U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Airport Pavement Management Program (PMP)	**Date:** DRAFT **Initiated by:** AAS-100	**AC No:** 150/5380-7B **Change:**

1. What is the purpose of this advisory circular (AC)?

This advisory circular (AC) discusses the Airport Pavement Management Program (PMP) concept, its essential components, and how it is used to make cost-effective decisions about pavement maintenance and rehabilitation (M&R). The terms "pavement management program (PMP)," "pavement maintenance-management program (PMMP)," and "pavement management system (PMS)" are interchangeable.

A PMP is a set of defined procedures for collecting, analyzing, maintaining, and reporting pavement data. A PMP assists airports in finding optimum strategies for maintaining pavements in a safe serviceable condition over a given period for the least cost. A PMP should take into account not only inspection procedures and condition assessment, maintenance protocols and procedures, management and oversight of completed works, but also staff competence needs.

2. Does this AC cancel any prior ACs?

This AC cancels AC 150/5380-7A, Airport Pavement Management Program, dated September 1, 2006.

3. To whom does this AC apply?

a. This AC is intended for airport owners, state aviation organizations, engineers, and maintenance personnel responsible for implementing a PMP. Obligated airports must perform a detailed inspection of airfield pavements at least once a year for the PMP. If a pavement condition index (PCI) survey is performed, as set forth in ASTM D5340, Standard Test Method for Airport Pavement Condition Index Surveys, the frequency of the detailed inspections by PCI surveys may be extended to three years. The PMP inspections are in addition to routine maintenance inspections for operations.

b. The Federal Aviation Administration (FAA) recommends the guidance in this AC. Use of this AC is mandatory for all projects funded with federal grant monies through the Airport Improvement Program (AIP) and/or with revenue from the Passenger Facility Charges (PFC) Program. See Grant Assurance No. 34, Policies, Standards, and Specifications, and PFC Assurance No. 9, Standards and Specifications.

AIP Grant Assurance No. 11, Pavement Preventive Maintenance, requires an airport sponsor to assure or certify that it has implemented an effective airport pavement maintenance management program and it assures that it will use such program for the useful life of any pavement constructed, reconstructed or repaired with Federal financial assistance at the airport with respect to projects approved after January 1, 1995. The basic requirements for the PMP are defined in this AC. FAA Order 5100.38, Airport Improvement Program Handbook, provides guidance and sets forth policies and procedures for the administration of the AIP including eligibility and justification requirements.

4. What are the principal changes in this AC?

a. Included airfield inspection frequency requirement in paragraph 3.a, above, and Appendix A.

b. Added information on requirements to implement a PMP in paragraph 3.b, i.e., AIP Grant Assurance 11.

c. Added discussion on pavement preservation concept and new Figure 2 to paragraph 2.0.

d. Added new Appendix A, Pavement Management Program (PMP), which addresses minimum PMP requirements. This information was previously included in AC 150/5380-6, Guidelines and Procedures for Maintenance of Airport Pavements.

e. Added new Appendix B, Pavement Condition Index (PCI) Method.

f. Added new Appendix C, Paver™ Distress Identification Manuals, with link to manuals.

g. Updated Appendix D, Related Reading Material.

5. Where can I send comments or suggestions to the AC? Send comments or suggestions for improving this AC to—

Manager, Airport Engineering Division
Federal Aviation Administration
ATTN: AAS-100
800 Independence Avenue SW
Washington DC 20591

6. Where can I get copies of this AC?

All Office of Airport Safety and Standards ACs are available online at:
http://www.faa.gov/airports_airtraffic/airports/resources/advisory_circulars/.

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1.0 Background.

Historically, some airport owners have made decisions about pavement maintenance and rehabilitation (M&R) based on immediate need or experience rather than long-term planning or documented data on effective M&R methods. This approach did not allow the airport owner to evaluate the cost effectiveness of alternative M&R strategies, and it led to the inefficient use of available M&R funds.

Every airport owner must decide the most cost effective way to allocate available funds. This has typically been done based on either experience or the existing condition of the pavement. Using the experience approach, the airport staff applies M&R procedures which their experience indicates is the best solution for the problem. This approach typically results in the repeated application of a few select alternatives which may not lead to a preferred rehabilitation strategy, considering pavement performance and life-cycle cost. Using the existing condition approach, the pavement network is evaluated by its condition indicators. M&R alternatives, based on these indicators, are chosen based solely on the condition of the pavement, which may not be the most efficient alternative, and does not take into account life-cycle cost comparisons between M&R alternatives.

Because these approaches have worked reasonably well in the past, some airports have adopted them as standard procedures. Due to limited funds for M&R and new technologies offering additional options, these approaches fail to answer some basic questions. For example, if you are planning a pavement rehabilitation project such as an overlay, how do you make the best decision if funds are only available to do a full 4-inch overlay over half the pavement in need of M&R in a given funding year? Will there be sufficient funding in the next funding cycle to complete the full 4-inch overlay on the remaining pavements? Should you do a 2-inch overlay over all the pavement this year? What is the effect on the pavement since these decisions impact future pavement conditions? What course(s) of action do you take and what are the consequences?

The selection of the best course of action can be determined based on the predicted effects of each action. For example, by placing a thin overlay on all pavements, there will be an immediate improvement to all the pavements. However, due to rapid deterioration of the overlays, there will probably be a need for further rehabilitation in a short period of time. If, in addition to other pavements needing work, some of the overlaid pavements need rehabilitation action again next year, the overall condition of the pavement network will eventually deteriorate. Alternatively, if a few selected pavements receive the full thickness overlay, they will not need rehabilitation for many years. During subsequent years, remaining pavements can then receive full thickness overlays, so the number of pavements needing rehabilitation will ultimately decrease. With this strategy, however, overall pavement condition will be worse in the short term because pavements that were not overlaid will continue to deteriorate until they are rehabilitated.

To determine which of these actions is preferable, you must be able to predict the future consequences of the various scenarios. This requires an understanding of the life span of the M&R method selected, i.e., in our example, a thick (e.g., 4-inch) versus thin (2-inch) overlay. Airports must also have a good understanding of the rate of pavement deterioration, with and

without maintenance, and the causes of current pavement deterioration such as environmental or pavement loading conditions. Predicting consequences of M&R scenarios requires experience and the application of best practices and engineering judgment in the decision-making process.

The implementation of a pavement management program (PMP) improves the decision-making process, expands its scope, allows for feedback based on choices made, and ensures that consistent decisions are made throughout an organization. If the consequences are predicted using a predetermined methodology, such as a PMP, it becomes possible to analyze previous predictions and improve on the prediction procedure over a period of time—regardless of management or staff turnover.

2.0 Airport Pavement Management Program (PMP).

A PMP provides a consistent, objective, and systematic procedure for establishing facility policies, setting priorities and schedules, allocating resources, and budgeting for pavement maintenance and rehabilitation. It can also quantify information and provide specific recommendations for actions required to maintain a pavement network at an acceptable level of service while minimizing the cost of maintenance and rehabilitation. A PMP not only evaluates the present condition of a pavement, but also predicts its future condition through the use of a pavement condition indicator. By projecting the rate of deterioration, a life-cycle cost analysis can be made for various alternatives to determine the optimal time to apply the best M&R alternative and avoid higher M&R costs in the future.

Figure 1 illustrates how pavement typically deteriorates and the relative cost of rehabilitation at various times throughout its life. A pavement generally performs well for the majority of its life, after which it reaches a "critical condition" and begins to deteriorate rapidly. Maintaining and preserving a pavement in good condition versus rehabilitating a pavement in fair to poor condition is four to five times less expensive and increases pavement useful life. The number of years a pavement stays in "good" condition before reaching the point of rapid deterioration depends on several factors, including construction type and quality, pavement use, climate, and maintenance.

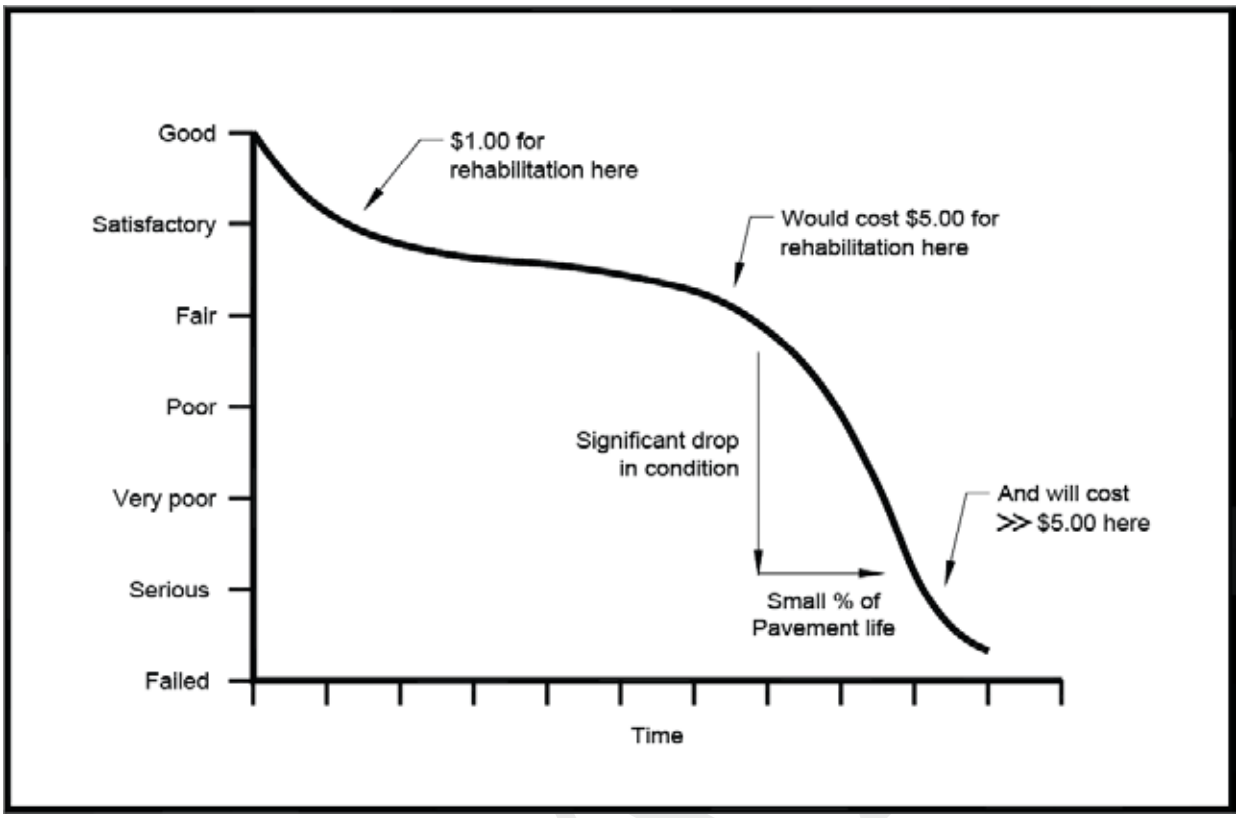

Figure 1. Typical Pavement Condition Life Cycle.

Figure 1 also shows that the ideal time for major rehabilitation is just as a pavement's rate of deterioration begins to increase. Maintenance and rehabilitation solutions would be easy to plan if pavements exhibited clear signs they had reached this point, but unfortunately, they do not. The shape of the deterioration curve, and the optimal maintenance and repair points, vary considerably within a pavement network. A pavement experiencing a sudden increase in operations or aircraft loading will have a tendency to deteriorate more rapidly than a pavement deteriorating solely from environmental causes. A pavement deteriorating from environmental damage may have a number of cracks that need filling, but still remain structurally sound. Conversely, this same pavement may be in the early stages of load damage deterioration, which can only be detected with testing. Because it is difficult to determine when a pavement has reached the critical condition, a PMP can help identify the optimal rehabilitation point and help decision-makers target available resources where they will be most effective. The PMP can do this by making use of data from a pavement condition rating system that will predict future conditions and indicate whether the distress is load or environmentally related.

Information on pavement deterioration, by itself, is not sufficient to answer questions involved in selecting cost-effective M&R strategies. For example, should a pavement be sealed, recycled, or resurfaced? This type of decision requires information on the cost of various M&R procedures and their effectiveness. Effectiveness in this case means the proposed solution targets the pavement deficiency, improves the pavement condition, recovers the M&R costs, and extends the useful life of the pavement.

A PMP will enable a user to store pavement condition and maintenance information in a database and use the program's resources to determine the most cost-effective solution for pavement maintenance issues.

Figure 2 illustrates the pavement preservation concept, which begins with the application of M&R techniques early in a pavement's life. An effective pavement preservation program addresses pavements while they are still in good condition and before any serious damage occurs. By applying a cost-effective treatment at the right time, the pavement condition is improved. The cumulative effect of systematic, successive preservation treatments is to minimize or eliminate costly repairs and postpone costly rehabilitation and reconstruction. During the life of a pavement, the cumulative cost of the series of pavement preservation treatments is substantially less than the cost of the more extensive, higher cost of reconstruction and generally more economical than the cost of major rehabilitation. Additionally, performing a series of successive pavement preservation treatments during the life of a pavement is less disruptive to users than the long closures normally associated with reconstruction projects.

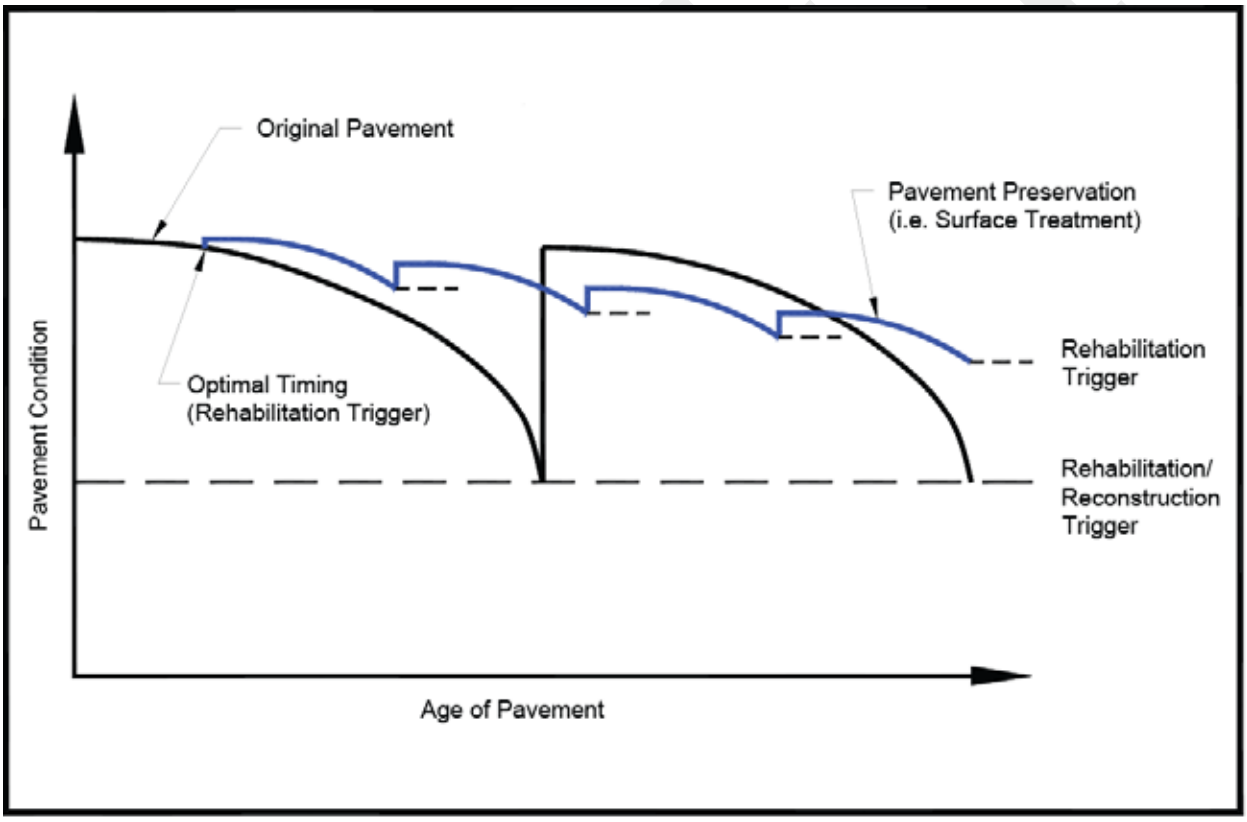

Figure 2. Pavement Preservation Concept.

When implementing a PMP, note the distinction between rehabilitation and routine maintenance activities. Routine maintenance is required to preserve the pavement to achieve the design life of the pavement. Routine maintenance consists of work that is planned and performed by airport maintenance on a routine basis to maintain and preserve the condition of the airport pavements. This includes items such as yearly crack sealing and daily inspections of the airport pavement system.

2.1 Benefits of a PMP.

A PMP can provide several benefits, including—

- Increased pavement useful life.
- An objective and consistent evaluation of the condition of a network of pavements.
- A systematic and documentable engineering basis for determining M&R needs.
- Identifying budget requirements necessary to maintain pavement functionality.
- Documentation on the present and future condition of the pavements.
- Life Cycle Cost Analysis for various M&R alternatives.
- Identifying the impact on the pavement if no major repairs are performed.

2.2 Components of a PMP.

To take full advantage of a PMP, pavement condition information must be collected and periodically updated. Alternative rehabilitation strategies must be identified along with decision criteria and a maintenance policy that will determine which rehabilitation procedures are employed. Further, the PMP must contain models for prediction of performance, cost of alternate strategies, and optimization procedures that consider the entire pavement life cycle.

A system for accomplishing these objectives includes—

- A systematic means for collecting and storing information regarding existing pavement structure and pavement condition.
- An objective and repeatable system for evaluating pavement condition.
- Procedures for predicting future pavement condition.
- Procedures for modeling both past and future pavement performance conditions.
- Determine the M&R budget required to keep a pavement at a specified pavement condition index (PCI) level or the M&R budget required to improve to a target PCI level.
- Procedures for determining budget requirements to meet management objectives, such as maintaining a minimum pavement condition.
- Procedures for formulating and prioritizing M&R projects.

The components of a PMP include—

2.2.1 **Database.** There are several elements critical to making good pavement M&R decisions: pavement inventory; pavement structure; M&R history, including costs; information on the condition of a pavement; and traffic data. This data can be stored in a PMP database.

2.2.1.1 **Pavement Inventory.** Location of all runways, taxiways, and aprons; dimensions; type of pavement; year of construction and/or most recent major rehabilitation; and whether Federal financial assistance was used to construct, reconstruct, or repair the pavement.

2.2.1.2 **Pavement structure.** Knowing when the pavement was originally built, the structural composition (material and thickness), and subsequent overlays, rehabilitation, etc., is key to analyzing problems and designing solutions. "As built" records should provide this information. If they are not available or if records are suspect, it may be necessary to perform

nondestructive and/or destructive testing to determine the existing pavement's thickness and composition of the structural layers. Additional information regarding the pavements structural load bearing capacity, e.g., pavement classification number (PCN) may be beneficial. Additional information on PCN is available in AC 150/5335-5, Standardized Method of Reporting Airport Pavement Strength – PCN.

2.2.1.3 **M&R history**. A history of M&R performed and its associated costs will provide valuable information on the effectiveness of various M&R procedures on pavements.

2.2.1.4 **Pavement condition data**. A fundamental component of any PMP is the ability to track pavement condition. This requires an evaluation process that is objective, systematic, and repeatable. A pavement condition rating system, such as the PCI rating system described in ASTM D5340, Standard Test Method for Airport Pavement Condition Index Surveys (see Appendix B for an overview of PCI), provides a rating of the surface condition of a pavement with implications of structural performance. Regular collection of pavement condition data is essential for tracking pavement performance, modeling pavement performance, and determining when to schedule M&R. Changes in pavement conditions, as documented in routine pavement inspections, may require a need for a more detailed PCI survey.

2.2.1.5 **Traffic data.** Data about the number of operations and type of aircraft using the pavement is beneficial when analyzing probable causes of deterioration and when evaluating alternate M&R procedures.

2.2.2 **System capabilities.**

2.2.2.1 **Predicting future pavement condition.** A PMP must be capable of predicting future pavement condition. Condition predictions are necessary in developing optimum, multi-year M&R plans.

2.2.2.2 **Determining optimum M&R plans for a given budget.** A PMP should be capable of producing an optimum M&R plan that identifies where and when M&R is required and approximately how much it will cost. This data will assist in setting priorities that fit predetermined M&R budgets.

2.2.2.3 **Determining budget requirements to meet management objectives.** A PMP should be capable of determining the budget requirements to meet specified management objectives. Typical management objectives include maintaining pavements above a specified condition and eliminating major M&R requirements over a specified number of years.

2.2.2.4 **Facilitating the formulation and prioritization of M&R projects.** In addition to developing optimum M&R plans at the network level, a PMP should facilitate the formulation and prioritization of M&R projects. Engineering judgment, however, remains a key component in transforming the optimum M&R plans into practical executable projects.

2.3 PMP Management levels.

Managing a pavement system effectively requires decision-making at two levels: network and project. PMP software (paragraph 3.0) can be used to assist in making pavement management decisions.

2.3.1 **Network-level management.** In network-level management, questions are answered about short-term and long-term budget needs, the overall condition of the network (current and future), and pavements to be considered at the project level. Decisions are made about the management of an entire pavement network. For example, local consideration, might comprise all the pavements on an airport and, for state consideration, all the pavements in the state airport system.

2.3.1.1 **Using PMP software at the network level.** In addition to providing an automated tool for storing information about specific pavements, PMP software includes the ability to produce standard or customized user-defined reports. These reports can help the user make decisions about inspection scheduling, pavements needing rehabilitation, budget forecasting, routine maintenance projects, current pavement conditions, and future condition predictions.

2.3.1.2 **Condition prediction.** Condition prediction is used as the basis for developing inspection schedules and identifying pavements requiring maintenance or rehabilitation. Once pavements requiring future work have been identified, a budget for the current year and for several years into the future can be developed. By using an agency's prioritization scheme, maintenance policy, and M&R costs and then comparing the budget to the actual funds available for the current year, the software produces a list of potential projects. This list becomes the link into project-level management.

2.3.2 **Project-level management.** In project-level management, decisions are made about the most cost-effective M&R alternative for the pavements identified in the network analysis. At this level, each specified pavement should have a detailed condition survey. A project normally consists of multiple pavement sections and may include different M&R actions for different sections. Roughness and friction measurements may be useful for project development. Nondestructive and/or destructive tests may be necessary to determine the pavement's load-carrying capacity.

2.3.2.1 **Using PMP** software **at the project level.** PMP software can use a number of engineering measurements to quantify a pavement's condition. Nondestructive test data, friction measurements, roughness measurements, and drainage information may be entered into the PMP database. This information is used to identify feasible alternatives that can correct existing deficiencies. The various alternatives identified, including no action, are then compared on a life-cycle cost basis. The results, combined with budget and management constraints, produce the current year's maintenance and repair program.

2.3.2.2 **Roughness.** Roughness measurements can be helpful when there is evidence of roughness, usually in the form of frequent pilot complaints. Roughness measurement is of greater value when the pavement is in very good condition with little or no distress. It has less value if reconstruction is imminent.

2.3.2.3 **Friction.** Friction measurements should be made on a periodic basis to measure the skid-resistance of runway pavement due to the accumulation of contaminants, chiefly rubber, on the pavement surface; and the mechanical wear and polishing action from aircraft tires rolling or braking on the pavement. AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces, provides recommendations for friction measurements.

2.4 Reports.

There are numerous reports that can be developed using the data from a PMP. PMP software can assist in the decision-making process by allowing the user to run standard reports. Standard and customized reporting functions vary among PMP software packages. PMP software should allow the user to customize the reports to include only the pavements and/or conditions of interest and to generate various budget/condition scenarios. Reports and their use typically include the following:

2.4.1 **Inventory Report.** This report lists all pavements in a network and contains information such as surface type, location, area, and pavement function, i.e., runway, taxiway, apron.

2.4.2 **Inspection Scheduling Report.** This report allows the user to schedule inspections based on minimum acceptable condition levels and rates of deterioration. The PMP should have annual detailed inspections and include provisions for less comprehensive daily, weekly, and monthly inspections.

2.4.3 **Pavement Condition Report.** This report provides the user with a tabulation of pavement condition for the current and future years. The report provides the condition of individual pavement sections and the overall network condition. The projected condition is used to assist in planning future maintenance and repair needs and to inform management of present and future conditions.

2.4.4 **Budget Planning Report.** This report allows the user to project the budgets required to maintain the pavement network above a user-specified condition level. For each pavement selected, the report predicts the year in which the minimum condition or PCI will be reached and calculates the cost of repair.

2.4.5 **Network Maintenance Report.** This report uses the agency's maintenance strategy, which is stored in the database, and applies it to the distresses identified in the latest PCI survey. This report can be used to estimate both the type and cost of routine maintenance for the development of an annual work plan.

2.4.6 **Economic Analysis Report.** This report can assist the user in selecting the most cost-effective alternative for a pavement repair. For each feasible alternative, the user must input initial costs, periodic maintenance costs, one-time future maintenance costs, interest rates, and discount rates. The program performs a life-cycle cost analysis and provides the user with a means of comparing the effectiveness of the various repair alternatives. The program allows the user to vary interest rates, repair costs, and timing so their effect on alternatives can be analyzed.

2.4.7 **Other Reports.** Based upon local needs and conditions, other customized reports may be beneficial.

3.0 PMP Software.

When developing a PMP, airports can use any of several existing software options. PMP software allows for storage of pavement condition history, nondestructive testing data, and construction and maintenance history, including cost data. It provides many capabilities, including evaluation of current conditions, prediction of future conditions, identification of M&R needs, inspection scheduling, economic analysis, and budget planning. PMP software can be tailored to each airport based on past performance of the alternatives.

3.1 MicroPAVER™.

MicroPAVER™ is a PMP application developed by the U.S. Army Construction Engineering Research Laboratory sponsored by the FAA. MicroPAVER™ development and updating is supported by the FAA, Federal Highway Administration, U.S. Army, U.S. Air Force, and U.S. Navy to meet current user needs. MicroPAVER™ provides pavement management capabilities to (1) develop and organize the pavement inventory; (2) assess the current condition of pavements; (3) develop models to predict future conditions; (4) report on past and future pavement performance; (5) develop scenarios for M&R based on budget or condition requirements; (6) performs life cycle cost analysis; and (7) plan projects. Additional information on the PMP software is available at the following website: http://www.paverteam.com/Project%20Management/Paverteam/Index.htm.

3.2 FAA PAVEAIR.

FAA PAVEAIR is a web-based airport PMP using the concept originally developed in MicroPAVER™ that provides users with historic and current information about airport pavement construction, maintenance and management. The program offers users a planning tool capable of modeling airport pavement surface degradation due to external effects such as traffic and the environment. The program can be used with other FAA pavement applications to give users input to determine repair scheduling and strategies. FAA PAVEAIR is accessible at the following website: https://faapaveair.faa.gov.

3.3 Other PMP Software.

Various firms have developed similar software using the concept originally developed in MicroPAVER™ that provides pavement evaluation and management services. Any software that meets the minimum requirements for a PMP as described in Appendix A is acceptable.

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Appendix A. Pavement Management Program (PMP).

A-1.0 An effective PMP specifies the procedures to be followed to assure that proper preventative and remedial pavement maintenance is performed. The program must identify funding or anticipated funding and other resources available to provide remedial and preventive maintenance activities. An airport owner may use any format deemed appropriate, but the program must, as a minimum, include the following:

A-1.1. Pavement inventory. The following must be depicted:

- Location of all runways, taxiways, and aprons
- Dimensions
- Type of pavement
- Year of construction and/or most recent major rehabilitation
- Whether Federal financial assistance was used to construct, reconstruct, or repair the pavement.

A-1.2. PMP Pavement Inspection Schedule. Airports must perform a detailed inspection of airfield pavements at least once a year for the PMP. If a pavement condition index (PCI) survey is performed, as set forth in ASTM D5340, Standard Test Method for Airport Pavement Condition Index Surveys, the frequency of the detailed inspection by PCI surveys may be extended to three years.

A-1.3. Record keeping. The airport must record and keep on file complete information about all detailed inspections and maintenance performed until the pavement system is replaced. The types of distress, their locations, and remedial action, scheduled or performed, must be documented. The minimum information recorded must include:

- Inspection date
- Location
- Distress types
- Maintenance scheduled or performed

A-1.4. Information retrieval. An airport owner may use any form of record keeping it deems appropriate if the information and records produced by the pavement survey can be retrieved, as necessary.

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Appendix B. Pavement Condition Index (PCI) Method.

B-1.0 Most PMP software use the PCI method. ASTM has adopted the PCI as a pavement condition rating standard for airfield pavements. ASTM D5340, Standard Test Method for Airport Pavement Condition Index Surveys, covers the determination of airport pavement condition through visual surveys of pavement using the PCI method to quantify pavement condition. ASTM D6433, Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys, covers the determination of road and parking lot pavement condition.

B-2.0 The PCI is a numerical indicator that reflects the structural integrity and surface operational condition of a pavement. It is based on an objective measurement of the type, severity, and quantity of distress. By projecting the rate of deterioration, a life-cycle cost analysis can be performed for various M&R alternatives. Not only can the best alternative be selected, but the optimal time of application can also be determined. The PCI values range from 0 to 100, as shown in Figure B-1 where 0 indicates a failed pavement and 100 is a new pavement.

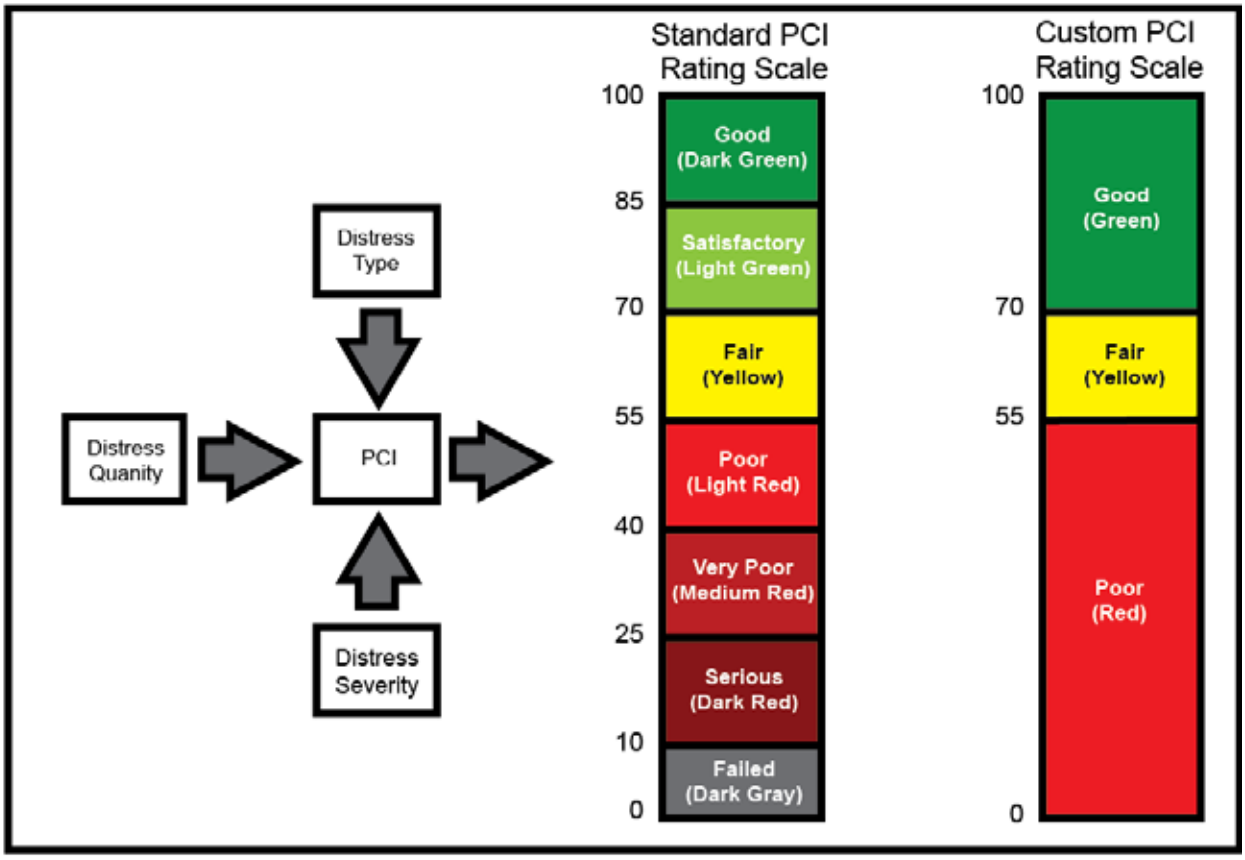

Figure B-1. Example of PCI Rating Scales.

B-3.0 The distress types for hot mix asphalt (HMA) and PCC pavements are identified in ASTM D5340; which describes each distress type, severity levels, and measurement of each distress. This information is also included in the PAVER™ Distress Identification Manuals referenced in Appendix C in this AC, as well as the MicroPAVER™ and PAVEAIR programs.

Appendix C. PAVER™ Distress Identification Manuals.

C-1.0 This appendix includes a link to the Paver™ Distress Identification Manuals developed by the U.S. Army Corps of Engineers Army Engineering Research and Development Center – Construction Engineering Research Laboratory (USACE ERDC-CERL). The manuals contain distress definitions, severity levels, and measuring methods for asphalt and concrete surfaced airfields, respectively. The information in these manuals can be used to determine the PCI of airfield pavements.

- The Asphalt Surfaced Airfields PAVER™ Distress Identification Manual contains distress definitions and measurement methods for asphalt surfaced airfields.

- The Concrete Surfaced Airfields PAVER™ Distress Identification Manual contains distress definitions and measuring methods for concrete surfaced airfields.

C-2.0 The manuals are available at the FAA Airports website: http://www.faa.gov/airports/resources/advisory_circulars/index.cfm.

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Appendix D. Related Reading Material.

D-1.0 Electronic copies of the latest versions of the following FAA publications are available on the FAA website at http://www.faa.gov/airports.

- AC 150/5320-5, Airport Drainage Design.
- AC 150/5320-6, Airport Pavement Design and Evaluation.
- AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces.
- AC 150/5335-5, Standardized Method of Reporting Airport Pavement Strength – PCN.
- AC 150/5370-11, Use of Nondestructive Testing Devices in the Evaluation of Airport Pavements.
- AC 150/5380-6, Guidelines and Procedures for Maintenance of Airport Pavements.
- AC 150/5380-9, Guidelines and Procedures for Measuring Airfield Pavement Roughness.
- FAA Order 5100.38, Airport Improvement Program Handbook.

D-2.0 Copies of ASTM Standards can be obtained from ASTM International at http://www.astm.org/.

- ASTM D5340, Standard Test Method for Airport Pavement Condition Index Surveys.
- ASTM D6433, Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys.

D-3.0 Pavement Management for Airports, Roads, and Parking Lots, M.Y. Shahin, Second Edition, Springer, 2005.

D-4.0 Transportation Research Circular No. E-C127, Implementation of an Airport Pavement Management Program (2/2008). A copy of the publication is available at the following website: http://onlinepubs.trb.org/onlinepubs/circulars/ec127.pdf.

D-5.0 Airport Cooperative Research Program (ACRP) Synthesis 22, Common Airport Pavement Maintenance Practices. A copy of the publication is available at the following website: http://www.trb.org/Publications/Blurbs/Common_Airport_Pavement_Maintenance_Practices_165167.aspx.

D-6.0 Unified Facilities Criteria (UFC) 3-270-08, Pavement Maintenance Management. A copy of the publication is available at the following website: http://www.wbdg.org/ccb/DOD/UFC/ufc_3_270_08.pdf.

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