.50	1.70	0.01	0.000023	0.000080	0.000000	0.0539	0.3105	0.0003	0.36
Background		103.6457	1.9956	210.51	0.60	2.10	0.04	0.000032	0.000112	0.000002	0.0739	0.4386	0.0015	0.51

Atlanta Area 2 Zone 1, 2008														
Acid Soluble Alkalis														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
(mm)	(1000th)	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	110.6525	2.0123	206.29	1.40	2.20	0.49	0.000067	0.000105	0.000023	0.153	0.4078	0.0163	0.58
3.048	120	109.2618	2.0081	181.98	1.00	1.70	0.27	0.000036	0.000062	0.000010	0.0833	0.2401	0.0068	0.33
4.064	160	106.9863	2.0274	185.09	0.80	1.40	0.18	0.000031	0.000054	0.000007	0.0709	0.2103	0.0049	0.29
5.080	200	108.9928	2.0310	193.98	0.60	1.10	0.10	0.000025	0.000046	0.000004	0.0577	0.1795	0.0029	0.24
6.096	240	106.0499	2.0024	174.52	0.60	1.60	0.12	0.000021	0.000055	0.000004	0.0472	0.2134	0.0029	0.26
9.144	360	101.0937	2.0272	177.72	0.60	1.20	0.09	0.000023	0.000045	0.000003	0.0522	0.1769	0.0024	0.23
12.192	480	106.6821	2.0069	173.77	0.60	1.60	0.12	0.000020	0.000053	0.000004	0.0461	0.2086	0.0028	0.26
15.240	600	112.9260	2.0223	189.99	0.60	1.60	0.10	0.000023	0.000061	0.000004	0.0526	0.2378	0.0027	0.29
18.288	720	108.8518	2.0253	180.87	1.00	1.90	0.12	0.000036	0.000068	0.000004	0.0818	0.2635	0.0030	0.35
21.336	840	100.2865	2.0493	171.76	0.80	2.20	0.12	0.000028	0.000077	0.000004	0.0642	0.2992	0.0029	0.37
24.384	960	111.5601	2.0222	190.38	0.80	2.00	0.10	0.000031	0.000078	0.000004	0.0717	0.3040	0.0027	0.38
Background		104.6367	2.0089	204.27	0.80	1.60	0.04	0.000040	0.000079	0.000002	0.0913	0.3095	0.0014	0.40

Atlanta Area 2 Zone 3, 2008														
Acid Soluble Alkalies														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
(mm)	(1000th in)	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	103.8831	2.0172	175.25	1.00	2.70	0.71	0.000035	0.000096	0.000025	0.0814	0.3725	0.0176	0.47
3.048	120	109.6543	1.9851	191.78	0.80	2.30	0.43	0.000033	0.000095	0.000018	0.0761	0.3711	0.0125	0.46
4.064	160	106.7416	2.0147	198.53	0.80	1.90	0.31	0.000036	0.000087	0.000014	0.0838	0.3376	0.0099	0.43
5.080	200	119.8287	2.0386	199.28	1.00	2.50	0.36	0.000039	0.000097	0.000014	0.0896	0.3800	0.0098	0.48
6.096	240	119.0703	2.0090	198.18	1.00	2.50	0.35	0.000039	0.000098	0.000014	0.0906	0.3839	0.0096	0.48
9.144	360	104.1622	2.0344	190.94	0.80	2.30	0.22	0.000034	0.000098	0.000009	0.0785	0.3826	0.0066	0.47
12.192	480	109.1621	2.0034	198.72	0.80	2.20	0.17	0.000036	0.000098	0.000008	0.0823	0.3836	0.0053	0.47
15.240	600	104.8762	2.0037	197.14	0.80	2.00	0.13	0.000037	0.000092	0.000006	0.0847	0.3592	0.0042	0.45
18.288	720	106.1781	1.9632	198.57	0.80	1.80	0.15	0.000038	0.000085	0.000007	0.0866	0.3304	0.0049	0.42
21.336	840	104.4098	2.0257	188.79	0.80	2.20	0.14	0.000033	0.000092	0.000006	0.0766	0.3574	0.0041	0.44
24.384	960	104.9042	2.0033	185.77	0.90	2.20	0.14	0.000036	0.000089	0.000006	0.0836	0.3463	0.0040	0.43
Background		104.9042	2.0033	185.77	0.90	2.20	0.14	0.000036	0.000089	0.000006	0.0836	0.3463	0.0040	0.43

Appendix B

Cheyenne: Total Alkali Profile Tests (2008 Cores)

Cheyenne Zone 2, 2008														
Acid Soluble Alkalis														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
(mm)	(1000th in)	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	110.3902	2.0488	178.95	2.33	2.50	2.14	0.000078	0.000084	0.000072	0.1793	0.3263	0.0501	0.56
3.048	120	105.3911	2.0071	181.67	0.70	0.80	0.32	0.000027	0.000030	0.000012	0.0612	0.1186	0.0085	0.19
4.064	160	103.9347	2.0344	172.86	0.70	0.90	0.29	0.000024	0.000030	0.000010	0.0545	0.1189	0.0069	0.18
5.080	200	102.8626	2.0028	164.31	0.90	1.10	0.31	0.000028	0.000034	0.000010	0.0635	0.1316	0.0067	0.20
6.096	240	101.2287	2.0264	176.50	0.70	0.80	0.22	0.000026	0.000030	0.000008	0.0598	0.1159	0.0057	0.18
9.144	360	108.8788	2.0488	171.74	0.90	0.90	0.21	0.000028	0.000028	0.000006	0.0635	0.1077	0.0045	0.18
12.192	480	103.7572	2.0304	172.09	0.60	0.80	0.13	0.000020	0.000027	0.000004	0.0464	0.1050	0.0031	0.15
15.240	600	105.4800	2.0340	176.59	0.50	0.60	0.11	0.000017	0.000021	0.000004	0.0402	0.0818	0.0027	0.12
18.288	720	109.2891	2.0492	191.17	0.50	0.50	0.08	0.000020	0.000020	0.000003	0.0460	0.0779	0.0022	0.13
21.336	840	101.9530	2.0278	173.76	0.50	0.80	0.14	0.000018	0.000028	0.000005	0.0407	0.1105	0.0035	0.15
24.384	960	100.1331	2.0347	173.94	0.70	1.00	0.12	0.000025	0.000036	0.000004	0.0584	0.1415	0.0030	0.20
Background		100.6622	2.0154	169.86	0.90	0.90	0.11	0.000031	0.000031	0.000004	0.0711	0.1205	0.0026	0.19

Cheyenne Zone 3, 2008														
Acid Soluble Alkalis														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
(mm)	(1000th in)	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	104.6352	2.0081	180.76	3.33	4.00	3.62	0.000126	0.000152	0.000137	0.2903	0.5914	0.0961	0.98
3.048	120	110.6541	1.9697	191.49	1.20	1.20	0.29	0.000049	0.000049	0.000012	0.1133	0.1921	0.0083	0.31
6.096	240	104.1499	1.9795	178.91	0.90	0.90	0.16	0.000034	0.000034	0.000006	0.0782	0.1326	0.0042	0.21
9.144	360	112.9256	1.9835	185.19	0.90	0.90	0.14	0.000033	0.000033	0.000005	0.0754	0.1279	0.0036	0.21
12.192	480	104.2246	1.9756	176.99	0.90	0.80	0.17	0.000033	0.000029	0.000006	0.0762	0.1149	0.0044	0.20
15.240	600	101.0935	2.0097	175.07	1.00	0.80	0.11	0.000037	0.000029	0.000004	0.0847	0.1148	0.0028	0.20
18.288	720	103.9949	1.9735	181.28	0.80	0.80	0.10	0.000031	0.000031	0.000004	0.0721	0.1222	0.0027	0.20
21.336	840	106.1799	2.0395	179.62	0.90	1.00	0.12	0.000032	0.000036	0.000004	0.0745	0.1404	0.0030	0.22
24.384	960	109.6291	1.9968	186.64	0.80	1.20	0.12	0.000031	0.000046	0.000005	0.0710	0.1805	0.0032	0.25
Background		104.4089	1.9900	178.14	0.90	0.90	0.10	0.000033	0.000033	0.000004	0.0767	0.1300	0.0026	0.21

Appendix C

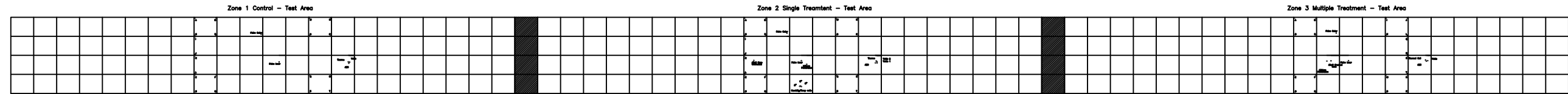
Pheonix: Total Alkali Profile Tests (2008 Cores)

Pheonix Zone 2, 2008														
Acid Soluble Alkalis														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total, %
(mm)	(1000th in)	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	107.1896	2.0243	177.29	2.20	2.17	0.37	0.000076	0.000075	0.000013	0.1752	0.2926	0.0090	0.48
3.048	120	112.8495	2.0171	191.93	2.90	2.40	0.29	0.000114	0.000094	0.000011	0.2615	0.3670	0.0080	0.64
6.096	240	107.9628	2.0404	187.39	2.60	2.20	0.29	0.000101	0.000086	0.000011	0.2328	0.3340	0.0079	0.57
9.144	360	122.6248	1.9955	201.73	2.80	2.10	0.20	0.000111	0.000083	0.000008	0.2553	0.3247	0.0055	0.59
12.192	480	104.6077	2.0010	179.84	2.50	2.20	0.13	0.000094	0.000083	0.000005	0.2162	0.3226	0.0034	0.54
15.240	600	103.6468	1.9812	188.49	1.60	1.70	0.06	0.000069	0.000073	0.000003	0.1576	0.2839	0.0018	0.44
18.288	720	119.8227	1.9866	198.70	1.70	1.80	0.06	0.000067	0.000071	0.000002	0.1552	0.2787	0.0017	0.44
21.336	840	106.9722	2.0153	180.46	1.50	1.60	0.05	0.000055	0.000058	0.000002	0.1258	0.2275	0.0013	0.35
24.384	960	106.3884	1.9719	178.59	1.70	1.60	0.06	0.000062	0.000059	0.000002	0.1432	0.2285	0.0015	0.37
Background		109.5028	2.0012	185.68	1.90	1.90	0.06	0.000072	0.000072	0.000002	0.1663	0.2821	0.0016	0.45

Pheonix Zone 3. 2008														
Acid Soluble Alkalis														
Depth	Depth	Large Beaker	Sample	Filtered	Ion concentration, mmol/L			Ion concentration, mol/g			Ion concentration, %			Total,%
(mm)	(1000th in)	Mass (g)	Mass (g)	Mass (g)	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	Na ⁺	K ⁺	Li ⁺	
1.270	50	112.6597	1.9919	200.79	1.10	1.40	0.52	0.000049	0.000062	0.000023	0.1119	0.2416	0.0162	0.37
3.048	120	115.6051	1.9917	229.41	1.00	1.00	0.33	0.000057	0.000057	0.000019	0.1314	0.2228	0.0132	0.37
4.064	160	106.6537	1.9668	192.79	1.30	1.40	0.40	0.000057	0.000061	0.000018	0.1309	0.2391	0.0123	0.38
5.080	200	103.8709	2.0270	193.67	1.10	1.20	0.29	0.000049	0.000053	0.000013	0.1121	0.2073	0.0090	0.33
6.096	240	110.3559	1.9788	222.11	0.80	0.90	0.20	0.000045	0.000051	0.000011	0.1039	0.1982	0.0079	0.31
9.144	360	121.0841	2.0028	271.37	0.60	0.60	0.06	0.000045	0.000045	0.000005	0.1036	0.1756	0.0032	0.28
12.192	480	103.6301	2.0121	197.77	1.30	1.10	0.18	0.000061	0.000051	0.000008	0.1399	0.2007	0.0059	0.35
15.240	600	105.7097	2.0217	192.64	1.50	1.60	0.32	0.000064	0.000069	0.000014	0.1483	0.2683	0.0096	0.43
18.288	720	111.5547	1.9909	206.71	1.20	1.40	0.14	0.000057	0.000067	0.000007	0.1319	0.2610	0.0047	0.40
21.336	840	108.8082	1.9702	190.69	1.60	1.90	0.11	0.000066	0.000079	0.000005	0.1529	0.3080	0.0032	0.46
24.384	960	111.2574	1.9890	206.67	1.60	1.80	0.09	0.000077	0.000086	0.000004	0.1765	0.3368	0.0030	0.52
Background		103.0759	2.0282	203.36	1.10	1.80	0.00	0.000054	0.000089	0.000000	0.1251	0.3471	0.0000	0.47

Appendix 6

Sites Layouts and Drawings



LITHIUM SOLUTION TESTING

CHEYENNE REGIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



Zone 1 Control – Test Area

	A	B				M	N		
	C	D		Petro Outer		O	P		
	I								
	J								
	K			Petro Inner				Thermo	Voids
	L							ABS	
	E	F				Q	R		
	G	H				S	T		

LITHIUM SOLUTION
TESTING

CHEYENNE
REGIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008

Zone 2 Single Treatment – Test Area

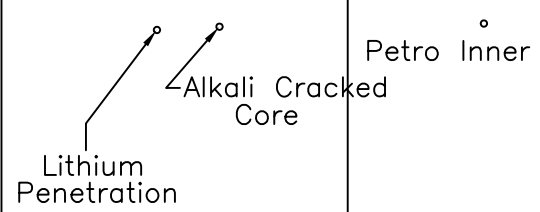
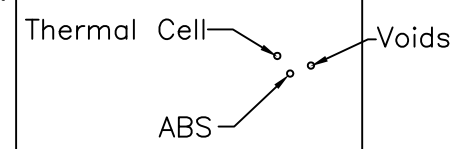
		A	B			M	N		
		C	D	Petro Outer		O	P		
		I							
		J							
		K	Alkali Core Uncracked	Petro Inner Lithium Penetration				Thermo ABS	Voids 2 Voids 1
		L							
		E	F			Q	R		
		G	H	Humidity/Temp wells		S	T		

LITHIUM SOLUTION
TESTING

CHEYENNE
REGIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008

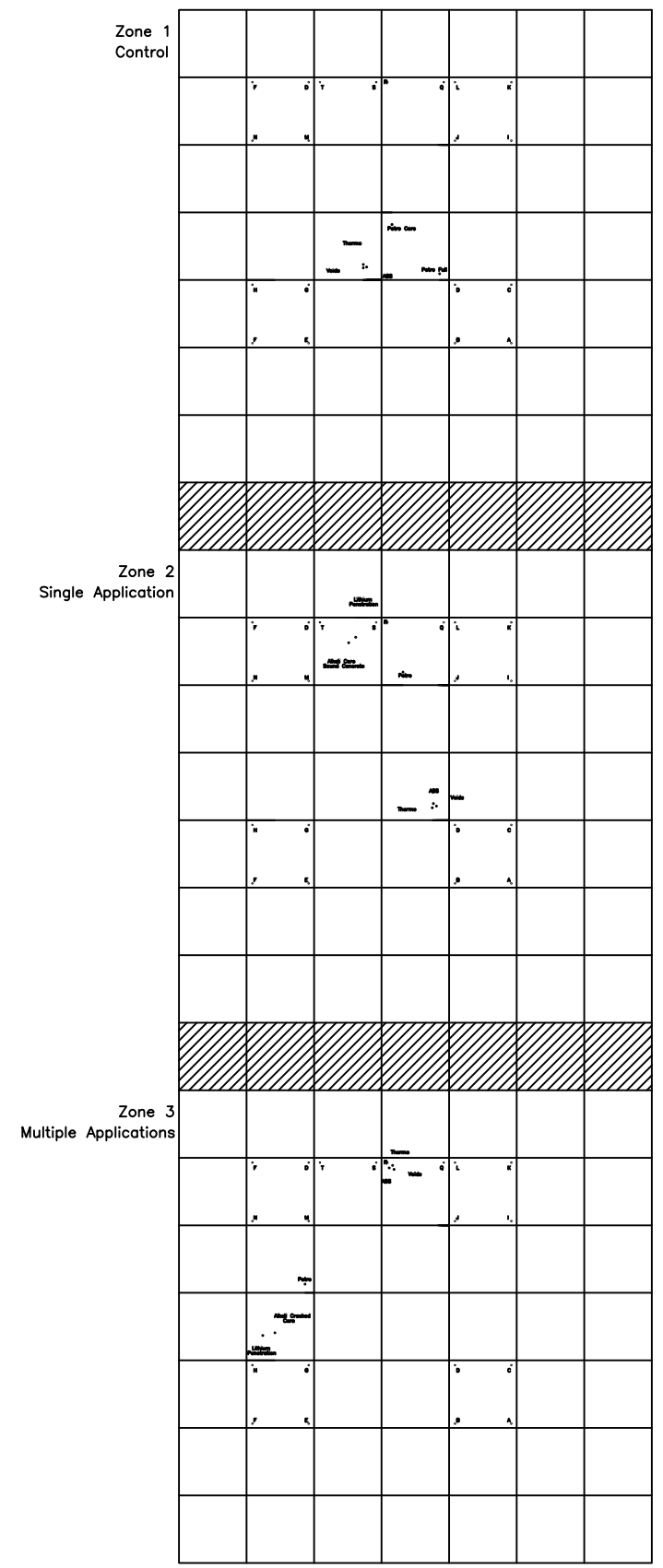
Zone 3 Multiple Treatment – Test Area

		A	B				I	J	
		C	D	Petro Outer			K	L	
								Q	
								R	
								S	
		E	F				M	N	
		G	H				O	P	

LITHIUM SOLUTION
TESTING

CHEYENNE
REGIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008

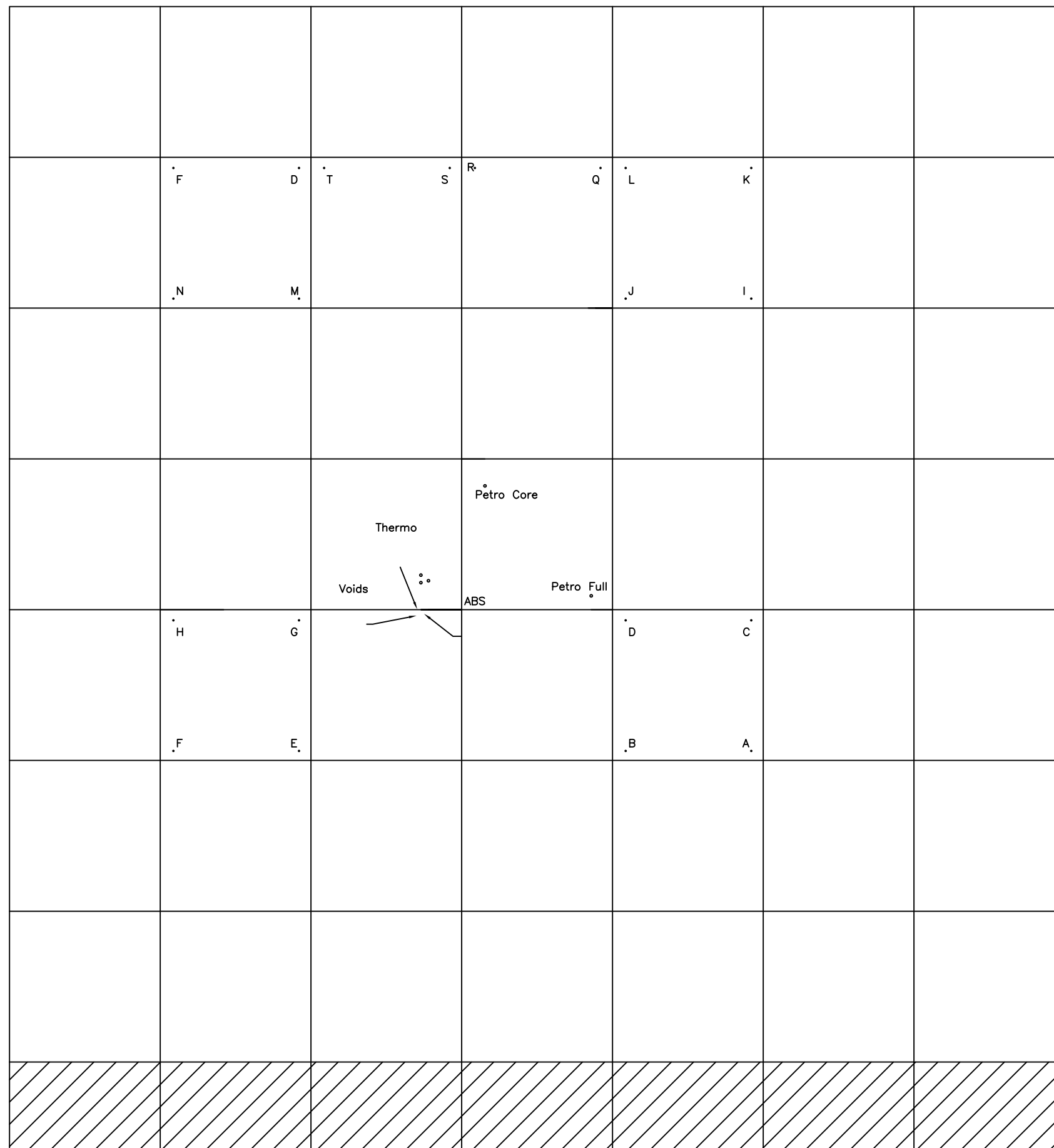


LITHIUM SOLUTION TESTING

PHEONIX SKY HARBOR INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008

Zone 1
Control

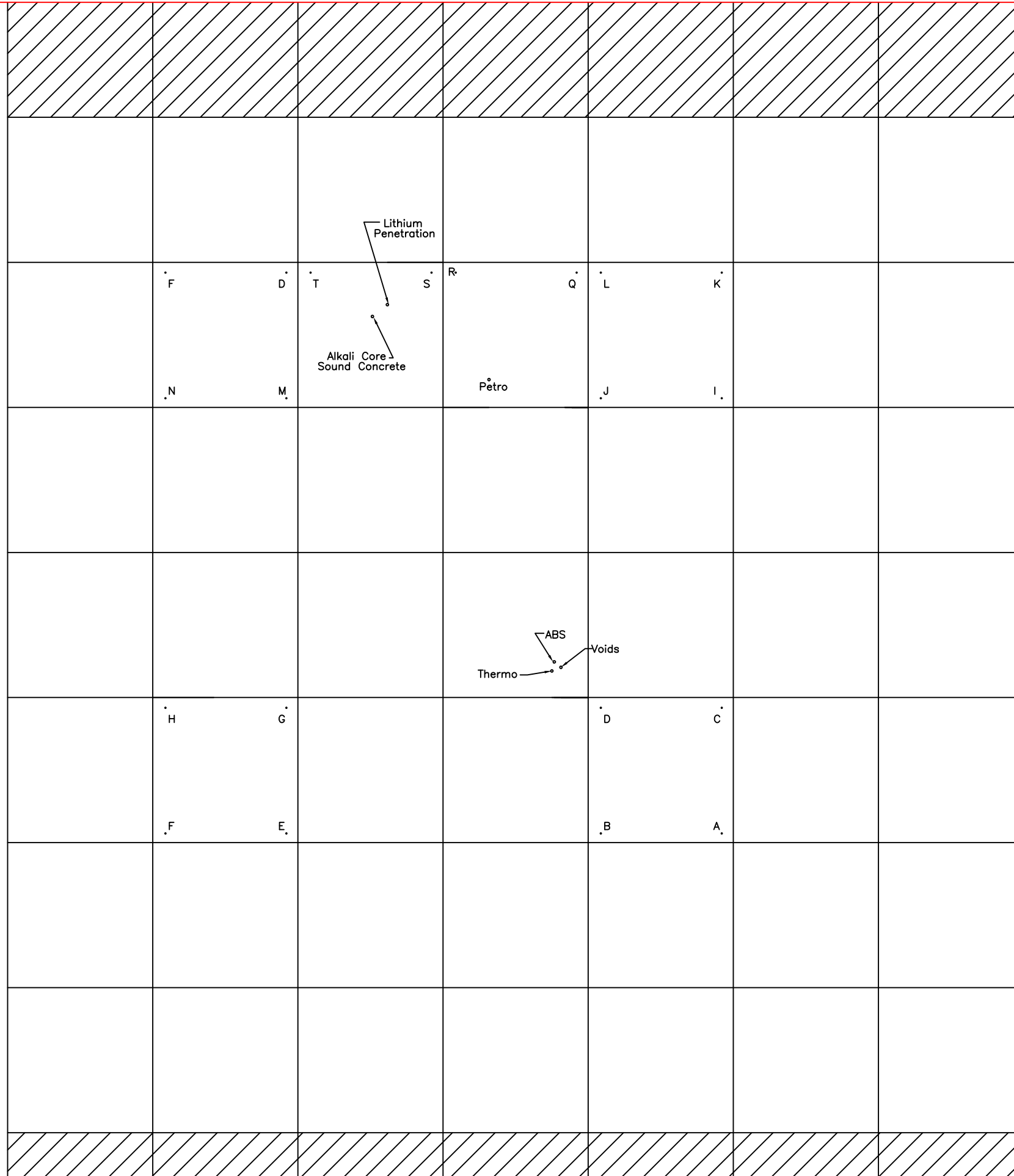


LITHIUM SOLUTION
TESTING

PHEONIX SKY HARBOR
INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008

Zone 2
Single Application



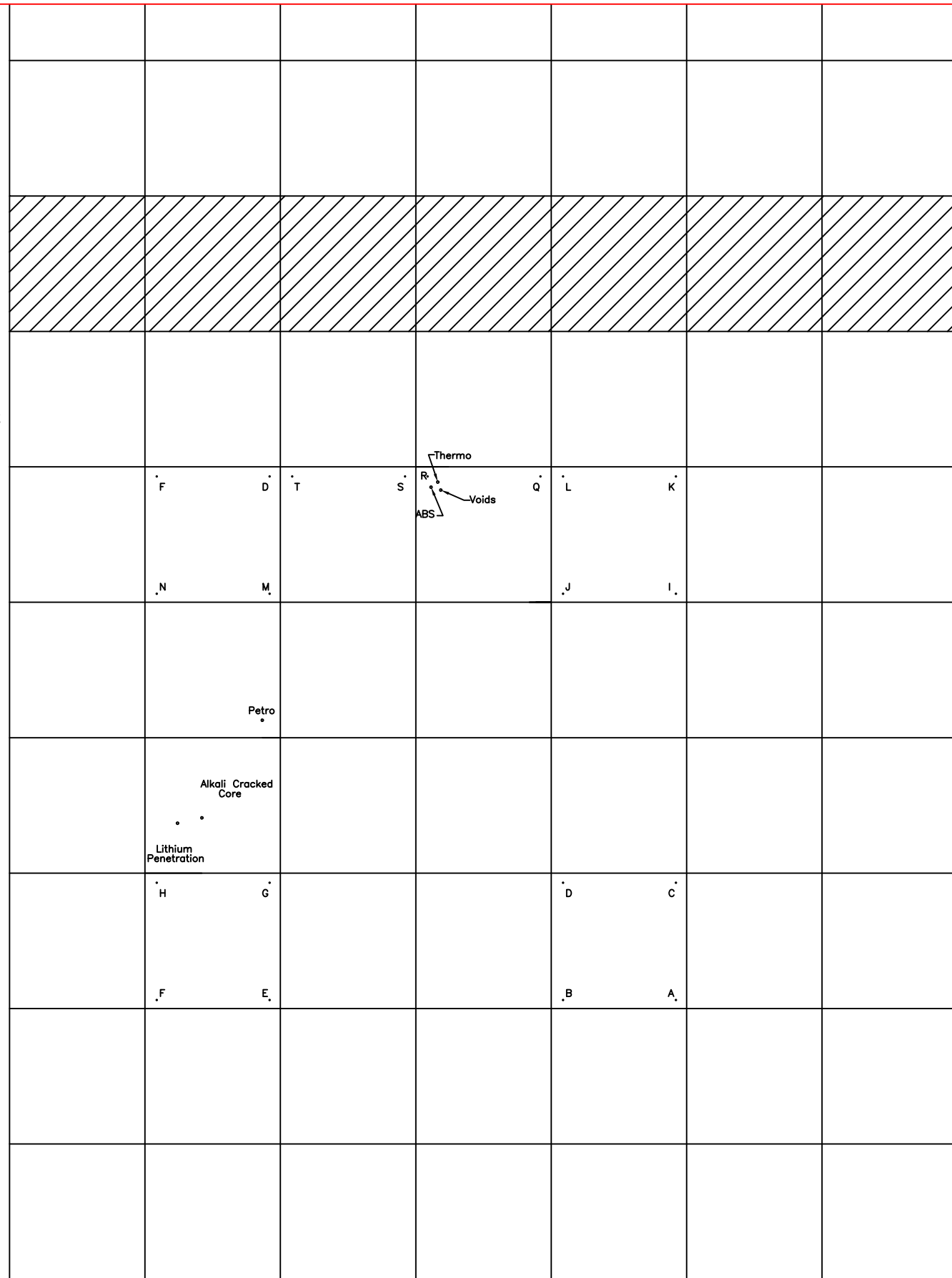
LITHIUM SOLUTION TESTING

PHEONIX SKY HARBOR INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



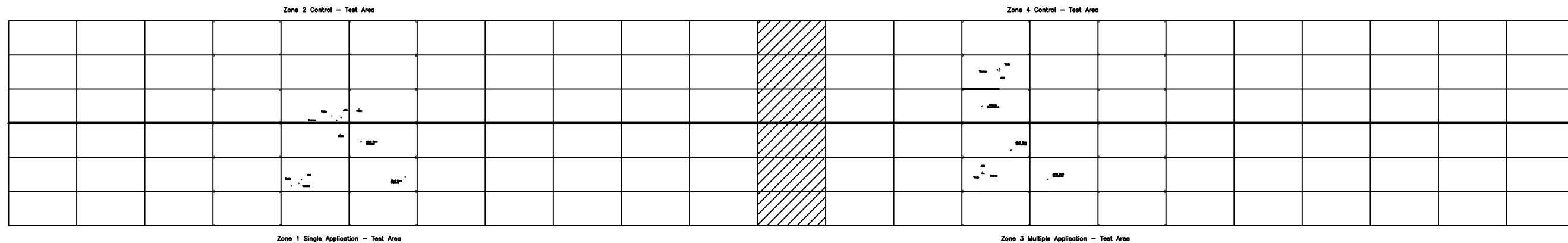
Zone 3
Multiple Applications



LITHIUM SOLUTION TESTING

PHEONIX SKY HARBOR
INTERNATIONAL AIRPORT

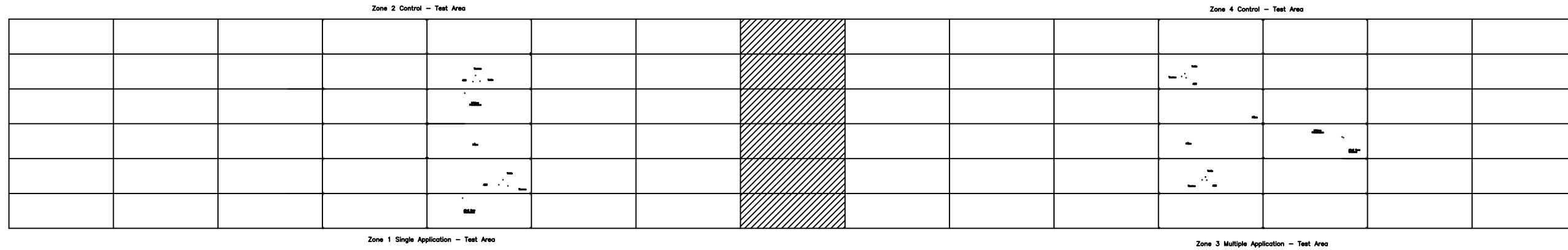
Drawn: A.D.J. Date: DEC 2008



LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

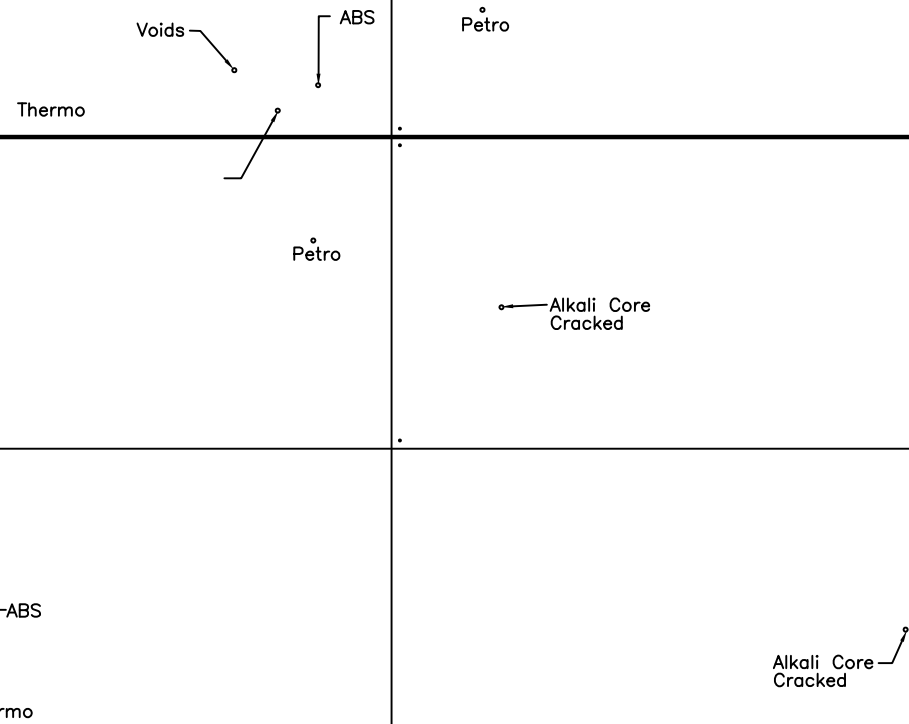
Drawn: A.D.J. Date: DEC 2008



LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

Drawn: A.D.J Date: DEC 2008



Zone 1 Single Application – Test Area

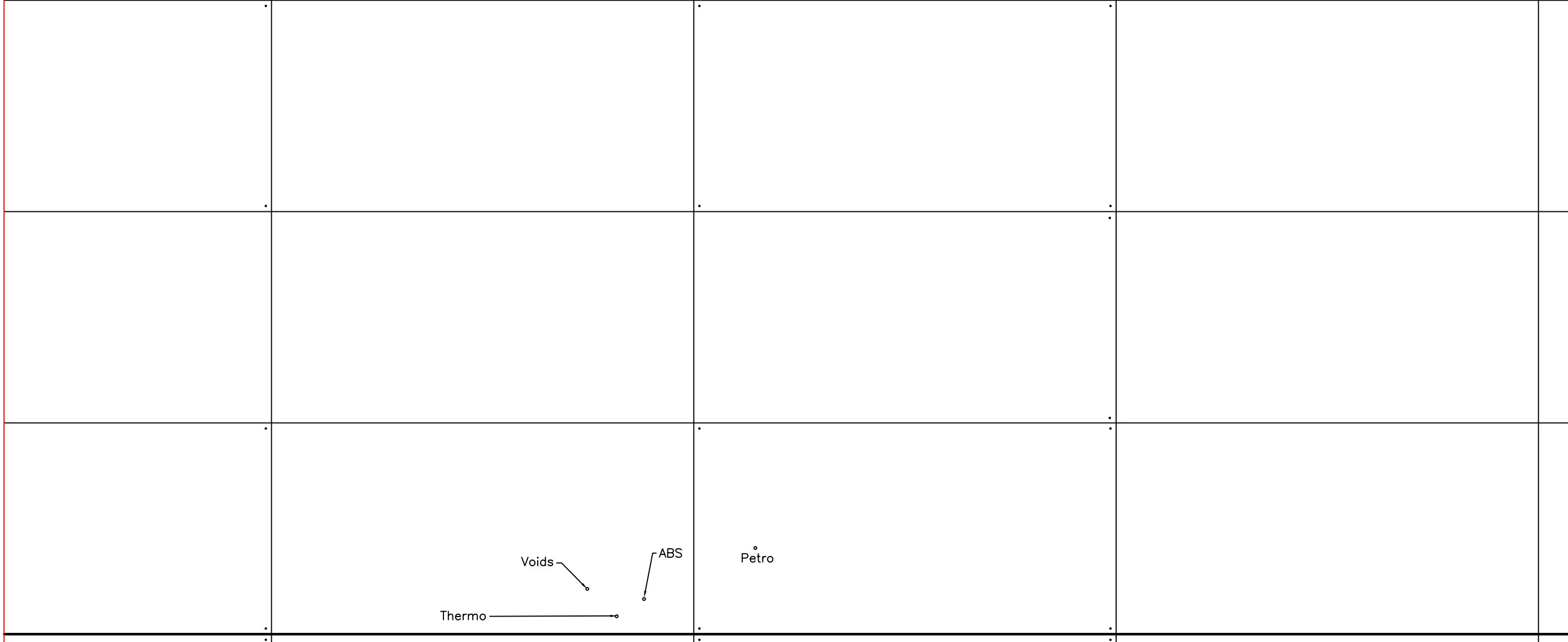
LITHIUM SOLUTION
TESTING

ATLANTA
INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



Zone 2 Control – Test Area

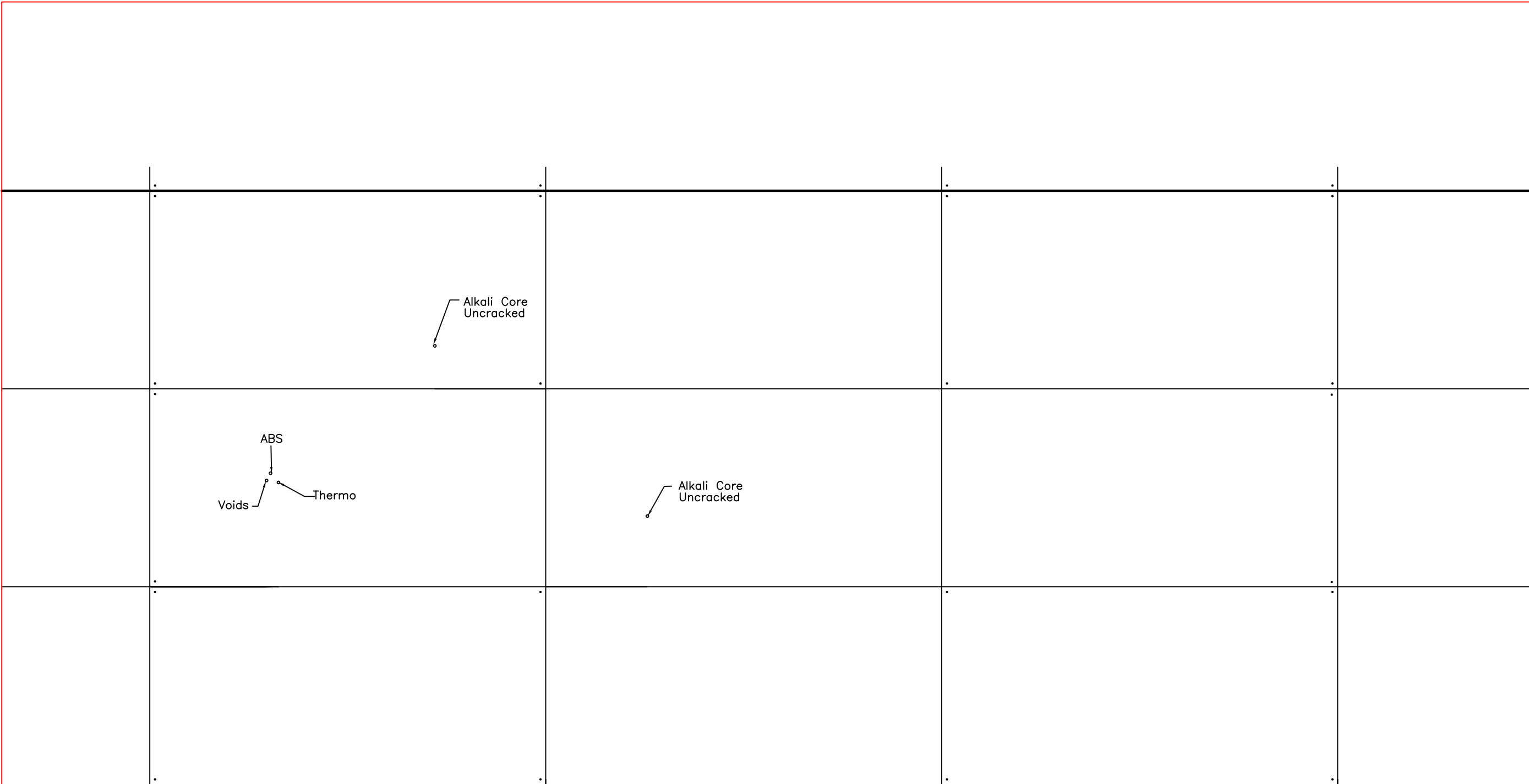


Thermo —————
Voids ————
ABS ————
Petro

LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



Zone 3 Multiple Application – Test Area

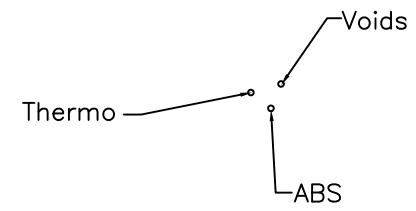
LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



Zone 4 Control – Test Area



Lithium Penetration

LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



Petro

ABS

Voids

Thermo

Alkali Core
Uncracked

Zone 1 Single Application – Test Area

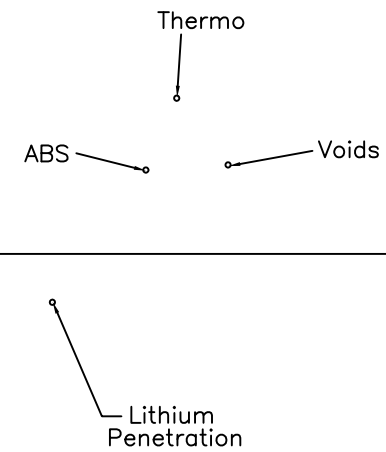
LITHIUM SOLUTION
TESTING

ATLANTA
INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



Zone 2 Control – Test Area



LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

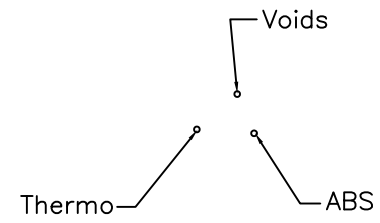
Drawn: A.D.J. Date: DEC 2008



Petro

Lithium Penetration

Alkali Core Cracked



Zone 3 Multiple Application – Test Area

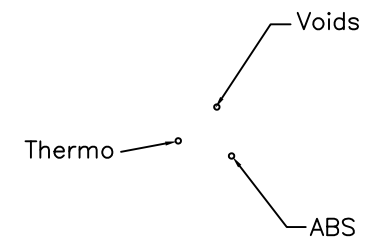
LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008



Zone 4 Control – Test Area



Petro

LITHIUM SOLUTION TESTING

ATLANTA INTERNATIONAL AIRPORT

Drawn: A.D.J. Date: DEC 2008

Appendix 7

PCI Ratings Calculations

From ASTM D5340-03 “Standard Test Method for Airport Pavement
Condition Index Surveys”

Phoenix Sky Harbor International Airport

Visual Survey PCI Rating Calculation

Zone 1

20-Sep-05 PCI **77.5 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
5	L	9	22.5%	2	13	12	2		27	2	22.5
10	L	9	56.3%	13	17	5	2		24	1	20
14	L	7	43.8%	12							

26-Sep-06 PCI **78 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
5	L	14	35.0%	2	15	9	2		26	2	21
10	L	9	56.3%	15	15	5	2		22	1	22
14	L	6	37.5%	9							

08-Nov-08 PCI **77 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
5	L	12	30.0%	2	16	8	2		26	2	21.5
10	L	15	93.8%	16	16	5	2		23	1	23
14	L	5	31.3%	8							

Hartsfield-Jackson Atlanta International Airport
 Visual Survey PCI Rating Calculation

Zone 1

16-Nov-05 PCI **87 EXCELLENT**

Dist Type	Sev	No. Slabs	Density	Deduct Value				Total	q	CDV
13		6	33.3%	5	5	5	3	13	0	13
10	L	1	5.6%	3						
11	L	1	5.6%	5						

04-Dec-06 PCI **83 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value				Total	q	CDV
5	L	1	3.8%	2	5	4	3	3	2	17
5	M	1	3.8%	x						
13		5	27.8%	4						
10	L	1	5.6%	3						
11	L	1	5.6%	5						
14	L	1	5.6%	3						

24-Oct-08 PCI **78 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value				Total	q	CDV
5	L	1	3.8%	2	5	5	4	3	3	2
5	M	1	3.8%	x						
13		6	33.3%	4						
10	L	1	5.6%	3						
11	L	1	5.6%	5						
14	L	1	5.6%	3						
14	M	1	5.6%	5						

Hartsfield-Jackson Atlanta International Airport
 Visual Survey PCI Rating Calculation

Zone 3

16-Nov-05		PCI	80		VERY GOOD						
Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		8	44.4%	6	12	6	3		21	2	17
10	L	1	5.6%	3	12	5	3		20	1	20
11	L	3	16.7%	12							
04-Dec-06		PCI	80		VERY GOOD						
Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		10	55.6%	8	12	8	3		23	2	19
10	L	1	5.6%	3	15	5	3		23	1	20
11	L	3	16.7%	12							
24-Oct-08		PCI	79.5		VERY GOOD						
Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		12	66.7%	10	12	10	3		25	2	20.5
10	L	1	5.6%	3	12	5	3		20	1	20
11	L	3	16.7%	12							

Hartsfield-Jackson Atlanta International Airport
 Visual Survey PCI Rating Calculation

Zone 2

16-Nov-05 PCI **76 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	7	5		26	2	21
10	L	2	11.1%	5	14	5	5		24	1	24
5	H	1	3.8%	7							

04-Dec-06 PCI **76 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	7	7		28	3	21
10	L	3	16.7%	7	14	7	5		26	2	21.5
5	H	1	3.8%	7	14	5	5		24	1	24

24-Oct-08 PCI **76 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	10	7		31	3	23
10	L	3	16.7%	10	14	10	5		29	2	24
5	H	1	3.8%	7	14	5	5		24	1	24
5	L	1	3.8%	x							

Hartsfield-Jackson Atlanta International Airport
 Visual Survey PCI Rating Calculation

Zone 3

16-Nov-05 PCI **79 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	5	2		21	1	21
10	L	2	11.1%	5							
6	L	2	11.1%	2							

04-Dec-06 PCI **79 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	5	2		21	1	21
10	L	2	11.1%	5							
6	L	2	11.1%	2							

24-Oct-08 PCI **79 VERY GOOD**

Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	6	2		22	2	18
10	L	3	16.7%	6	14	5	2		21	1	21
11	L	2	11.1%	2							

Hartsfield-Jackson Atlanta International Airport
 Visual Survey PCI Rating Calculation

Zone 4

16-Nov-05		PCI	81	VERY GOOD							
Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	5			19	1	19
10	L	3	16.7%	5							
5	L	1	3.8%	x							
04-Dec-06		PCI	78	VERY GOOD							
Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	6	2		22	2	19
10	L	3	16.7%	6	14	5	2		21	1	21
5	L	2	11.1%	2							
24-Oct-08		PCI	81	VERY GOOD							
Dist Type	Sev	No. Slabs	Density	Deduct Value					Total	q	CDV
13		18	100.0%	14	14	7			21	2	17
10	L	4	22.2%	7	14	5			19	1	19
5	L	1	5.6%	x							

Appendix 8

Visual Survey Photos 2005, 2006 and 2008

Appendix 8-1

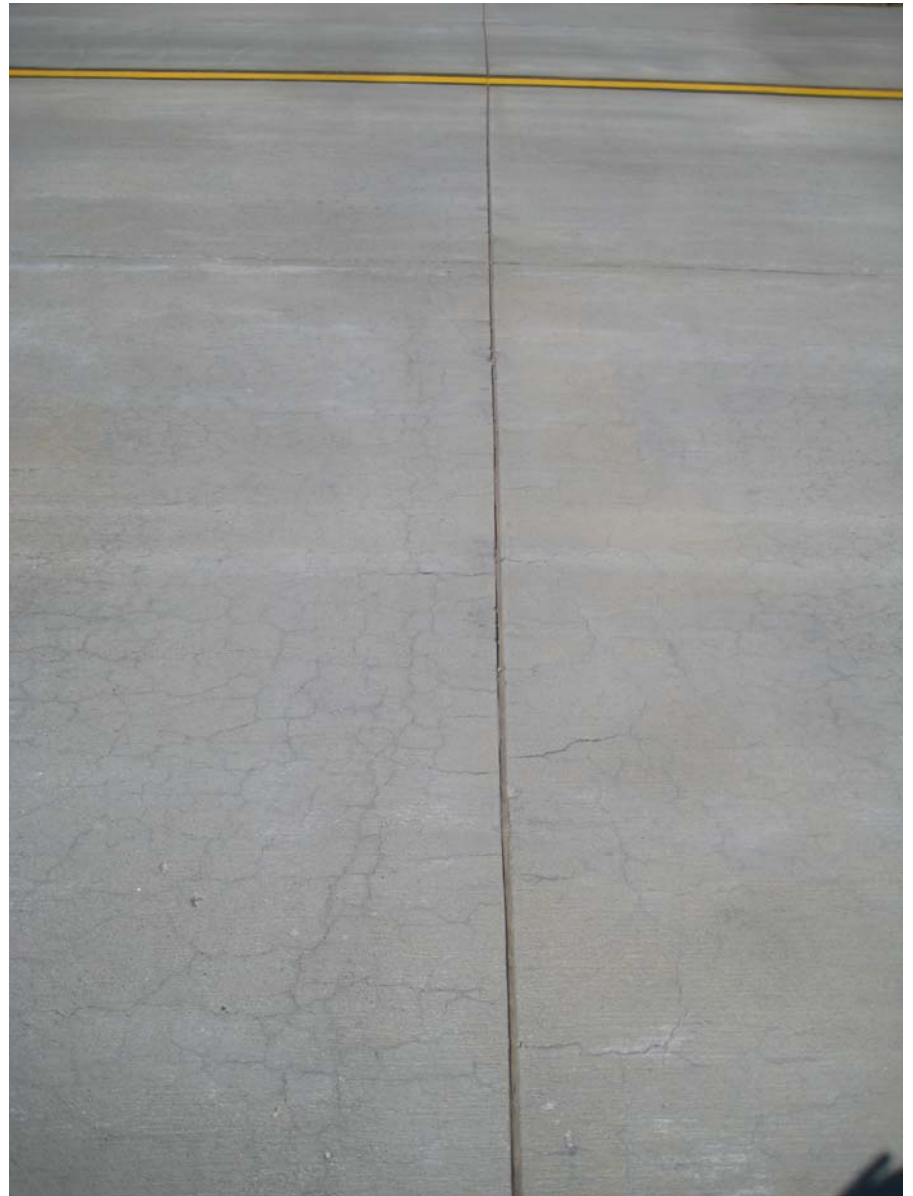
Cheyenne Visual Survey Photos

Zone 1 - Photo 1

2006



2008

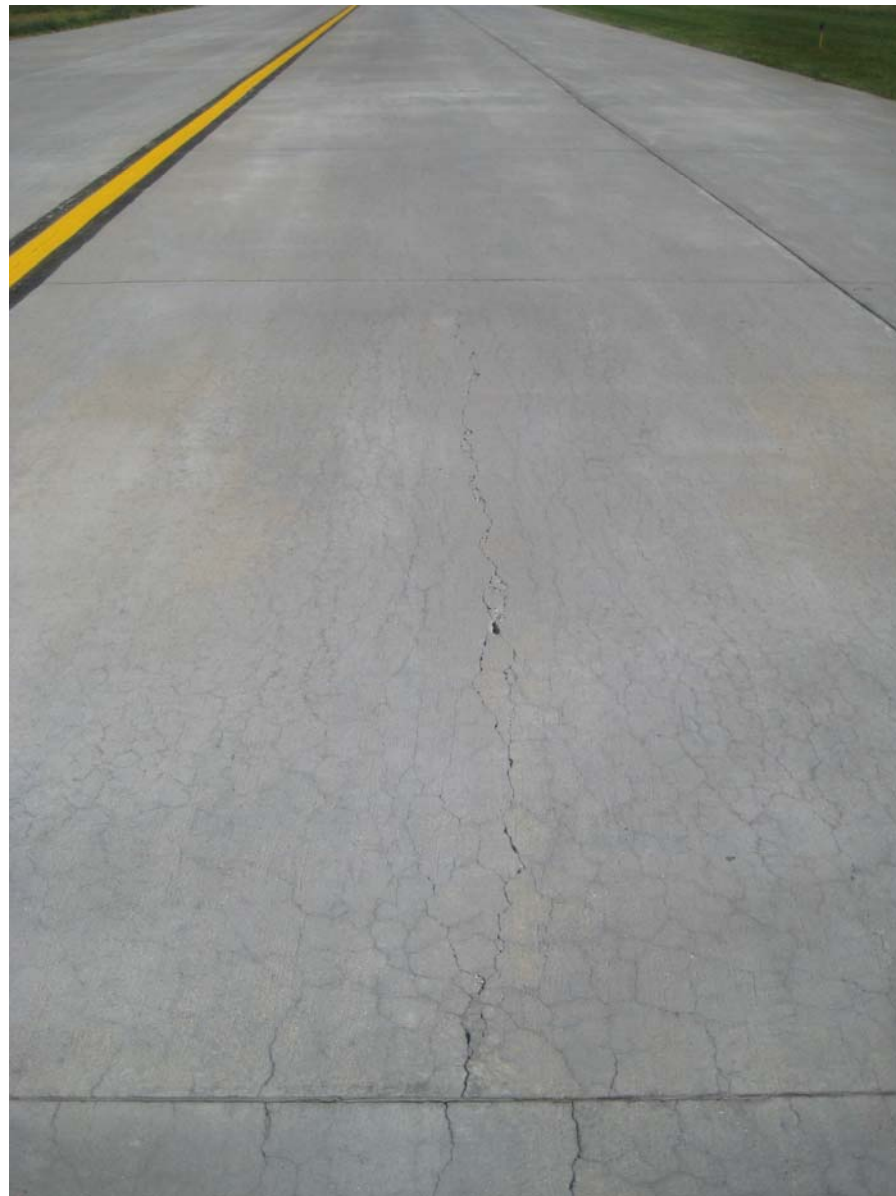


Zone 1 - Photo 2

2006



2008



Zone 1 - Photo 3

2006



2008



Zone 1 - Photo 4

2006



2008



Zone 2 - Photo 1

2006



2008



Zone 2 - Photo 2

2006



2008



Zone 2 - Photo 3

2006



2008



Zone 3 - Photo 1

2006

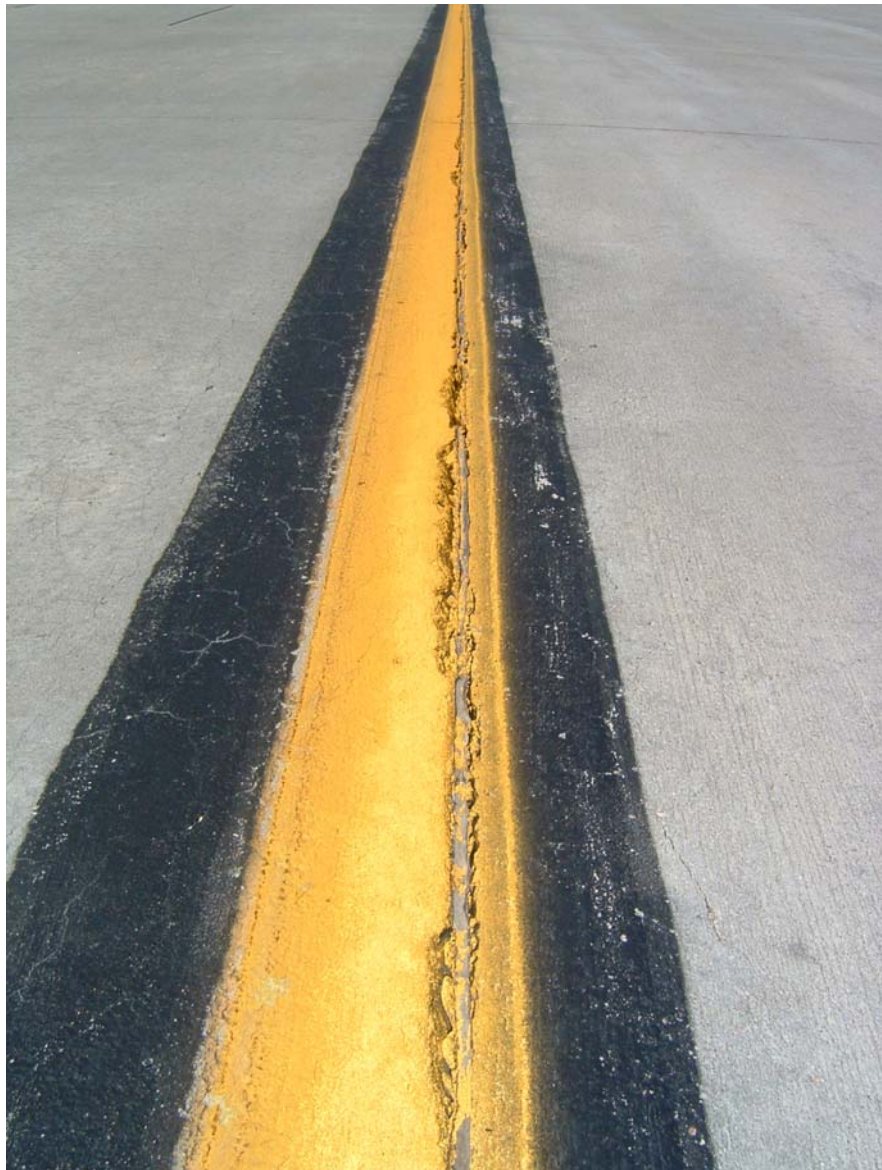


2008

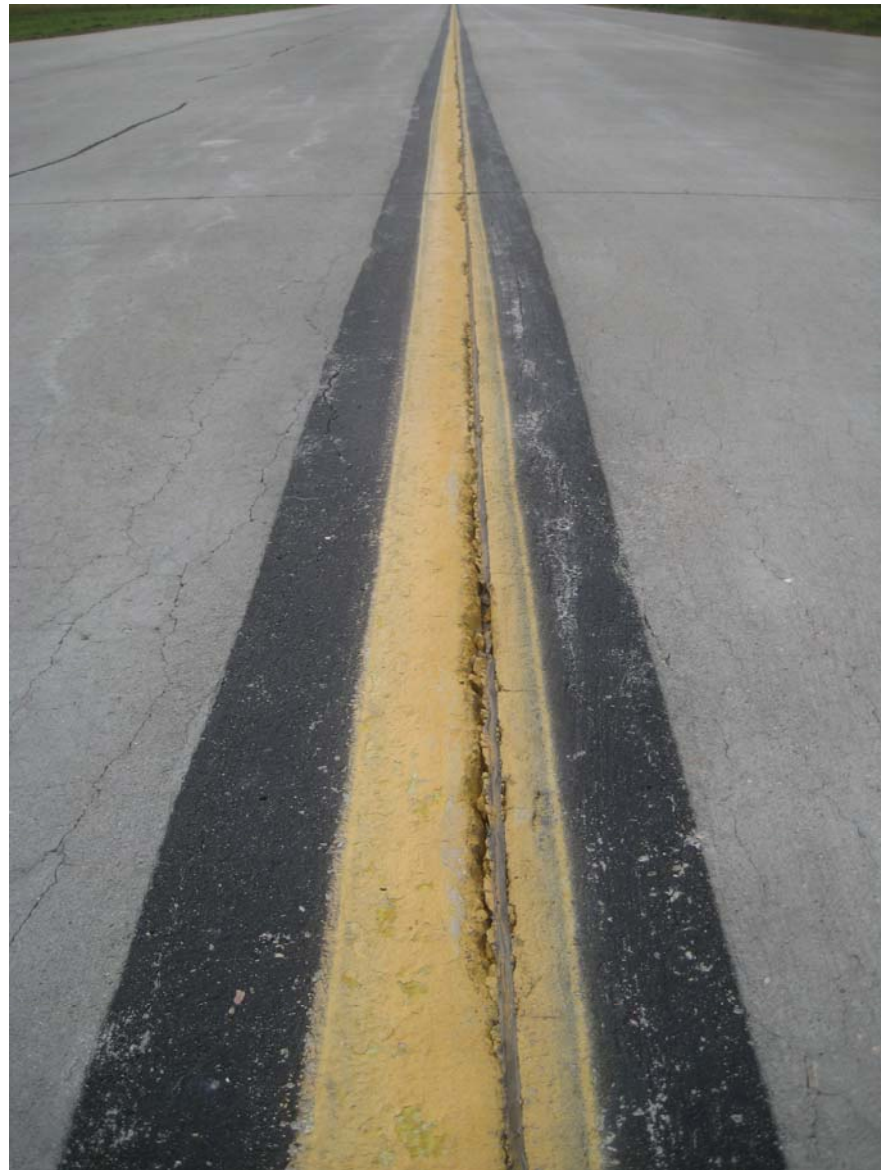


Zone 3 - Photo 2

2006



2008



Zone 3 - Photo 3

2006



2008



Zone 3 - Photo 4

2006



2008



Appendix 8-2

Phoenix Visual Survey Photos

Zone 1 - Photo 1

2006



2008



Zone 1 - Photo 2

2006



2008



Zone 2 - Photo 1

2006



2008



Zone 2 - Photo 2

2006



2008



Zone 2 - Photo 3

2006



2008



Zone 3 - Photo 1

2006



2008



Zone 3 - Photo 2

2006



2008



Zone 3 - Photo 3

2006



2008



Appendix 8-3

Atlanta Area 1 Visual Survey Photos

Zone 1 - Photo 1

2005



2006



2008



Zone 1 - Photo 2

2005



2006



2008



Zone 1 - Photo 3

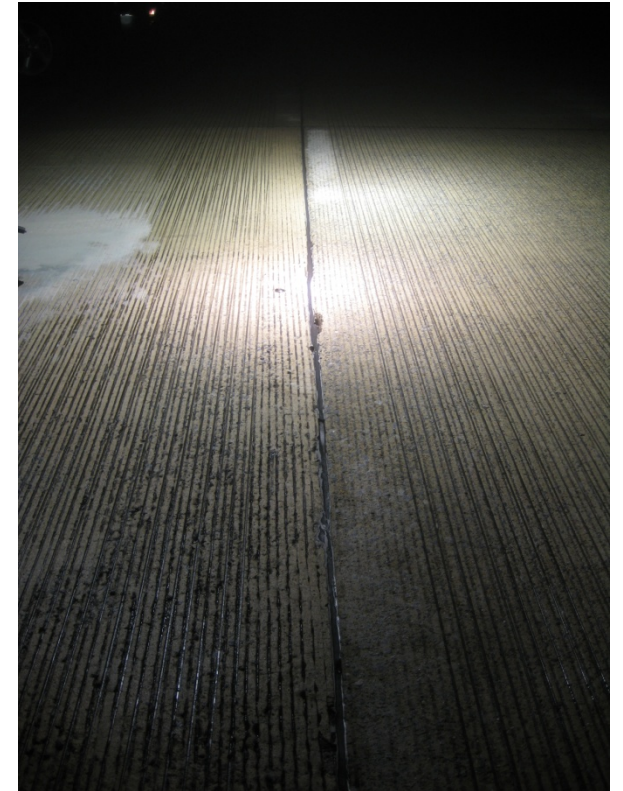
2005



2006



2008

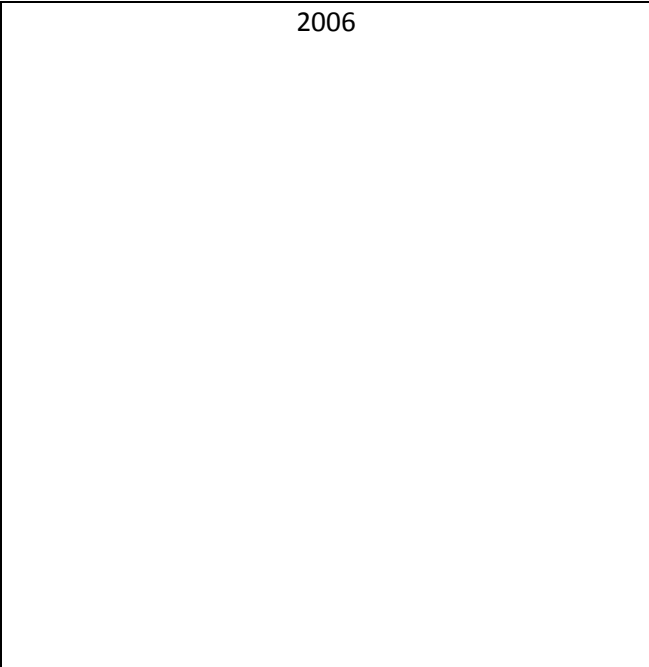


Zone 1 - Photo 4

2005



2006



2008



Zone 2 - Photo 1

2005



2006



2008

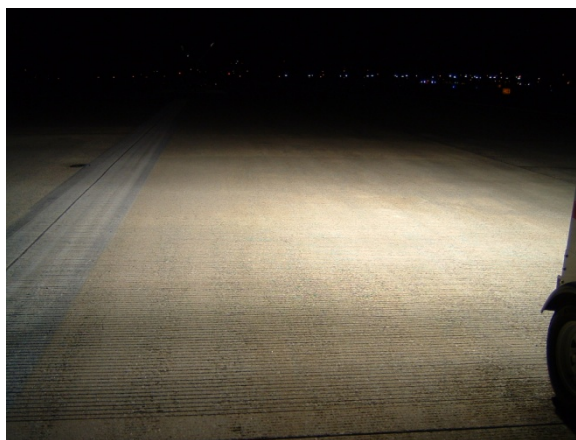


Zone 2 - Photo 2

2005

2006

2008

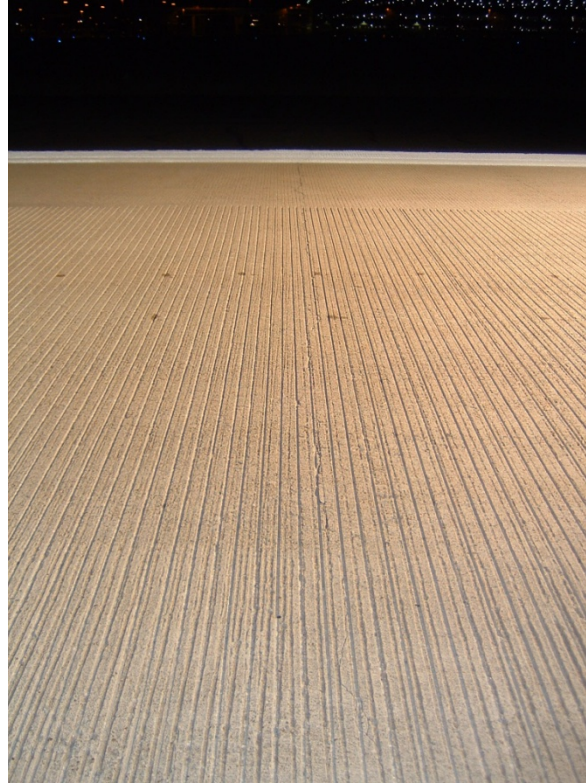


Zone 2 - Photo 3

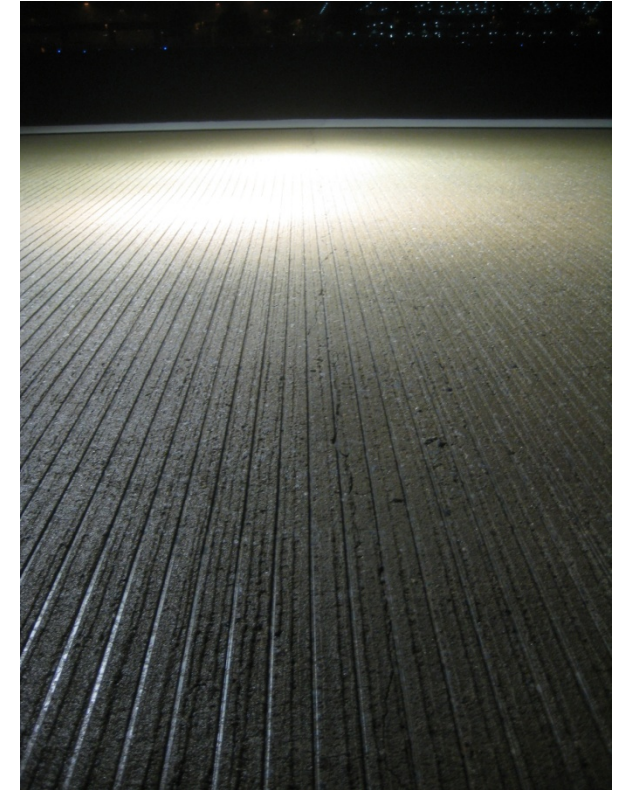
2005



2006



2008



Zone 3 - Photo 1

2005



2006



2008



Zone 3 - Photo 2

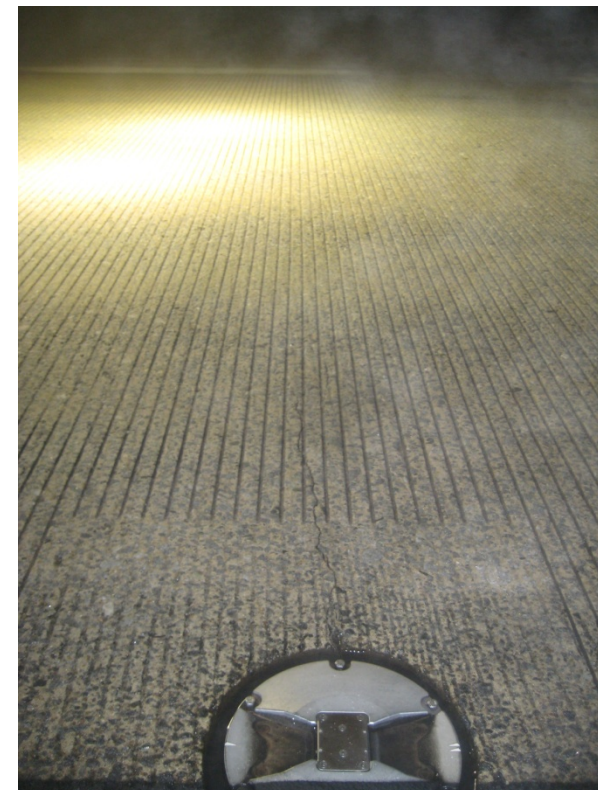
2005



2006



2008



Zone 4 - Photo 1

2005



2006



2008



Zone 4 - Photo 2

2005



2006



2008



Zone 4 - Photo 3

2005

2006

2008



Appendix 8-4

Atlanta Area 2 Visual Survey Photos

Zone 1 - Photo 1

2005

2006

2008



Zone 1 - Photo 2

2005



2006



2008

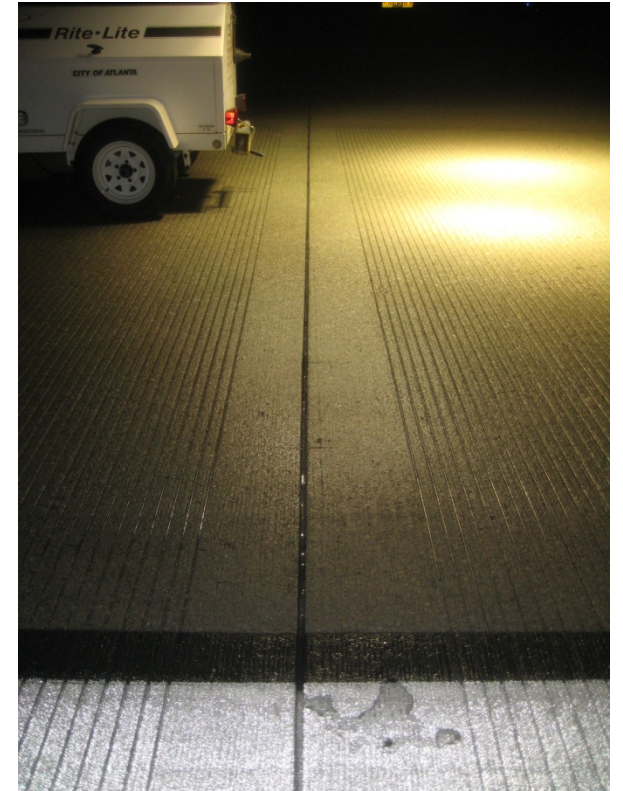


Zone 1 - Photo 3

2005

2006

2008



Zone 2 - Photo 1

2005



2006



2008



Zone 2 - Photo 2

2005

2006

2008



Zone 2 - Photo 3

2005



2006



2008



Zone 3 - Photo 1

2005



2006



2008



Zone 4 - Photo 1

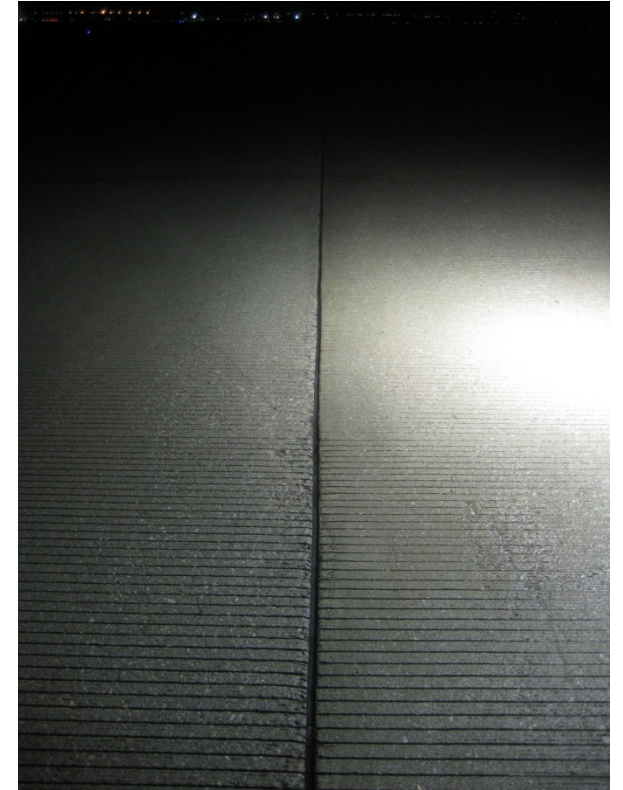
2005



2006



2008



Zone 4 - Photo 2

2005

2006

2008



Zone 4 - Photo 3

2005



2006



2008



Appendix 9

Extensometer Measurements Cheyenne Regional Airport

Extensometer Measurements

Cheyenne Regional Airport

Zone 1

Control

Pins	ft	in	1st Measurement					2nd Measurement					0.009 ΔD	Average	Date		
			total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc				adj length	adj (conc)
Lateral																	
A-B	16	11.659	203.659	13.4	19.1	203.643	203.647	16	11.650	203.650	13.9	19.6	203.636	203.637	0.010	203.642	04-Aug-05
C-D	16	11.827	203.827	13.2	18.9	203.810	203.815	16	11.829	203.829	14.2	19.9	203.815	203.816	0.001	203.815	04-Aug-05
E-F	16	11.450	203.450	13.6	19.3	203.435	203.438	16	11.439	203.439	14.4	20.1	203.425	203.425	0.013	203.431	04-Aug-05
G-H	16	10.586	202.586	14.0	19.7	202.572	202.573	16	10.577	202.577	14.6	20.3	202.564	202.563	0.010	202.568	04-Aug-05
Transverse																	
A-C	14	1.786	169.786	13.8	19.5	169.774	169.775	14	1.789	169.789	15.4	21.1	169.780	169.776	0.001	169.776	04-Aug-05
B-D	14	2.873	170.873	13.5	19.2	170.860	170.863	14	2.869	170.869	15.2	20.9	170.859	170.857	0.006	170.860	04-Aug-05
E-G	14	1.005	169.005	13.7	19.4	168.993	168.995	14	0.997	168.997	15.2	20.9	168.988	168.985	0.010	168.990	04-Aug-05
F-H	14	0.426	168.426	13.5	19.2	168.413	168.416	14	0.425	168.425	14.8	20.5	168.415	168.413	0.003	168.415	04-Aug-05
Diagonal																	
A-D	21	11.049	263.049	13.6	19.3	263.029	263.033	21	11.037	263.037	15.1	20.8	263.022	263.018	0.015	263.026	04-Aug-05
B-C	22	4.166	268.166	13.4	19.1	268.145	268.150	22	4.164	268.164	15.2	20.9	268.149	268.145	0.005	268.147	04-Aug-05
E-H	21	8.847	260.847	13.9	19.6	260.828	260.830	21	8.833	260.833	15.3	21.0	260.819	260.814	0.016	260.822	04-Aug-05
F-G	22	3.163	267.163	13.9	19.6	267.144	267.146	22	3.164	267.164	15.2	20.9	267.149	267.145	0.001	267.145	04-Aug-05
Transverse																	
C-E	31	2.286	374.286	13.6	19.3	374.258	374.263	31	2.279	374.279	15.7	21.4	374.260	374.251	0.013	374.257	04-Aug-05
D-F	31	1.535	373.535	13.4	19.1	373.506	373.513	31	1.517	373.517	15.4	21.1	373.497	373.489	0.023	373.501	04-Aug-05
Diagonal																	
C-F	35	2.226	422.226	13.4	19.1	422.194	422.201	35	2.219	422.219	15.0	20.7	422.195	422.189	0.012	422.195	04-Aug-05
D-E	35	9.361	429.361	13.6	19.3	429.329	429.335	35	9.369	429.369	15.1	20.8	429.345	429.338	0.003	429.336	04-Aug-05

Across Joint

Extensometer Measurements

Cheyenne Regional Airport

Zone 1

Control

Pins	1st Measurement							2nd Measurement							0.009		
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj length	adj (conc)	ΔD	Average	Date
A-I	15	2.343	182.343	14.6	20.3	182.332	182.331	15	2.355	182.355	14.5	20.2	182.343	182.343	0.012	182.337	04-Aug-05
I-K	14	11.082	179.082	14.5	20.2	179.071	179.070	14	11.080	179.080	14.4	20.1	179.068	179.068	0.002	179.069	04-Aug-05
K-E	15	2.523	182.523	14.6	20.3	182.512	182.511	15	2.514	182.514	14.1	19.8	182.502	182.502	0.008	182.506	04-Aug-05
C-J	14	11.351	179.351	14.3	20.0	179.339	179.339	14	11.345	179.345	14.9	20.6	179.334	179.332	0.007	179.336	04-Aug-05
J-L	15	2.435	182.435	14.7	20.4	182.424	182.422	15	2.446	182.446	14.7	20.4	182.435	182.433	0.011	182.428	04-Aug-05
L-G	15	1.295	181.295	14.8	20.5	181.284	181.282	15	1.299	181.299	14.5	20.2	181.287	181.287	0.004	181.285	04-Aug-05
Internal Transverse																	
I-J	13	10.780	166.780	14.5	20.2	166.769	166.769	13	10.778	166.778	14.8	20.5	166.768	166.766	0.002	166.768	04-Aug-05
K-L	14	2.252	170.252	14.5	20.2	170.241	170.241	14	2.228	170.228	14.6	20.3	170.217	170.216	0.024	170.228	04-Aug-05
Lateral																	
B-M	73	0.003	876.003	15.4	21.1	875.956	875.938	73	0.036	876.036	14.4	20.1	875.979	875.977	0.039	875.958	04-Aug-05
D-O	72	11.653	875.653	15.0	20.7	875.602	875.591	72	11.676	875.676	14.4	20.1	875.619	875.617	0.027	875.604	04-Aug-05
F-Q	73	0.176	876.176	15.3	21.0	876.128	876.112	73	0.171	876.171	14.6	20.3	876.116	876.111	0.001	876.112	04-Aug-05
H-S	73	1.085	877.085	15.0	20.7	877.034	877.023	73	1.086	877.086	14.5	20.2	877.030	877.027	0.004	877.025	04-Aug-05
Diagonal																	
B-O	74	0.917	888.917	14.6	20.3	888.861	888.856	74	0.929	888.929	14.3	20.0	888.870	888.870	0.014	888.863	04-Aug-05
D-M	74	7.579	895.579	14.3	20.0	895.520	895.520	74	7.583	895.583	14.4	20.1	895.525	895.523	0.003	895.521	04-Aug-05
F-S	74	1.135	889.135	14.6	20.3	889.079	889.074	74	1.127	889.127	14.3	20.0	889.068	889.068	0.006	889.071	04-Aug-05
H-Q	74	8.266	896.266	14.8	20.5	896.212	896.204	74	8.278	896.278	14.6	20.3	896.222	896.217	0.013	896.210	04-Aug-05

Lateral

Extensometer Measurements

Cheyenne Regional Airport

Zone 1

Control

Pins	1st Measurement								2nd Measurement								0.009 ΔD	Average	Date
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj length	adj (conc)					
M-N	16	11.774	203.774	19.7	25.4	203.773	203.753	16	11.784	203.784	18.4	24.1	203.780	203.765	0.012	203.759	04-Aug-05		
O-P	16	11.905	203.905	20.1	25.8	203.905	203.883	16	11.900	203.900	18.3	24.0	203.896	203.881	0.002	203.882	04-Aug-05		
Q-R	16	10.649	202.649	19.9	25.6	202.649	202.628	16	10.631	202.631	18.4	24.1	202.627	202.612	0.016	202.620	04-Aug-05		
S-T	16	10.868	202.868	19.8	25.5	202.868	202.847	16	10.872	202.872	18.1	23.8	202.868	202.853	0.006	202.850	04-Aug-05		
Transverse																			
M-O	14	1.516	169.516	18.4	24.1	169.513	169.500	14	1.512	169.512	18.1	23.8	169.508	169.496	0.004	169.498	04-Aug-05		
N-P	14	1.719	169.719	18.8	24.5	169.717	169.702	14	1.716	169.716	18.1	23.8	169.712	169.700	0.002	169.701	04-Aug-05		
Q-S	14	0.690	168.690	19.1	24.8	168.688	168.673	14	0.679	168.679	18.1	23.8	168.675	168.663	0.010	168.668	04-Aug-05		
R-T	14	0.560	168.560	19.3	25.0	168.559	168.543	14	0.553	168.553	18.0	23.7	168.549	168.537	0.005	168.540	04-Aug-05		
Diagonal																			
M-P	21	10.291	262.291	17.9	23.6	262.285	262.267	21	10.301	262.301	18.0	23.7	262.295	262.277	0.010	262.272	04-Aug-05		
N-O	22	4.154	268.154	18.8	24.5	268.150	268.128	22	4.161	268.161	17.9	23.6	268.154	268.136	0.009	268.132	04-Aug-05		
Q-T	21	9.489	261.489	18.3	24.0	261.484	261.464	21	9.473	261.473	17.9	23.6	261.467	261.449	0.015	261.457	04-Aug-05		
R-S	22	2.038	266.038	18.3	24.0	266.033	266.013	22	2.039	266.039	17.8	23.5	266.032	266.015	0.002	266.014	04-Aug-05		
Transverse																			
O-Q	31	1.778	373.778	18.1	23.8	373.770	373.743	31	1.769	373.769	18.0	23.7	373.760	373.734	0.009	373.739	04-Aug-05		
P-R	31	2.326	374.326	18.5	24.2	374.319	374.290	31	2.326	374.326	17.8	23.5	374.316	374.292	0.002	374.291	04-Aug-05		
Diagonal																			
O-R	35	1.927	421.927	18.3	24.0	421.919	421.887	35	1.929	421.929	17.8	23.5	421.918	421.891	0.003	421.889	04-Aug-05		
P-Q	35	9.601	429.601	18.4	24.1	429.593	429.560	35	9.580	429.580	17.0	22.7	429.565	429.543	0.017	429.552	04-Aug-05		

Extensometer Measurements

Cheyenne Regional Airport

Zone 2
Single Application

Pins	1st Measurement							2nd Measurement							0.016 ΔD	Average	Date
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj length	adj (conc)			
Lateral																	
A-B	16	8.914	200.914	30.3	36.0	200.938	200.878	16	8.946	200.946	27.9	33.6	200.964	200.913	0.035	200.896	03-Aug-05
C-D	17	6.176	210.176	30.3	36.0	210.201	210.138	17	6.158	210.158	27.9	33.6	210.177	210.124	0.014	210.131	03-Aug-05
E-F	19	1.278	229.278	30.3	36.0	229.305	229.237	19	1.321	229.321	27.9	33.6	229.342	229.284	0.047	229.260	03-Aug-05
G-H	19	8.275	236.275	30.3	36.0	236.303	236.233	19	8.295	236.295	27.9	33.6	236.317	236.257	0.024	236.245	03-Aug-05
Transverse																	
A-C	14	1.761	169.761	33.4	39.1	169.787	169.727	14	1.782	169.782	28.1	33.8	169.798	169.754	0.027	169.740	03-Aug-05
B-D	14	2.306	170.306	33.4	39.1	170.332	170.272	14	2.319	170.319	28.1	33.8	170.335	170.291	0.019	170.281	03-Aug-05
E-G	14	0.830	168.830	33.4	39.1	168.856	168.796	14	0.839	168.839	28.1	33.8	168.855	168.811	0.015	168.804	03-Aug-05
F-H	14	0.884	168.884	33.4	39.1	168.910	168.850	14	0.915	168.915	28.1	33.8	168.931	168.887	0.037	168.869	03-Aug-05
Diagonal																	
A-D	22	0.758	264.758	29.5	35.2	264.787	264.712	22	0.737	264.737	28.4	34.1	264.763	264.693	0.019	264.702	03-Aug-05
B-C	22	4.816	268.816	29.5	35.2	268.846	268.769	22	4.778	268.778	28.4	34.1	268.804	268.733	0.036	268.751	03-Aug-05
E-H	23	10.677	286.677	29.5	35.2	286.709	286.627	23	10.653	286.653	31.3	37.0	286.691	286.599	0.028	286.613	03-Aug-05
F-G	24	0.636	288.636	29.5	35.2	288.668	288.586	24	0.616	288.616	28.4	34.1	288.644	288.568	0.018	288.577	03-Aug-05
Transverse																	
C-E	31	1.333	373.333	28.6	34.3	373.370	373.270	31	1.318	373.318	31.1	36.8	373.366	373.249	0.022	373.260	03-Aug-05
D-F	31	1.625	373.625	28.6	34.3	373.662	373.562	31	1.619	373.619	29.9	35.6	373.662	373.553	0.009	373.558	03-Aug-05
Diagonal																	
C-F	35	11.579	431.579	28.6	34.3	431.622	431.507	35	11.598	431.598	28.7	34.4	431.642	431.525	0.019	431.516	03-Aug-05
D-E	36	2.960	434.960	28.6	34.3	435.003	434.887	36	2.975	434.975	28.1	33.8	435.016	434.904	0.017	434.895	03-Aug-05

Across Joint

Extensometer Measurements

Cheyenne Regional Airport

Zone 2

Single Application

Pins	1st Measurement								2nd Measurement								0.016	Average	Date
	ft	in	total in	temp	temp	conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp	conc	adj length	adj (conc)			
A-I	15	1.775	181.775	27.4	33.1	181.791	181.746	15	1.766	181.766	25.0	30.7	181.777	181.740	0.006	181.743	03-Aug-05		
I-K	14	10.815	178.815	27.9	33.6	178.831	178.786	14	10.822	178.822	26.2	31.9	178.835	178.795	0.009	178.790	03-Aug-05		
K-E	15	2.392	182.392	27.3	33.0	182.407	182.363	15	2.372	182.372	27.4	33.1	182.388	182.343	0.020	182.353	03-Aug-05		
C-J	14	10.297	178.297	26.3	32.0	178.310	178.270	14	10.274	178.274	27.7	33.4	178.290	178.245	0.025	178.258	03-Aug-05		
J-L	15	2.568	182.568	26.4	32.1	182.582	182.540	15	2.571	182.571	27.1	32.8	182.586	182.542	0.002	182.541	03-Aug-05		
L-G	15	1.394	181.394	25.9	31.6	181.406	181.367	15	1.384	181.384	26.9	32.6	181.399	181.356	0.011	181.361	03-Aug-05		
Internal Transverse																			
I-J	N/A				0.0		0.000									0.000	0.000		
K-L	14	1.856	169.856	27.9	33.6	169.872	169.828	14	1.856	169.856	28.0	33.7	169.872	169.828	0.000	169.828	03-Aug-05		
Lateral																			
B-M	73	1.127	877.127	28.2	33.9	877.210	876.982	73	1.115	877.115	28.5	34.2	877.201	876.969	0.014	876.975	03-Aug-05		
D-O	73	0.567	876.567	28.2	33.9	876.650	876.423	73	0.567	876.567	29.4	35.1	876.663	876.415	0.007	876.419	03-Aug-05		
F-Q	72	11.574	875.574	28.7	34.4	875.662	875.427	72	11.561	875.561	29.2	34.9	875.654	875.410	0.016	875.419	03-Aug-05		
H-S	73	0.854	876.854	26.7	32.4	876.922	876.719	73	0.824	876.824	29.6	35.3	876.922	876.671	0.048	876.695	03-Aug-05		
Diagonal																			
B-O	74	7.329	895.329	28.2	33.9	895.414	895.181	74	7.317	895.317	28.3	34.0	895.403	895.169	0.013	895.175	03-Aug-05		
D-M	74	3.278	891.278	27.6	33.3	891.357	891.135	74	3.288	891.288	27.7	33.4	891.368	891.144	0.009	891.140	03-Aug-05		
F-S	74	7.323	895.323	28.2	33.9	895.408	895.175	74	7.333	895.333	27.8	33.5	895.414	895.188	0.013	895.182	03-Aug-05		
H-Q	74	1.512	889.512	27.8	33.5	889.592	889.368	74	1.535	889.535	28.7	34.4	889.625	889.385	0.017	889.377	03-Aug-05		

Lateral

Extensometer Measurements

Cheyenne Regional Airport

Zone 2

Single Application

Pins	1st Measurement								2nd Measurement								0.016 ΔD	Average	Date
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj length	adj (conc)					
M-N	16	11.796	203.796	27.2	32.9	203.813	203.764	16	11.787	203.787	25.6	31.3	203.800	203.757	0.007	203.761	03-Aug-05		
O-P	16	11.789	203.789	26.1	31.8	203.803	203.758	16	11.798	203.798	24.9	30.6	203.810	203.769	0.011	203.764	03-Aug-05		
Q-R	16	11.520	203.520	25.7	31.4	203.533	203.490	16	11.531	203.531	24.7	30.4	203.542	203.503	0.012	203.496	03-Aug-05		
S-T	16	11.631	203.631	25.2	30.9	203.643	203.602	16	11.637	203.637	24.8	30.5	203.648	203.608	0.007	203.605	03-Aug-05		
Transverse																			
M-O	14	2.681	170.681	23.8	29.5	170.689	170.658	14	2.695	170.695	25.8	31.5	170.706	170.670	0.012	170.664	03-Aug-05		
N-P	14	2.460	170.460	23.8	29.5	170.468	170.437	14	2.455	170.455	26.1	31.8	170.467	170.429	0.008	170.433	03-Aug-05		
Q-S	14	1.604	169.604	24.6	30.3	169.613	169.580	14	1.610	169.610	25.2	30.9	169.620	169.586	0.005	169.583	03-Aug-05		
R-T	14	1.233	169.233	23.8	29.5	169.240	169.210	14	1.239	169.239	25.9	31.6	169.251	169.214	0.003	169.212	03-Aug-05		
Diagonal																			
M-P	22	3.241	267.241	23.9	29.6	267.253	267.205	22	3.244	267.244	25.5	31.2	267.261	267.205	0.000	267.205	03-Aug-05		
N-O	22	0.400	264.400	23.8	29.5	264.412	264.365	22	0.393	264.393	25.8	31.5	264.411	264.354	0.011	264.359	03-Aug-05		
Q-T	22	3.575	267.575	24.1	29.8	267.588	267.539	22	3.576	267.576	25.2	30.9	267.592	267.538	0.001	267.538	03-Aug-05		
R-S	21	10.198	262.198	24.3	30.0	262.211	262.162	21	10.233	262.233	24.7	30.4	262.247	262.196	0.034	262.179	03-Aug-05		
Transverse																			
O-Q	31	3.044	375.044	25.3	31.0	375.067	374.990	31	3.058	375.058	24.7	30.4	375.078	375.006	0.016	374.998	03-Aug-05		
P-R	31	3.530	375.530	26.1	31.8	375.557	375.474	31	3.557	375.557	24.4	30.1	375.576	375.505	0.032	375.489	03-Aug-05		
Diagonal																			
O-R	35	9.534	429.534	25.7	31.4	429.562	429.471	35	9.535	429.535	25.2	30.9	429.561	429.473	0.003	429.472	03-Aug-05		
P-Q	35	4.563	424.563	25.4	31.1	424.590	424.501	35	4.567	424.567	24.8	30.5	424.591	424.507	0.006	424.504	03-Aug-05		

Extensometer Measurements

Cheyenne Regional Airport

Zone 3

Multiple Application

Pins	1st Measurement							2nd Measurement							0.024 Diff	Average	Date
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj length	adj (conc)			
Lateral																	
A-B	16	11.554	203.554	30.2	35.9	203.578	203.518	16	11.584	203.584	18.7	24.4	203.581	203.564	0.047	203.541	03-Aug-05
C-D	16	10.890	202.890	30.2	35.9	202.914	202.853	16	10.900	202.900	18.7	24.4	202.897	202.880	0.027	202.867	03-Aug-05
E-F	16	7.952	199.952	30.2	35.9	199.976	199.916	16	7.973	199.973	18.7	24.4	199.969	199.953	0.037	199.935	03-Aug-05
G-H	16	5.523	197.523	30.2	35.9	197.546	197.488	16	5.565	197.565	18.7	24.4	197.562	197.545	0.058	197.516	03-Aug-05
Transverse																	
A-C	14	2.854	170.854	29.9	35.6	170.874	170.824	14	2.846	170.846	19.7	25.4	170.845	170.828	0.004	170.826	03-Aug-05
B-D	14	2.271	170.271	29.9	35.6	170.291	170.241	14	2.270	170.270	19.7	25.4	170.269	170.252	0.011	170.247	03-Aug-05
E-G	14	0.270	168.270	29.9	35.6	168.289	168.240	14	0.275	168.275	19.7	25.4	168.274	168.257	0.017	168.249	03-Aug-05
F-H	14	0.221	168.221	29.9	35.6	168.240	168.191	14	0.248	168.248	19.7	25.4	168.247	168.230	0.039	168.211	03-Aug-05
Diagonal																	
A-D	22	1.583	265.583	29.9	35.6	265.613	265.536	22	1.600	265.600	19.9	25.6	265.600	265.572	0.036	265.554	03-Aug-05
B-C	22	1.086	265.086	29.9	35.6	265.116	265.039	22	1.104	265.104	19.9	25.6	265.104	265.076	0.037	265.058	03-Aug-05
E-H	21	8.846	260.846	29.9	35.6	260.875	260.799	21	8.866	260.866	19.9	25.6	260.865	260.838	0.039	260.819	03-Aug-05
F-G	21	7.989	259.989	29.9	35.6	260.019	259.943	21	8.009	260.009	19.9	25.6	260.009	259.981	0.038	259.962	03-Aug-05
Transverse																	
C-E	31	2.740	374.740	27.0	32.7	374.770	374.681	31	2.718	374.718	22.4	28.1	374.728	374.672	0.010	374.677	03-Aug-05
D-F	31	2.691	374.691	27.0	32.7	374.721	374.632	31	2.697	374.697	22.4	28.1	374.707	374.650	0.018	374.641	03-Aug-05
Diagonal																	
C-F	35	6.300	426.300	27.0	32.7	426.335	426.233	35	6.266	426.266	22.4	28.1	426.278	426.213	0.020	426.223	03-Aug-05
D-E	35	4.614	424.614	27.0	32.7	424.648	424.548	35	4.639	424.639	22.4	28.1	424.650	424.586	0.038	424.567	03-Aug-05

Across Joint

Extensometer Measurements

Cheyenne Regional Airport

Zone 3

Multiple Application

Pins	1st Measurement							2nd Measurement							0.024		
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj length	adj (conc)	Diff	Average	Date
J-Q	15	2.396	182.396	27.2	32.9	182.411	182.367	15	2.381	182.381	27.9	33.6	182.398	182.351	0.016	182.359	03-Aug-05
Q-S	14	11.861	179.861	27.2	32.9	179.876	179.833	14	11.868	179.868	27.9	33.6	179.884	179.839	0.006	179.836	03-Aug-05
S-N	15	2.839	182.839	27.2	32.9	182.854	182.810	15	2.836	182.836	27.9	33.6	182.853	182.806	0.003	182.808	03-Aug-05
L-R	14	11.275	179.275	27.5	33.2	179.291	179.246	14	11.283	179.283	29.2	34.9	179.302	179.252	0.006	179.249	03-Aug-05
R-T	15	3.249	183.249	27.5	33.2	183.265	183.220	15	3.244	183.244	29.2	34.9	183.264	183.212	0.007	183.216	03-Aug-05
T-P	14	11.961	179.961	27.5	33.2	179.977	179.932	14	11.966	179.966	29.2	34.9	179.985	179.935	0.003	179.934	03-Aug-05
Internal Transverse																	
Q-R	13	11.029	167.029	29.2	34.9	167.047	167.000	13	11.022	167.022	30.3	36.0	167.042	166.992	0.008	166.996	03-Aug-05
S-T	14	2.420	170.420	29.2	34.9	170.438	170.391	14	2.426	170.426	30.3	36.0	170.446	170.395	0.005	170.393	03-Aug-05
Lateral																	
B-I	73	1.630	877.630	28.2	33.9	877.713	877.485	73	1.587	877.587	31.3	37.0	877.702	877.423	0.062	877.454	03-Aug-05
D-K	73	0.923	876.923	28.2	33.9	877.006	876.778	73	0.893	876.893	31.3	37.0	877.008	876.729	0.049	876.754	03-Aug-05
F-M	72	10.485	874.485	28.2	33.9	874.568	874.341	72	10.491	874.491	31.3	37.0	874.606	874.328	0.013	874.334	03-Aug-05
H-O	72	11.197	875.197	28.2	33.9	875.280	875.053	72	11.166	875.166	31.3	37.0	875.281	875.002	0.050	875.028	03-Aug-05
Diagonal																	
B-K	74	5.368	893.368	28.2	33.9	893.453	893.221	74	5.383	893.383	31.1	36.8	893.498	893.217	0.003	893.219	03-Aug-05
D-I	74	5.993	893.993	28.8	34.5	894.084	893.842	74	5.927	893.927	31.1	36.8	894.042	893.761	0.081	893.802	03-Aug-05
F-O	74	2.856	890.856	28.2	33.9	890.941	890.709	74	2.799	890.799	31.1	36.8	890.914	890.634	0.075	890.671	03-Aug-05
H-M	74	2.793	890.793	28.2	33.9	890.878	890.646	74	2.848	890.848	31.1	36.8	890.963	890.683	0.037	890.664	03-Aug-05

Lateral

Extensometer Measurements

Cheyenne Regional Airport

Zone 3

Multiple Application

Pins	1st Measurement								2nd Measurement								Diff	Average	Date
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj length	adj (conc)					
I-J	16	11.901	203.901	22.9	28.6	203.908	203.875	16	11.896	203.896	23.8	29.5	203.905	203.869	0.006	203.872	03-Aug-05		
K-L	16	11.811	203.811	22.9	28.6	203.818	203.785	16	11.808	203.808	23.8	29.5	203.816	203.780	0.005	203.783	03-Aug-05		
M-N	16	11.076	203.076	22.9	28.6	203.083	203.050	16	11.031	203.031	23.8	29.5	203.040	203.004	0.046	203.027	03-Aug-05		
O-P	16	11.217	203.217	22.9	28.6	203.223	203.191	16	11.219	203.219	23.8	29.5	203.227	203.191	0.001	203.191	03-Aug-05		
Transverse																			
I-K	14	2.197	170.197	22.8	28.5	170.203	170.175	14	2.193	170.193	23.6	29.3	170.200	170.171	0.005	170.173	03-Aug-05		
J-L	14	2.163	170.163	22.8	28.5	170.169	170.141	14	2.171	170.171	23.6	29.3	170.178	170.149	0.007	170.145	03-Aug-05		
M-O	13	11.500	167.500	22.8	28.5	167.505	167.479	13	11.493	167.493	23.6	29.3	167.500	167.471	0.008	167.475	03-Aug-05		
N-P	13	11.557	167.557	22.8	28.5	167.562	167.536	13	11.550	167.550	23.6	29.3	167.557	167.528	0.008	167.532	03-Aug-05		
Diagonal																			
I-L	22	0.762	264.762	23.3	29.0	264.772	264.728	22	0.773	264.773	23.7	29.4	264.784	264.738	0.010	264.733	03-Aug-05		
J-K	22	2.395	266.395	23.3	29.0	266.405	266.360	22	2.376	266.376	23.7	29.4	266.387	266.341	0.020	266.350	03-Aug-05		
M-P	21	11.593	263.593	23.3	29.0	263.603	263.559	21	11.585	263.585	23.7	29.4	263.596	263.550	0.009	263.554	03-Aug-05		
N-O	21	11.085	263.085	23.3	29.0	263.095	263.051	21	11.041	263.041	23.7	29.4	263.052	263.006	0.045	263.028	03-Aug-05		
Transverse																			
K-M	31	2.707	374.707	23.3	29.0	374.721	374.658	31	2.691	374.691	24.7	30.4	374.711	374.639	0.020	374.648	03-Aug-05		
L-N	31	2.955	374.955	23.3	29.0	374.969	374.906	31	2.942	374.942	24.7	30.4	374.962	374.890	0.017	374.898	03-Aug-05		
Diagonal																			
K-N	35	5.528	425.528	23.3	29.0	425.544	425.473	35	5.502	425.502	24.7	30.4	425.525	425.442	0.030	425.458	03-Aug-05		
L-M	35	7.497	427.497	23.3	29.0	427.513	427.441	35	7.482	427.482	24.7	30.4	427.505	427.422	0.019	427.432	03-Aug-05		

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
				0.344	0.098%			0.189	0.030%	0.344	0.098%	0.302	0.072%	0.090
Cheyenne Regional Airport				-0.161	-0.090%		-0.078	-0.038%	-0.126	-0.075%	-0.076	-0.029%	-0.161	-0.090%
Zone 1	2006		Average	0.057	0.016%	Average	0.030	0.004%	0.069	0.025%	0.080	0.018%	0.026	0.014%
Control														

Pins	ft	in	1st Measurement					2nd Measurement					0.012		Percentage				
			total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
Lateral																			
A-B	16	11.585	203.585	26.7	31.2	203.601	203.559	16	11.588	203.588	21.3	25.8	203.591	203.569	0.011	203.564	19-Sep-06	-0.078	-0.038%
C-D	16	11.867	203.867	25.6	30.1	203.880	203.842	16	11.878	203.878	21.3	25.8	203.881	203.859	0.017	203.851	19-Sep-06	0.036	0.017%
E-F	16	11.449	203.449	21.8	26.3	203.453	203.430	16	11.452	203.452	21.3	25.8	203.455	203.433	0.004	203.431	19-Sep-06	0.000	0.000%
G-H	16	10.548	202.548	21.3	25.8	202.551	202.529	16	10.555	202.555	20.4	24.9	202.556	202.538	0.008	202.533	19-Sep-06	-0.035	-0.017%
Transverse																			
A-C	14	1.709	169.709	23.0	27.5	169.715	169.691	14	1.711	169.711	21.3	25.8	169.714	169.695	0.004	169.693	19-Sep-06	-0.083	-0.049%
B-D	14	2.892	170.892	22.7	27.2	170.897	170.875	14	2.893	170.893	22.2	26.7	170.897	170.876	0.002	170.875	19-Sep-06	0.016	0.009%
E-G	14	0.971	168.971	21.9	26.4	168.975	168.955	14	0.789	168.789	22.7	27.2	168.794	168.772	0.183	168.863	19-Sep-06	-0.126	-0.075%
F-H	14	0.438	168.438	22.6	27.1	168.443	168.421	14	0.466	168.466	22.8	27.3	168.471	168.449	0.028	168.435	19-Sep-06	0.020	0.012%
Diagonal																			
A-D	21	11.043	263.043	27.5	32.0	263.066	263.007	21	11.042	263.042	21.3	25.8	263.046	263.018	0.010	263.013	19-Sep-06	-0.013	-0.005%
B-C	22	4.107	268.107	25.8	30.3	268.125	268.074	22	4.101	268.101	21.2	25.7	268.105	268.076	0.003	268.075	19-Sep-06	-0.072	-0.027%
E-H	21	8.771	260.771	20.9	25.4	260.774	260.748	21	8.768	260.768	20.9	25.4	260.771	260.745	0.003	260.746	19-Sep-06	-0.076	-0.029%
F-G	22	3.233	267.233	21.3	25.8	267.237	267.208	22	3.228	267.228	21.2	25.7	267.232	267.204	0.005	267.206	19-Sep-06	0.061	0.023%
Transverse																			
C-E	31	2.392	374.392	23.3	27.8	374.406	374.352	31	2.402	374.402	22.7	27.2	374.414	374.364	0.012	374.358	19-Sep-06	0.101	0.027%
D-F	31	1.590	373.590	23.1	27.6	373.603	373.551	31	1.594	373.594	22.2	26.7	373.604	373.557	0.006	373.554	19-Sep-06	0.053	0.014%
Diagonal																			
C-F	35	2.440	422.440	22.6	27.1	422.453	422.397	35	2.438	422.438	21.4	25.9	422.445	422.399	0.001	422.398	19-Sep-06	0.203	0.048%
D-E	35	9.356	429.356	23.8	28.3	429.375	429.309	35	9.353	429.353	21.3	25.8	429.359	429.313	0.004	429.311	19-Sep-06	-0.025	-0.006%

Across Joint

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
				0.344	0.098%		0.189	0.030%	0.344	0.098%	0.302	0.072%	0.090	0.049%
Cheyenne Regional Airport				-0.161	-0.090%		-0.078	-0.038%	-0.126	-0.075%	-0.076	-0.029%	-0.161	-0.090%
Zone 1	2006		Average	0.057	0.016%	Average	0.030	0.004%	0.069	0.025%	0.080	0.018%	0.026	0.014%

Pins	ft	in	1st Measurement						2nd Measurement						Diff	Average	Date	Percentage	
			total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)				ΔD '05-'06	ΔD '05-'06
A-I	15	2.445	182.445	24.1	28.6	182.454	182.425	15	2.443	182.443	22.7	27.2	182.449	182.424	0.000	182.425	19-Sep-06	0.088	0.048%
I-K	14	10.921	178.921	23.5	28.0	178.928	178.902	14	10.932	178.932	22.9	27.4	178.938	178.914	0.012	178.908	19-Sep-06	-0.161	-0.090%
K-E	15	2.624	182.624	22.7	27.2	182.630	182.605	15	2.607	182.607	23.1	27.6	182.614	182.588	0.018	182.597	19-Sep-06	0.090	0.049%
C-J	14	11.424	179.424	22.2	26.7	179.429	179.406	14	11.424	179.424	21.6	26.1	179.427	179.407	0.001	179.407	19-Sep-06	0.071	0.040%
J-L	15	2.441	182.441	22.0	26.5	182.445	182.423	15	2.437	182.437	21.8	26.3	182.441	182.420	0.004	182.421	19-Sep-06	-0.006	-0.004%
L-G	15	1.382	181.382	22.0	26.5	181.386	181.364	15	1.374	181.374	21.7	26.2	181.378	181.357	0.008	181.361	19-Sep-06	0.076	0.042%
Internal Transverse																			
I-J	13	10.789	166.789	22.4	26.9	166.794	166.772	13	10.786	166.786	22.7	27.2	166.791	166.769	0.003	166.771	19-Sep-06	0.003	0.002%
K-L	14	2.293	170.293	22.3	26.8	170.298	170.276	14	2.301	170.301	22.6	27.1	170.306	170.284	0.008	170.280	19-Sep-06	0.052	0.030%
Lateral																			
B-M	73	0.048	876.048	15.4	10.4	876.001	876.157	73	0.035	876.035	16.7	11.7	876.001	876.136	0.021	876.146	20-Sep-06	0.189	0.022%
D-O	72	11.665	875.665	17.9	12.9	875.644	875.759	72	11.652	875.652	20.7	15.7	875.659	875.729	0.030	875.744	20-Sep-06	0.140	0.016%
F-Q	72	11.980	875.980	19.4	14.4	875.974	876.065	72	11.974	875.974	18.8	13.8	875.962	876.062	0.002	876.063	20-Sep-06	-0.048	-0.005%
H-S	73	0.996	876.996	21.5	16.5	877.011	877.068	73	1.012	877.012	21.4	16.4	877.026	877.085	0.017	877.076	20-Sep-06	0.052	0.006%
Diagonal																			
B-O	74	0.956	888.956	16.9	11.9	888.924	889.057	74	0.954	888.954	17.6	12.6	888.929	889.051	0.006	889.054	20-Sep-06	0.191	0.021%
D-M	74	7.578	895.578	16.9	11.9	895.546	895.680	74	7.553	895.553	20.6	15.6	895.559	895.632	0.048	895.656	20-Sep-06	0.135	0.015%
F-S	74	0.961	888.961	20.8	15.8	888.969	889.038	74	0.955	888.955	21.6	16.6	888.971	889.027	0.011	889.033	20-Sep-06	-0.038	-0.004%
H-Q	74	8.202	896.202	20.8	15.8	896.210	896.280	74	8.199	896.199	20.9	15.9	896.208	896.276	0.004	896.278	20-Sep-06	0.068	0.008%

Lateral

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
Cheyenne Regional Airport				0.344	0.098%		0.189	0.030%	0.344	0.098%	0.302	0.072%	0.090	0.049%
Zone 1 Control				-0.161	-0.090%		-0.078	-0.038%	-0.126	-0.075%	-0.076	-0.029%	-0.161	-0.090%
2006			Average	0.057	0.016%	Average	0.030	0.004%	0.069	0.025%	0.080	0.018%	0.026	0.014%

Pins	1st Measurement								2nd Measurement								0.012		Percentage	
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06	
M-N	16	11.780	203.780	10.4	5.4	203.757	203.812	16	11.790	203.790	7.7	2.7	203.761	203.826	0.014	203.819	20-Sep-06	0.061	0.030%	
O-P	16	11.882	203.882	8.2	3.2	203.854	203.917	16	11.879	203.879	8.4	3.4	203.852	203.914	0.003	203.916	20-Sep-06	0.034	0.017%	
Q-R	16	10.596	202.596	7.7	2.7	202.567	202.632	16	10.597	202.597	8.7	3.7	202.570	202.632	0.000	202.632	20-Sep-06	0.012	0.006%	
S-T	16	10.814	202.814	7.6	2.6	202.785	202.850	16	10.813	202.813	9.1	4.1	202.787	202.847	0.003	202.849	20-Sep-06	-0.001	-0.001%	
Transverse																				
M-O	14	1.641	169.641	10.4	5.4	169.622	169.668	14	1.633	169.633	10.9	5.9	169.615	169.659	0.009	169.664	20-Sep-06	0.166	0.098%	
N-P	14	1.773	169.773	9.7	4.7	169.753	169.801	14	1.767	169.767	9.6	4.6	169.747	169.795	0.006	169.798	20-Sep-06	0.097	0.057%	
Q-S	14	0.773	168.773	9.5	4.5	168.752	168.801	14	0.779	168.779	10.1	5.1	168.760	168.806	0.005	168.803	20-Sep-06	0.135	0.080%	
R-T	14	0.509	168.509	9.3	4.3	168.488	168.537	14	0.503	168.503	11.1	6.1	168.486	168.529	0.008	168.533	20-Sep-06	-0.007	-0.004%	
Diagonal																				
M-P	21	10.345	262.345	8.5	3.5	262.310	262.390	21	10.348	262.348	8.2	3.2	262.312	262.394	0.004	262.392	20-Sep-06	0.120	0.046%	
N-O	22	4.218	268.218	8.4	3.4	268.182	268.264	22	4.220	268.220	7.8	2.8	268.182	268.267	0.003	268.266	20-Sep-06	0.134	0.050%	
Q-T	21	9.562	261.562	7.7	2.7	261.525	261.608	21	9.560	261.560	9.0	4.0	261.527	261.604	0.004	261.606	20-Sep-06	0.150	0.057%	
R-S	22	1.916	265.916	7.7	2.7	265.878	265.963	22	1.908	265.908	8.7	3.7	265.873	265.953	0.010	265.958	20-Sep-06	-0.056	-0.021%	
Transverse																				
O-Q	31	1.867	373.867	9.5	4.5	373.821	373.929	31	1.871	373.871	9.9	4.9	373.827	373.932	0.003	373.930	20-Sep-06	0.191	0.051%	
P-R	31	2.572	374.572	9.1	4.1	374.525	374.635	31	2.575	374.575	10.1	5.1	374.532	374.635	0.000	374.635	20-Sep-06	0.344	0.092%	
Diagonal																				
O-R	35	2.123	422.123	8.1	3.1	422.065	422.197	35	2.113	422.113	8.6	3.6	422.057	422.185	0.011	422.191	20-Sep-06	0.302	0.072%	
P-Q	35	9.678	429.678	8.1	3.1	429.619	429.753	35	9.667	429.667	8.5	3.5	429.610	429.741	0.012	429.747	20-Sep-06	0.195	0.045%	

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
				0.389	0.229%		0.262	0.130%	0.389	0.229%	0.337	0.127%	0.263	0.144%
Cheyenne Regional Airport				-0.410	-0.063%		-0.410	-0.052%	-0.109	-0.030%	-0.354	-0.040%	-0.114	-0.063%
Zone 2	2006													
Single Application			Average	0.047	0.035%	Average	-0.020	0.022%	0.117	0.059%	0.030	0.024%	0.076	0.042%

		1st Measurement						2nd Measurement						0.018			Percentage		
Pins	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
Lateral																			
A-B	16	9.183	201.183	19.4	23.9	201.182	201.167	16	9.172	201.172	25.5	30.0	201.185	201.148	0.019	201.157	19-Sep-06	0.262	0.130%
C-D	17	6.043	210.043	19.7	24.2	210.042	210.026	17	6.048	210.048	29.2	33.7	210.070	210.017	0.009	210.022	19-Sep-06	-0.109	-0.052%
E-F	19	1.407	229.407	19.3	23.8	229.405	229.389	19	1.408	229.408	28.7	33.2	229.431	229.375	0.014	229.382	19-Sep-06	0.122	0.053%
G-H	19	8.301	236.301	21.9	26.4	236.306	236.278	19	8.293	236.293	27.9	32.4	236.315	236.260	0.018	236.269	19-Sep-06	0.025	0.010%
Transverse																			
A-C	14	1.751	169.751	20.3	24.8	169.752	169.737	14	1.745	169.745	29.0	33.5	169.763	169.720	0.016	169.728	19-Sep-06	-0.012	-0.007%
B-D	14	2.638	170.638	20.3	24.8	170.639	170.623	14	2.619	170.619	28.0	32.5	170.635	170.595	0.028	170.609	19-Sep-06	0.328	0.193%
E-G	14	0.783	168.783	21.5	26.0	168.786	168.767	14	0.762	168.762	29.0	33.5	168.780	168.737	0.030	168.752	19-Sep-06	-0.051	-0.030%
F-H	14	0.934	168.934	23.4	27.9	168.941	168.916	14	0.925	168.925	28.4	32.9	168.941	168.901	0.015	168.909	19-Sep-06	0.040	0.024%
Diagonal																			
A-D	22	1.066	265.066	19.6	24.1	265.065	265.045	22	1.073	265.073	28.9	33.4	265.100	265.035	0.010	265.040	19-Sep-06	0.337	0.127%
B-C	22	4.792	268.792	19.7	24.2	268.791	268.770	22	4.796	268.796	20.9	25.4	268.799	268.772	0.002	268.771	19-Sep-06	0.020	0.007%
E-H	23	10.617	286.617	21.4	25.9	286.622	286.590	23	10.604	286.604	28.6	33.1	286.633	286.563	0.027	286.577	19-Sep-06	-0.037	-0.013%
F-G	24	0.755	288.755	20.9	25.4	288.758	288.729	24	0.758	288.758	29.0	33.5	288.788	288.716	0.013	288.723	19-Sep-06	0.146	0.050%
Transverse																			
C-E	31	1.698	373.698	22.4	26.9	373.708	373.661	31	1.669	373.669	28.7	33.2	373.707	373.615	0.045	373.638	19-Sep-06	0.378	0.101%
D-F	31	1.511	373.511	21.4	25.9	373.517	373.476	31	1.474	373.474	28.6	33.1	373.511	373.421	0.056	373.449	19-Sep-06	-0.109	-0.029%
Diagonal																			
C-F	35	11.909	431.909	19.1	23.6	431.904	431.876	35	11.876	431.876	28.0	32.5	431.916	431.816	0.060	431.846	19-Sep-06	0.330	0.076%
D-E	36	2.848	434.848	18.8	23.3	434.842	434.815	36	2.857	434.857	29.0	33.5	434.902	434.794	0.022	434.805	19-Sep-06	-0.091	-0.021%

Across Joint

Extensometer Measurements		1 Year Change ΔD '05-'06	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint				
			Max	0.389		0.229%	0.262	0.130%	0.389	0.229%	0.337	0.127%	0.263	0.144%		
Cheyenne Regional Airport			-0.410	-0.063%	Min	-0.410	-0.052%	-0.109	-0.030%	-0.354	-0.040%	-0.114	-0.063%			
Zone 2	2006				Average	0.047	0.035%	Average	-0.020	0.022%	0.117	0.059%	0.030	0.024%	0.076	0.042%
Single Application																

Pins	ft	in	1st Measurement				2nd Measurement				Diff	Average	Date	Percentage					
			total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in				temp	temp conc	adj (tape)	adj (conc)	ΔD '05-'06	ΔD '05-'06
A-I	15	1.922	181.922	28.5	33.0	181.940	181.896	15	1.932	181.932	28.4	32.9	181.950	181.906	0.010	181.901	19-Sep-06	0.158	0.087%
I-K	14	10.731	178.731	28.4	32.9	178.748	178.706	14	10.727	178.727	27.0	31.5	178.742	178.703	0.002	178.705	19-Sep-06	-0.086	-0.048%
K-E	15	2.641	182.641	27.6	32.1	182.657	182.616	15	2.641	182.641	28.3	32.8	182.659	182.615	0.001	182.616	19-Sep-06	0.263	0.144%
C-J	14	10.342	178.342	27.8	32.3	178.358	178.318	14	10.346	178.346	27.8	32.3	178.362	178.322	0.004	178.320	19-Sep-06	0.062	0.035%
J-L	15	2.734	182.734	27.4	31.9	182.750	182.709	15	2.740	182.740	26.7	31.2	182.754	182.716	0.007	182.713	19-Sep-06	0.172	0.094%
L-G	15	1.271	181.271	26.7	31.2	181.285	181.248	15	1.270	181.270	25.7	30.2	181.282	181.248	0.000	181.248	19-Sep-06	-0.114	-0.063%
Internal Transverse																			
I-J	13	10.185	166.185	28.0	32.5	166.200	166.162	13	10.193	166.193	27.8	32.3	166.208	166.170	0.008	166.166	19-Sep-06	N/A	N/A
K-L	14	2.246	170.246	28.4	32.9	170.263	170.222	14	2.235	170.235	26.9	31.4	170.249	170.213	0.009	170.217	19-Sep-06	0.389	0.229%
Lateral																			
B-M	73	0.860	876.860	23.4	27.9	876.895	876.766	73	0.880	876.880	26.2	30.7	876.943	876.769	0.003	876.768	19-Sep-06	-0.208	-0.024%
D-O	73	0.358	876.358	28.3	32.8	876.442	876.235	73	0.368	876.368	30.4	34.9	876.474	876.232	0.003	876.233	19-Sep-06	-0.185	-0.021%
F-Q	72	11.117	875.117	26.6	31.1	875.184	875.004	72	11.147	875.147	30.0	34.5	875.249	875.014	0.009	875.009	19-Sep-06	-0.410	-0.047%
H-S	73	0.579	876.579	30.2	34.7	876.683	876.444	73	0.626	876.626	28.6	33.1	876.713	876.501	0.057	876.473	19-Sep-06	-0.222	-0.025%
Diagonal																			
B-O	74	6.920	894.920	27.2	31.7	894.995	894.801	74	6.976	894.976	25.7	30.2	895.035	894.866	0.065	894.834	19-Sep-06	-0.341	-0.038%
D-M	74	3.243	891.243	24.8	29.3	891.293	891.139	74	3.273	891.273	25.7	30.2	891.332	891.164	0.024	891.152	19-Sep-06	0.012	0.001%
F-S	74	7.028	895.028	31.4	35.9	895.146	894.883	74	7.080	895.080	31.6	36.1	895.200	894.934	0.051	894.908	19-Sep-06	-0.273	-0.031%
H-Q	74	1.140	889.140	26.9	31.4	889.211	889.024	74	1.180	889.180	33.8	38.3	889.322	889.021	0.002	889.022	19-Sep-06	-0.354	-0.040%

Lateral

Extensometer Measurements		1 Year Change ΔD '05-'06		Total				Lateral		Transverse		Diagonal		Across Joint					
Cheyenne Regional Airport		Max	Min	0.389	0.229%	0.410	-0.063%	Max	Min	0.262	0.130%	0.389	0.229%	0.337	0.127%	0.263	0.144%		
Zone 2 2006 Single Application		Average		0.047	0.035%			Average		-0.020	0.022%	0.117	0.059%	0.030	0.024%	0.076	0.042%		
Pins	ft	1st Measurement						2nd Measurement						0.018		Percentage			
		in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
M-N	16	11.877	203.877	25.8	30.3	203.891	203.852	16	11.893	203.893	28.4	32.9	203.913	203.864	0.012	203.858	19-Sep-06	0.098	0.048%
O-P	16	11.952	203.952	27.8	32.3	203.970	203.924	16	11.968	203.968	28.7	33.2	203.989	203.939	0.015	203.931	19-Sep-06	0.168	0.082%
Q-R	16	11.649	203.649	30.0	34.5	203.673	203.618	16	11.629	203.629	27.5	32.0	203.647	203.602	0.016	203.610	19-Sep-06	0.113	0.056%
S-T	16	11.751	203.751	28.6	33.1	203.771	203.722	16	11.737	203.737	28.2	32.7	203.756	203.709	0.013	203.715	19-Sep-06	0.110	0.054%
Transverse																			
M-O	14	2.810	170.810	31.4	35.9	170.833	170.782	14	2.815	170.815	27.3	31.8	170.829	170.792	0.010	170.787	19-Sep-06	0.123	0.072%
N-P	14	2.633	170.633	30.7	35.2	170.654	170.606	14	2.634	170.634	26.7	31.2	170.647	170.612	0.006	170.609	19-Sep-06	0.176	0.103%
Q-S	14	1.743	169.743	28.6	33.1	169.760	169.719	14	1.742	169.742	28.6	33.1	169.759	169.718	0.001	169.718	19-Sep-06	0.135	0.080%
R-T	14	1.213	169.213	28.7	33.2	169.230	169.189	14	1.222	169.222	25.9	30.4	169.234	169.201	0.012	169.195	19-Sep-06	-0.017	-0.010%
Diagonal																			
M-P	22	3.411	267.411	28.6	33.1	267.438	267.373	22	3.424	267.424	27.9	32.4	267.449	267.387	0.014	267.380	19-Sep-06	0.175	0.065%
N-O	22	0.596	264.596	28.9	33.4	264.623	264.558	22	0.591	264.591	28.4	32.9	264.617	264.554	0.004	264.556	19-Sep-06	0.196	0.074%
Q-T	22	3.675	267.675	29.5	34.0	267.704	267.635	22	3.669	267.669	28.0	32.5	267.694	267.632	0.003	267.634	19-Sep-06	0.095	0.036%
R-S	21	10.360	262.360	28.1	32.6	262.385	262.323	21	10.340	262.340	29.2	33.7	262.368	262.301	0.022	262.312	19-Sep-06	0.133	0.051%
Transverse																			
O-Q	31	3.078	375.078	28.7	33.2	375.116	375.024	31	3.088	375.088	26.7	31.2	375.117	375.039	0.015	375.032	19-Sep-06	0.034	0.009%
P-R	31	3.634	375.634	29.8	34.3	375.677	375.577	31	3.657	375.657	26.2	30.7	375.684	375.610	0.032	375.593	19-Sep-06	0.104	0.028%
Diagonal																			
O-R	35	9.659	429.659	31.1	35.6	429.714	429.590	35	9.680	429.680	28.4	32.9	429.722	429.619	0.029	429.605	19-Sep-06	0.133	0.031%
P-Q	35	4.569	424.569	29.7	34.2	424.617	424.505	35	4.565	424.565	27.8	32.3	424.603	424.507	0.002	424.506	19-Sep-06	0.002	0.000%

Extensometer Measurements

Cheyenne Regional Airport	1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
			0.331	0.193%		-0.036	-0.018%	0.328	0.193%	0.205	0.069%	0.303	0.166%
Zone 3 2006 Multiple Application		Average	0.101	0.037%	Average	0.079	0.019%	0.107	0.054%	0.107	0.027%	0.115	0.063%

Pins	ft	in	1st Measurement					2nd Measurement					0.015 Diff	Average	Date	Percentage			
			total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc				adj (tape)	adj (conc)	ΔD '05-'06	ΔD '05-'06
Lateral																			
A-B	16	11.543	203.543	16.9	22.3	203.536	203.527	16	11.535	203.535	17.7	23.1	203.530	203.518	0.009	203.522	18-Sep-06	-0.018	-0.009%
C-D	16	10.959	202.959	17.7	23.1	202.954	202.942	16	10.952	202.952	17.1	22.5	202.945	202.936	0.006	202.939	18-Sep-06	0.072	0.036%
E-F	16	7.983	199.983	15.4	20.8	199.972	199.969	16	7.978	199.978	17.9	23.3	199.973	199.961	0.008	199.965	18-Sep-06	0.031	0.015%
G-H	16	5.648	197.648	16.6	22.0	197.640	197.633	16	5.639	197.639	19.3	24.7	197.637	197.620	0.013	197.627	18-Sep-06	0.110	0.056%
Transverse																			
A-C	14	2.870	170.870	17.0	22.4	170.864	170.856	14	2.866	170.866	17.1	22.5	170.860	170.852	0.004	170.854	18-Sep-06	0.028	0.017%
B-D	14	2.407	170.407	18.0	23.4	170.403	170.392	14	2.406	170.406	16.5	21.9	170.399	170.393	0.001	170.393	18-Sep-06	0.146	0.086%
E-G	14	0.277	168.277	19.7	25.1	168.276	168.261	14	0.288	168.288	20.1	25.5	168.288	168.271	0.011	168.266	18-Sep-06	0.017	0.010%
F-H	14	0.260	168.260	17.4	22.8	168.255	168.246	14	0.260	168.260	19.6	25.0	168.259	168.244	0.003	168.245	18-Sep-06	0.034	0.020%
Diagonal																			
A-D	22	1.758	265.758	16.9	22.3	265.748	265.737	22	1.737	265.737	17.3	22.7	265.729	265.715	0.022	265.726	18-Sep-06	0.172	0.065%
B-C	22	1.082	265.082	17.0	22.4	265.073	265.061	22	1.079	265.079	17.8	23.2	265.072	265.057	0.004	265.059	18-Sep-06	0.001	0.000%
E-H	21	8.800	260.800	15.9	21.3	260.788	260.781	21	8.788	260.788	20.3	25.7	260.789	260.761	0.020	260.771	18-Sep-06	-0.047	-0.018%
F-G	21	8.157	260.157	17.5	22.9	260.149	260.135	21	8.171	260.171	19.6	25.0	260.170	260.146	0.010	260.141	18-Sep-06	0.178	0.069%
Transverse																			
C-E	31	2.956	374.956	22.4	27.8	374.966	374.912	31	2.931	374.931	19.5	24.9	374.929	374.895	0.017	374.904	18-Sep-06	0.227	0.061%
D-F	31	2.713	374.713	18.9	24.3	374.708	374.678	31	2.692	374.692	18.1	23.5	374.684	374.659	0.019	374.669	18-Sep-06	0.028	0.007%
Diagonal																			
C-F	35	6.467	426.467	21.0	26.4	426.472	426.421	35	6.449	426.449	17.6	23.0	426.437	426.413	0.008	426.417	18-Sep-06	0.194	0.046%
D-E	35	4.684	424.684	17.8	23.2	424.673	424.648	35	4.654	424.654	19.1	24.5	424.650	424.614	0.034	424.631	18-Sep-06	0.064	0.015%

Across Joint

Extensometer Measurements		1 Year Change ΔD '05-'06	Total		Lateral		Transverse		Diagonal		Across Joint		
Cheyenne Regional Airport			Max	Min	0.331	0.193%	0.328	0.193%	0.205	0.069%	0.303	0.166%	
Zone 3 2006 Multiple Application		Average	0.101	0.037%	Average	0.079	0.019%	0.107	0.054%	0.107	0.027%	0.115	0.063%

Pins	1st Measurement								2nd Measurement								Diff	Average	Date	Percentage	
	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ΔD '05-'06	ΔD '05-'06					
J-Q	15	2.483	182.483	12.3	16.8	182.467	182.478	15	2.473	182.473	11.6	16.1	182.455	182.468	0.009	182.473	19-Sep-06	0.114	0.062%		
Q-S	14	11.772	179.772	12.9	17.4	179.757	179.766	14	11.772	179.772	12.2	16.7	179.756	179.767	0.001	179.766	19-Sep-06	-0.069	-0.039%		
S-N	15	3.115	183.115	12.2	16.7	183.098	183.110	15	3.117	183.117	11.8	16.3	183.100	183.112	0.003	183.111	19-Sep-06	0.303	0.166%		
L-R	14	11.372	179.372	12.7	17.2	179.357	179.366	14	11.400	179.400	13.9	18.4	179.387	179.393	0.027	179.379	19-Sep-06	0.130	0.073%		
R-T	15	3.332	183.332	12.7	17.2	183.316	183.326	15	3.333	183.333	14.2	18.7	183.321	183.325	0.001	183.326	19-Sep-06	0.109	0.060%		
T-P	15	0.045	180.045	12.9	17.4	180.030	180.039	15	0.044	180.044	13.9	18.4	180.031	180.037	0.002	180.038	19-Sep-06	0.104	0.058%		
Internal Transverse																					
Q-R	13	11.156	167.156	12.4	16.9	167.141	167.151	13	11.160	167.160	12.2	16.7	167.145	167.155	0.004	167.153	19-Sep-06	0.157	0.094%		
S-T	14	2.738	170.738	12.3	16.8	170.723	170.733	14	2.714	170.714	11.7	16.2	170.698	170.710	0.023	170.721	19-Sep-06	0.328	0.193%		
Lateral																					
B-I	73	1.832	877.832	13.6	18.1	877.767	877.798	73	1.806	877.806	13.3	17.8	877.738	877.774	0.024	877.786	19-Sep-06	0.331	0.038%		
D-K	73	0.805	876.805	12.6	17.1	876.730	876.777	73	0.810	876.810	14.4	18.9	876.753	876.771	0.006	876.774	19-Sep-06	0.020	0.002%		
F-M	72	10.583	874.583	16.9	21.4	874.552	874.529	72	10.510	874.510	19.6	24.1	874.506	874.440	0.089	874.484	19-Sep-06	0.150	0.017%		
H-O	72	11.257	875.257	19.5	24.0	875.252	875.187	72	11.212	875.212	19.7	24.2	875.209	875.141	0.046	875.164	19-Sep-06	0.136	0.016%		
Diagonal																					
B-K	74	5.452	893.452	12.1	16.6	893.370	893.426	74	5.406	893.406	13.6	18.1	893.340	893.371	0.055	893.399	19-Sep-06	0.180	0.020%		
D-I	74	5.928	893.928	12.1	16.6	893.846	893.902	74	5.940	893.940	15.1	19.6	893.889	893.896	0.007	893.899	19-Sep-06	0.098	0.011%		
F-O	74	2.957	890.957	19.6	24.1	890.953	890.885	74	2.940	890.940	19.7	24.2	890.937	890.868	0.018	890.876	19-Sep-06	0.205	0.023%		
H-M	74	2.866	890.866	18.6	23.1	890.852	890.800	74	2.819	890.819	21.2	25.7	890.831	890.737	0.063	890.769	19-Sep-06	0.104	0.012%		

Lateral

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
Cheyenne Regional Airport				0.331	0.193%		0.331	0.056%	0.328	0.193%	0.205	0.069%	0.303	0.166%
Zone 3 2006 Multiple Application			Average	0.101	0.037%	Average	0.079	0.019%	0.107	0.054%	0.107	0.027%	0.115	0.063%

Pins	ft	in	1st Measurement				2nd Measurement				Diff	Average	Date	Percentage					
			total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in				temp	temp conc	adj (tape)	adj (conc)	ΔD '05-'06	ΔD '05-'06
I-J	16	11.986	203.986	18.8	24.2	203.983	203.967	16	11.983	203.983	17.2	22.6	203.976	203.967	0.001	203.967	18-Sep-06	0.095	0.047%
K-L	16	11.826	203.826	17.7	23.1	203.821	203.809	16	11.817	203.817	17.3	22.7	203.811	203.800	0.008	203.805	18-Sep-06	0.022	0.011%
M-N	16	10.992	202.992	5.3	9.8	202.957	202.996	16	10.987	202.987	8.6	13.1	202.960	202.986	0.010	202.991	19-Sep-06	-0.036	-0.018%
O-P	16	11.232	203.232	6.3	10.8	203.200	203.234	16	11.229	203.229	8.2	12.7	203.201	203.229	0.006	203.231	19-Sep-06	0.040	0.020%
Transverse																			
I-K	14	2.295	170.295	17.1	22.5	170.289	170.281	14	2.284	170.284	16.8	22.2	170.278	170.271	0.011	170.276	18-Sep-06	0.103	0.061%
J-L	14	2.357	170.357	17.2	22.6	170.351	170.343	14	2.343	170.343	17.1	22.5	170.337	170.329	0.014	170.336	18-Sep-06	0.191	0.112%
M-O	13	11.510	167.510	7.8	12.3	167.486	167.510	13	11.495	167.495	10.7	15.2	167.477	167.492	0.018	167.501	19-Sep-06	0.026	0.016%
N-P	13	11.605	167.605	8.4	12.9	167.582	167.604	13	11.612	167.612	8.6	13.1	167.590	167.611	0.007	167.608	19-Sep-06	0.076	0.045%
Diagonal																			
I-L	22	0.883	264.883	17.1	22.5	264.874	264.862	22	0.878	264.878	17.1	22.5	264.869	264.857	0.005	264.859	18-Sep-06	0.127	0.048%
J-K	22	2.565	266.565	18.3	23.7	266.560	266.541	22	2.543	266.543	17.0	22.4	266.534	266.522	0.020	266.532	18-Sep-06	0.181	0.068%
M-P	21	11.633	263.633	7.2	11.7	263.594	263.634	21	11.632	263.632	10.1	14.6	263.602	263.628	0.006	263.631	19-Sep-06	0.077	0.029%
N-O	21	11.022	263.022	5.4	9.9	262.977	263.027	21	11.011	263.011	8.3	12.8	262.975	263.010	0.016	263.018	19-Sep-06	-0.010	-0.004%
Transverse																			
K-M	31	2.708	374.708	18.6	24.0	374.702	374.674	31	2.693	374.693	21.0	26.4	374.697	374.653	0.021	374.664	18-Sep-06	0.015	0.004%
L-N	31	3.051	375.051	20.7	26.1	375.054	375.012	31	3.052	375.052	19.6	25.0	375.050	375.016	0.004	375.014	18-Sep-06	0.116	0.031%
Diagonal																			
K-N	35	5.526	425.526	18.9	24.3	425.521	425.487	35	5.516	425.516	19.4	24.8	425.513	425.475	0.011	425.481	18-Sep-06	0.023	0.006%
L-M	35	7.635	427.635	19.3	24.7	427.632	427.594	35	7.630	427.630	18.8	24.2	427.624	427.591	0.004	427.593	18-Sep-06	0.161	0.038%

Extensometer Measurements				2 Year Change ΔD '06-'08		Max		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Max		Total		Lateral		Transverse	
Cheyenne Regional Airport				Average				0.229		0.135%		0.141		0.069%		0.229		0.135%		0.230		0.136%	
Zone 1 Control				Average				0.046		0.028%		-0.010		-0.005%		0.102		0.060%		0.061		0.036%	
				1st Measurement				2nd Measurement						0.011				Percentage		Percentage			
Pins	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08		
Lateral																							
A-B	16	11.707	203.707	14.9	16.0	203.695	203.710	16	11.700	203.700	16.7	17.8	203.692	203.700	0.010	203.705	27-Aug-08	0.141	0.069%	0.063	0.031%		
C-D	16	11.839	203.839	16.3	17.4	203.830	203.840	16	11.807	203.807	18.3	19.4	203.803	203.805	0.035	203.823	27-Aug-08	-0.028	-0.014%	0.008	0.004%		
E-F	16	11.482	203.482	18.3	19.4	203.478	203.480	16	11.479	203.479	19.8	20.9	203.479	203.475	0.005	203.478	27-Aug-08	0.046	0.023%	0.046	0.023%		
G-H	16	10.519	202.519	20.9	22.0	202.521	202.514	16	10.522	202.522	21.6	22.7	202.526	202.516	0.002	202.515	27-Aug-08	-0.019	-0.009%	-0.053	-0.026%		
Transverse																							
A-C	14	1.929	169.929	15.9	17.0	169.921	169.930	14	1.915	169.915	18.1	19.2	169.911	169.914	0.017	169.922	27-Aug-08	0.229	0.135%	0.146	0.086%		
B-D	14	2.939	170.939	16.4	17.5	170.932	170.940	14	2.932	170.932	17.5	18.6	170.927	170.931	0.008	170.936	27-Aug-08	0.060	0.035%	0.076	0.044%		
E-G	14	1.062	169.062	18.8	19.9	169.060	169.060	14	1.052	169.052	21.7	22.8	169.055	169.047	0.013	169.053	27-Aug-08	0.190	0.112%	0.064	0.038%		
F-H	14	0.437	168.437	20.7	21.8	168.438	168.433	14	0.429	168.429	21.7	22.8	168.432	168.424	0.009	168.428	27-Aug-08	-0.007	-0.004%	0.014	0.008%		

Extensometer Measurements										2 Year Change ΔD '06-'08		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Total		Lateral		Transverse	
Cheyenne Regional Airport										Max	Min	0.229	0.135%	0.141	0.069%	0.229	0.135%	0.230	0.136%	0.147	0.073%	0.230	0.136%		
Zone 1 2008 Control										Average		0.046	0.028%	-0.010	-0.005%	0.102	0.060%	0.061	0.036%	-0.007	-0.003%	0.129	0.076%		
Pins		1st Measurement						2nd Measurement						0.011	Percentage										
ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08					
Lateral																									
M-N	16	11.727	203.727	21.1	22.2	203.730	203.721	16	11.718	203.718	22.3	23.4	203.723	203.711	0.011	203.716	27-Aug-08	-0.103	-0.051%	-0.043	-0.021%				
O-P	16	11.920	203.920	20.6	21.7	203.921	203.915	16	11.910	203.910	22.8	23.9	203.917	203.902	0.013	203.908	27-Aug-08	-0.007	-0.004%	0.027	0.013%				
Q-R	16	10.776	202.776	21.2	22.3	202.779	202.770	16	10.772	202.772	23.1	24.2	202.779	202.764	0.007	202.767	27-Aug-08	0.135	0.067%	0.147	0.073%				
S-T	16	10.621	202.621	27.3	28.4	202.638	202.607	16	10.601	202.601	23.3	24.4	202.609	202.592	0.014	202.599	27-Aug-08	-0.249	-0.123%	-0.250	-0.123%				
Transverse																									
M-O	14	1.728	169.728	21.3	22.4	169.731	169.723	14	1.732	169.732	23.3	24.4	169.738	169.725	0.002	169.724	27-Aug-08	0.060	0.036%	0.226	0.133%				
N-P	14	1.943	169.943	21.4	22.5	169.946	169.938	14	1.931	169.931	21.7	22.8	169.934	169.926	0.012	169.932	27-Aug-08	0.134	0.079%	0.230	0.136%				
Q-S	14	0.803	168.803	21.7	22.8	168.806	168.798	14	0.793	168.793	21.7	22.8	168.796	168.788	0.010	168.793	27-Aug-08	-0.011	-0.006%	0.124	0.074%				
R-T	14	0.705	168.705	23.8	24.9	168.712	168.697	14	0.699	168.699	22.3	23.4	168.704	168.693	0.004	168.695	27-Aug-08	0.162	0.096%	0.155	0.092%				

Extensometer Measurements		2 Year Change Δ '06-'08		Total		Lateral		Transverse		3 Year Change Δ '05-'08		Total		Lateral		Transverse					
Cheyenne Regional Airport		Max	Min	0.367	0.216%	0.132	0.063%	0.367	0.216%	Max	Min	0.369	0.216%	0.197	0.098%	0.369	0.216%				
Zone 2 2008 Single Application		Average		0.072	0.045%	-0.048	-0.023%	0.193	0.114%	Average		0.166	0.096%	0.050	0.025%	0.283	0.167%				
Pins	ft	1st Measurement						2nd Measurement						Diff	Average	Date	Percentage		Percentage		
		in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)				adj (conc)	Δ '06-'08	Δ '06-'08	Δ '05-'08	Δ '05-'08
Lateral																					
A-B	16	9.094	201.094	20.1	25.5	201.094	201.074	16	9.131	201.131	20.1	25.5	201.131	201.111	0.037	201.092	27-Aug-08	-0.065	-0.032%	0.197	0.098%
C-D	17	6.176	210.176	21.4	26.8	210.179	210.153	17	6.178	210.178	21.4	26.8	210.181	210.155	0.002	210.154	27-Aug-08	0.132	0.063%	0.023	0.011%
E-F	19	1.252	229.252	22.1	27.5	229.258	229.226	19	1.247	229.247	22.9	28.3	229.255	229.220	0.006	229.223	27-Aug-08	-0.159	-0.070%	-0.038	-0.016%
G-H	19	8.325	236.325	22.9	28.3	236.333	236.297	19	8.317	236.317	22.4	27.8	236.324	236.289	0.007	236.293	27-Aug-08	0.024	0.010%	0.049	0.021%
Transverse																					
A-C	14	2.118	170.118	20.2	25.6	170.118	170.101	14	2.110	170.110	21.9	27.3	170.114	170.091	0.010	170.096	27-Aug-08	0.367	0.216%	0.355	0.209%
B-D	14	2.567	170.567	20.8	26.2	170.569	170.549	14	2.558	170.558	22.2	27.6	170.562	170.538	0.011	170.544	27-Aug-08	-0.066	-0.039%	0.262	0.154%
E-G	14	1.079	169.079	20.6	26.0	169.080	169.061	14	1.085	169.085	23.4	28.8	169.092	169.064	0.003	169.063	27-Aug-08	0.310	0.184%	0.259	0.154%
F-H	14	1.231	169.231	22.2	27.6	169.235	169.212	14	1.234	169.234	22.8	28.2	169.239	169.214	0.002	169.213	27-Aug-08	0.304	0.180%	0.344	0.204%

Extensometer Measurements																							
Cheyenne Regional Airport																							
Zone 2 2008 Single Application																							
				2 Year Change ΔD '06-'08		Max Min		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Max Min		Total		Lateral		Transverse	
Pins	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	Average	Date	Percentage ΔD '06-'08	Percentage ΔD '06-'08	Percentage ΔD '05-'08	Percentage ΔD '05-'08
Lateral																							
M-N	16	11.861	203.861	28.4	33.8	203.881	203.829	16	11.865	203.865	28.6	34.0	203.885	203.833	0.004	203.831	27-Aug-08	0.004	27-Aug-08	-0.027	-0.013%	0.070	0.034%
O-P	16	11.969	203.969	27.8	33.2	203.987	203.938	16	11.956	203.956	25.9	31.3	203.970	203.927	0.010	203.932	27-Aug-08	0.010	27-Aug-08	0.001	0.001%	0.169	0.083%
Q-R	16	11.420	203.420	24.1	29.5	203.430	203.394	16	11.409	203.409	26.3	31.7	203.424	203.380	0.014	203.387	27-Aug-08	0.014	27-Aug-08	-0.223	-0.110%	-0.109	-0.054%
S-T	16	11.672	203.672	25.6	31.0	203.685	203.644	16	11.673	203.673	24.7	30.1	203.684	203.646	0.002	203.645	27-Aug-08	0.002	27-Aug-08	-0.070	-0.035%	0.040	0.020%
Transverse																							
M-O	14	3.005	171.005	26.8	32.2	171.018	170.980	14	3.013	171.013	26.2	31.6	171.025	170.989	0.009	170.984	27-Aug-08	0.009	27-Aug-08	0.197	0.115%	0.320	0.188%
N-P	14	2.820	170.820	28.7	34.1	170.837	170.793	14	2.838	170.838	27.9	33.3	170.854	170.812	0.019	170.802	27-Aug-08	0.019	27-Aug-08	0.193	0.113%	0.369	0.216%
Q-S	14	1.923	169.923	24.3	29.7	169.931	169.901	14	1.929	169.929	25.2	30.6	169.939	169.906	0.005	169.903	27-Aug-08	0.005	27-Aug-08	0.185	0.109%	0.320	0.189%
R-T	14	1.251	169.251	26.2	31.6	169.263	169.227	14	1.284	169.284	24.7	30.1	169.293	169.262	0.035	169.244	27-Aug-08	0.035	27-Aug-08	0.049	0.029%	0.032	0.019%

Extensometer Measurements				2 Year Change ΔD '06-'08		Max Min		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Max Min		Total		Lateral		Transverse	
Cheyenne Regional Airport				Average				0.193 0.115%		0.166 0.083%		0.193 0.115%		0.241 0.142%				0.209 0.103%		0.241 0.142%			
Zone 3 2008 Multiple Application				Average				0.079 0.045%		0.046 0.023%		0.112 0.066%		0.137 0.077%				0.085 0.042%		0.190 0.112%			
				1st Measurement				2nd Measurement				0.001				Percentage							
Pins	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08	Percentage	Percentage
Lateral																							
A-B	16	11.661	203.661	11.4	16.8	203.641	203.653	16	11.657	203.657	11.3	16.7	203.636	203.649	0.004	203.651	28-Aug-08	0.128	0.063%	0.110	0.054%		
C-D	16	11.084	203.084	11.2	16.6	203.063	203.076	16	11.083	203.083	11.4	16.8	203.063	203.075	0.001	203.075	28-Aug-08	0.137	0.067%	0.209	0.103%		
E-F	16	8.139	200.139	11.6	17.0	200.119	200.131	16	8.141	200.141	12.2	17.6	200.123	200.132	0.001	200.131	28-Aug-08	0.166	0.083%	0.197	0.098%		
G-H	16	5.651	197.651	12.1	17.5	197.633	197.642	16	5.649	197.649	12.3	17.7	197.631	197.640	0.002	197.641	28-Aug-08	0.014	0.007%	0.124	0.063%		
Transverse																							
A-C	14	2.932	170.932	11.2	16.6	170.915	170.925	14	2.918	170.918	11.4	16.8	170.901	170.911	0.014	170.918	28-Aug-08	0.064	0.037%	0.092	0.054%		
B-D	14	2.449	170.449	11.2	16.6	170.432	170.442	14	2.454	170.454	11.4	16.8	170.437	170.447	0.005	170.445	28-Aug-08	0.052	0.031%	0.198	0.116%		
E-G	14	0.404	168.404	11.7	17.1	168.388	168.397	14	0.404	168.404	12.6	18.0	168.390	168.396	0.001	168.396	28-Aug-08	0.130	0.078%	0.147	0.088%		
F-H	14	0.448	168.448	12.2	17.6	168.433	168.440	14	0.443	168.443	12.2	17.6	168.428	168.435	0.005	168.438	28-Aug-08	0.193	0.115%	0.227	0.135%		

Extensometer Measurements																2 Year Change ΔD '06-'08				3 Year Change ΔD '05-'08															
Cheyenne Regional Airport																Total		Lateral		Transverse		Total		Lateral		Transverse									
Zone 3 2008 Multiple Application																Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min								
Average																0.193	0.115%	0.166	0.083%	0.193	0.115%	0.241	0.142%	0.209	0.103%	0.241	0.142%								
Average																-0.147	-0.072%	-0.147	-0.072%	0.049	0.029%	-0.052	-0.026%	-0.052	-0.026%	0.092	0.054%								
Average																0.079	0.045%	0.046	0.023%	0.112	0.066%	0.137	0.077%	0.085	0.042%	0.190	0.112%								
1st Measurement																2nd Measurement																0.001			
Pins	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	ft	in	total in	temp	temp conc	adj (tape)	adj (conc)	Diff	Average	Date	Percentage ΔD '06-'08		Percentage ΔD '05-'08															
Lateral																																			
I-J	16	11.851	203.851	26.5	31.9	203.866	203.821	16	11.846	203.846	25.4	30.8	203.859	203.818	0.003	203.820	27-Aug-08	-0.147	-0.072%	-0.052	-0.026%														
K-L	16	11.863	203.863	25.9	31.3	203.877	203.834	16	11.864	203.864	25.6	31.0	203.877	203.836	0.001	203.835	27-Aug-08	0.030	0.015%	0.052	0.026%														
M-N	16	11.071	203.071	24.3	29.7	203.081	203.045	16	11.064	203.064	25.6	31.0	203.077	203.036	0.009	203.040	27-Aug-08	0.049	0.024%	0.013	0.007%														
O-P	16	11.244	203.244	24.7	30.1	203.255	203.217	16	11.248	203.248	25.1	30.5	203.260	203.221	0.003	203.219	27-Aug-08	-0.013	-0.006%	0.028	0.014%														
Transverse																																			
I-K	14	2.426	170.426	26.4	31.8	170.439	170.401	14	2.421	170.421	25.2	30.6	170.431	170.398	0.004	170.400	27-Aug-08	0.124	0.073%	0.227	0.133%														
J-L	14	2.408	170.408	25.9	31.3	170.420	170.384	14	2.411	170.411	25.4	30.8	170.422	170.388	0.004	170.386	27-Aug-08	0.049	0.029%	0.241	0.142%														
M-O	13	11.700	167.700	25.2	30.6	167.710	167.677	13	11.708	167.708	24.8	30.2	167.717	167.686	0.008	167.681	27-Aug-08	0.180	0.108%	0.207	0.123%														
N-P	13	11.735	167.735	25.3	30.7	167.745	167.712	13	11.732	167.732	25.3	30.7	167.742	167.709	0.003	167.711	27-Aug-08	0.103	0.061%	0.179	0.107%														

Appendix 10

Extensometer Measurements Phoenix Sky Harbor International Airport

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 1

Control

Pins	1st Measurement							2nd Measurement							0.005		
	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	ΔD	Average	Date
Lateral																	
A-B	18	11.889	227.889	28.7	31.8	227.912	227.867	18	11.889	227.889	26.9	30.0	227.907	227.869	0.005	227.868	18-Sep-05
C-D	19	0.121	228.121	28.1	31.2	228.142	228.100	19	0.118	228.118	26.9	30.0	228.136	228.098	0.006	228.099	18-Sep-05
E-F	18	8.304	224.304	28.9	32.0	224.327	224.282	18	8.313	224.313	27.1	30.2	224.331	224.293	0.004	224.287	18-Sep-05
G-H	18	8.484	224.484	28.1	31.2	224.505	224.463	18	8.482	224.482	27.3	30.4	224.501	224.462	0.004	224.462	18-Sep-05
Transverse																	
A-C	19	0.032	228.032	27.9	31.0	228.053	228.011	19	0.028	228.028	26.4	29.5	228.045	228.009	0.008	228.010	18-Sep-05
B-D	18	11.603	227.603	27.9	31.0	227.624	227.582	18	11.607	227.607	26.7	29.8	227.625	227.587	0.001	227.585	18-Sep-05
E-G	18	11.259	227.259	27.9	31.0	227.280	227.238	18	11.252	227.252	27.2	30.3	227.271	227.232	0.009	227.235	18-Sep-05
F-H	18	11.296	227.296	27.9	31.0	227.317	227.275	18	11.301	227.301	26.7	29.8	227.319	227.281	0.002	227.278	18-Sep-05
Diagonal																	
A-D	26	9.923	321.923	27.6	30.7	321.951	321.894	26	9.925	321.925	26.7	29.8	321.950	321.897	0.001	321.895	18-Sep-05
B-C	26	10.877	322.877	27.3	30.4	322.904	322.848	26	10.879	322.879	26.5	29.6	322.903	322.851	0.001	322.850	18-Sep-05
E-H	26	5.476	317.476	27.5	30.6	317.504	317.447	26	5.482	317.482	26.4	29.5	317.506	317.455	0.002	317.451	18-Sep-05
F-G	26	11.436	323.436	28.7	31.8	323.469	323.405	26	11.445	323.445	28.7	31.8	323.478	323.414	0.009	323.409	18-Sep-05
Lateral																	
C-E	41	0.266	492.266	27.3	30.4	492.308	492.222	41	0.272	492.272	26.6	29.7	492.310	492.229	0.002	492.226	18-Sep-05
D-G	41	0.860	492.860	27.2	30.3	492.901	492.816	41	0.866	492.866	26.4	29.5	492.903	492.824	0.001	492.820	18-Sep-05
Diagonal																	
B-G	45	2.387	542.387	27.2	30.3	542.432	542.338	45	2.403	542.403	26.3	29.4	542.443	542.357	0.010	542.348	18-Sep-05
E-D	45	2.766	542.766	26.9	30.0	542.809	542.718	45	2.766	542.766	26.2	29.3	542.805	542.720	0.004	542.719	18-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 1

Control

Pins	1st Measurement		temp	temp conc	adj tape	adj conc	2nd Measurement		temp	temp conc	adj tape	adj conc	0.005 ΔD	Average	Date		
	ft	in					ft	in									
Lateral																	
I-J	18	11.166	227.166	25.7	28.8	227.181	227.267	18	11.159	227.159	25.5	28.6	227.173	227.260	0.008	227.264	12-Sep-05
K-L	18	11.538	227.538	25.7	28.8	227.553	227.640	18	11.545	227.545	25.1	28.2	227.558	227.645	0.005	227.642	12-Sep-05
M-N	18	9.286	225.286	25.7	28.8	225.301	225.387	18	9.281	225.281	25.0	28.1	225.294	225.380	0.007	225.383	12-Sep-05
O-P	18	10.605	226.605	25.7	28.8	226.620	226.706	18	10.609	226.609	25.2	28.3	226.623	226.709	0.003	226.708	12-Sep-05
Transverse																	
I-K	18	11.719	227.719	25.4	28.5	227.733	227.820	18	11.713	227.713	25.1	28.2	227.726	227.813	0.007	227.817	12-Sep-05
J-L	18	11.681	227.681	25.5	28.6	227.696	227.782	18	11.686	227.686	24.6	27.7	227.698	227.785	0.003	227.783	12-Sep-05
M-O	18	11.147	227.147	25.7	28.8	227.162	227.248	18	11.152	227.152	24.7	27.8	227.164	227.251	0.002	227.250	12-Sep-05
N-P	18	11.925	227.925	25.7	28.8	227.940	228.027	18	11.912	227.912	24.7	27.8	227.924	228.011	0.016	228.019	12-Sep-05
Diagonal																	
I-L	26	9.802	321.802	25.4	28.5	321.822	321.945	26	9.804	321.804	24.8	27.9	321.822	321.944	0.000	321.944	12-Sep-05
J-K	26	9.904	321.904	25.4	28.5	321.924	322.047	26	9.905	321.905	24.7	27.8	321.923	322.045	0.002	322.046	12-Sep-05
M-P	26	8.603	320.603	25.7	28.8	320.624	320.746	26	8.604	320.604	24.8	27.9	320.622	320.744	0.002	320.745	12-Sep-05
N-O	26	8.873	320.873	25.4	28.5	320.893	321.015	26	8.879	320.879	24.9	28.0	320.897	321.019	0.004	321.017	12-Sep-05
Lateral																	
J-M	41	0.611	492.611	25.4	28.5	492.642	492.829	41	0.612	492.612	24.5	27.6	492.638	492.825	0.004	492.827	12-Sep-05
L-O	40	11.502	491.502	25.7	28.8	491.534	491.722	40	11.501	491.501	26.0	29.1	491.535	491.722	0.001	491.722	12-Sep-05
Diagonal																	
J-O	45	1.791	541.791	25.7	28.8	541.827	542.033	45	1.796	541.796	24.4	27.5	541.824	542.030	0.003	542.031	12-Sep-05
M-L	45	2.479	542.479	25.7	28.8	542.515	542.721	45	2.477	542.477	25.0	28.1	542.508	542.715	0.006	542.718	12-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 1

Control

Pins			1st Measurement							2nd Measurement					0.005		Date
	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	ΔD	Average	
Across Joint																	
K-Q	19	11.524	239.524	24.3	27.4	239.536	239.506	19	11.536	239.536	24.2	27.3	239.548	239.518	0.012	239.512	18-Sep-05
Q-S	19	10.642	238.642	24.0	27.1	238.653	238.625	19	10.647	238.647	24.2	27.3	238.659	238.629	0.006	238.627	18-Sep-05
S-O	20	0.718	240.718	24.2	27.3	240.730	240.700	20	0.704	240.704	24.0	27.1	240.715	240.686	0.015	240.693	18-Sep-05
L-R	19	10.094	238.094	24.6	27.7	238.107	238.076	19	10.098	238.098	24.6	27.7	238.111	238.080	0.004	238.078	18-Sep-05
R-T	20	1.165	241.165	24.9	28.0	241.179	241.146	20	1.168	241.168	24.7	27.8	241.181	241.150	0.002	241.148	18-Sep-05
T-P	19	10.927	238.927	24.7	27.8	238.940	238.909	19	10.934	238.934	24.7	27.8	238.947	238.916	0.007	238.912	18-Sep-05
Transverse																	
C-I	40	10.875	490.875	25.4	28.5	490.906	490.836	40	10.879	490.879	25.1	28.2	490.908	490.840	0.002	490.838	18-Sep-05
D-J	40	10.825	490.825	25.1	28.2	490.854	490.786	40	10.815	490.815	25.0	28.1	490.843	490.777	0.011	490.782	18-Sep-05
G-M	40	10.501	490.501	25.3	28.4	490.531	490.462	40	10.497	490.497	24.7	27.8	490.524	490.459	0.007	490.461	18-Sep-05
H-N	41	0.852	492.852	25.3	28.4	492.882	492.813	41	0.853	492.853	24.8	27.9	492.880	492.815	0.002	492.814	18-Sep-05
Diagonal																	
C-J	45	0.867	540.867	25.5	28.6	540.902	540.823	45	0.862	540.862	24.4	27.5	540.890	540.821	0.012	540.822	18-Sep-05
D-I	45	1.342	541.342	25.5	28.6	541.377	541.298	45	1.343	541.343	24.7	27.8	541.373	541.302	0.004	541.300	18-Sep-05
G-N	44	10.996	538.996	24.9	28.0	539.027	538.954	44	11.000	539.000	24.7	27.8	539.029	538.959	0.003	538.956	18-Sep-05
H-M	45	2.441	542.441	25.1	28.2	542.473	542.398	45	2.435	542.435	25.2	28.3	542.468	542.392	0.005	542.395	18-Sep-05
G-J	58	0.092	696.092	25.0	28.1	696.132	696.038	58	0.083	696.083	24.3	27.4	696.118	696.031	0.015	696.034	18-Sep-05
D-M	57	10.799	694.799	25.6	28.7	694.844	694.743	57	10.813	694.813	24.2	27.3	694.847	694.762	0.003	694.752	18-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 2

Single Application

Pins	1st Measurement		2nd Measurement					0.010		Date							
	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in		total in	temp	temp conc	adj tape	adj conc	ΔD	Average
Lateral																	
A-B	18	11.344	227.344	22.2	23.3	227.350	227.337	18	11.339	227.339	22.3	23.4	227.345	227.332	0.005	227.335	17-Sep-05
C-D	18	10.725	226.725	22.2	23.3	226.731	226.718	18	10.738	226.738	21.9	23.0	226.743	226.732	0.013	226.725	17-Sep-05
E-F	18	9.367	225.367	22.2	23.3	225.373	225.360	18	9.352	225.352	22.3	23.4	225.358	225.345	0.015	225.353	17-Sep-05
G-H	18	9.381	225.381	22.2	23.3	225.387	225.374	18	9.381	225.381	21.9	23.0	225.386	225.375	0.000	225.374	17-Sep-05
Transverse																	
A-C	19	0.005	228.005	22.2	23.3	228.011	227.998	18	11.993	227.993	22.1	23.2	227.999	227.986	0.012	227.992	17-Sep-05
B-D	18	11.575	227.575	22.2	23.3	227.581	227.568	18	11.571	227.571	22.4	23.5	227.577	227.564	0.004	227.566	17-Sep-05
E-G	18	10.736	226.736	22.2	23.3	226.742	226.729	18	10.736	226.736	22.1	23.2	226.742	226.729	0.000	226.729	17-Sep-05
F-H	19	0.017	228.017	22.2	23.3	228.023	228.010	18	11.992	227.992	22.3	23.4	227.998	227.985	0.025	227.998	17-Sep-05
Diagonal																	
A-D	26	9.696	321.696	22.2	23.3	321.704	321.686	26	9.701	321.701	22.1	23.2	321.709	321.692	0.005	321.689	17-Sep-05
B-C	26	9.695	321.695	22.1	23.2	321.703	321.686	26	9.700	321.700	22.2	23.3	321.708	321.690	0.005	321.688	17-Sep-05
E-H								N/A Fuel Well									
F-G	26	7.995	319.995	22.2	23.3	320.003	319.985	26	7.988	319.988	22.2	23.3	319.996	319.978	0.007	319.982	17-Sep-05
Lateral																	
C-E	40	11.629	491.629	22.2	23.3	491.642	491.614	40	11.634	491.634	21.7	22.8	491.644	491.621	0.006	491.617	17-Sep-05
D-G	41	0.115	492.115	22.1	23.2	492.127	492.101	41	0.104	492.104	21.9	23.0	492.115	492.090	0.010	492.095	17-Sep-05
Diagonal																	
B-G	45	1.596	541.596	21.9	23.0	541.608	541.581	45	1.610	541.610	21.8	22.9	541.621	541.595	0.014	541.588	17-Sep-05
E-D	45	2.099	542.099	21.9	23.0	542.111	542.084	45	2.089	542.089	21.8	22.9	542.100	542.074	0.010	542.079	17-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 2
Single Application

Pins	1st Measurement							2nd Measurement							0.010 ΔD	Average	Date
	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
I-J	18	10.340	226.340	24.0	25.1	226.351	226.331	18	10.351	226.351	23.6	24.7	226.360	226.343	0.011	226.337	16-Sep-05
K-L	18	10.310	226.310	24.6	25.7	226.322	226.300	18	10.319	226.319	23.8	24.9	226.329	226.310	0.010	226.305	16-Sep-05
M-N	18	10.882	226.882	23.8	24.9	226.892	226.873	18	10.892	226.892	23.2	24.3	226.900	226.884	0.011	226.879	16-Sep-05
O-P	18	10.677	226.677	24.4	25.5	226.689	226.668	18	10.676	226.676	23.8	24.9	226.686	226.667	0.000	226.667	16-Sep-05
Transverse																	
I-K	19	11.817	239.817	24.4	25.5	239.829	239.807	19	11.821	239.821	23.4	24.5	239.830	239.812	0.005	239.810	16-Sep-05
J-L	19	11.173	239.173	24.2	25.3	239.185	239.163	19	11.178	239.178	23.8	24.9	239.189	239.169	0.005	239.166	16-Sep-05
M-O	19	11.981	239.981	24.3	25.4	239.993	239.971	19	11.981	239.981	23.8	24.9	239.992	239.972	0.001	239.972	16-Sep-05
N-P	19	11.369	239.369	24.1	25.2	239.380	239.359	19	11.368	239.368	24.2	25.3	239.380	239.358	0.001	239.359	16-Sep-05
Diagonal																	
I-L	27	5.966	329.966	23.5	24.6	329.979	329.954	27	5.982	329.982	23.3	24.4	329.995	329.970	0.016	329.962	16-Sep-05
J-K	27	5.180	329.180	23.5	24.6	329.193	329.168	27	5.176	329.176	23.5	24.6	329.189	329.164	0.004	329.166	16-Sep-05
M-P	27	5.585	329.585	23.7	24.8	329.599	329.573	27	5.584	329.584	23.8	24.9	329.599	329.571	0.001	329.572	16-Sep-05
N-O	27	6.483	330.483	23.9	25.0	330.498	330.470	27	6.484	330.484	23.7	24.8	330.498	330.472	0.001	330.471	16-Sep-05
Lateral																	
J-M	41	0.527	492.527	23.6	24.7	492.548	492.509	41	0.521	492.521	23.4	24.5	492.540	492.503	0.005	492.506	16-Sep-05
L-O	40	11.577	491.577	23.8	24.9	491.599	491.558	40	11.569	491.569	23.8	24.9	491.591	491.550	0.008	491.554	16-Sep-05
Diagonal																	
J-O	45	7.343	547.343	23.5	24.6	547.365	547.323	45	7.334	547.334	23.5	24.6	547.356	547.314	0.009	547.318	16-Sep-05
M-L	45	7.307	547.307	23.5	24.6	547.329	547.287	45	7.303	547.303	23.7	24.8	547.326	547.282	0.005	547.285	16-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 2

Single Application

Pins	ft		1st Measurement					ft		2nd Measurement					0.010		Date
	in		total in	temp	temp conc	adj tape	adj conc	in		total in	temp	temp conc	adj tape	adj conc	ΔD	Average	
Across Joint																	
K-Q	19	10.157	238.157	23.3	24.4	238.166	238.149	19	10.162	238.162	23.6	24.7	238.172	238.153	0.005	238.151	16-Sep-05
Q-S	20	0.869	240.869	23.7	24.8	240.879	240.860	20	0.854	240.854	23.8	24.9	240.865	240.845	0.015	240.852	16-Sep-05
S-O	19	10.696	238.696	23.9	25.0	238.707	238.687	19	10.720	238.720	24.0	25.1	238.731	238.711	0.024	238.699	16-Sep-05
L-R	20	0.386	240.386	24.1	25.2	240.397	240.376	20	0.386	240.386	23.7	24.8	240.396	240.377	0.001	240.377	16-Sep-05
R-T	19	10.849	238.849	23.8	24.9	238.860	238.840	19	10.851	238.851	23.4	24.5	238.860	238.842	0.002	238.841	16-Sep-05
T-P	19	10.865	238.865	23.4	24.5	238.874	238.856	19	10.861	238.861	23.7	24.8	238.871	238.852	0.004	238.854	16-Sep-05
Transverse																	
C-I	40	11.864	491.864	28.2	32.3	491.911	491.809	40	11.861	491.861	26.4	30.5	491.898	491.811	0.002	491.810	19-Sep-05
D-J	41	0.241	492.241	27.1	31.2	492.282	492.189	41	0.243	492.243	25.8	29.9	492.276	492.194	0.005	492.192	19-Sep-05
G-M	41	0.822	492.822	27.2	31.3	492.863	492.770	41	0.801	492.801	25.7	29.8	492.834	492.752	0.017	492.761	19-Sep-05
H-N	41	0.243	492.243	27.1	31.2	492.284	492.191	41	0.269	492.269	26.7	30.8	492.307	492.218	0.027	492.204	19-Sep-05
Diagonal																	
C-J	45	1.460	541.460	26.7	30.8	541.502	541.404	45	1.545	541.545	26.6	30.7	541.586	541.489	0.085	541.446	19-Sep-05
D-I	45	2.080	542.080	26.6	30.7	542.122	542.024	45	2.064	542.064	26.5	30.6	542.105	542.008	0.016	542.016	19-Sep-05
G-N	45	2.387	542.387	27.2	31.3	542.432	542.329	45	2.400	542.400	26.4	30.5	542.440	542.345	0.015	542.337	19-Sep-05
H-M	45	1.608	541.608	27.2	31.3	541.653	541.550	45	1.625	541.625	26.7	30.8	541.667	541.569	0.018	541.560	19-Sep-05
G-J	58	1.251	697.251	26.2	30.3	697.301	697.180	58	1.254	697.254	25.9	30.0	697.302	697.185	0.004	697.183	19-Sep-05
D-M	57	11.495	695.495	26.5	30.6	695.547	695.424	57	11.473	695.473	25.9	30.0	695.521	695.404	0.020	695.414	19-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 3

Multiple Application

Pins	1st Measurement		2nd Measurement		temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	0.011 Diff	Average	Date
	ft	in	total in	temp													
Lateral																	
A-B	18	11.222	227.222	24.9	28.0	227.235	227.204	18	11.229	227.229	24.4	27.5	227.241	227.212	0.008	227.208	18-Sep-05
C-D	18	10.266	226.266	24.7	27.8	226.278	226.249	18	10.249	226.249	24.2	27.3	226.260	226.232	0.016	226.240	18-Sep-05
E-F	18	10.769	226.769	24.2	27.3	226.780	226.752	18	10.785	226.785	24.2	27.3	226.796	226.768	0.016	226.760	18-Sep-05
G-H	18	11.194	227.194	24.6	27.7	227.206	227.177	18	11.193	227.193	24.3	27.4	227.204	227.176	0.001	227.176	18-Sep-05
Transverse																	
A-C	18	11.493	227.493	24.7	27.8	227.505	227.476	18	11.492	227.492	24.4	27.5	227.504	227.475	0.001	227.475	18-Sep-05
B-D	18	11.923	227.923	24.4	27.5	227.935	227.906	18	11.923	227.923	24.2	27.3	227.934	227.906	0.000	227.906	18-Sep-05
E-G	18	11.638	227.638	24.7	27.8	227.650	227.621	18	11.641	227.641	24.7	27.8	227.653	227.624	0.003	227.622	18-Sep-05
F-H	18	11.506	227.506	24.8	27.9	227.519	227.488	18	11.545	227.545	24.0	27.1	227.556	227.528	0.040	227.508	18-Sep-05
Diagonal																	
A-D	26	9.691	321.691	24.5	27.6	321.708	321.667	26	9.692	321.692	23.7	26.8	321.706	321.669	0.002	321.668	18-Sep-05
B-C	26	9.163	321.163	24.4	27.5	321.179	321.139	26	9.159	321.159	23.7	26.8	321.173	321.136	0.003	321.138	18-Sep-05
E-H									N/A Fuel Well								
F-G	26	9.830	321.830	24.4	27.5	321.846	321.806	26	9.857	321.857	23.9	27.0	321.872	321.834	0.028	321.820	18-Sep-05
Lateral																	
C-E	40	11.722	491.722	24.8	27.9	491.749	491.684	40	11.730	491.730	23.8	26.9	491.752	491.695	0.011	491.689	18-Sep-05
D-G	40	11.750	491.750	24.9	28.0	491.778	491.712	40	11.773	491.773	23.8	26.9	491.795	491.738	0.026	491.725	18-Sep-05
Diagonal																	
B-G	45	1.519	541.519	24.8	27.9	541.549	541.477	45	1.533	541.533	23.7	26.8	541.556	541.494	0.017	541.486	18-Sep-05
E-D	45	2.488	542.488	25.2	28.3	542.521	542.445	45	2.494	542.494	23.7	26.8	542.517	542.455	0.010	542.450	18-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 3

Multiple Application

Pins	ft		1st Measurement					ft		2nd Measurement					0.011 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
I-J	18	11.487	227.487	27.2	28.3	227.506	227.474	18	11.493	227.493	28.6	29.7	227.516	227.479	0.004	227.476	17-Sep-05
K-L	18	11.602	227.602	27.1	28.2	227.621	227.589	18	11.596	227.596	28.0	29.1	227.617	227.582	0.007	227.586	17-Sep-05
M-N	18	10.961	226.961	28.9	30.0	226.984	226.946	18	10.962	226.962	28.5	29.6	226.984	226.948	0.001	226.947	17-Sep-05
O-P	18	11.361	227.361	27.7	28.8	227.381	227.348	18	11.345	227.345	28.1	29.2	227.366	227.331	0.016	227.339	17-Sep-05
Transverse																	
I-K	18	11.593	227.593	28.9	30.0	227.616	227.578	18	11.608	227.608	28.6	29.7	227.631	227.594	0.015	227.586	17-Sep-05
J-L	18	11.733	227.733	28.9	30.0	227.757	227.718	18	11.737	227.737	28.1	29.2	227.758	227.723	0.005	227.721	17-Sep-05
M-O	19	0.055	228.055	28.9	30.0	228.079	228.040	19	0.032	228.032	28.6	29.7	228.055	228.018	0.023	228.029	17-Sep-05
N-P	18	11.448	227.448	28.9	30.0	227.471	227.433	18	11.459	227.459	26.6	27.7	227.476	227.447	0.014	227.440	17-Sep-05
Diagonal																	
I-L	26	9.741	321.741	28.9	30.0	321.774	321.720	26	9.752	321.752	26.5	27.6	321.776	321.735	0.015	321.728	17-Sep-05
J-K	26	10.203	322.203	28.9	30.0	322.236	322.182	26	10.213	322.213	26.6	27.7	322.238	322.196	0.014	322.189	17-Sep-05
M-P	26	10.052	322.052	28.9	30.0	322.085	322.031	26	10.055	322.055	26.9	28.0	322.081	322.037	0.006	322.034	17-Sep-05
N-O	26	9.463	321.463	28.9	30.0	321.496	321.442	26	9.469	321.469	26.2	27.3	321.492	321.453	0.011	321.447	17-Sep-05
Lateral																	
J-M	40	11.591	491.591	28.9	30.0	491.642	491.559	40	11.592	491.592	26.6	27.7	491.630	491.566	0.007	491.563	17-Sep-05
L-O	41	0.019	492.019	28.6	29.7	492.068	491.988	41	0.014	492.014	26.7	27.8	492.052	491.988	0.000	491.988	17-Sep-05
Diagonal																	
J-O	45	2.209	542.209	28.9	30.0	542.265	542.174	45	2.199	542.199	26.7	27.8	542.241	542.170	0.004	542.172	17-Sep-05
M-L	45	1.997	541.997	28.9	30.0	542.053	541.962	45	2.013	542.013	26.9	28.0	542.056	541.984	0.022	541.973	17-Sep-05

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 3

Multiple Application

Pins	ft		1st Measurement					ft		2nd Measurement					0.011		Date
	in		total in	temp	temp conc	adj tape	adj conc	in		total in	temp	temp conc	adj tape	adj conc	Diff	Average	
Across Joint																	
K-Q	20	0.056	240.056	26.1	27.2	240.073	240.044	20	0.066	240.066	25.7	26.8	240.082	240.054	0.010	240.049	17-Sep-05
Q-S	19	11.579	239.579	25.7	26.8	239.595	239.567	19	11.579	239.579	26.2	27.3	239.596	239.567	0.001	239.567	17-Sep-05
S-O	19	11.790	239.790	25.4	26.5	239.805	239.779	19	11.795	239.795	26.2	27.3	239.812	239.783	0.004	239.781	17-Sep-05
L-R	19	11.526	239.526	25.9	27.0	239.542	239.514	19	11.521	239.521	25.9	27.0	239.537	239.509	0.005	239.512	17-Sep-05
R-T	19	11.919	239.919	26.1	27.2	239.936	239.907	19	11.911	239.911	26.1	27.2	239.928	239.899	0.008	239.903	17-Sep-05
T-P	19	11.468	239.468	25.8	26.9	239.484	239.456	19	11.468	239.468	25.9	27.0	239.484	239.456	0.000	239.456	17-Sep-05
Transverse																	
C-I	41	0.355	492.355	25.1	26.2	492.384	492.333	41	0.337	492.337	24.2	25.3	492.361	492.317	0.016	492.325	17-Sep-05
D-J	40	11.739	491.739	25.5	26.6	491.770	491.716	40	11.748	491.748	24.2	25.3	491.772	491.728	0.012	491.722	17-Sep-05
G-M	41	0.085	492.085	24.9	26.0	492.113	492.063	41	0.094	492.094	24.2	25.3	492.118	492.074	0.011	492.069	17-Sep-05
H-N	41	0.527	492.527	24.8	25.9	492.554	492.506	41	0.538	492.538	24.4	25.5	492.563	492.518	0.012	492.512	17-Sep-05
Diagonal																	
C-J	45	1.620	541.620	24.6	25.7	541.649	541.597	45	1.603	541.603	23.9	25.0	541.628	541.582	0.015	541.590	17-Sep-05
D-I	45	2.093	542.093	24.7	25.8	542.123	542.070	45	2.105	542.105	24.2	25.3	542.131	542.083	0.013	542.076	17-Sep-05
G-N	45	1.931	541.931	24.9	26.0	541.962	541.907	45	1.946	541.946	23.8	24.9	541.970	541.925	0.018	541.916	17-Sep-05
H-M	45	2.443	542.443	25.2	26.3	542.476	542.418	45	2.456	542.456	24.2	25.3	542.482	542.434	0.016	542.426	17-Sep-05
G-J	58	0.050	696.050	24.9	26.0	696.090	696.019	58	0.070	696.070	23.7	24.8	696.100	696.044	0.024	696.032	17-Sep-05
D-M	57	11.279	695.279	24.7	25.8	695.317	695.249	57	11.289	695.289	24.2	25.3	695.323	695.261	0.012	695.255	17-Sep-05

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
				0.232	0.072%		0.163	0.072%	0.232	0.072%	0.232	0.072%	-0.179	0.030%
Phoenix Sky Harbor International Airport				-0.439	-0.152%		-0.387	-0.152%	-0.231	-0.092%	-0.439	-0.120%	-0.347	-0.096%
Zone 1 Control	2006		Average	-0.101	-0.029%	Average	-0.107	-0.041%	-0.026	-0.021%	-0.066	-0.028%	-0.228	-0.027%

Pins	ft	in	1st Measurement				ft	in	2nd Measurement				0.007 Diff	Average	Date	Percentage			
			total in	temp	temp conc	adj tape			adj conc	total in	temp	temp conc				adj tape	adj conc	ΔD '05-'06	ΔD '05-'06
Lateral																			
A-B	18	11.999	227.999	31.5	34.7	228.029	227.973	18	11.978	227.978	29.1	32.3	228.002	227.955	0.018	227.964	27-Sep-06	0.096	0.042%
C-D	19	0.098	228.098	30.2	33.4	228.125	228.074	19	0.097	228.097	29.4	32.6	228.122	228.074	0.000	228.074	27-Sep-06	-0.025	-0.011%
E-F	18	8.402	224.402	29.2	32.4	224.426	224.379	18	8.399	224.399	29.3	32.5	224.423	224.376	0.003	224.378	27-Sep-06	0.090	0.040%
G-H	18	8.388	224.388	23.9	27.1	224.398	224.371	18	8.398	224.398	23.8	27.0	224.408	224.382	0.010	224.376	27-Sep-06	-0.086	-0.038%
Transverse																			
A-C	19	0.081	228.081	29.2	32.4	228.105	228.058	19	0.082	228.082	29.7	32.9	228.108	228.058	0.000	228.058	27-Sep-06	0.048	0.021%
B-D	18	11.768	227.768	29.0	32.2	227.792	227.745	18	11.774	227.774	29.6	32.8	227.799	227.750	0.005	227.748	27-Sep-06	0.163	0.072%
E-G	18	11.419	227.419	29.1	32.3	227.443	227.396	18	11.423	227.423	29.2	32.4	227.447	227.400	0.004	227.398	27-Sep-06	0.163	0.072%
F-H	18	11.240	227.240	24.0	27.2	227.251	227.223	18	11.210	227.210	24.1	27.3	227.221	227.193	0.030	227.208	27-Sep-06	-0.070	-0.031%
Diagonal																			
A-D	26	10.162	322.162	30.2	33.4	322.200	322.128	26	10.161	322.161	29.4	32.6	322.196	322.128	0.000	322.128	27-Sep-06	0.232	0.072%
B-C	26	10.845	322.845	30.2	33.4	322.883	322.811	26	10.936	322.936	29.1	32.3	322.970	322.903	0.093	322.857	27-Sep-06	0.007	0.002%
E-H	26	5.518	317.518	29.4	32.6	317.553	317.485	26	5.523	317.523	29.4	32.6	317.558	317.490	0.005	317.488	27-Sep-06	0.037	0.012%
F-G	26	11.484	323.484	23.9	27.1	323.499	323.460	26	11.474	323.474	23.9	27.1	323.489	323.450	0.010	323.455	27-Sep-06	0.046	0.014%
Lateral																			
C-E	41	0.297	492.297	29.1	32.3	492.349	492.247	41	0.298	492.298	29.2	32.4	492.351	492.248	0.001	492.248	27-Sep-06	0.022	0.004%
D-G	41	0.857	492.857	30.8	34.0	492.919	492.803	41	0.866	492.866	29.6	32.8	492.921	492.815	0.012	492.809	27-Sep-06	-0.011	-0.002%
Diagonal																			
B-G	45	2.472	542.472	29.3	32.5	542.531	542.417	45	2.467	542.467	29.3	32.5	542.526	542.412	0.005	542.414	27-Sep-06	0.066	0.012%
E-D	45	2.872	542.872	29.9	33.1	542.934	542.815	45	2.874	542.874	29.3	32.5	542.933	542.819	0.004	542.817	27-Sep-06	0.097	0.018%

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint	
				Average	0.232		0.072%	Average	0.096	0.042%	0.163	0.072%	0.232	0.072%
Phoenix Sky Harbor International Airport				-0.439	-0.152%		-0.387	-0.152%	-0.231	-0.092%	-0.439	-0.120%	-0.347	-0.096%
Zone 1 Control	2006		Average	-0.101	-0.029%	Average	-0.107	-0.041%	-0.026	-0.021%	-0.066	-0.028%	-0.228	-0.027%

Pins	ft	in	1st Measurement				ft	in	2nd Measurement				0.007 Diff	Average	Date	Percentage			
			total in	temp	temp conc	adj tape			adj conc	total in	temp	temp conc				adj tape	adj conc	ΔD '05-'06	ΔD '05-'06
Lateral																			
I-J	18	11.116	227.116	28.0	34.5	227.137	227.082	18	11.122	227.122	27.7	34.2	227.142	227.088	0.006	227.085	25-Sep-06	-0.179	-0.079%
K-L	18	11.331	227.331	27.7	34.2	227.351	227.297	18	11.328	227.328	27.7	34.2	227.348	227.294	0.003	227.296	25-Sep-06	-0.347	-0.152%
M-N	18	9.201	225.201	24.1	30.6	225.212	225.172	18	9.203	225.203	23.6	30.1	225.212	225.174	0.003	225.173	25-Sep-06	-0.210	-0.093%
O-P	18	10.539	226.539	24.2	30.7	226.550	226.509	18	10.543	226.543	23.6	30.1	226.552	226.514	0.005	226.512	25-Sep-06	-0.196	-0.086%
Transverse																			
I-K	18	11.632	227.632	23.3	29.8	227.641	227.603	18	11.639	227.639	23.0	29.5	227.647	227.611	0.007	227.607	25-Sep-06	-0.210	-0.092%
J-L	18	11.676	227.676	27.7	34.2	227.696	227.642	18	11.675	227.675	27.7	34.2	227.695	227.641	0.001	227.642	25-Sep-06	-0.142	-0.062%
M-O	18	11.146	227.146	23.9	30.4	227.156	227.117	18	11.142	227.142	24.2	30.7	227.153	227.112	0.004	227.114	25-Sep-06	-0.135	-0.060%
N-P	18	11.866	227.866	24.0	30.5	227.877	227.836	18	11.869	227.869	23.8	30.3	227.879	227.840	0.003	227.838	25-Sep-06	-0.181	-0.079%
Diagonal																			
I-L	26	9.667	321.667	27.8	34.3	321.696	321.619	26	9.670	321.670	27.7	34.2	321.699	321.622	0.003	321.620	25-Sep-06	-0.324	-0.101%
J-K	26	9.706	321.706	27.8	34.3	321.735	321.658	26	9.707	321.707	27.7	34.2	321.736	321.659	0.001	321.658	25-Sep-06	-0.387	-0.120%
M-P	26	8.654	320.654	24.1	30.6	320.669	320.612	26	8.648	320.648	23.4	29.9	320.661	320.607	0.005	320.610	25-Sep-06	-0.135	-0.042%
N-O	26	8.725	320.725	24.2	30.7	320.741	320.683	26	8.722	320.722	23.6	30.1	320.735	320.681	0.002	320.682	25-Sep-06	-0.335	-0.104%
Lateral																			
J-M	41	0.462	492.462	27.7	34.2	492.506	492.388	41	0.461	492.461	27.4	33.9	492.503	492.388	0.000	492.388	25-Sep-06	-0.439	-0.089%
L-O	40	11.676	491.676	27.7	34.2	491.720	491.603	40	11.669	491.669	27.5	34.0	491.712	491.596	0.006	491.599	25-Sep-06	-0.123	-0.025%
Diagonal																			
J-O	45	1.820	541.820	27.8	34.3	541.869	541.739	45	1.826	541.826	27.5	34.0	541.873	541.746	0.007	541.742	25-Sep-06	-0.289	-0.053%
M-L	45	2.469	542.469	27.7	34.2	542.517	542.388	45	2.462	542.462	27.4	33.9	542.509	542.382	0.006	542.385	25-Sep-06	-0.333	-0.061%

Extensometer Measurements

		1 Year Change ΔD '05-'06	Max Min	Total		Max Min	Lateral		Transverse		Diagonal		Across Joint		
				Average											
Phoenix Sky Harbor International Airport				0.232	0.072%		0.096	0.042%	0.163	0.072%	0.232	0.072%	-0.179	0.030%	
				-0.439	-0.152%		-0.387	-0.152%	-0.231	-0.092%	-0.439	-0.120%	-0.347	-0.096%	
Zone 1	2006														
Control							Average	-0.107	-0.041%	-0.026	-0.021%	-0.066	-0.028%	-0.228	-0.027%

Pins	ft	in	1st Measurement					ft	in	2nd Measurement					0.007 Diff	Average	Date	Percentage	
			total in	temp	temp conc	adj tape	adj conc			total in	temp	temp conc	adj tape	adj conc				ΔD '05-'06	ΔD '05-'06
Across Joint																			
K-Q	19	11.540	239.540	27.5	30.7	239.561	239.518	19	11.545	239.545	27.7	30.9	239.566	239.523	0.005	239.520	27-Sep-06	0.008	0.003%
Q-S	19	10.624	238.624	27.6	30.8	238.645	238.602	19	10.622	238.622	27.7	30.9	238.643	238.600	0.002	238.601	27-Sep-06	-0.026	-0.011%
S-O	20	0.662	240.662	27.6	30.8	240.683	240.640	20	0.656	240.656	27.6	30.8	240.677	240.634	0.006	240.637	27-Sep-06	-0.057	-0.024%
L-R	19	9.937	237.937	27.4	30.6	237.957	237.915	19	9.945	237.945	27.4	30.6	237.965	237.923	0.008	237.919	27-Sep-06	-0.159	-0.067%
R-T	20	0.941	240.941	27.4	30.6	240.962	240.919	20	0.937	240.937	27.4	30.6	240.958	240.915	0.004	240.917	27-Sep-06	-0.231	-0.096%
T-P	19	11.007	239.007	27.4	30.6	239.028	238.985	19	11.006	239.006	27.4	30.6	239.027	238.984	0.001	238.984	27-Sep-06	0.072	0.030%
Transverse																			
C-I	40	10.784	490.784	28.4	31.6	490.832	490.736	40	10.783	490.783	28.4	31.6	490.831	490.735	0.001	490.736	27-Sep-06	-0.102	-0.021%
D-J	40	10.553	490.553	29.2	32.4	490.605	490.503	40	10.550	490.550	28.2	31.4	490.597	490.503	0.000	490.503	27-Sep-06	-0.279	-0.057%
G-M	40	10.391	490.391	23.9	27.1	490.413	490.355	40	10.390	490.390	23.4	26.6	490.409	490.355	0.000	490.355	27-Sep-06	-0.106	-0.022%
H-N	41	0.906	492.906	24.1	27.3	492.929	492.869	41	0.905	492.905	23.6	26.8	492.926	492.869	0.000	492.869	27-Sep-06	0.055	0.011%
Diagonal																			
C-J	45	0.785	540.785	28.4	31.6	540.838	540.732	45	0.783	540.783	28.2	31.4	540.834	540.731	0.001	540.732	27-Sep-06	-0.091	-0.017%
D-I	45	1.134	541.134	29.1	32.3	541.191	541.079	45	1.136	541.136	28.2	31.4	541.187	541.084	0.005	541.082	27-Sep-06	-0.218	-0.040%
G-N	44	10.946	538.946	24.1	27.3	538.972	538.906	44	10.971	538.971	23.4	26.6	538.992	538.932	0.027	538.919	27-Sep-06	-0.037	-0.007%
H-M	45	2.398	542.398	24.1	27.3	542.424	542.357	45	2.398	542.398	23.3	26.5	542.419	542.360	0.002	542.358	27-Sep-06	-0.037	-0.007%
G-J	57	11.920	695.920	28.3	31.5	695.987	695.853	57	11.920	695.920	28.3	31.5	695.987	695.853	0.000	695.853	27-Sep-06	-0.182	-0.026%
D-M	57	10.468	694.468	29.2	32.4	694.542	694.397	57	10.472	694.472	28.1	31.3	694.537	694.405	0.008	694.401	27-Sep-06	-0.351	-0.050%

Extensometer Measurements		1 Year Change ΔD '05-'06	Max Min	Total		Lateral		Transverse		Diagonal		Across Joint		
Phoenix Sky Harbor International Airport				0.355	0.082%	Max	0.298	0.048%	0.197	0.062%	0.108	0.033%	0.171	0.082%
Zone 2 2006 Single Application				-0.234	-0.102%	Min	-0.200	-0.067%	-0.234	-0.102%	-0.163	-0.061%	-0.152	-0.064%
			Average	-0.011	-0.005%	Average	0.015	-0.003%	-0.044	-0.011%	-0.032	-0.006%	0.012	0.005%

Pins	ft	in	1st Measurement					2nd Measurement					0.005			Percentage			
			total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
Lateral																			
A-B	18	11.275	227.275	26.5	32.0	227.292	227.246	18	11.280	227.280	26.0	31.5	227.296	227.252	0.006	227.249	28-Sep-06	-0.086	-0.038%
C-D	18	10.861	226.861	26.9	32.4	226.879	226.832	18	10.866	226.866	26.5	32.0	226.883	226.837	0.005	226.835	28-Sep-06	0.110	0.048%
E-F	18	9.402	225.402	27.6	33.1	225.422	225.372	18	9.406	225.406	26.2	31.7	225.422	225.378	0.006	225.375	28-Sep-06	0.022	0.010%
G-H	18	9.385	225.385	27.2	32.7	225.404	225.356	18	9.385	225.385	26.1	31.6	225.401	225.357	0.001	225.356	28-Sep-06	-0.018	-0.008%
Transverse																			
A-C	18	11.787	227.787	23.8	29.3	227.797	227.761	18	11.785	227.785	26.7	32.2	227.803	227.756	0.005	227.759	28-Sep-06	-0.234	-0.102%
B-D	18	11.635	227.635	25.8	31.3	227.650	227.607	18	11.632	227.632	26.5	32.0	227.649	227.603	0.004	227.605	28-Sep-06	0.039	0.017%
E-G	18	10.900	226.900	26.7	32.2	226.918	226.871	18	10.897	226.897	26.5	32.0	226.914	226.868	0.003	226.870	28-Sep-06	0.140	0.062%
F-H	19	0.029	228.029	26.7	32.2	228.047	228.000	19	0.028	228.028	26.4	31.9	228.045	227.999	0.001	228.000	28-Sep-06	0.002	0.001%
Diagonal																			
A-D	26	9.562	321.562	26.5	32.0	321.586	321.521	26	9.572	321.572	26.8	32.3	321.597	321.531	0.009	321.526	28-Sep-06	-0.163	-0.051%
B-C	26	9.773	321.773	26.9	32.4	321.799	321.732	26	9.778	321.778	26.8	32.3	321.803	321.737	0.005	321.734	28-Sep-06	0.046	0.014%
E-H	N/A Fuel Well																		
F-G	26	8.100	320.100	26.8	32.3	320.125	320.059	26	8.113	320.113	26.4	31.9	320.137	320.073	0.014	320.066	28-Sep-06	0.084	0.026%
Lateral																			
C-E	40	11.602	491.602	27.4	32.9	491.644	491.538	40	11.608	491.608	25.4	30.9	491.639	491.549	0.011	491.543	28-Sep-06	-0.074	-0.015%
D-G	41	0.034	492.034	27.2	32.7	492.075	491.970	41	0.040	492.040	26.6	32.1	492.078	491.978	0.008	491.974	28-Sep-06	-0.121	-0.025%
Diagonal																			
B-G	45	1.694	541.694	27.0	32.5	541.738	541.624	45	1.699	541.699	26.6	32.1	541.740	541.630	0.006	541.627	28-Sep-06	0.040	0.007%
E-D	45	2.009	542.009	27.1	32.6	542.054	541.939	45	2.026	542.026	25.7	31.2	542.062	541.960	0.021	541.949	28-Sep-06	-0.129	-0.024%

Extensometer Measurements

Phoenix Sky Harbor International Airport	1 Year Change ΔD '05-'06	Max Min	Total		Lateral		Transverse		Diagonal		Across Joint		
			0.355	0.082%	0.298	0.048%	0.197	0.062%	0.108	0.033%	0.171	0.082%	
			-0.234	-0.102%	Min	-0.200	-0.067%	-0.234	-0.102%	-0.163	-0.061%	-0.152	-0.064%
Zone 2 2006 Single Application		Average	-0.011	-0.005%	Average	0.015	-0.003%	-0.044	-0.011%	-0.032	-0.006%	0.012	0.005%

Pins	ft	in	1st Measurement				2nd Measurement				0.005			Percentage						
			total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06	
Lateral																				
I-M	59	11.093	719.093	23.7	29.2	719.124	719.013	59	11.095	719.095	23.6	29.1	719.125	719.015	0.002	719.014	28-Sep-06	0.171	0.024%	
K-L	18	10.384	226.384	24.7	30.2	226.396	226.358	18	10.380	226.380	23.9	29.4	226.390	226.354	0.003	226.356	28-Sep-06	0.051	0.022%	
M-N	18	10.756	226.756	24.1	29.6	226.767	226.730	18	10.751	226.751	25.7	31.2	226.766	226.723	0.007	226.727	28-Sep-06	-0.152	-0.067%	
O-P	18	10.776	226.776	23.9	29.4	226.786	226.750	18	10.774	226.774	24.0	29.5	226.785	226.748	0.002	226.749	28-Sep-06	0.082	0.036%	
Transverse																				
I-K	19	11.746	239.746	25.1	30.6	239.760	239.717	19	11.746	239.746	25.0	30.5	239.760	239.718	0.000	239.718	28-Sep-06	-0.092	-0.038%	
D-L	60	11.795	731.795	23.9	29.4	731.828	731.713	60	11.798	731.798	24.8	30.3	731.839	731.712	0.000	731.712	28-Sep-06	0.355	0.048%	
M-O	19	11.853	239.853	23.9	29.4	239.864	239.826	19	11.853	239.853	25.1	30.6	239.867	239.824	0.001	239.825	28-Sep-06	-0.146	-0.061%	
N-P	19	11.408	239.408	24.9	30.4	239.422	239.380	19	11.404	239.404	24.7	30.2	239.417	239.376	0.004	239.378	28-Sep-06	0.019	0.008%	
Diagonal																				
I-L	27	6.108	330.108	23.8	29.3	330.123	330.071	27	6.106	330.106	23.7	29.2	330.120	330.069	0.002	330.070	28-Sep-06	0.108	0.033%	
K-G	85	6.764	1026.764	24.1	29.6	1026.813	1026.647	85	6.762	1026.762	24.0	29.5	1026.810	1026.646	0.001	1026.646	28-Sep-06	0.298	0.029%	
M-P	27	5.575	329.575	23.8	29.3	329.590	329.538	27	5.569	329.569	24.1	29.6	329.585	329.532	0.007	329.535	28-Sep-06	-0.037	-0.011%	
N-O	27	6.307	330.307	23.9	29.4	330.322	330.270	27	6.309	330.309	23.9	29.4	330.324	330.272	0.002	330.271	28-Sep-06	-0.200	-0.061%	
Lateral																				
J-M								N/A (See I-M)												
L-O	40	11.510	491.510	24.1	29.6	491.533	491.454	40	11.509	491.509	24.0	29.5	491.532	491.453	0.001	491.454	28-Sep-06	-0.100	-0.020%	
Diagonal																				
J-O								N/A												
M-L	45	7.164	547.164	24.7	30.2	547.194	547.100	45	7.162	547.162	24.2	29.7	547.189	547.099	0.001	547.100	28-Sep-06	-0.185	-0.034%	

Extensometer Measurements		1 Year Change ΔD '05-'06	Max Min	Total		Lateral		Transverse		Diagonal		Across Joint	
Phoenix Sky Harbor International Airport				0.355	0.082%	0.298	0.048%	0.197	0.062%	0.108	0.033%	0.171	0.082%
Zone 2 2006 Single Application		Average	-0.234	-0.102%	-0.200	-0.067%	-0.234	-0.102%	-0.163	-0.061%	-0.152	-0.064%	
		Average	-0.011	-0.005%	0.015	-0.003%	-0.044	-0.011%	-0.032	-0.006%	0.012	0.005%	

Pins	ft	in	1st Measurement				2nd Measurement				0.005			Percentage					
			total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
Across Joint																			
K-Q	19	10.125	238.125	24.7	30.2	238.138	238.097	19	10.128	238.128	24.3	29.8	238.140	238.101	0.003	238.099	28-Sep-06	-0.052	-0.022%
Q-S	20	0.857	240.857	24.7	30.2	240.870	240.829	20	0.857	240.857	24.1	29.6	240.868	240.830	0.001	240.829	28-Sep-06	-0.023	-0.010%
S-O	19	10.767	238.767	24.6	30.1	238.780	238.739	19	10.762	238.762	24.1	29.6	238.773	238.735	0.004	238.737	28-Sep-06	0.038	0.016%
L-R	20	0.462	240.462	24.9	30.4	240.476	240.434	20	0.467	240.467	24.1	29.6	240.478	240.440	0.006	240.437	28-Sep-06	0.060	0.025%
R-T	19	10.716	238.716	24.6	30.1	238.729	238.688	19	10.716	238.716	24.2	29.7	238.728	238.689	0.000	238.688	28-Sep-06	-0.153	-0.064%
T-P	19	11.079	239.079	24.5	30.0	239.091	239.051	19	11.078	239.078	24.2	29.7	239.090	239.051	0.001	239.051	28-Sep-06	0.197	0.082%
Transverse																			
C-I	40	11.777	491.777	25.2	30.7	491.807	491.718	40	11.788	491.788	25.0	30.5	491.817	491.730	0.012	491.724	28-Sep-06	-0.086	-0.017%
D-J									N/A (See D-L)										
G-M	41	0.734	492.734	25.6	31.1	492.766	492.674	41	0.731	492.731	25.2	30.7	492.761	492.672	0.002	492.673	28-Sep-06	-0.088	-0.018%
H-N	41	0.160	492.160	25.0	30.5	492.189	492.102	41	0.193	492.193	24.9	30.4	492.221	492.135	0.033	492.118	28-Sep-06	-0.086	-0.017%
Diagonal																			
C-J									N/A										
D-I	45	2.039	542.039	24.2	29.7	542.065	541.977	45	2.038	542.038	25.6	31.1	542.073	541.972	0.005	541.975	28-Sep-06	-0.042	-0.008%
G-N	45	2.345	542.345	25.3	30.8	542.378	542.280	45	2.342	542.342	25.2	30.7	542.375	542.277	0.003	542.279	28-Sep-06	-0.058	-0.011%
H-M	45	1.535	541.535	25.3	30.8	541.568	541.470	45	1.532	541.532	25.3	30.8	541.565	541.467	0.003	541.469	28-Sep-06	-0.091	-0.017%
G-J									N/A (See K-G)										
D-M	57	11.600	695.600	24.2	29.7	695.634	695.521	57	11.607	695.607	25.5	31.0	695.651	695.523	0.002	695.522	28-Sep-06	0.108	0.016%

Extensometer Measurements

Phoenix Sky Harbor International Airport	1 Year Change ΔD '05-'06	Max Min	Total		Lateral		Transverse		Diagonal		Across Joint		Max Min	0.272 -0.251
			0.272	0.113%	0.130	0.057%	0.272	0.051%	0.044	0.008%	0.111	0.113%		
Zone 3 2006 Multiple Application		Average	-0.032	-0.007%	-0.002	-0.012%	-0.035	-0.011%	-0.054	-0.013%	-0.024	0.023%		

Pins	ft	in	1st Measurement				2nd Measurement				0.007 Diff	Average	Date	Percentage					
			total in	temp	temp conc	adj tape	adj conc	ft	in	total in				temp	temp conc	adj tape	adj conc	ΔD '05-'06	ΔD '05-'06
Lateral																			
I-J	18	11.356	227.356	28.3	34.8	227.378	227.321	18	11.367	227.367	27.9	34.4	227.388	227.333	0.011	227.327	24-Sep-06	-0.149	-0.066%
K-L	18	11.727	227.727	28.1	34.6	227.748	227.693	18	11.734	227.734	27.4	33.9	227.754	227.700	0.008	227.696	24-Sep-06	0.111	0.049%
M-N	18	10.827	226.827	27.9	34.4	226.848	226.793	18	10.829	226.829	26.6	33.1	226.846	226.796	0.004	226.795	24-Sep-06	-0.152	-0.067%
O-P	18	11.410	227.410	27.9	34.4	227.431	227.376	18	11.409	227.409	26.2	32.7	227.425	227.377	0.001	227.376	24-Sep-06	0.037	0.016%
Transverse																			
I-K	18	11.651	227.651	28.1	34.6	227.672	227.617	18	11.653	227.653	26.1	32.6	227.669	227.621	0.004	227.619	24-Sep-06	0.033	0.014%
J-L	18	11.663	227.663	28.0	34.5	227.684	227.629	18	11.662	227.662	26.2	32.7	227.678	227.630	0.001	227.629	24-Sep-06	-0.091	-0.040%
M-O	19	0.079	228.079	27.8	34.3	228.100	228.045	19	0.054	228.054	26.5	33.0	228.071	228.021	0.023	228.033	24-Sep-06	0.004	0.002%
N-P	18	11.589	227.589	27.8	34.3	227.610	227.555	18	11.590	227.590	26.5	33.0	227.607	227.557	0.003	227.556	24-Sep-06	0.116	0.051%
Diagonal																			
I-L	26	9.735	321.735	28.2	34.7	321.766	321.686	26	9.737	321.737	27.7	34.2	321.766	321.689	0.003	321.688	24-Sep-06	-0.040	-0.012%
J-K	26	10.187	322.187	27.8	34.3	322.216	322.139	26	10.204	322.204	27.7	34.2	322.233	322.156	0.017	322.147	24-Sep-06	-0.042	-0.013%
M-P	26	10.057	322.057	27.9	34.4	322.087	322.009	26	10.060	322.060	26.1	32.6	322.083	322.015	0.006	322.012	24-Sep-06	-0.023	-0.007%
N-O	26	9.512	321.512	27.9	34.4	321.541	321.464	26	9.511	321.511	26.2	32.7	321.534	321.466	0.002	321.465	24-Sep-06	0.017	0.005%
Lateral																			
J-M	40	11.654	491.654	27.7	34.2	491.698	491.581	40	11.657	491.657	26.8	33.3	491.696	491.586	0.005	491.583	24-Sep-06	0.021	0.004%
L-O	40	11.924	491.924	27.9	34.4	491.969	491.850	40	11.940	491.940	27.2	33.7	491.981	491.868	0.018	491.859	24-Sep-06	-0.129	-0.026%
Diagonal																			
J-O	45	2.198	542.198	27.9	34.4	542.248	542.117	45	2.217	542.217	27.3	33.8	542.263	542.137	0.021	542.127	24-Sep-06	-0.045	
M-L	45	1.950	541.950	28.0	34.5	542.000	541.868	45	1.962	541.962	26.7	33.2	542.004	541.884	0.016	541.876	24-Sep-06	-0.097	-0.018%

Extensometer Measurements																						
Phoenix Sky Harbor International Airport																						
Zone 1 2008 Control																						
2 Year Change ΔD '06-'08																						
3 Year Change ΔD '05-'08																						
Total																						
Lateral																						
Transverse																						
Max Min																						
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total in temp temp conc adj tape adj conc																						
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2nd Measurement																						
total in temp temp conc adj tape adj conc																						
0.002 Diff																						
Average																						
Date																						
ΔD '06-'08 ΔD '06-'08 ΔD '05-'08 ΔD '05-'08																						
Lateral	A-B	18	11.866	227.866	15.9	23.2	227.855	227.843	18	11.865	227.865	15.4	22.7	227.853	227.843	0.000	227.843	06-Nov-08	-0.121	-0.053%	-0.025	-0.011%
	C-D										N/A											
	E-F	18	8.427	224.427	15.8	23.1	224.416	224.404	18	8.428	224.428	15.3	22.6	224.416	224.406	0.002	224.405	06-Nov-08	0.028	0.012%	0.118	0.052%
	G-H	18	8.436	224.436	15.9	23.2	224.425	224.413	18	8.429	224.429	15.4	22.7	224.417	224.407	0.006	224.410	06-Nov-08	0.034	0.015%	-0.052	-0.023%
Transverse	A-C	18	11.996	227.996	15.9	23.2	227.985	227.973	18	11.995	227.995	15.2	22.5	227.982	227.973	0.000	227.973	06-Nov-08	-0.085	-0.037%	-0.037	-0.016%
	B-D										N/A											
	E-G	18	11.357	227.357	15.8	23.1	227.346	227.334	18	11.351	227.351	15.1	22.4	227.338	227.329	0.005	227.331	06-Nov-08	-0.066	-0.029%	0.097	0.043%
	F-H	18	11.250	227.250	15.8	23.1	227.239	227.227	18	11.248	227.248	15.2	22.5	227.235	227.226	0.001	227.226	06-Nov-08	0.018	0.008%	-0.052	-0.023%
Lateral	I-J										N/A											
	K-L										N/A											
	M-N	18	9.021	225.021	14.4	21.7	225.006	225.000	18	9.028	225.028	13.9	21.2	225.012	225.008	0.008	225.004	06-Nov-08	-0.169	-0.075%	-0.379	-0.168%
	O-P	18	10.502	226.502	14.7	22.0	226.488	226.480	18	10.503	226.503	14.7	22.0	226.489	226.481	0.001	226.481	06-Nov-08	-0.031	-0.014%	-0.227	-0.100%
Transverse	I-K	18	11.622	227.622	14.4	21.7	227.607	227.601	18	11.623	227.623	13.9	21.2	227.607	227.602	0.002	227.602	06-Nov-08	-0.005	-0.002%	-0.215	-0.094%
	J-L										N/A											
	M-O	18	11.023	227.023	14.4	21.7	227.008	227.002	18	11.023	227.023	14.6	21.9	227.009	227.002	0.000	227.002	06-Nov-08	-0.113	-0.050%	-0.248	-0.109%
	N-P	18	11.832	227.832	14.6	21.9	227.818	227.810	18	11.831	227.831	14.6	21.9	227.817	227.809	0.001	227.810	06-Nov-08	-0.028	-0.012%	-0.209	-0.092%

Extensometer Measurements																					
Phoenix Sky Harbor International Airport																					
Zone 2 2008 Single Application																					
2 Year Change ΔD '06-'08																					
3 Year Change ΔD '05-'08																					
Total																					
Lateral																					
Transverse																					
Max Min																					
Average																					
0.210 0.088% 0.155 0.068% 0.210 0.088% 0.229 0.096% 0.102 0.032% 0.229 0.096%																					
-0.230 -0.101% -0.230 -0.101% -0.164 -0.072% -0.162 -0.071% -0.148 -0.065% -0.162 -0.071%																					
0.027 0.011% -0.025 -0.011% 0.070 0.029% 0.009 0.001% -0.004 -0.008% 0.019 0.008%																					
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Percentage																					
ΔD '06-'08 ΔD '06-'08 ΔD '05-'08 ΔD '05-'08																					
Lateral																					
A-B																					
C-D																					
E-F	18	9.326	225.326	13.0	20.3	225.308	225.307	18	9.324	225.324	13.3	20.6	225.306	225.304	0.002	225.305	06-Nov-08	-0.070	-0.031%	-0.047	-0.021%
G-H	18	9.467	225.467	13.2	20.5	225.449	225.447	18	9.467	225.467	13.1	20.4	225.449	225.447	0.000	225.447	06-Nov-08	0.091	0.040%	0.073	0.032%
Transverse																					
A-C	18	11.883	227.883	13.8	21.1	227.867	227.862	18	11.882	227.882	13.7	21.0	227.865	227.862	0.001	227.862	06-Nov-08	0.103	0.045%	-0.130	-0.057%
B-D																					
E-G	18	10.940	226.940	13.1	20.4	226.922	226.920	18	10.941	226.941	13.3	20.6	226.923	226.921	0.001	226.921	06-Nov-08	0.051	0.022%	0.191	0.084%
F-H	18	11.856	227.856	13.3	20.6	227.838	227.836	18	11.855	227.855	13.3	20.6	227.837	227.835	0.001	227.835	06-Nov-08	-0.164	-0.072%	-0.162	-0.071%
Lateral																					
I-M	59	11.005	719.005	12.8	20.1	718.945	718.944	59	11.005	719.005	12.4	19.7	718.942	718.945	0.001	718.944	06-Nov-08	-0.069	-0.031%	0.102	0.014% Equals I-J + J-M
K-L																					
M-N	18	10.899	226.899	12.6	19.9	226.880	226.880	18	10.902	226.902	12.4	19.7	226.882	226.883	0.003	226.882	06-Nov-08	0.155	0.068%	0.003	0.001%
O-P	18	10.540	226.540	12.3	19.6	226.520	226.521	18	10.537	226.537	12.8	20.1	226.518	226.518	0.004	226.519	06-Nov-08	-0.230	-0.101%	-0.148	-0.065%
Transverse																					
I-K	19	11.917	239.917	12.4	19.7	239.896	239.897	19	11.917	239.917	12.9	20.2	239.897	239.896	0.001	239.897	06-Nov-08	0.179	0.075%	0.087	0.036%
D-L																					
M-O	19	11.889	239.889	12.4	19.7	239.868	239.869	19	11.887	239.887	12.7	20.0	239.867	239.867	0.002	239.868	06-Nov-08	0.043	0.018%	-0.104	-0.043%
N-P	19	11.611	239.611	12.4	19.7	239.590	239.591	19	11.605	239.605	12.4	19.7	239.584	239.585	0.006	239.588	06-Nov-08	0.210	0.088%	0.229	0.096%

Extensometer Measurements

Phoenix Sky Harbor International Airport

Zone 3 2008
Multiple Application

										2 Year Change ΔD '06-'08		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Total		Lateral		Transverse					
										Max	Min	0.246	0.108%	0.228	0.101%	0.246	0.108%	0.230	0.101%	0.221	0.050%	0.230	0.101%	0.221	0.031%	0.230	0.101%		
										Average		0.082	0.036%	0.086	0.038%	0.079	0.035%	Average		0.072	0.025%	0.060	0.017%	0.085	0.034%				
												1st Measurement				2nd Measurement						Percentage		Percentage					
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	0.004 Diff	Average	Date	ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08								
Lateral																													
A-B	18	11.343	227.343	13.6	20.9	227.326	227.323	18	11.342	227.342	13.6	20.9	227.325	227.322	0.001	227.322	06-Nov-08	-0.016	-0.007%	0.114	0.050%								
C-G	59	10.241	718.241	11.6	18.9	718.171	718.184	59	10.243	718.243	11.2	18.5	718.170	718.188	0.003	718.186	06-Nov-08	0.115	0.051%	0.221	0.031%								
E-F	18	10.843	226.843	10.9	18.2	226.819	226.826	18	10.844	226.844	10.8	18.1	226.820	226.827	0.001	226.826	06-Nov-08	-0.011	-0.005%	0.066	0.029%								
G-H	18	11.152	227.152	11.0	18.3	227.128	227.135	18	11.155	227.155	10.8	18.1	227.131	227.138	0.003	227.136	06-Nov-08	0.188	0.083%	-0.040	-0.018%								
Transverse																													
A-C	18	11.405	227.405	12.9	20.2	227.386	227.386	18	11.404	227.404	12.4	19.7	227.384	227.385	0.000	227.385	06-Nov-08	-0.008	-0.003%	-0.090	-0.040%								
B-J	59	11.774	719.774	13.7	21.0	719.721	719.709	59	11.783	719.783	12.8	20.1	719.723	719.722	0.012	719.715	06-Nov-08	0.052	0.023%	0.087	0.012%								
E-G	18	11.833	227.833	10.0	17.3	227.807	227.817	18	11.828	227.828	10.7	18.0	227.803	227.811	0.006	227.814	06-Nov-08	0.244	0.107%	0.192	0.084%								
F-H	18	11.759	227.759	11.4	18.7	227.736	227.741	18	11.753	227.753	10.7	18.0	227.728	227.736	0.005	227.739	06-Nov-08	0.246	0.108%	0.230	0.101%								
Lateral																													
I-J	18	11.418	227.418	8.8	16.1	227.388	227.403	18	11.423	227.423	9.1	16.4	227.394	227.408	0.005	227.406	06-Nov-08	0.079	0.035%	-0.071	-0.031%								
K-L										N/A																			
M-N	18	11.041	227.041	9.1	16.4	227.012	227.026	18	11.034	227.034	8.7	16.0	227.004	227.019	0.007	227.023	06-Nov-08	0.228	0.101%	0.076	0.033%								
O-P	18	11.408	227.408	7.6	14.9	227.375	227.395	18	11.407	227.407	9.5	16.8	227.379	227.392	0.003	227.393	06-Nov-08	0.017	0.007%	0.054	0.024%								
Transverse																													
I-K	18	11.654	227.654	9.8	17.1	227.627	227.638	18	11.651	227.651	10.4	17.7	227.626	227.634	0.004	227.636	06-Nov-08	0.018	0.008%	0.050	0.022%								
J-L										N/A																			
M-O	19	0.106	228.106	7.9	15.2	228.074	228.092	19	0.103	228.103	9.8	17.1	228.076	228.087	0.005	228.090	06-Nov-08	0.057	0.025%	0.061	0.027%								
N-P	18	11.520	227.520	8.0	15.3	227.488	227.506	18	11.517	227.517	9.3	16.6	227.489	227.502	0.005	227.504	06-Nov-08	-0.052	-0.023%	0.064	0.028%								

Appendix 11

Extensometer Measurements Hartsfield-Jackson Atlanta International Airport

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 1

Pins	ft		1st Measurement					ft		2nd Measurement					0.014		Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc	ΔD	Average	
Lateral																	
A-B	48	11.171	587.171	17.1	22.0	587.151	587.138	48	11.246	587.246	16.3	21.2	587.221	587.213	0.075	587.175	15-Nov-05
C-D	48	11.522	587.522	16.7	21.6	587.500	587.489	48	11.558	587.558	16.4	21.3	587.533	587.525	0.036	587.507	15-Nov-05
E-F	48	11.535	587.535	16.3	21.2	587.510	587.502	48	11.523	587.523	16.3	21.2	587.498	587.490	0.012	587.496	15-Nov-05
G-H	48	11.336	587.336	16.4	21.3	587.311	587.303	48	11.348	587.348	16.1	21.0	587.321	587.315	0.012	587.309	15-Nov-05
Transverse																	
A-C	23	4.708	280.708	16.4	21.3	280.696	280.692	23	4.708	280.708	16.0	20.9	280.695	280.692	0.000	280.692	15-Nov-05
B-D	23	4.935	280.935	16.2	21.1	280.923	280.919	23	4.926	280.926	15.9	20.8	280.913	280.910	0.009	280.915	15-Nov-05
E-G	24	2.596	290.596	16.1	21.0	290.583	290.579	24	2.616	290.616	16.0	20.9	290.603	290.599	0.020	290.589	15-Nov-05
F-H	24	2.712	290.712	16.2	21.1	290.699	290.695	24	2.699	290.699	15.9	20.8	290.685	290.682	0.013	290.689	15-Nov-05
Diagonal																	
A-D	54	3.075	651.075	16.3	21.2	651.047	651.038	54	3.074	651.074	16.2	21.1	651.045	651.037	0.001	651.037	15-Nov-05
B-C	54	3.223	651.223	16.4	21.3	651.196	651.186	54	3.221	651.221	16.1	21.0	651.192	651.184	0.002	651.185	15-Nov-05
E-H	54	7.401	655.401	16.3	21.2	655.373	655.364	54	7.415	655.415	15.7	20.6	655.382	655.378	0.014	655.371	15-Nov-05
F-G	54	7.600	655.600	16.2	21.1	655.571	655.563	54	7.604	655.604	15.8	20.7	655.572	655.567	0.004	655.565	15-Nov-05
Transverse																	
C-E	25	9.551	309.551	16.2	21.1	309.537	309.533	25	9.563	309.563	16.5	21.4	309.550	309.545	0.012	309.539	15-Nov-05
D-F	25	9.600	309.600	16.3	21.2	309.587	309.582	25	9.630	309.630	16.3	21.2	309.617	309.612	0.030	309.597	15-Nov-05
Diagonal																	
C-F	55	3.641	663.641	16.4	21.3	663.613	663.603	55	3.646	663.646	15.9	20.8	663.614	663.608	0.005	663.606	15-Nov-05
D-E	55	4.767	664.767	16.2	21.1	664.738	664.729	55	4.765	664.765	16.1	21.0	664.735	664.727	0.002	664.728	15-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 1

Pins	1st Measurement							2nd Measurement							0.014		Date
	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	ΔD	Average	
Lateral																	
B-I	51	0.802	612.802	18.9	23.8	612.794	612.767	51	0.772	612.772	18.5	23.4	612.761	612.737	0.030	612.752	16-Nov-05
D-K	51	0.303	612.303	18.7	23.6	612.294	612.268	51	0.300	612.300	18.4	23.3	612.289	612.265	0.003	612.266	16-Nov-05
F-M	51	0.344	612.344	18.6	23.5	612.334	612.309	51	0.323	612.323	18.7	23.6	612.314	612.288	0.021	612.298	16-Nov-05
H-O	51	0.058	612.058	18.8	23.7	612.049	612.023	51	0.068	612.068	18.2	23.1	612.055	612.033	0.010	612.028	16-Nov-05
Diagonal																	
B-K	56	2.298	674.298	18.2	23.1	674.284	674.259	56	2.295	674.295	18.2	23.1	674.281	674.256	0.003	674.258	16-Nov-05
I-D	56	1.645	673.645	17.8	22.7	673.628	673.607	56	1.637	673.637	18.2	23.1	673.623	673.599	0.008	673.603	16-Nov-05
F-O	56	5.549	677.549	18.1	23.0	677.534	677.510	56	5.537	677.537	18.3	23.2	677.524	677.498	0.012	677.504	16-Nov-05
M-H	56	5.871	677.871	17.9	22.8	677.854	677.832	56	5.839	677.839	18.3	23.2	677.826	677.800	0.032	677.816	16-Nov-05
D-M	57	2.031	686.031	18.1	23.0	686.016	685.992	57	2.045	686.045	18.2	23.1	686.031	686.006	0.014	685.999	16-Nov-05
K-F	57	2.410	686.410	17.9	22.8	686.393	686.371	57	2.384	686.384	18.5	23.4	686.372	686.345	0.026	686.358	16-Nov-05
Across Joint																	
A-Q	24	5.883	293.883	16.3	21.2	293.870	293.866	24	5.873	293.873	16.5	21.4	293.861	293.856	0.010	293.861	15-Nov-05
Q-E	24	8.513	296.513	16.4	21.3	296.501	296.496	24	8.516	296.516	16.4	21.3	296.504	296.499	0.003	296.498	15-Nov-05
C-R	24	8.376	296.376	16.6	21.5	296.364	296.359	24	8.377	296.377	16.4	21.3	296.365	296.360	0.001	296.360	15-Nov-05
R-G	25	3.908	303.908	16.9	21.8	303.897	303.891	25	3.910	303.910	16.3	21.2	303.897	303.893	0.002	303.892	15-Nov-05
J-S	24	5.177	293.177	19.0	23.9	293.174	293.160	24	5.169	293.169	19.4	24.3	293.167	293.152	0.008	293.156	16-Nov-05
S-N	24	8.941	296.941	19.5	24.4	296.939	296.924	24	8.928	296.928	19.0	23.9	296.925	296.911	0.013	296.917	16-Nov-05
L-T	24	9.257	297.257	18.8	23.7	297.253	297.240	24	9.243	297.243	18.9	23.8	297.239	297.226	0.014	297.233	16-Nov-05
T-P	25	3.579	303.579	18.8	23.7	303.575	303.562	25	3.576	303.576	19.1	24.0	303.573	303.559	0.003	303.560	16-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 1

Pins	ft		1st Measurement					ft		2nd Measurement					0.014		Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc	ΔD	Average	
Lateral																	
I-J	48	10.901	586.901	20.8	25.7	586.906	586.867	48	10.901	586.901	19.8	24.7	586.900	586.867	0.000	586.867	16-Nov-05
K-L	48	10.803	586.803	20.1	25.0	586.804	586.769	48	10.825	586.825	19.6	24.5	586.822	586.791	0.022	586.780	16-Nov-05
M-N	48	11.049	587.049	19.9	24.8	587.048	587.015	48	11.018	587.018	19.6	24.5	587.015	586.984	0.031	587.000	16-Nov-05
O-P	48	11.681	587.681	19.9	24.8	587.680	587.647	48	11.668	587.668	19.6	24.5	587.665	587.634	0.013	587.641	16-Nov-05
Transverse																	
I-K	23	5.050	281.050	19.8	24.7	281.049	281.034	23	5.047	281.047	19.0	23.9	281.044	281.031	0.003	281.032	16-Nov-05
J-L	23	4.392	280.392	19.4	24.3	280.390	280.376	23	4.395	280.395	18.9	23.8	280.391	280.379	0.003	280.377	16-Nov-05
M-O	24	2.241	290.241	19.4	24.3	290.239	290.224	24	2.234	290.234	18.7	23.6	290.230	290.217	0.007	290.221	16-Nov-05
N-P	24	2.841	290.841	19.3	24.2	290.839	290.824	24	2.848	290.848	18.7	23.6	290.844	290.831	0.007	290.828	16-Nov-05
Diagonal																	
I-L	54	2.612	650.612	19.3	24.2	650.607	650.575	54	2.573	650.573	18.9	23.8	650.565	650.536	0.039	650.555	16-Nov-05
J-K	54	2.687	650.687	18.8	23.7	650.678	650.650	54	2.703	650.703	19.1	24.0	650.696	650.666	0.016	650.658	16-Nov-05
M-P	54	7.504	655.504	18.9	23.8	655.496	655.466	54	7.501	655.501	18.9	23.8	655.493	655.463	0.003	655.465	16-Nov-05
N-O	54	7.194	655.194	18.9	23.8	655.186	655.157	54	7.202	655.202	19.1	24.0	655.195	655.164	0.008	655.161	16-Nov-05
Transverse																	
K-M	25	9.748	309.748	18.9	23.8	309.744	309.730	25	9.735	309.735	18.9	23.8	309.731	309.717	0.013	309.724	16-Nov-05
L-N	25	9.816	309.816	19.1	24.0	309.813	309.798	25	9.786	309.786	18.9	23.8	309.782	309.768	0.030	309.783	16-Nov-05
Diagonal																	
K-N	55	3.338	663.338	19.2	24.1	663.332	663.300	55	3.353	663.353	19.3	24.2	663.348	663.315	0.015	663.308	16-Nov-05
L-M	55	4.128	664.128	18.9	23.8	664.120	664.090	55	4.119	664.119	18.8	23.7	664.110	664.081	0.009	664.086	16-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 2

Pins	ft		1st Measurement					ft		2nd Measurement					0.007		Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc	ΔD	Average	
Lateral																	
A-B	48	11.365	587.365	8.3	9.3	587.285	587.359	48	11.367	587.367	8.5	9.5	587.289	587.361	0.002	587.360	16-Jan-06
C-D	48	11.038	587.038	8.5	9.5	586.960	587.032	48	11.035	587.035	8.7	9.7	586.958	587.029	0.003	587.030	16-Jan-06
E-F	48	11.112	587.112	8.5	9.5	587.034	587.106	48	11.109	587.109	8.9	9.9	587.033	587.103	0.003	587.104	16-Jan-06
G-H	48	10.750	586.750	8.5	9.5	586.672	586.744	48	10.751	586.751	8.6	9.6	586.673	586.745	0.001	586.744	16-Jan-06
Transverse																	
A-C	24	1.881	289.881	8.5	9.5	289.842	289.878	24	1.882	289.882	8.6	9.6	289.844	289.879	0.001	289.878	16-Jan-06
B-D	24	1.785	289.785	8.6	9.6	289.747	289.782	24	1.785	289.785	8.6	9.6	289.747	289.782	0.000	289.782	16-Jan-06
E-G	24	2.572	290.572	8.6	9.6	290.534	290.569	24	2.560	290.560	8.6	9.6	290.522	290.557	0.012	290.563	16-Jan-06
F-H	24	2.457	290.457	8.6	9.6	290.419	290.454	24	2.457	290.457	8.7	9.7	290.419	290.454	0.000	290.454	16-Jan-06
Diagonal																	
A-D	54	6.789	654.789	8.4	9.4	654.701	654.782	54	6.801	654.801	8.8	9.8	654.716	654.794	0.012	654.788	16-Jan-06
B-C	54	7.007	655.007	8.4	9.4	654.919	655.000	54	7.008	655.008	8.7	9.7	654.922	655.001	0.001	655.001	16-Jan-06
E-H	54	7.592	655.592	8.4	9.4	655.504	655.585	54	7.604	655.604	8.3	9.3	655.515	655.597	0.012	655.591	16-Jan-06
F-G	54	6.312	654.312	8.6	9.6	654.225	654.305	54	6.315	654.315	8.4	9.4	654.227	654.308	0.003	654.307	16-Jan-06
Transverse																	
C-E	25	10.412	310.412	8.2	9.2	310.370	310.409	25	10.407	310.407	8.2	9.2	310.365	310.404	0.005	310.406	16-Jan-06
D-F	25	10.501	310.501	8.1	9.1	310.458	310.498	25	10.513	310.513	8.2	9.2	310.470	310.510	0.012	310.504	16-Jan-06
Diagonal																	
C-F	55	4.251	664.251	8.4	9.4	664.162	664.244	55	4.243	664.243	8.8	9.8	664.157	664.236	0.008	664.240	16-Jan-06
D-E	55	4.136	664.136	8.4	9.4	664.047	664.129	55	4.144	664.144	8.8	9.8	664.058	664.137	0.008	664.133	16-Jan-06

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 2

Pins	ft		1st Measurement					ft		2nd Measurement					0.007	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc	ΔD		
Lateral																	
B-I	51	1.074	613.074	8.4	9.4	612.992	613.068	51	1.072	613.072	8.6	9.6	612.991	613.066	0.002	613.067	16-Jan-06
D-K	51	1.439	613.439	8.6	9.6	613.358	613.433	51	1.432	613.432	8.6	9.6	613.351	613.426	0.007	613.429	16-Jan-06
F-M	51	1.333	613.333	8.8	9.8	613.253	613.327	51	1.335	613.335	8.6	9.6	613.254	613.329	0.002	613.328	16-Jan-06
H-O	51	0.835	612.835	8.8	9.8	612.755	612.829	51	0.819	612.819	8.5	9.5	612.737	612.813	0.016	612.821	16-Jan-06
Diagonal																	
B-K	56	6.325	678.325	8.6	9.6	678.235	678.318	56	6.328	678.328	8.5	9.5	678.238	678.321	0.003	678.319	16-Jan-06
I-D	56	6.516	678.516	8.7	9.7	678.427	678.509	56	6.505	678.505	8.5	9.5	678.414	678.498	0.011	678.503	16-Jan-06
F-O	56	6.892	678.892	8.8	9.8	678.804	678.885	56	6.868	678.868	8.6	9.6	678.778	678.861	0.024	678.873	16-Jan-06
M-H	56	5.985	677.985	8.8	9.8	677.897	677.978	56	5.994	677.994	8.3	9.3	677.902	677.987	0.009	677.982	16-Jan-06
D-M	57	3.785	687.785	8.6	9.6	687.694	687.778	57	3.783	687.783	8.3	9.3	687.690	687.776	0.002	687.777	16-Jan-06
K-F	57	3.323	687.323	8.4	9.4	687.231	687.316	57	3.315	687.315	8.3	9.3	687.222	687.308	0.008	687.312	16-Jan-06
Across Joint																	
A-Q	25	2.497	302.497	8.1	9.1	302.455	302.494	25	2.499	302.499	8.4	9.4	302.458	302.496	0.002	302.495	16-Jan-06
Q-E	24	9.757	297.757	8.0	9.0	297.716	297.754	24	9.765	297.765	8.4	9.4	297.725	297.762	0.008	297.758	16-Jan-06
C-R	24	9.897	297.897	8.4	9.4	297.857	297.894	24	9.896	297.896	8.4	9.4	297.856	297.893	0.001	297.893	16-Jan-06
R-G	25	3.074	303.074	8.4	9.4	303.033	303.071	25	3.082	303.082	8.6	9.6	303.042	303.079	0.008	303.075	16-Jan-06
J-S	25	3.081	303.081	7.4	8.4	303.037	303.078	25	3.083	303.083	7.4	8.4	303.039	303.080	0.002	303.079	16-Jan-06
S-N	24	11.083	299.083	7.4	8.4	299.039	299.080	24	11.078	299.078	7.6	8.6	299.035	299.075	0.005	299.077	16-Jan-06
L-T	24	10.981	298.981	7.3	8.3	298.937	298.978	24	10.987	298.987	7.3	8.3	298.943	298.984	0.006	298.981	16-Jan-06
T-P	25	2.717	302.717	7.4	8.4	302.673	302.714	25	2.725	302.725	7.1	8.1	302.680	302.722	0.008	302.718	16-Jan-06

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 2

Pins	ft		1st Measurement					ft		2nd Measurement					0.007	Average	Date	
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc	ΔD			
Lateral																		
I-J	48	11.065	587.065	8.4	9.4	586.986	587.059	48	11.069	587.069	8.2	9.2	586.989	587.063	0.004	587.061	16-Jan-06	
K-L	48	10.748	586.748	8.2	9.2	586.668	586.742	48	10.738	586.738	8.2	9.2	586.658	586.732	0.010	586.737	16-Jan-06	
M-N	48	10.750	586.750	8.2	9.2	586.670	586.744	48	10.739	586.739	8.4	9.4	586.660	586.733	0.011	586.738	16-Jan-06	
O-P	48	10.817	586.817	8.2	9.2	586.737	586.811	48	10.804	586.804	8.3	9.3	586.724	586.798	0.013	586.804	16-Jan-06	
Transverse																		
I-K	24	2.136	290.136	8.5	9.5	290.097	290.133	24	2.142	290.142	8.2	9.2	290.102	290.139	0.006	290.136	16-Jan-06	
J-L	24	2.372	290.372	8.4	9.4	290.333	290.369	24	2.379	290.379	8.2	9.2	290.339	290.376	0.007	290.372	16-Jan-06	
M-O	24	2.270	290.270	8.5	9.5	290.231	290.267	24	2.264	290.264	8.2	9.2	290.224	290.261	0.006	290.264	16-Jan-06	
N-P	24	1.942	289.942	8.5	9.5	289.903	289.939	24	1.939	289.939	8.5	9.5	289.900	289.936	0.003	289.937	16-Jan-06	
Diagonal																		
I-L	54	6.430	654.430	8.1	9.1	654.340	654.423	54	6.425	654.425	8.0	9.0	654.334	654.418	0.005	654.421	16-Jan-06	
J-K	54	7.227	655.227	8.0	9.0	655.136	655.220	54	7.230	655.230	7.8	8.8	655.137	655.223	0.003	655.222	16-Jan-06	
M-P	54	7.263	655.263	8.2	9.2	655.173	655.256	54	7.271	655.271	7.9	8.9	655.179	655.264	0.008	655.260	16-Jan-06	
N-O	54	6.019	654.019	8.2	9.2	653.929	654.012	54	6.028	654.028	8.5	9.5	653.941	654.021	0.009	654.017	16-Jan-06	
Transverse																		
K-M	25	10.694	310.694	8.4	9.4	310.652	310.691	25	10.685	310.685	8.2	9.2	310.642	310.682	0.009	310.686	16-Jan-06	
L-N	25	11.782	311.782	8.4	9.4	311.740	311.779	25	11.790	311.790	8.2	9.2	311.747	311.787	0.008	311.783	16-Jan-06	
Diagonal																		
K-N	55	4.810	664.810	8.2	9.2	664.719	664.803	55	4.798	664.798	8.9	9.9	664.712	664.791	0.012	664.797	16-Jan-06	
L-M	55	3.711	663.711	8.3	9.3	663.621	663.704	55	3.704	663.704	8.4	9.4	663.615	663.697	0.007	663.700	16-Jan-06	

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 3

Pins	ft		1st Measurement					ft		2nd Measurement					0.012 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
A-B	48	7.056	583.056	18.3	23.2	583.045	583.023	48	7.039	583.039	18.3	23.2	583.028	583.006	0.017	583.014	16-Nov-05
C-D	48	7.240	583.240	18.4	23.3	583.229	583.207	48	7.208	583.208	18.2	23.1	583.196	583.175	0.032	583.191	16-Nov-05
E-F	48	8.210	584.210	18.3	23.2	584.198	584.177	48	8.190	584.190	18.1	23.0	584.177	584.157	0.020	584.167	16-Nov-05
G-H	48	7.971	583.971	18.4	23.3	583.960	583.938	48	7.951	583.951	17.9	22.8	583.937	583.918	0.020	583.928	16-Nov-05
Transverse																	
A-C	23	1.086	277.086	17.8	22.7	277.079	277.070	23	1.083	277.083	17.9	22.8	277.076	277.067	0.003	277.069	16-Nov-05
B-D	23	1.251	277.251	17.6	22.5	277.243	277.235	23	1.239	277.239	17.8	22.7	277.232	277.223	0.012	277.229	16-Nov-05
E-G	23	9.179	285.179	17.9	22.8	285.172	285.163	23	9.167	285.167	15.0	19.9	285.150	285.151	0.012	285.157	16-Nov-05
F-H	23	8.909	284.909	15.2	20.1	284.893	284.893	23	8.911	284.911	17.4	22.3	284.902	284.895	0.002	284.894	16-Nov-05
Diagonal																	
A-D	53	10.368	646.368	18.1	23.0	646.354	646.331	53	10.367	646.367	14.4	19.3	646.325	646.330	0.001	646.331	16-Nov-05
B-C	53	9.064	645.064	18.2	23.1	645.051	645.027	53	9.022	645.022	18.1	23.0	645.008	644.985	0.042	645.006	16-Nov-05
E-H	54	2.011	650.011	18.1	23.0	649.997	649.974	54	1.987	649.987	18.0	22.9	649.972	649.950	0.024	649.962	16-Nov-05
F-G	54	1.973	649.973	18.1	23.0	649.959	649.936	54	1.956	649.956	18.1	23.0	649.942	649.919	0.017	649.927	16-Nov-05
Transverse																	
C-E	26	2.509	314.509	18.0	22.9	314.502	314.491	26	2.492	314.492	18.2	23.1	314.485	314.474	0.017	314.483	16-Nov-05
D-F	26	2.985	314.985	17.3	22.2	314.975	314.967	26	2.949	314.949	17.8	22.7	314.941	314.931	0.036	314.949	16-Nov-05
Diagonal																	
C-F	55	3.232	663.232	18.0	22.9	663.217	663.194	55	3.206	663.206	18.0	22.9	663.191	663.168	0.026	663.181	16-Nov-05
D-E	55	3.236	663.236	17.9	22.8	663.220	663.198	55	3.217	663.217	17.1	22.0	663.195	663.179	0.019	663.189	16-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 3

Pins	ft		1st Measurement					ft		2nd Measurement					0.012 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
B-I	51	4.363	616.363	17.9	22.8	616.348	616.328	51	4.354	616.354	17.0	21.9	616.333	616.319	0.009	616.323	16-Nov-05
D-K	51	3.135	615.135	18.4	23.3	615.124	615.100	51	3.122	615.122	17.4	22.3	615.103	615.087	0.013	615.093	16-Nov-05
F-M	51	3.218	615.218	18.2	23.1	615.205	615.183	51	3.189	615.189	17.6	22.5	615.172	615.154	0.029	615.168	16-Nov-05
H-O	51	3.720	615.720	18.0	22.9	615.706	615.685	51	3.698	615.698	17.4	22.3	615.679	615.663	0.022	615.674	16-Nov-05
Diagonal																	
B-K	56	4.407	676.407	0.0	0.1	676.250	676.408	56	4.402	676.402	-0.6	-0.5	676.240	676.403	0.005	676.405	15-Jan-06
I-D	56	3.636	675.636	0.5	0.6	675.483	675.636	56	3.632	675.632	-0.8	-0.7	675.469	675.633	0.004	675.635	15-Jan-06
F-O	56	7.894	679.894	0.5	0.6	679.740	679.894	56	7.898	679.898	-0.6	-0.5	679.736	679.899	0.004	679.897	15-Jan-06
M-H	56	7.067	679.067	-0.7	-0.6	678.904	679.068	56	7.082	679.082	-0.8	-0.7	678.918	679.083	0.015	679.075	15-Jan-06
D-M	57	7.239	691.239	0.4	0.5	691.082	691.240	57	7.230	691.230	-0.6	-0.5	691.065	691.231	0.009	691.235	15-Jan-06
K-F	57	6.039	690.039	0.6	0.7	689.884	690.039	57	6.047	690.047	-0.7	-0.6	689.881	690.048	0.008	690.044	15-Jan-06
Across Joint																	
A-Q	24	7.050	295.050	17.8	22.7	295.042	295.033	24	7.040	295.040	17.8	22.7	295.032	295.023	0.010	295.028	16-Nov-05
Q-E	24	8.581	296.581	15.6	20.5	296.566	296.564	24	8.584	296.584	17.7	22.6	296.576	296.567	0.003	296.566	16-Nov-05
C-R	24	9.570	297.570	14.6	19.5	297.551	297.553	24	9.557	297.557	18.0	22.9	297.550	297.540	0.013	297.547	16-Nov-05
R-G	25	2.237	302.237	17.9	22.8	302.230	302.220	25	2.242	302.242	17.8	22.7	302.234	302.225	0.005	302.222	16-Nov-05
J-S	24	5.192	293.192	-0.7	-0.6	293.122	293.192	24	5.182	293.182	-0.8	-0.7	293.111	293.182	0.010	293.187	15-Jan-06
S-N	24	8.765	296.765	-0.8	-0.7	296.693	296.765	24	8.758	296.758	-0.8	-0.7	296.686	296.758	0.007	296.762	15-Jan-06
L-T	24	8.684	296.684	-0.6	-0.5	296.613	296.684	24	8.674	296.674	-0.7	-0.6	296.603	296.674	0.010	296.679	15-Jan-06
T-P	25	3.963	303.963	-0.7	-0.6	303.890	303.963	25	3.963	303.963	-0.7	-0.6	303.890	303.963	0.000	303.963	15-Jan-06

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 3

Pins	ft		1st Measurement					ft		2nd Measurement					0.012 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
I-J	48	8.624	584.624	12.0	11.2	584.570	584.630	48	8.612	584.612	12.4	11.6	584.560	584.618	0.012	584.624	17-Jan-06
K-L	48	8.728	584.728	12.2	11.4	584.675	584.734	48	8.747	584.747	12.3	11.5	584.695	584.753	0.019	584.743	17-Jan-06
M-N	48	8.813	584.813	12.2	11.4	584.760	584.819	48	8.821	584.821	12.5	11.7	584.770	584.827	0.008	584.823	17-Jan-06
O-P	48	8.555	584.555	12.3	11.5	584.503	584.561	48	8.566	584.566	12.4	11.6	584.514	584.572	0.011	584.566	17-Jan-06
Transverse																	
I-K	23	4.016	280.016	4.8	4.9	279.967	280.016	23	4.013	280.013	5.2	5.3	279.965	280.013	0.003	280.015	18-Jan-06
J-L	23	1.436	277.436	4.7	4.8	277.387	277.436	23	1.434	277.434	4.6	4.7	277.384	277.434	0.002	277.435	18-Jan-06
M-O	23	11.373	287.373	4.2	4.3	287.320	287.373	23	11.369	287.369	5.4	5.5	287.320	287.369	0.004	287.371	18-Jan-06
N-P	23	11.732	287.732	4.4	4.5	287.680	287.732	23	11.741	287.741	4.9	5.0	287.691	287.741	0.009	287.737	18-Jan-06
Diagonal																	
I-L	53	11.407	647.407	12.4	11.6	647.350	647.414	53	11.417	647.417	12.3	11.5	647.359	647.424	0.010	647.419	17-Jan-06
J-K	54	0.150	648.150	12.2	11.4	648.091	648.157	54	0.153	648.153	12.3	11.5	648.095	648.160	0.003	648.158	17-Jan-06
M-P	54	3.453	651.453	12.4	11.6	651.396	651.460	54	3.464	651.464	12.4	11.6	651.407	651.471	0.011	651.465	17-Jan-06
N-O	54	3.726	651.726	12.4	11.6	651.669	651.733	54	3.726	651.726	12.4	11.6	651.669	651.733	0.000	651.733	17-Jan-06
Transverse																	
K-M	25	11.752	311.752	5.1	5.2	311.698	311.752	25	11.762	311.762	5.6	5.7	311.710	311.762	0.010	311.757	18-Jan-06
L-N	26	0.756	312.756	4.4	4.5	312.699	312.756	26	0.751	312.751	5.0	5.1	312.697	312.751	0.005	312.754	18-Jan-06
Diagonal																	
K-N	55	3.069	663.069	12.4	11.6	663.011	663.076	55	3.058	663.058	12.4	11.6	663.000	663.065	0.011	663.070	17-Jan-06
L-M	55	2.876	662.876	12.4	11.6	662.818	662.883	55	2.878	662.878	12.4	11.6	662.820	662.885	0.002	662.884	17-Jan-06

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 4

Pins	ft		1st Measurement					ft		2nd Measurement					0.007 Diff	Average	Date	
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc				
Lateral																		
A-B	48	7.429	583.429	13.6	12.8	583.386	583.435	48	7.437	583.437	11.9	11.1	583.382	583.443	0.008	583.439	17-Jan-06	
C-D	48	8.053	584.053	12.5	11.7	584.002	584.059	48	8.046	584.046	12.1	11.3	583.992	584.052	0.007	584.055	17-Jan-06	
E-F	48	8.498	584.498	12.2	11.4	584.445	584.504	48	8.500	584.500	12.1	11.3	584.446	584.506	0.002	584.505	17-Jan-06	
G-H	48	7.349	583.349	12.2	11.4	583.296	583.355	48	7.350	583.350	12.1	11.3	583.297	583.356	0.001	583.355	17-Jan-06	
Transverse																		
A-C	23	11.254	287.254	12.1	11.3	287.228	287.257	23	11.251	287.251	12.2	11.4	287.225	287.254	0.003	287.255	17-Jan-06	
B-D	23	11.739	287.739	12.2	11.4	287.713	287.742	23	11.749	287.749	12.1	11.3	287.723	287.752	0.010	287.747	17-Jan-06	
E-G	23	11.580	287.580	11.9	11.1	287.553	287.583	23	11.582	287.582	12.2	11.4	287.556	287.585	0.002	287.584	17-Jan-06	
F-H	23	10.488	286.488	12.3	11.5	286.462	286.491	23	10.481	286.481	12.2	11.4	286.455	286.484	0.007	286.487	17-Jan-06	
Diagonal																		
A-D	54	2.247	650.247	12.2	11.4	650.188	650.254	54	2.236	650.236	12.4	11.6	650.179	650.243	0.011	650.248	17-Jan-06	
B-C	54	3.282	651.282	12.0	11.2	651.222	651.289	54	3.270	651.270	12.4	11.6	651.213	651.277	0.012	651.283	17-Jan-06	
E-H	54	2.353	650.353	12.3	11.5	650.295	650.360	54	2.380	650.380	12.1	11.3	650.320	650.387	0.027	650.373	17-Jan-06	
F-G	54	3.061	651.061	13.1	12.3	651.009	651.068	54	3.062	651.062	12.1	11.3	651.002	651.069	0.001	651.068	17-Jan-06	
Transverse																		
C-E	26	2.938	314.938	11.9	11.1	314.908	314.941	26	2.936	314.936	12.2	11.4	314.908	314.939	0.002	314.940	17-Jan-06	
D-F	26	2.819	314.819	12.0	11.2	314.790	314.822	26	2.825	314.825	12.2	11.4	314.797	314.828	0.006	314.825	17-Jan-06	
Diagonal																		
C-F	55	4.235	664.235	12.0	11.2	664.173	664.242	55	4.223	664.223	12.0	11.2	664.161	664.230	0.012	664.236	17-Jan-06	
D-E	55	3.369	663.369	12.1	11.3	663.308	663.376	55	3.362	663.362	12.1	11.3	663.301	663.369	0.007	663.372	17-Jan-06	

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 4

Pins	ft		1st Measurement					ft		2nd Measurement					0.007 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
B-I	51	2.684	614.684	11.9	12.9	614.626	614.677	51	2.699	614.699	11.8	12.8	614.641	614.692	0.015	614.685	16-Jan-06
D-K	51	3.556	615.556	11.9	12.9	615.498	615.549	51	3.553	615.553	11.9	12.9	615.495	615.546	0.003	615.548	16-Jan-06
F-M	51	3.205	615.205	11.8	12.8	615.146	615.198	51	3.211	615.211	11.9	12.9	615.153	615.204	0.006	615.201	16-Jan-06
H-O	51	4.064	616.064	11.8	12.8	616.005	616.057	51	4.060	616.060	12.1	13.1	616.004	616.053	0.004	616.055	16-Jan-06
Diagonal																	
B-K	56	6.899	678.899	11.9	12.9	678.835	678.892	56	6.892	678.892	12.1	13.1	678.830	678.885	0.007	678.888	16-Jan-06
I-D	56	6.860	678.860	12.2	13.2	678.799	678.853	56	6.862	678.862	12.0	13.0	678.799	678.855	0.002	678.854	16-Jan-06
F-O	56	6.800	678.800	11.9	12.9	678.736	678.793	56	6.801	678.801	11.8	12.8	678.736	678.794	0.001	678.793	16-Jan-06
M-H	56	7.619	679.619	11.9	12.9	679.555	679.612	56	7.618	679.618	11.9	12.9	679.554	679.611	0.001	679.611	16-Jan-06
D-M	57	7.483	691.483	12.1	13.1	691.420	691.475	57	7.489	691.489	11.9	12.9	691.424	691.481	0.006	691.478	16-Jan-06
K-F	57	7.342	691.342	11.9	12.9	691.277	691.334	57	7.336	691.336	11.9	12.9	691.271	691.328	0.006	691.331	16-Jan-06
Across Joint																	
A-Q	25	2.848	302.848	12.1	13.1	302.820	302.845	25	2.851	302.851	12.1	13.1	302.823	302.848	0.003	302.846	16-Jan-06
Q-E	24	11.315	299.315	12.0	13.0	299.287	299.312	24	11.307	299.307	12.2	13.2	299.280	299.304	0.008	299.308	16-Jan-06
C-R	24	11.051	299.051	11.9	12.9	299.023	299.048	24	11.052	299.052	12.1	13.1	299.025	299.049	0.001	299.048	16-Jan-06
R-G	25	3.341	303.341	11.9	12.9	303.312	303.338	25	3.337	303.337	11.9	12.9	303.308	303.334	0.004	303.336	16-Jan-06
J-S	25	2.712	302.712	12.4	13.4	302.685	302.709	25	2.712	302.712	12.4	13.4	302.685	302.709	0.000	302.709	16-Jan-06
S-N	25	1.034	301.034	12.3	13.3	301.007	301.031	25	1.027	301.027	12.4	13.4	301.000	301.024	0.007	301.027	16-Jan-06
L-T	25	0.710	300.710	12.1	13.1	300.682	300.707	25	0.720	300.720	12.3	13.3	300.693	300.717	0.010	300.712	16-Jan-06
T-P	25	3.174	303.174	12.3	13.3	303.147	303.171	25	3.162	303.162	12.2	13.2	303.135	303.159	0.012	303.165	16-Jan-06

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 1

Zone 4

Pins	ft		1st Measurement					ft		2nd Measurement					0.007 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
I-J	48	9.237	585.237	12.3	13.3	585.185	585.231	48	9.241	585.241	12.3	13.3	585.189	585.235	0.004	585.233	16-Jan-06
K-L	48	8.500	584.500	12.2	13.2	584.447	584.494	48	8.499	584.499	12.3	13.3	584.447	584.493	0.001	584.493	16-Jan-06
M-N	48	8.508	584.508	12.2	13.2	584.455	584.502	48	8.496	584.496	12.4	13.4	584.444	584.490	0.012	584.496	16-Jan-06
O-P	48	8.639	584.639	12.2	13.2	584.586	584.633	48	8.622	584.622	12.4	13.4	584.570	584.616	0.017	584.624	16-Jan-06
Transverse																	
I-K	23	10.353	286.353	12.3	13.3	286.327	286.350	23	10.350	286.350	12.6	13.6	286.325	286.347	0.003	286.348	16-Jan-06
J-L	23	11.062	287.062	12.6	13.6	287.037	287.059	23	11.063	287.063	12.6	13.6	287.038	287.060	0.001	287.059	16-Jan-06
M-O	23	11.043	287.043	12.6	13.6	287.018	287.040	23	11.041	287.041	12.6	13.6	287.016	287.038	0.002	287.039	16-Jan-06
N-P	23	11.212	287.212	12.6	13.6	287.187	287.209	23	11.204	287.204	12.6	13.6	287.179	287.201	0.008	287.205	16-Jan-06
Diagonal																	
I-L	54	3.326	651.326	12.5	13.5	651.269	651.319	54	3.323	651.323	12.6	13.6	651.267	651.316	0.003	651.317	16-Jan-06
J-K	54	3.509	651.509	12.6	13.6	651.453	651.502	54	3.520	651.520	12.5	13.5	651.463	651.513	0.011	651.507	16-Jan-06
M-P	54	4.007	652.007	12.6	13.6	651.951	652.000	54	4.018	652.018	12.4	13.4	651.961	652.011	0.011	652.005	16-Jan-06
N-O	54	2.639	650.639	12.6	13.6	650.583	650.632	54	2.615	650.615	12.4	13.4	650.558	650.608	0.024	650.620	16-Jan-06
Transverse																	
K-M	26	3.305	315.305	12.6	13.6	315.278	315.302	26	3.306	315.306	12.4	13.4	315.278	315.303	0.001	315.302	16-Jan-06
L-N	26	4.712	316.712	12.6	13.6	316.685	316.709	26	4.713	316.713	12.6	13.6	316.686	316.710	0.001	316.709	16-Jan-06
Diagonal																	
K-N	55	4.964	664.964	12.6	13.6	664.907	664.957	55	4.957	664.957	12.6	13.6	664.900	664.950	0.007	664.953	16-Jan-06
L-M	55	4.094	664.094	12.5	13.5	664.036	664.087	55	4.087	664.087	12.4	13.4	664.028	664.080	0.007	664.083	16-Jan-06

Extensometer Measurements

		1 Year Change ΔD '05-'06	Total		Lateral		Transverse		Diagonal		Across Joint			
			Max	Min	Max	Min	Max	Min	Max	Min	Max	Min		
Hartsfield-Jackson Atlanta International Airpor			0.261	0.093%	0.162	0.028%	0.261	0.093%	0.208	0.032%	0.201	0.069%		
Area 1			-0.166	-0.035%	-0.091	-0.016%	-0.057	-0.018%	-0.166	-0.025%	-0.105	-0.035%		
Zone 1 2006			Average	0.046	0.011%	Average	0.037	0.006%	0.066	0.023%	0.051	0.008%	0.015	0.005%

Pins	ft	in	1st Measurement				ft	in	2nd Measurement				0.008 Diff	Average	Date	Percentage			
			total in	temp	temp conc	adj tape			adj conc	total in	temp	temp conc				adj tape	adj conc	ΔD '05-'06	ΔD '05-'06
Lateral																			
A-B	48	11.212	587.212	10.1	20.2	587.145	587.143	48	11.221	587.221	8.1	18.2	587.140	587.152	0.009	587.148	07-Nov-06	-0.027	-0.005%
C-D	48	11.739	587.739	10.0	20.1	587.671	587.670	48	11.736	587.736	9.3	19.4	587.663	587.667	0.003	587.669	07-Nov-06	0.162	0.028%
E-F	48	11.585	587.585	10.0	20.1	587.517	587.516	48	11.592	587.592	9.2	19.3	587.518	587.523	0.007	587.520	07-Nov-06	0.024	0.004%
G-H	48	11.323	587.323	10.0	20.1	587.255	587.254	48	11.331	587.331	9.1	19.2	587.257	587.262	0.008	587.258	07-Nov-06	-0.050	-0.009%
Transverse																			
A-C	23	4.842	280.842	10.0	20.1	280.809	280.809	23	4.848	280.848	9.1	19.2	280.812	280.815	0.006	280.812	07-Nov-06	0.120	0.043%
B-D	23	4.975	280.975	10.0	20.1	280.942	280.942	23	4.966	280.966	8.5	18.6	280.929	280.933	0.009	280.938	07-Nov-06	0.023	0.008%
E-G	24	2.638	290.638	10.0	20.1	290.604	290.604	24	2.625	290.625	9.7	19.8	290.590	290.591	0.013	290.597	07-Nov-06	0.008	0.003%
F-H	24	2.864	290.864	10.0	20.1	290.830	290.830	24	2.866	290.866	8.8	18.9	290.828	290.832	0.002	290.831	07-Nov-06	0.142	0.049%
Diagonal																			
A-D	54	3.255	651.255	9.9	20.0	651.179	651.179	54	3.249	651.249	9.2	19.3	651.167	651.173	0.006	651.176	07-Nov-06	0.138	0.021%
B-C	54	3.232	651.232	10.4	20.5	651.159	651.156	54	3.242	651.242	9.2	19.3	651.160	651.166	0.010	651.161	07-Nov-06	-0.024	-0.004%
E-H	54	7.283	655.283	10.0	20.1	655.207	655.206	54	7.279	655.279	9.3	19.4	655.198	655.202	0.004	655.204	07-Nov-06	-0.166	-0.025%
F-G	54	7.788	655.788	10.0	20.1	655.712	655.711	54	7.792	655.792	9.1	19.2	655.709	655.715	0.004	655.713	07-Nov-06	0.149	0.023%
Transverse																			
C-E	25	9.576	309.576	10.0	20.1	309.540	309.540	25	9.562	309.562	9.3	19.4	309.524	309.526	0.014	309.533	07-Nov-06	-0.007	-0.002%
D-F	25	9.744	309.744	10.0	20.1	309.708	309.708	25	9.733	309.733	8.5	18.6	309.692	309.697	0.011	309.702	07-Nov-06	0.105	0.034%
Diagonal																			
C-F	55	3.890	663.890	10.0	20.1	663.813	663.812	55	3.888	663.888	9.3	19.4	663.806	663.810	0.002	663.811	07-Nov-06	0.206	0.031%
D-E	55	4.758	664.758	10.0	20.1	664.681	664.680	55	4.756	664.756	9.2	19.3	664.673	664.678	0.002	664.679	07-Nov-06	-0.049	-0.007%

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint					
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max		0.261 0.093%		Max		0.162 0.028%		0.261 0.093%		0.208 0.032%		0.201 0.069%					
Area 1				Min		-0.166 -0.035%		Min		-0.091 -0.016%		-0.057 -0.018%		-0.166 -0.025%		-0.105 -0.035%					
Zone 1 2006				Average		0.046 0.011%		Average		0.037 0.006%		0.066 0.023%		0.051 0.008%		0.015 0.005%					
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.008	Average	Date	Percentage	
Lateral			total in								total in						Diff			ΔD '05-'06	ΔD '05-'06
B-I	51	0.993	612.993	8.6	18.7	612.912	612.921	51	0.968	612.968	11.2	21.3	612.905	612.896	0.025	612.909	07-Nov-06			0.157	0.026%
D-K	51	0.321	612.321	8.3	18.4	612.238	612.249	51	0.325	612.325	9.1	19.2	612.248	612.253	0.004	612.251	07-Nov-06			-0.015	-0.002%
F-M	51	0.367	612.367	8.3	18.4	612.284	612.295	51	0.361	612.361	8.6	18.7	612.280	612.289	0.006	612.292	07-Nov-06			-0.006	-0.001%
H-O	51	0.206	612.206	8.1	18.2	612.121	612.134	51	0.203	612.203	8.5	18.6	612.121	612.131	0.003	612.133	07-Nov-06			0.105	0.017%
Diagonal																					
B-K	56	2.414	674.414	8.5	18.6	674.324	674.335	56	2.395	674.395	9.3	19.4	674.311	674.316	0.019	674.326	07-Nov-06			0.068	0.010%
I-D	56	1.774	673.774	8.3	18.4	673.683	673.695	56	1.749	673.749	9.7	19.8	673.669	673.670	0.025	673.683	07-Nov-06			0.080	0.012%
F-O	56	5.569	677.569	8.4	18.5	677.478	677.490	56	5.572	677.572	8.6	18.7	677.482	677.493	0.003	677.491	07-Nov-06			-0.013	-0.002%
M-H	56	5.975	677.975	8.2	18.3	677.882	677.896	56	5.978	677.978	8.6	18.7	677.888	677.899	0.003	677.897	07-Nov-06			0.081	0.012%
D-M	57	2.216	686.216	8.5	18.6	686.124	686.136	57	2.218	686.218	8.8	18.9	686.129	686.138	0.002	686.137	07-Nov-06			0.138	0.020%
K-F	57	2.355	686.355	8.3	18.4	686.262	686.275	57	2.364	686.364	9.0	19.1	686.276	686.284	0.009	686.279	07-Nov-06			-0.079	-0.011%
Across Joint																					
A-Q	24	5.930	293.930	7.9	18.0	293.889	293.896	24	5.927	293.927	8.1	18.2	293.886	293.893	0.003	293.894	07-Nov-06			0.033	0.011%
Q-E	24	8.495	296.495	8.1	18.2	296.454	296.460	24	8.493	296.493	8.1	18.2	296.452	296.458	0.002	296.459	07-Nov-06			-0.038	-0.013%
C-R	24	8.298	296.298	8.2	18.3	296.257	296.263	24	8.301	296.301	8.5	18.6	296.261	296.266	0.003	296.265	07-Nov-06			-0.095	-0.032%
R-G	25	3.968	303.968	8.1	18.2	303.926	303.932	25	3.970	303.970	8.7	18.8	303.930	303.934	0.002	303.933	07-Nov-06			0.042	0.014%
J-S	24	5.393	293.393	11.0	21.1	293.362	293.359	24	5.391	293.391	10.8	20.9	293.360	293.357	0.002	293.358	08-Nov-06			0.201	0.069%
S-N	24	9.025	297.025	11.8	21.9	296.997	296.990	24	9.036	297.036	10.9	21.0	297.005	297.001	0.011	296.996	08-Nov-06			0.078	0.026%
L-T	24	9.275	297.275	11.0	21.1	297.244	297.240	24	9.274	297.274	10.6	20.7	297.242	297.239	0.001	297.240	08-Nov-06			0.007	0.002%
T-P	25	3.488	303.488	10.9	21.0	303.456	303.452	25	3.493	303.493	10.7	20.8	303.460	303.457	0.005	303.455	08-Nov-06			-0.105	-0.035%

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint					
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max	Min	0.261	0.093%	Max	0.162	0.028%	0.261	0.093%	0.208	0.032%	0.201	0.069%					
Area 1				Min		-0.166	-0.035%	Min	-0.091	-0.016%	-0.057	-0.018%	-0.166	-0.025%	-0.105	-0.035%					
Zone 1 2006				Average		0.046	0.011%	Average	0.037	0.006%	0.066	0.023%	0.051	0.008%	0.015	0.005%					
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.008	Average	Date	Percentage	
			total in								total in						Diff			ΔD '05-'06	ΔD '05-'06
Lateral																					
I-J	48	11.032	587.032	10.6	20.7	586.968	586.963	48	11.020	587.020	9.6	19.7	586.949	586.951	0.012	586.957	07-Nov-06			0.090	0.015%
K-L	48	10.973	586.973	8.8	18.9	586.897	586.904	48	10.963	586.963	8.9	19.0	586.887	586.894	0.010	586.899	07-Nov-06			0.119	0.020%
M-N	48	11.050	587.050	11.2	21.3	586.990	586.981	48	11.048	587.048	10.7	20.8	586.985	586.979	0.002	586.980	08-Nov-06			-0.020	-0.003%
O-P	48	11.619	587.619	11.0	21.1	587.558	587.550	48	11.618	587.618	10.7	20.8	587.555	587.549	0.001	587.550	08-Nov-06			-0.091	-0.016%
Transverse																					
I-K	23	5.039	281.039	8.8	18.9	281.002	281.006	23	5.084	281.084	8.7	18.8	281.047	281.051	0.045	281.029	07-Nov-06			-0.004	-0.001%
J-L	23	4.672	280.672	8.7	18.8	280.635	280.639	23	4.671	280.671	8.3	18.4	280.633	280.638	0.001	280.639	07-Nov-06			0.261	0.093%
M-O	24	2.353	290.353	10.5	20.6	290.321	290.319	24	2.343	290.343	10.6	20.7	290.311	290.309	0.010	290.314	08-Nov-06			0.093	0.032%
N-P	24	2.932	290.932	10.6	20.7	290.900	290.898	24	2.937	290.937	10.7	20.8	290.906	290.903	0.005	290.900	08-Nov-06			0.073	0.025%
Diagonal																					
I-L	54	2.714	650.714	8.7	18.8	650.629	650.638	54	2.687	650.687	8.9	19.0	650.603	650.611	0.027	650.624	07-Nov-06			0.069	0.011%
J-K	54	2.946	650.946	8.9	19.0	650.862	650.870	54	2.937	650.937	8.8	18.9	650.852	650.861	0.009	650.865	07-Nov-06			0.208	0.032%
M-P	54	7.415	655.415	11.0	21.1	655.347	655.338	54	7.410	655.410	10.6	20.7	655.339	655.333	0.005	655.336	08-Nov-06			-0.129	-0.020%
N-O	54	7.338	655.338	10.9	21.0	655.269	655.261	54	7.336	655.336	10.7	20.8	655.265	655.259	0.002	655.260	08-Nov-06			0.100	0.015%
Transverse																					
K-M	25	9.702	309.702	10.6	20.7	309.668	309.666	25	9.705	309.705	10.5	20.6	309.671	309.669	0.003	309.667	08-Nov-06			-0.057	-0.018%
L-N	25	9.854	309.854	11.5	21.6	309.823	309.818	25	9.858	309.858	10.6	20.7	309.824	309.822	0.004	309.820	08-Nov-06			0.036	0.012%
Diagonal																					
K-N	55	3.490	663.490	11.2	21.3	663.422	663.412	55	3.495	663.495	10.5	20.6	663.422	663.417	0.005	663.415	08-Nov-06			0.107	0.016%
L-M	55	4.195	664.195	11.0	21.1	664.126	664.117	55	4.196	664.196	10.5	20.6	664.123	664.118	0.001	664.118	08-Nov-06			0.032	0.005%

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint											
Hartsfield-Jackson Atlanta International Airpor		1 Year Change		Max		0.177		0.061%		Max		0.040		0.007%		0.177		0.061%		0.108		0.016%		0.163		0.055%	
Area 1		'05-'06		Min		-0.484		-0.093%		Min		-0.484		-0.079%		-0.270		-0.093%		-0.401		-0.059%		-0.134		-0.044%	
Zone 2		2006		Average		-0.078		-0.014%		Average		-0.099		-0.017%		-0.041		-0.014%		-0.118		-0.018%		-0.006		-0.002%	
				1st Measurement								2nd Measurement				0.005				Percentage							
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06								
Lateral																											
A-B	48	11.398	587.398	10.5	20.6	587.333	587.329	48	11.400	587.400	10.1	20.2	587.333	587.331	0.002	587.330	08-Nov-06	-0.030	-0.005%								
C-D	48	11.020	587.020	10.9	21.0	586.958	586.951	48	11.024	587.024	10.8	20.9	586.961	586.955	0.004	586.953	08-Nov-06	-0.077	-0.013%								
E-F	48	11.059	587.059	10.8	20.9	586.996	586.990	48	11.060	587.060	10.5	20.6	586.995	586.991	0.001	586.991	08-Nov-06	-0.114	-0.019%								
G-H	48	10.838	586.838	10.5	20.6	586.773	586.769	48	10.837	586.837	10.3	20.4	586.771	586.768	0.001	586.769	08-Nov-06	0.024	0.004%								
Transverse																											
A-C	24	1.806	289.806	10.7	20.8	289.775	289.772	24	1.814	289.814	10.4	20.5	289.782	289.780	0.008	289.776	08-Nov-06	-0.102	-0.035%								
B-D	24	1.643	289.643	10.7	20.8	289.612	289.609	24	1.646	289.646	10.3	20.4	289.613	289.612	0.003	289.611	08-Nov-06	-0.171	-0.059%								
E-G	24	2.468	290.468	10.6	20.7	290.436	290.434	24	2.466	290.466	10.5	20.6	290.434	290.432	0.002	290.433	08-Nov-06	-0.130	-0.045%								
F-H	24	2.665	290.665	10.5	20.6	290.633	290.631	24	2.665	290.665	10.7	20.8	290.634	290.631	0.000	290.631	08-Nov-06	0.177	0.061%								
Diagonal																											
A-D	54	6.869	654.869	12.5	22.6	654.812	654.792	54	6.872	654.872	11.7	21.8	654.809	654.795	0.003	654.794	08-Nov-06	0.006	0.001%								
B-C	54	6.838	654.838	11.1	21.2	654.770	654.761	54	6.844	654.844	10.7	20.8	654.773	654.767	0.006	654.764	08-Nov-06	-0.236	-0.036%								
E-H	54	7.699	655.699	10.6	20.7	655.628	655.622	54	7.684	655.684	10.4	20.5	655.611	655.607	0.015	655.615	08-Nov-06	0.024	0.004%								
F-G	54	6.315	654.315	10.7	20.8	654.244	654.238	54	6.317	654.317	10.9	21.0	654.248	654.240	0.002	654.239	08-Nov-06	-0.067	-0.010%								
Transverse																											
C-E	25	10.580	310.580	10.5	20.6	310.546	310.544	25	10.588	310.588	10.7	20.8	310.554	310.552	0.008	310.548	08-Nov-06	0.141	0.046%								
D-F	25	10.448	310.448	10.8	20.9	310.415	310.412	25	10.449	310.449	10.7	20.8	310.416	310.413	0.001	310.412	08-Nov-06	-0.092	-0.030%								
Diagonal																											
C-F	55	4.062	664.062	10.7	20.8	663.990	663.984	55	4.058	664.058	10.3	20.4	663.983	663.980	0.004	663.982	08-Nov-06	-0.258	-0.039%								
D-E	55	4.307	664.307	10.7	20.8	664.235	664.229	55	4.311	664.311	10.5	20.6	664.238	664.233	0.004	664.231	08-Nov-06	0.098	0.015%								

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint																											
Hartsfield-Jackson Atlanta International Airpor		1 Year Change		Max		0.177		0.061%		Max		0.040		0.007%		0.177		0.061%		0.108		0.016%		0.163		0.055%																	
Area 1		'05-'06		Min		-0.484		-0.093%		Min		-0.484		-0.079%		-0.270		-0.093%		-0.401		-0.059%		-0.134		-0.044%																	
Zone 2		2006		Average		-0.078		-0.014%		Average		-0.099		-0.017%		-0.041		-0.014%		-0.118		-0.018%		-0.006		-0.002%																	
Pins		ft		in		1st Measurement		total in		temp		temp conc		adj tape		adj conc		ft		in		2nd Measurement		total in		temp		temp conc		adj tape		adj conc		0.005		Diff		Average		Date		Percentage	
Lateral																																											
B-I	51	1.181	613.181	11.3	21.4	613.119	613.109	51	1.176	613.176	11.1	21.2	613.113	613.104	0.005	613.107	08-Nov-06	0.040	0.007%																								
D-K	51	1.020	613.020	10.6	20.7	612.953	612.948	51	1.013	613.013	10.4	20.5	612.945	612.941	0.007	612.945	08-Nov-06	-0.484	-0.079%																								
F-M	51	1.345	613.345	10.4	20.5	613.277	613.273	51	1.348	613.348	10.1	20.2	613.278	613.276	0.003	613.275	08-Nov-06	-0.053	-0.009%																								
H-O	51	0.778	612.778	10.5	20.6	612.710	612.706	51	0.781	612.781	10.4	20.5	612.713	612.709	0.003	612.708	08-Nov-06	-0.113	-0.018%																								
Diagonal																																											
B-K	56	6.000	678.000	10.7	20.8	677.927	677.921	56	5.996	677.996	10.5	20.6	677.921	677.917	0.004	677.919	08-Nov-06	-0.401	-0.059%																								
I-D	56	6.370	678.370	10.7	20.8	678.297	678.290	56	6.357	678.357	10.5	20.6	678.282	678.277	0.013	678.284	08-Nov-06	-0.219	-0.032%																								
F-O	56	7.061	679.061	10.5	20.6	678.986	678.981	56	7.060	679.060	10.3	20.4	678.984	678.980	0.001	678.981	08-Nov-06	0.108	0.016%																								
M-H	56	5.922	677.922	10.4	20.5	677.847	677.843	56	5.926	677.926	10.0	20.1	677.847	677.847	0.004	677.845	08-Nov-06	-0.138	-0.020%																								
D-M	57	3.628	687.628	10.6	20.7	687.553	687.547	57	3.624	687.624	10.1	20.2	687.545	687.543	0.004	687.545	08-Nov-06	-0.231	-0.034%																								
K-F	57	3.166	687.166	10.6	20.7	687.091	687.085	57	3.158	687.158	10.2	20.3	687.080	687.077	0.008	687.081	08-Nov-06	-0.230	-0.034%																								
Across Joint																																											
A-Q	25	2.508	302.508	10.7	20.8	302.475	302.473	25	2.513	302.513	10.9	21.0	302.481	302.478	0.005	302.475	08-Nov-06	-0.020	-0.007%																								
Q-E	24	9.810	297.810	10.8	20.9	297.778	297.775	24	9.806	297.806	10.7	20.8	297.774	297.771	0.004	297.773	08-Nov-06	0.015	0.005%																								
C-R	24	10.092	298.092	11.0	21.1	298.061	298.057	24	10.091	298.091	11.1	21.2	298.060	298.056	0.001	298.057	08-Nov-06	0.163	0.055%																								
R-G	25	2.985	302.985	11.4	21.5	302.955	302.949	25	2.975	302.975	11.2	21.3	302.944	302.939	0.010	302.944	08-Nov-06	-0.130	-0.043%																								
J-S	25	3.114	303.114	9.4	19.5	303.077	303.079	25	3.115	303.115	9.3	19.4	303.077	303.080	0.001	303.079	09-Nov-06	0.000	0.000%																								
S-N	24	11.038	299.038	9.3	19.4	299.001	299.003	24	11.038	299.038	9.1	19.2	299.000	299.003	0.000	299.003	09-Nov-06	-0.074	-0.025%																								
L-T	24	11.143	299.143	9.1	19.2	299.105	299.108	24	11.155	299.155	8.9	19.0	299.116	299.120	0.012	299.114	09-Nov-06	0.133	0.045%																								
T-P	25	2.621	302.621	8.9	19.0	302.582	302.586	25	2.617	302.617	9.1	19.2	302.579	302.582	0.004	302.584	09-Nov-06	-0.134	-0.044%																								

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint					
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max	0.177	0.061%	Max	0.040	0.007%	0.177	0.061%	0.108	0.016%	0.163	0.055%						
Area 1				Min	-0.484	-0.093%	Min	-0.484	-0.079%	-0.270	-0.093%	-0.401	-0.059%	-0.134	-0.044%						
Zone 2 2006				Average	-0.078	-0.014%	Average	-0.099	-0.017%	-0.041	-0.014%	-0.118	-0.018%	-0.006	-0.002%						
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.005	Average	Date	Percentage	
Lateral			total in								total in						Diff			ΔD '05-'06	ΔD '05-'06
I-J	48	10.943	586.943	11.1	21.2	586.882	586.874	48	10.950	586.950	11.0	21.1	586.889	586.881	0.007	586.878	08-Nov-06	-0.183	-0.031%		
K-L	48	10.748	586.748	11.2	21.3	586.688	586.679	48	10.749	586.749	11.1	21.2	586.688	586.680	0.001	586.680	08-Nov-06	-0.057	-0.010%		
M-N	48	10.776	586.776	11.4	21.5	586.717	586.707	48	10.771	586.771	11.2	21.3	586.711	586.702	0.005	586.705	08-Nov-06	-0.034	-0.006%		
O-P	48	10.766	586.766	10.5	20.6	586.701	586.697	48	10.761	586.761	10.3	20.4	586.695	586.692	0.005	586.695	08-Nov-06	-0.110	-0.019%		
Transverse																					
I-K	24	1.906	289.906	10.1	20.2	289.873	289.872	24	1.894	289.894	10.0	20.1	289.860	289.860	0.012	289.866	08-Nov-06	-0.270	-0.093%		
J-L	24	2.370	290.370	12.7	22.8	290.345	290.336	24	2.369	290.369	13.2	23.3	290.346	290.335	0.001	290.335	09-Nov-06	-0.037	-0.013%		
M-O	24	2.443	290.443	10.3	20.4	290.410	290.409	24	2.441	290.441	10.5	20.6	290.409	290.407	0.002	290.408	08-Nov-06	0.144	0.050%		
N-P	24	1.906	289.906	10.3	20.4	289.873	289.872	24	1.912	289.912	9.7	19.8	289.877	289.878	0.006	289.875	09-Nov-06	-0.062	-0.022%		
Diagonal																					
I-L	54	6.285	654.285	11.0	21.1	654.217	654.208	54	6.286	654.286	11.3	21.4	654.220	654.209	0.001	654.209	08-Nov-06	-0.212	-0.032%		
J-K	54	7.169	655.169	10.9	21.0	655.100	655.092	54	7.166	655.166	10.6	20.7	655.095	655.089	0.003	655.091	08-Nov-06	-0.131	-0.020%		
M-P	54	7.239	655.239	10.8	20.9	655.169	655.162	54	7.243	655.243	10.5	20.6	655.171	655.166	0.004	655.164	08-Nov-06	-0.096	-0.015%		
N-O	54	6.094	654.094	10.8	20.9	654.024	654.017	54	6.101	654.101	10.5	20.6	654.029	654.024	0.007	654.021	08-Nov-06	0.004	0.001%		
Transverse																					
K-M	25	10.660	310.660	10.6	20.7	310.626	310.624	25	10.646	310.646	10.3	20.4	310.611	310.610	0.014	310.617	08-Nov-06	-0.070	-0.022%		
L-N	25	11.800	311.800	11.1	21.2	311.768	311.763	25	11.806	311.806	10.9	21.0	311.773	311.769	0.006	311.766	09-Nov-06	-0.016	-0.005%		
Diagonal																					
K-N	55	4.748	664.748	10.6	20.7	664.676	664.670	55	4.749	664.749	10.4	20.5	664.675	664.671	0.001	664.671	08-Nov-06	-0.126	-0.019%		
L-M	55	3.751	663.751	10.3	20.4	663.676	663.673	55	3.757	663.757	10.1	20.2	663.681	663.679	0.006	663.676	08-Nov-06	-0.024	-0.004%		

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint				
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max Min		0.313 0.107%		Max Min		0.223 0.036%		0.237 0.085%		0.300 0.046%		0.313 0.107%				
Area 1						-0.246 -0.084%		Min		-0.159 -0.026%		-0.246 -0.084%		-0.243 -0.036%		-0.161 -0.054%		Max 0.313		
Zone 3 2006				Average		0.006 0.001%		Average		0.041 0.007%		0.001 0.000%		-0.013 -0.002%		0.000 0.000%		Min -0.246		
Pins	ft	in	1st Measurement total in	temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement total in	temp	temp conc	adj tape	adj conc	0.005 Diff	Average	Date	Average	0.005 ΔD '05-'06	Percentage ΔD '05-'06
Lateral																				
A-B	48	7.205	583.205	9.8	19.9	583.136	583.137	48	7.202	583.202	9.4	19.5	583.130	583.134	0.003	583.135	09-Nov-06		0.121	0.021%
C-D	48	7.330	583.330	9.0	19.1	583.256	583.262	48	7.328	583.328	8.9	19.0	583.253	583.260	0.002	583.261	09-Nov-06		0.070	0.012%
E-F	48	8.266	584.266	9.1	19.2	584.192	584.198	48	8.259	584.259	8.7	18.8	584.182	584.191	0.007	584.194	09-Nov-06		0.027	0.005%
G-H	48	8.075	584.075	9.2	19.3	584.002	584.007	48	8.073	584.073	8.6	18.7	583.996	584.005	0.002	584.006	09-Nov-06		0.078	0.013%
Transverse																				
A-C	23	1.337	277.337	8.5	18.6	277.300	277.305	23	1.340	277.340	8.4	18.5	277.303	277.308	0.003	277.306	09-Nov-06		0.237	0.085%
B-D	23	1.262	277.262	8.4	18.5	277.225	277.230	23	1.266	277.266	8.5	18.6	277.229	277.234	0.004	277.232	09-Nov-06		0.002	0.001%
E-G	23	9.369	285.369	8.5	18.6	285.331	285.336	23	9.368	285.368	8.4	18.5	285.330	285.335	0.001	285.335	09-Nov-06		0.178	0.061%
F-H	23	8.998	284.998	8.5	18.6	284.960	284.965	23	9.001	285.001	8.3	18.4	284.962	284.968	0.003	284.966	09-Nov-06		0.072	0.025%
Diagonal																				
A-D	53	10.423	646.423	9.2	19.3	646.342	646.347	53	10.427	646.427	8.9	19.0	646.344	646.351	0.004	646.349	09-Nov-06		0.019	0.003%
B-C	53	9.382	645.382	9.0	19.1	645.300	645.306	53	9.381	645.381	9.2	19.3	645.300	645.305	0.001	645.306	09-Nov-06		0.300	0.046%
E-H	54	2.212	650.212	9.2	19.3	650.131	650.136	54	2.209	650.209	8.0	18.1	650.118	650.133	0.003	650.134	09-Nov-06		0.173	0.026%
F-G	54	2.033	650.033	9.2	19.3	649.952	649.957	54	2.024	650.024	8.9	19.0	649.940	649.948	0.009	649.952	09-Nov-06		0.025	0.004%
Transverse																				
C-E	26	2.478	314.478	8.5	18.6	314.436	314.441	26	2.479	314.479	8.3	18.4	314.436	314.442	0.001	314.442	09-Nov-06		-0.041	-0.013%
D-F	26	2.966	314.966	8.5	18.6	314.924	314.929	26	2.969	314.969	8.6	18.7	314.927	314.932	0.003	314.931	09-Nov-06		-0.018	-0.006%
Diagonal																				
C-F	55	3.344	663.344	9.0	19.1	663.259	663.266	55	3.341	663.341	8.7	18.8	663.254	663.263	0.003	663.265	09-Nov-06		0.084	0.013%
D-E	55	3.207	663.207	9.0	19.1	663.122	663.129	55	3.243	663.243	8.8	18.9	663.157	663.165	0.036	663.147	09-Nov-06		-0.041	-0.006%

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint						
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max		0.313 0.107%		Max		0.223 0.036%		0.237 0.085%		0.300 0.046%		0.313 0.107%						
Area 1				Min		-0.246 -0.084%		Min		-0.159 -0.026%		-0.246 -0.084%		-0.243 -0.036%		-0.161 -0.054%						
Zone 3 2006				Average		0.006 0.001%		Average		0.041 0.007%		0.001 0.000%		-0.013 -0.002%		0.000 0.000%		Max 0.313 Min -0.246				
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.005	Average	Date	Average	0.005	Percentage
			total in								total in						Diff				ΔD '05-'06	ΔD '05-'06
Lateral																						
B-I	51	4.313	616.313	8.1	18.2	616.228	616.241	51	4.315	616.315	7.9	18.0	616.228	616.243	0.002	616.242	09-Nov-06				-0.081	-0.013%
D-K	51	3.363	615.363	7.9	18.0	615.277	615.291	51	3.360	615.360	7.8	17.9	615.273	615.288	0.003	615.290	09-Nov-06				0.196	0.032%
F-M	51	3.465	615.465	7.8	17.9	615.378	615.393	51	3.462	615.462	7.6	17.7	615.373	615.390	0.003	615.392	09-Nov-06				0.223	0.036%
H-O	51	3.587	615.587	7.9	18.0	615.501	615.515	51	3.587	615.587	7.7	17.8	615.499	615.515	0.000	615.515	09-Nov-06				-0.159	-0.026%
Diagonal																						
B-K	56	4.412	676.412	8.0	18.1	676.318	676.333	56	4.412	676.412	7.6	17.7	676.315	676.333	0.000	676.333	09-Nov-06				-0.072	-0.011%
I-D	56	3.614	675.614	7.7	17.8	675.518	675.535	56	3.617	675.617	7.8	17.9	675.521	675.538	0.003	675.536	09-Nov-06				-0.098	-0.015%
F-O	56	7.798	679.798	8.0	18.1	679.703	679.718	56	7.798	679.798	7.7	17.8	679.701	679.719	0.000	679.718	09-Nov-06				-0.178	-0.026%
M-H	56	6.914	678.914	7.9	18.0	678.819	678.835	56	6.909	678.909	7.8	17.9	678.813	678.830	0.005	678.832	09-Nov-06				-0.243	-0.036%
D-M	57	7.284	691.284	8.0	18.1	691.188	691.203	57	7.289	691.289	7.8	17.9	691.191	691.208	0.005	691.206	09-Nov-06				-0.029	-0.004%
K-F	57	6.057	690.057	8.0	18.1	689.961	689.976	57	6.063	690.063	7.7	17.8	689.965	689.982	0.006	689.979	09-Nov-06				-0.064	-0.009%
Across Joint																						
A-Q	24	7.177	295.177	8.3	18.4	295.137	295.142	24	7.177	295.177	8.4	18.5	295.137	295.142	0.000	295.142	09-Nov-06				0.114	0.039%
Q-E	24	8.637	296.637	8.4	18.5	296.597	296.602	24	8.640	296.640	8.6	18.7	296.601	296.605	0.003	296.604	09-Nov-06				0.038	0.013%
C-R	24	9.461	297.461	8.1	18.2	297.420	297.426	24	9.454	297.454	8.0	18.1	297.413	297.419	0.007	297.423	09-Nov-06				-0.124	-0.042%
R-G	25	2.336	302.336	8.0	18.1	302.294	302.301	25	2.335	302.335	8.4	18.5	302.294	302.300	0.001	302.300	09-Nov-06				0.078	0.026%
J-S	24	5.534	293.534	12.4	22.5	293.508	293.500	24	5.536	293.536	12.6	22.7	293.511	293.502	0.002	293.501	10-Nov-06				0.313	0.107%
S-N	24	8.696	296.696	12.3	22.4	296.669	296.661	24	8.697	296.697	12.8	22.9	296.672	296.662	0.001	296.662	10-Nov-06				-0.100	-0.034%
L-T	24	8.572	296.572	12.6	22.7	296.547	296.537	24	8.535	296.535	12.3	22.4	296.509	296.500	0.037	296.519	10-Nov-06				-0.161	-0.054%
T-P	25	3.838	303.838	12.6	22.7	303.812	303.802	25	3.837	303.837	12.2	22.3	303.810	303.801	0.001	303.802	10-Nov-06				-0.161	-0.053%

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint							
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max	0.313	0.107%		Max	0.223	0.036%	0.237	0.085%	0.300	0.046%	0.313	0.107%							
Area 1				Min	-0.246	-0.084%		Min	-0.159	-0.026%	-0.246	-0.084%	-0.243	-0.036%	-0.161	-0.054%			Max	0.313			
Zone 3 2006				Average	0.006	0.001%		Average	0.041	0.007%	0.001	0.000%	-0.013	-0.002%	0.000	0.000%			Min	-0.246			
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.005	Average	Date	Average	0.005	Percentage	
			total in								total in						Diff				ΔD '05-'06	ΔD '05-'06	
Lateral																							
I-J	48	8.841	584.841	9.5	19.6	584.770	584.773	48	8.844	584.844	7.5	17.6	584.759	584.776	0.003	584.774	09-Nov-06	0.150	0.026%				
K-L	48	8.735	584.735	7.7	17.8	584.652	584.667	48	8.722	584.722	7.9	18.0	584.640	584.654	0.013	584.660	09-Nov-06	-0.083	-0.014%				
M-N	48	8.847	584.847	13.7	23.8	584.804	584.778	48	8.843	584.843	12.7	22.8	584.793	584.774	0.004	584.776	10-Nov-06	-0.047	-0.008%				
O-P	48	8.630	584.630	13.3	23.4	584.585	584.561	48	8.633	584.633	12.9	23.0	584.585	584.564	0.003	584.563	10-Nov-06	-0.004	-0.001%				
Transverse																							
I-K	23	4.039	280.039	7.8	17.9	279.999	280.006	23	4.047	280.047	7.6	17.7	280.007	280.014	0.008	280.010	09-Nov-06	-0.004	-0.002%				
J-L	23	1.274	277.274	7.6	17.7	277.234	277.242	23	1.279	277.279	7.5	17.6	277.239	277.247	0.005	277.244	09-Nov-06	-0.191	-0.068%				
M-O	23	11.298	287.298	7.8	17.9	287.257	287.264	23	11.305	287.305	7.6	17.7	287.264	287.271	0.007	287.268	09-Nov-06	-0.103	-0.036%				
N-P	23	11.523	287.523	7.8	17.9	287.482	287.489	23	11.526	287.526	7.0	17.1	287.483	287.492	0.003	287.491	09-Nov-06	-0.246	-0.084%				
Diagonal																							
I-L	53	11.510	647.510	8.3	18.4	647.422	647.434	53	11.515	647.515	7.4	17.5	647.420	647.439	0.005	647.437	09-Nov-06	0.018	0.003%				
J-K	54	0.257	648.257	7.9	18.0	648.166	648.181	54	0.253	648.253	7.3	17.4	648.157	648.177	0.004	648.179	09-Nov-06	0.021	0.003%				
M-P	54	3.616	651.616	13.4	23.5	651.566	651.539	54	3.610	651.610	12.7	22.8	651.555	651.533	0.006	651.536	10-Nov-06	0.071	0.011%				
N-O	54	3.692	651.692	13.2	23.3	651.641	651.615	54	3.689	651.689	12.7	22.8	651.634	651.612	0.003	651.614	10-Nov-06	-0.119	-0.018%				
Transverse																							
K-M	25	11.797	311.797	7.7	17.8	311.753	311.761	25	11.802	311.802	7.7	17.8	311.758	311.766	0.005	311.763	09-Nov-06	0.006	0.002%				
L-N	26	0.903	312.903	7.6	17.7	312.858	312.866	26	0.906	312.906	7.5	17.6	312.861	312.869	0.003	312.868	09-Nov-06	0.114	0.037%				
Diagonal																							
K-N	55	3.071	663.071	14.2	24.3	663.026	662.993	55	3.076	663.076	13.0	23.1	663.022	662.998	0.005	662.996	10-Nov-06	-0.075	-0.011%				
L-M	55	2.941	662.941	14.1	24.2	662.896	662.863	55	2.929	662.929	13.1	23.2	662.876	662.851	0.012	662.857	10-Nov-06	-0.027	-0.004%				

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint											
Hartsfield-Jackson Atlanta International Airpor		1 Year Change		Max		0.238		0.049%		Max		0.115		0.020%		0.138		0.049%		0.238		0.036%		0.061		0.021%	
Area 1		ΔD		Min		-0.211		-0.068%		Min		-0.123		-0.021%		-0.211		-0.068%		-0.168		-0.026%		-0.023		-0.008%	
Zone 4		2006		Average		-0.005		0.000%		Average		0.006		0.001%		-0.007		0.000%		-0.025		-0.004%		0.032		0.011%	
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.005	Average	Date	Percentage							
																						ΔD '05-'06	ΔD '05-'06				
Lateral																											
A-B	48	7.618	583.618	20.7	30.8	583.623	583.549	48	7.628	583.628	20.4	30.5	583.631	583.559	0.010	583.554	01-Dec-06	0.115	0.020%								
C-D	48	8.122	584.122	20.3	30.4	584.124	584.053	48	8.136	584.136	20.4	30.5	584.139	584.067	0.014	584.060	01-Dec-06	0.005	0.001%								
E'-F	48	9.965	585.965	3.2	13.3	585.851	585.897	48	9.956	585.956	2.8	12.9	585.839	585.888	0.009	585.892	06-Dec-06	N/A	N/A								
G-H	48	7.459	583.459	20.2	30.3	583.460	583.390	48	7.464	583.464	20.4	30.5	583.467	583.395	0.005	583.393	01-Dec-06	0.037	0.006%								
Transverse																											
A-C	23	11.405	287.405	20.3	30.4	287.406	287.371	23	11.405	287.405	20.1	30.2	287.405	287.371	0.000	287.371	01-Dec-06	0.116	0.041%								
B-D	23	11.919	287.919	20.1	30.2	287.919	287.885	23	11.918	287.918	20.3	30.4	287.919	287.884	0.001	287.884	01-Dec-06	0.138	0.049%								
E'-G	24	1.185	289.185	2.8	12.9	289.127	289.151	24	1.186	289.186	2.8	12.9	289.128	289.152	0.001	289.152	06-Dec-06	N/A	N/A								
F-H	23	10.399	286.399	20.0	30.1	286.399	286.365	23	10.391	286.391	20.1	30.2	286.391	286.357	0.008	286.361	01-Dec-06	-0.126	-0.043%								
Diagonal																											
A-D	54	2.556	650.556	20.4	30.5	650.559	650.479	54	2.569	650.569	20.5	30.6	650.573	650.492	0.013	650.486	01-Dec-06	0.238	0.036%								
B-C	54	3.337	651.337	20.3	30.4	651.339	651.260	54	3.332	651.332	20.4	30.5	651.335	651.255	0.005	651.258	01-Dec-06	-0.025	-0.004%								
E'-H	54	4.372	652.372	2.9	13.0	652.243	652.296	54	4.373	652.373	2.8	12.9	652.243	652.297	0.001	652.297	06-Dec-06	N/A	N/A								
F-G	54	3.140	651.140	20.3	30.4	651.142	651.063	54	3.132	651.132	20.6	30.7	651.137	651.055	0.008	651.059	01-Dec-06	-0.009	-0.001%								
Transverse																											
C-E'	26	1.445	313.445	3.7	13.8	313.386	313.408	26	1.446	313.446	2.8	12.9	313.383	313.409	0.001	313.409	06-Dec-06	N/A	N/A								
D-F	26	2.653	314.653	20.2	30.3	314.654	314.616	26	2.649	314.649	20.2	30.3	314.650	314.612	0.004	314.614	01-Dec-06	-0.211	-0.068%								
Diagonal																											
C-F	55	4.288	664.288	20.3	30.4	664.290	664.209	55	4.280	664.280	20.6	30.7	664.285	664.201	0.008	664.205	01-Dec-06	-0.030	-0.005%								
D-E'	55	3.883	663.883	3.3	13.4	663.754	663.806	55	3.875	663.875	2.8	12.9	663.743	663.798	0.008	663.802	06-Dec-06	N/A	N/A								

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint					
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max		0.238 0.049%		Max		0.115 0.020%		0.138 0.049%		0.238 0.036%		0.061 0.021%					
Area 1				Min		-0.211 -0.068%		Min		-0.123 -0.021%		-0.211 -0.068%		-0.168 -0.026%		-0.023 -0.008%					
Zone 4 2006				Average		-0.005 0.000%		Average		0.006 0.001%		-0.007 0.000%		-0.025 -0.004%		0.032 0.011%					
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.005	Average	Date	Percentage	
Lateral			total in								total in						Diff			ΔD '05-'06	ΔD '05-'06
B-I	51	2.768	614.768	3.1	13.2	614.647	614.696	51	2.761	614.761	3.4	13.5	614.643	614.689	0.007	614.693	06-Dec-06	0.008	0.001%		
D-K'	51	2.283	614.283	3.1	13.2	614.163	614.211	51	2.282	614.282	3.7	13.8	614.166	614.210	0.001	614.211	06-Dec-06	N/A	N/A		
F-M'	51	1.950	613.950	3.3	13.4	613.831	613.878	51	1.953	613.953	3.1	13.2	613.833	613.881	0.003	613.880	06-Dec-06	N/A	N/A		
H-O	51	4.218	616.218	3.2	13.3	616.098	616.146	51	4.225	616.225	2.9	13.0	616.103	616.153	0.007	616.150	06-Dec-06	0.094	0.015%		
Diagonal																					
B-K'	56	6.342	678.342	2.7	12.8	678.206	678.263	56	6.336	678.336	3.6	13.7	678.207	678.257	0.006	678.260	06-Dec-06	N/A	N/A		
I-D	56	6.996	678.996	2.9	13.0	678.861	678.917	56	6.998	678.998	3.4	13.5	678.867	678.919	0.002	678.918	06-Dec-06	0.064	0.010%		
F-O	56	6.720	678.720	3.3	13.4	678.589	678.641	56	6.723	678.723	2.7	12.8	678.587	678.644	0.003	678.642	06-Dec-06	-0.151	-0.022%		
M'-H	56	7.336	679.336	3.3	13.4	679.204	679.257	56	7.338	679.338	2.8	12.9	679.202	679.259	0.002	679.258	06-Dec-06	N/A	N/A		
D-M'	57	5.818	689.818	3.1	13.2	689.683	689.738	57	5.819	689.819	3.3	13.4	689.685	689.739	0.001	689.738	06-Dec-06	N/A	N/A		
K'-F	57	5.389	689.389	3.1	13.2	689.254	689.309	57	5.386	689.386	3.6	13.7	689.255	689.306	0.003	689.307	06-Dec-06	N/A	N/A		
Across Joint																					
A-Q	25	2.941	302.941	20.2	30.3	302.942	302.905	25	2.937	302.937	20.2	30.3	302.938	302.901	0.004	302.903	01-Dec-06	0.057	0.019%		
Q-E'	24	9.840	297.840	3.4	13.5	297.783	297.805	24	9.846	297.846	3.3	13.4	297.788	297.811	0.006	297.808	06-Dec-06	N/A	N/A		
C-R'	25	0.515	300.515	3.6	13.7	300.458	300.480	25	0.516	300.516	3.6	13.7	300.459	300.481	0.001	300.480	06-Dec-06	N/A	N/A		
R'-G	25	2.088	302.088	3.6	13.7	302.031	302.053	25	2.082	302.082	3.8	13.9	302.025	302.047	0.006	302.050	06-Dec-06	N/A	N/A		
J-S	25	2.725	302.725	20.2	30.3	302.726	302.689	25	2.717	302.717	19.8	29.9	302.716	302.681	0.008	302.685	01-Dec-06	-0.023	-0.008%		
S-N	25	1.127	301.127	19.9	30.0	301.127	301.091	25	1.121	301.121	19.8	29.9	301.120	301.085	0.006	301.088	01-Dec-06	0.061	0.021%		
L-T'	25	1.815	301.815	10.9	21.0	301.783	301.780	25	1.814	301.814	10.9	21.0	301.782	301.779	0.001	301.779	07-Dec-06	N/A	N/A		
T'-P	25	2.231	302.231	10.9	21.0	302.199	302.196	25	2.226	302.226	10.9	21.0	302.194	302.191	0.005	302.193	07-Dec-06	N/A	N/A		

Extensometer Measurements

				Total				Lateral		Transverse		Diagonal		Across Joint					
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06	Max	0.238	0.049%	Max	0.115	0.020%	0.138	0.049%	0.238	0.036%	0.061	0.021%					
Area 1			Min	-0.211	-0.068%	Min	-0.123	-0.021%	-0.211	-0.068%	-0.168	-0.026%	-0.023	-0.008%					
Zone 4 2006			Average	-0.005	0.000%	Average	0.006	0.001%	-0.007	0.000%	-0.025	-0.004%	0.032	0.011%					
Pins	ft	in	1st Measurement				2nd Measurement				0.005		Percentage						
			total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
Lateral																			
I-J	48	9.183	585.183	2.6	12.7	585.065	585.115	48	9.173	585.173	3.9	14.0	585.064	585.105	0.010	585.110	06-Dec-06	-0.123	-0.021%
K'-L	48	9.704	585.704	2.9	13.0	585.588	585.636	48	9.709	585.709	3.9	14.0	585.600	585.641	0.005	585.638	06-Dec-06	N/A	N/A
M'-N	48	9.904	585.904	13.1	23.2	585.857	585.835	48	9.896	585.896	11.4	21.5	585.838	585.827	0.008	585.831	07-Dec-06	N/A	N/A
O-P	48	8.598	584.598	11.7	21.8	584.542	584.529	48	8.593	584.593	11.0	21.1	584.532	584.524	0.005	584.527	07-Dec-06	-0.097	-0.017%
Transverse																			
I-K'	23	11.958	287.958	3.2	13.3	287.902	287.924	23	11.955	287.955	3.9	14.0	287.901	287.921	0.003	287.923	06-Dec-06	N/A	N/A
J-L	23	11.070	287.070	20.3	30.4	287.071	287.036	23	11.063	287.063	20.3	30.4	287.064	287.029	0.007	287.033	01-Dec-06	-0.027	N/A
M'-O	24	0.423	288.423	3.6	13.7	288.368	288.389	24	0.418	288.418	3.0	13.1	288.361	288.384	0.005	288.387	06-Dec-06	N/A	N/A
N-P	23	11.279	287.279	20.2	30.3	287.280	287.245	23	11.276	287.276	20.2	30.3	287.277	287.242	0.003	287.244	01-Dec-06	0.039	0.013%
Diagonal																			
I-L	54	3.273	651.273	2.7	12.8	651.142	651.197	54	3.268	651.268	4.1	14.2	651.148	651.192	0.005	651.195	06-Dec-06	-0.123	-0.019%
J-K'	54	5.289	653.289	2.9	13.0	653.159	653.213	54	5.283	653.283	4.0	14.1	653.162	653.207	0.006	653.210	06-Dec-06	N/A	N/A
M'-P	54	6.001	654.001	11.7	21.8	653.938	653.924	54	5.999	653.999	11.1	21.2	653.931	653.922	0.002	653.923	07-Dec-06	N/A	N/A
N-O	54	2.531	650.531	11.9	22.0	650.470	650.455	54	2.526	650.526	11.4	21.5	650.461	650.450	0.005	650.452	07-Dec-06	-0.168	-0.026%
Transverse																			
K'-M'	26	0.339	312.339	3.4	13.5	312.279	312.303	26	0.337	312.337	3.0	13.1	312.275	312.301	0.002	312.302	06-Dec-06	N/A	N/A
L-N	26	4.770	316.770	20.3	30.4	316.771	316.733	26	4.773	316.773	20.3	30.4	316.774	316.736	0.003	316.734	01-Dec-06	0.025	0.008%
Diagonal																			
K'-N	55	5.312	665.312	3.4	13.5	665.184	665.234	55	5.311	665.311	3.7	13.8	665.185	665.233	0.001	665.234	06-Dec-06	N/A	N/A
L-M'	55	4.415	664.415	3.6	13.7	664.289	664.338	55	4.419	664.419	3.7	13.8	664.293	664.342	0.004	664.340	06-Dec-06	N/A	N/A

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport																					
Area 1																					
Zone 1 2008																					
		2 Year Change ΔD '06-'08							3 Year Change ΔD '05-'08												
		Total		Lateral		Transverse		Total		Lateral		Transverse									
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min								
		Average		Average		Average		Average		Average		Average									
		1st Measurement							2nd Measurement												
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	0.001 Diff	Average	Date	Percentage		Percentage	
				ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08					ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08			ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08
Lateral																					
A-B	48	11.383	587.383	10.7	13.7	587.320	587.363	48	11.388	587.388	10.3	13.3	587.322	587.368	0.005	587.365	26-Oct-08	0.218	0.037%	0.190	0.032%
C-D	48	11.854	587.854	10.5	13.5	587.789	587.834	48	11.853	587.853	10.5	13.5	587.788	587.833	0.001	587.833	26-Oct-08	0.165	0.028%	0.327	0.056%
E-F	48	11.542	587.542	10.5	13.5	587.477	587.522	48	11.543	587.543	10.4	13.4	587.478	587.523	0.001	587.522	26-Oct-08	0.003	0.000%	0.027	0.005%
G-H	48	11.369	587.369	10.5	13.5	587.304	587.349	48	11.367	587.367	10.4	13.4	587.302	587.347	0.002	587.348	26-Oct-08	0.090	0.015%	0.039	0.007%
Transverse																					
A-C	23	4.832	280.832	10.0	13.0	280.799	280.822	23	4.833	280.833	10.1	13.1	280.801	280.823	0.001	280.823	26-Oct-08	0.011	0.004%	0.131	0.047%
B-D	23	5.164	281.164	10.3	13.3	281.132	281.154	23	5.162	281.162	10.0	13.0	281.129	281.152	0.002	281.153	26-Oct-08	0.216	0.077%	0.239	0.085%
E-G	24	2.492	290.492	10.4	13.4	290.460	290.482	24	2.514	290.514	10.3	13.3	290.481	290.504	0.022	290.493	26-Oct-08	-0.104	-0.036%	-0.096	-0.033%
F-H	24	2.789	290.789	10.3	13.3	290.756	290.779	24	2.790	290.790	10.2	13.2	290.757	290.780	0.001	290.780	26-Oct-08	-0.051	-0.018%	0.091	0.031%
Lateral																					
I-J	N/A																				
K-L	48	11.073	587.073	10.3	13.3	587.007	587.053	48	11.072	587.072	9.8	12.8	587.003	587.052	0.001	587.052	26-Oct-08	0.153	0.026%	0.272	0.046%
M-N	48	11.129	587.129	10.0	13.0	587.061	587.109	48	11.133	587.133	9.6	12.6	587.062	587.113	0.004	587.111	26-Oct-08	0.131	0.022%	0.111	0.019%
O-P	48	11.531	587.531	9.8	12.8	587.461	587.511	48	11.532	587.532	9.7	12.7	587.462	587.512	0.001	587.511	26-Oct-08	-0.038	-0.006%	-0.129	-0.022%
Transverse																					
I-K	N/A																				
J-L	23	4.599	280.599	9.5	12.5	280.565	280.589	23	4.600	280.600	9.4	12.4	280.565	280.590	0.001	280.590	26-Oct-08	-0.049	-0.017%	0.212	0.076%
M-O	24	2.217	290.217	9.7	12.7	290.182	290.207	24	2.220	290.220	9.5	12.5	290.185	290.210	0.003	290.209	26-Oct-08	-0.105	-0.036%	-0.012	-0.004%
N-P	24	3.050	291.050	9.7	12.7	291.015	291.040	24	3.041	291.041	9.5	12.5	291.006	291.031	0.009	291.036	26-Oct-08	0.135	0.046%	0.208	0.071%

Extensometer Measurements

		2 Year Change ΔD '06-'08								3 Year Change ΔD '05-'08																										
		Total				Lateral				Transverse				Total				Lateral				Transverse														
		Max	Min	Average	ΔD	Temp	Conc	Adj	Adj	Max	Min	Average	ΔD	Temp	Conc	Adj	Adj	Max	Min	Average	ΔD	Temp	Conc	Adj	Adj	Max	Min	Average	ΔD	Temp	Conc	Adj	Adj			
		1st Measurement				2nd Measurement				0.001 Diff				Average				Date				Percentage														
		ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc
Hartsfield-Jackson Atlanta International Airport																																				
Area 1																																				
Zone 2 2008																																				
Lateral																																				
A-B	N/A	48	11.190	587.190	8.1	11.1	587.109	587.1701	48	11.190	587.190	8.1	11.1	587.109	587.1701	0	587.1701	26-Oct-08	0.217	0.037%	0.140	0.024%														
C-D	N/A																																			
E-F	N/A																																			
G-H	N/A																																			
Transverse																																				
A-C	N/A	24	1.796	289.796	8.1	11.1	289.756	289.7862	24	1.799	289.799	7.8	10.8	289.758	289.7892	0.003008	289.7877	26-Oct-08	0.177	0.061%	0.006	0.002%														
B-D	N/A																																			
E-G	N/A																																			
F-H	N/A																																			
Lateral																																				
I-J	N/A	48	11.042	587.042	8.7		586.965	587.1024	48	11.043	587.043	8.5		586.965	587.102	0.000362	587.1022	26-Oct-08	0.225	0.038%	0.041	0.007%														
K-L	N/A																																			
M-N	N/A	48	10.742	586.742	8.8	11.8	586.666	586.7221	48	10.743	586.743	8.7	11.7	586.666	586.7231	0.001006	586.7226	26-Oct-08	0.018	0.003%	-0.016	-0.003%														
O-P	N/A	48	10.986	586.986	9.1	12.1	586.912	586.966	48	10.991	586.991	8.7	11.7	586.914	586.9711	0.005023	586.9685	26-Oct-08	0.274	0.047%	0.164	0.028%														
Transverse																																				
I-K	N/A	24	2.399	290.399	8.5	11.5	290.360	290.3891	24	2.395	290.395	8.5	11.5	290.356	290.3851	0.004	290.3871	26-Oct-08	0.052	0.018%	0.015	0.005%														
J-L	N/A	24	2.545	290.545	8.7	11.7	290.507	290.5351	24	2.550	290.550	8.7	11.7	290.512	290.5401	0.005	290.5376	26-Oct-08	0.130	0.045%	0.274	0.094%														
M-O	N/A	24	1.951	289.951	8.7	11.7	289.913	289.9411	24	1.958	289.958	8.5	11.5	289.919	289.9482	0.007005	289.9446	26-Oct-08	0.070	0.024%	0.007	0.002%														
N-P	N/A																																			

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport										2 Year Change ΔD '06-'08		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Total		Lateral		Transverse	
Area 1										Max	Min	0.360	0.064%	0.360	0.062%	0.185	0.064%	Max	Min	0.300	0.105%	0.268	0.046%	0.300	0.105%
Zone 4 2008										Average		0.092	0.014%	0.203	0.035%	-0.019	-0.007%	Average		0.099	0.018%	0.190	0.033%	0.008	0.003%
Pins		ft	in	1st Measurement				2nd Measurement				0.003		Average		Date		Average		0.092 Percentage		Percentage			
				total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff				ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08		
Lateral																									
A-B		48	7.728	583.728	9.7	12.7	583.658	583.708	48	7.726	583.726	9.8	12.8	583.657	583.706	0.002	583.707	24-Oct-08		0.153	0.026%	0.268	0.046%		
C-D		48	8.311	584.311	9.9	12.9	584.243	584.291	48	8.310	584.310	9.8	12.8	584.241	584.290	0.001	584.291	24-Oct-08		0.231	0.039%	0.235	0.040%		
E'-F	N/A																								
G-H		48	7.563	583.563	10.7	13.7	583.500	583.543	48	7.560	583.560	9.9	12.9	583.492	583.540	0.003	583.542	24-Oct-08		0.149	0.026%	0.186	0.032%		
Transverse																									
A-C		23	11.559	287.559	9.3	12.3	287.523	287.549	23	11.572	287.572	9.2	12.2	287.536	287.562	0.013	287.556	24-Oct-08		0.185	0.064%	0.300	0.105%		
B-D		23	11.799	287.799	9.7	12.7	287.765	287.789	23	11.746	287.746	9.2	12.2	287.710	287.736	0.053	287.763	24-Oct-08		-0.122	-0.042%	0.016	0.005%		
E'-G	N/A																								
F-H		23	10.425	286.425	9.7	12.7	286.391	286.415	23	10.462	286.462	9.5	12.5	286.427	286.452	0.037	286.434	24-Oct-08		0.073	0.025%	-0.054	-0.019%		
Lateral																									
I-J		48	9.249	585.249	8.3	11.3	585.170	585.229	48	9.251	585.251	8.7	11.7	585.174	585.231	0.002	585.230	24-Oct-08		0.120	0.021%	-0.002	0.000%		
K'-L	N/A																								
M'-N	N/A																								
O-P		48	8.915	584.915	9.7	12.7	584.845	584.895	48	8.898	584.898	9.0	12.0	584.823	584.878	0.017	584.887	24-Oct-08		0.360	0.062%	0.262	0.045%		
Transverse																									
I-K'	N/A																								
J-L		23	10.833	286.833	9.3	12.3	286.797	286.823	23	10.835	286.835	9.3	12.3	286.799	286.825	0.002	286.824	24-Oct-08		-0.208	-0.073%	-0.235	-0.082%		
M'-O	N/A																								
N-P		23	11.219	287.219	9.2	12.2	287.183	287.209	23	11.240	287.240	9.5	12.5	287.205	287.230	0.021	287.220	24-Oct-08		-0.024	-0.008%	0.015	0.005%		

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 1

Pins	1st Measurement							2nd Measurement							0.014 ΔD	Average	Date
	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
A-B	73	9.947	885.947	17.3	22.6	885.919	885.883	73	9.942	885.942	17.0	22.3	885.911	885.879	0.004	885.881	15-Nov-05
C-D	73	11.182	887.182	17.2	22.5	887.153	887.118	73	11.190	887.190	17.2	22.5	887.161	887.126	0.008	887.122	15-Nov-05
E-F	73	11.148	887.148	17.1	22.4	887.118	887.085	73	11.131	887.131	17.3	22.6	887.103	887.067	0.018	887.076	15-Nov-05
G-H	73	11.136	887.136	17.3	22.6	887.108	887.072	73	11.134	887.134	17.2	22.5	887.105	887.070	0.002	887.071	15-Nov-05
Transverse																	
A-C	24	0.239	288.239	17.5	22.8	288.231	288.218	24	0.238	288.238	17.1	22.4	288.228	288.217	0.000	288.218	15-Nov-05
B-D	24	0.566	288.566	17.3	22.6	288.557	288.545	24	0.567	288.567	17.1	22.4	288.557	288.546	0.001	288.546	15-Nov-05
E-G	24	0.928	288.928	17.1	22.4	288.918	288.907	24	0.926	288.926	17.1	22.4	288.916	288.905	0.002	288.906	15-Nov-05
F-H	24	1.602	289.602	17.1	22.4	289.592	289.581	24	1.603	289.603	17.1	22.4	289.593	289.582	0.001	289.582	15-Nov-05
Diagonal																	
A-D	77	8.428	932.428	17.1	22.4	932.397	932.361	77	8.447	932.447	17.1	22.4	932.416	932.380	0.019	932.371	15-Nov-05
B-C	77	8.218	932.218	17.1	22.4	932.187	932.151	77	8.218	932.218	16.4	21.7	932.179	932.154	0.003	932.153	15-Nov-05
E-H	77	9.428	933.428	17.1	22.4	933.397	933.361	77	9.422	933.422	15.9	21.2	933.378	933.360	0.001	933.361	15-Nov-05
F-G	77	8.910	932.910	17.1	22.4	932.879	932.843	77	8.918	932.918	16.1	21.4	932.876	932.856	0.012	932.849	15-Nov-05
Transverse																	
C-E	25	11.554	311.554	15.9	21.2	311.539	311.533	25	11.647	311.647	14.1	19.4	311.626	311.629	0.096	311.581	15-Nov-05
D-F	25	11.971	311.971	15.9	21.2	311.956	311.950	25	11.967	311.967	14.5	19.8	311.947	311.948	0.002	311.949	15-Nov-05
Diagonal																	
C-F	78	4.151	940.151	15.5	20.8	940.102	940.091	78	4.162	940.162	14.8	20.1	940.105	940.105	0.014	940.098	15-Nov-05
D-E	78	4.571	940.571	15.3	20.6	940.520	940.511	78	4.591	940.591	14.8	20.1	940.534	940.534	0.022	940.522	15-Nov-05
Across Joint																	
A-Q	25	0.599	300.599	13.4	18.7	300.576	300.583	25	0.594	300.594	12.9	18.2	300.569	300.578	0.004	300.580	15-Nov-05
Q-E	24	11.228	299.228	13.3	18.6	299.205	299.212	24	11.225	299.225	12.9	18.2	299.200	299.209	0.002	299.210	15-Nov-05
C-R	24	11.155	299.155	12.1	17.4	299.128	299.140	24	11.150	299.150	11.5	16.8	299.121	299.136	0.004	299.138	15-Nov-05
R-G	25	1.313	301.313	11.9	17.2	301.285	301.299	25	1.313	301.313	11.3	16.6	301.283	301.299	0.001	301.299	15-Nov-05
J-S	24	11.945	299.945	1.3	7.7	299.880	299.939	24	11.865	299.865	2.3	8.7	299.803	299.858	0.081	299.899	17-Nov-05
S-N	24	10.705	298.705	1.8	8.2	298.642	298.699	24	10.708	298.708	3.1	9.5	298.649	298.700	0.001	298.699	17-Nov-05
L-T	24	11.148	299.148	4.8	11.2	299.095	299.138	24	11.146	299.146	5.7	12.1	299.096	299.134	0.003	299.136	17-Nov-05
T-P	25	3.315	303.315	4.0	10.4	303.259	303.306	25	3.320	303.320	5.2	11.6	303.268	303.309	0.003	303.307	17-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 1

Pins	ft		1st Measurement					ft		2nd Measurement					0.014		Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc	ΔD	Average	
Lateral																	
I-J	73	11.323	887.323	5.2	11.6	887.171	887.291	73	11.304	887.304	4.6	11.0	887.145	887.274	0.017	887.282	17-Nov-05
K-L	73	10.462	886.462	5.9	12.3	886.317	886.427	73	10.459	886.459	4.7	11.1	886.302	886.429	0.002	886.428	17-Nov-05
M-N	73	10.336	886.336	4.9	11.3	886.181	886.305	73	10.344	886.344	4.7	11.1	886.187	886.314	0.009	886.309	17-Nov-05
O-P	73	11.301	887.301	4.9	11.3	887.146	887.270	73	11.290	887.290	4.9	11.3	887.135	887.259	0.011	887.264	17-Nov-05
Transverse																	
I-K	24	0.093	288.093	4.6	11.0	288.042	288.083	24	0.096	288.096	4.4	10.8	288.044	288.087	0.003	288.085	17-Nov-05
J-L	23	10.978	286.978	4.4	10.8	286.926	286.969	23	10.986	286.986	4.1	10.5	286.933	286.977	0.008	286.973	17-Nov-05
M-O	24	1.301	289.301	4.5	10.9	289.249	289.291	24	1.295	289.295	4.2	10.6	289.242	289.286	0.006	289.289	17-Nov-05
N-P	24	2.741	290.741	4.6	11.0	290.689	290.731	24	2.758	290.758	4.1	10.5	290.704	290.749	0.018	290.740	17-Nov-05
Diagonal																	
I-L	77	8.556	932.556	2.8	9.2	932.370	932.532	77	8.575	932.575	1.2	7.6	932.372	932.558	0.026	932.545	17-Nov-05
J-K	77	8.232	932.232	3.1	9.5	932.049	932.207	77	8.238	932.238	0.7	7.1	932.029	932.223	0.016	932.215	17-Nov-05
M-P	77	9.080	933.080	0.7	7.1	932.871	933.065	77	9.096	933.096	4.4	10.8	932.927	933.065	0.000	933.065	17-Nov-05
N-O	77	9.142	933.142	1.2	7.6	932.939	933.125	77	9.122	933.122	3.9	10.3	932.948	933.093	0.031	933.109	17-Nov-05
Transverse																	
K-M	25	11.927	311.927	4.6	11.0	311.871	311.916	25	11.851	311.851	4.1	10.5	311.793	311.841	0.075	311.879	17-Nov-05
L-N	25	11.698	311.698	4.4	10.8	311.642	311.688	25	11.698	311.698	4.1	10.5	311.641	311.688	0.000	311.688	17-Nov-05
Diagonal																	
K-N	78	3.622	939.622	1.5	6.8	939.420	939.621	78	3.615	939.615	3.6	8.9	939.436	939.605	0.016	939.613	17-Nov-05
L-M	78	3.765	939.765	2.2	7.5	939.571	939.761	78	3.760	939.760	1.7	7.0	939.561	939.758	0.003	939.759	17-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 2

Pins	ft		1st Measurement					ft		2nd Measurement					0.007	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc	ΔD		
Lateral																	
A-B	73	11.918	887.918	3.3	9.6	887.746	887.895	73	11.910	887.910	3.0	9.3	887.735	887.888	0.007	887.891	18-Jan-06
C-D	73	10.744	886.744	3.6	9.9	886.575	886.719	73	10.735	886.735	3.4	9.7	886.564	886.711	0.008	886.715	18-Jan-06
E-F	73	9.429	885.429	3.3	9.6	885.257	885.406	73	9.421	885.421	3.6	9.9	885.253	885.397	0.009	885.401	18-Jan-06
G-H	73	9.920	885.920	3.3	9.6	885.748	885.897	73	9.932	885.932	2.7	9.0	885.754	885.911	0.014	885.904	18-Jan-06
Transverse																	
A-C	24	1.350	289.350	2.3	8.6	289.291	289.344	24	1.352	289.352	4.6	10.9	289.300	289.343	0.001	289.343	18-Jan-06
B-D	24	0.737	288.737	3.7	10.0	288.682	288.729	24	0.738	288.738	3.4	9.7	288.682	288.730	0.001	288.730	18-Jan-06
E-G	24	0.642	288.642	2.2	8.5	288.582	288.636	24	0.643	288.643	4.8	11.1	288.592	288.633	0.002	288.635	18-Jan-06
F-H	24	0.674	288.674	3.1	9.4	288.617	288.667	24	0.662	288.662	4.3	10.6	288.609	288.653	0.014	288.660	18-Jan-06
Diagonal																	
A-D	77	9.178	933.178	6.7	13.0	933.034	933.139	77	9.179	933.179	1.7	8.0	932.981	933.161	0.022	933.150	18-Jan-06
B-C	77	9.491	933.491	6.7	13.0	933.347	933.452	77	9.473	933.473	1.8	8.1	933.276	933.455	0.003	933.453	18-Jan-06
E-H	77	7.298	931.298	2.2	8.5	931.106	931.278	77	7.297	931.297	1.5	7.8	931.097	931.280	0.002	931.279	18-Jan-06
F-G	77	7.877	931.877	2.0	8.3	931.682	931.858	77	7.887	931.887	1.4	7.7	931.686	931.870	0.013	931.864	18-Jan-06
Transverse																	
C-E	26	0.564	312.564	2.9	9.2	312.502	312.556	26	0.582	312.582	4.7	11.0	312.527	312.572	0.015	312.564	18-Jan-06
D-F	25	11.772	311.772	3.1	9.4	311.711	311.764	25	11.764	311.764	3.4	9.7	311.704	311.756	0.008	311.760	18-Jan-06
Diagonal																	
C-F	78	4.333	940.333	4.6	10.9	940.165	940.303	78	4.323	940.323	1.8	8.1	940.124	940.305	0.002	940.304	18-Jan-06
D-E	78	2.826	938.826	3.4	9.7	938.645	938.801	78	2.823	938.823	1.8	8.1	938.625	938.805	0.004	938.803	18-Jan-06
Across Joint																	
A-Q	25	1.888	301.888	3.0	9.3	301.828	301.880	25	1.890	301.890	2.9	9.2	301.830	301.883	0.002	301.882	18-Jan-06
Q-E	25	0.050	300.050	2.7	9.0	299.990	300.043	25	0.049	300.049	2.7	9.0	299.989	300.042	0.001	300.042	18-Jan-06
C-R	24	11.463	299.463	2.1	8.4	299.401	299.457	24	11.486	299.486	1.9	8.2	299.423	299.480	0.023	299.468	18-Jan-06
R-G	25	1.705	301.705	2.1	8.4	301.642	301.699	25	1.693	301.693	1.7	8.0	301.629	301.687	0.011	301.693	18-Jan-06
J-S	25	2.734	302.734	1.1	7.4	302.668	302.729	25	2.735	302.735	0.8	7.1	302.668	302.730	0.001	302.730	18-Jan-06
S-N	24	10.358	298.358	0.8	7.1	298.292	298.354	24	10.356	298.356	0.5	6.8	298.289	298.352	0.002	298.353	18-Jan-06
L-T	24	10.459	298.459	0.6	6.9	298.392	298.455	24	10.463	298.463	0.5	6.8	298.395	298.459	0.004	298.457	18-Jan-06
T-P	25	3.401	303.401	0.6	6.9	303.333	303.397	25	3.408	303.408	0.7	7.0	303.340	303.404	0.007	303.400	18-Jan-06

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 2

Pins	ft		1st Measurement					ft		2nd Measurement					0.007 ΔD	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
I-J	73	11.227	887.227	1.1	7.4	887.032	887.212	73	11.216	887.216	0.4	6.7	887.014	887.204	0.008	887.208	18-Jan-06
K-L	74	0.077	888.077	0.9	7.2	887.880	888.063	74	0.069	888.069	0.3	6.6	887.866	888.058	0.006	888.060	18-Jan-06
M-N	73	10.923	886.923	0.6	6.9	886.723	886.910	73	10.920	886.920	0.3	6.6	886.717	886.909	0.002	886.910	18-Jan-06
O-P	73	10.894	886.894	0.5	6.8	886.693	886.882	73	10.890	886.890	0.4	6.7	886.688	886.878	0.004	886.880	18-Jan-06
Transverse																	
I-K	24	0.101	288.101	2.0	8.3	288.041	288.095	24	0.103	288.103	1.1	7.4	288.040	288.098	0.003	288.097	18-Jan-06
J-L	24	1.677	289.677	1.4	7.7	289.614	289.672	24	1.682	289.682	1.3	7.6	289.619	289.677	0.005	289.674	18-Jan-06
M-O	24	1.079	289.079	1.6	7.9	289.017	289.074	24	1.077	289.077	0.7	7.0	289.012	289.073	0.001	289.073	18-Jan-06
N-P	24	2.461	290.461	1.3	7.6	290.398	290.456	24	2.467	290.467	0.7	7.0	290.402	290.463	0.007	290.459	18-Jan-06
Diagonal																	
I-L	77	8.751	932.751	2.2	8.5	932.558	932.731	77	8.736	932.736	2.0	8.3	932.541	932.717	0.014	932.724	18-Jan-06
J-K	77	10.273	934.273	2.1	8.4	934.079	934.253	77	10.270	934.270	2.0	8.3	934.075	934.251	0.003	934.252	18-Jan-06
M-P	77	8.780	932.780	1.7	8.0	932.582	932.762	77	8.763	932.763	2.0	8.3	932.568	932.744	0.018	932.753	18-Jan-06
N-O	77	9.291	933.291	1.9	8.2	933.095	933.272	77	9.289	933.289	1.8	8.1	933.092	933.271	0.002	933.272	18-Jan-06
Transverse																	
K-M	25	11.944	311.944	1.7	8.0	311.878	311.938	25	11.954	311.954	0.9	7.2	311.885	311.949	0.011	311.944	18-Jan-06
L-N	25	11.432	311.432	1.4	7.7	311.365	311.426	25	11.432	311.432	1.3	7.6	311.364	311.427	0.000	311.427	18-Jan-06
Diagonal																	
K-N	78	4.428	940.428	1.7	8.0	940.228	940.410	78	4.410	940.410	1.9	8.2	940.213	940.391	0.019	940.401	18-Jan-06
L-M	78	4.884	940.884	1.6	7.9	940.683	940.866	78	4.877	940.877	1.9	8.2	940.679	940.858	0.008	940.862	18-Jan-06

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 3

Pins	ft		1st Measurement					ft		2nd Measurement					0.009 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
A-B	73	9.374	885.374	-3.2	3.2	885.136	885.375	73	9.360	885.360	-1.8	4.6	885.136	885.356	0.020	885.365	17-Nov-05
C-D	73	9.115	885.115	-2.7	3.7	884.882	885.114	73	9.095	885.095	-1.3	5.1	884.876	885.089	0.026	885.101	17-Nov-05
E-F	73	10.175	886.175	-2.5	3.9	885.944	886.173	73	10.190	886.190	-0.7	5.7	885.977	886.181	0.008	886.177	17-Nov-05
G-H	73	10.473	886.473	-2.5	3.9	886.242	886.471	73	10.475	886.475	-0.4	6.0	886.265	886.465	0.006	886.468	17-Nov-05
Transverse																	
A-C	23	11.445	287.445	-1.1	5.3	287.375	287.443	23	11.464	287.464	-0.9	5.5	287.394	287.461	0.019	287.452	17-Nov-05
B-D	24	0.298	288.298	-3.4	3.0	288.220	288.299	24	0.300	288.300	-3.9	2.5	288.220	288.301	0.003	288.300	17-Nov-05
E-G	24	1.328	289.328	-2.1	4.3	289.254	289.327	24	1.333	289.333	-2.7	3.7	289.257	289.333	0.006	289.330	17-Nov-05
F-H	24	1.578	289.578	-2.4	4.0	289.503	289.577	24	1.578	289.578	-3.1	3.3	289.500	289.578	0.001	289.578	17-Nov-05
Diagonal																	
A-D	77	7.116	931.116	-4.1	2.3	930.856	931.121	77	7.076	931.076	-10.5	-4.1	930.747	931.108	0.013	931.114	17-Nov-05
B-C	77	6.744	930.744	-5.4	1.0	930.470	930.754	77	6.716	930.716	-11.1	-4.7	930.380	930.750	0.004	930.752	17-Nov-05
E-H	77	8.859	932.859	-5.5	0.9	932.583	932.870	77	8.850	932.850	-7.8	-1.4	932.549	932.870	0.001	932.870	17-Nov-05
F-G	77	8.010	932.010	-6.7	-0.3	931.721	932.026	77	8.031	932.031	-8.8	-2.4	931.720	932.056	0.030	932.041	17-Nov-05
Transverse																	
C-E	26	0.409	312.409	-1.7	4.7	312.330	312.407	26	0.421	312.421	-1.4	5.0	312.343	312.419	0.012	312.413	17-Nov-05
D-F	25	11.659	311.659	-3.1	3.3	311.575	311.659	25	11.654	311.654	-3.4	3.0	311.569	311.655	0.005	311.657	17-Nov-05
Diagonal																	
C-F	78	2.804	938.804	-5.7	0.7	938.524	938.816	78	2.804	938.804	-9.1	-2.7	938.487	938.830	0.014	938.823	17-Nov-05
D-E	78	3.268	939.268	-6.1	0.3	938.984	939.281	78	3.259	939.259	-9.5	-3.1	938.938	939.287	0.005	939.284	17-Nov-05
Across Joint																	
A-Q	25	0.802	300.802	-12.1	-5.7	300.690	300.814	25	0.805	300.805	-9.1	-2.7	300.703	300.813	0.001	300.814	17-Nov-05
Q-E	24	11.017	299.017	-12.3	-5.9	298.905	299.030	24	11.017	299.017	-9.0	-2.6	298.916	299.025	0.004	299.027	17-Nov-05
C-R	24	11.441	299.441	-13.1	-6.7	299.326	299.455	24	11.440	299.440	-14.1	-7.7	299.322	299.455	0.000	299.455	17-Nov-05
R-G	25	2.125	302.125	-13.6	-7.2	302.007	302.139	25	2.121	302.121	-14.2	-7.8	302.001	302.136	0.003	302.138	17-Nov-05
J-S	25	0.690	300.690	2.7	8.0	300.630	300.688	25	0.694	300.694	2.7	8.0	300.634	300.692	0.004	300.690	19-Nov-05
S-N	24	11.383	299.383	2.7	8.0	299.323	299.381	24	11.389	299.389	2.8	8.1	299.329	299.387	0.006	299.384	19-Nov-05
L-T	24	11.406	299.406	2.8	8.1	299.346	299.404	24	11.399	299.399	3.1	8.4	299.340	299.396	0.007	299.400	19-Nov-05
T-P	25	2.398	302.398	3.1	8.4	302.339	302.395	25	2.397	302.397	2.9	8.2	302.337	302.395	0.001	302.395	19-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 3

Pins	ft		1st Measurement					ft		2nd Measurement					0.009 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
I-J	73	11.383	887.383	-10.1	-3.7	887.073	887.412	73	11.384	887.384	-12.9	-6.5	887.045	887.424	0.012	887.418	17-Nov-05
K-L	73	11.504	887.504	-9.3	-2.9	887.202	887.529	73	11.507	887.507	-12.6	-6.2	887.171	887.546	0.016	887.538	17-Nov-05
M-N	73	11.915	887.915	-8.7	-2.3	887.619	887.938	73	11.905	887.905	-12.1	-5.7	887.574	887.942	0.004	887.940	17-Nov-05
O-P	73	11.668	887.668	-5.7	0.7	887.403	887.679	73	11.673	887.673	-10.6	-4.2	887.358	887.704	0.025	887.691	17-Nov-05
Transverse																	
I-K	23	11.913	287.913	-13.5	-7.1	287.801	287.927	23	11.904	287.904	-13.7	-7.3	287.791	287.918	0.009	287.922	17-Nov-05
J-L	24	0.091	288.091	-15.3	-8.9	287.973	288.107	24	0.095	288.095	-16.8	-10.4	287.972	288.113	0.006	288.110	17-Nov-05
M-O	24	1.607	289.607	-14.1	-7.7	289.492	289.622	24	1.612	289.612	-15.2	-8.8	289.494	289.628	0.006	289.625	17-Nov-05
N-P	24	1.792	289.792	-14.6	-8.2	289.676	289.807	24	1.794	289.794	-15.8	-9.4	289.674	289.811	0.004	289.809	17-Nov-05
Diagonal																	
I-L	77	8.857	932.857	2.4	7.7	932.667	932.852	77	8.851	932.851	2.8	8.1	932.665	932.844	0.008	932.848	19-Nov-05
J-K	77	9.260	933.260	2.2	7.5	933.067	933.256	77	9.244	933.244	2.8	8.1	933.058	933.237	0.019	933.247	19-Nov-05
M-P	77	10.475	934.475	2.8	8.1	934.289	934.468	77	10.470	934.470	3.1	8.4	934.287	934.462	0.006	934.465	19-Nov-05
N-O	77	9.299	933.299	2.7	8.0	933.112	933.293	77	9.289	933.289	3.1	8.4	933.106	933.281	0.012	933.287	19-Nov-05
Transverse																	
K-M	25	11.918	311.918	-13.7	-7.3	311.796	311.933	25	11.904	311.904	-15.0	-8.6	311.777	311.921	0.012	311.927	17-Nov-05
L-N	26	0.053	312.053	-14.9	-8.5	311.927	312.070	26	0.058	312.058	-16.6	-10.2	311.926	312.077	0.007	312.073	17-Nov-05
Diagonal																	
K-N	78	5.413	941.413	2.5	7.8	941.222	941.408	78	5.408	941.408	3.0	8.3	941.222	941.400	0.007	941.404	19-Nov-05
L-M	78	4.491	940.491	2.8	8.1	940.303	940.484	78	4.487	940.487	2.8	8.1	940.299	940.480	0.004	940.482	19-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 4

Pins	ft		1st Measurement					ft		2nd Measurement					0.007 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
A-B	73	9.325	885.325	4.8	10.1	885.169	885.311	73	9.319	885.319	4.2	9.5	885.157	885.307	0.004	885.309	19-Nov-05
C-D	73	9.245	885.245	4.6	9.9	885.087	885.231	73	9.230	885.230	4.3	9.6	885.069	885.218	0.014	885.225	19-Nov-05
E-F	73	9.907	885.907	4.6	9.9	885.749	885.893	73	9.896	885.896	4.2	9.5	885.734	885.884	0.009	885.889	19-Nov-05
G-H	73	9.325	885.325	4.1	9.4	885.162	885.313	73	9.311	885.311	4.1	9.4	885.148	885.299	0.014	885.306	19-Nov-05
Transverse																	
A-C	24	1.880	289.880	4.1	9.4	289.827	289.876	24	1.877	289.877	3.9	9.2	289.823	289.873	0.003	289.875	19-Nov-05
B-D	24	0.453	288.453	3.7	9.0	288.398	288.450	24	0.444	288.444	3.8	9.1	288.390	288.441	0.009	288.445	19-Nov-05
E-G	24	0.412	288.412	4.2	9.5	288.359	288.408	24	0.420	288.420	3.8	9.1	288.366	288.417	0.009	288.412	19-Nov-05
F-H	24	1.200	289.200	4.0	9.3	289.146	289.196	24	1.194	289.194	3.9	9.2	289.140	289.190	0.006	289.193	19-Nov-05
Diagonal																	
A-D	77	7.543	931.543	4.7	10.0	931.378	931.528	77	7.563	931.563	3.7	9.0	931.387	931.553	0.024	931.540	19-Nov-05
B-C	77	7.110	931.110	4.6	9.9	930.944	931.096	77	7.092	931.092	3.7	9.0	930.916	931.082	0.014	931.089	19-Nov-05
E-H	77	7.543	931.543	4.1	9.4	931.371	931.531	77	7.541	931.541	3.6	8.9	931.364	931.531	0.000	931.531	19-Nov-05
F-G	77	7.547	931.547	4.3	9.6	931.377	931.534	77	7.576	931.576	4.0	9.3	931.403	931.564	0.030	931.549	19-Nov-05
Transverse																	
C-E	25	11.856	311.856	3.8	9.1	311.797	311.852	25	11.858	311.858	3.8	9.1	311.799	311.854	0.002	311.853	19-Nov-05
D-F	26	0.890	312.890	3.5	8.8	312.830	312.887	26	0.899	312.899	3.7	9.0	312.840	312.895	0.009	312.891	19-Nov-05
Diagonal																	
C-F	78	2.605	938.605	4.3	9.6	938.434	938.592	78	2.596	938.596	4.0	9.3	938.422	938.584	0.008	938.588	19-Nov-05
D-E	78	3.527	939.527	4.2	9.5	939.355	939.514	78	3.534	939.534	4.1	9.4	939.361	939.522	0.007	939.518	19-Nov-05
Across Joint																	
A-Q	25	2.281	302.281	3.4	8.7	302.223	302.278	25	2.282	302.282	3.5	8.8	302.224	302.279	0.001	302.278	19-Nov-05
Q-E	24	11.434	299.434	3.5	8.8	299.377	299.431	24	11.438	299.438	3.3	8.6	299.380	299.435	0.004	299.433	19-Nov-05
C-R	24	10.770	298.770	3.0	8.3	298.711	298.768	24	10.770	298.770	3.3	8.6	298.712	298.767	0.000	298.767	19-Nov-05
R-G	25	1.413	301.413	3.1	8.4	301.354	301.410	25	1.409	301.409	3.2	8.5	301.350	301.406	0.004	301.408	19-Nov-05
J-S	24	11.357	299.357	1.9	7.2	299.294	299.356	24	11.353	299.353	2.1	7.4	299.291	299.352	0.004	299.354	19-Nov-05
S-N	24	11.737	299.737	1.7	7.0	299.673	299.736	24	11.744	299.744	1.8	7.1	299.681	299.743	0.007	299.740	19-Nov-05
L-T	24	11.801	299.801	2.2	7.5	299.739	299.800	24	11.782	299.782	2.1	7.4	299.720	299.781	0.019	299.790	19-Nov-05
T-P	25	0.589	300.589	2.1	7.4	300.527	300.588	25	0.591	300.591	1.9	7.2	300.528	300.590	0.002	300.589	19-Nov-05

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport

Area 2

Zone 4

Pins	ft		1st Measurement					ft		2nd Measurement					0.007 Diff	Average	Date
		in	total in	temp	temp conc	adj tape	adj conc		in	total in	temp	temp conc	adj tape	adj conc			
Lateral																	
I-J	73	10.401	886.401	2.3	7.6	886.219	886.397	73	10.386	886.386	2.6	7.9	886.207	886.380	0.016	886.389	19-Nov-05
K-L	73	11.123	887.123	2.5	7.8	886.943	887.118	73	11.117	887.117	2.9	8.2	886.941	887.110	0.008	887.114	19-Nov-05
M-N	74	0.192	888.192	2.9	8.2	888.016	888.185	74	0.187	888.187	2.9	8.2	888.011	888.180	0.005	888.183	19-Nov-05
O-P	73	11.069	887.069	2.6	7.9	886.890	887.063	73	11.064	887.064	3.3	8.6	886.892	887.056	0.008	887.060	19-Nov-05
Transverse																	
I-K	24	0.468	288.468	3.4	8.7	288.412	288.465	24	0.470	288.470	2.9	8.2	288.413	288.468	0.003	288.466	19-Nov-05
J-L	23	11.429	287.429	3.2	8.5	287.373	287.426	23	11.421	287.421	3.0	8.3	287.364	287.419	0.008	287.423	19-Nov-05
M-O	24	1.227	289.227	3.4	8.7	289.171	289.224	24	1.232	289.232	3.2	8.5	289.176	289.229	0.005	289.227	19-Nov-05
N-P	24	0.553	288.553	3.1	8.4	288.496	288.551	24	0.554	288.554	3.2	8.5	288.498	288.551	0.001	288.551	19-Nov-05
Diagonal																	
I-L	77	9.218	933.218	2.7	8.0	933.031	933.212	77	9.222	933.222	3.1	8.4	933.039	933.214	0.002	933.213	19-Nov-05
J-K	77	7.540	931.540	2.8	8.1	931.354	931.533	77	7.541	931.541	3.1	8.4	931.358	931.533	0.000	931.533	19-Nov-05
M-P	77	9.902	933.902	3.1	8.4	933.719	933.894	77	9.913	933.913	2.2	7.5	933.720	933.909	0.015	933.901	19-Nov-05
N-O	77	9.079	933.079	3.2	8.5	932.897	933.071	77	9.088	933.088	2.3	7.6	932.896	933.083	0.013	933.077	19-Nov-05
Transverse																	
K-M	26	0.695	312.695	3.4	8.7	312.635	312.692	26	0.694	312.694	2.7	8.0	312.631	312.692	0.000	312.692	19-Nov-05
L-N	25	11.718	311.718	3.3	8.6	311.658	311.715	25	11.723	311.723	3.3	8.6	311.663	311.720	0.005	311.718	19-Nov-05
Diagonal																	
K-N	78	5.638	941.638	3.2	8.5	941.454	941.630	78	5.639	941.639	2.7	8.0	941.450	941.633	0.003	941.631	19-Nov-05
L-M	78	4.337	940.337	3.1	8.4	940.153	940.329	78	4.337	940.337	3.1	8.4	940.153	940.329	0.000	940.329	19-Nov-05

Extensometer Measurements

				1 Year Change ΔD '05-'06		Total				Lateral		Transverse		Diagonal		Across Joint				
Hartsfield-Jackson Atlanta International Airport				Max	Min	0.254	0.084%	Max	Min	0.236	0.027%	0.158	0.051%	0.161	0.017%	0.254	0.084%			
Area 2						-0.239	-0.029%			-0.157	-0.018%	-0.084	-0.029%	-0.239	-0.026%	-0.072	-0.024%			
Zone 1 2006				Average		0.006	0.004%	Average		0.010	0.001%	0.033	0.011%	-0.032	-0.003%	0.023	0.008%			
				1st Measurement								2nd Measurement				0.005			Percentage	
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06	
Lateral																				
A-B'	73	7.943	883.943	10.7	24.6	883.848	883.782	73	7.940	883.940	10.4	24.3	883.842	883.780	0.002	883.781	07-Dec-06	N/A	N/A	
C-D	73	11.133	887.133	7.0	20.9	886.999	886.986	73	11.130	887.130	7.4	21.3	887.000	886.982	0.005	886.984	27-Nov-06	-0.138	-0.016%	
E-F	73	11.303	887.303	7.3	21.2	887.172	887.155	73	11.297	887.297	7.8	21.7	887.171	887.147	0.008	887.151	27-Nov-06	0.075	0.009%	
G-H	73	11.460	887.460	7.3	21.2	887.329	887.312	73	11.452	887.452	7.7	21.6	887.325	887.303	0.010	887.307	27-Nov-06	0.236	0.027%	
Transverse																				
A-C	24	0.182	288.182	7.1	21.0	288.139	288.134	24	0.181	288.181	7.5	21.4	288.139	288.133	0.002	288.133	27-Nov-06	-0.084	-0.029%	
B'-D	24	10.598	298.598	-4.2	9.7	298.514	298.564	24	10.596	298.596	-4.1	9.8	298.513	298.562	0.002	298.563	08-Dec-06	N/A	N/A	
E-G	24	0.970	288.970	7.2	21.1	288.927	288.922	24	0.968	288.968	7.8	21.7	288.927	288.919	0.003	288.921	27-Nov-06	0.014	0.005%	
F-H	24	1.668	289.668	7.5	21.4	289.626	289.619	24	1.669	289.669	8.0	21.9	289.629	289.620	0.000	289.620	27-Nov-06	0.038	0.013%	
Diagonal																				
A-D	77	8.389	932.389	7.6	21.5	932.255	932.232	77	8.381	932.381	7.6	21.5	932.247	932.224	0.008	932.228	27-Nov-06	-0.142	-0.015%	
B'-C	77	5.683	929.683	10.6	24.5	929.582	929.514	77	5.684	929.684	10.2	24.1	929.578	929.517	0.003	929.516	07-Dec-06	N/A	N/A	
E-H	77	9.629	933.629	7.3	21.2	933.491	933.473	77	9.621	933.621	7.6	21.5	933.487	933.464	0.009	933.469	27-Nov-06	0.108	0.012%	
F-G	77	9.168	933.168	7.4	21.3	933.032	933.012	77	9.166	933.166	7.5	21.4	933.031	933.010	0.002	933.011	27-Nov-06	0.161	0.017%	
Transverse																				
C-E	25	11.792	311.792	7.2	21.1	311.746	311.740	25	11.791	311.791	7.7	21.6	311.747	311.738	0.002	311.739	27-Nov-06	0.158	0.051%	
D-F	25	11.979	311.979	7.1	21.0	311.932	311.927	25	11.984	311.984	8.0	21.9	311.941	311.931	0.004	311.929	27-Nov-06	-0.020	-0.006%	
Diagonal																				
C-F	78	4.270	940.270	7.1	21.0	940.129	940.114	78	4.258	940.258	7.9	21.8	940.126	940.099	0.015	940.106	27-Nov-06	0.009	0.001%	
D-E	78	4.678	940.678	7.2	21.1	940.538	940.522	78	4.673	940.673	7.4	21.3	940.536	940.516	0.006	940.519	27-Nov-06	-0.004	0.000%	
Across Joint																				
A-Q'	25	2.901	302.901	-4.4	9.5	302.815	302.866	25	2.903	302.903	-4.1	9.8	302.818	302.868	0.002	302.867	08-Dec-06	N/A	N/A	
Q'-E	24	8.969	296.969	-4.2	9.7	296.886	296.935	24	8.971	296.971	-4.0	9.9	296.888	296.937	0.002	296.936	08-Dec-06	N/A	N/A	
C-R	24	11.118	299.118	7.6	21.5	299.075	299.068	24	11.122	299.122	7.9	21.8	299.080	299.071	0.004	299.070	27-Nov-06	-0.069	-0.023%	
R-G	25	1.604	301.604	8.1	22.0	301.562	301.553	25	1.604	301.604	7.8	21.7	301.561	301.553	0.000	301.553	27-Nov-06	0.254	0.084%	
J-S	24	11.904	299.904	6.7	20.6	299.858	299.855	24	11.910	299.910	7.1	21.0	299.865	299.860	0.005	299.858	27-Nov-06	-0.041	-0.014%	
S-N	24	10.808	298.808	7.3	21.2	298.764	298.758	24	10.811	298.811	7.2	21.1	298.767	298.761	0.003	298.760	27-Nov-06	0.060	0.020%	
L-T	24	11.112	299.112	7.0	20.9	299.067	299.063	24	11.115	299.115	6.9	20.8	299.070	299.066	0.003	299.064	27-Nov-06	-0.072	-0.024%	
T-P	25	3.364	303.364	6.7	20.6	303.317	303.314	25	3.365	303.365	6.7	20.6	303.318	303.315	0.001	303.315	27-Nov-06	0.008	0.002%	

Extensometer Measurements

				1 Year Change ΔD '05-'06		Total				Lateral		Transverse		Diagonal		Across Joint			
Hartsfield-Jackson Atlanta International Airport				Max	Min	0.254	0.084%	Max	Min	0.236	0.027%	0.158	0.051%	0.161	0.017%	0.254	0.084%		
Area 2						-0.239	-0.029%	Min		-0.157	-0.018%	-0.084	-0.029%	-0.239	-0.026%	-0.072	-0.024%		
Zone 1 2006				Average		0.006	0.004%	Average		0.010	0.001%	0.033	0.011%	-0.032	-0.003%	0.023	0.008%		
Pins	ft	in	1st Measurement				2nd Measurement						0.005	Average	Date	Percentage			
Lateral			total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff			ΔD '05-'06	ΔD '05-'06
I-J	73	11.470	887.470	6.6	20.5	887.332	887.325	73	11.469	887.469	7.1	21.0	887.336	887.322	0.003	887.323	27-Nov-06	0.041	0.005%
K-L	73	10.419	886.419	6.4	20.3	886.279	886.275	73	10.416	886.416	7.6	21.5	886.288	886.267	0.008	886.271	27-Nov-06	-0.157	-0.018%
M-N	73	10.362	886.362	6.6	20.5	886.224	886.217	73	10.362	886.362	7.6	21.5	886.235	886.213	0.004	886.215	27-Nov-06	-0.094	-0.011%
O-P	73	11.526	887.526	7.2	21.1	887.394	887.379	73	11.508	887.508	7.3	21.2	887.377	887.360	0.018	887.369	27-Nov-06	0.105	0.012%
Transverse																			
I-K	24	0.195	288.195	7.4	21.3	288.153	288.147	24	0.196	288.196	7.4	21.3	288.154	288.148	0.001	288.147	27-Nov-06	0.062	0.022%
J-L	23	10.936	286.936	7.4	21.3	286.894	286.888	23	10.939	286.939		13.9	286.872	286.901	0.013	286.894	27-Nov-06	-0.078	-0.027%
M-O	24	1.362	289.362	7.6	21.5	289.320	289.313	24	1.365	289.365	7.6	21.5	289.323	289.316	0.003	289.315	27-Nov-06	0.026	0.009%
N-P	24	2.799	290.799	7.6	21.5	290.757	290.750	24	2.808	290.808	7.4	21.3	290.765	290.759	0.009	290.755	27-Nov-06	0.015	0.005%
Diagonal																			
I-L	77	8.766	932.766	6.6	20.5	932.621	932.614	77	8.763	932.763	7.7	21.6	932.630	932.606	0.008	932.610	27-Nov-06	0.065	0.007%
J-K	77	8.128	932.128	6.8	20.7	931.985	931.975	77	8.132	932.132	7.3	21.2	931.995	931.977	0.002	931.976	27-Nov-06	-0.239	-0.026%
M-P	77	9.225	933.225	6.6	20.5	933.080	933.072	77	9.222	933.222	7.6	21.5	933.088	933.065	0.007	933.069	27-Nov-06	0.004	0.000%
N-O	77	9.223	933.223	7.1	21.0	933.083	933.068	77	9.216	933.216	7.6	21.5	933.082	933.059	0.009	933.064	27-Nov-06	-0.045	-0.005%
Transverse																			
K-M	26	0.088	312.088	7.6	21.5	312.043	312.036	26	0.088	312.088	7.6	21.5	312.043	312.036	0.000	312.036	27-Nov-06	0.157	0.050%
L-N	25	11.811	311.811	7.6	21.5	311.766	311.759	25	11.817	311.817	7.2	21.1	311.771	311.765	0.007	311.762	27-Nov-06	0.074	0.024%
Diagonal																			
K-N	78	3.534	939.534	6.6	20.5	939.388	939.380	78	3.527	939.527	7.6	21.5	939.392	939.369	0.011	939.375	27-Nov-06	-0.238	-0.025%
L-M	78	3.893	939.893	6.7	20.6	939.748	939.739	78	3.888	939.888	7.8	21.7	939.755	939.729	0.010	939.734	27-Nov-06	-0.025	-0.003%

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint				
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max	0.149	0.042%		Max	0.081	0.009%	0.122	0.042%	0.149	0.016%	-0.008	-0.003%				
Area 2				Min	-0.382	-0.045%		Min	-0.297	-0.034%	-0.130	-0.045%	-0.382	-0.041%	-0.089	-0.029%				
Zone 2 2006				Average	-0.113	-0.017%		Average	-0.139	-0.016%	-0.048	-0.016%	-0.167	-0.018%	-0.048	-0.016%				
				1st Measurement				2nd Measurement										Percentage		
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	0.006 Diff	Average	Date	ΔD '05-'06	ΔD '05-'06	
Lateral																				
A-B	73	11.789	887.789	4.4	18.3	887.628	887.653	73	11.797	887.797	6.3	20.2	887.656	887.653	0.000	887.653	27-Nov-06	-0.238	-0.027%	
C-D	73	10.560	886.560	5.5	19.4	886.411	886.419	73	10.561	886.561	6.4	20.3	886.421	886.417	0.003	886.418	27-Nov-06	-0.297	-0.034%	
E-F'	73	7.338	883.338	10.8	24.7	883.244	883.177	73	7.342	883.342	10.4	24.3	883.244	883.182	0.006	883.180	07-Dec-06	N/A	N/A	
G-H	73	9.937	885.937	6.2	20.1	885.795	885.794	73	9.927	885.927	6.7	20.6	885.790	885.782	0.012	885.788	27-Nov-06	-0.116	-0.013%	
Transverse																				
A-C	24	1.351	289.351	20.3	34.2	289.352	289.286	24	1.352	289.352	19.8	33.7	289.351	289.288	0.002	289.287	01-Dec-06	-0.057	-0.020%	
B-D	24	0.776	288.776	19.8	33.7	288.775	288.712	24	0.779	288.779	20.0	33.9	288.779	288.714	0.003	288.713	01-Dec-06	-0.017	-0.006%	
E-G	24	0.597	288.597	19.8	33.7	288.596	288.533	24	0.606	288.606	19.9	33.8	288.606	288.542	0.009	288.537	01-Dec-06	-0.098	-0.034%	
F'-H	24	0.908	288.908	-4.9	9.0	288.825	288.876	24	0.908	288.908	-5.1	8.8	288.824	288.876	0.000	288.876	08-Dec-06	N/A	N/A	
Diagonal																				
A-D	77	8.921	932.921	5.1	19.0	932.760	932.775	77	8.914	932.914	6.5	20.4	932.768	932.762	0.013	932.768	27-Nov-06	-0.382	-0.041%	
B-C	77	9.271	933.271	5.6	19.5	933.115	933.123	77	9.272	933.272	6.6	20.5	933.127	933.119	0.003	933.121	27-Nov-06	-0.332	-0.036%	
E-H	77	7.240	931.240	6.0	19.9	931.089	931.090	77	7.240	931.240	6.6	20.5	931.095	931.088	0.003	931.089	27-Nov-06	-0.190	-0.020%	
F'-G	77	5.040	929.040	10.9	24.8	928.942	928.870	77	5.044	929.044	10.3	24.2	928.939	928.877	0.007	928.873	07-Dec-06	N/A	N/A	
Transverse																				
C-E	26	0.526	312.526	19.8	33.7	312.525	312.456	26	0.521	312.521	19.8	33.7	312.520	312.451	0.005	312.454	01-Dec-06	-0.110	-0.035%	
D-F'	26	1.574	313.574	-4.4	9.5	313.485	313.538	26	1.569	313.569	-5.1	8.8	313.478	313.534	0.004	313.536	08-Dec-06	N/A	N/A	
Diagonal																				
C-F'	78	2.871	938.871	10.6	24.5	938.769	938.701	78	2.875	938.875	10.5	24.4	938.772	938.705	0.004	938.703	07-Dec-06	N/A	N/A	
D-E	78	2.683	938.683	5.7	19.6	938.527	938.533	78	2.684	938.684	6.6	20.5	938.538	938.531	0.003	938.532	27-Nov-06	-0.271	-0.029%	
Across Joint																				
A-Q'	25	3.634	303.634	-4.7	9.2	303.547	303.600	25	3.620	303.620	-5.3	8.6	303.531	303.587	0.013	303.593	08-Dec-06	N/A	N/A	
Q'-E	24	10.268	298.268	-4.4	9.5	298.184	298.234	24	10.267	298.267	-5.4	8.5	298.179	298.234	0.000	298.234	08-Dec-06	N/A	N/A	
C-R'	24	9.968	297.968	-5.3	8.6	297.881	297.935	24	9.978	297.978	-5.3	8.6	297.891	297.945	0.010	297.940	08-Dec-06	N/A	N/A	
R'-G	25	3.387	303.387	-5.3	8.6	303.298	303.354	25	3.391	303.391	-5.5	8.4	303.301	303.358	0.004	303.356	08-Dec-06	N/A	N/A	
J-S	25	2.708	302.708	19.1	33.0	302.705	302.641	25	2.707	302.707	19.0	32.9	302.703	302.641	0.001	302.641	01-Dec-06	-0.089	-0.029%	
S-N	24	10.414	298.414	19.1	33.0	298.411	298.348	24	10.407	298.407	19.2	33.1	298.404	298.341	0.007	298.345	01-Dec-06	-0.008	-0.003%	
L-T'	24	11.410	299.410	-6.1	7.8	299.319	299.378	24	11.418	299.418	-6.3	7.6	299.327	299.386	0.008	299.382	08-Dec-06	N/A	N/A	
T'-P	25	4.874	304.874	-6.3	7.6	304.781	304.842	25	4.879	304.879	-6.4	7.5	304.786	304.847	0.005	304.844	08-Dec-06	N/A	N/A	

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint					
Hartsfield-Jackson Atlanta International Airpor		1 Year Change		Max	0.149	0.042%		Max	0.081	0.009%	0.122	0.042%	0.149	0.016%	-0.008	-0.003%					
Area 2		ΔD		Min	-0.382	-0.045%		Min	-0.297	-0.034%	-0.130	-0.045%	-0.382	-0.041%	-0.089	-0.029%					
Zone 2 2006		'05-'06		Average	-0.113	-0.017%		Average	-0.139	-0.016%	-0.048	-0.016%	-0.167	-0.018%	-0.048	-0.016%					
Pins	ft	in	1st Measurement		temp	temp conc	adj tape	adj conc	ft	in	2nd Measurement		temp	temp conc	adj tape	adj conc	0.006	Average	Date	Percentage	Percentage
			total in								total in						Diff			ΔD '05-'06	ΔD '05-'06
Lateral																					
I-J	73	11.405	887.405	-0.9	13.0	887.190	887.290	73	11.404	887.404	-0.9	13.0	887.189	887.289	0.001	887.289	01-Dec-06	0.081	0.009%		
K-L'	73	10.313	886.313	9.2	23.1	886.202	886.158	73	10.314	886.314	9.0	22.9	886.201	886.160	0.002	886.159	07-Dec-06	N/A	N/A		
M'-N	73	9.334	885.334	9.3	23.2	885.224	885.179	73	9.349	885.349	8.6	22.5	885.232	885.196	0.018	885.187	07-Dec-06	N/A	N/A		
O-P	73	10.873	886.873	-0.9	13.0	886.658	886.758	73	10.871	886.871	-1.0	12.9	886.655	886.756	0.002	886.757	05-Dec-06	-0.123	-0.014%		
Transverse																					
I-K	24	0.280	288.280	19.2	33.1	288.277	288.217	24	0.285	288.285	19.1	33.0	288.282	288.222	0.005	288.219	05-Dec-06	0.122	0.042%		
J-L'	23	11.554	287.554	-5.1	8.8	287.470	287.522	23	11.560	287.560	-5.4	8.5	287.475	287.528	0.006	287.525	08-Dec-06	N/A	N/A		
M'-O	23	11.702	287.702	-5.3	8.6	287.618	287.670	23	11.694	287.694	-5.6	8.3	287.609	287.663	0.008	287.667	08-Dec-06	N/A	N/A		
N-P	24	2.394	290.394	19.0	32.9	290.391	290.330	24	2.393	290.393	19.1	33.0	290.390	290.329	0.001	290.330	01-Dec-06	-0.130	-0.045%		
Diagonal																					
I-L'	77	6.331	930.331	9.5	23.4	930.218	930.167	77	6.326	930.326	8.8	22.7	930.205	930.165	0.002	930.166	07-Dec-06	N/A	N/A		
J-K	77	10.526	934.526	-0.8	13.1	934.301	934.404	77	10.519	934.519	-0.9	13.0	934.292	934.398	0.007	934.401	05-Dec-06	0.149	0.016%		
M'-P	77	6.677	930.677	8.9	22.8	930.557	930.515	77	6.689	930.689	8.4	22.3	930.564	930.529	0.014	930.522	07-Dec-06	N/A	N/A		
N-O	77	9.322	933.322	-0.9	13.0	933.096	933.201	77	9.320	933.320	-1.0	12.9	933.093	933.199	0.002	933.200	05-Dec-06	-0.071	-0.008%		
Transverse																					
K-M'	26	1.594	313.594	-5.1	8.8	313.503	313.559	26	1.565	313.565	-5.7	8.2	313.472	313.531	0.028	313.545	08-Dec-06	N/A	N/A		
L'-N	26	1.801	313.801	-4.7	9.2	313.711	313.766	26	1.802	313.802	-5.6	8.3	313.709	313.768	0.002	313.767	08-Dec-06	N/A	N/A		
Diagonal																					
K-N	78	4.448	940.448	-0.9	13.0	940.220	940.326	78	4.449	940.449	-0.9	13.0	940.221	940.327	0.001	940.326	05-Dec-06	-0.074	-0.008%		
L'-M	78	3.269	939.269	9.1	23.0	939.150	939.105	78	3.286	939.286	8.7	22.6	939.163	939.124	0.019	939.114	07-Dec-06	N/A	N/A		

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint							
Hartsfield-Jackson Atlanta International Airpor		1 Year Change		Max Min		0.289 0.034%		Max Min		0.084 0.009%		0.097 0.034%		0.289 0.031%		0.090 0.030%							
Area 2		'05-'06		Average		-0.360 -0.089%		Average		-0.288 -0.033%		-0.258 -0.089%		-0.360 -0.039%		0.041 0.013%		Max 0.289					
Zone 3 2006										-0.048		-0.005%		-0.064		-0.022%		Min -0.360					
				1st Measurement						2nd Measurement				0.006		Average		Date		Average		-0.059 Percentage	
Pins		ft in		total in temp		temp conc adj tape adj conc		ft in		total in temp		temp conc adj tape adj conc		Diff		Average		Date		Average		-0.059 Percentage	
Lateral																						ΔD '05-'06 ΔD '05-'06	
A'-B'		73	5.525	881.525	8.3	22.2	881.405	881.374	73	5.515	881.515	7.7	21.6	881.389	881.367	0.008	881.370	07-Dec-06			N/A	N/A	
C'-D'		73	5.204	881.204	8.1	22.0	881.082	881.054	73	5.195	881.195	7.8	21.7	881.070	881.046	0.008	881.050	07-Dec-06			N/A	N/A	
E-F		73	10.025	886.025	3.6	17.5	885.856	885.892	73	10.015	886.015	2.7	16.6	885.837	885.886	0.006	885.889	02-Dec-06			-0.288	-0.033%	
G-H		73	10.483	886.483	2.8	16.7	886.306	886.353	73	10.471	886.471	2.3	16.2	886.289	886.343	0.010	886.348	02-Dec-06			-0.120	-0.014%	
Transverse																							
A'-C'		23	7.556	283.556	8.8	22.7	283.519	283.507	23	7.564	283.564	7.5	21.4	283.523	283.516	0.010	283.512	07-Dec-06			N/A	N/A	
B'-D'		23	7.603	283.603	7.7	21.6	283.563	283.555	23	7.600	283.600	6.9	20.8	283.557	283.553	0.002	283.554	07-Dec-06			N/A	N/A	
E-G		24	1.223	289.223	2.5	16.4	289.164	289.181	24	1.231	289.231	2.2	16.1	289.171	289.189	0.008	289.185	02-Dec-06			-0.145	-0.050%	
F-H		24	1.359	289.359	2.4	16.3	289.300	289.317	24	1.365	289.365	2.4	16.3	289.306	289.323	0.006	289.320	02-Dec-06			-0.258	-0.089%	
Diagonal																							
A'-D'		77	1.984	925.984	7.9	21.8	925.854	925.827	77	1.974	925.974	8.0	21.9	925.845	925.817	0.010	925.822	07-Dec-06			N/A	N/A	
B'-C'		77	1.845	925.845	8.0	21.9	925.716	925.688	77	1.832	925.832	8.3	22.2	925.706	925.674	0.014	925.681	07-Dec-06			N/A	N/A	
E-H		77	8.794	932.794	3.0	16.9	932.610	932.657	77	8.787	932.787	2.4	16.3	932.597	932.652	0.004	932.654	02-Dec-06			-0.216	-0.023%	
F-G		77	7.823	931.823	3.0	16.9	931.639	931.686	77	7.811	931.811	2.6	16.5	931.623	931.675	0.010	931.681	02-Dec-06			-0.360	-0.039%	
Transverse																							
C'-E'		26	2.203	314.203	8.1	22.0	314.160	314.150	26	2.202	314.202	7.6	21.5	314.157	314.149	0.000	314.149	07-Dec-06			N/A	N/A	
D'-F'		26	2.582	314.582	8.1	22.0	314.539	314.528	26	2.587	314.587	7.3	21.2	314.541	314.535	0.006	314.532	07-Dec-06			N/A	N/A	
Diagonal																							
C'-F'		78	1.409	937.409	7.8	21.7	937.276	937.251	78	1.400	937.400	7.6	21.5	937.265	937.243	0.008	937.247	07-Dec-06			N/A	N/A	
D'-E'		78	2.465	938.465	7.8	21.7	938.332	938.307	78	2.458	938.458	7.8	21.7	938.325	938.300	0.007	938.303	07-Dec-06			N/A	N/A	
Across Joint																							
A'-Q'		24	11.845	299.845	6.8	20.7	299.799	299.796	24	11.843	299.843	7.1	21.0	299.798	299.793	0.002	299.795	07-Dec-06			N/A	N/A	
Q'-E'		24	9.906	297.906	7.1	21.0	297.861	297.857	24	9.912	297.912	7.2	21.1	297.868	297.862	0.006	297.860	07-Dec-06			N/A	N/A	
C'-R'		25	1.144	301.144	6.9	20.8	301.098	301.094	25	1.139	301.139	6.9	20.8	301.093	301.089	0.005	301.092	07-Dec-06			N/A	N/A	
R-G		25	2.217	302.217	-1.0	12.9	302.143	302.178	25	2.218	302.218	-1.1	12.8	302.144	302.179	0.001	302.178	05-Dec-06			0.041	0.013%	
J'-S'		25	2.614	302.614	-4.5	9.4	302.528	302.580	25	2.645	302.645	-3.4	10.5	302.563	302.609	0.030	302.594	08-Dec-06			N/A	N/A	
S'-N'		24	9.623	297.623	-4.7	9.2	297.538	297.589	24	9.626	297.626	-3.3	10.6	297.546	297.591	0.001	297.590	08-Dec-06			N/A	N/A	
L'-T'		25	1.569	301.569	-4.3	9.6	301.484	301.534	25	1.564	301.564	-4.4	9.5	301.479	301.530	0.005	301.532	08-Dec-06			N/A	N/A	
T-P		25	2.524	302.524	-0.8	13.1	302.451	302.485	25	2.524	302.524	-0.9	13.0	302.451	302.485	0.000	302.485	05-Dec-06			0.090	0.030%	

Extensometer Measurements

				1 Year Change ΔD '05-'06		Total				Lateral		Transverse		Diagonal		Across Joint					
				Max	Min	0.289	0.034%	Max	Min	0.084	0.009%	0.097	0.034%	0.289	0.031%	0.090	0.030%				
				Average		-0.360	-0.089%			-0.288	-0.033%	-0.258	-0.089%	-0.360	-0.039%	0.041	0.013%	Max	0.289		
				Average		-0.059	-0.010%			Average	-0.048	-0.005%	-0.064	-0.022%	-0.105	-0.011%	0.065	0.022%	Min	-0.360	
Zone 3 2006				1st Measurement				2nd Measurement				0.006		Average		Date		Average		-0.059 Percentage ΔD '05-'06 ΔD '05-'06	
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	Average	ΔD '05-'06	Percentage ΔD '05-'06	
Lateral																					
I-J	73	11.623	887.623	-0.3	13.6	887.414	887.505	73	11.614	887.614	-0.7	13.2	887.401	887.498	0.007	887.502	05-Dec-06	0.084	0.009%		
K-L'	73	9.196	885.196	8.8	22.7	885.081	885.043	73	9.199	885.199	8.8	22.7	885.084	885.046	0.003	885.044	07-Dec-06	N/A	N/A		
M-N	74	0.066	888.066	-0.7	13.2	887.853	887.950	74	0.057	888.057	-0.8	13.1	887.843	887.941	0.009	887.946	05-Dec-06	0.006	0.001%		
O-P	73	11.885	887.885	-0.8	13.1	887.671	887.769	73	11.883	887.883	-0.9	13.0	887.668	887.768	0.002	887.769	05-Dec-06	0.077	0.009%		
Transverse																					
I-K	23	11.841	287.841	-0.8	13.1	287.772	287.804	23	11.846	287.846	-0.7	13.2	287.777	287.808	0.005	287.806	05-Dec-06	-0.116	-0.040%		
J-L'	23	10.106	286.106	-4.1	9.8	286.026	286.073	23	10.112	286.112	-4.1	9.8	286.032	286.079	0.006	286.076	08-Dec-06	N/A	N/A		
M-O	24	1.759	289.759	-0.7	13.2	289.689	289.721	24	1.760	289.760	-1.0	12.9	289.689	289.723	0.001	289.722	05-Dec-06	0.097	0.034%		
N-P	24	1.886	289.886	-0.9	13.0	289.816	289.848	24	1.884	289.884	-0.9	13.0	289.814	289.846	0.002	289.847	05-Dec-06	0.038	0.013%		
Diagonal																					
I-L'	77	6.224	930.224	8.7	22.6	930.102	930.063	77	6.230	930.230	8.5	22.4	930.106	930.070	0.007	930.067	07-Dec-06	N/A	N/A		
J-K	77	9.229	933.229	-0.7	13.2	933.005	933.107	77	9.239	933.239	-0.8	13.1	933.014	933.117	0.010	933.112	05-Dec-06	-0.134	-0.014%		
M-P	77	10.874	934.874	-0.7	13.2	934.650	934.752	77	10.879	934.879	-0.7	13.2	934.655	934.757	0.005	934.754	05-Dec-06	0.289	0.031%		
N-O	77	9.364	933.364	-0.6	13.3	933.141	933.242	77	9.360	933.360	-0.8	13.1	933.135	933.238	0.003	933.240	05-Dec-06	-0.047	-0.005%		
Transverse																					
K-M	25	11.958	311.958	-0.8	13.1	311.883	311.917	25	11.972	311.972	-0.8	13.1	311.897	311.931	0.014	311.924	05-Dec-06	-0.003	-0.001%		
L'-N	26	2.196	314.196	-3.8	10.1	314.109	314.159	26	2.198	314.198	-3.5	10.4	314.112	314.161	0.002	314.160	08-Dec-06	N/A	N/A		
Diagonal																					
K-N	78	5.363	941.363	-0.8	13.1	941.136	941.240	78	5.360	941.360	-0.9	13.0	941.132	941.238	0.003	941.239	05-Dec-06	-0.165	-0.018%		
L'-M	78	3.187	939.187	8.7	22.6	939.064	939.025	78	3.197	939.197	8.7	22.6	939.074	939.035	0.010	939.030	07-Dec-06	N/A	N/A		

Extensometer Measurements

						Total				Lateral		Transverse		Diagonal		Across Joint			
Hartsfield-Jackson Atlanta International Airpor		1 Year Change ΔD '05-'06		Max Min		0.162	0.036%	Max Min		0.114	0.013%	0.103	0.036%	0.162	0.017%	0.076	0.026%		
Area 2						-0.261	-0.087%			-0.217	-0.025%	-0.185	-0.064%	-0.186	-0.020%	-0.261	-0.087%		
Zone 4 2006				Average		-0.075	-0.016%	Average		-0.087	-0.010%	-0.075	-0.025%	-0.078	-0.008%	-0.061	-0.020%		
				1st Measurement				2nd Measurement						0.007			Percentage		
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
Lateral																			
A-B	73	9.544	885.544	-0.6	13.3	885.332	885.428	73	9.534	885.534	-0.8	13.1	885.320	885.419	0.009	885.423	05-Dec-06	0.114	0.013%
C-D	73	9.323	885.323	-0.7	13.2	885.110	885.207	73	9.295	885.295	-0.7	13.2	885.082	885.179	0.028	885.193	05-Dec-06	-0.031	-0.004%
E-F	73	9.820	885.820	-0.8	13.1	885.606	885.705	73	9.817	885.817	-1.0	12.9	885.601	885.702	0.002	885.704	05-Dec-06	-0.185	-0.021%
G-H'	73	4.709	880.709	9.3	23.2	880.600	880.554	73	4.678	880.678	9.0	22.9	880.566	880.525	0.030	880.539	07-Dec-06	N/A	N/A
Transverse																			
A-C	24	1.796	289.796	19.2	33.1	289.793	289.732	24	1.789	289.789	19.2	33.1	289.786	289.725	0.007	289.729	01-Dec-06	-0.146	-0.050%
B-D	24	0.393	288.393	19.3	33.2	288.391	288.329	24	0.392	288.392	19.0	32.9	288.389	288.329	0.001	288.329	01-Dec-06	-0.116	-0.040%
E-G'	23	10.830	286.830	-4.7	9.2	286.748	286.798	23	10.828	286.828	-4.5	9.4	286.746	286.795	0.002	286.797	08-Dec-06	N/A	N/A
F-H'	23	11.126	287.126	-3.7	10.2	287.047	287.092	23	11.131	287.131	-4.6	9.3	287.049	287.099	0.006	287.095	08-Dec-06	N/A	N/A
Diagonal																			
A-D	77	7.558	931.558	-0.2	13.7	931.340	931.434	77	7.552	931.552	-0.8	13.1	931.327	931.431	0.003	931.432	05-Dec-06	-0.108	-0.012%
B-C	77	7.384	931.384	-0.7	13.2	931.160	931.262	77	7.359	931.359	-0.9	13.0	931.133	931.238	0.024	931.250	05-Dec-06	0.162	0.017%
E-H'	77	4.718	928.718	9.2	23.1	928.602	928.555	77	4.700	928.700	9.0	22.9	928.581	928.538	0.017	928.547	07-Dec-06	N/A	N/A
F-G'	77	4.774	928.774	9.1	23.0	928.657	928.612	77	4.771	928.771	9.0	22.9	928.652	928.609	0.003	928.610	07-Dec-06	N/A	N/A
Transverse																			
C-E	25	11.808	311.808	19.3	33.2	311.805	311.739	25	11.807	311.807	18.9	32.8	311.803	311.739	0.000	311.739	01-Dec-06	-0.114	-0.037%
D-F	26	0.982	312.982	19.2	33.1	312.979	312.913	26	0.983	312.983	18.9	32.8	312.979	312.915	0.001	312.914	01-Dec-06	0.023	0.007%
Diagonal																			
C-F	78	2.711	938.711	-0.7	13.2	938.486	938.588	78	2.691	938.691	-0.8	13.1	938.465	938.569	0.020	938.579	05-Dec-06	-0.010	-0.001%
D-E	78	3.488	939.488	-1.0	12.9	939.259	939.367	78	3.484	939.484	-0.9	13.0	939.256	939.362	0.004	939.364	05-Dec-06	-0.154	-0.016%
Across Joint																			
A-Q	25	2.160	302.160	19.0	32.9	302.156	302.094	25	2.154	302.154	19.1	33.0	302.151	302.088	0.006	302.091	01-Dec-06	-0.188	-0.062%
Q-E	24	11.478	299.478	19.0	32.9	299.475	299.412	24	11.468	299.468	19.0	32.9	299.465	299.402	0.010	299.407	01-Dec-06	-0.026	-0.009%
C-R	24	10.913	298.913	18.9	32.8	298.909	298.848	24	10.905	298.905	18.9	32.8	298.901	298.840	0.008	298.844	01-Dec-06	0.076	0.026%
R-G'	24	11.688	299.688	-4.8	9.1	299.602	299.654	24	11.696	299.696	-4.7	9.2	299.610	299.662	0.008	299.658	08-Dec-06	N/A	N/A
J-S	24	11.440	299.440	13.0	26.9	299.416	299.382	24	11.443	299.443	13.2	27.1	299.419	299.385	0.003	299.384	10-Nov-06	0.030	0.010%
S-N	24	11.663	299.663	13.2	27.1	299.639	299.605	24	11.667	299.667	13.1	27.0	299.643	299.609	0.004	299.607	10-Nov-06	-0.133	-0.044%
L-T	24	11.916	299.916	13.9	27.8	299.895	299.857	24	11.925	299.925	14.2	28.1	299.905	299.866	0.009	299.861	10-Nov-06	0.071	0.024%
T-P	25	0.387	300.387	13.7	27.6	300.365	300.328	25	0.387	300.387	14.3	28.2	300.367	300.327	0.001	300.328	10-Nov-06	-0.261	-0.087%

Extensometer Measurements

				1 Year Change ΔD '05-'06		Total				Lateral		Transverse		Diagonal		Across Joint			
Hartsfield-Jackson Atlanta International Airpor				Max	Min	0.162	0.036%	Max	Min	0.114	0.013%	0.103	0.036%	0.162	0.017%	0.076	0.026%		
Area 2				Average		-0.261	-0.087%	Min	Min	-0.217	-0.025%	-0.185	-0.064%	-0.186	-0.020%	-0.261	-0.087%		
Zone 4 2006				Average		-0.075	-0.016%	Average	Average	-0.087	-0.010%	-0.075	-0.025%	-0.078	-0.008%	-0.061	-0.020%		
				1st Measurement				2nd Measurement										Percentage	
Pins	ft	in	total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc	0.007 Diff	Average	Date	ΔD '05-'06	ΔD '05-'06
Lateral																			
I-J	73	10.352	886.352	14.4	28.3	886.294	886.176	73	10.341	886.341	14.0	27.9	886.279	886.167	0.009	886.171	10-Nov-06	-0.217	-0.025%
K-L	73	11.178	887.178	13.7	27.6	887.113	887.005	73	11.181	887.181	14.0	27.9	887.119	887.006	0.002	887.006	10-Nov-06	-0.109	-0.012%
M-N	74	0.387	888.387	14.1	28.0	888.326	888.212	74	0.385	888.385	14.2	28.1	888.325	888.209	0.002	888.211	10-Nov-06	0.028	0.003%
O-P	73	11.023	887.023	14.0	27.9	886.961	886.848	73	11.027	887.027	13.3	27.2	886.958	886.855	0.007	886.852	10-Nov-06	-0.208	-0.023%
Transverse																			
I-K	24	0.625	288.625	13.4	27.3	288.603	288.569	24	0.626	288.626	13.2	27.1	288.603	288.570	0.001	288.570	10-Nov-06	0.103	0.036%
J-L	23	11.293	287.293	13.6	27.5	287.272	287.237	23	11.293	287.293	13.1	27.0	287.270	287.238	0.001	287.237	10-Nov-06	-0.185	-0.064%
M-O	24	1.115	289.115	13.6	27.5	289.094	289.059	24	1.112	289.112	13.4	27.3	289.090	289.056	0.003	289.057	10-Nov-06	-0.170	-0.059%
N-P	24	0.518	288.518	13.4	27.3	288.496	288.462	24	0.519	288.519	13.3	27.2	288.497	288.463	0.001	288.463	10-Nov-06	-0.088	-0.031%
Diagonal																			
I-L	77	9.246	933.246	14.1	28.0	933.182	933.062	77	9.251	933.251	13.9	27.8	933.185	933.068	0.006	933.065	10-Nov-06	-0.148	-0.016%
J-K	77	7.533	931.533	13.8	27.7	931.466	931.351	77	7.526	931.526	13.9	27.8	931.460	931.343	0.007	931.347	10-Nov-06	-0.186	-0.020%
M-P	77	9.931	933.931	13.9	27.8	933.865	933.748	77	9.933	933.933	13.5	27.4	933.863	933.751	0.004	933.749	10-Nov-06	-0.152	-0.016%
N-O	77	9.166	933.166	14.0	27.9	933.101	932.982	77	9.166	933.166	13.6	27.5	933.097	932.984	0.002	932.983	10-Nov-06	-0.094	-0.010%
Transverse																			
K-M	26	0.655	312.655	13.6	27.5	312.632	312.594	26	0.654	312.654	13.3	27.2	312.630	312.593	0.001	312.594	10-Nov-06	-0.098	-0.031%
L-N	25	11.825	311.825	13.4	27.3	311.801	311.764	25	11.822	311.822	13.2	27.1	311.797	311.762	0.003	311.763	10-Nov-06	0.046	0.015%
Diagonal																			
K-N	78	5.679	941.679	13.7	27.6	941.610	941.495	78	5.678	941.678	14.5	28.4	941.618	941.491	0.004	941.493	10-Nov-06	-0.138	-0.015%
L-M	78	4.558	940.558	14.1	28.0	940.494	940.372	78	4.563	940.563	14.2	28.1	940.500	940.377	0.005	940.375	10-Nov-06	0.046	0.005%

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport																	2 Year Change ΔD '06-'08		Max Min		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Max Min		Total		Lateral		Transverse	
Area 2																	Average										Average									
Zone 1 2008																													Average		Average		0.003 Percentage ΔD '06-'08		Percentage ΔD '05-'08	
Pins Lateral		ft	in	1st Measurement				2nd Measurement				0.003 Diff		Average	Date	Average		0.003 Percentage ΔD '06-'08		Percentage ΔD '05-'08																
A-B*		N/A		total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc																					
C-D	73	11.027	887.027	16.8	21.9	886.994	886.967	73	11.031	887.031	15.9	21	886.989	886.975	0.008	886.971	22-Oct-08	-0.013	-0.002%	-0.151	-0.017%															
E-F	73	11.183	887.183	16.7	21.8	887.149	887.123	73	11.177	887.177	15.9	21	887.135	887.121	0.003	887.122	22-Oct-08	-0.029	-0.003%	0.046	0.005%															
G-H	73	11.304	887.304	16.0	21.1	887.263	887.247	73	11.300	887.300	15.7	20.8	887.256	887.244	0.003	887.246	22-Oct-08	-0.062	-0.007%	0.175	0.020%															
Transverse A-C		24	0.124	288.124	15.7	20.8	288.110	288.106	24	0.121	288.121	15.7	20.8	288.107	288.103	0.003	288.104	22-Oct-08	-0.029	-0.010%	-0.113	-0.039%														
B*-D		N/A																																		
E-G	24	0.912	288.912	15.9	21	288.898	288.894	24	0.910	288.910	15.7	20.8	288.896	288.892	0.002	288.893	22-Oct-08	-0.028	-0.010%	-0.014	-0.005%															
F-H	24	1.589	289.589	16.0	21.1	289.576	289.570	24	1.585	289.585	15.7	20.8	289.571	289.567	0.004	289.569	22-Oct-08	-0.051	-0.018%	-0.013	-0.005%															
Lateral I-J		73	11.333	887.333	14.1	19.2	887.272	887.284	73	11.335	887.335	14.1	19.2	887.274	887.286	0.002	887.285	22-Oct-08	-0.039	-0.004%	0.002	0.000%														
K-L	73	10.234	886.234	14.4	19.5	886.176	886.184	73	10.241	886.241	14.2	19.3	886.181	886.191	0.008	886.187	22-Oct-08	-0.084	-0.009%	-0.240	-0.027%															
M-N	73	10.342	886.342	13.9	19	886.279	886.294	73	10.345	886.345	14.3	19.4	886.286	886.295	0.001	886.294	22-Oct-08	0.079	0.009%	-0.015	-0.002%															
O-P	73	11.493	887.493	13.7	18.8	887.428	887.445	73	11.494	887.494	14.1	19.2	887.433	887.445	0.001	887.445	22-Oct-08	0.076	0.009%	0.181	0.020%															
Transverse I-K		24	0.253	288.253	14.6	19.7	288.235	288.236	24	0.253	288.253	14.3	19.4	288.234	288.237	0.000	288.237	22-Oct-08	0.089	0.031%	0.152	0.053%														
J-L	23	11.193	287.193	14.0	19.1	287.173	287.177	23	11.193	287.193	14.1	19.2	287.173	287.177	0.000	287.177	22-Oct-08	0.283	0.099%	0.204	0.071%															
M-O	24	1.355	289.355	14.4	19.5	289.336	289.339	24	1.352	289.352	14.4	19.5	289.333	289.336	0.003	289.337	22-Oct-08	0.022	0.008%	0.048	0.017%															
N-P	24	2.599	290.599	14.1	19.2	290.579	290.583	24	2.603	290.603	14.2	19.3	290.583	290.587	0.004	290.585	22-Oct-08	-0.170	-0.058%	-0.155	-0.053%															

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport																	2 Year Change ΔD '06-'08		Max Min		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Max Min		Total		Lateral		Transverse	
Area 2																	Average										Average									
Zone 2 2008																													Average		0.002 Percentage ΔD '06-'08		0.002 Percentage ΔD '05-'08			
Pins		ft	in	1st Measurement				2nd Measurement				0.006 Diff		Average		Date	Average		0.002 Percentage ΔD '06-'08		0.002 Percentage ΔD '05-'08															
Lateral				total in	temp	temp conc	adj tape	adj conc	ft	in	total in	temp	temp conc	adj tape	adj conc				ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08														
A-B		73	11.696	887.696	14.7	19.8	887.641	887.644	73	11.698	887.698	14.2	19.3	887.638	887.648	0.004	887.646	22-Oct-08	-0.007	-0.001%	-0.245	-0.028%														
C-D		73	10.577	886.577	14.5	19.6	886.520	886.526	73	10.567	886.567	13.9	19.0	886.504	886.519	0.008	886.522	22-Oct-08	0.104	0.012%	-0.193	-0.022%														
E-F	N/A																																			
G-H		73	9.808	885.808	14.6	19.7	885.753	885.757	73	9.789	885.789	15.3	20.4	885.741	885.735	0.022	885.746	22-Oct-08	-0.042	-0.005%	-0.158	-0.018%														
Transverse																																				
A-C		24	1.359	289.359	15.6	20.7	289.344	289.341	24	1.367	289.367	15.6	20.7	289.352	289.349	0.008	289.345	22-Oct-08	0.058	0.020%	0.002	0.001%														
B-D		24	0.723	288.723	15.0	20.1	288.706	288.706	24	0.727	288.727	15.2	20.3	288.711	288.710	0.004	288.708	22-Oct-08	-0.005	-0.002%	-0.022	-0.008%														
E-G		24	0.612	288.612	15.7	20.8	288.598	288.594	24	0.612	288.612	15.7	20.8	288.598	288.594	0.000	288.594	22-Oct-08	0.057	0.020%	-0.041	-0.014%														
F-H	N/A																																			
Lateral																																				
I-J		73	11.060	887.060	14.1	19.2	886.999	887.011	73	11.060	887.060	14.7	19.8	887.005	887.008	0.002	887.010	22-Oct-08	-0.280	-0.032%	-0.199	-0.022%														
K-L	N/A																																			
M-N	N/A																																			
O-P		73	10.843	886.843	14.4	19.5	886.785	886.793	73	10.856	886.856	15.1	20.2	886.806	886.803	0.010	886.798	22-Oct-08	0.041	0.005%	-0.082	-0.009%														
Transverse																																				
I-K		24	0.177	288.177	14.7	19.8	288.159	288.160	24	0.176	288.176	14.5	19.6	288.158	288.159	0.001	288.160	22-Oct-08	-0.059	-0.021%	0.063	0.022%														
J-L	N/A																																			
M-O	N/A																																			
N-P		24	2.505	290.505	14.4	19.5	290.486	290.488	24	2.500	290.500	14.4	19.5	290.481	290.483	0.005	290.486	22-Oct-08	0.156	0.054%	0.027	0.009%														

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport																2 Year Change ΔD '06-'08		Max Min		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Max Min		Total		Lateral		Transverse		
Area 2																Average		-0.001 0.006%		-0.053 -0.006%		0.050 0.018%		Average		-0.064 -0.010%		-0.101 -0.011%		-0.026 -0.009%						
Zone 3 2008																Average		-0.001 0.006%		-0.053 -0.006%		0.050 0.018%		Average		-0.064 -0.010%		-0.101 -0.011%		-0.026 -0.009%						
																0.005 Diff		Average		Date		Average		-0.001 Percentage ΔD '06-'08		Percentage ΔD '05-'08										
																Average		Date		Average		-0.001 Percentage ΔD '06-'08		Percentage ΔD '05-'08												
																Average		Date		Average		-0.001 Percentage ΔD '06-'08		Percentage ΔD '05-'08												
Lateral																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A				
A'-B'																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A				
C'-D'																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A				
E-F																73	9.954	885.954	13.0	18.1	885.882	885.909	73	9.940	885.940	12.9	18	885.867	885.896	0.014	885.902	22-Oct-08	0.013	0.002%	-0.275	-0.031%
G-H																73	10.427	886.427	13.1	18.2	886.356	886.382	73	10.419	886.419	13.0	18.1	886.347	886.374	0.008	886.378	22-Oct-08	0.030	0.003%	-0.090	-0.010%
Transverse																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
A'-C'																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
B'-D'																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
E-G																24	1.358	289.358	12.7	17.8	289.333	289.344	24	1.359	289.359	12.6	17.7	289.334	289.345	0.001	289.344	22-Oct-08	0.159	0.055%	0.014	0.005%
F-H																24	1.306	289.306	12.5	17.6	289.281	289.292	24	1.306	289.306	12.6	17.7	289.281	289.292	0.000	289.292	22-Oct-08	-0.028	-0.010%	-0.286	-0.099%
Lateral																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
I-J																73	11.603	887.603	13.3	18.4	887.534	887.557	73	11.611	887.611	13.1	18.2	887.540	887.566	0.009	887.561	22-Oct-08	0.060	0.007%	0.144	0.016%
K-L'																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
M-N																73	11.910	887.910	13.3	18.4	887.841	887.864	73	11.912	887.912	13.1	18.2	887.841	887.867	0.003	887.865	22-Oct-08	-0.080	-0.009%	-0.075	-0.008%
O-P																73	11.530	887.530	13.2	18.3	887.460	887.484	73	11.528	887.528	13.1	18.2	887.457	887.483	0.002	887.483	22-Oct-08	-0.285	-0.032%	-0.208	-0.023%
Transverse																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
I-K																24	0.017	288.017	13.4	18.5	287.995	288.002	24	0.019	288.019	13.4	18.5	287.997	288.004	0.002	288.003	22-Oct-08	0.197	0.068%	0.081	0.028%
J-L'																N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
M-O																24	1.584	289.584	13.9	19	289.564	289.568	24	1.590	289.590	13.3	18.4	289.567	289.575	0.007	289.572	22-Oct-08	-0.150	-0.052%	-0.053	-0.018%
N-P																24	1.936	289.936	13.3	18.4	289.913	289.921	24	1.938	289.938	13.2	18.3	289.915	289.923	0.002	289.922	22-Oct-08	0.075	0.026%	0.113	0.039%

Extensometer Measurements

Hartsfield-Jackson Atlanta International Airport										2 Year Change ΔD '06-'08		Total		Lateral		Transverse		3 Year Change ΔD '05-'08		Total		Lateral		Transverse	
Area 2										Max	Min	0.265	0.092%	0.199	0.022%	0.265	0.092%	0.152	0.053%	0.145	0.016%	0.152	0.053%		
Zone 4 2008										Average		0.073	0.020%	0.042	0.005%	0.109	0.038%	-0.196	-0.053%	-0.196	-0.022%	-0.153	-0.053%		
										0.004		1st Measurement		2nd Measurement		0.004		Average		0.073 Percentage		Percentage			
										Diff	Average	Date	Average	ΔD '06-'08	ΔD '06-'08	ΔD '05-'08	ΔD '05-'08								
Lateral																									
A-B	73	9.161	885.161	12.9	18.0	885.088	885.117	73	9.153	885.153	12.8	17.9	885.079	885.109	0.008	885.113	22-Oct-08	0.008	885.113	22-Oct-08	-0.310	-0.035%	-0.196	-0.022%	
C-D	73	9.302	885.302	12.9	18.0	885.229	885.258	73	9.308	885.308	12.9	18.0	885.235	885.264	0.006	885.261	22-Oct-08	0.006	885.261	22-Oct-08	0.067	0.008%	0.036	0.004%	
E-F	73	9.778	885.778	12.8	17.9	885.704	885.734	73	9.764	885.764	12.9	18.0	885.691	885.720	0.014	885.727	22-Oct-08	0.014	885.727	22-Oct-08	0.023	0.003%	-0.162	-0.018%	
G'-H' N/A																									
Transverse																									
A-C	24	1.788	289.788	12.4	17.5	289.762	289.774	24	1.796	289.796	13.0	18.1	289.772	289.781	0.007	289.778	22-Oct-08	0.007	289.778	22-Oct-08	0.049	0.017%	-0.097	-0.034%	
B-D	24	0.609	288.609	12.7	17.8	288.585	288.595	24	0.608	288.608	12.6	17.7	288.583	288.594	0.001	288.594	22-Oct-08	0.001	288.594	22-Oct-08	0.265	0.092%	0.149	0.052%	
E-G' N/A																									
F-H' N/A																									
Lateral																									
I-J	73	10.417	886.417	13.4	18.5	886.349	886.371	73	10.416	886.416	13.1	18.2	886.345	886.371	0.000	886.371	22-Oct-08	0.000	886.371	22-Oct-08	0.199	0.022%	-0.018	-0.002%	
K-L	73	11.164	887.164	13.5	18.6	887.097	887.117	73	11.170	887.170	13.4	18.5	887.102	887.124	0.006	887.120	22-Oct-08	0.006	887.120	22-Oct-08	0.115	0.013%	0.006	0.001%	
M-N	74	0.374	888.374	13.8	18.9	888.310	888.326	74	0.378	888.378	13.7	18.8	888.313	888.330	0.004	888.328	22-Oct-08	0.004	888.328	22-Oct-08	0.117	0.013%	0.145	0.016%	
O-P	73	10.984	886.984	13.7	18.8	886.919	886.936	73	10.982	886.982	13.7	18.8	886.917	886.934	0.002	886.935	22-Oct-08	0.002	886.935	22-Oct-08	0.083	0.009%	-0.124	-0.014%	
Transverse																									
I-K	24	0.624	288.624	13.4	18.5	288.602	288.609	24	0.623	288.623	13.7	18.8	288.602	288.607	0.001	288.608	22-Oct-08	0.001	288.608	22-Oct-08	0.039	0.013%	0.142	0.049%	
J-L	23	11.300	287.300	13.3	18.4	287.278	287.285	23	11.297	287.297	13.6	18.7	287.276	287.282	0.003	287.283	22-Oct-08	0.003	287.283	22-Oct-08	0.046	0.016%	-0.139	-0.048%	
M-O	24	1.090	289.090	13.4	18.5	289.068	289.075	24	1.088	289.088	13.8	18.9	289.067	289.072	0.003	289.074	22-Oct-08	0.003	289.074	22-Oct-08	0.016	0.006%	-0.153	-0.053%	
N-P	24	0.718	288.718	13.4	18.5	288.696	288.703	24	0.718	288.718	13.9	19.0	288.698	288.702	0.001	288.703	22-Oct-08	0.001	288.703	22-Oct-08	0.240	0.083%	0.152	0.053%	