BEN EPPS FIELD

PAVEMENT EVALUATION REPORT

JULY 2002

GEORGIA AVIATION SYSTEM PLAN

The preparation of this document was financed in part through a planning grant from the Federal Aviation Administration, Department of Transportation, under the provisions of the Airport and Airway Improvement Act of 1982, as amended. This financial commitment is not to be construed that the FAA approves of all the recommendations and does not represent a binding financial obligation to provide federal funding. The contents of this publication reflect the views of the author(s), who is responsible for the facts and accuracy of the data presented herein. The opinions, findings and conclusions in this publication are those of the author(s) and not necessarily those of the Department of Transportation, State of Georgia or the Federal Aviation Administration.

Ben Epps Field

Pavement Evaluation Report

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July 2002

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PAVEMENT EVALUATION REPORT

Introduction

In 2001, the Georgia Department of Transportation (GDOT), Aviation Programs, retained Wilbur Smith Associates, assisted by Applied Pavement Technology, Inc. (APTech), to update the Georgia Aviation System Plan (GASP). APTech's portion of the project involved updating the 1998 State Airport Pavement Management System (APMS) by reevaluating the 94 general aviation airports included in the original APMS plus incorporating eight commercial service airports. The ultimate goal of this project was to provide the airports and the State with the pavement information and analytical tools that can help them identify pavement related needs, optimize the selection of projects and treatments over a multi-year period, and evaluate the long-term impacts of their project priorities.

As part of the GASP Update, an evaluation of the pavement conditions at Athens - Ben Epps Field was conducted in 2001. The results of this evaluation are presented within this report and can be used by GDOT, the Federal Aviation Administration (FAA), and Athens - Ben Epps Field to monitor the condition of pavements and to identify, prioritize, and schedule pavement maintenance and rehabilitation actions at the airport.

Pavement conditions were assessed using the Pavement Condition Index (PCI) procedure – the industry standard in aviation for visually assessing the condition of pavements. During a PCI inspection, inspectors identify signs of deterioration on the surface of the pavement. The types, severities, and amounts of distress present in a pavement are quantified during the pavement survey. This information is then used to develop a composite index (PCI number) that represents the overall condition of the pavement in numerical terms, ranging from 0 (failed) to 100 (excellent).

The PCI number provides an overall measure of condition and an indication of the level of maintenance or rehabilitation work that will be required to maintain or repair a pavement. This number also provides an objective means of prioritizing and scheduling pavement rehabilitation work. Further, the individual distress information, such as cracking or rutting, provides insight into what is causing the pavement to deteriorate. These factors can then be used to select the appropriate maintenance or rehabilitation action to correct the problem. PCI data also serve as the basis for a computerized APMS – a tool that is used to track pavement condition, identify pavement repair needs, and develop prioritized maintenance and rehabilitation programs with associated schedules and budgets.

The importance of identifying not only the best repair alternative, but also the optimal time of repair, is illustrated in Figure 1. This figure shows that during the first 75 percent of the life of a pavement, approximately 40 percent of the pavement deterioration takes place. After this point, the pavement deteriorates much faster. The financial impact of delaying repairs until the second drop in condition can mean repair expenses 4 to 5 times higher than repairs triggered over the first 75 percent of the pavements life. By evaluating the condition of pavements, and using an

APMS to project future pavement condition, the most economical time to apply pavement maintenance and rehabilitation can be identified.

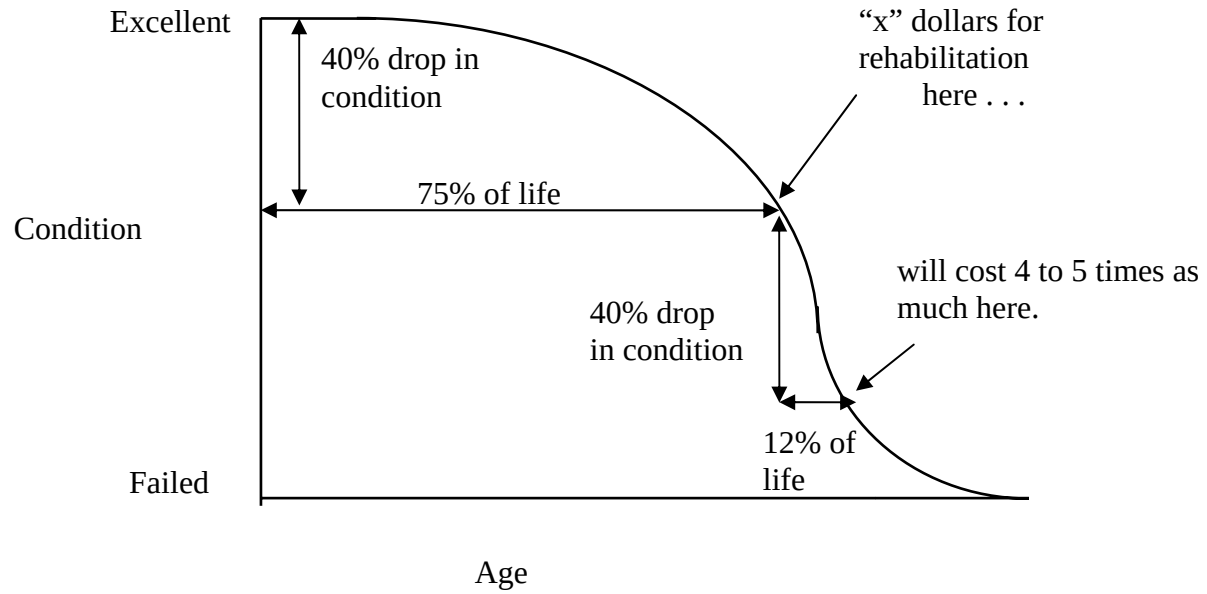


Figure 1. Pavement condition versus cost of repair.

This report contains the results of the 2001 pavement evaluation, as well as a diskette containing the Micro PAVER pavement management software database developed during this project.

Scope of Work

This project included the collection of pavement history information, the development of CAD maps, the evaluation of current pavement condition, and the development of a computerized APMS. The APMS was then used to prepare a 5-year pavement maintenance and rehabilitation program at the state level for the GDOT and the FAA to use as a planning tool.

Individual reports, such as this one, were prepared for each of the project airports to communicate the results of the pavement inspections. A statewide analysis report and an executive summary report were also developed. The statewide analysis report presents the overall results of the study and provides detailed recommendations for future maintenance and rehabilitation actions at the airports. The executive summary presents an overview of the current condition of the State's airports and a summary of the recommended 5-year maintenance and rehabilitation program.

Project Results

Pavement Inventory

Athens - Ben Epps Field has over 1,855,950 square feet of pavement. Figure 2 shows the area of the pavement system, broken out by pavement use (runway, taxiway, and apron). This figure also shows the average age of the pavements.

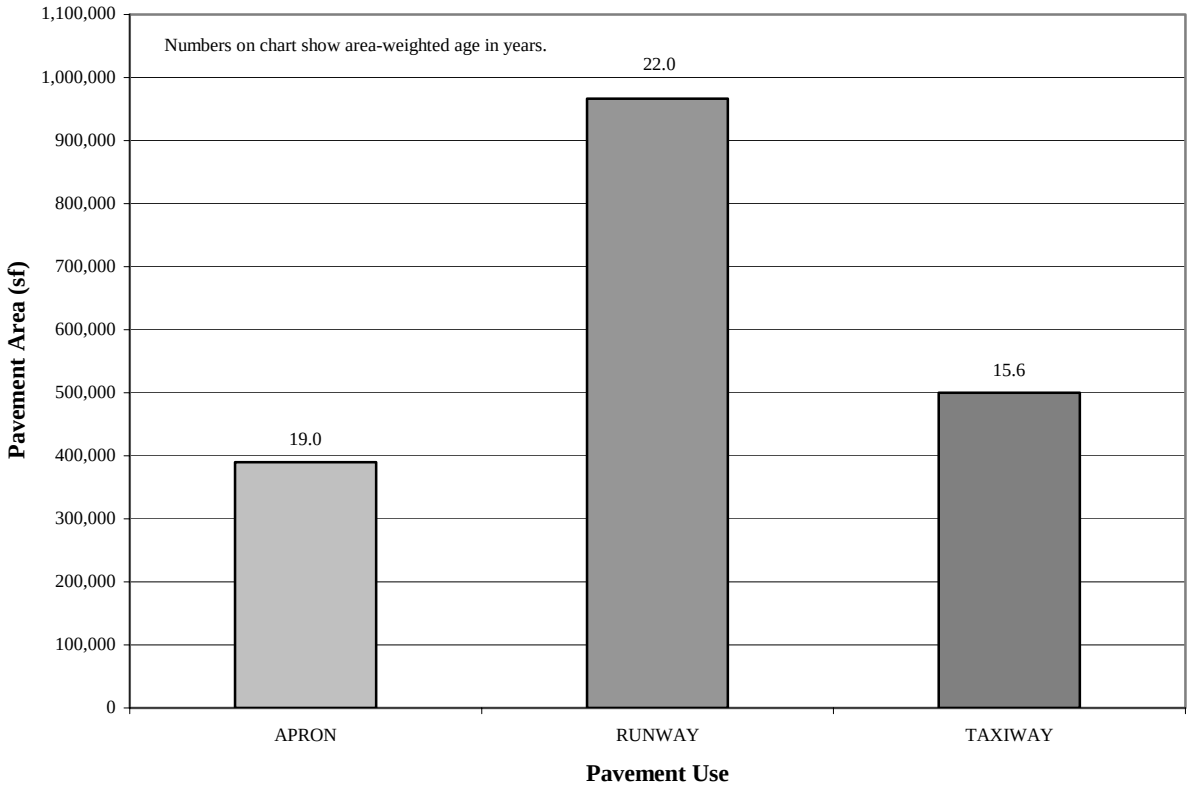


Figure 2. Pavement inventory.

Figure 3 is a network definition map that identifies the pavements at Athens - Ben Epps Field evaluated during this project. This map shows how the pavement network was divided into branches, sections, and sample units for pavement management purposes. It also shows the nomenclature used in the Micro PAVER pavement management database to identify the different pavement areas. Finally, the map summarizes the construction history information compiled during the records review and identifies the areas inspected during the visual survey.

Figure 3. Network Definition Map (11 x 17 except for very large airports that need larger map folded into a map sleeve.

A branch is a single entity that serves a distinct function. For example, a runway is considered a branch because it serves a single function (allowing aircraft to take off and land). Taxiways and aprons are also separate branches.

A branch may be further divided into sections. Traditionally, sections are defined as parts of the branch that share common attributes, such as cross-section, last construction date, traffic level, and performance. Using the traditional approach, if a runway was built in 1968 and then extended in 1984, it would be comprised of two separate sections. A modified approach to defining pavement sections has become increasingly popular with state aviation agencies in recent years and has been adopted by GDOT. The basic premise of this approach is that the section is considered the management unit of the APMS, and that it should represent a pavement area where it is realistic to expect that pavement maintenance or rehabilitation would be undertaken. For example, if a runway was built in 1968 and then extended in 1984, in the database this runway would be represented by a single section, even though there are two distinct construction periods. This is because in the future if repair work is scheduled for that runway it is probable that it will be programmed for the entire runway and not just a portion of it.

To estimate the overall condition of each pavement section, each section is subdivided into sample units. Portions of these sample units are then evaluated during pavement inspections and this information is extrapolated to predict the condition of the section as a whole.

PCI Procedure

APTech inspected the pavements at Athens - Ben Epps Field using the PCI procedure. This procedure is described in FAA AC 150/5380-6 and ASTM Standard D5340. A network-level sampling rate was used during the inspection, and the sample units inspected are identified on the network definition map shown in Figure 3.

The PCI provides a numerical indication of overall pavement condition, as illustrated in Figure 4. The types and amounts of deterioration are used to calculate the PCI value of the section. The PCI ranges from 0 to 100, with 100 representing a pavement in excellent condition. It should be noted that a PCI value is based on visual signs of pavement deterioration and does not provide a measure of structural capacity.

Typical Pavement Surface	PCI
	100
	60
	5

Figure 4. Visual representation of PCI scale.

In general terms, pavements with a PCI of 60 to 100 that are not exhibiting significant load-related distress will benefit from preventive maintenance actions, such as crack sealing and surface treatments. Pavements with a PCI of 40 to 60 may require major rehabilitation, such as an overlay. Often, when the PCI is less than 40, reconstruction is the only viable alternative due to the substantial damage to the pavement structure. Figure 5 illustrates how the appropriate repair type varies with the PCI of a pavement section.

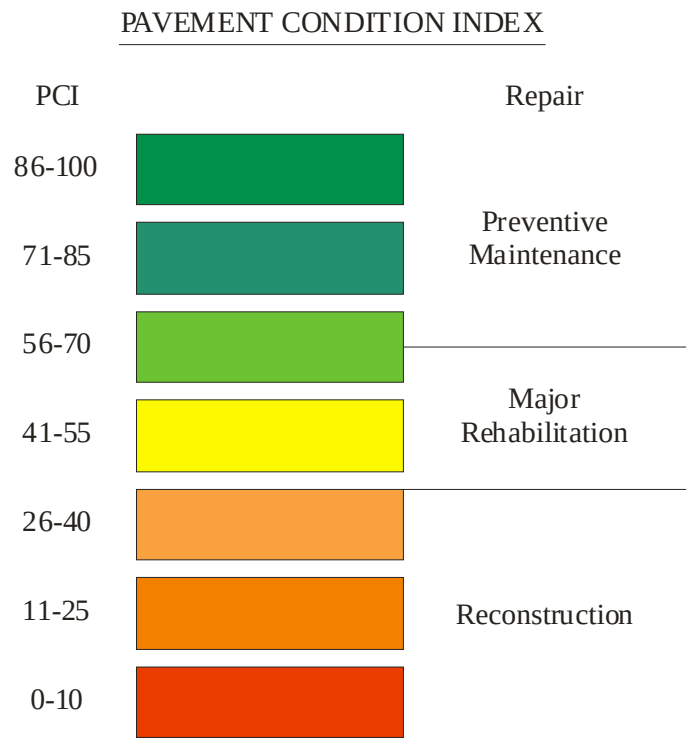


Figure 5. PCI versus repair type.

The types of distress identified during the PCI inspection provide insight into the cause of pavement deterioration. PCI distress types are characterized as load-related (such as alligator cracking on hot-mix asphalt [HMA] pavements or corner breaks on portland cement concrete [PCC] pavements), climate/durability-related (such as weathering [climate-related on HMA pavements) and D-cracking [durability-related on PCC pavements]), and other (distress types that cannot be attributed solely to load or climate/durability). Understanding the cause of distress helps in selecting a rehabilitation alternative that corrects the cause and thus eliminates its recurrence.

Appendix A contains tables for asphalt and concrete pavements indicating the typical types of distresses that may be identified during a PCI survey, the likely cause of each distress type, and feasible maintenance strategies for addressing each distress type.

Inspection Comments

The inspection of Athens-Ben Epps Airport was completed on November 29th, 2001. A total of fifteen sections were defined on the airport comprising the runways, taxiways, and aprons. The following comments discuss the overall condition of each facility.

Runway 9-27

Two sections were defined in Runway 9-27. R927AT-10 consisted of the pavement west of Runway 2-20 and was the largest section of the two. Moderate amounts of low-severity longitudinal and transverse (L&T) cracking, both sealed and unsealed, were observed in the

section. In addition, some medium-severity L&T cracking was found. Raveling and weathering was recorded throughout the section where abrasive methods were used to remove old paint and portions of the surface affected.

R927AT-20 is in similar condition to R927AT-10 with lesser amounts on L&T cracking being observed. Occasional small amounts of medium-severity L&T cracking were also found to exist. A small area of jet blast erosion was observed near the departure end of Runway 27.

Runway 2-20

Runway 2-20 was divided into three sections. RW220AT-10 comprises the pavement north of Runway 9-27. Significant amounts of low and medium-severity L&T cracking were observed throughout the section. Crack sealant that had failed and that was allowing moisture to penetrate into the pavements underlying layers accounted for the majority of L&T cracking that was observed at medium-severity. An area near the intersection of Taxiway A contained a large area of patching. This pavement is in better condition and has distresses that are atypical of those observed throughout the rest of the section which require it to be identified as and additional sample unit.

RW220AT-20 consisted of newer pavement on either side of Runway 9-27. Moderate amounts of low-severity L&T cracking were observed throughout the section. Lesser amounts of medium-severity L&T cracking were also observed.

RW220AT-30 is in fair condition with large amounts of low and medium severity L&T cracking being observed. Failed joint sealant accounted for nearly all of the medium-severity L&T cracking.

Taxiway A

Taxiway A is divided into four sections. TAAT-10 is in good condition with only moderate amounts of low-severity L&T cracking being observed.

Significant amounts of low-severity L&T cracking, both sealed and unsealed, were observed in TAAT-20. In addition to this cracking, large quantities of raveling and weathering were observed throughout the surface of the pavement. Isolated areas of alligator cracking were also observed throughout the section. Areas containing roller marks were identified during the inspection. The cracking associated with the roller marks is starting to form an interconnecting pattern which may be mistaken for alligator cracking in the future. Since these cracks only extend ¼ of an inch into the surface of the pavement they were noted as a blemish and not recorded as a distress.

Low and medium-severity L&T cracking, low and medium-severity block cracking, alligator cracking and raveling and weathering were all observed in TAAT-30. With the exception of alligator cracking, the other distresses were present in large quantities. This section of Taxiway A is in the worst condition of the four.

TAAT-40 is a newer pavement and is in excellent condition. Small amounts of low-severity L&T cracking were observed throughout the section.

Taxiway B

Two sections were defined in Taxiway B. The pavement north of Runway 9-27 comprised section TBAT-10. Large amounts of low-severity L&T and block cracking, both sealed and unsealed, were observed throughout the section. Some isolated amounts of medium-severity L&T cracking were also found. In addition to the cracking, large amounts of raveling and weathering were observed. In some instances, raveling and weathering was observed over the entire pavement surface. Similar to TAAT-30, roller marks were evident over the entire pavement surface and were not recorded as a distress.

TBAT-20 is in better condition then TBAT-10 with moderate amounts of low-severity L&T cracking comprising the majority of the distress that was observed. Smaller amounts of medium-severity cracking and raveling and weathering were also found throughout the section.

Apron

The apron at Athens was divided into three sections. A01AT-10 defines approximately the western ¼ of the apron area. Significant amounts of low and medium-severity L&T cracking were found throughout the section. Failed joint sealant accounted for most of the cracking that was recorded at medium-severity. Large amounts of raveling and weathering were also observed throughout the section. An isolated area containing significant amounts of alligator cracking was identified and inspected as an additional sample unit.

A01AT-20 is in better condition then A01AT-10. Significant amounts of low-severity L&T cracking were observed throughout the section. Some areas on the eastern portion of the section contained large amounts of low-severity block cracking. Isolated amounts of medium-severity L&T and block cracking were also observed. The pavement has had a surface treatment applied to it. In many areas thermal cracking in this surface treatment is beginning to resemble alligator cracking. This thermal cracking is only associated with the surface treatment and was not recorded as a distress.

A01AT-30 is in similar condition to A01AT-20 with significant amounts of low-severity L&T cracking being observed throughout the section. Moderate amounts of medium-severity L&T cracking were also observed. A few isolated areas of swell, associated with the L&T cracking, were found in the section.

T-hangar Taxiways

Two taxiways leading into the t-hangars near the northeastern portion of the apron are defined in this facility. THANGAT-10 is in good condition with only moderate amounts of low-severity L&T cracking and an isolated area of patching being found in the section.

Overall Pavement Condition

The 2001 area-weighted condition of Athens - Ben Epps Field is 68, with conditions ranging from 41 to 93 [on a scale of 0 (failed) to 100 (excellent)]. Figures 6 and 7 provide graphs summarizing the overall condition of the pavements at Ben Epps Field. Figure 8 is a map that displays the condition of the pavements evaluated. Table 1 summarizes the results of the pavement evaluation.

Appendix B presents photographs taken during the PCI inspection, and Appendix C contains a detailed inspection report. The detailed inspection report provides information on the quantity of the different types and severities of distresses observed during the visual survey.

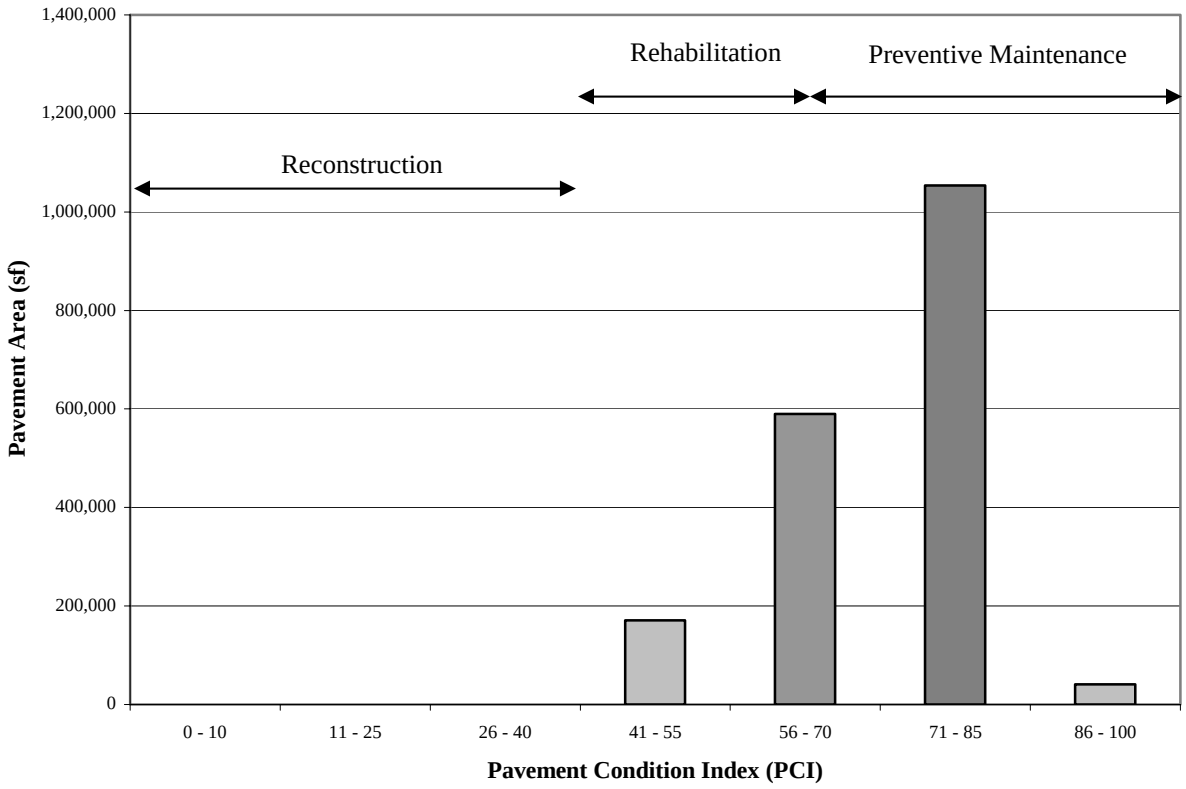


Figure 6. Condition distribution.

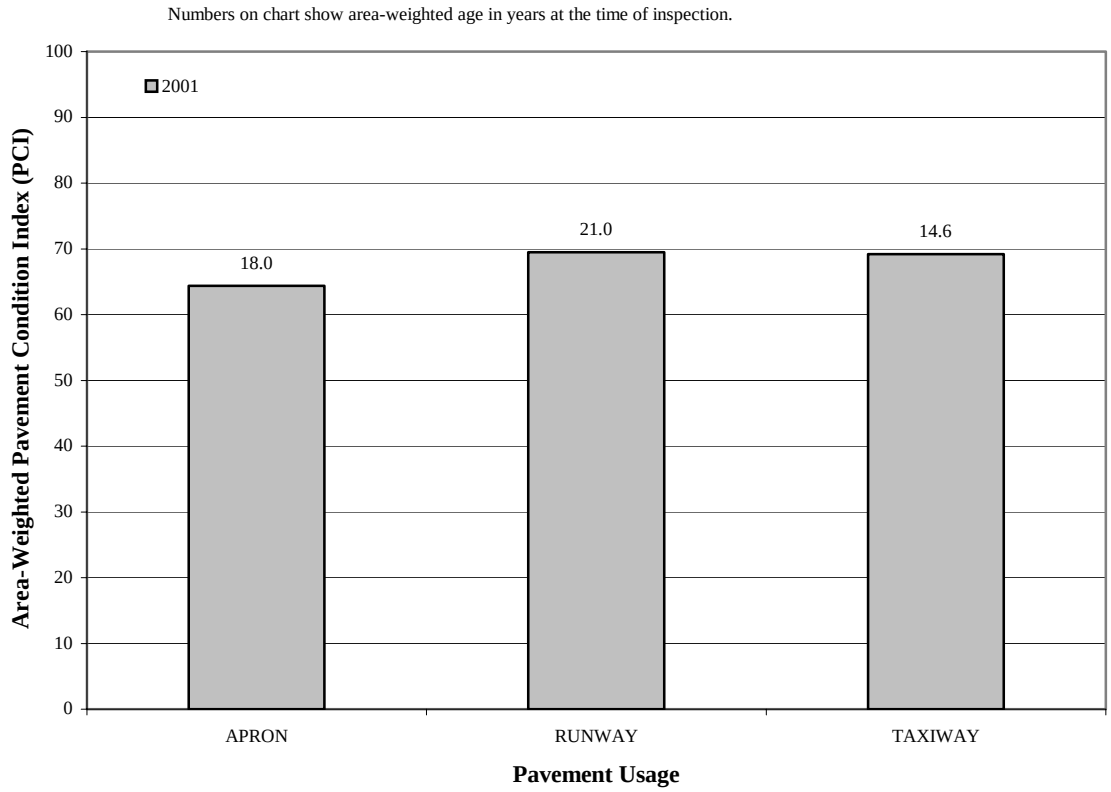
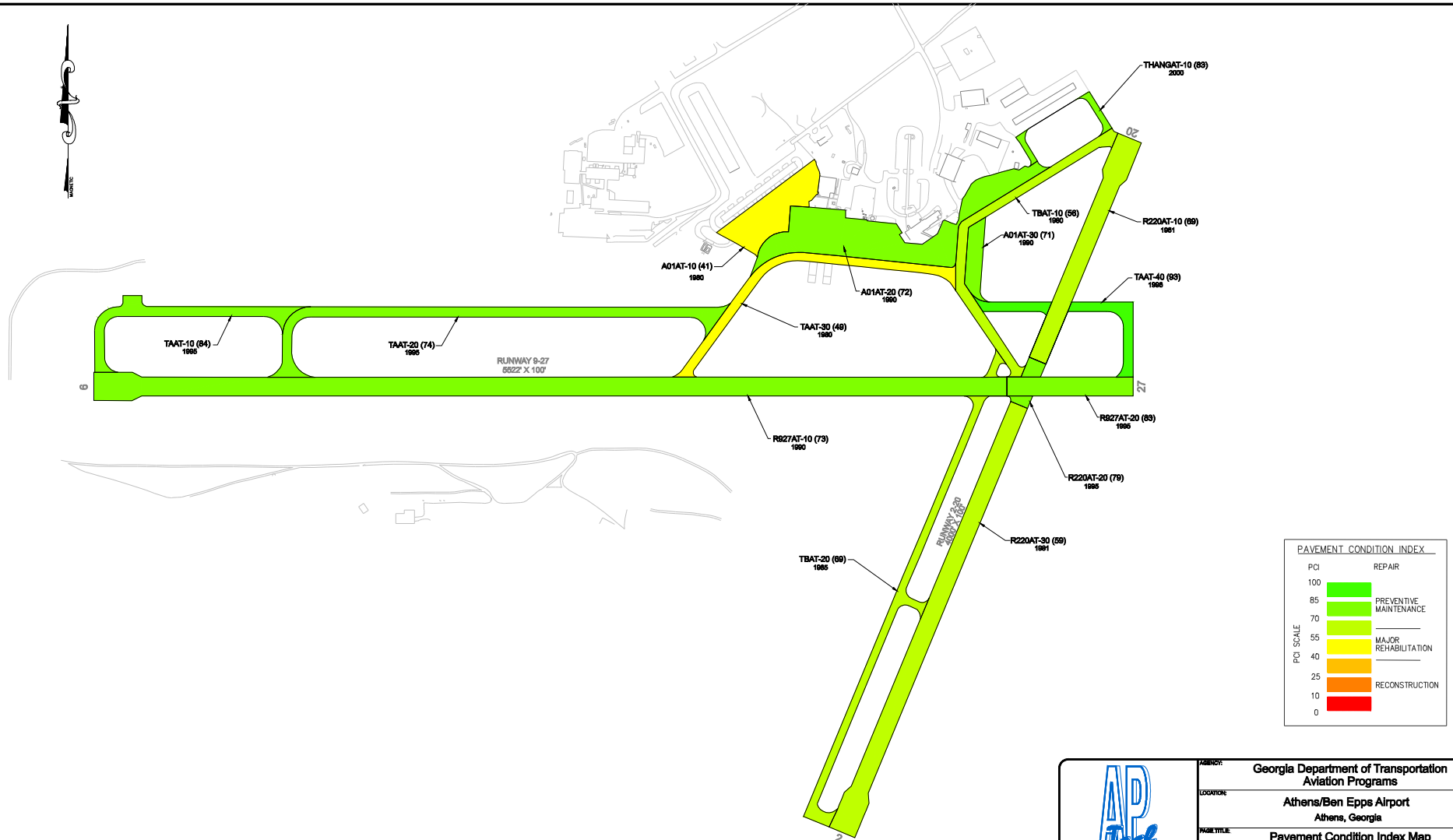


Figure 7. Condition by use.



Applied Pavement Technology, Inc.

AGENCY:	Georgia Department of Transportation Aviation Programs
LOCATION:	Athens/Ben Epps Airport Athens, Georgia
PAGE TITLE:	Pavement Condition Index Map

PROJECT DATE:	CREATION DATE:	PROJECT MANAGER:	JOB NUMBER:
19-Dec-02	19-Dec-02	MRB	00-060-AM1
DRAWING SCALE:	**LAST MODIFIED DATE:**	**REVISED BY:**	**DRAWN BY:**
1" = 500'	8/1/2002	AMR	KMP
FILENAME:		**LAYOUT NAME/NUMBER:**	**PAGE NUMBER:**
Athens.dwg		1	1

Figure 8. INSERT PCI MAP
(11 x 17)

Table 1. 2001 pavement inspection results.

ATHENS - BEN EPPS FIELD								
BRANCH ID	SECTION ID	SURFACE TYPE [1]	SECTION AREA (sf)	LCD [2]	2001 PCI	% Distress due to:		DISTRESS TYPES [5]
						LOAD [3]	CLIMATE OR DURABILITY [4]	
A01AT	10	AC	95,000	1980	41	9	91	ALLIGATOR CR, WEATH/RAVEL, L & T CR
A01AT	20	AAC	260,000	1984	72	0	100	BLOCK CR, L & T CR
A01AT	30	AC	34,800	1984	71	0	98	SWELLING, L & T CR
R220AT	10	AAC	136,800	1975	69	0	100	PATCHING, L & T CR
R220AT	20	AC	15,000	1995	79	0	100	L & T CR
R220AT	30	AAC	256,250	1975	59	0	100	BLOCK CR, L & T CR
R927AT	10	AC	491,250	1982	73	0	100	WEATH/RAVEL, L & T CR
R927AT	20	AC	67,000	1991	83	0	100	JET BLAST, L & T CR
TAAT	10	AC	63,550	1995	84	0	100	L & T CR
TAAT	20	AC	109,500	1995	74	26	74	ALLIGATOR CR, WEATH/RAVEL, L & T CR
TAAT	30	AC	76,000	1979	49	32	68	ALLIGATOR CR, L & T CR, WEATH/RAVEL, RUTTING, BLOCK CR
TAAT	40	AC	41,200	1998	93	0	100	L & T CR
TBAT	10	AC	81,000	1979	56	9	91	ALLIGATOR CR, BLOCK CR, L & T CR, PATCHING, WEATH/RAVEL
TBAT	20	AC	116,000	1979	69	0	99	L & T CR, WEATH/RAVEL, DEPRESSION
THANGAT	10	AC	12,600	1989	83	0	100	PATCHING, L & T CR

NOTES:

[1] See Figure 3 for the location of the branch.

[2] AC = asphalt cement concrete; AAC = asphalt overlay on AC; PCC = portland cement concrete; APC = asphalt overlay on PCC.

[3] LCD = last construction date.

[4] Distress due to load includes those distresses attributed to a structural deficiency in the pavement, such as alligator (fatigue) cracking, rutting, or shattered concrete slabs.

[5] Distress due to climate or durability includes those distresses attributed to either the aging of the pavement and the effects of the environment (such as weathering and raveling or block cracking in asphalt pavements) or to a materials-related problem (such as durability cracking in a concrete pavement).

[6] L & T CR = longitudinal and transverse cracking.

5-Year Pavement Maintenance and Rehabilitation Recommendations

As part of the statewide analysis, a 5-year pavement maintenance and rehabilitation program was developed for Athens - Ben Epps Field. The initial steps in generating this program were developing maintenance policies and determining unit cost information for maintenance and rehabilitation actions. A copy of this information is provided in Appendix D. Please note that this information was developed in conjunction with the GDOT and is of a general nature for the entire state.

For purposes of this analysis, pavement repair was categorized as follows:

- major rehabilitation (reconstruction, overlay), and
- localized preventive maintenance (a preventive maintenance action that is applied only to a distressed area, such as crack sealing or patching).

Many budget scenarios were investigated during the statewide analysis, and the results of those may be found in the statewide detailed analysis report. For the purposes of this report, however, only the results of the unlimited budget scenario (where all identified projects are funded) are presented. The analysis results identify those pavement areas that are predicted to need major rehabilitation within the next 5 years, as well as those recommended for preventive maintenance actions.

An unlimited budget was used in the analysis with the goal of maintaining the pavement above its critical PCI value. For runway pavements this value is 70. The rest of the pavements on the airport were assigned a value of 65. In general, preventive maintenance is recommended for pavements with a PCI above the critical value while major rehabilitation is recommended for pavements that have a PCI below the critical value. An inflation rate of 3 percent was used during the analysis.

A summary of the 5-year pavement maintenance and rehabilitation program is presented in Table 2. Detailed information on the recommendations for localized maintenance in Year 1 of the analysis is contained in Appendix E and Appendix F. In Year 1, all distresses observed during the inspection are considered in determining viable localized maintenance projects. Preventive maintenance recommendations that are identified in subsequent years only address crack sealing those cracks in asphalt pavements that were rated as low severity at the time of inspection.

Note that these recommendations are based upon a broad network level analysis and are meant to provide the Airport with an indication of the type of pavement-related work required during the next 5 years. Further engineering investigation will need to be performed to identify exactly which repair action is most appropriate and to more accurately estimate the cost of such work. In addition, the cost estimates provided were based on a statewide policy and each airport should adjust the maintenance policies and unit costs to match its own approach to pavement maintenance and to reflect local costs.

Major rehabilitation projects may be clustered in the first year of the analysis. Obviously, for economic and operational reasons, this work will often need to be distributed over several years. It is important to remember that regardless of the recommendations presented within this report, the Airport is responsible for repairing pavements where existing conditions pose a hazard to safe operations.

Table 2. 5-year program under an unlimited funding analysis scenario.

Branch[1]	Section	Year	Type of Repair[2]	Estimated Cost[3]
R220AT	10	2002	Major M&R	$224,962
R220AT	30	2002	Major M&R	$508,006
R927AT	10	2002	Preventive	$14,581
TAAT	30	2002	Major M&R	$253,420
TBAT	10	2002	Major M&R	$201,647
TBAT	20	2002	Preventive	$4,925
A01AT	10	2002	Major M&R	$316,775
A01AT	30	2002	Preventive	$3,484
A01AT	20	2004	Major M&R	$453,597
R927AT	10	2005	Major M&R	$882,749
R220AT	20	2006	Preventive	$3,471
R927AT	20	2006	Preventive	$14,443
TAAT	10	2006	Preventive	$13,095
TAAT	20	2006	Preventive	$30,452
TAAT	40	2006	Preventive	$2,514
TBAT	20	2006	Major M&R	$214,699
A01AT	30	2006	Major M&R	$64,410
THANGAT	10	2006	Preventive	$1,559

[1]See Figure 3 for the location of the branch.

[2]Major Rehabilitation: overlay, mill and overlay, reconstruction, and so on;
Preventive Maintenance: crack sealing, patching, joint resealing, and so on.

[3]Cost estimates based on broad statewide policy and should be adjusted to reflect local costs.

Summary

This report documents the results of the pavement evaluation conducted at Athens - Ben Epps Field. During a visual inspection of the pavements in 2001, it was found that the overall condition of the pavement network is a PCI of 68. A 5- year pavement repair program was generated for the Airport, which revealed that approximately $3,208,789 needs to be expended on the pavement system in order to maintain and improve its condition. If this program is followed, over the next 5 years the pavement system will improve from an overall area-weighted PCI value of 68 to approximately a PCI of 91. If money is not expended on pavement maintenance and rehabilitation, it is predicted that the overall area-weighted PCI of the pavement network will drop from 68 to 61.

APPENDIX A

CAUSE OF DISTRESS TABLES

Table A-1. Cause of pavement distress, asphalt-surfaced pavements.

Distress Type	Probable Cause of Distress	Feasible Maintenance Strategies
Alligator Cracking	Fatigue failure of the asphalt concrete surface under repeated traffic loading	If localized, partial- or full-depth asphalt patch. If extensive, major rehabilitation needed.
Bleeding	Excessive amounts of asphalt cement or tars in the mix and/or low air void content	Spread heated sand, roll, and sweep. Another option is to plane excess asphalt. Or, remove and replace.
Block Cracking	Shrinkage of the asphalt concrete and daily temperature cycling; it is not load associated	At low severity levels, crack seal and/or surface treatment. At higher severities, consider overlay.
Corrugation	Traffic action combined with an unstable pavement layer	If localized, mill. If extensive, remove and replace.
Depression	Settlement of the foundation soil or can be "built up" during construction	Patch.
Jet Blast	Bituminous binder has been burned or carbonized	Patch.
Joint Reflection	Movement of the concrete slab beneath the asphalt concrete surface because of thermal and moisture changes	At low and medium severities, crack seal. At higher severities, especially if extensive, consider overlay.
Longitudinal and Transverse Cracking	Cracks may be caused by 1) poorly constructed paving lane joint, 2) shrinkage of the AC surface due to low temperatures or hardening of the asphalt, or 3) reflective crack caused by cracks in an underlying PCC[1] slab	At low and medium severity levels, crack seal. At higher severities, especially if extensive, consider overlay options.
Oil Spillage	Deterioration or softening of the pavement surface caused by the spilling of oil, fuel, or other solvents	Patch.
Patching	N/A	Replace patch if deteriorated.
Polished Aggregate	Repeated traffic applications	Aggregate seal coat is one option. Could also groove or mill. Overlay is another option.
Raveling and Weathering	Asphalt binder may have hardened significantly	Patch if isolated. If low-severity, consider surface treatment if extensive. At medium and high severity levels, consider major rehabilitation if extensive.
Rutting	Usually caused by consolidation or lateral movement of the materials due to traffic loads	Patch medium and high severity levels if localized. If extensive, consider major rehabilitation.
Shoving	Where PCC pavements adjoin flexible pavements, PCC "growth" may shove the asphalt pavement	Mill and patch as needed.
Slippage Cracking	Low strength surface mix or poor bond between the surface and next layer of pavement structure	Partial- or full-depth patch.
Swelling	Usually caused by frost action or by swelling soil	Patch if localized. Major rehabilitation if extensive.

[1]PCC: portland cement concrete

Table A-2. Cause of pavement distress, portland cement concrete pavements.

Distress Type	Probable Cause of Distress	Feasible Maintenance Strategies
Blow-Up	Incompressibles in joints	Partial- or full-depth patch. Slab replacement.
Corner Break	Load repetition combined with loss of support and curling stresses	Seal cracks at low severity. Full-depth patch.
Cracks	Combination of load repetition, curling stresses, and shrinkage stresses	Seal cracks. At high severity, may need full-depth patch or slab replacement.
Durability Cracking	Concrete's inability to withstand environmental factors such as freeze-thaw cycles	Full-depth patch if present on small amount of slab. At higher severity levels, once it has appeared on most of slab, slab replacement.
Joint Seal Damage	Stripping of joint sealant, extrusion of joint sealant, weed growth, hardening of the filler (oxidation, loss of bond to the slab edges, or absence of sealant in joint	Replace joint seal.
Patching (Small and Large)	N/A	Replace patches if deteriorated.
Popouts	Freeze-thaw action in combination with expansive aggregates	Monitor.
Pumping	Poor drainage, poor joint sealant	Seal cracks and joints. Underseal is an option if voids have developed. Establish good drainage.
Scaling	Overfinishing of concrete, deicing salts, improper construction, freeze-thaw cycles, poor aggregate, and alkali-silica reactivity	At low severity levels, do nothing. At medium and high severity levels, partial-depth patches or slab replacement.
Settlement	Upheaval or consolidation	At higher severity levels, leveling patch or grind to restore smooth ride.
Shattered Slab	Load repetition	Replace slab.
Shrinkage	Setting and curing of the concrete	Monitor.
Spalling (Joint and Corner)	Excessive stresses at the joint caused by infiltration of incompressible materials or traffic loads; weak concrete at joint combined with traffic loads	Partial-depth patch.

APPENDIX B

PHOTOGRAPHS

Overview of section R220AT-10.

Overview of an additional sample unit in section R220AT-10.

Overview of section R220AT-20.

Overview of section R220AT-30.

Raveling and weathering in section R927AT-10.

Overview of section R927AT-20.

Jet blast erosion in section R927AT-20.

Overview of section TAAT-10.

Overview of section TAAT-20.

Roller marks in section TAAT-20.

Overview of section TAAT-30.

Alligator cracking in section TAAT-30.

Overview of section TAAT-40.

Overview of section TBAT-10.

Raveling and weathering in section TBAT-10.

Overview of section TBAT-20.

Overview of section A01AT-10.

Overview of section A01AT-20.

Overview of section A01AT-30.

Overview of section THANGAT-10.

APPENDIX C

INSPECTION REPORT

APPENDIX D

MAINTENANCE POLICIES AND UNIT COSTS

Table D-1. GDOT's preventive maintenance policy, asphalt-surfaced pavements.

Distress Type	Severity Level	Maintenance Action
Alligator Cracking	Low	Monitor
	Medium	Patch (major rehabilitation if extensive)
	High	Patch (major rehabilitation if extensive)
Bleeding	N/A	Monitor (major rehabilitation required if skid resistance significantly impacted by the distress)
Block Cracking	Low	Monitor
	Medium	Crack Seal
	High	Crack Seal (major rehabilitation if extensive)
Corrugation	Low	Monitor
	Medium	Patch (major rehabilitation if extensive)
	High	Patch (major rehabilitation if extensive)
Depression	Low	Monitor
	Medium	Patch
	High	Patch
Jet Blast	N/A	Patch
Joint Reflection Cracking	Low	Monitor
	Medium	Crack Seal
	High	Crack Seal (major rehabilitation if extensive)
Longitudinal and Transverse Cracking	Low	Monitor
	Medium	Crack Seal
	High	Crack Seal (major rehabilitation if extensive)
Oil Spillage	N/A	AC Patch
Patching	Low	Monitor
	Medium	Monitor
	High	Patch
Polished Aggregate	N/A	Monitor (major rehabilitation required if skid resistance significantly impacted by the distress)
Raveling and Weathering	Low	Monitor (global preventive maintenance action such as surface treatment if extensive)
	Medium	Patch if localized
	High	Patch if localized
Rutting	Low	Monitor
	Medium	Patch (major rehabilitation if extensive)
	High	Patch (major rehabilitation if extensive)
Shoving	Low	Monitor
	Medium	Patch
	High	Patch
Slippage Cracking	N/A	Patch (major rehabilitation if extensive)
Swelling	Low	Monitor
	Medium	Patch
	High	Patch

Table D-2. GDOT's preventive maintenance policy, portland cement concrete pavements.

Distress Type	Severity Level	Maintenance Action
Blow-Up	Low	Patch
	Medium	Patch
	High	Patch
Corner Break	Low	Crack Seal
	Medium	Crack Seal
	High	Patch
Cracks	Low	Crack Seal
	Medium	Crack Seal
	High	Crack Seal
Durability Cracking	Low	Monitor
	Medium	Patch
	High	Slab Replacement
Joint Seal Damage	Low	Monitor
	Medium	Joint Seal
	High	Joint Seal
Patching	Low	Monitor
	Medium	Patch
	High	Patch
Popouts	N/A	Monitor
Pumping	N/A	Monitor
Scaling	Low	Monitor
	Medium	Slab Replacement
	High	Slab Replacement
Settlement	Low	Monitor
	Medium	Monitor
	High	Grinding
Shattered Slab	Low	Crack Seal
	Medium	Slab Replacement
	High	Slab Replacement
Shrinkage	N/A	Monitor
Spalling (Joint and Corner)	Low	Monitor
	Medium	Patch
	High	Patch

Table D-3. Unit costs for GDOT preventive maintenance actions, commercial service airports.

Maintenance Action	Unit Cost ($/sf)
Patching	2.55
Crack Sealing	3.20
Slab Replacement	5.10
Joint Sealing	4.00
Grinding	50.00

Table D-4. GDOT's unit costs based on PCI ranges, commercial service airports.

	PCI Range							
Work Type	0 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89	> 89
Major Rehabilitation: CS	$30.01/sy	$30.01/sy	$30.01/sy	$14.80/sy	$14.80/sy	$14.80/sy	$10.71/sy	$10.71/sy

APPENDIX E

YEAR 2002 MAINTENANCE PLAN
ORGANIZED BY SECTION

Table E-1. 2002 maintenance plan organized by section.

Plan Year	Network	Branch	Section	Distress Description	Severity	Work Description	Work Qty.	Work Unit	Unit Cost	Work Cost
2002	ATHENS	A01AT	30	L & T CR	M	Crack Sealing	1,089	LF	$3.20	$3,484
2002	ATHENS	R927AT	10	L & T CR	M	Crack Sealing	4,557	LF	$3.20	$14,581
2002	ATHENS	TBAT	20	L & T CR	M	Crack Sealing	1,539	LF	$3.20	$4,925

APPENDIX F

YEAR 2002 MAINTENANCE PLAN
ORGANIZED BY REPAIR TYPE

Table F-1. 2002 maintenance plan organized by repair type.

Plan Year	Network	Branch	Section	Distress Description	Severity	Work Description	Work Qty.	Work Unit	Unit Cost	Work Cost
2002	ATHENS	A01AT	30	L & T CR	M	Crack Sealing	1,089	LF	$3.20	$3,484
2002	ATHENS	R927AT	10	L & T CR	M	Crack Sealing	4,557	LF	$3.20	$14,581
2002	ATHENS	TBAT	20	L & T CR	M	Crack Sealing	1,539	LF	$3.20	$4,925