

Performance Indicators

PHILIP W. AMOS

The Pennsylvania Department of Transportation has developed three systems for indicating performance in the field of maintenance activities. They are management objectives reports, county accreditations, and quality assurance evaluations.

Management objectives reports are distributed monthly and summarized at three levels in the department. The first level, statewide, is called the Blue Book. Each activity is compared by the amount expended or performed last year, the amount budgeted for this year, and the amount accomplished or expended to date. This is recorded on a cumulative monthly basis for our fiscal year (July 1 to June 30). Figure 5 shows examples of expenditures, and Figures 5 and 6 show examples of maintenance activities by contract and department forces. Figure 7 summarizes our truck weight enforcement program.

The second level of management objectives reports is the district management summary (the Green Book). This report summarizes district activities, including maintenance, by fiscal year-to-date versus planned year-to-date as a percent and fiscal year-to-date versus last year-to-date. Figure 8 is an example of this summary.

The third level of management objectives reports is the county management summary (the Red Book). This report provides comparisons for each major

maintenance activity between amounts completed in the preceding year, planned, completed to date, and the percentages. It also compares county costs with statewide average costs. Figure 9 shows examples. Another portion of this county report addresses county equipment utilization compared with statewide averages. Figure 10 shows an example.

The county accreditation program was developed as an indicator of the counties' performance. The program includes an independent review of field operations, equipment, personnel, and office operations. Each function is weighted along with weighted items within the function, and an overall accreditation rank is established. In this way the county maintenance manager knows where improvements are needed. An example of the program is shown in Figure 11.

The maintenance quality assurance evaluation systems were developed to evaluate statistically the quality of our major maintenance activities and improve our policies and procedures, thereby improving the quality of our product. The system developed for manual patching is shown in Figures 12-14; the figures show the evaluation form, the rating form, and the indicators used for the evaluation, respectively. An important function of the question and answer evaluations is the analysis, which determines needs for basic training of our maintenance forces.

PERSON RESPONSIBLE: DEPUTY SECRETARY FOR HIGHWAY ADMINISTRATION
DAVID C. SIMS, PE

NO	ITEM	UNIT OF MEASURE	1983-84 CUMULATIVE PERIOD: YEAR TO DATE											
			JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
			L LAST YR B BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET	LAST YR BUDGET
EXPENDITURES														
1	SALARIES AND FRINGES OBJ 100 (84-86, 87, 89)	L	25.1	56.4	81.8	108.2	136.2	163.3	188.7	215.0	247.8	273.2	300.7	321.2
		B	23.4	56.0	80.1	104.0	130.9	154.6	181.0	209.1	234.3	261.3	285.0	312.8
		MILLIONS A	24.2	56.4	80.0	103.9	130.3	154.0	186.1	205.6	239.5			
2	OPERATING EXPENSES HWY PROJS (OBJ 301, 327, 392, 394)	L	.6	1.2	2.3	2.7	2.7	3.2	3.4	3.6	3.9	4.2	4.6	5.0
		B	1.0	1.8	2.8	3.8	4.5	4.9	5.7	6.2	7.5	8.9	9.9	13.9
		MILLIONS A	.5	1.0	1.4	1.8	2.2	2.5	2.8	3.0	3.3			
3	ENGINEERING CONSULTANTS (84, 85, 86, 87, 89)	L	2.9	4.4	8.6	12.8	15.6	19.5	21.8	24.3	28.3	31.5	35.1	38.1
		B	3.9	8.3	14.7	18.2	21.5	24.2	26.3	27.6	28.7	29.4	31.0	32.4
		MILLIONS A	4.4	7.6	9.8	13.2	16.6	19.5	22.0	25.7	28.8			
4	RIGHT-OF-WAY (APPN 85, 89)	L	2.9	6.1	7.1	8.9	10.5	11.4	12.9	14.2	15.2	16.2	16.8	18.4
		B	3.0	4.5	6.2	7.7	9.4	10.9	12.6	14.0	15.5	17.2	19.3	20.8
		MILLIONS A	1.6	2.7	5.4	6.6	7.6	9.4	10.1	12.0	14.4			
5	PAYMENTS TO CONTRACTORS CONSTRUCTION (84, 85, 89)	L	30.9	68.2	101.8	134.6	168.9	191.1	203.4	218.5	225.8	240.6	253.0	272.2
		B	22.2	51.9	79.4	103.8	127.4	147.1	161.2	172.7	182.4	199.9	225.7	260.0
		MILLIONS A	22.9	50.7	86.5	118.8	136.9	158.1	167.7	181.0	192.9			
6	PAYMENTS TO CONTRACTORS HWY MAINTENANCE (86, 87)	L	41.1	90.0	134.6	186.6	221.8	241.1	252.5	260.3	265.4	270.6	280.9	299.3
		B	19.5	44.2	75.2	100.6	120.9	136.4	147.7	153.4	158.9	168.7	182.1	199.7
		MILLIONS A	22.3	45.7	73.0	91.6	112.7	124.1	130.4	134.2	136.8			
7	ROAD TURNBACK GRANTS (APPN 86)	L	-	-	-	-	-	-	-	-	-	-	-	-
		B	-	-	-	-	-	-	-	-	-	-	-	-
		MILLIONS A	-	-	-	-	-	.3	1.3	4.1	6.2			

*INCLUDES REPAYMENT OF ADVANCES ON INTERSTATE PROJECTS IN THE PITTSBURGH AREA.

FIGURE 5 Management objectives report: Examples of statewide (Blue Book) expenditures.

1983-84 CUMULATIVE PERIOD: YEAR TO DATE

NO	ITEM	UNIT OF MEASURE	JULY		AUG		SEP		OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUNE	
			L B	A	L B	A	L B	A	L B	A	L B	A	L B	A	L B	A	L B	A	L B	A	L B	A	L B	A	L B	A
EXPENDITURES (CON'T)																										
MAINTENANCE MATERIALS																										
8	WINTER MAINT. MATERIALS (APPH 87)	\$ MILLIONS	L B	A	-1	0	.2	0	.2	0	1.9	6.8	9.7	11.1	12.6	13.3	13.4	13.5	13.6	13.4	14.9	15.0	15.0	15.0	15.0	15.0
9	ROUTINE MAINT MATERIALS (APPH 87)	\$ MILLIONS	L B	A	8.0	18.1	27.6	34.1	38.4	41.8	44.0	45.4	46.5	48.0	49.9	55.1	46.9	44.0	47.1	48.0	49.9	55.1	51.6	51.6	51.6	51.6
1	MAINT EQUIP & SUPPLIES (APPH 87)	\$ MILLIONS	L B	A	2.5	4.8	7.3	9.5	12.4	15.1	17.9	20.6	23.5	25.7	27.8	29.4	13.4	13.0	13.4	13.0	13.4	13.0	13.4	13.0	13.4	13.0
2	OTHER (APPH 87, OBJ5 300, 400)	\$ MILLIONS	L B	A	2.1	4.7	9.4	13.6	17.0	20.5	23.8	26.5	30.5	32.8	34.6	37.6	36.7	36.5	30.3	41.5	45.0	51.9	60.0	60.0	60.0	60.0
3	TOTAL EXPENDITURES	\$ MILLIONS	L B	A	116.2	254.2	380.3	512.5	630.3	716.7	779.5	841.0	900.2	956.2	1016.9	1092.9	560.9	639.8	697.3	749.2	815.3	895.6	997.3	997.3	997.3	997.3
4	OVERTIME	\$ THOUSAND	L B	A	442	2441	3620	4493	5181	6107	7318	8804	10532	11161	11744	12208	-	-	-	-	-	-	-	-	-	-
CONTRACT LETTINGS																										
5	TOTAL PROJECTS LET	NUMBER	L B	A	54	137	239	261	329	403	467	531	592	667	727	796	404	467	531	592	667	727	796	796	796	796
6	TOTAL PROJECTS LET	\$ MILLIONS	L B	A	40.8	138.0	236.1	254.6	304.9	405.2	584.7	712.6	815.4	841.0	906.6	906.6	293.4	405.2	584.7	712.6	815.4	841.0	906.6	906.6	906.6	906.6
BILLION \$ BRIDGE PROG																										
7	NOT DOABLE NO WORK STARTED IN DESIGN	NUMBER	L B	A	14	560	523	501	472	448	400	385	366	349	349	349	349	349	349	349	349	349	349	349	349	349
8	PROJECTS LET	NUMBER	L B	A	70	76	95	99	126	163	164	168	184	184	184	184	184	184	184	184	184	184	184	184	184	184
*SOME PROJECTS WERE LET PRIOR TO THE BRIDGE BILL PASSAGE. ANNUAL ELEMENT.																										
AWARDS																										
1	MAINTENANCE TOTAL	\$ MILLIONS	L B	A	45.9	15.6	34.7	93.3	99.2	105.7	108.3	123.2	135.9	152.1	161.0	172.0	200.0	108.3	108.3	123.2	135.9	152.1	161.0	172.0	200.0	200.0
2	CONSTRUCTION TOTAL	\$ MILLIONS	L B	A	10.1	15.6	24.8	124.3	144.2	144.3	157.7	171.1	246.3	261.2	274.6	376.4	400.3	108.3	108.3	123.2	135.9	152.1	161.0	172.0	200.0	200.0
3	BRIDGE PROGRAM	\$ MILLIONS	L B	A	4.3	0	0.3	19.0	20.1	28.2	33.1	46.7	80.1	89.3	103.4	133.6	199.7	108.3	108.3	123.2	135.9	152.1	161.0	172.0	200.0	200.0
4	TOTAL AWARDS	\$ MILLIONS	L B	A	56.0	31.3	59.8	240.4	252.8	262.1	282.0	322.8	436.9	473.0	524.6	648.0	800.0	216.6	216.6	246.4	271.8	304.0	333.0	393.0	470.0	470.0
5	BRIDGE PREVENTATIVE MAINTENANCE (711-414, 415, 416, 417)	SITES	L B	A	47	1314	2303	389	3626	4705	5348	5556	5688	7326	10255	12483	14251	4111	4111	4150	4387	4791	4845	5513	5747	5747
SURFACE IMPROV PRODUCTION																										
6	3R CONTRACT	MILES	L B	A	29	21	81	178	392	392	392	392	392	392	401	418	392	392	392	392	392	392	392	392	392	392
7	CONCRETE PATCHING (CONTRACT)	MILES	L B	A	11	3	2	16	28	28	28	28	28	28	29	32	129	129	129	129	129	129	129	129	129	129
8	SURFACE TREATMENT (CONTRACT)	MILES	L B	A	330	81	342	1740	2480	2480	2480	2480	2480	2480	2480	2592	2480	2480	2480	2480	2480	2480	2480	2480	2480	2480

*THE LAST YEAR BRIDGE PREVENTATIVE MAINTENANCE FIGURE WAS REPORTED UNDER ONE COST FUNCTION. THE BUDGET AND THE ACTUAL HAVE BEEN REDEFINED THIS YEAR UNDER FOUR SEPARATE ACTIVITIES.

FIGURE 5 (continued)

		1983-84 CUMULATIVE PERIOD: YEAR TO DATE																									
		JULY		AUG		SEP		OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUNE			
NO	ITEM	UNIT OF MEASURE	L B A	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR		
				BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET
1	SURFACE TREATMENT (DEPARTMENT FORCES)	MILES	L	560	1648	2011	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2055	2225	2225	2225	2225		
			B	457	1409	1661	1661	1661	1661	1661	1661	1661	1661	1661	1661	1661	1661	1661	1661	1661	1661	1731	1775	1775	1775	1775	
			A	449	1321	1530	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592						
2	SURFACE IMPROV PROD TOTAL	MILES	L	930	2722	3945	5218	5218	5218	5218	5218	5218	5218	5218	5218	5218	5218	5218	5218	5218	5267	5586	5586	5586	5586		
			B	562	2187	2740	3153	3153	3153	3153	3153	3153	3153	3153	3153	3153	3153	3153	3153	3153	3153	3422	3705	3705	3705	3705	
			A	528	1746	2348	2910	2910	2910	2910	2910	2910	2910	2910	2910	2910	2910	2910	2910	2910							
MUNICIPAL CONTRACTS																											
3	POTHOLE PATCHING	NUMBER	L	2	3	5	6	7	9	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
			B	2	3	5	6	7	9	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
			A	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5						
4	COMPREHENSIVE MAINTENANCE	NUMBER	L	3	4	6	7	9	9	11	13	15	18	21	24												
			B	3	4	6	7	9	9	11	13	15	18	21	24												
			A	7	14	16	16	16	16	16	16	16	18	22													
ROUTINE MAINTENANCE																											
5	SHOULDERS CUT (711-215)	MILES	L	2638	5639	8311	11001	12245	12779	13000	13077	13736	14908	17223	20239												
			B	2335	5148	8429	11129	11806	11801	11895	11920	12356	13644	16137	18688												
			A	2672	5992	9067	11194	12009	12291	12296	12351	12446															
6	PIPE & CULVERT REPAIRED/ REPLACED/INSTALLED (711-324)	THOUSAND FEET	L	30	62	91	116	133	147	157	169	210	250	285	312												
			B	32	67	105	148	165	170	171	173	194	232	269	302												
			A	29	69	105	149	171	182	183	189	203															
7	MANUAL PATCHING (711-121)	THOUSAND TONS	L	34	66	90	110	119	129	137	147	168	188	209	233												
			B	22	42	59	73	81	88	93	101	123	152	175	198												
			A	23	43	63	74	84	89	94	115	132															
8	CRACK SEALING (711-128)	THOUSAND GALLONS	L	23	58	96	186	269	321	371	398	450	490	532	567												
			B	31	89	184	337	440	459	468	477	520	583	632	652												
			A	36	93	148	265	346	382	387	425	452															
1	JOINT SEALING (711-147)	THOUSAND GALLONS	L	8	33	61	129	181	229	253	263	288	310	341	396												
			B	17	24	65	161	230	241	248	254	283	313	333	347												
			A	9	18	52	112	155	183	186	201	220															
2	LINE PAINTING	MILES	L	10619	22128	33968	44414	49899	51904	52100	52111	52363	55758	61035	65083												
			B	8776	19729	30472	39894	45761	47070	47070	47070	47872	54211	62686	72878												
			A	8655	23137	36884	50212	57619	60304	60314	60314	60363															
WINTER TRAFFIC SERVICES																											
3	WINTER STORM OCCURRENCES	NUMBER	L	0	0	0	1	19	193	407	703	606	828	828	828												
			B	0	0	0	0	59	299	460	645	884															
			A	0	0	0	0																				
4	SNOW & ICE CONTROL (712-521 & 522)	THOUSAND MILES	L	0	0	0	0	111	965	2485	4001	4290	4504	4504	4504												
			B	0	0	0	0	220	2085	4972	6087	8221															
			A	0	0	0	0																				
5	SALT INVENTORY	THOUSAND TONS	L	32	30	53	181	275	236	189	130	114	106	105	106												
			B	106	106	106	180	275	235	200	100	100	50	50	50												
			A	106	106	106	179	249	175	96	101	31															
6	SALT USAGE	THOUSAND TONS	L	0	0	0	0	4	60	138	216	232	239	242	242												
			B	0	0	0	0	46	139	325	441	465	465	465	465												
			A	0	0	0	0	10	112	310	375	473															
7	SALT USAGE	THOUSAND \$	L	0	0	0	0	94	1508	3551	5600	5989	6167	6420	6420												
			B	0	0	0	0	1242	3753	8775	11907	12555	12555	12555	12555												
			A	0	0	0	0	235	2792	7942	9506	12024															
8	ANTI-SKID USAGE	THOUSAND TONS	L	0	0	0	2	11	171	411	607	659	671	671	671												
			B	0	0	0	0	120	360	840	1140	1200	1200	1200	1200												
			A	0	0	0	0	38	317	803	970	1203															
9	ANTI-SKID USAGE	THOUSAND \$	L	0	0	0	13	64	1032	2474	3676	4007	4067	4067	4067												
			B	0	0	0	0	720	2160	5040	6840	7200	7200	7200	7200												
			A	0	0	0	0	235	1876	4630	5579	6931															
1	EQUIPMENT LEASED	THOUSAND HOURS	L	0	1	1	1	1	3	19	34	61	63	66	66												
			B	1	1	1	1	1	2	30	68	89															
			A	1	1	1	1	1	2	30	68	89															
2	EQUIPMENT LEASED	THOUSAND \$	L	2	23	25	27	38	98	762	1321	2435	2510	2637	2645												
			B	7	18	20	23	28	83	1229	2837	3725															
			A	7	18	20	23	28	83	1229	2837	3725															
3	EQUIPMENT DOT	THOUSAND HOURS	L	0	0	6	17	52	236	768	1422	1551	1700	1762	1764												
			B	1	2	3	14	78	302	1264	1942	2500															
			A	1	2	3	14	78	302	1264	1942	2500															
4	EQUIPMENT DOT	THOUSAND \$	L	1	1	88	220	648	2550	7643	14099	15407	16902	17578	17601												
			B	7	32	44																					

		1983-84 CUMULATIVE PERIOD: YEAR TO DATE												
		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	
NO	ITEM	UNIT OF MEASURE	L	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	
			B BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET
		A	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	
WINTER TRAFFIC SERVICES (CON'T)														
7	AUTOS, TRUCKS AND ROAD EQUIPMENT REMOVED FROM INVENTORY	NUMBER	114	223	380	501	565	740	893	948	1039	1106	1225	1370
		B												
		A	117	266	426	550	665	722	799	904	1070			
TRUCK WEIGHT PROGRAM														
8	WEIGHED	THOUSAND	31.2	72.5	107.8	146.4	172.3	198.9	223.6	255.5	280.6	315.7	347.6	390.6
		L	32.8	68.0	102.2	138.0	164.6	195.1	223.1	239.1	280.9	315.7	347.6	390.6
		B	34.5	71.7	107.7	145.4	173.6	205.7	235.2	265.6	296.1	332.8	366.4	400.0
		A	31.2	72.5	107.8	146.4	172.3	198.9	223.6	255.5	280.6			

FIGURE 6 (continued)

		1983-84 CUMULATIVE PERIOD: YEAR TO DATE												
		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	
NO	ITEM	UNIT OF MEASURE	L	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	LAST YR	
			B BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET
		A	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	
TRUCK WEIGHT PROGRAM														
1	IN VIOLATION	NUMBER	525	1071	1548	2047	2421	2827	3274	3585	4213	4706	5133	5662
		B	516	1073	1613	2179	2601	3083	3525	3902	4439	4990	5493	6000
		A	451	974	1439	1836	2222	2593	2965	3486	3971			
2	FACE VALUE OF FINES	THOUSAND	331.5	734.1	1072.9	1386.7	1695.2	1967.7	2317.3	2492.2	2896.4	3192.0	3476.2	3886.0
		B	343.1	713.5	1072.6	1449.0	1729.6	2050.2	2344.1	2648.0	2951.9	3318.3	3652.8	3990.0
		A	274.6	681.6	1046.8	1321.9	1547.6	1783.6	2024.7	2412.6	2692.6			
3	COLLECTIONS	THOUSAND	221.0	405.2	614.2	747.2	931.4	1088.9	1196.4	1279.3	1390.6	1463.3	1463.3	1604.4
		B												
		A	47.5	136.6	236.9	296.5	335.2	423.4	426.4	612.8	810.4			
4	DESIGN AND CONSTRUCTION VALUE ENGINEERING SAVINGS	THOUSAND	6	559	2226	2798	7826	7920	9864	14651	18106	21900	23839	27817
		B	6	559	2000	3500	4900	6500	7900	9500	10700	12300	13500	15500
		A	138	2477	2693	3733	9685	10085	12909	13586	15207			
OPERATIONS REVIEW														
5	TRAINED OBSERVER	MILES OBSERVED	1398	2605	3535	4814	5813	6262	6308	6333	6683	7418	8195	9248
		B	728	1403	2258	3113	3991	4363	4388	4413	4438	5248	6058	6868
		A	728	1439	2286	3142	3981	4364	4364	4364	4653			

FIGURE 7 Management objectives report: Example of summary statewide truck weight enforcement program.

DISTRICT MANAGEMENT SUMMARY AS OF March 31, 1984												
DISTRICTS:	1	2	3	4	5	6	8	9	10	11	12	Total (All Districts)
(34) Cumulative Bridges Inspected (Fiscal Year to Date)/Total Bridges in District	1094 2437	713 2149	1189 2894	807 2121	798 2246	1475 2945	1330 3506	1048 2426	950 1805	990 1612	968 2789	11362 26930
(35) Traffic Line Miles Painted Calendar Year 1984 to Date vs. 1984 Calendar Year Plan	0 7700	0 7700	0 6200	0 5250	0 8000	0 9200	59 11708	0 8523	0 6900	0 7000	0 5390	59 83171
(36) Road Miles Under Bond/Total Miles in District	133* 4423	255** 3955	5 5051	1 3921	0 3707	4 3811	0 5792	174 3959	793*** 3646	30 1978	222**** 3914	1617 44157
(37) Road Miles Weight Restricted/Total Miles in District	950 4423	799 3955	59 5051	13 3921	24 3707	21 3811	0 5792	690 3959	2011 3646	187 1978	858 3914	5612 44157
(38) Shoulder Cutting Fiscal Year to Date vs. Planned Year to Date (As a Percent)	93	54	118	109	104	96	122	78	104	107	82	100
(38a) Shoulder Cutting Fiscal Year to Date vs. Last Year Fiscal Year to Date (Miles)	1320 1408	962 1032	1569 1083	1105 1868	1105 875	1126 1003	1165 1377	1332 1307	1186 1274	516 514	1060 1995	12446 13736
(39) Pipe Replacement Fiscal Year to Date vs. Planned Year to Date (As a Percent)	117	82	107	130	129	87	106	98	102	117	85	104

*District 1-0 has 104 Type 3 agreements.
 **District 2-0 has 60 Type 3 agreements.
 ***District 10-0 has 153 Type 3 agreements.
 ****District 12-0 has 32 Type 3 agreements.

FIGURE 8 Management objectives report: Example of district management summary (Green Book).

MONTH		ACTIVITY PRODUCTION/COST REPORT		COUNTY MANAGEMENT SUMMARY							RURDATE	PAGE
MARCH, 1984		REDBOOK		04/09/84							1	
ACTIVITY/UNITS		TOTAL	12-1	12-2	12-3	12-4	12-5	12-6	12-7	12-8	12-9	
711-121	ROADS-PAVED TONS PATCHING MANUAL	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	27252 23398 15910 17513 110 74	3161 3516 2143 2131 99 60	2440 2256 1491 1879 126 83		7201 9267 6267 7326 116 79	14442 8359 6009 6177 102 73				
STATE AVG	176.44	DEPT \$ COST/UNIT	157.92	179.26	154.34		163.65	144.91				
711-122	ROADS-PAVED TONS PATCHING MECHANIZED	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	15012 13926 13379 13210 98 94	1916 5101 5101 5077 99 99	1511		6785 6714 6714 6522 97 97	6311 600 400 429 107 71				
STATE AVG	48.42	DEPT \$ COST/UNIT	49.00	45.16	55.33		49.65	67.13				
711-124	ROADS-PAVED GALS SURF TREAT LIQ BIT	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	2430847 449159 455451 504260 110 107 52	579603 46357 46357 46537 100 100 100	401516 119437		559828 30365 289657 342360 118 112 30	889900				
STATE AVG	1.24	DEPT \$ COST/UNIT	1.37				1.37	0.63				
711-127	ROADS-PAVED GALS SKIN PATCH LIQ BIT	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	448122 1187646 748646 851365 113 71 1.50	80968 275100 145100 145631 100 52 1.47	59060 210050 121050 139744 115 66 1.81		164884 257153 197153 198147 100 77 1.48	143210 445343 285343 367843 128 82 1.41				
STATE AVG	2.04	DEPT \$ COST/UNIT	1.50	1.47	1.81		1.48	1.41				
711-128	ROADS-PAVED GALS CRACKSEAL BIT SURF	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	58546 92891 57291 61012 106 65 4.91	14869 21331 12731 10314 81 48 5.50	22215 5900 3900 5621 144 95 6.45		17101 31800 19800 21913 110 68 3.63	4361 33860 20860 23164 111 68 5.49				
STATE AVG	6.67	DEPT \$ COST/UNIT	4.91	5.50	6.45		3.63	5.49				
MONTH	MARCH, 1984								RURDATE	PAGE		
ACTIVITY/UNITS		TOTAL	12-1	12-2	12-3	12-4	12-5	12-6	12-7	12-8	12-9	
711-131	ROADS-PAVED TONS SCRATCH COAT TOM/PVR/FIN	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	177246 70438 67638 70773 104 100 57	27977 8374 8374 8767 104 104 100	12723 19022 19022 19152 100 100 100		55717 23338 23338 23423 100 100 51	80829 19704 16904 19431 114 98				
STATE AVG	33.93	DEPT \$ COST/UNIT	45.60				28.37	40.61				
711-147	ROADS-CONC GALS JOINT SEAL	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	14386 42369 26619 27020 101 63 5.93	4450 2650 1445 54 32 7.30	585 1500 1500 691 46 46 10.48		5382 16850 9800 11560 117 68 4.95	8419 19569 12689 13324 105 68 6.40				
STATE AVG	8.40	DEPT \$ COST/UNIT	5.93	7.30	10.48		4.95	6.40				
711-212	SHOULDERS MILES UNPAVED GRADING	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	494 1134 819 968 118 85 405.64	77 75 55 60 109 80 286.30	3		329 555 375 458 122 82 319.69	85 504 389 450 115 89 509.03				
STATE AVG	397.56	DEPT \$ COST/UNIT	405.64	286.30			319.69	509.03				
711-215	SHOULDERS MILES UNPAVED CUTTING	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	1995 2294 1298 1060 81 46 588.98	567 649 423 325 76 50 524.92	426 408 248 154 62 37 591.62		422 677 467 487 104 71 640.24	580 560 160 94 58 16 540.62				
STATE AVG	622.31	DEPT \$ COST/UNIT	588.98	524.92	591.62		640.24	540.62				
711-312	DRAIN FEET CLEAN DITCH DRAIN CHAN	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	564944 568565 381665 432882 113 76 0.73	134263 191360 151360 126163 83 65 0.61	89504 104300 70400 77644 110 74 0.61		162750 191510 148510 175770 118 91 0.84	178427 81395 11395 53305 467 65 0.79				
STATE AVG	0.99	DEPT \$ COST/UNIT	0.73	0.61	0.61		0.84	0.79				
711-324	REPLACE PIPES FEET PIPES CULVERTS	PRIOR YTD ACTUAL TOTAL ANNUAL PLAN YTD PLAN YTD ACTUAL % YTD PLAN COMPLETE % TTL PLAN COMPLETE % WORK BY CONTRACT	39460 51058 37548 32179 85 62 30.77	12289 11688 8178 6292 76 53 31.31	12939 12531 9231 8323 90 66 29.41		8205 15110 10910 10206 93 67 27.40	6027 12529 9229 7358 79 58 36.52				
STATE AVG	31.00	DEPT \$ COST/UNIT	30.77	31.31	29.41		27.40	36.52				

FIGURE 9 Management objectives report: Example of county management summary (Red Book).

		MONTHLY AVG/UNIT/USE				
DISTRICT	UTILIZATION HOURS/UNIT	ST AVG	121	122	124	125
12	TRUCKS,DUMP	141.5	126.5	99.3	115.3	120.7
	PAVERS	1.3	4.0	***	0.0	0.0
	ROLLERS, 8-15 TONS	3.7	0.5	4.9	2.1	0.2
	SPREADERS,CHIP	1.2	0.0	0.0	0.0	***
	EXCAVATORS	60.8	88.5	53.5	85.2	60.7
	GRADERS	45.1	43.8	17.5	38.1	29.0
	LOADERS	91.6	77.2	63.2	76.3	105.1
	TRACTORS,BACKHOE	51.3	34.8	26.2	36.1	45.5
	COMPRESSORS	33.7	30.7	17.1	74.2	42.1
	ATHEY LOADERS	3.0	68.5	0.0	0.0	0.0
	MAINTAINERS	3.8	***	14.5	32.6	***
	ROLLERS, 0-6 TONS	39.1	34.1	28.6	71.5	57.7
		YEAR-TO-DATE				
	TRUCKS,DUMP	1002.5	097.5	056.0	967.0	1046.1
	PAVERS	239.8	264.4	20.5	411.4	478.5
	ROLLERS, 8-15 TONS	223.5	169.5	179.6	212.1	339.3
	SPREADERS,CHIP	245.9	178.0	151.5	475.2	***
	EXCAVATORS	712.5	850.0	692.5	785.7	936.1
	GRADERS	434.2	361.7	279.4	459.7	488.1
	LOADERS	618.7	431.3	383.9	590.9	782.0
	TRACTORS,BACKHOE	494.5	444.2	472.0	637.1	504.4
	COMPRESSORS	298.7	196.0	111.2	435.2	364.9
	ATHEY LOADERS	308.6	631.0	349.5	394.3	307.5
	MAINTAINERS	146.4	324.5	125.8	261.8	***
	ROLLERS, 0-6 TONS	368.2	361.8	302.8	474.7	431.3

*** - NO EQUIPMENT OF THIS TYPE IN COUNTY FLEET

FIGURE 10 Management objectives report: Example of key equipment utilization report from county management summary (Red Book).

COUNTY ACCREDITATION PROGRAM

1. <u>FIELD OPERATIONS</u>	50%	3. <u>PERSONNEL</u>	10%
Redbook	10%	Sick Leave	3%
Q/A review	10%	Hms Training	2%
Inspec. Rpts.	10%	Disabling Injury	3%
M-681 vs. M-650	10%	MEO Use	2%
Field Safety	10%		
2. <u>EQUIPMENT</u>	30%	4. <u>OFFICE OPERATIONS</u>	10%
P.M.'s	10%	Inventory Control	2%
Utilization	4%	Cash Advancement	2%
Garage Safety	4%	Material Usage	4%
Eq. Work Order	4%	Hms Error Rate	2%
Fleet Accidents	4%		
Repair vs. utiliz.	4%		

1. CATEGORY: FIELD OPERATIONS

A. REDBOOK ACTIVITIES

Standard: Percent of activities within 80-120% plan adherence

- Score: 0 = 0-49%
 1 = 50-59%
 2 = 60-69%
 3 = 70-79%
 4 = 80-89%
 5 = 90-100%

B. QUALITY ASSURANCE

Standard: Average score received for minimum of 3 Q/A reviews conducted during the fiscal year on redbook activities.

- Score: 0 = less than 1
 1 = greater than or = 1
 2 = greater than or = 2
 3 = greater than or = 3
 4 = greater than or = 4
 5 = 5

C. MAINTENANCE PRODUCTION INSPECTION REPORTS

Standard: Number of inspection reports prepared during April 1 through October 31 by the COUNTY MANAGER.

- Score: 0 = less than 10
 1 = 11-14
 2 = 15-19
 3 = 20-24 (minimum of one per foreman)
 4 = 20-34 (minimum of one per foreman)
 5 = 35 (minimum of one per foreman)

D. MAINTENANCE ROADWAY INSPECTION REPORT

Standard: Form M-681 or (approved) equivalent corresponds to six activities scheduled on Form M-650 or (approved) equivalent. Select five examples of each of the following: pipe replacement, shoulder cutting, skin patching, seal coat, joint sealing and mechanized patching.

- Score: 0 = less than 15 matches
 1 = 15-17
 2 = 18-20
 3 = 21-23
 4 = 24-26
 5 = 27-30

E. FIELD SAFETY

Standard: Safety compliance determined through visual inspection in following five areas: proper signing, protective equipment, tailgate safety talks, certified operators, backing alarms.

- Score: 0 = total non-compliance
 1 = compliance achieved in 1 of 5 areas
 2 = " " in 2 of 5 areas
 3 = " " in 3 of 5 areas
 4 = " " in 4 of 5 areas
 5 = " " in 5 of 5 areas

2. CATEGORY: EQUIPMENT

A. EQUIPMENT PREVENTATIVE MAINTENANCE

Standard: Number of pieces of equipment out of 20 (ten #1's, ten #2's) randomly selected pieces that had PM performed within five days of the scheduled date.

- Score: 0 = unintelligible records
 1 = 11 or less
 2 = 12-13
 3 = 14-16
 4 = 17-18
 5 = 19-20

B. EQUIPMENT UTILIZATION

Standard: Extract equipment usage from EMIS files for trucks, rollers, graders, excavators, backhoes, loaders and compressors and compute the percentage of pieces which meet the District/County recommended utilization goals. (equip. must be in the Dept. fleet min. 1 year)

FIGURE 11 Example of county accreditation program.

Score: 0 = 0-49%
 1 = 50-59%
 2 = 60-69%
 3 = 70-79%
 4 = 80-89%
 5 = 90-100%

Score: 0 = 59 or less
 1 = 60-69%
 2 = 70-79%
 3 = 80-89%
 4 = 90-99%
 5 = 100%

C. GARAGE SAFETY

Standard: Compliance, determined through visual inspection in the following areas: material handling, ventilation, protective equipment, working conditions and fire hazards.

Score: 0 = total non-compliance
 1 = compliance achieved in 1 of 5 areas
 2 = " " in 2 of 5 areas
 3 = " " in 3 of 5 areas
 4 = " " in 4 of 5 areas
 5 = " " in 5 of 5 areas

D. EQUIPMENT REPAIR WORK ORDER

Standard: Total points accumulated for 20 randomly selected equipment work orders (same 20 used for PM check) completed within original estimated time frame.

SCORE: 0 = 0-49% (sub) points
 1 = 50-59% 5 = (+ or -) 1 hour of est.
 2 = 60-69% 4 = (+ or -) 1-1/2 hr. of est.
 3 = 70-79% 3 = (+ or -) 2 hr. of est.
 4 = 80-89% 2 = (+ or -) 2-1/2 hr. of est.
 5 = 90-100% 1 = (+ or -) 3 hr. of est.

E. FLEET ACCIDENT RATE

Standard: Must meet established Department goal (4.0) for preventable accidents.

Score: 0 = 8.00 or more
 1 = 7.00-7.99
 2 = 6.00-6.99
 3 = 5.00-5.99
 4 = 4.00-4.99
 5 = 0.00-3.99

F. EQUIPMENT REPAIR COST VERSUS UTILIZATION

Standard: Compare cost per hour of utilization for trucks, rollers, excavators, graders, loaders and backhoes with the state average.

Score: 0 = 31.1% or more above the state average
 1 = 25.1 - 30.0% above
 2 = 20.1 - 25.0% above
 3 = 10.1 - 20.0% above
 4 = (+ or -) 10% of previous f.y. end average
 5 = 10.1% or more below the state average

C. DISABLING INJURY RATE

Standard: Must meet established Department goal (10.00)

Score: 0 = greater than 26.00
 1 = 22.01-26.00
 2 = 18.01-22.00
 3 = 14.01-18.00
 4 = 10.00-14.00
 5 = less than 10.00

D. MEO USE AND EFFECTIVENESS

Standard: MPEP's meet approval in these areas: timeliness, specific objectives, results achieved, training/developmental needs and progress reviews.

Score: 0 = unsatisfactory
 1 = incomplete
 2 = needs improvement
 3 = meets some standards, but needs improvement
 4 = meets most standards, but needs improvement
 5 = meets all standards

4. CATEGORY: OFFICE OPERATIONS

A. INVENTORY CONTROL

Standard: Total inventory value per lane mile (on-hand value equals the average results of four quarterly reviews)

Score: 0 = \$500.00 or more
 1 = \$421.00 - \$499.00
 2 = \$371.00 - \$420.00
 3 = \$311.00 - \$370.00
 4 = \$261.00 - \$310.00
 5 = \$260.00 or less

B. CASH ADVANCEMENT

Standard: Must meet established Department goal (1.0%)

Score: 0 = less than 0.1%
 1 = 0.1%
 2 = 0.2 - 0.29
 3 = 0.3 - 0.69
 4 = 0.7 - 1.00
 5 = more than 1.0

C. MATERIAL USAGE

Standard: Percent of total number of activities within (+ or -) 10% variance on the HMS/AIMS redbook report.

Score: 0 = less than 20%
 1 = 20-39%
 2 = 40-59%
 3 = 60-79%
 4 = 80-99%
 5 = 100%

D. HMS ERROR RATE PERCENTAGES

Standard: Must meet established Department goal. (based on error rates for all twelve months)

Score: 0 = greater than 5%
 1 = 5%
 2 = 4%
 3 = 3%
 4 = 2%
 5 = 1%

3. CATEGORY: PERSONNEL

A. SICK LEAVE PERCENTAGE

Standard: Must meet established Department goal (3.35%)

Score: 0 = greater than 4.30
 1 = 3.06-4.30
 2 = 3.66-3.95
 3 = 3.36-3.65
 4 = 3.01-3.35
 5 = 3.00 or less

B. HMS TRAINING COMPLETION

Standard: Percent of supervisor/management employees with at least one year of service who have completed either "Managing Highway Maintenance" training or "Foreman's Orientation Program."

FIGURE 11 (continued)

BUREAU OF MAINTENANCE & OPERATIONS
 QUALITY ASSURANCE EVALUATION

MANUAL PATCHING

Evaluator _____ District _____
 Date _____ County _____
 LR _____ Sta _____ Sta _____ Foreman _____ # _____

1. PROGRAM PLANNING

Units, FY 81-82 AWP _____ Actual _____
 Units, FY 82-83 AWP _____ Actual _____
 Units, FY 83-84 AWP _____ YTD _____

Yes No

M-650 (or equal) _____

Comments: _____

2. PROJECT COORDINATION

Training: A/V _____ VCR _____ Other _____ None _____

Material Available _____
 Cutting Equipment _____
 Compaction Equipment _____

Comments: _____

3. SCHEDULING

Weekly Schedule to Media _____
 M-6146 Complete _____
 Secondary Activities Identified _____

FIGURE 12 Example of system developed for quality assurance of manual patching.

3. SCHEDULING (cont'd)

PERSONNEL	Perf. Stand.	M-6146	Job Site	Payroll
Operators	1-2			
Highway Maintenance Workers	3			
Foremen	1			
EQUIPMENT				
Crew Cab	1			
Dump Truck	1-2			
Cutting Equipment & Power Source	1			
Tack Coat Appl.	1*			
Compaction Equipment				
Hand tools, Brooms, lutes, S/P shovels				
OTHER				

Comments:

4. MATERIALS

	AIMS	Payroll
Plant Mix		
Type	----- Tons	----- Tons
Type	----- Tons	----- Tons
Tack Coat*	----- Gallons	
Aggregate	----- Tons	
	----- Tons	

Comments:

FIGURE 12 (continued)

5. OPERATIONAL EFFICIENCY

PERSONNEL	Very Effective	Adequate	Requires Training
Demonstrated Performance of-			
Asst. Co. Mgr.	-----	-----	-----
Foreman	-----	-----	-----
Crew	-----	-----	-----

Comments: (Training required)

EQUIPMENT

	Yes	No
No Breakdowns	-----	-----
Sufficient Backup Equipment	-----	-----
M-614	-----	-----

OPERATIONS

Activities Coordinated	-----	-----
------------------------	-------	-------

Comments:

6. PROJECT OPERATIONS

Normal Starting Time	-----	Activity Ending Time	-----
Safety Starting Time	-----	Safety Ending Time	-----
Activity Starting Time	-----	Normal Ending	-----
Start Delay: <14 min	15-29	30-44	45-59 >60

Comments:

MANUAL PATCHING

Evaluator _____ District _____
 Date _____ County _____
 LR _____ Sta _____ Sta _____ Foreman _____ # _____

PROJECT EVALUATION

	Raw Score	Weighted Score
A. Drainage	_____	
Base Repair	_____	
Cutting	_____	
Cleaning	_____	
Tacking*	_____	
Filling	_____	
Material Condition	_____	
Compaction	_____	
Total Raw Score =	_____	
Average Score =	_____	x 0.70 = _____

*Where applicable

The activity is unsatisfactory if any one of the above is less than 3.

B. Marking	_____	
Sealing (Optional)	_____	
Clean Up	_____	
Rideability	_____	
Safety	_____	
Total Raw Score =	_____	
Average Score =	_____	x 0.30 = _____

Activity Rating = _____

Very Good: 4.75 - 5.0 _____ Good: 3.65 - 4.7 _____
 Poor: 2.30 - 3.64 _____ Unsatisfactory: <2.30 _____

Comments:

FIGURE 13 Example of summary sheet for quality assurance of manual patching.

Drainage (not rated if not required)

- 1 - Obvious water problem, no corrective action taken
- 2 - No skin patch, or crack sealing done where patching is done
- 3 - Hand work done to correct deficiencies
- 4 - Skin patching and/or crack sealing done to protect pavement from water. Also minor corrections made
- 5 - U-Drain, subgrade drain, shoulders cut, problem corrected

Base Repair(not rated if not required)

- 1 - Obvious base failure, no corrective action taken
- 2 - Surface repairs made. Base repairs are programmed
- 3 - Partial base repair made
- 4 - Base repair full depth with other than BCBC
- 5 - Problem corrected, base repair full depths w/BCBC

Cutting

- 1 - Not cut mechanically
- 2 - Cut from outside in, cut on curved lines
- 3 - Cut from inside out to sound material (depth & width)
- 4 - Cut from inside out, most edges vertical
- 5 - Cut from inside out, all edges vertical

Cleaning

- 1 - Water, loose material or debris in hole
- 2 - Incomplete cleaning
- 3 - Broomed out - no loose material in corners, clean, damp
- 4 - Same as #5 except damp surface
- 5 - No water, loose material or debris, compressed air used. Dry surfaces

Tacking (where applicable)

- 1 - Not tacked where required
- 2 - Too much or used when not required, improperly applied
- 3 - Non-uniform film, 80% coverage
- 4 - Uniform thin film, brushed 100% coverage
- 5 - Uniform thin film, pressure sprayed. 100% coverage.

Filling

- 1 - Lifts > 3", rake used for distribution
- 2 - Non-uniform lifts, material raked, corners not filled
- 3 - 3" uniform lifts, corners filled, spillage on pavement
- 4 - 3" uniform lifts, corners filled, no spillage, no material added
- 5 - 1" - 3" uniform lifts shoveled in hole, corners filled, no spillage, no segregation, no material added after compaction

Material Condition

- 1 - Hard, lumpy, frozen, stripped, crusted or cold hot mix
- 2 - XXX
- 3 - Useable with reduced workability
- 4 - XXX
- 5 - Within temperature specifications, workable

NOTE: Non-uniform material conditions can reduce rating

Compaction

- 1 - No compaction
- 2 - Compacted, corners and edges not tamped, spillage not removed prior to compaction
- 3 - Finished patch < 1/8" higher than existing surface
- 4 - XXX
- 5 - Finished patch 1/8" - 1/4" high, compaction equipment appropriate for conditions, corners and edges tamped, first pass made against traffic

Marking

- 1 - Not marked
- 2 - Some holes marked
- 3 - General areas to be cut outlined
- 4 - Marked by other crew member
- 5 - Foreman marks areas to be cut with chalk keil, paint, etc.

Sealing(optional)-not rated when not performed

- 1 - Wrong material
- 2 - XXX
- 3 - Proper material, non-uniform application
- 4 - XXX
- 5 - Uniform application, proper material

Clean Up

- 1 - Debris left on pavement and/or piled on shoulders
- 2 - Waste material piled on shoulders
- 3 - No debris on pavement. Evidence remains on shoulder of material removed from hole
- 4 - No debris on pavement, minor debris on shoulder
- 5 - No debris evident on shoulder or pavement

Rideability

- 1 - Any depression or bump > 1/4"
- 2 - > 1/4" bump
- 3 - No depression, < 1/8" high
- 4 - 1/8" - 1/4" above pavement, non-uniform across patch
- 5 - 1/8" - 1/4" above pavement, uniform across the patch

Safety

- 1 - Improper traffic control and personal protective devices
- 2 - XXX
- 3 - Same infractions noted
- 4 - XXX
- 5 - Proper traffic control and personal protective devices

FIGURE 14 Quality assurance evaluation indicators for manual patching.