

Maine Department of Transportation

Pavement Condition Report



MaineDOT

BRUNSWICK EXECUTIVE AIRPORT (KBXM)



**DuBois
& King** inc.



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Executive Summary

Background

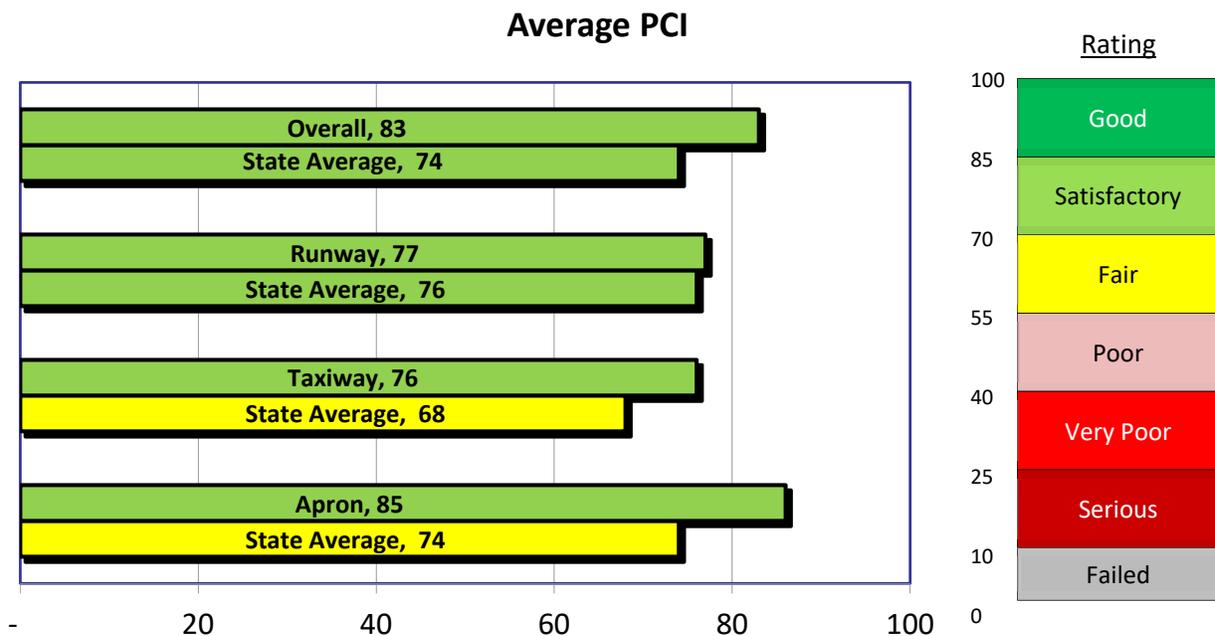
To assist individual airports to effectively maintain their pavement infrastructure and help improve airport pavement conditions statewide, the Maine Department of Transportation (MaineDOT) contracted with DuBois & King, Inc. (D&K) to provide pavement evaluation surveys at local airports. Assisting D&K on this effort was Applied Research Associates, Inc. (ARA). This report documents the pavement condition at Brunswick Executive Airport (BXM) in October 2018.

A primary objective of the pavement management program is to determine maintenance and rehabilitation needs by comparing pavement condition to a standardized benchmark called the minimum service level (MSL), defined by MaineDOT as the minimum pavement condition desirable in managing Maine airfield pavements. The benchmark MSL values used to trigger rehabilitation are shown below.

Runway	Taxiway	Apron
70	70	70

Pavement Condition

The average inspected Pavement Condition Index (PCI) for all the airfield pavements at BXM was 83. Runway 1-19 had an average inspected PCI of 77, which is above the MSL of 70. Taxiways had an average inspected PCI of 76, and aprons had an average inspected PCI of 85. A comparison of the average PCI values at BXM to the statewide average PCI values, by branch use, is shown in the figure below.



Capital Improvement Program

The table below provides a summary of the projected funds needed to perform major rehabilitation on all pavement sections forecasted to fall below the MSL within the next 5 years. Seven sections were identified for major rehabilitation based on their PCI rating. If no action is taken, the overall PCI is projected to drop from 83 to 77 by 2023.

Project Year	Calendar Year	Amount	PCI Before	PCI After
Year 1	2019	\$0	81	81
Year 2	2020	\$6,310,446	80	86
Year 3	2021	\$0	85	85
Year 4	2022	\$2,887,427	83	88
Year 5	2023	\$521,039	87	87
5-Year Total		\$9,718,912		

Maintenance

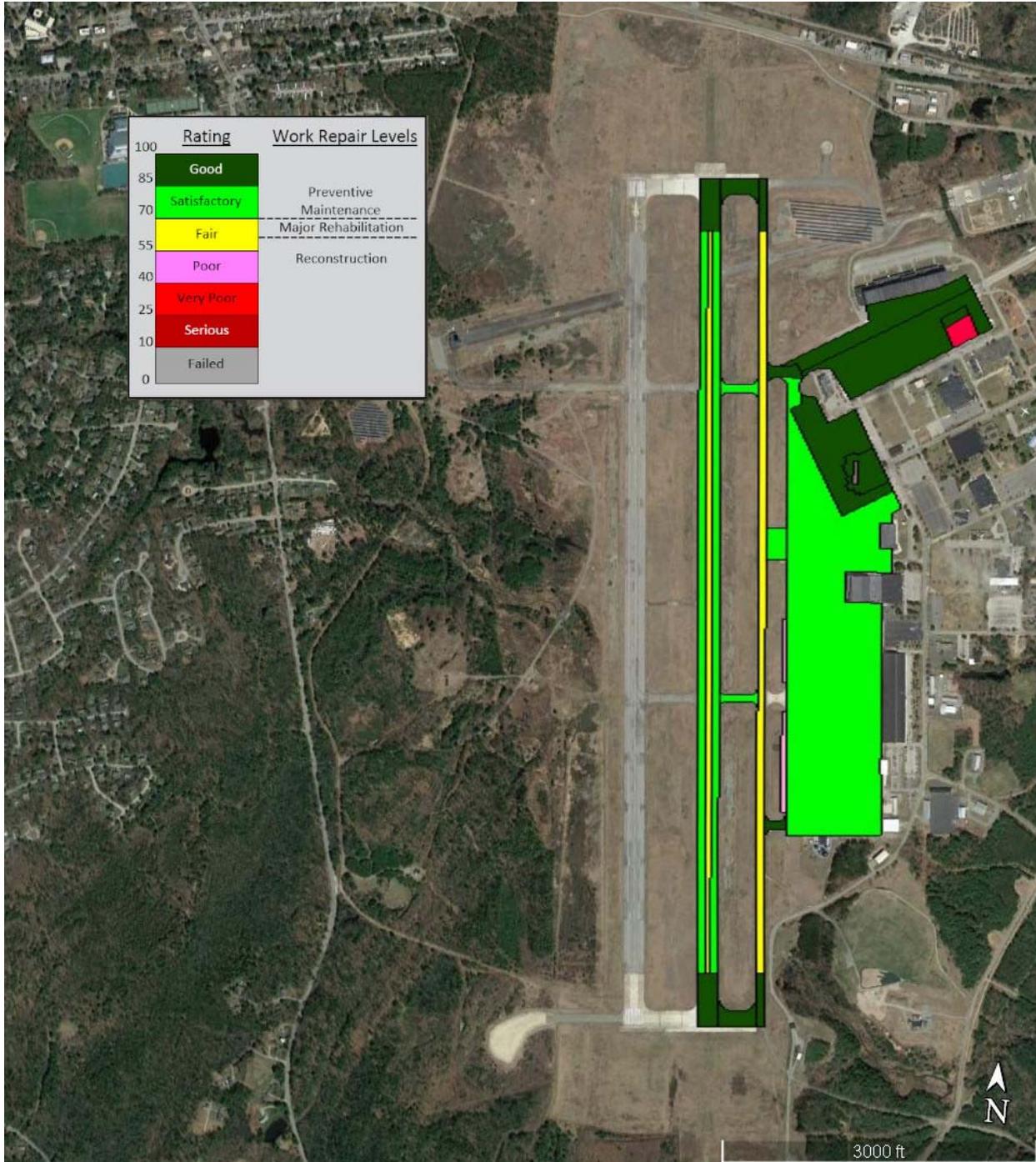
Based on the pavement distress documented during the survey, an analysis of potential maintenance projects identified needs of approximately \$2.3 million. The estimated quantity and cost for each type of maintenance action is shown in the table below. The decision matrix and unit costs upon which these estimates are based are described in section 3 and appendix E of this report.

Ongoing development of capital improvement projects may address some of these maintenance needs. To help budgeting and prevent duplication of effort, all pavement features recommended for maintenance should be compared to planned improvements prior to finalizing a maintenance program strategy.

Specific recommendations to help prioritize airfield maintenance are found in chapter 3 of this report. The table below further summarizes the identified maintenance needs.

Work Item	Quantity	Unit	Cost
Crack Sealing - AC	30,172	Ft	\$41,638
Crack Sealing - PCC	3,497	Ft	\$13,742
Joint Seal (Localized)	202,599	Ft	\$780,003
Patching - AC Deep	760	SqFt	\$14,112
Patching - PCC Full Depth	8,097	SqFt	\$963,553
Patching - PCC Partial Depth	1,718	SqFt	\$106,226
Slab Replacement - PCC	10,570	SqFt	\$333,488
Total:			\$2,252,761

AC = asphalt concrete; PCC = portland cement concrete; SqFt. = square feet; Ft = linear feet



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Abbreviations and Acronyms

AAC	Asphalt Overlaid with Asphalt
AC	Asphalt Concrete
APC	PCC Overlaid with Asphalt
APMS	Airport Pavement Management System
ARA	Applied Research Associates, Inc.
ASTM	American Society for Testing and Materials
BXM	Brunswick Executive Airport
CAD	Computer-aided Drafting
CIP	Capital Improvement Plan
D&K	Dubois & King, Inc.
FAA	Federal Aviation Administration
FOD	Foreign Object Debris
GIS	Geographic Information System
MaineDOT	Maine Department of Transportation
L&T	Longitudinal & Transverse Cracking
LCD	Last Construction Date
M&R	Maintenance and Rehabilitation
MSL	Minimum Service Level
PCC	Portland Cement Concrete
PCI	Pavement Condition Index

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1. Introduction

Pavement conditions were assessed using the Pavement Condition Index (PCI) procedure outlined in Federal Aviation Administration (FAA) Advisory Circular 150/5380 and ASTM D5340 for airfield pavements. The PCI was developed to provide a numerical value representing the overall pavement condition that correlates well with the ratings of experienced engineers. During a PCI survey, visible signs of deterioration within a selected sample unit are recorded and analyzed. The recorded distress data are used to calculate a PCI value from 0 to 100, with 100 representing a pavement in excellent condition. The PCI evaluation makes it possible to forecast future deterioration and allows for accurate projections of maintenance and rehabilitation (M&R) needs.

The data collected during this project were entered into the PAVER pavement management software program developed by the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory. The capabilities of PAVER were utilized to meet the following project objectives:

- Update and store pavement inventory and condition data.
- Develop models to predict future conditions.
- Develop M&R recommendations.
- Plan budgets for future M&R needs.
- Report the results at the individual airport and statewide level.

1.1 Project Background

The 36 publicly owned airports throughout Maine play a key role in the movement of goods and services, with an estimated overall economic impact of \$1.5 billion. MaineDOT realizes the value in maintaining the paved facilities by implementing and updating an airport pavement management system (APMS). An APMS provides guidance for decisions regarding pavement M&R policies at an airport and can identify short-, medium-, and long-term rehabilitation needs, as well as provide an accessible historical record of life-extending pavement maintenance activities.

1.2 Pavement Management Approach

The main goal of any pavement management system is to identify pavements that will receive the most benefit from an optimally timed repair. By projecting the rate at which the pavement condition will deteriorate, the optimal time for applying treatments can be determined. Typically, the optimal repair time is the point at which a gradual rate of deterioration begins to increase to a much faster rate, as illustrated in Figure 1. It is critical to identify this point in time to avoid higher rehabilitation costs caused by excess deterioration.

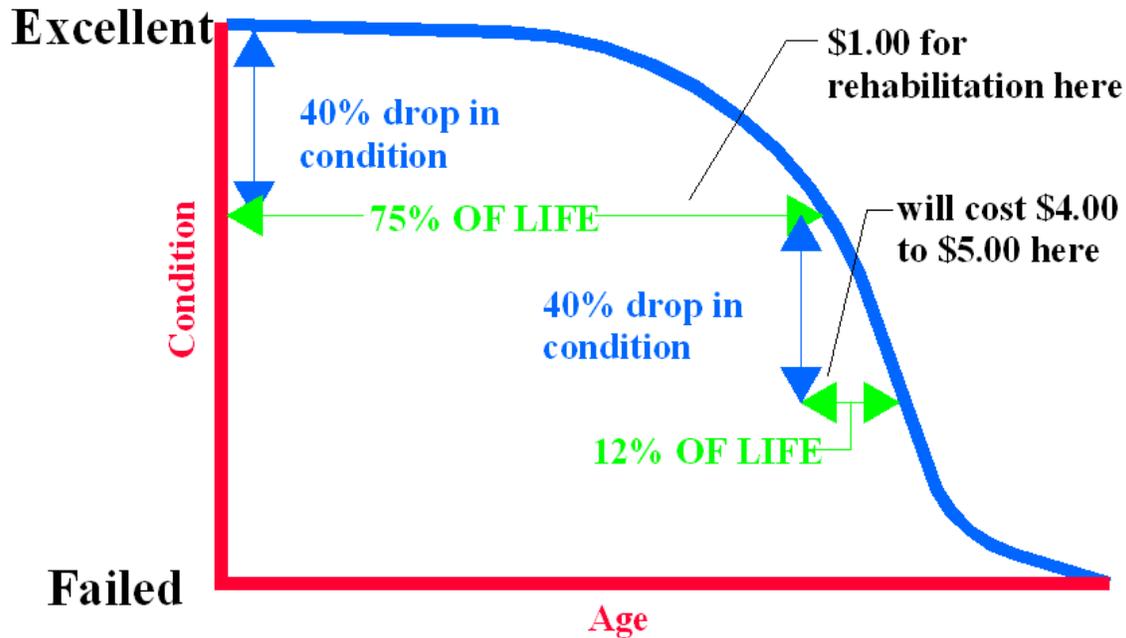


Figure 1. Pavement condition life cycle.

Often, the identified needs will cost more than the available budget and will need to be prioritized over time. The APMS can measure the impact of a limited budget scenario by projecting the future condition of deferred projects. Ultimately, the APMS will provide MaineDOT and the airport a planning tool that can help identify pavement needs, optimize the selection of projects and treatments over a multi-year period, and understand the consequences of these plans.

1.3 Scope of Work

MaineDOT retained D&K/ARA to implement the APMS for the Maine publicly owned general aviation airports. A PCI survey was completed at each airport, and available construction history information was compiled and included in the PAVER database and subsequent analysis. D&K and MaineDOT coordinated the PCI inspections with each airport. After the fieldwork was completed, ARA updated the PAVER database for each airport. PAVER was then used to develop a maintenance work plan based on current distresses. In addition, a 5-year projection identifying recommended pavement repairs was prepared at the state level for the various stakeholders to use as a planning tool. Individual reports, such as this one, were prepared for each airport documenting the results of the pavement inspections. A statewide analysis report was prepared based on that inspection year's airports. The airport maps were linked to the PAVER database to allow for geographic information system (GIS) viewing of data.

2. Project Approach

2.1 Update Pavement Inventory

The pavement inventory at BXM includes all airfield pavements intended for aviation-related traffic. The main objective in updating the pavement inventory was to determine the year of construction (or most recent overlay), the limits of the project, and the surface type for each pavement area based on construction history. When available, MaineDOT provided access to this information from their historical records. This information was used to update the pavement section definitions on the computer-aided drafting (CAD) map and in the PAVER database based on project limits, surface type, layer properties, traffic patterns, and overall condition.

2.1.1 Pavement Network Definition

The construction history information was used to divide the pavement network at BXM into management units—branches, sections, and sample units. 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). On an airfield, a branch typically represents an entire runway, taxiway, or apron.

Because of the disparity of characteristics that can occur throughout a branch, it is further subdivided into units called sections. A section is a portion of the pavement that has uniform construction history, pavement structure, traffic patterns, and condition throughout its entire length or area. Sections are used as a management unit for the selection of potential M&R projects. The guideline for determining section breaks is to consider the section as a "repair unit"—a portion of the pavement that will be managed independently and evaluated separately for pavement maintenance and rehabilitation.

Pavement sections are further subdivided into sample units for inspection purposes. The typical sample unit size for asphalt concrete (AC) pavements is 5,000 square feet \pm 2,000 square feet, and the typical sample unit size for portland cement concrete (PCC) pavements is 20 slabs \pm 8 slabs. A statistical based sampling rate described in ASTM D5340 was used to determine the number of sample units to inspect for each section. The inspected sample units were representative of the overall condition within a section and were used to extrapolate the condition as a whole.

2.1.2 Naming Scheme

For the pavement management system to work efficiently, some unique identifiers were added to the database. The branch names assigned were designed to assist in identification of the pavement area. The first characters are used to identify the pavement use—apron, runway, taxiway, or taxilane (pavement in and around hangar areas). The next character is a number or letter used to further identify the pavement branch (such as RWY0119 for Runway 1-19 or APA for Apron A). The sections for each branch are assigned a sequential number (001, 002, and so on). Table 1 presents the branches defined for BXM and their corresponding areas.

Table 1. Branch definition.

Branch ID	Name	Number of Sections	Area (SF)
APA	Apron A	4	3,609,800
APB	Apron B	4	985,300
CTH	Connecting Taxiway H	1	40,000
CTG	Connecting Taxiway G	1	59,550
CTF	Connecting Taxiway F	1	19,100
CTA1	Connecting Taxiway A1	1	61,900
CTA2	Connecting Taxiway A2	1	33,150
CTA3	Connecting Taxiway A3	1	29,350
CTA4	Connecting Taxiway A4	1	61,200
PTA	Parallel Taxiway A	3	600,000
RWY0119	Runway 1-19	4	1,600,000
Airport Total			7,099,350

Figure 2 presents the network definition for BXM and represents the pavements included in the APMS. Some privately built/maintained pavements and “driveways” leading into hangars may not be included within this report nor represented on Figure 2 because they are considered outside the scope of work.

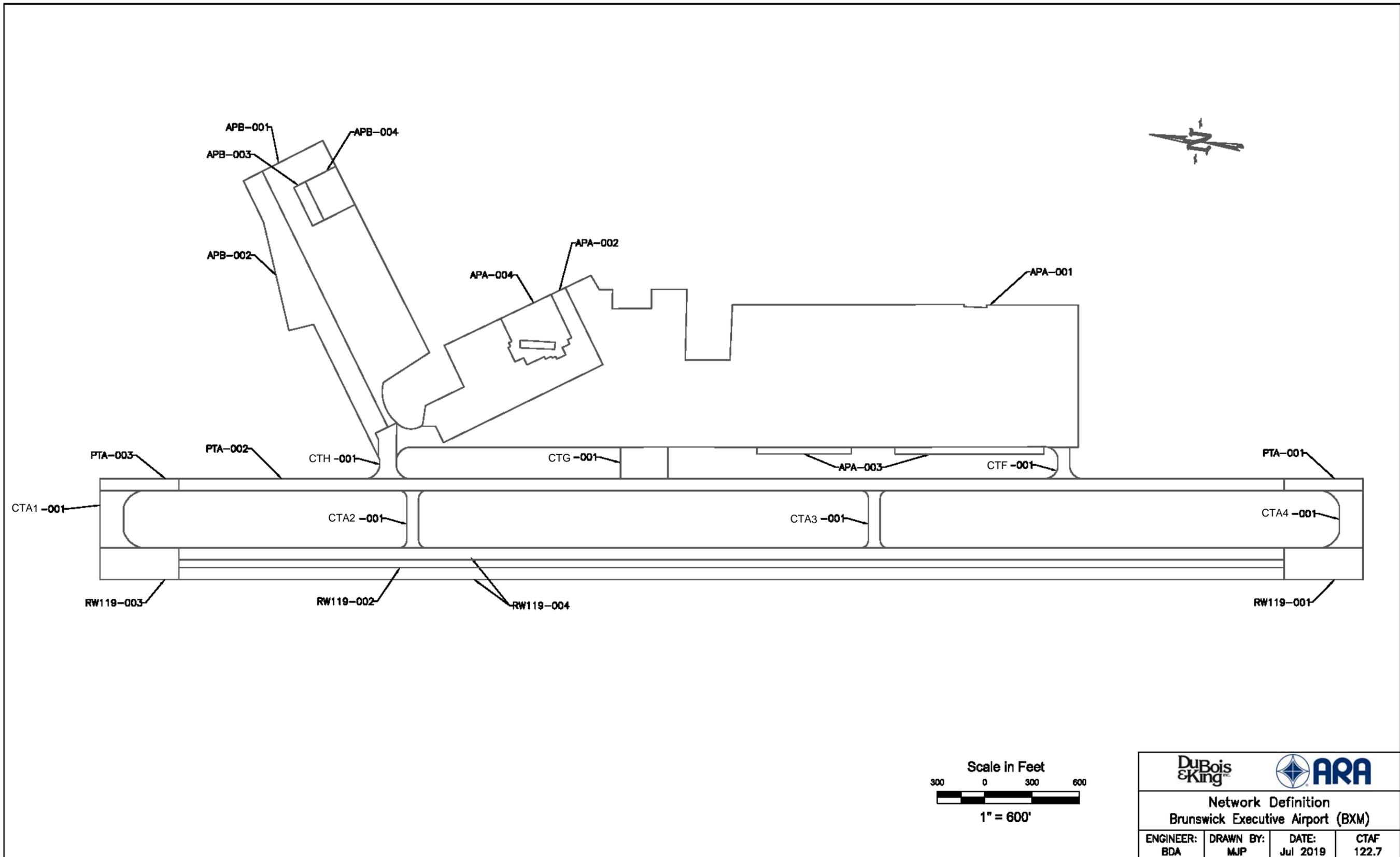


Figure 2. Network Definition at Brunswick Executive Airport (BXM)

2.2 Pavement Evaluation

The pavement surfaces at BXM were visually inspected on October 29, 2018 using the PCI procedure. During a PCI inspection, inspectors walk over the surface of the pavement and identify visible signs of distress within a sample unit. Appendix A presents the scalable map used during the inspection to locate the inspected sample units. Each distress type was identified, then classified as low, medium, or high severity, and recorded on field sheets. In general, the higher the severity, the higher the foreign object damage (FOD) potential. The quantity, or extent, is measured for each distress/severity combination.

After collecting and summarizing the distress type, severity, and quantity for each of the inspected sample units, the distress data were entered into the PAVER database and a PCI was calculated. The PCI procedure uses established deduct curves to determine the number of points to deduct for each distress type/severity combination, depending on the density of the distress. The inspected sample unit PCIs were then averaged to determine an overall PCI for that section.

The PCI value provides a general sense as to the level of rehabilitation that will be needed to repair a given pavement. In general terms, maintenance activities such as crack sealing and patching often provide benefit when the PCI is above 70. However, as the pavement continues to deteriorate, more complex and expensive treatments will be necessary. Pavements with a PCI between 60 and 70 are good candidates for a mill and inlay or overlay. Once the PCI drops below 60, MaineDOT typically programs reconstruction as the preferred rehabilitation alternative. Figure 3 presents the PCI inputs, rating scale, and corresponding general work repair levels.

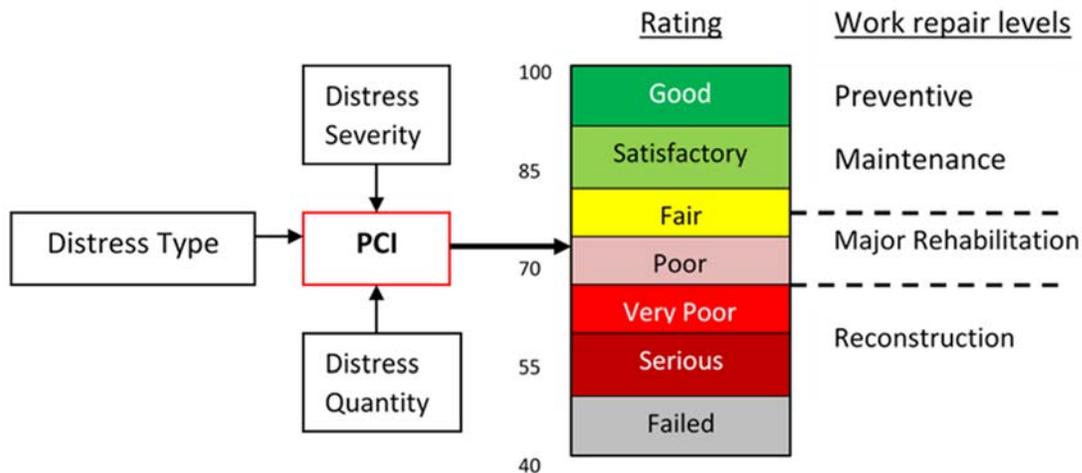


Figure 3. PCI rating scale and repair levels.

2.2.1 Distress Types

To better understand the cause of pavement deterioration, it is necessary to look at the distress types associated with each PCI. Each distress type has been classified into one of three groups based on cause—load, climate/durability, or other. Load-related distresses such as alligator cracking in asphalt pavements, or corner breaks in PCC pavements, indicate that the structural integrity of the pavement has been compromised. Climate-related distresses indicate that the pavement has aged due to seasonal environmental effects. Distresses that cannot be attributed solely to either load or climate are classified as other. Table 2 shows distress types for both asphalt and concrete surfaced pavements in the PCI procedure and their classification. The table also identifies which distresses were observed at BXM during the pavement inspection.

Table 2. PCI distress types.

Asphalt Distresses	Cause Classification	Concrete Distresses	Cause Classification
*Alligator cracking	*Load	*Blowup	*Climate
Bleeding	Other	*Corner break	*Load
Block cracking	Climate	*Linear cracking	*Load
*Corrugation	*Other	*Durability cracking	*Climate
Depression	Other	*Joint seal damage	*Climate
Jet blast	Other	*Small patch	*Other
Joint reflection cracking	Climate	*Large patch	*Other
*L&T cracking	*Climate	Popouts	Other
Oil spillage	Other	Pumping	Other
*Patching	*Other	*Scaling/crazing	*Other
Polished aggregate	Other	*Faulting	*Other
Raveling	Climate	*Shattered slab	*Load
*Rutting	*Load	*Shrinkage cracking	*Other
Shoving	Other	*Joint spalling	*Other
Slippage cracking	Other	*Corner spalling	*Other
Swelling	Other	Alkali silica reaction	Climate
Weathering	Climate		

* Indicates distresses found at BXM

2.3 PCI Results

The results of the 2018 PCI inspection are presented in Table 3 and Figure 7. The overall area-weighted PCI for BXM is 83. When summarizing PCI values, an area-weighted calculation is used instead of a straight mathematical average because the area-weighted calculations eliminate the skewing of the PCI due to disparities between section sizes.

Figure 4 and Figure 5 present the overall PCI for BXM by area distribution and pavement use, respectively. Table 3 presents the PCI summary for each section at BXM, including the drop in PCI per year. Generally, pavement sections will deteriorate between 1 and 3 PCI points per year. Sections

deteriorating at higher rates may need maintenance above the normal application rates and should be closely monitored in case major repairs become necessary earlier than expected.

Appendix B provides a graphical illustration of the projected PCI for each pavement section along with additional summary data including various repair alternatives. Appendix C contains the detailed inspection report with sample unit data produced from PAVER. Appendix D describes the distress types most commonly identified during the PCI inspections of Maine airports.

Table 3. PCI section summary table.

Branch ID	Section ID	Surface Type ¹	Section Area (SF)	LCD ²	2018 PCI	Drop in PCI/Yr ³	% Deduct due to	
							Load	Climate
APA	001	PCC	3,011,900	1957	84	0.3	16	42
APA	002	PCC	415,300	2004	92	0.6	12	59
APA	003	PCC	67,800	1957	45	0.9	80	19
APA	004	AC	114,800	2012	95	0.8	0	100
APB	001	PCC	589,650	1951	88	0.2	10	56
APB	002	PCC	315,000	2003	94	0.4	12	55
APB	003	PCC	25,150	2006	97	0.3	0	100
APB	004	PCC	55,500	1957	39	1.0	41	49
CTH	001	PCC	40,000	2004	96	0.3	0	35
CTG	001	PCC	59,550	2004	74	1.9	49	0
CTF	001	PCC	19,100	2004	97	0.2	0	0
CTA1	001	PCC	61,900	2001	100	-	0	0
CTA2	001	AC	33,150	1996	82	0.8	0	100
CTA3	001	AC	29,350	1996	71	1.3	48	52
CTA4	001	PCC	61,200	2004	96	0.3	23	0
PTA	001	PCC	37,500	1999	91	0.5	9	0
PTA	002	AC	525,000	1996	67	1.5	42	58
PTA	003	PCC	37,500	1999	86	0.7	15	0
RWY0119	001	PCC	100,000	2001	97	0.2	41	0
RWY0119	002	AC	350,000	2004	68	2.3	0	82
RWY0119	003	PCC	100,000	1952	92	0.1	12	0
RWY0119	004	AC	1,050,000	2004	76	1.7	0	100

¹ AC = asphalt cement; AAC = asphalt overlaid with asphalt; PCC = portland cement concrete; APC = PCC overlaid with asphalt

² LCD = last construction date (original construction, last overlay, or reconstruction [whichever is most recent])

³ Drop in PCI/Yr = (100 – PCI)/age where age = 2018 – LCD

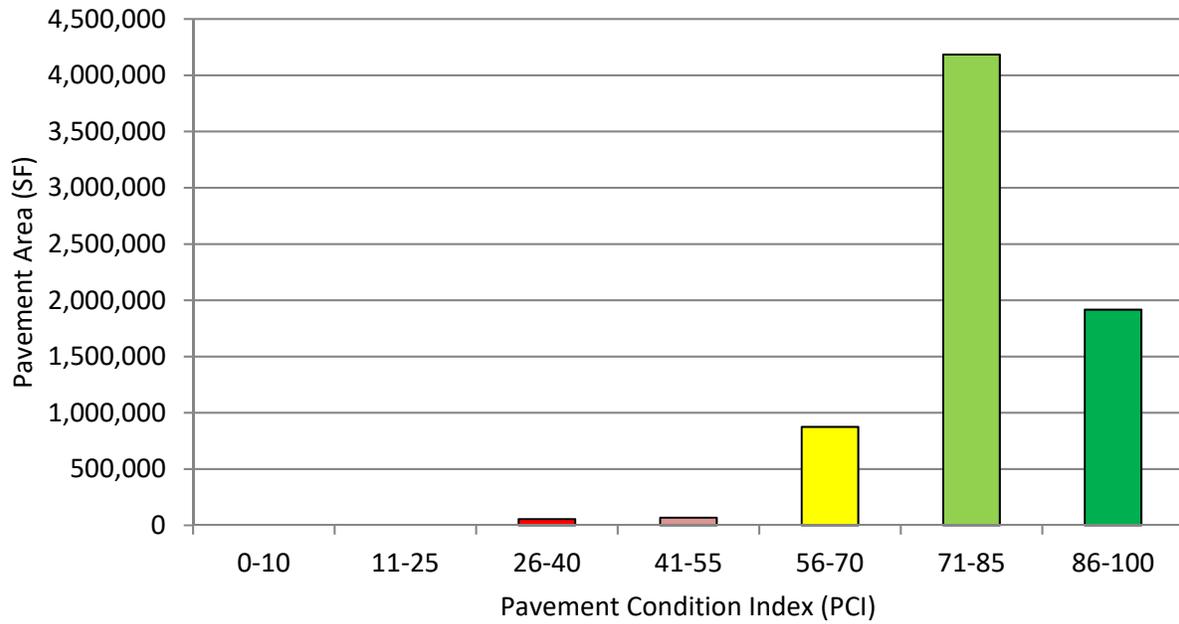


Figure 4. Condition distribution.

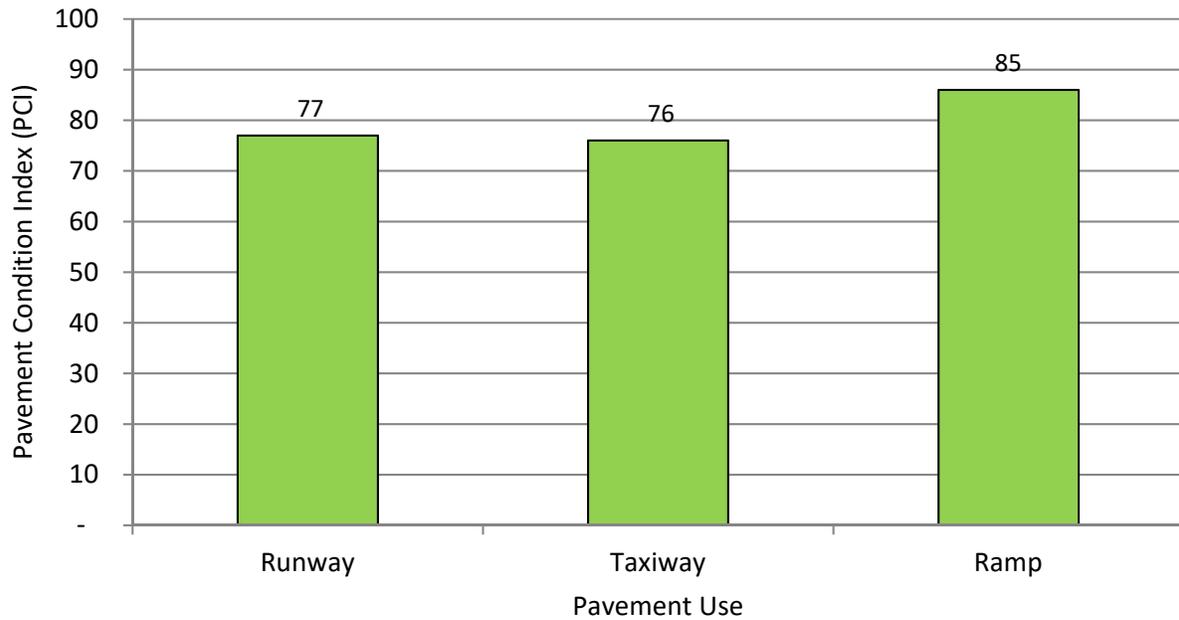


Figure 5. Area-weighted PCI by pavement use.

2.4 Projected PCI

After the 2018 distress data were entered into PAVER and the PCI determined, a modeling approach was used to predict future PCI levels based on historical PCI data from MaineDOT's airports. Pavements were grouped together in performance families based on similar construction, traffic, pavement use, and other factors affecting pavement performance. These performance models predict future PCI, not future distresses.

Figure 6 shows the projected PCI at BXM by percent area for the next 5 years assuming no maintenance or major repairs (overlays, reconstruction, etc.) are performed during that period. It shows how quickly the pavement network will deteriorate if no capital improvements are made. The corresponding projected PCI values for each pavement section are shown in Table 4.

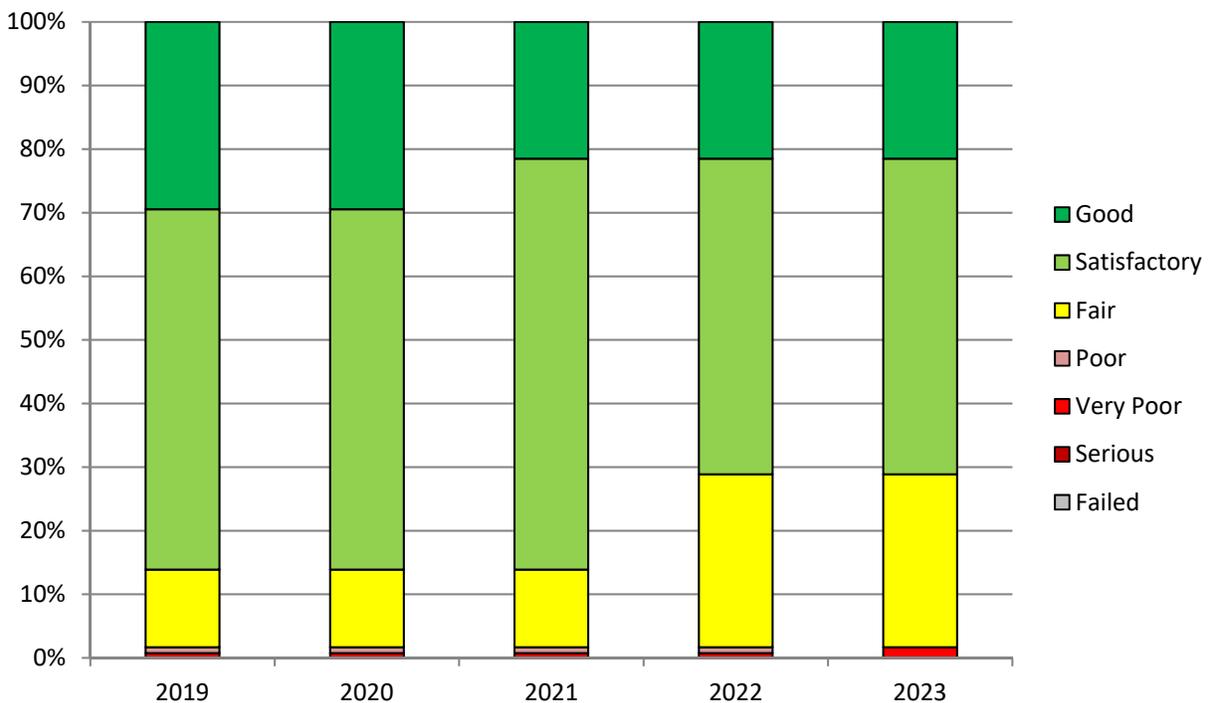


Figure 6. Projected PCI by percent area.

Table 4. Projected PCI by section (no M&R).

Branch ID	Section ID	2019	2020	2021	2022	2023
APA	001	83	82	81	80	79
APA	002	91	90	89	88	87
APA	003	44	43	42	41	40
APA	004	93	91	90	88	86
APB	001	87	86	85	84	83
APB	002	93	92	91	90	89
APB	003	96	95	94	93	92
APB	004	38	37	36	35	34
CTH	001	95	94	93	92	91
CTG	001	73	72	71	70	69
CTF	001	96	95	94	93	92
CTA1	001	99	98	97	96	95
CTA2	001	80	79	77	75	74
CTA3	001	69	68	66	64	62
CTA4	001	95	94	93	92	91
PTA	001	89	88	88	87	86
PTA	002	65	64	62	60	58
PTA	003	85	84	83	82	81
RWY0119	001	96	95	94	93	92
RWY0119	002	66	65	63	61	59
RWY0119	003	91	90	89	88	87
RWY0119	004	74	73	71	69	67

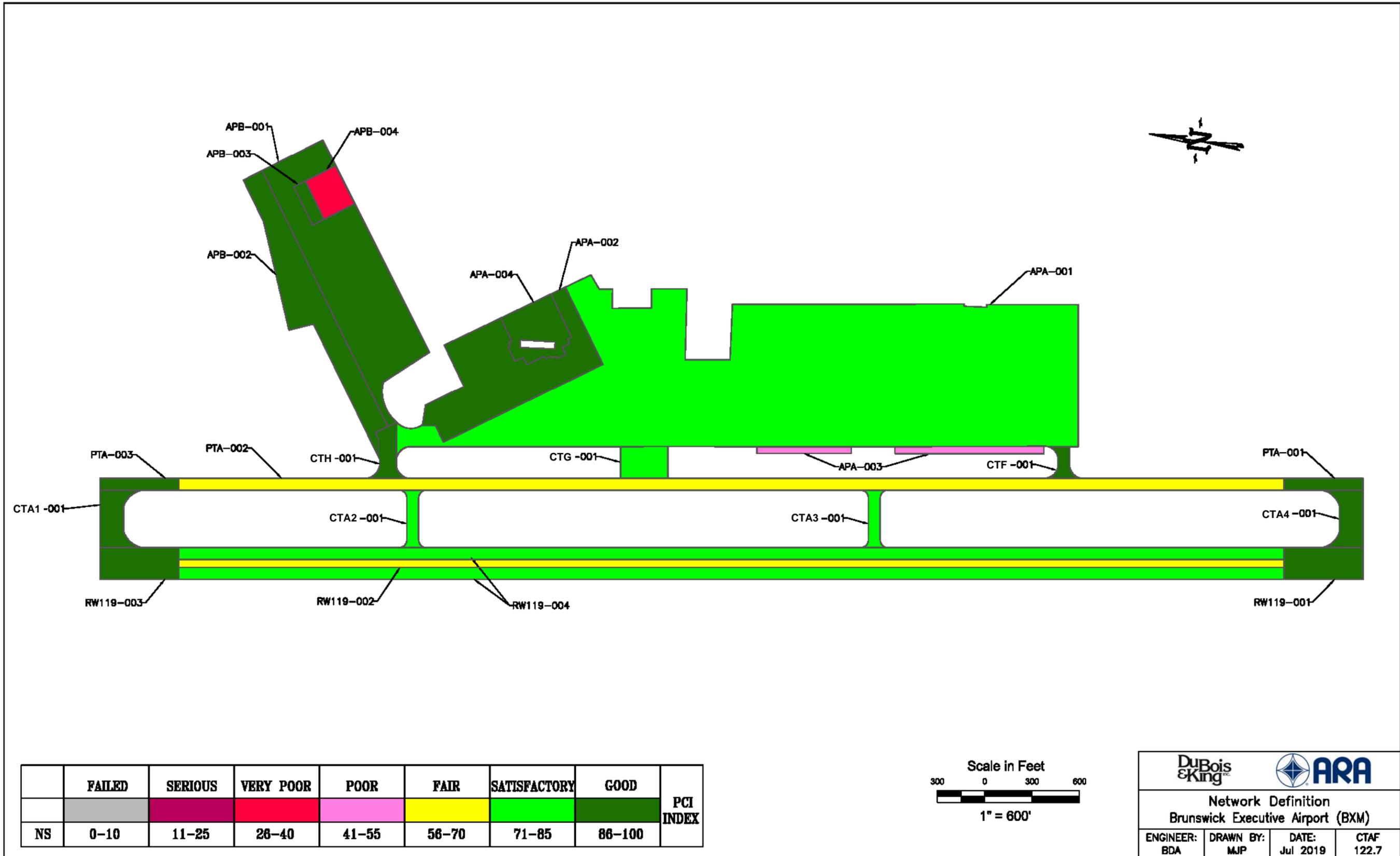


Figure 7. 2018 PCI Map at Brunswick Executive Airport (BXM)

3. Maintenance and Rehabilitation Needs

A 5-year M&R program was developed for BXM based on the 2018 pavement inspections and the projected PCI deterioration. The recommendations are divided into two categories—near term maintenance (local M&R) and major rehabilitation (major M&R). The near term maintenance is intended to address annual maintenance needs such as crack sealing and localized patching. The major rehabilitation treatments are applied globally and are capable of returning the pavement to a nearly distress-free state. Costs for both categories were developed based on recent bid tabs and are intended to represent typical unit costs in Maine. While these cost estimates provide a useful network-level planning tool, they are not meant to represent an engineer’s estimate for any particular project. Project-specific cost estimates must be developed on a case-by-case basis.

Table 5 shows the unit costs used to determine the near term maintenance needs and Table 6 shows the unit costs used to determine the major rehabilitation needs. Unlike the maintenance costs based on specific action items, PAVER estimates major rehabilitation costs based on the PCI value. Therefore, the costs shown in Table 6 are meant to represent a unit cost for complete reconstruction (PCI < 60) of \$31.01 for PCC and \$20.40 for AC pavement. For major rehabilitation (PCI between 61 and 70), unit costs are \$8.75 for PCC and \$2.75 for AC pavement. Note that the unit cost of \$2.75 between PCI values of 61 and 70 for AC pavement represents the cost of a 2-inch mill and inlay.

Table 5. Local M&R unit costs

Treatment Name	Unit Cost
Crack Sealing - AC	\$1.38 / Ft
Crack Sealing - PCC	\$3.93 / Ft
Grinding (Localized)	\$5.75 / Ft
Joint Seal (Localized)	\$3.85 / Ft
Patching - AC Deep	\$18.56 / SqFt
Patching - AC Shallow	\$16.81 / SqFt
Surface Treatment	\$0.61 / SqFt
Patching - PCC Full Depth	\$119.00 / SqFt
Patching - PCC Partial Depth	\$61.63 / SqFt
Slab Replacement - PCC	\$31.55 / SqFt
Undersealing - PCC	\$3.03 / Ft

Table 6. Major M&R unit costs

PCI	Cost AC	Cost PCC
0-60	\$20.40 / SqFt	\$31.01 / SqFt
61-70	\$2.75 / SqFt	\$8.75 / SqFt
71-80	\$1.10 / SqFt	\$5.45 / SqFt
81-100	\$0.61 / SqFt	\$0.61 / SqFt

3.1 Local M&R

Near term maintenance includes activities such as crack sealing, patching, and surface treatments that help to slow the rate of deterioration. Localized maintenance policies were developed for the AC and PCC surfaces. The policies, provided in appendix E, present the recommended maintenance treatment for each distress/severity combination.

Table 7 presents the summary of maintenance work quantities and estimated costs to apply the near term maintenance plan at BXM. The repair quantities are based on extrapolated distress quantities from PAVER using the 2018 PCI inspection and the maintenance policy matrix as defined in appendix E.

Table 7. Airport maintenance summary

Treatment	Estimated Repair Quantity	Units	Estimated Costs
Crack Sealing - AC	30,172	Ft	\$41,638
Crack Sealing - PCC	3,497	Ft	\$13,742
Joint Seal (Localized)	202,599	Ft	\$780,003
Patching - AC Deep	760	SqFt	\$14,112
Patching - PCC Full Depth	8,097	SqFt	\$963,553
Patching - PCC Partial Depth	1,718	SqFt	\$106,226
Slab Replacement - PCC	10,570	SqFt	\$333,488
Total:			\$2,252,761

When using this plan, it is recommended that the entire pavement section be viewed to determine whether the identified distress types are so advanced in density and severity that maintenance efforts will no longer be cost-effective. Table 8 provides a more detailed breakdown of the maintenance needs with each pavement section classified as preventive, restorative, or stopgap. Preventive maintenance is defined as occurring above the minimum service level (MSL) and is recommended as a cost-effective means of prolonging the pavement life. Restorative maintenance occurs below the MSL but has the ability to increase the PCI above the MSL. It is recommended that the airport engineer perform a life cycle cost analysis comparing restorative maintenance to major rehabilitation to determine the ideal repair strategy. Stopgap maintenance is defined as maintenance needs that will not restore the pavement to the MSL. Stopgap maintenance is typically limited to the minimum necessary to control FOD and maintain safety until such time as major rehabilitation can be programmed.

Table 8. Maintenance type by section

Branch	Section	Maintenance Type	PCI Before	PCI After	Cost
APA	001	Preventive	84	89	\$1,197,227
APA	002	Preventive	92	95	\$21,359
APA	003	Stopgap	45	68	\$236,830
APB	001	Preventive	88	91	\$110,555
APB	002	Preventive	94	96	\$23,963
APB	003	Preventive	97	100	\$8,622
APB	004	Stopgap	39	67	\$585,752
CTG	001	Preventive	74	77	\$12,317
CTA2	001	Preventive	82	83	\$171
CTA3	001	Preventive	71	73	\$306
PTA	002	Restorative	67	70	\$18,770
PTA	003	Preventive	86	88	\$387
RWY0119	002	Restorative	68	71	\$16,024
RWY0119	004	Preventive	76	79	\$20,479

It is important to understand that the maintenance plan is based on the distress types, severities, and quantities found during the 2018 PCI survey. As field conditions change, the maintenance plan will become less accurate. Therefore, the maintenance plan will be most useful if implemented as soon as is practical. Applying maintenance treatments should be an annual event at the airport, and this maintenance plan can serve as a baseline for that work. The recommended maintenance type for each section is shown in Figure 9 and summarized in Table 8. Recommended maintenance actions by section are provided in Table 9. Guidelines for performing crack sealing and patching techniques are provided in appendix F.

Table 9. Maintenance details by section

Branch	Section	Work Type	Quantity	Unit	Cost
APA	001	Crack Sealing - PCC	2,524	Ft	\$9,920
APA	001	Joint Seal (Localized)	151,000	Ft	\$581,350
APA	001	Patching - PCC Full Depth	4,367	SqFt	\$519,670
APA	001	Patching - PCC Partial Depth	1,396	SqFt	\$86,287
APA	002	Joint Seal (Localized)	3,379	Ft	\$13,009
APA	002	Patching - PCC Partial Depth	136	SqFt	\$8,350
APA	003	Crack Sealing - PCC	207	Ft	\$815
APA	003	Joint Seal (Localized)	8,579	Ft	\$33,029
APA	003	Patching - PCC Full Depth	81	SqFt	\$9,660
APA	003	Slab Replacement - PCC	6,128	SqFt	\$193,326
APB	001	Crack Sealing - PCC	655	Ft	\$2,575
APB	001	Joint Seal (Localized)	25,781	Ft	\$99,258
APB	001	Patching - PCC Partial Depth	141	SqFt	\$8,721
APB	002	Joint Seal (Localized)	5,301	Ft	\$20,408
APB	002	Patching - PCC Full Depth	19	SqFt	\$2,339
APB	002	Patching - PCC Partial Depth	19	SqFt	\$1,215
APB	003	Slab Replacement - PCC	273	SqFt	\$8,622
APB	004	Joint Seal (Localized)	8,558	Ft	\$32,948
APB	004	Patching - PCC Full Depth	3,529	SqFt	\$419,903
APB	004	Patching - PCC Partial Depth	22	SqFt	\$1,360
APB	004	Slab Replacement - PCC	4,171	SqFt	\$131,540
CTG	001	Crack Sealing - PCC	86	Ft	\$337
CTG	001	Patching - PCC Full Depth	101	SqFt	\$11,980
CTA2	001	Crack Sealing - AC	124	Ft	\$171
CTA3	001	Crack Sealing - AC	37	Ft	\$51
CTA3	001	Patching - AC Deep	14	SqFt	\$254
PTA	002	Crack Sealing - AC	3,560	Ft	\$4,913
PTA	002	Patching - AC Deep	746	SqFt	\$13,857
PTA	003	Crack Sealing - PCC	24	Ft	\$95
PTA	003	Patching - PCC Partial Depth	4	SqFt	\$292
RWY0119	002	Crack Sealing - AC	11,611	Ft	\$16,024
RWY0119	004	Crack Sealing - AC	14,840	Ft	\$20,479

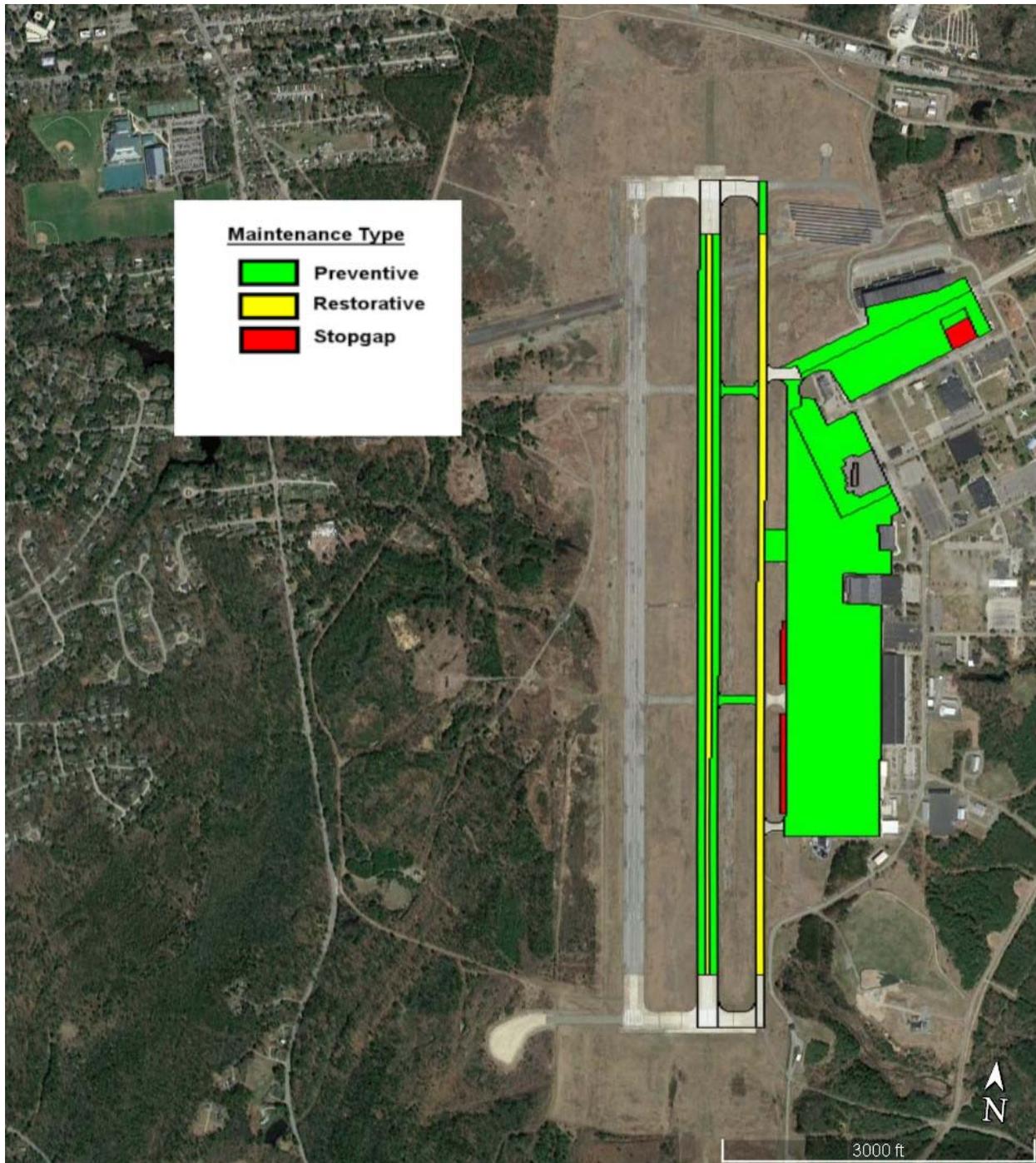


Figure 8. Maintenance type

3.2 Major M&R

In addition to the annual maintenance activities such as crack sealing and patching, some pavements may require more substantial rehabilitation. As a planning aid to the airport and MaineDOT, Table 10 provides a summary from PAVER of the predicted 5-year pavement rehabilitation needs at BXM. The recommended timing of each improvement action is defined as the year that the pavement condition is projected to reach the MSL. By establishing benchmark MSL targets, it is possible to plan objectively for future needs against a standard set of performance criteria. Based on D&K/ARA's recommendations and a review of national best practices, MaineDOT Division of Aviation has selected benchmark MSL values of 70 for all airside pavement. These MSL values fall within the typical range of those used throughout the nation to manage general aviation airport pavement.

The pavement sections identified for major rehabilitation in Table 10 and shown in Figure 9 are at or are predicted to reach a condition level where major M&R should be considered. While the predicted rehabilitation timeline identifies specific sections and the general timing for the repair, more in-depth project-level studies will be needed to determine exactly how to fix each pavement (i.e. asphalt overlay, reconstruction, or some other repair alternative). Additionally, the airport may find it desirable to adjust the timing of projects to meet fiscal and operational constraints. For example, if the runway and several connector taxiways were forecast to reach the MSL in various years ranging from 2019-2023, it may be preferable to group these pavement sections into a single project.

Note that identifying projects for work does not guarantee that federal or state funding will be available to complete the work in the year shown. The airport and MaineDOT should view these recommendations as viable projects when preparing future capital improvement plans (CIP).

Table 10. 5-year major rehabilitation plan.

Branch ID	Section ID	Year	Predicted PCI Before Rehab	Estimated Cost
APA	003	2020	43	\$2,102,485
APB	004	2020	37	\$1,721,061
CTA3	001	2020	68	\$80,710
PTA	002	2020	64	\$1,443,713
RWY0119	002	2020	65	\$962,476
RWY0119	004	2022	69	\$2,887,427
CTG	001	2023	69	\$521,039
5-year Airport Total				\$9,718,912

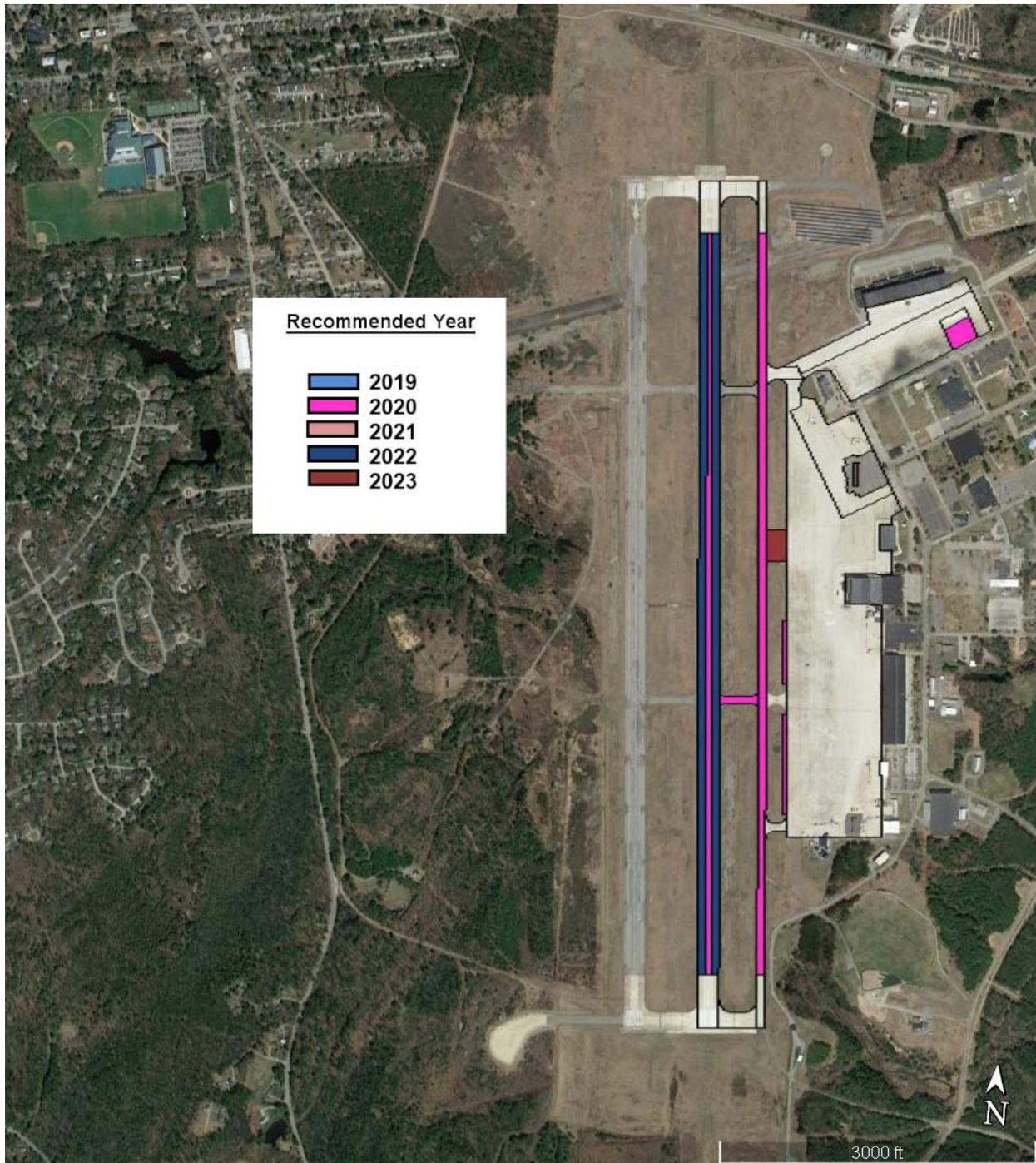


Figure 9. Major M&R

3.3 Airfield Capital Improvement Plan - Unlimited Budget

Assuming that all pavement sections below the MSL receive major M&R and that all pavement sections above the MSL receive preventive maintenance, the total funding needs for the identified maintenance and rehabilitation projects at BXM are shown in Table 11. Note that funding sources will vary by airport, but it is generally assumed that major M&R projects will be eligible for FAA AIP funding and that preventive maintenance will be completed with airport/city staff. Pavement sections, where restorative maintenance appears to be a cost effective alternative to major M&R, have been flagged for additional analysis by the airport sponsor / design engineer. If this pavement repair plan were to be implemented as shown, the subsequent projected PCI values for each pavement section are shown in Table 12.

Table 11. Summary of repair needs (unlimited budget)

Branch ID	Section ID	Year	Type of Repair	Funding Sources	Cost
APA	001	2020	Preventive Maintenance	Local / City Crew	\$1,197,227
APA	002	2020	Preventive Maintenance	Local / City Crew	\$21,359
APA	003	2020	Major M&R	FAA/Local	\$2,102,485
APA	004	2020	No Action		
APB	001	2020	Preventive Maintenance	Local / City Crew	\$110,555
APB	002	2020	Preventive Maintenance	Local / City Crew	\$23,963
APB	003	2020	Preventive Maintenance	Local / City Crew	\$8,622
APB	004	2020	Major M&R	FAA/Local	\$1,721,061
CTH	001	2020	No Action		
CTG	001	2020 ¹	Preventive Maintenance	Local / City Crew	\$12,317
CTF	001	2020	No Action		
CTA1	001	2020	No Action		
CTA2	001	2020	Preventive Maintenance	Local / City Crew	\$171
CTA3	001	2020	Major M&R	FAA/Local	\$80,710
CTA4	001	2020	No Action		
PTA	001	2020	No Action		
PTA	002	2020	Major M&R	FAA/Local	\$1,443,713
PTA	003	2020	Preventive Maintenance	Local / City Crew	\$387
RWY0119	001	2020	No Action		
RWY0119	002	2020	Major M&R	FAA/Local	\$962,476
RWY0119	003	2020	No Action		
RWY0119	004	2020 ²	Preventive Maintenance	Local / City Crew	\$20,479
RWY0119	004	2022 ²	Major M&R	FAA/Local	\$2,887,427
APA	001	2023	Preventive Maintenance	Local / City Crew	\$30,119
APA	002	2023	Preventive Maintenance	Local / City Crew	\$4,153
APA	003	2023	Preventive Maintenance	Local / City Crew	\$678
APA	004	2023	Preventive Maintenance	Local / City Crew	\$1,764
APB	001	2023	Preventive Maintenance	Local / City Crew	\$5,897
APB	002	2023	Preventive Maintenance	Local / City Crew	\$3,150
APB	003	2023	Preventive Maintenance	Local / City Crew	\$252
APB	004	2023	Preventive Maintenance	Local / City Crew	\$555

Branch ID	Section ID	Year	Type of Repair	Funding Sources	Cost
CTH	001	2023	Preventive Maintenance	Local / City Crew	\$400
CTG	001	2023 ¹	Major M&R	FAA/Local	\$521,039
CTF	001	2023	Preventive Maintenance	Local / City Crew	\$191
CTA1	001	2023	Preventive Maintenance	Local / City Crew	\$619
CTA2	001	2023	Preventive Maintenance	Local / City Crew	\$2,400
CTA3	001	2023	Preventive Maintenance	Local / City Crew	\$294
CTA4	001	2023	Preventive Maintenance	Local / City Crew	\$612
PTA	001	2023	Preventive Maintenance	Local / City Crew	\$375
PTA	002	2023	Preventive Maintenance	Local / City Crew	\$5,250
PTA	003	2023	Preventive Maintenance	Local / City Crew	\$375
RWY0119	001	2023	Preventive Maintenance	Local / City Crew	\$1,000
RWY0119	002	2023	Preventive Maintenance	Local / City Crew	\$3,500
RWY0119	003	2023	Preventive Maintenance	Local / City Crew	\$1,000
RWY0119	004	2023	Preventive Maintenance	Local / City Crew	\$10,500
Total:					\$11,187,075

¹ Preventive Maintenance for CTG-001 estimated at \$12,317 will keep the section PCI above 70 until 2027.

² Preventive Maintenance for RWY0119-004 estimated at \$20,479 will keep the section PCI above 70 until 2025.

Table 12. Projected PCI by section (unlimited funding)

Branch ID	Section ID	2019	2020	2021	2022	2023
APA	001	83	89	88	87	86
APA	002	91	95	94	93	92
APA	003	44	100	99	98	97
APA	004	93	91	90	88	86
APB	001	87	91	90	89	88
APB	002	93	96	95	94	93
APB	003	96	100	99	98	97
APB	004	38	100	99	98	97
CTH	001	95	94	93	92	91
CTG	001	73	72	71	70	100
CTF	001	96	95	94	93	92
CTA1	001	99	98	97	96	95
CTA2	001	80	83	81	80	78
CTA3	001	69	100	99	97	96
CTA4	001	95	94	93	92	91
PTA	001	89	88	88	87	86
PTA	002	65	100	99	97	96
PTA	003	85	88	87	86	85
RWY0119	001	96	95	94	93	92
RWY0119	002	66	100	99	97	96
RWY0119	003	91	90	89	88	87
RWY0119	004	74	73	71	100	99

3.4 Airport Responsibilities

The FAA has defined an acceptable maintenance-management program, and this report fulfills many requirements of such a program, including documenting:

- Locations of all runways, taxiways, and aprons.
- Dimensions of the pavement system.
- Types of pavement.
- Year of construction or most recent major rehabilitation.

In accordance with best practices, the airport owner should be an active participant specifically by implementing the following actions:

- Conduct a "drive-by" inspection at least monthly to detect changes in pavement condition.
- Record the date of each "drive-by" inspection and any maintenance performed as a result.
- Document all maintenance activities.
- Document detailed inspection information with a history of recorded pavement deterioration by PCI survey (e.g., this report).
- Maintain all records on file for a minimum of 5 years.

An example of a form that can be completed during "drive-by" inspections is provided in appendix F.

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Appendix A: Sample Unit Maps

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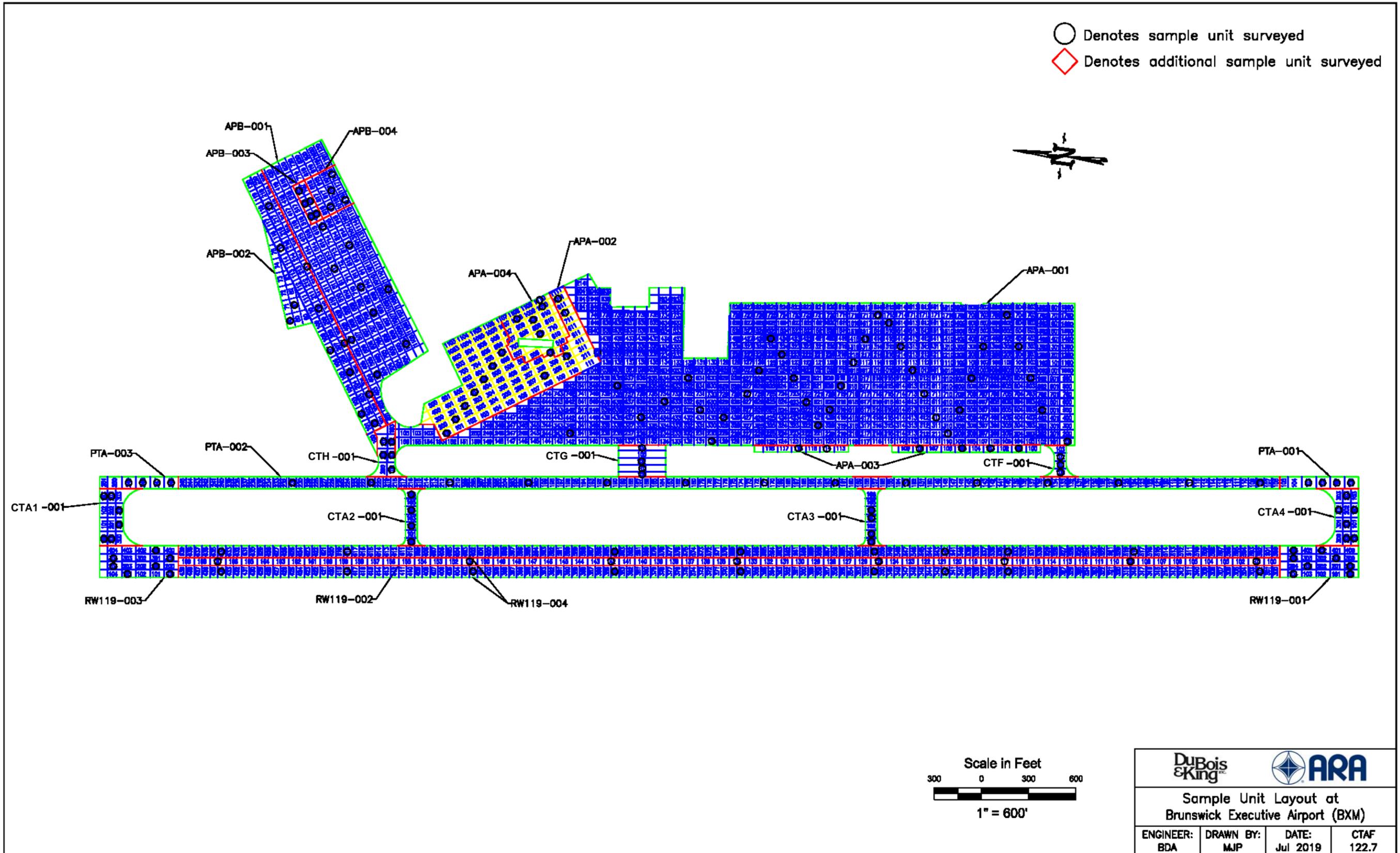


Figure A1. Sample Unit Layout at Brunswick Executive Airport (BXM)

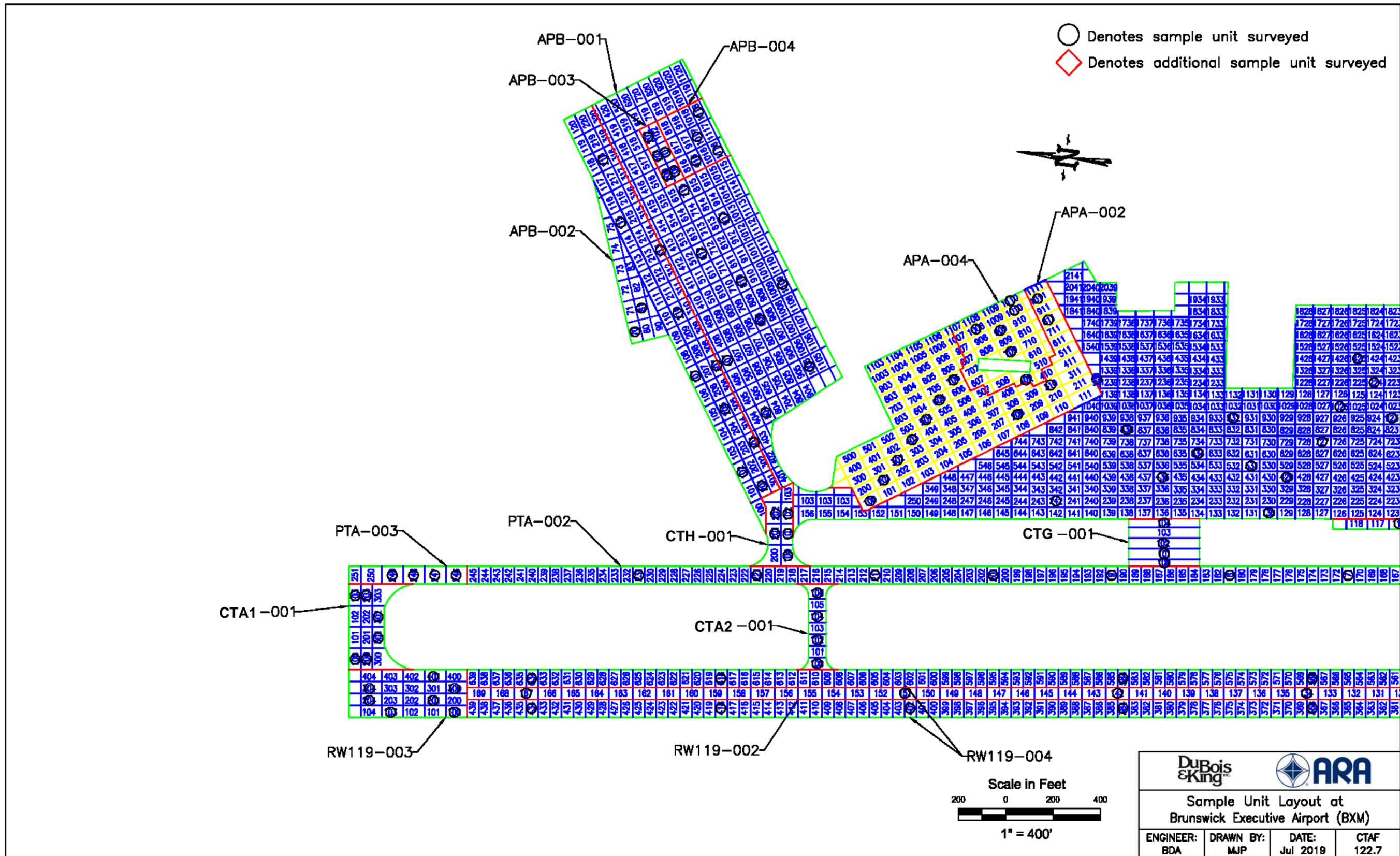
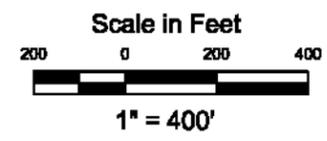
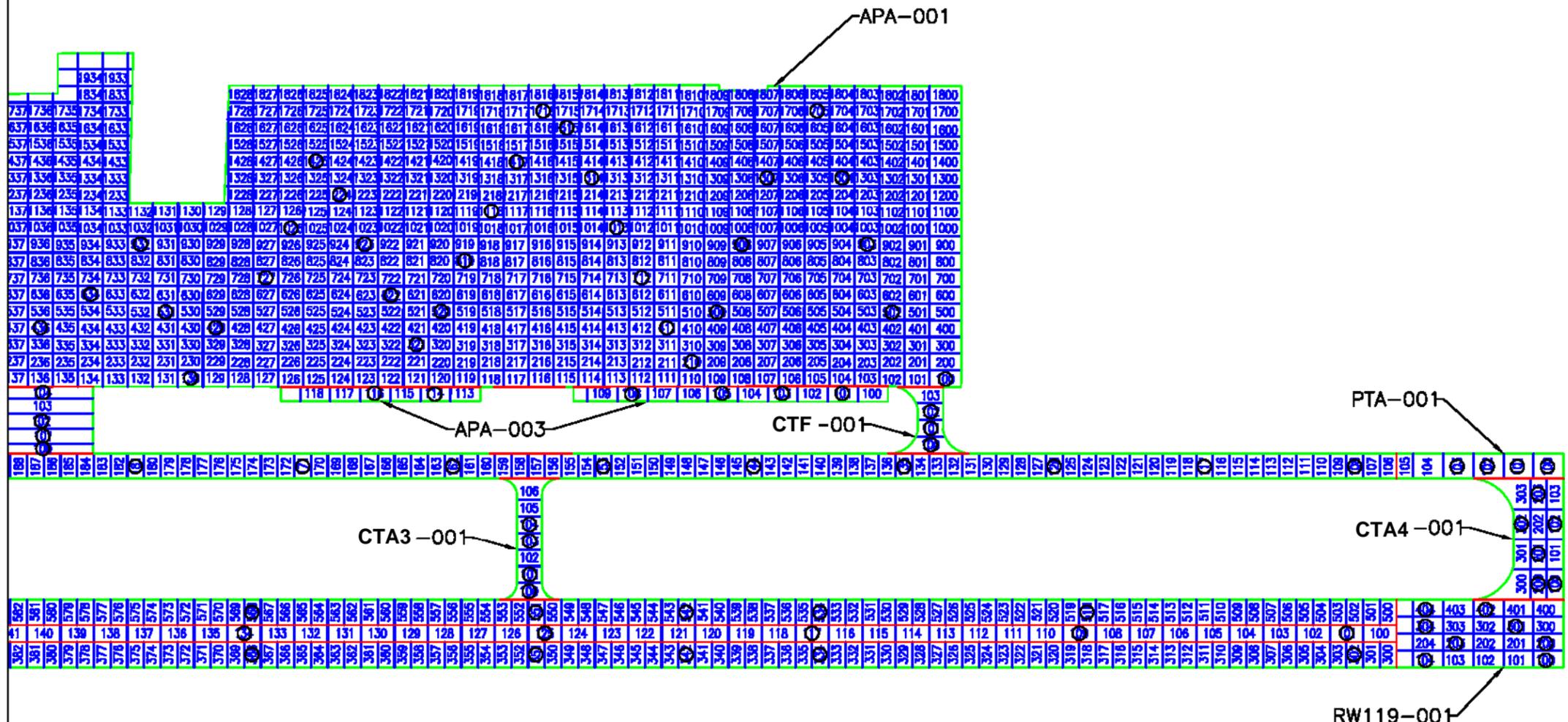
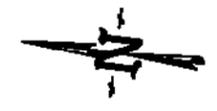


Figure A2. Sample Unit Layout at Brunswick Executive Airport (BXM)

- Denotes sample unit surveyed
- ◇ Denotes additional sample unit surveyed



Sample Unit Layout at Brunswick Executive Airport (BXM)			
ENGINEER: BDA	DRAWN BY: MJP	DATE: Jul 2019	CTAF 122.7

Figure A3. Sample Unit Layout at Brunswick Executive Airport (BXM)

Appendix B: Pavement Analysis

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ARAPA

ARA Pavement Analysis

Section:	BXM::APA::001
Description:	Apron A
PaveType:	PCC
Area:	3,011,900
Built:	1/15/1957
Age:	62yr

InspPCI:	84
InspPCI Rating:	Satisfactory
InspDate:	10/29/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	43
MSL:	70

Work History	Year	Thickness (in)	Type
1	1957	0.0	new construction - pcc
2	1957	11.0	surface course - pcc (layer construct)
3	1957	9.5	subbase - aggregate
4	-	-	-
5	-	-	-

Basic Cause of Distress:

Traffic/Load:	16%	Total Samples:	785
Age/Weather:	42%	Insp. Samples:	35
Other:	42%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner break	184	low	Slabs
2	corner break	46	medium	Slabs
3	corner spall	138	low	Slabs
4	corner spall	230	medium	Slabs
5	faulting	46	low	Slabs
6	joint spall	115	low	Slabs
7	joint spall	92	medium	Slabs
8	joint spall	23	high	Slabs
9	jt seal dmg	918	low	Slabs
10	jt seal dmg	3,672	medium	Slabs
11	jt seal dmg	1,836	high	Slabs
12	large patch	620	low	Slabs
13	large patch	46	medium	Slabs
14	large patch	46	high	Slabs
15	ltd crack	367	low	Slabs
16	ltd crack	184	medium	Slabs
17	scaling	23	low	Slabs
18	shrinkage	207	n/a	Slabs
19	small patch	2,088	low	Slabs
20	small patch	184	medium	Slabs
21	small patch	23	high	Slabs
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23	-	-	-	-
24	-	-	-	-
25	-	-	-	-

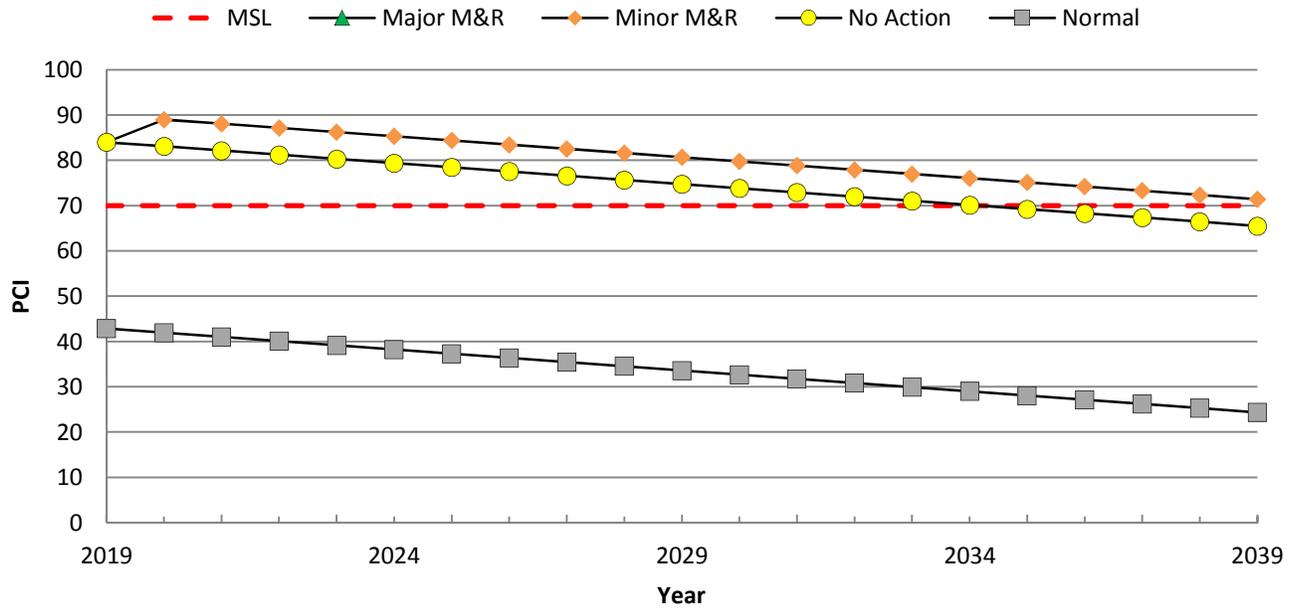
ARA Pavement Analysis

Section:

BXM::APA::001

Description:

Apron A



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	All Minor	2020	1,197,227	89
1	Joint Seal (Localized)	151000 Ft	581,350	-
2	Patching - PCC Full Depth	4367 SqFt	519,670	-
3	Patching - PCC Partial Depth	1396 SqFt	86,287	-
4	Crack Sealing - PCC	2524 Ft	9,920	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::APA::002
Description:	Apron A
PaveType:	PCC
Area:	415,300
Built:	5/30/2004
Age:	14yr

InspPCI:	92
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	87
MSL:	70

Work History	Year	Thickness (in)	Type
1	2004	0.0	new construction - pcc
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	12%	Total Samples:	80
Age/Weather:	59%	Insp. Samples:	11
Other:	29%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner break	35	low	Slabs
2	corner spall	9	low	Slabs
3	corner spall	9	medium	Slabs
4	joint spall	9	low	Slabs
5	joint spall	17	medium	Slabs
6	jt seal dmg	415	high	Slabs
7	ltd crack	17	low	Slabs
8	shrinkage	43	n/a	Slabs
9	small patch	294	low	Slabs
10	small patch	17	medium	Slabs
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

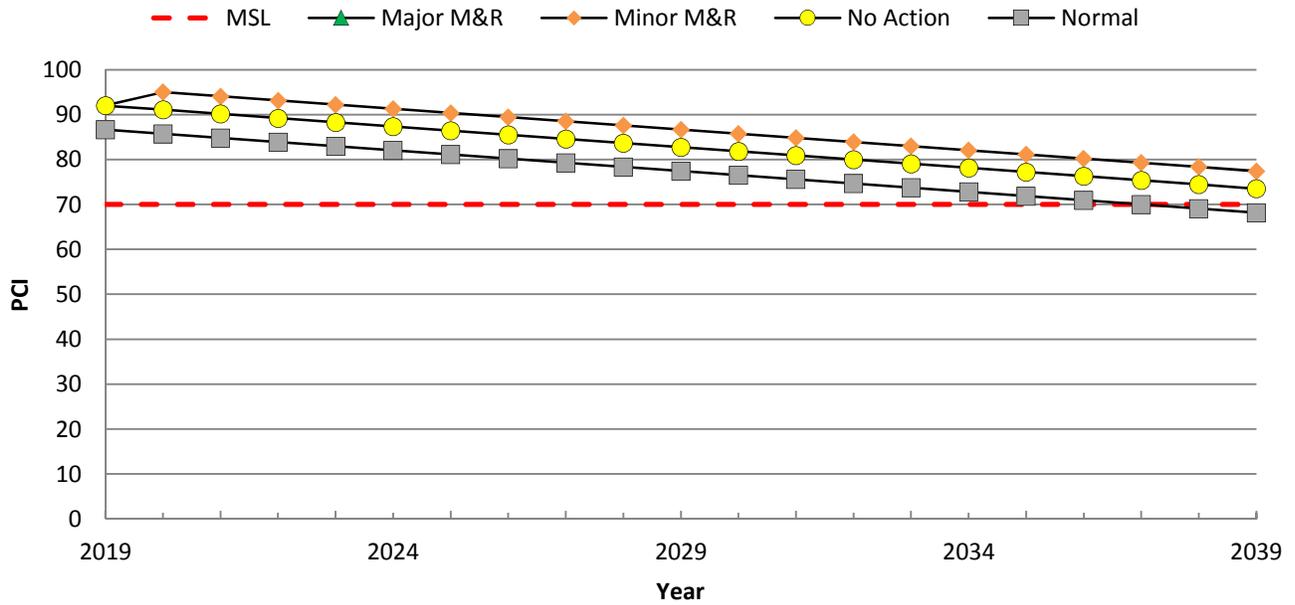
ARA Pavement Analysis

Section:

BXM::APA::002

Description:

Apron A



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	All Minor	2020	21,359	95
1	Joint Seal (Localized)	3379 Ft	13,009	-
2	Patching - PCC Partial Depth	136 SqFt	8,350	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-

No Section Photo

ARA Pavement Analysis

Section:	BXM::APA::003
Description:	Apron A
PaveType:	PCC
Area:	67,800
Built:	2/15/1957
Age:	62yr

InspPCI:	45
InspPCI Rating:	Poor
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	43
MSL:	70

Work History	Year	Thickness (in)	Type
1	1957	0.0	new construction - pcc
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	80%	Total Samples:	17
Age/Weather:	19%	Insp. Samples:	6
Other:	1%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner break	48	low	Slabs
2	corner break	3	medium	Slabs
3	jt seal dmg	121	medium	Slabs
4	jt seal dmg	241	high	Slabs
5	large patch	5	low	Slabs
6	ltd crack	113	low	Slabs
7	ltd crack	15	medium	Slabs
8	shattered slab	33	low	Slabs
9	shattered slab	33	medium	Slabs
10	small patch	5	low	Slabs
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
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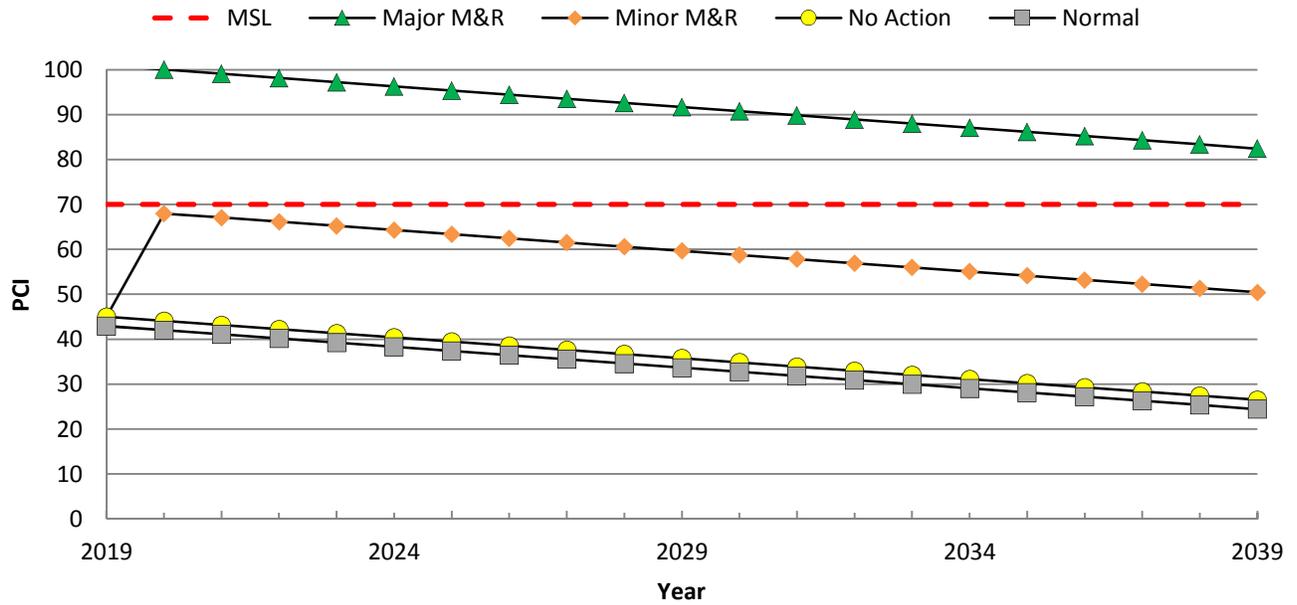
ARA Pavement Analysis

Section:

BXM::APA::003

Description:

Apron A



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2020	2,102,485	100
Minor	All Minor	2020	236,830	68
1	Slab Replacement - PCC	6128 SqFt	193,326	-
2	Joint Seal (Localized)	8579 Ft	33,029	-
3	Patching - PCC Full Depth	81 SqFt	9,660	-
4	Crack Sealing - PCC	207 Ft	815	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::APA::004
Description:	Apron A
PaveType:	AC
Area:	114,800
Built:	1/15/2012
Age:	7yr

InspPCI:	95
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE AC APRON-TLN
NormalPCI:	88
MSL:	70

Work History	Year	Thickness (in)	Type
1	2012	0.0	overlay - ac
2	2012	4.0	surface course - ac (layer construct)
3	1957	0.0	new construction - pcc
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	28
Age/Weather:	100%	Insp. Samples:	6
Other:	0%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	l & t crack	1,278	low	Ft
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
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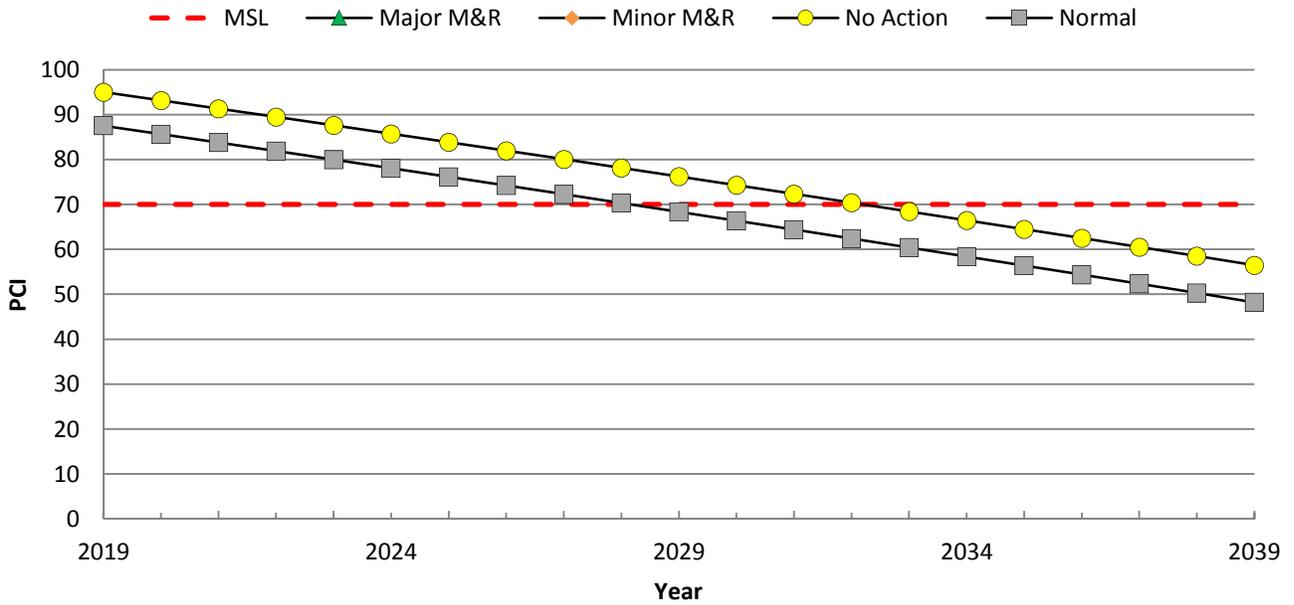
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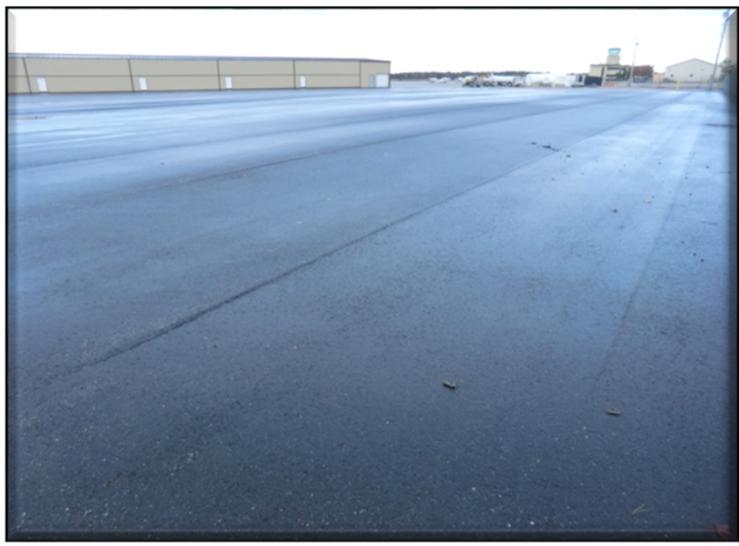
BXM::APA::004

Description:

Apron A



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::APB::001
Description:	Apron B
PaveType:	PCC
Area:	589,650
Built:	1/15/1951
Age:	68yr

InspPCI:	88
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	37
MSL:	70

Work History	Year	Thickness (in)	Type
1	1951	0.0	new construction - pcc
2	1951	9.5	surface course - pcc (layer construct)
3	1951	8.0	subbase - aggregate
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	10%	Total Samples:	122
Age/Weather:	56%	Insp. Samples:	11
Other:	34%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner spall	72	low	Slabs
2	corner spall	12	medium	Slabs
3	corner spall	12	high	Slabs
4	faulting	24	low	Slabs
5	joint spall	12	low	Slabs
6	joint spall	12	medium	Slabs
7	jt seal dmg	286	low	Slabs
8	jt seal dmg	572	medium	Slabs
9	jt seal dmg	286	high	Slabs
10	large patch	107	low	Slabs
11	ltd crack	48	medium	Slabs
12	scaling	203	low	Slabs
13	shrinkage	60	n/a	Slabs
14	small patch	560	low	Slabs
15	small patch	12	medium	Slabs
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

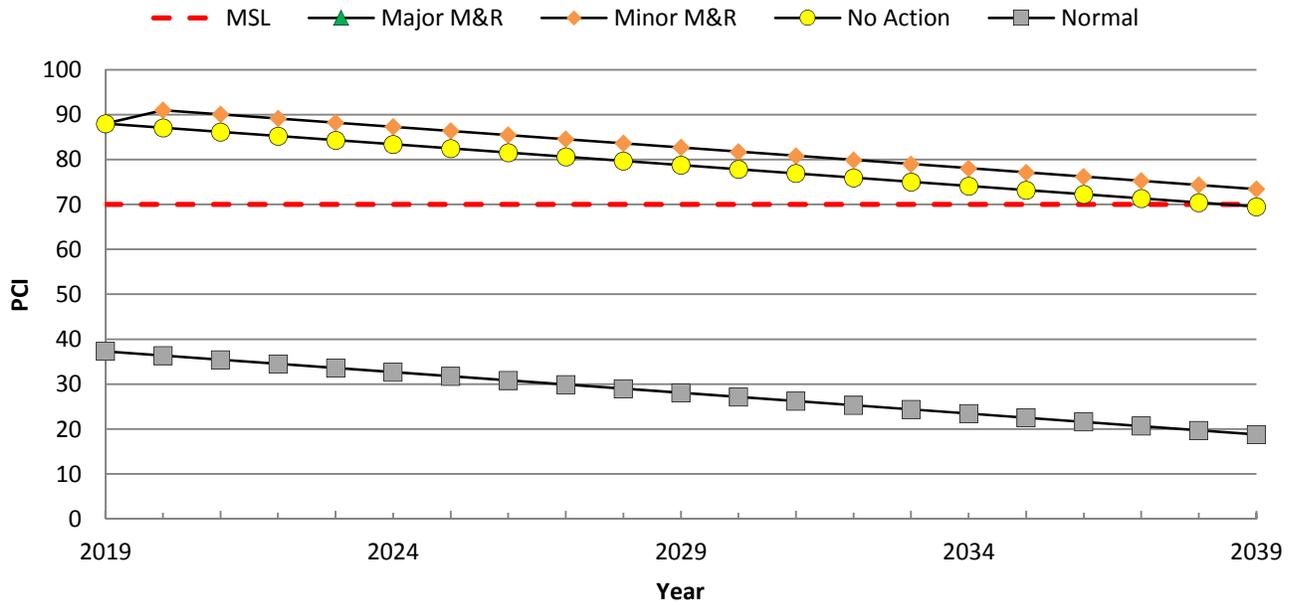
ARA Pavement Analysis

Section:

BXM::APB::001

Description:

Apron B



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	All Minor	2020	110,555	91
1	Joint Seal (Localized)	25781 Ft	99,258	-
2	Patching - PCC Partial Depth	141 SqFt	8,721	-
3	Crack Sealing - PCC	655 Ft	2,575	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::APB::002
Description:	Apron B
PaveType:	PCC
Area:	315,000
Built:	6/1/2003
Age:	15yr

InspPCI:	94
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	86
MSL:	70

Work History	Year	Thickness (in)	Type
1	2003	0.0	new construction - pcc
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	12%	Total Samples:	72
Age/Weather:	55%	Insp. Samples:	10
Other:	33%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner break	15	low	Slabs
2	corner spall	22	low	Slabs
3	corner spall	7	high	Slabs
4	jt seal dmg	307	low	Slabs
5	jt seal dmg	175	medium	Slabs
6	large patch	22	low	Slabs
7	ltd crack	7	low	Slabs
8	small patch	44	low	Slabs
9	small patch	15	medium	Slabs
10	small patch	7	high	Slabs
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

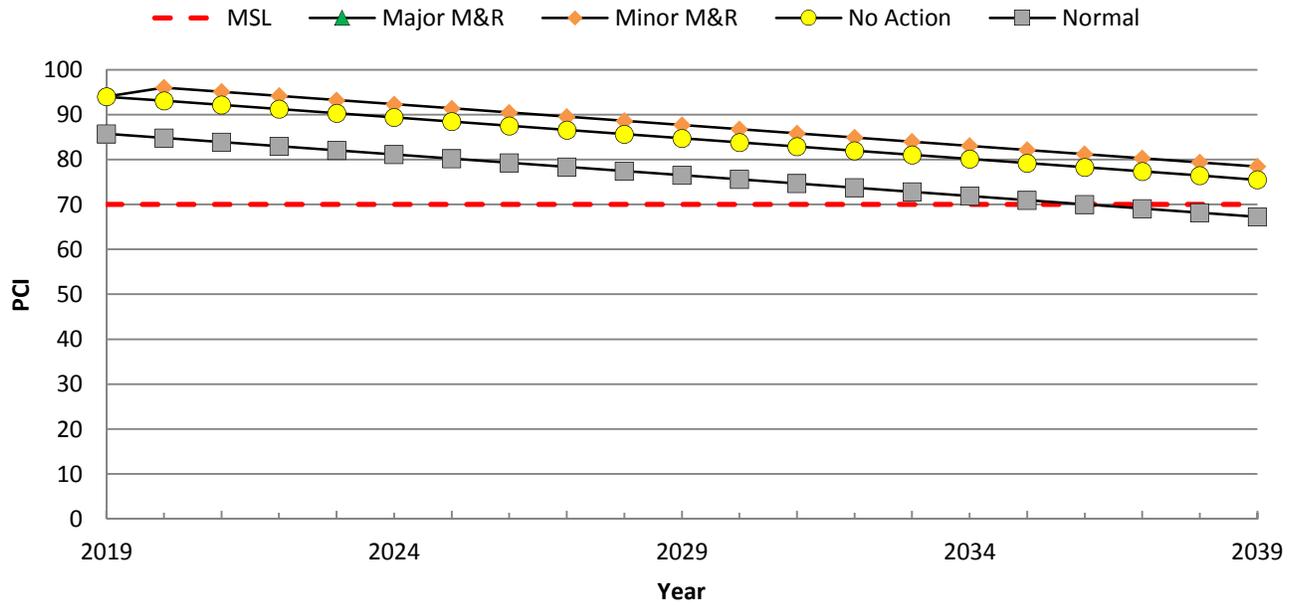
ARA Pavement Analysis

Section:

BXM::APB::002

Description:

Apron B



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	All Minor	2020	23,963	96
1	Joint Seal (Localized)	5301 Ft	20,408	-
2	Patching - PCC Full Depth	19 SqFt	2,339	-
3	Patching - PCC Partial Depth	19 SqFt	1,215	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::APB::003
Description:	Apron B
PaveType:	PCC
Area:	25,150
Built:	2/15/2006
Age:	13yr

InspPCI:	97
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	88
MSL:	70

Work History	Year	Thickness (in)	Type
1	2006	0.0	new construction - pcc
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	6
Age/Weather:	100%	Insp. Samples:	5
Other:	0%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	blow-up	1	low	Slabs
2	jt seal dmg	22	low	Slabs
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

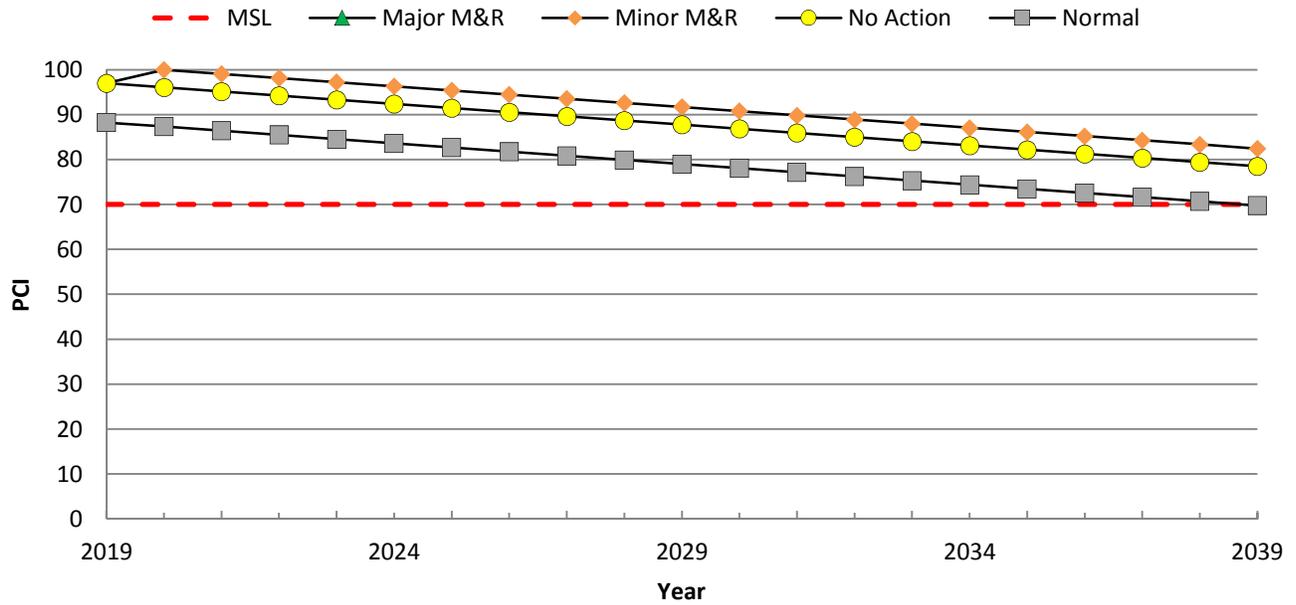
ARA Pavement Analysis

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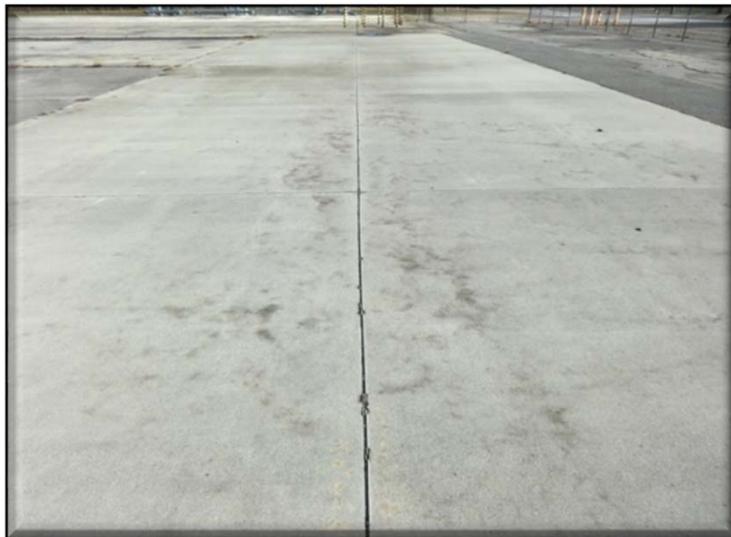
BXM::APB::003

Description:

Apron B



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	All Minor	2020	8,622	100
1	Slab Replacement - PCC	273 SqFt	8,622	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::APB::004
Description:	Apron B
PaveType:	PCC
Area:	55,500
Built:	2/15/1957
Age:	62yr

InspPCI:	39
InspPCI Rating:	Very Poor
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	43
MSL:	70

Work History	Year	Thickness (in)	Type
1	1957	0.0	new construction - pcc
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	41%	Total Samples:	15
Age/Weather:	49%	Insp. Samples:	4
Other:	10%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	blow-up	3	medium	Slabs
2	corner break	38	low	Slabs
3	corner break	6	medium	Slabs
4	d-crack	16	low	Slabs
5	d-crack	55	medium	Slabs
6	d-crack	3	high	Slabs
7	joint spall	11	low	Slabs
8	joint spall	3	high	Slabs
9	jt seal dmg	109	medium	Slabs
10	jt seal dmg	109	high	Slabs
11	large patch	19	low	Slabs
12	ltd crack	3	low	Slabs
13	shattered slab	8	low	Slabs
14	shattered slab	8	medium	Slabs
15	shattered slab	3	high	Slabs
16	small patch	3	low	Slabs
17	small patch	11	medium	Slabs
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

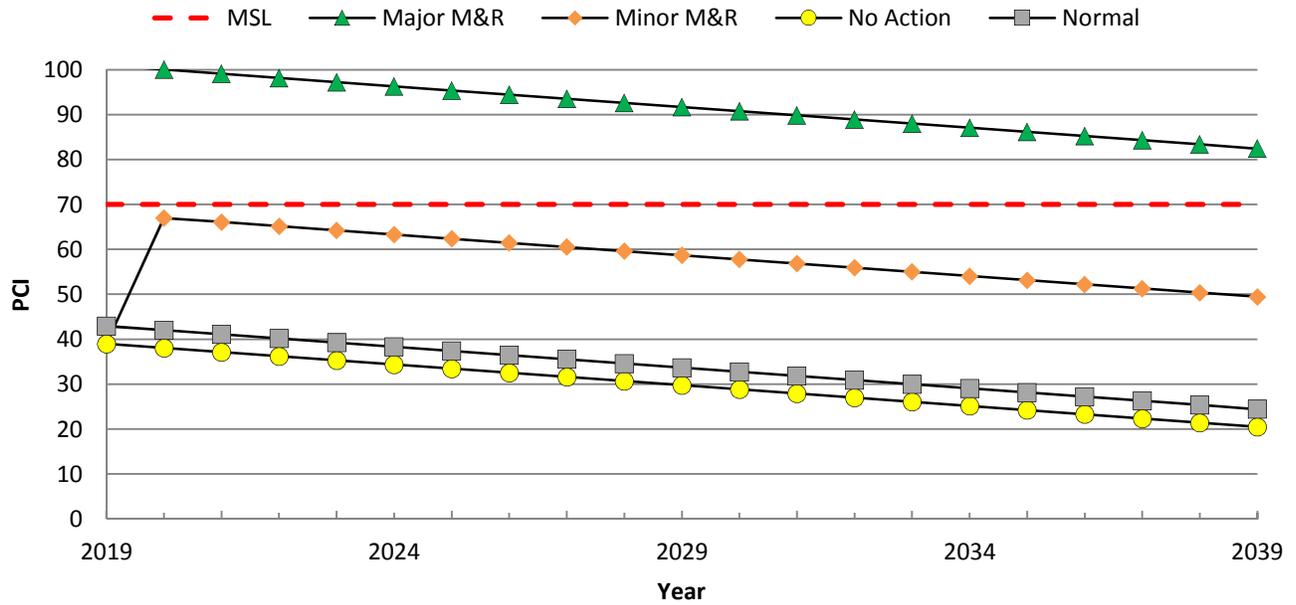
ARA Pavement Analysis

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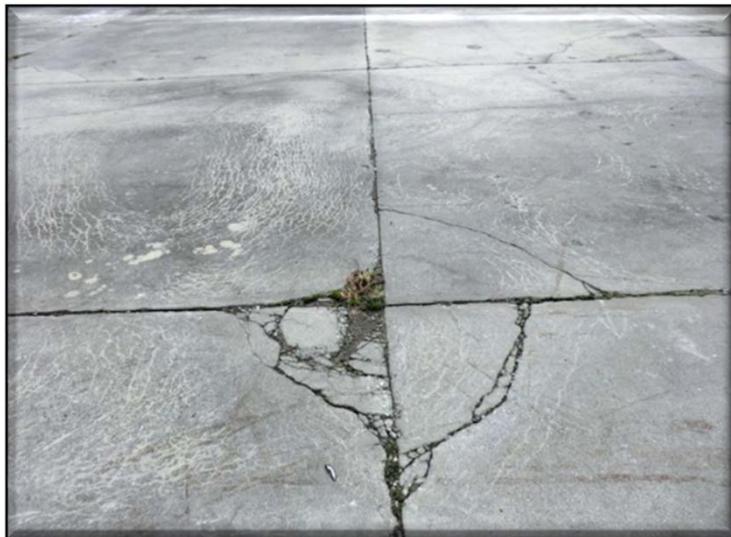
BXM::APB::004

Description:

Apron B



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2020	1,721,061	100
Minor	All Minor	2020	585,752	67
1	Patching - PCC Full Depth	3529 SqFt	419,903	-
2	Slab Replacement - PCC	4171 SqFt	131,540	-
3	Joint Seal (Localized)	8558 Ft	32,948	-
4	Patching - PCC Partial Depth	22 SqFt	1,360	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM: CTH :001
Description:	Connecting Taxiway H
PaveType:	PCC
Area:	40,000
Built:	1/15/2004
Age:	15yr

InspPCI:	96
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	86
MSL:	70

Work History	Year	Thickness (in)	Type
1	2004	0.0	complete reconstruction - pcc
2	2004	13.0	surface course - pcc (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	8
Age/Weather:	35%	Insp. Samples:	5
Other:	65%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	joint spall	10	low	Slabs
2	jt seal dmg	89	low	Slabs
3	large patch	5	low	Slabs
4	small patch	3	low	Slabs
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

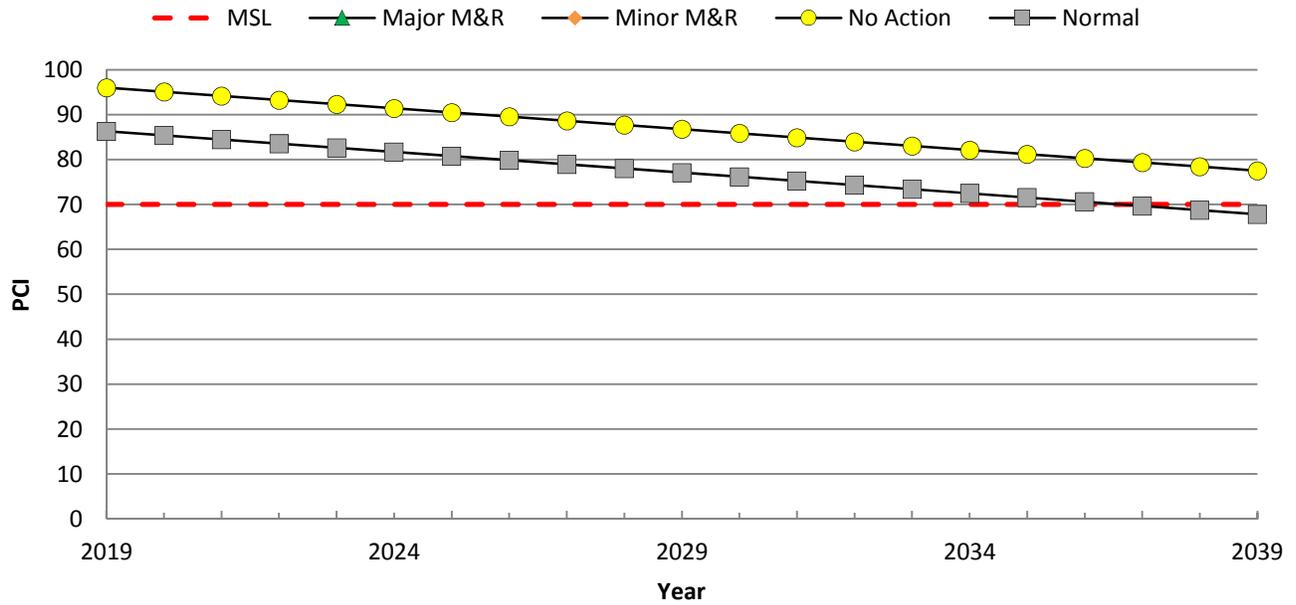
ARA Pavement Analysis

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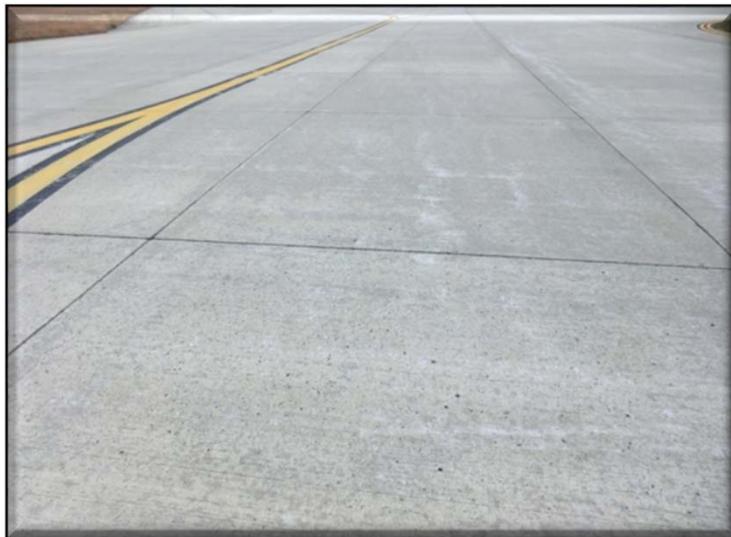
BXM: CTH :001

Description:

Connecting Taxiway H



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM: CTG :001
Description:	Connecting Taxiway G
PaveType:	PCC
Area:	59,550
Built:	1/15/2004
Age:	15yr

InspPCI:	74
InspPCI Rating:	Satisfactory
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	86
MSL:	70

Work History	Year	Thickness (in)	Type
1	2004	0.0	complete reconstruction - pcc
2	2004	13.0	surface course - pcc (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	49%	Total Samples:	12
Age/Weather:	0%	Insp. Samples:	4
Other:	51%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner break	16	low	Slabs
2	corner break	3	medium	Slabs
3	large patch	34	low	Slabs
4	large patch	3	medium	Slabs
5	ltd crack	13	low	Slabs
6	ltd crack	6	medium	Slabs
7	shattered slab	3	low	Slabs
8	small patch	172	low	Slabs
9	small patch	3	medium	Slabs
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

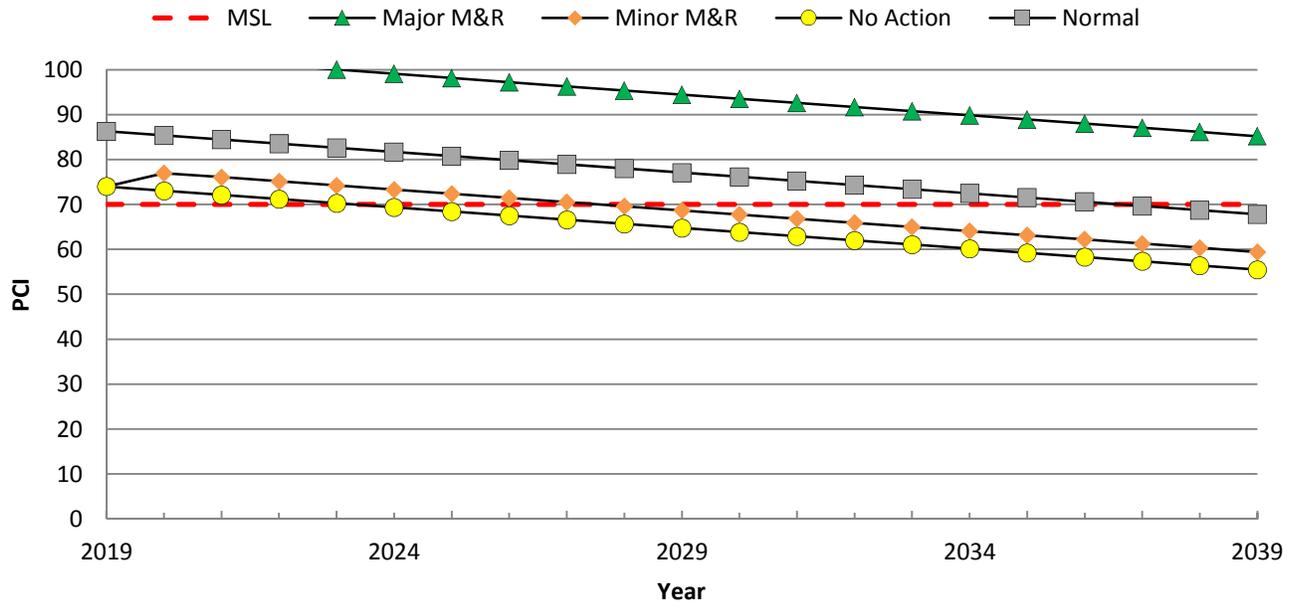
ARA Pavement Analysis

Section:

BXM: CTG :001

Description:

Connecting Taxiway G



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2023	521,039	100
Minor	All Minor	2020	12,317	77
1	Patching - PCC Full Depth	101 SqFt	11,980	-
2	Crack Sealing - PCC	86 Ft	337	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM: CTF :001
Description:	Connecting Taxiway F
PaveType:	PCC
Area:	19,100
Built:	1/15/2004
Age:	15yr

InspPCI:	97
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	86
MSL:	70

Work History	Year	Thickness (in)	Type
1	2004	0.0	complete reconstruction - pcc
2	2004	13.0	surface course - pcc (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	4
Age/Weather:	0%	Insp. Samples:	3
Other:	100%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	large patch	2	low	Slabs
2	small patch	8	low	Slabs
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

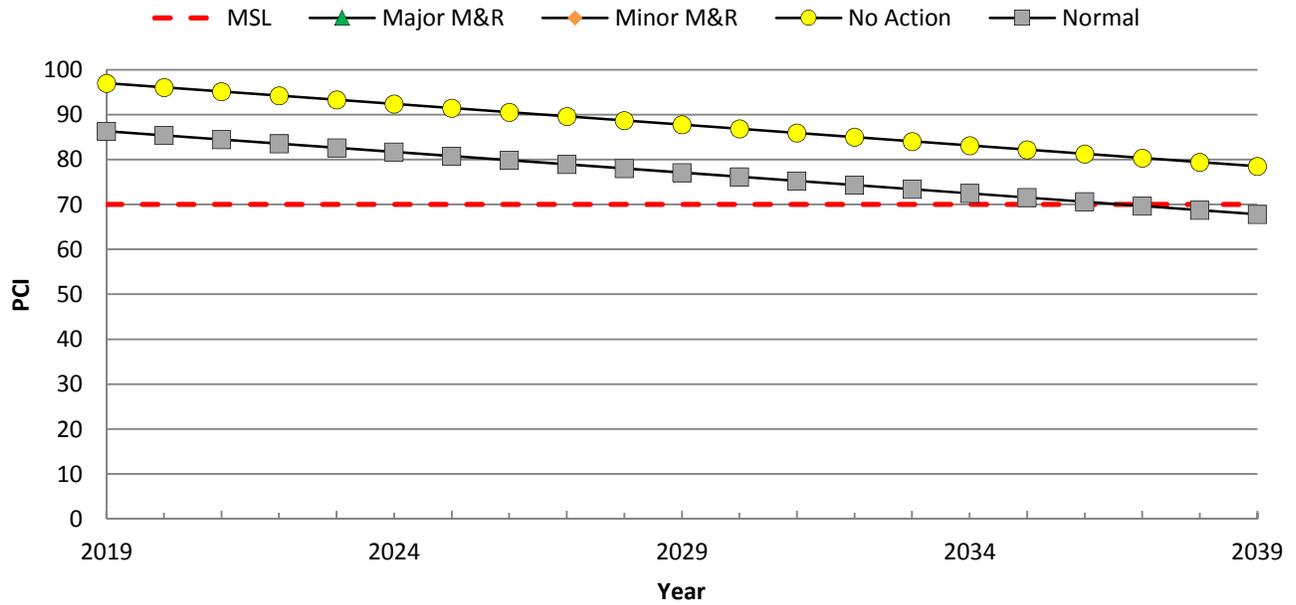
ARA Pavement Analysis

Section:

BXM: CTF :001

Description:

Connecting Taxiway F



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM:CTA1:001
Description:	Connecting Taxiway A1
PaveType:	PCC
Area:	61,900
Built:	1/15/2001
Age:	18yr

InspPCI:	100
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	84
MSL:	70

Work History	Year	Thickness (in)	Type
1	2001	0.0	complete reconstruction - pcc
2	2001	13.0	surface course - pcc (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	12
Age/Weather:	0%	Insp. Samples:	6
Other:	0%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	#N/A	-		0
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

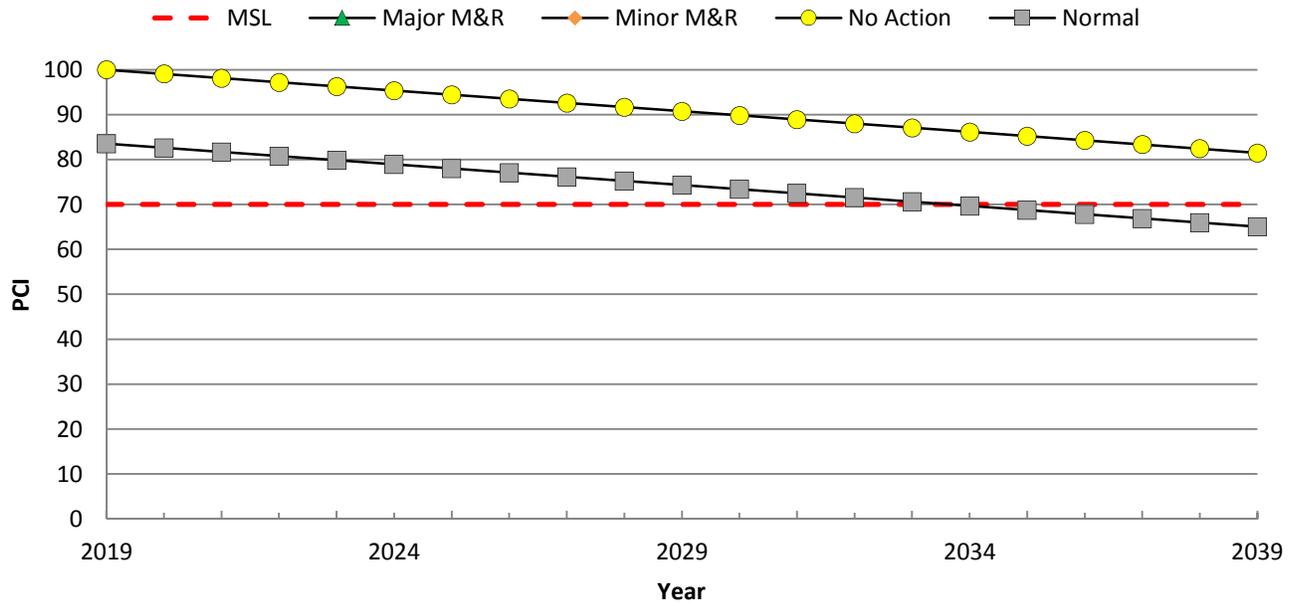
ARA Pavement Analysis

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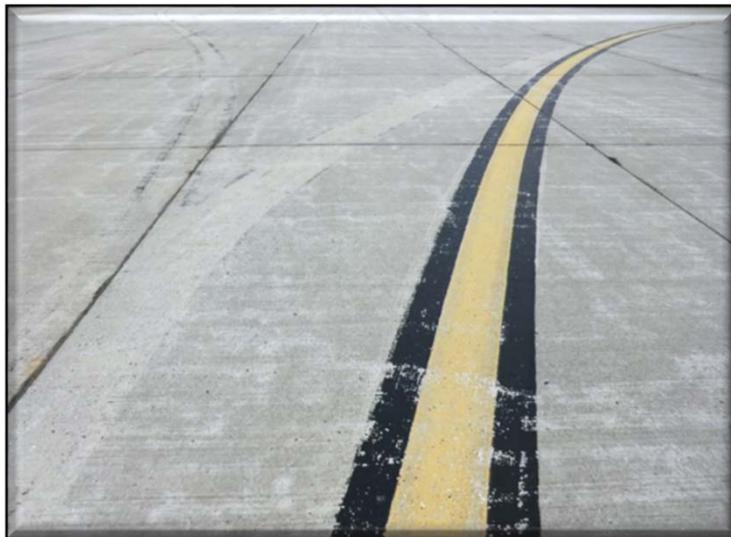
BXM:CTA1:001

Description:

Connecting Taxiway A1



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM:CTA2:001
Description:	Connecting Taxiway A2
PaveType:	AC
Area:	33,150
Built:	1/15/1996
Age:	23yr

InspPCI:	82
InspPCI Rating:	Satisfactory
InspDate:	10/30/2018
PCI Family:	2019 MAINE AC RW-TW
NormalPCI:	63
MSL:	70

Work History	Year	Thickness (in)	Type
1	1996	0.0	overlay - ac
2	1996	2.5	surface course - ac (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	7
Age/Weather:	100%	Insp. Samples:	4
Other:	0%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	l & t crack	1,616	low	Ft
2	l & t crack	124	medium	Ft
3	patch	497	low	SqFt
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

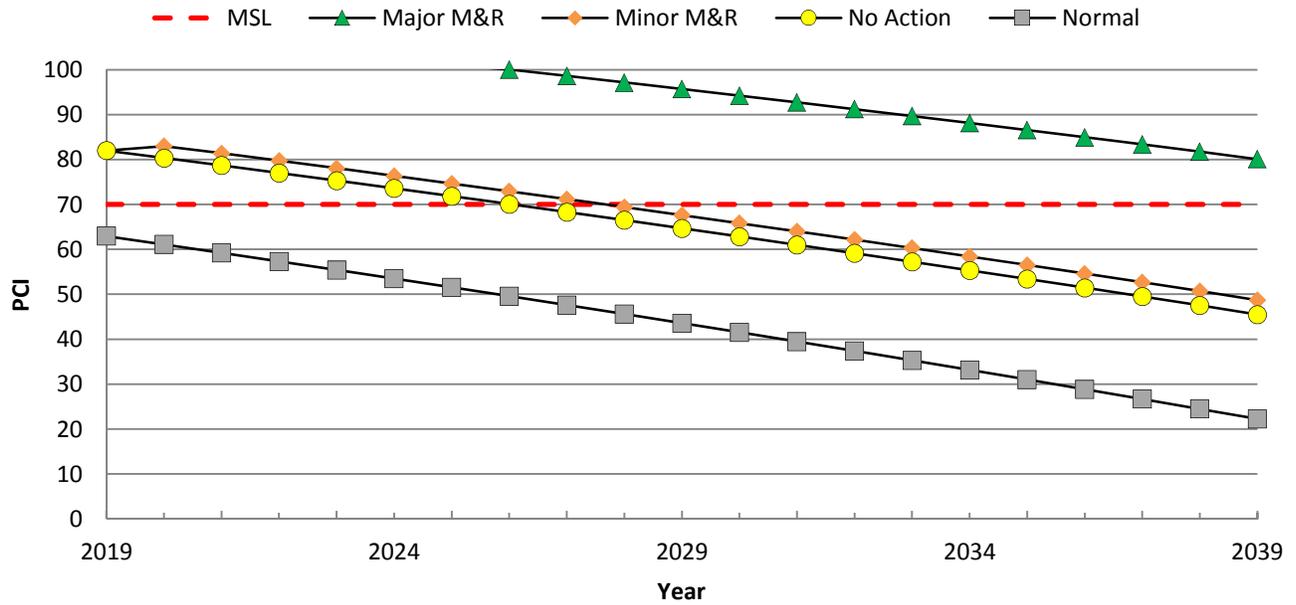
ARA Pavement Analysis

Section:

BXM:CTA2:001

Description:

Connecting Taxiway A2



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2026	91,160	100
Minor	All Minor	2020	171	83
1	Crack Sealing - AC	124 Ft	171	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM:CTA3:001
Description:	Connecting Taxiway A3
PaveType:	AC
Area:	29,350
Built:	1/15/1996
Age:	23yr

InspPCI:	71
InspPCI Rating:	Satisfactory
InspDate:	10/30/2018
PCI Family:	2019 MAINE AC RW-TW
NormalPCI:	63
MSL:	70

Work History	Year	Thickness (in)	Type
1	1996	0.0	overlay - ac
2	1996	2.5	surface course - ac (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	48%	Total Samples:	7
Age/Weather:	52%	Insp. Samples:	4
Other:	0%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	l & t crack	3,052	low	Ft
2	l & t crack	37	medium	Ft
3	rutting	131	low	SqFt
4	rutting	14	medium	SqFt
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

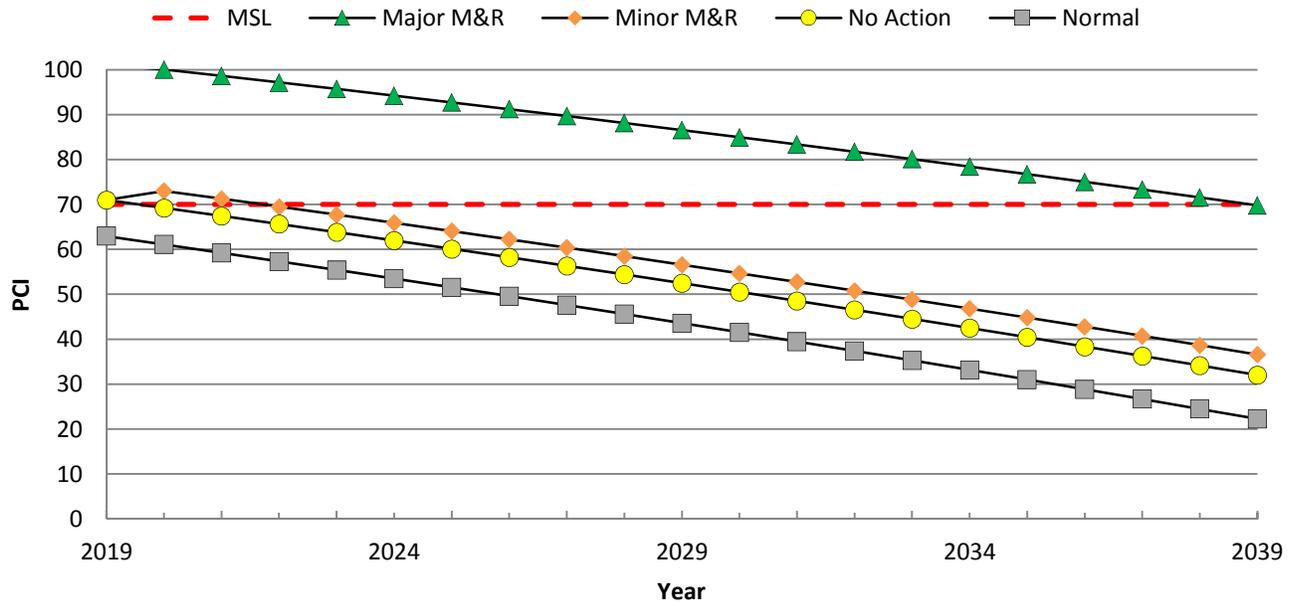
ARA Pavement Analysis

Section:

BXM:CTA3:001

Description:

Connecting Taxiway A3



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2020	80,710	100
Minor	All Minor	2020	306	73
1	Patching - AC Deep	14 SqFt	254	-
2	Crack Sealing - AC	37 Ft	51	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM:CTA4:001
Description:	Connecting Taxiway A4
PaveType:	PCC
Area:	61,200
Built:	6/1/2004
Age:	14yr

InspPCI:	96
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	87
MSL:	70

Work History	Year	Thickness (in)	Type
1	2004	0.0	new construction - pcc
2	2004	13.0	surface course - pcc (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	23%	Total Samples:	12
Age/Weather:	0%	Insp. Samples:	6
Other:	77%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	large patch	7	low	Slabs
2	ltd crack	2	low	Slabs
3	shrinkage	2	n/a	Slabs
4	small patch	34	low	Slabs
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
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17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
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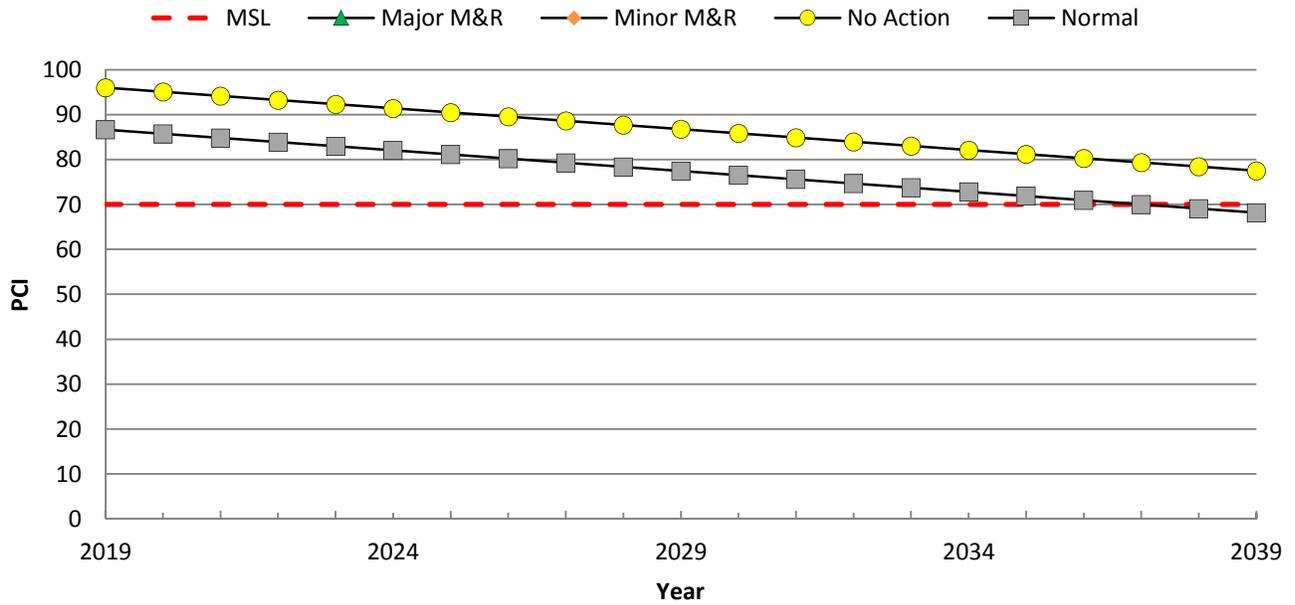
ARA Pavement Analysis

Section:

BXM:CTA4:001

Description:

Connecting Taxiway A4



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::PTA::001
Description:	Parallel Taxiway A
PaveType:	PCC
Area:	37,500
Built:	1/15/1999
Age:	19yr

InspPCI:	91
InspPCI Rating:	Good
InspDate:	1/1/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	82
MSL:	70

Work History	Year	Thickness (in)	Type
1	1999	0.0	complete reconstruction - pcc
2	1999	13.0	surface course - pcc (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	9%	Total Samples:	6
Age/Weather:	0%	Insp. Samples:	4
Other:	91%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner break	1	low	Slabs
2	corner spall	4	low	Slabs
3	large patch	15	low	Slabs
4	small patch	33	low	Slabs
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

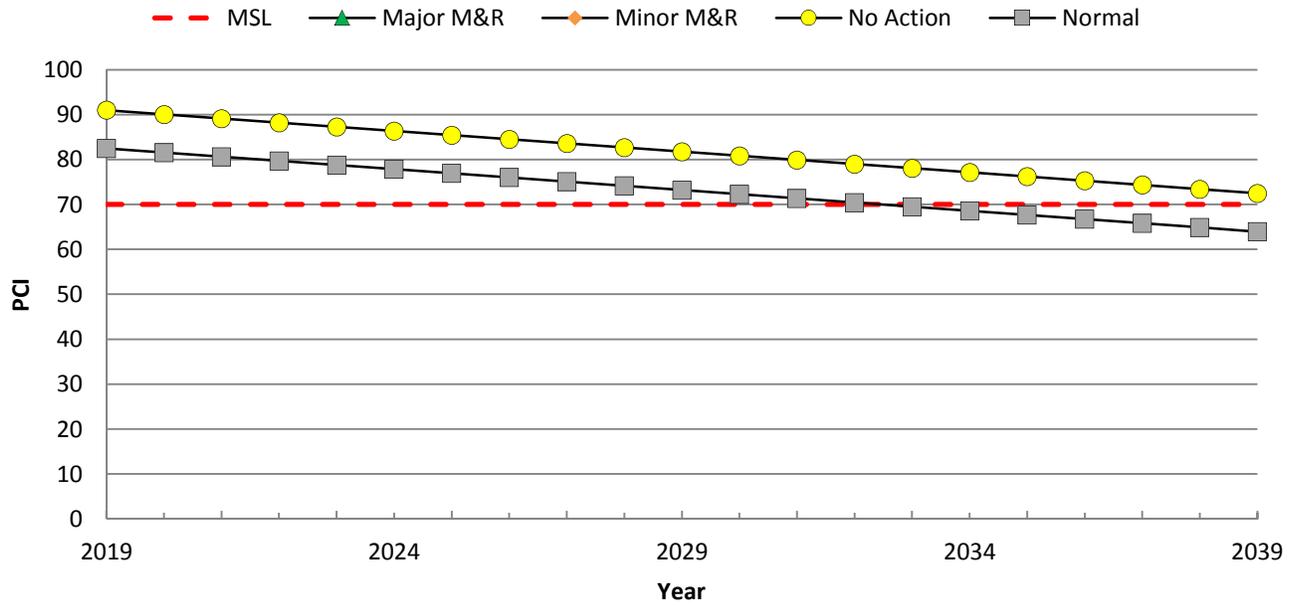
ARA Pavement Analysis

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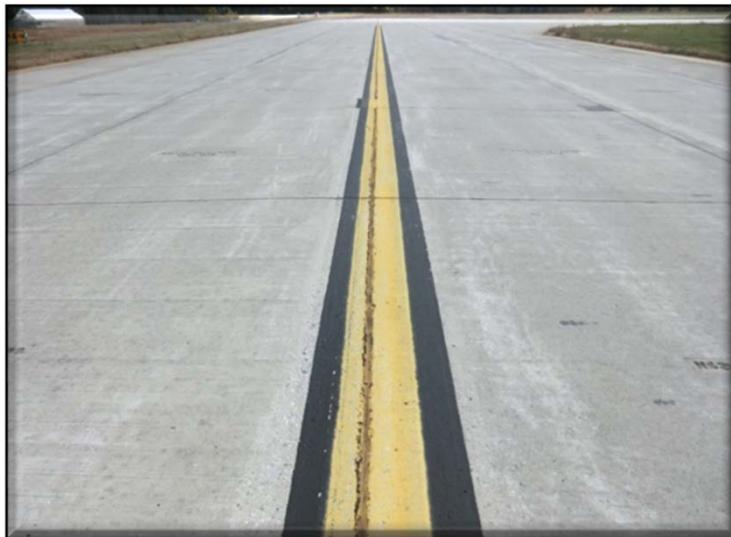
BXM::PTA::001

Description:

Parallel Taxiway A



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::PTA::002
Description:	Parallel Taxiway A
PaveType:	AC
Area:	525,000
Built:	1/15/1996
Age:	23yr

InspPCI:	67
InspPCI Rating:	Fair
InspDate:	10/30/2018
PCI Family:	2019 MAINE AC RW-TW
NormalPCI:	63
MSL:	70

Work History	Year	Thickness (in)	Type
1	2014	0.0	crack sealing - ac
2	1996	0.0	cold mill and overlay
3	1996	4.0	surface course - ac (layer construct)
4	1996	4.0	cold milling
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	42%	Total Samples:	140
Age/Weather:	58%	Insp. Samples:	14
Other:	0%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	alligator	1,490	low	SqFt
2	alligator	640	medium	SqFt
3	l & t crack	65,920	low	Ft
4	l & t crack	3,350	medium	Ft
5	l & t crack	210	high	Ft
6	rutting	900	low	SqFt
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

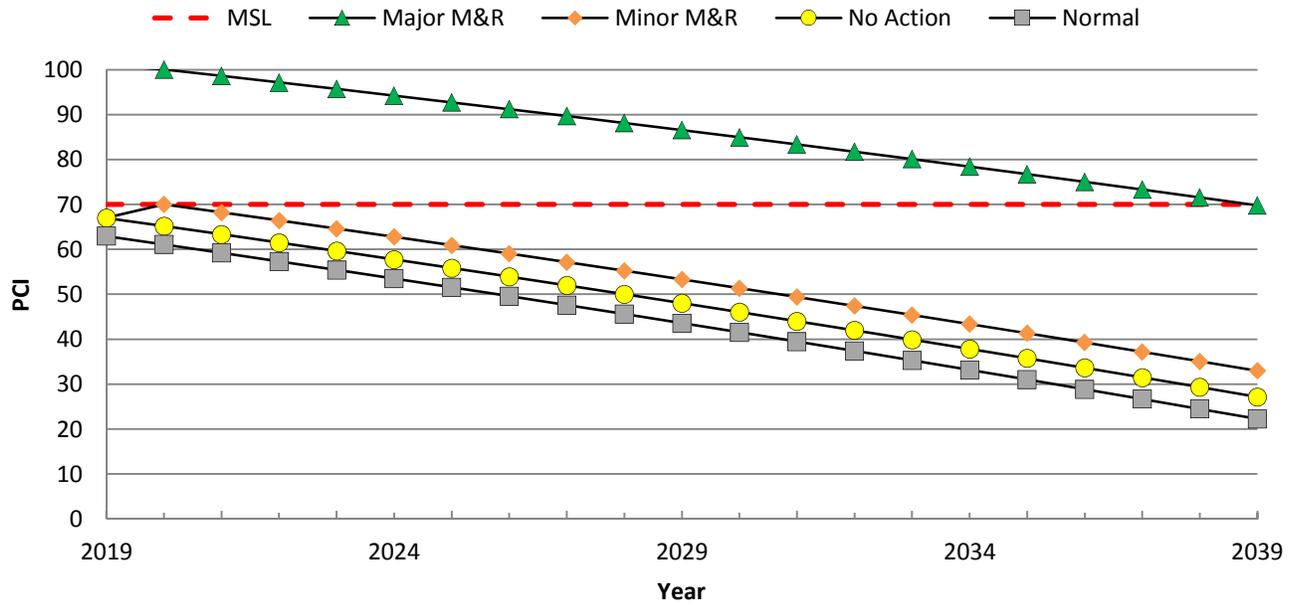
ARA Pavement Analysis

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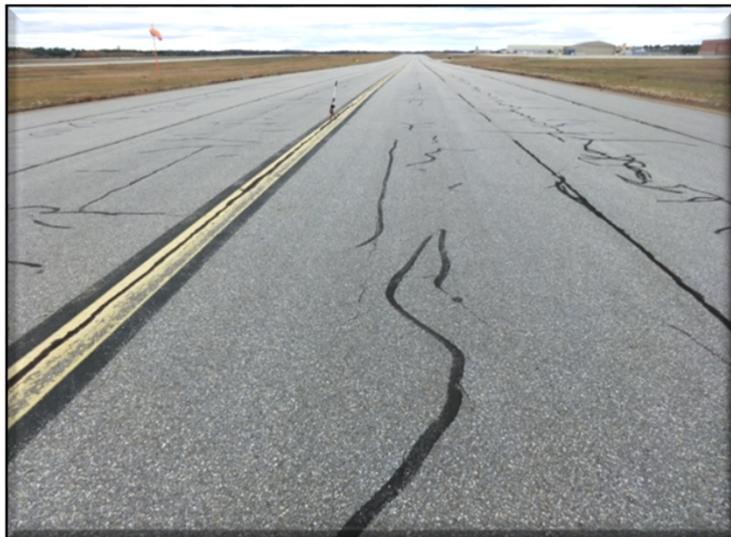
BXM::PTA::002

Description:

Parallel Taxiway A



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2020	1,443,713	100
Minor	All Minor	2020	18,770	70
1	Patching - AC Deep	746 SqFt	13,857	-
2	Crack Sealing - AC	3560 Ft	4,913	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::PTA::003
Description:	Parallel Taxiway A
PaveType:	PCC
Area:	37,500
Built:	1/15/1999
Age:	20yr

InspPCI:	86
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	82
MSL:	70

Work History	Year	Thickness (in)	Type
1	1999	0.0	complete reconstruction - pcc
2	1999	13.0	surface course - pcc (layer construct)
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	15%	Total Samples:	6
Age/Weather:	0%	Insp. Samples:	4
Other:	85%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corner spall	2	medium	Slabs
2	large patch	4	low	Slabs
3	large patch	7	medium	Slabs
4	ltd crack	2	medium	Slabs
5	shrinkage	2	n/a	Slabs
6	small patch	42	low	Slabs
7	small patch	4	medium	Slabs
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

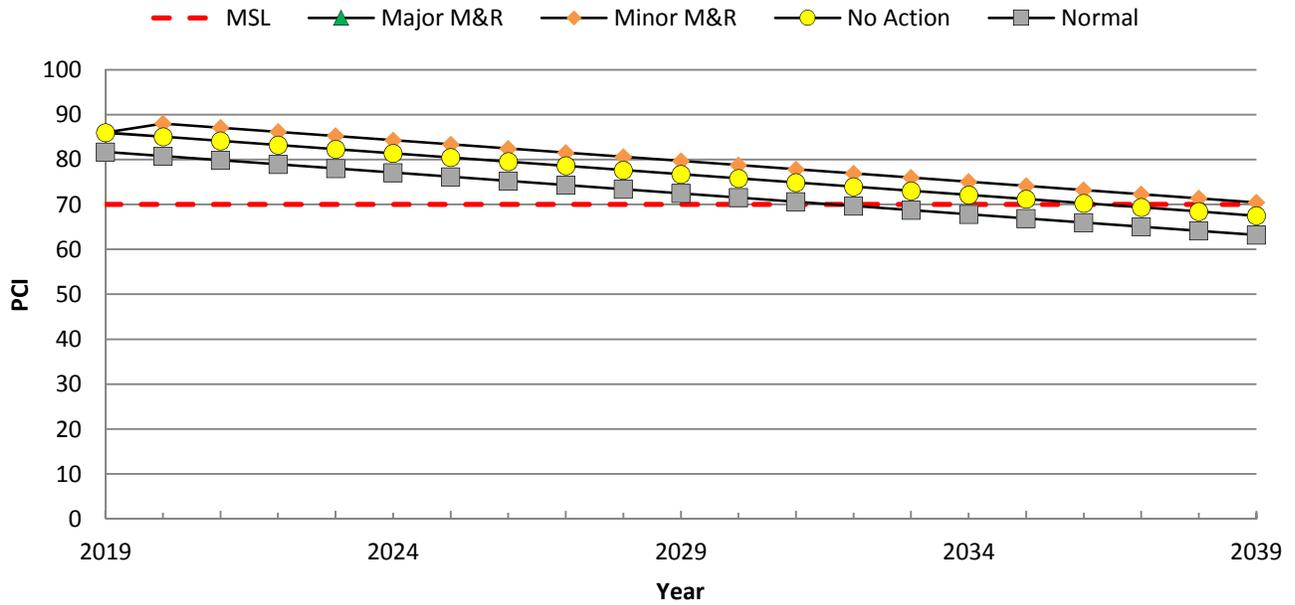
ARA Pavement Analysis

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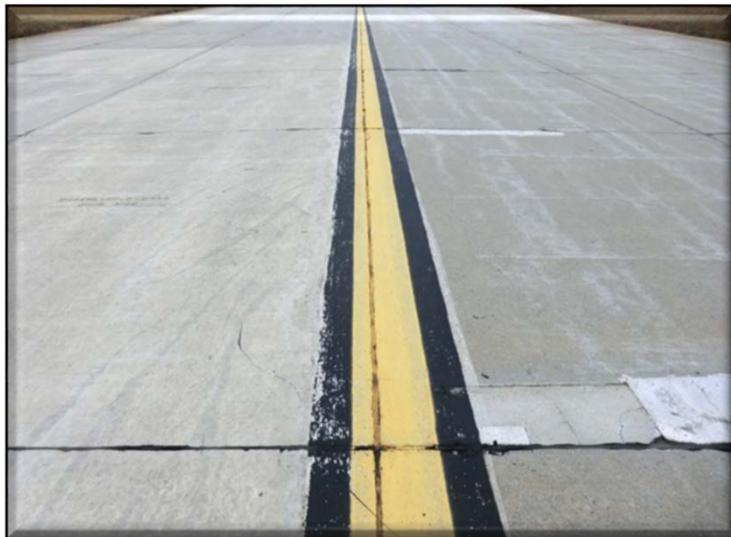
BXM::PTA::003

Description:

Parallel Taxiway A



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	All Minor	2020	387	88
1	Patching - PCC Partial Depth	4 SqFt	292	-
2	Crack Sealing - PCC	24 Ft	95	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::RWY0119::001
Description:	Runway 1-19
PaveType:	PCC
Area:	100,000
Built:	1/15/2001
Age:	18yr

InspPCI:	97
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	84
MSL:	70

Work History	Year	Thickness (in)	Type
1	2001	0.0	complete reconstruction - pcc
2	2001	13.0	surface course - pcc (layer construct)
3	1952	0.0	new construction - pcc
4	1952	10.0	surface course - pcc (layer construct)
5	1952	10.0	subbase - aggregate
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	41%	Total Samples:	24
Age/Weather:	0%	Insp. Samples:	8
Other:	59%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	ltd crack	6	low	Slabs
2	shrinkage	8	n/a	Slabs
3	small patch	33	low	Slabs
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

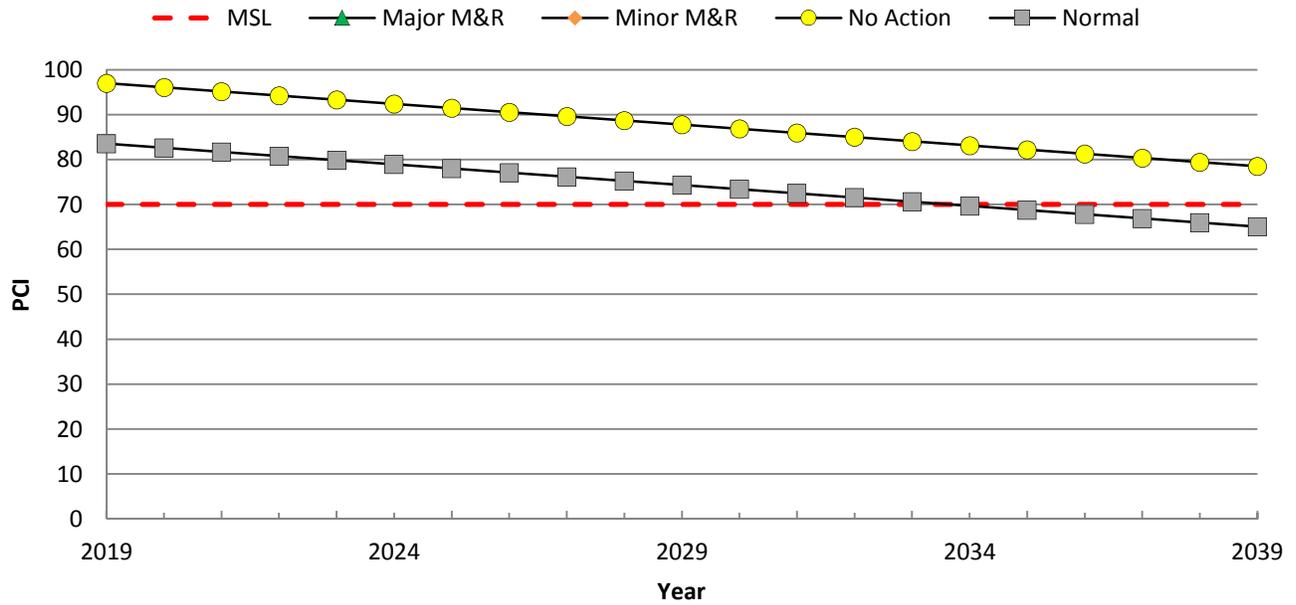
ARA Pavement Analysis

Section:

BXM::RWY0119::001

Description:

Runway 1-19



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::RWY0119::002
Description:	Runway 1-19
PaveType:	AC
Area:	350,000
Built:	1/15/2004
Age:	15yr

InspPCI:	68
InspPCI Rating:	Fair
InspDate:	10/31/2018
PCI Family:	2019 MAINE AC RW-TW
NormalPCI:	77
MSL:	70

Work History	Year	Thickness (in)	Type
1	2015	0.0	crack sealing - ac
2	2004	0.0	cold mill and overlay
3	2004	2.5	surface course - ac (layer construct)
4	2004	2.5	cold milling
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	70
Age/Weather:	82%	Insp. Samples:	8
Other:	18%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	corrugation	3,841	low	SqFt
2	l & t crack	37,581	low	Ft
3	l & t crack	11,611	medium	Ft
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

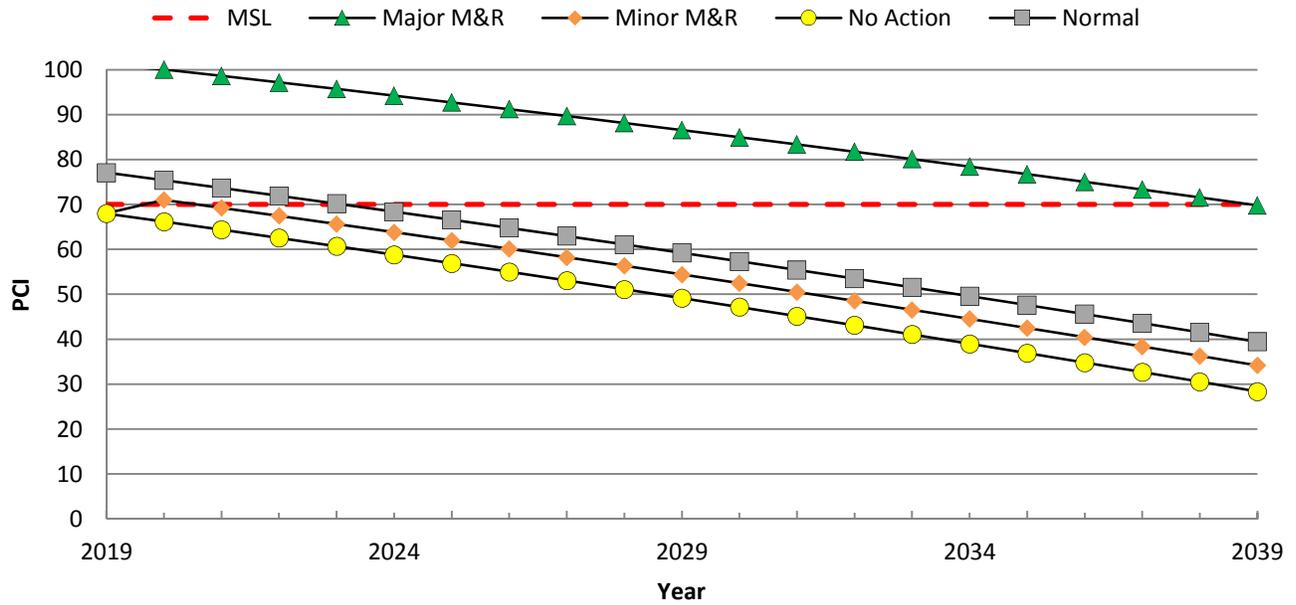
ARA Pavement Analysis

Section:

BXM::RWY0119::002

Description:

Runway 1-19



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2020	962,476	100
Minor	All Minor	2020	16,024	71
1	Crack Sealing - AC	11611 Ft	16,024	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::RWY0119::003
Description:	Runway 1-19
PaveType:	PCC
Area:	100,000
Built:	1/15/1952
Age:	67yr

InspPCI:	92
InspPCI Rating:	Good
InspDate:	10/30/2018
PCI Family:	2019 MAINE PCC
NormalPCI:	38
MSL:	70

Work History	Year	Thickness (in)	Type
1	1952	0.0	new construction - pcc
2	1952	10.0	surface course - pcc (layer construct)
3	1952	10.0	subbase - aggregate
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	12%	Total Samples:	24
Age/Weather:	0%	Insp. Samples:	7
Other:	88%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	large patch	41	low	Slabs
2	ltd crack	3	low	Slabs
3	small patch	95	low	Slabs
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

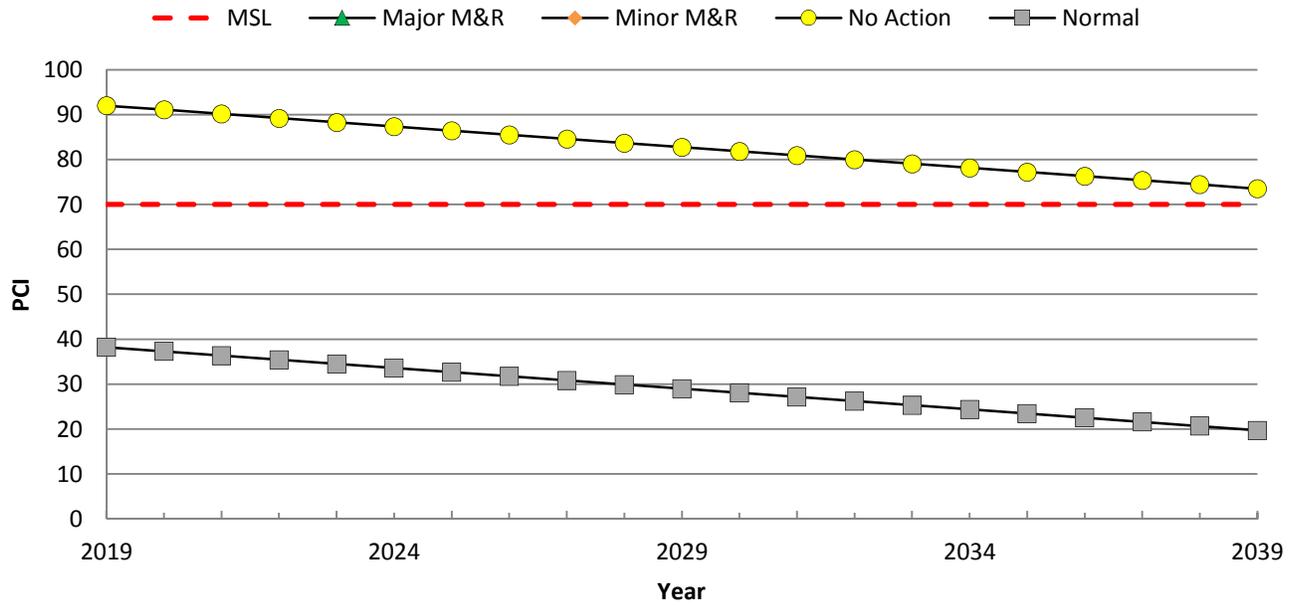
ARA Pavement Analysis

Section:

BXM::RWY0119::003

Description:

Runway 1-19



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	-	-	-	-
Minor	-	-	-	-
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



ARA Pavement Analysis

Section:	BXM::RWY0119::004
Description:	Runway 1-19
PaveType:	AC
Area:	1,050,000
Built:	1/15/2004
Age:	15yr

InspPCI:	76
InspPCI Rating:	Satisfactory
InspDate:	10/31/2018
PCI Family:	2019 MAINE AC RW-TW
NormalPCI:	77
MSL:	70

Work History	Year	Thickness (in)	Type
1	2015	0.0	crack sealing - ac
2	2004	0.0	cold mill and overlay
3	2004	2.5	surface course - ac (layer construct)
4	2004	2.5	cold milling
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

Basic Cause of Distress:

Traffic/Load:	0%	Total Samples:	280
Age/Weather:	100%	Insp. Samples:	17
Other:	0%		

Extrapolated Distress:	Type	Quantity	Severity	Units
1	l & t crack	77,148	low	Ft
2	l & t crack	14,840	medium	Ft
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

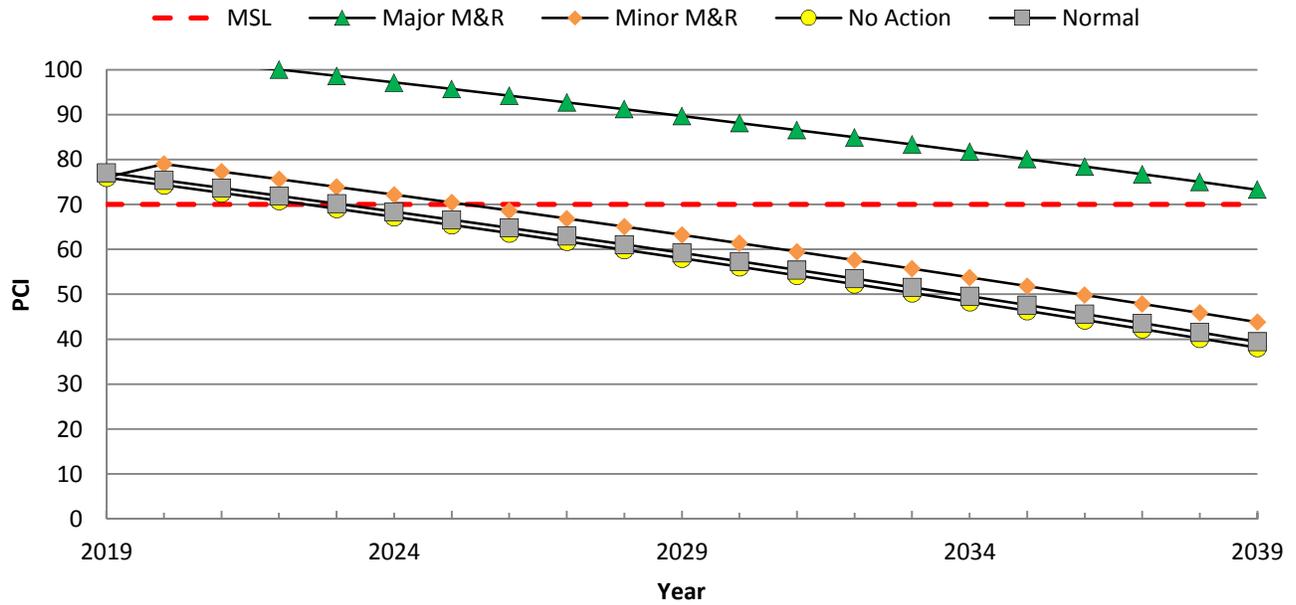
ARA Pavement Analysis

Section:

BXM::RWY0119::004

Description:

Runway 1-19



M&R	Action	Year / Quantity	Cost (\$)	Ending PCI
Major	Major M&R	2022	2,887,427	100
Minor	All Minor	2020	20,479	79
1	Crack Sealing - AC	14840 Ft	20,479	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-



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Appendix C: PCI Distress Report

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Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	APA	Name:	Apron A	Use:	APRON	Area:	3,910,265 SqFt
Section:	001	of 4	From:	00	To:	00	Last Const.: 1/15/1957
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	3,011,900 SqFt	Length:	3,000Ft	Width:	1,010Ft		
Slabs:	16,062	Slab Length:	15Ft	Slab Width:	12Ft	Joint Length:	440,390Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/29/2018	Total Samples:	785	Surveyed:	35		
Conditions:	PCI: 84						
Sample Number:	100	Type:	R	Area:	20.00 Slabs	PCI:	95
66	SMALL PATCH	L		1.00	Slabs		
73	SHRINKAGE CR	N		6.00	Slabs		
Sample Number:	1013	Type:	R	Area:	20.00 Slabs	PCI:	53
66	SMALL PATCH	L		3.00	Slabs		
62	CORNER BREAK	L		1.00	Slabs		
75	CORNER SPALL	L		2.00	Slabs		
63	LINEAR CR	M		5.00	Slabs		
63	LINEAR CR	L		2.00	Slabs		
Sample Number:	1026	Type:	R	Area:	20.00 Slabs	PCI:	85
65	JT SEAL DMG	M		20.00	Slabs		
67	LARGE PATCH	L		3.00	Slabs		
66	SMALL PATCH	L		1.00	Slabs		
Sample Number:	1118	Type:	R	Area:	20.00 Slabs	PCI:	86
75	CORNER SPALL	M		2.00	Slabs		
67	LARGE PATCH	L		3.00	Slabs		
Sample Number:	1224	Type:	R	Area:	20.00 Slabs	PCI:	92
65	JT SEAL DMG	M		20.00	Slabs		
66	SMALL PATCH	L		1.00	Slabs		
Sample Number:	1240	Type:	R	Area:	20.00 Slabs	PCI:	92
67	LARGE PATCH	L		1.00	Slabs		
74	JOINT SPALL	L		1.00	Slabs		
66	SMALL PATCH	L		4.00	Slabs		
Sample Number:	130	Type:	R	Area:	20.00 Slabs	PCI:	75
66	SMALL PATCH	L		5.00	Slabs		
65	JT SEAL DMG	M		20.00	Slabs		
66	SMALL PATCH	M		2.00	Slabs		
63	LINEAR CR	L		3.00	Slabs		
Sample Number:	1304	Type:	R	Area:	20.00 Slabs	PCI:	72
75	CORNER SPALL	L		1.00	Slabs		
66	SMALL PATCH	M		1.00	Slabs		
66	SMALL PATCH	L		1.00	Slabs		
74	JOINT SPALL	H		1.00	Slabs		
62	CORNER BREAK	L		1.00	Slabs		
63	LINEAR CR	L		1.00	Slabs		
Sample Number:	1307	Type:	R	Area:	20.00 Slabs	PCI:	44
66	SMALL PATCH	M		1.00	Slabs		
63	LINEAR CR	L		1.00	Slabs		
75	CORNER SPALL	M		1.00	Slabs		
67	LARGE PATCH	M		1.00	Slabs		
66	SMALL PATCH	L		1.00	Slabs		
74	JOINT SPALL	M		1.00	Slabs		
67	LARGE PATCH	H		1.00	Slabs		
67	LARGE PATCH	H		1.00	Slabs		
66	SMALL PATCH	H		1.00	Slabs		
67	LARGE PATCH	M		1.00	Slabs		
Sample Number:	1314	Type:	R	Area:	20.00 Slabs	PCI:	84
65	JT SEAL DMG	L		20.00	Slabs		
75	CORNER SPALL	M		4.00	Slabs		
66	SMALL PATCH	L		2.00	Slabs		

Sample Number:	1417	Type:	R	Area:	20.00 Slabs	PCI:	84
65	JT SEAL DMG		H		20.00 Slabs		
75	CORNER SPALL		M		1.00 Slabs		
Sample Number:	1425	Type:	R	Area:	20.00 Slabs	PCI:	81
74	JOINT SPALL		L		2.00 Slabs		
66	SMALL PATCH		L		2.00 Slabs		
65	JT SEAL DMG		M		20.00 Slabs		
67	LARGE PATCH		L		2.00 Slabs		
75	CORNER SPALL		L		1.00 Slabs		
Sample Number:	1615	Type:	R	Area:	20.00 Slabs	PCI:	92
73	SHRINKAGE CR		N		1.00 Slabs		
65	JT SEAL DMG		M		20.00 Slabs		
Sample Number:	1705	Type:	R	Area:	20.00 Slabs	PCI:	92
66	SMALL PATCH		L		1.00 Slabs		
65	JT SEAL DMG		L		20.00 Slabs		
67	LARGE PATCH		L		1.00 Slabs		
70	SCALING		L		1.00 Slabs		
Sample Number:	1716	Type:	R	Area:	20.00 Slabs	PCI:	95
75	CORNER SPALL		L		1.00 Slabs		
66	SMALL PATCH		L		1.00 Slabs		
74	JOINT SPALL		L		1.00 Slabs		
Sample Number:	210	Type:	R	Area:	20.00 Slabs	PCI:	92
66	SMALL PATCH		L		2.00 Slabs		
67	LARGE PATCH		L		2.00 Slabs		
Sample Number:	242	Type:	R	Area:	20.00 Slabs	PCI:	70
66	SMALL PATCH		L		10.00 Slabs		
65	JT SEAL DMG		M		20.00 Slabs		
62	CORNER BREAK		M		2.00 Slabs		
62	CORNER BREAK		L		2.00 Slabs		
Sample Number:	321	Type:	R	Area:	20.00 Slabs	PCI:	82
67	LARGE PATCH		L		2.00 Slabs		
66	SMALL PATCH		L		1.00 Slabs		
65	JT SEAL DMG		H		20.00 Slabs		
Sample Number:	411	Type:	R	Area:	20.00 Slabs	PCI:	97
73	SHRINKAGE CR		N		2.00 Slabs		
66	SMALL PATCH		L		1.00 Slabs		
Sample Number:	429	Type:	R	Area:	20.00 Slabs	PCI:	63
62	CORNER BREAK		L		2.00 Slabs		
63	LINEAR CR		L		2.00 Slabs		
63	LINEAR CR		M		2.00 Slabs		
66	SMALL PATCH		L		6.00 Slabs		
75	CORNER SPALL		M		1.00 Slabs		
Sample Number:	436	Type:	R	Area:	20.00 Slabs	PCI:	69
67	LARGE PATCH		L		2.00 Slabs		
66	SMALL PATCH		M		2.00 Slabs		
62	CORNER BREAK		L		1.00 Slabs		
65	JT SEAL DMG		M		20.00 Slabs		
66	SMALL PATCH		L		7.00 Slabs		
74	JOINT SPALL		M		2.00 Slabs		
Sample Number:	502	Type:	R	Area:	20.00 Slabs	PCI:	99
66	SMALL PATCH		L		1.00 Slabs		
Sample Number:	509	Type:	R	Area:	20.00 Slabs	PCI:	98
66	SMALL PATCH		L		2.00 Slabs		
Sample Number:	520	Type:	R	Area:	20.00 Slabs	PCI:	88
65	JT SEAL DMG		H		20.00 Slabs		
Sample Number:	531	Type:	R	Area:	20.00 Slabs	PCI:	92
67	LARGE PATCH		L		1.00 Slabs		
66	SMALL PATCH		L		6.00 Slabs		
Sample Number:	622	Type:	R	Area:	20.00 Slabs	PCI:	77

63	LINEAR CR	L	2.00 Slabs
71	FAULTING	L	2.00 Slabs
66	SMALL PATCH	L	1.00 Slabs
65	JT SEAL DMG	H	20.00 Slabs

Sample Number: 634 **Type:** R **Area:** 20.00 Slabs **PCI:** 86

66	SMALL PATCH	L	8.00 Slabs
67	LARGE PATCH	L	3.00 Slabs

Sample Number: 712 **Type:** R **Area:** 20.00 Slabs **PCI:** 88

63	LINEAR CR	L	1.00 Slabs
66	SMALL PATCH	L	2.00 Slabs
66	SMALL PATCH	M	1.00 Slabs
75	CORNER SPALL	L	1.00 Slabs

Sample Number: 727 **Type:** R **Area:** 20.00 Slabs **PCI:** 70

66	SMALL PATCH	L	3.00 Slabs
75	CORNER SPALL	M	1.00 Slabs
63	LINEAR CR	M	1.00 Slabs
66	SMALL PATCH	M	1.00 Slabs
63	LINEAR CR	L	1.00 Slabs
67	LARGE PATCH	L	2.00 Slabs

Sample Number: 819 **Type:** R **Area:** 20.00 Slabs **PCI:** 100

<No Distress>

Sample Number: 838 **Type:** R **Area:** 20.00 Slabs **PCI:** 82

66	SMALL PATCH	L	8.00 Slabs
62	CORNER BREAK	L	1.00 Slabs
63	LINEAR CR	L	2.00 Slabs

Sample Number: 903 **Type:** R **Area:** 20.00 Slabs **PCI:** 93

74	JOINT SPALL	L	1.00 Slabs
66	SMALL PATCH	L	1.00 Slabs
74	JOINT SPALL	M	1.00 Slabs

Sample Number: 908 **Type:** R **Area:** 20.00 Slabs **PCI:** 96

67	LARGE PATCH	L	1.00 Slabs
66	SMALL PATCH	L	1.00 Slabs

Sample Number: 923 **Type:** R **Area:** 20.00 Slabs **PCI:** 86

66	SMALL PATCH	L	3.00 Slabs
65	JT SEAL DMG	M	20.00 Slabs
63	LINEAR CR	L	1.00 Slabs

Sample Number: 932 **Type:** R **Area:** 20.00 Slabs **PCI:** 86

67	LARGE PATCH	L	4.00 Slabs
66	SMALL PATCH	L	5.00 Slabs

Network:	BXM	Name:	Brunswick Executive Airport						
Branch:	APA	Name:	Apron A	Use:	APRON	Area:	3,910,265 SqFt		
Section:	002	of	4	From:	001	To:	APB	Last Const.:	5/30/2004
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:		Rank:	P
Area:	415,300 SqFt	Length:	365 Ft	Width:	350 Ft				
Slabs:	2,215	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	18,022 Ft		
Shoulder:		Street Type:		Grade:	0	Lanes:	0		
Last Insp. Date:	10/30/2018	Total Samples:	80	Surveyed:	11				
Conditions:	PCI: 92								
Sample Number:	100	Type:	R	Area:	24.00 Slabs	PCI:	96		
66	SMALL PATCH		L		6.00 Slabs				
Sample Number:	1011	Type:	R	Area:	20.00 Slabs	PCI:	95		
73	SHRINKAGE CR		N		1.00 Slabs				
74	JOINT SPALL		M		1.00 Slabs				
Sample Number:	201	Type:	R	Area:	24.00 Slabs	PCI:	97		
66	SMALL PATCH		L		4.00 Slabs				
Sample Number:	208	Type:	R	Area:	24.00 Slabs	PCI:	85		
66	SMALL PATCH		L		4.00 Slabs				
65	JT SEAL DMG		H		24.00 Slabs				
Sample Number:	302	Type:	R	Area:	24.00 Slabs	PCI:	77		
63	LINEAR CR		L		2.00 Slabs				
62	CORNER BREAK		L		4.00 Slabs				
66	SMALL PATCH		L		8.00 Slabs				
Sample Number:	310	Type:	R	Area:	24.00 Slabs	PCI:	87		
65	JT SEAL DMG		H		24.00 Slabs				
66	SMALL PATCH		L		1.00 Slabs				
Sample Number:	403	Type:	R	Area:	24.00 Slabs	PCI:	99		
73	SHRINKAGE CR		N		1.00 Slabs				
Sample Number:	504	Type:	R	Area:	24.00 Slabs	PCI:	97		
66	SMALL PATCH		L		4.00 Slabs				
Sample Number:	605	Type:	R	Area:	24.00 Slabs	PCI:	94		
73	SHRINKAGE CR		N		3.00 Slabs				
66	SMALL PATCH		L		3.00 Slabs				
75	CORNER SPALL		L		1.00 Slabs				
Sample Number:	706	Type:	R	Area:	24.00 Slabs	PCI:	86		
75	CORNER SPALL		M		1.00 Slabs				
66	SMALL PATCH		M		2.00 Slabs				
66	SMALL PATCH		L		4.00 Slabs				
74	JOINT SPALL		M		1.00 Slabs				
Sample Number:	811	Type:	R	Area:	20.00 Slabs	PCI:	98		
74	JOINT SPALL		L		1.00 Slabs				

Re-Inspection Report

Network: BXM				Name: Brunswick Executive Airport		
Branch: APA	Name: Apron A	Use: APRON	Area: 3,910,265 SqFt			
Section: 003	of 4	From: 001	To: EDGE	Last Const.: 2/15/1957		
Surface: PCC	Family: 2019 MAINE PCC	Zone:	Category:	Rank: P		
Area: 67,800 SqFt	Length: 1,540 Ft	Width: 45 Ft				
Slabs: 362	Slab Length: 15 Ft	Slab Width: 12 Ft	Joint Length: 8,579 Ft			
Shoulder:	Street Type:	Grade: 0	Lanes: 0			
Last Insp. Date: 10/30/2018	Total Samples: 17	Surveyed: 6				
Conditions: PCI: 45						
Sample Number: 101	Type: R	Area: 24.00 Slabs	PCI: 60			
65 JT SEAL DMG	H	24.00 Slabs				
66 SMALL PATCH	L	2.00 Slabs				
72 SHAT. SLAB	L	1.00 Slabs				
62 CORNER BREAK	L	3.00 Slabs				
63 LINEAR CR	L	3.00 Slabs				
72 SHAT. SLAB	M	1.00 Slabs				
Sample Number: 103	Type: R	Area: 24.00 Slabs	PCI: 43			
65 JT SEAL DMG	M	24.00 Slabs				
67 LARGE PATCH	L	2.00 Slabs				
62 CORNER BREAK	L	4.00 Slabs				
72 SHAT. SLAB	M	2.00 Slabs				
72 SHAT. SLAB	L	2.00 Slabs				
63 LINEAR CR	L	9.00 Slabs				
Sample Number: 105	Type: R	Area: 24.00 Slabs	PCI: 50			
63 LINEAR CR	L	12.00 Slabs				
62 CORNER BREAK	L	4.00 Slabs				
65 JT SEAL DMG	M	24.00 Slabs				
72 SHAT. SLAB	L	2.00 Slabs				
63 LINEAR CR	M	2.00 Slabs				
Sample Number: 108	Type: R	Area: 24.00 Slabs	PCI: 61			
65 JT SEAL DMG	H	24.00 Slabs				
63 LINEAR CR	L	9.00 Slabs				
62 CORNER BREAK	L	8.00 Slabs				
Sample Number: 114	Type: R	Area: 24.00 Slabs	PCI: 32			
63 LINEAR CR	M	4.00 Slabs				
65 JT SEAL DMG	H	24.00 Slabs				
62 CORNER BREAK	M	1.00 Slabs				
72 SHAT. SLAB	M	5.00 Slabs				
63 LINEAR CR	L	4.00 Slabs				
Sample Number: 116	Type: R	Area: 24.00 Slabs	PCI: 27			
72 SHAT. SLAB	L	8.00 Slabs				
63 LINEAR CR	L	8.00 Slabs				
65 JT SEAL DMG	H	24.00 Slabs				
72 SHAT. SLAB	M	5.00 Slabs				



Re-Inspection Report

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	APA	Name:	Apron A	Use:	APRON	Area:	3,609,800 SqFt
Section:	004	of 4	From:	002	To:	002	Last Const.: 1/15/2012
Surface:	AC	Family:	2019 MAINE AC APRON -TLN	Zone:		Category:	Rank: P
Area:	114,800 SqFt	Length:	700 Ft	Width:	550 Ft		
Slabs:		Slab Length:	Ft	Slab Width:	Ft	Joint Length:	Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Section Comments:							

Last Insp. Date: 10/30/2018 **TotalSamples:** 28 **Surveyed:** 6
Conditions: PCI: 95

Inspection Comments:

Sample Number:	100	Type:	R	Area:	5000.00 SqFt	PCI:	98
48	L & T CR		L		3.00 Ft		
Sample Number:	200	Type:	R	Area:	5000.00 SqFt	PCI:	94
48	L & T CR		L		78.00 Ft		
Sample Number:	202	Type:	R	Area:	5000.00 SqFt	PCI:	95
48	L & T CR		L		39.00 Ft		
Sample Number:	301	Type:	R	Area:	5000.00 SqFt	PCI:	93
48	L & T CR		L		100.00 Ft		
Sample Number:	501	Type:	R	Area:	5000.00 SqFt	PCI:	94
48	L & T CR		L		79.00 Ft		
Sample Number:	801	Type:	R	Area:	4000.00 SqFt	PCI:	96
48	L & T CR		L		24.00 Ft		

Network:	BXM		Name:	Brunswick Executive Airport				
Branch:	APB	Name:	Apron B	Use:	APRON	Area:	985,300 SqFt	
Section:	001	of 4	From:	CTA	To:	END	Last Const.:	1/15/1951
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P	
Area:	589,650 SqFt	Length:	1,530 Ft	Width:	430 Ft			
Slabs:	3,145	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	94,532 Ft	
Shoulder:		Street Type:		Grade:	0	Lanes:	0	
Last Insp. Date:	10/30/2018	Total Samples:	122	Surveyed:	11			
Conditions:	PCI: 88							
Sample Number:	1005	Type:	R	Area:	24.00 Slabs	PCI:	64	
63	LINEAR CR		M	4.00	Slabs			
67	LARGE PATCH		L	4.00	Slabs			
65	JT SEAL DMG		H	24.00	Slabs			
Sample Number:	102	Type:	R	Area:	24.00 Slabs	PCI:	90	
75	CORNER SPALL		L	2.00	Slabs			
66	SMALL PATCH		L	8.00	Slabs			
65	JT SEAL DMG		L	24.00	Slabs			
Sample Number:	107	Type:	R	Area:	24.00 Slabs	PCI:	85	
66	SMALL PATCH		L	10.00	Slabs			
65	JT SEAL DMG		M	24.00	Slabs			
75	CORNER SPALL		L	2.00	Slabs			
Sample Number:	1109	Type:	R	Area:	24.00 Slabs	PCI:	87	
71	FAULTING		L	2.00	Slabs			
66	SMALL PATCH		L	7.00	Slabs			
75	CORNER SPALL		L	1.00	Slabs			
Sample Number:	407	Type:	R	Area:	24.00 Slabs	PCI:	84	
70	SCALING		L	12.00	Slabs			
67	LARGE PATCH		L	4.00	Slabs			
66	SMALL PATCH		L	5.00	Slabs			
Sample Number:	504	Type:	R	Area:	24.00 Slabs	PCI:	95	
70	SCALING		L	5.00	Slabs			
66	SMALL PATCH		L	4.00	Slabs			
Sample Number:	612	Type:	R	Area:	24.00 Slabs	PCI:	95	
66	SMALL PATCH		L	3.00	Slabs			
67	LARGE PATCH		L	1.00	Slabs			
Sample Number:	716	Type:	R	Area:	24.00 Slabs	PCI:	94	
75	CORNER SPALL		H	1.00	Slabs			
66	SMALL PATCH		L	3.00	Slabs			
Sample Number:	808	Type:	R	Area:	24.00 Slabs	PCI:	84	
66	SMALL PATCH		L	3.00	Slabs			
74	JOINT SPALL		L	1.00	Slabs			
65	JT SEAL DMG		M	24.00	Slabs			
75	CORNER SPALL		L	1.00	Slabs			
75	CORNER SPALL		M	1.00	Slabs			
Sample Number:	810	Type:	R	Area:	24.00 Slabs	PCI:	96	
74	JOINT SPALL		M	1.00	Slabs			
66	SMALL PATCH		L	1.00	Slabs			
Sample Number:	913	Type:	R	Area:	24.00 Slabs	PCI:	92	
66	SMALL PATCH		M	1.00	Slabs			
73	SHRINKAGE CR		N	5.00	Slabs			
66	SMALL PATCH		L	3.00	Slabs			

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	APB	Name:	Apron B	Use:	APRON	Area:	985,300 SqFt
Section:	002	of 4	From:	CTA	To:	001	Last Const.: 6/1/2003
Surface:	PCC	Family:	2019 MAINE PCC	Zone:	Category:	Rank: P	
Area:	315,000 SqFt	Length:	1,800Ft	Width:	200 Ft		
Slabs:	1,680	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	50,800Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	72	Surveyed:	10		
Conditions:	PCI: 94						
Sample Number:	070	Type:	R	Area:	24.00 Slabs	PCI:	94
66	SMALL PATCH		H		1.00 Slabs		
Sample Number:	081	Type:	R	Area:	24.00 Slabs	PCI:	98
65	JT SEAL DMG		L		24.00 Slabs		
Sample Number:	115	Type:	R	Area:	24.00 Slabs	PCI:	97
67	LARGE PATCH		L		1.00 Slabs		
Sample Number:	201	Type:	R	Area:	24.00 Slabs	PCI:	97
62	CORNER BREAK		L		1.00 Slabs		
Sample Number:	205	Type:	R	Area:	24.00 Slabs	PCI:	91
65	JT SEAL DMG		M		24.00 Slabs		
66	SMALL PATCH		L		2.00 Slabs		
Sample Number:	210	Type:	R	Area:	20.00 Slabs	PCI:	95
75	CORNER SPALL		H		1.00 Slabs		
Sample Number:	218	Type:	R	Area:	24.00 Slabs	PCI:	95
63	LINEAR CR		L		1.00 Slabs		
66	SMALL PATCH		L		1.00 Slabs		
Sample Number:	303	Type:	R	Area:	24.00 Slabs	PCI:	82
62	CORNER BREAK		L		1.00 Slabs		
67	LARGE PATCH		L		1.00 Slabs		
75	CORNER SPALL		L		3.00 Slabs		
66	SMALL PATCH		L		3.00 Slabs		
66	SMALL PATCH		M		2.00 Slabs		
Sample Number:	307	Type:	R	Area:	24.00 Slabs	PCI:	97
67	LARGE PATCH		L		1.00 Slabs		
Sample Number:	313	Type:	R	Area:	18.00 Slabs	PCI:	98
65	JT SEAL DMG		L		18.00 Slabs		

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	APB	Name:	Apron B	Use:	APRON	Area:	985,300 SqFt
Section:	003	of 4	From:	001	To:	004	Last Const.: 2/15/2006
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	25,150 SqFt	Length:	290Ft	Width:	75 Ft		
Slabs:	102	Slab Length:	17 Ft	Slab Width:	14 Ft	Joint Length:	2,414 Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	6	Surveyed:	5		
Conditions:	PCI: 97						
Sample Number:	100	Type:	R	Area:	16.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	101	Type:	R	Area:	16.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	200	Type:	R	Area:	20.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	201	Type:	R	Area:	20.00 Slabs	PCI:	98
65	JT SEAL DMG		L		20.00 Slabs		
Sample Number:	202	Type:	R	Area:	20.00 Slabs	PCI:	87
61	BLOW-UP		L		1.00 Slabs		

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	APB	Name:	Apron B	Use:	APRON	Area:	985,300 SqFt
Section:	004	of 4	From:	001	To:	003	Last Const.: 2/15/1957
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	55,500 SqFt	Length:	250 Ft	Width:	290 Ft		
Slabs:	218	Slab Length:	17 Ft	Slab Width:	15 Ft	Joint Length:	8,558 Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	15	Surveyed:	4		
Conditions:	PCI: 39						
Sample Number:	100	Type:	R	Area:	20.00 Slabs	PCI:	8
62	CORNER BREAK	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
62	CORNER BREAK	L	1.00 Slabs				
61	BLOW-UP	M	1.00 Slabs				
74	JOINT SPALL	H	1.00 Slabs				
62	CORNER BREAK	L	1.00 Slabs				
64	DURABIL. CR	H	1.00 Slabs				
72	SHAT. SLAB	L	1.00 Slabs				
72	SHAT. SLAB	L	1.00 Slabs				
62	CORNER BREAK	L	1.00 Slabs				
63	LINEAR CR	L	1.00 Slabs				
65	JT SEAL DMG	M	20.00 Slabs				
72	SHAT. SLAB	M	1.00 Slabs				
74	JOINT SPALL	L	1.00 Slabs				
67	LARGE PATCH	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	L	1.00 Slabs				
72	SHAT. SLAB	M	1.00 Slabs				
72	SHAT. SLAB	H	1.00 Slabs				
67	LARGE PATCH	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
62	CORNER BREAK	L	1.00 Slabs				
Sample Number:	101	Type:	R	Area:	20.00 Slabs	PCI:	39
64	DURABIL. CR	L	1.00 Slabs				
64	DURABIL. CR	L	1.00 Slabs				
67	LARGE PATCH	L	1.00 Slabs				
62	CORNER BREAK	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
67	LARGE PATCH	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
67	LARGE PATCH	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	L	1.00 Slabs				
64	DURABIL. CR	L	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
64	DURABIL. CR	M	1.00 Slabs				
65	JT SEAL DMG	M	20.00 Slabs				
67	LARGE PATCH	L	1.00 Slabs				
Sample Number:	300	Type:	R	Area:	20.00 Slabs	PCI:	51
62	CORNER BREAK	L	4.00 Slabs				
64	DURABIL. CR	M	2.00 Slabs				
62	CORNER BREAK	M	1.00 Slabs				
72	SHAT. SLAB	M	1.00 Slabs				

Branch:	APB	Name:	Apron B	Use:	APRON	Area:	985,300 SqFt
65	JT SEAL DMG	H	20.00 Slabs				
Sample Number:	401	Type:	R	Area:	20.00 Slabs	PCI:	58
62	CORNER BREAK	M	1.00 Slabs				
65	JT SEAL DMG	H	20.00 Slabs				
66	SMALL PATCH	M	4.00 Slabs				
66	SMALL PATCH	L	1.00 Slabs				
72	SHAT. SLAB	L	1.00 Slabs				
74	JOINT SPALL	L	3.00 Slabs				
62	CORNER BREAK	L	4.00 Slabs				

Network:	BXM	Name:	Brunswick Executive Airport						
Branch:	CTH	Name:	Connecting Taxiway H	Use:	TAXIWAY	Area:	40,000 SqFt		
Section:	001	of	1	From:	PTA	To:	APB	Last Const.:	1/15/2004
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:		Rank:	P
Area:	40,000 SqFt	Length:	350Ft	Width:	125 Ft				
Slabs:	213	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	5,942 Ft		
Shoulder:		Street Type:		Grade:	0	Lanes:	0		
Last Insp. Date:	10/30/2018	Total Samples:	8	Surveyed:	5				
Conditions:	PCI: 96								
Sample Number:	100	Type:	R	Area:	28.00 Slabs	PCI:	95		
65	JT SEAL DMG		L	28.00	Slabs				
74	JOINT SPALL		L	3.00	Slabs				
Sample Number:	101	Type:	R	Area:	24.00 Slabs	PCI:	92		
66	SMALL PATCH		L	2.00	Slabs				
74	JOINT SPALL		L	1.00	Slabs				
67	LARGE PATCH		L	2.00	Slabs				
Sample Number:	102	Type:	R	Area:	24.00 Slabs	PCI:	94		
74	JOINT SPALL		L	2.00	Slabs				
67	LARGE PATCH		L	1.00	Slabs				
Sample Number:	201	Type:	R	Area:	24.00 Slabs	PCI:	98		
65	JT SEAL DMG		L	24.00	Slabs				
Sample Number:	202	Type:	R	Area:	24.00 Slabs	PCI:	100		

<No Distress>

Network:	BXM	Name:	Brunswick Executive Airport						
Branch:	CTG	Name:	Connecting Taxiway G	Use:	TAXIWAY	Area:	59,550 SqFt		
Section:	001	of	1	From:	PTA	To:	APA	Last Const.:	1/15/2004
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:		Rank:	P
Area:	59,550 SqFt	Length:	300Ft	Width:	200Ft				
Slabs:	318	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	8,300Ft		
Shoulder:		Street Type:		Grade:	0	Lanes:	0		
Last Insp. Date:	10/30/2018	Total Samples:	12	Surveyed:	4				
Conditions:	PCI: 74								
Sample Number:	100	Type:	R	Area:	24.00 Slabs	PCI:	76		
66	SMALL PATCH	L		22.00	Slabs				
67	LARGE PATCH	L		3.00	Slabs				
63	LINEAR CR	L		1.00	Slabs				
62	CORNER BREAK	L		2.00	Slabs				
Sample Number:	101	Type:	R	Area:	26.00 Slabs	PCI:	77		
63	LINEAR CR	L		1.00	Slabs				
66	SMALL PATCH	L		14.00	Slabs				
67	LARGE PATCH	L		4.00	Slabs				
62	CORNER BREAK	L		2.00	Slabs				
Sample Number:	102	Type:	R	Area:	24.00 Slabs	PCI:	86		
66	SMALL PATCH	L		7.00	Slabs				
63	LINEAR CR	M		1.00	Slabs				
Sample Number:	104	Type:	R	Area:	28.00 Slabs	PCI:	57		
63	LINEAR CR	L		2.00	Slabs				
66	SMALL PATCH	M		1.00	Slabs				
62	CORNER BREAK	M		1.00	Slabs				
67	LARGE PATCH	M		1.00	Slabs				
72	SHAT. SLAB	L		1.00	Slabs				
63	LINEAR CR	M		1.00	Slabs				
62	CORNER BREAK	L		1.00	Slabs				
67	LARGE PATCH	L		4.00	Slabs				
66	SMALL PATCH	L		12.00	Slabs				

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	CTF	Name:	Connecting Taxiway F	Use:	TAXIWAY	Area:	19,100 SqFt
Section:	001	of 1	From:	PTA	To:	APA	Last Const.: 1/15/2004
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	19,100 SqFt	Length:	200Ft	Width:	80Ft		
Slabs:	102	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	2,067 Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	4	Surveyed:	3		
Conditions:	PCI: 97						
Sample Number:	100	Type:	R	Area:	46.00 Slabs	PCI:	96
66	SMALL PATCH		L		3.00 Slabs		
67	LARGE PATCH		L		2.00 Slabs		
Sample Number:	101	Type:	R	Area:	24.00 Slabs	PCI:	99
66	SMALL PATCH		L		1.00 Slabs		
Sample Number:	102	Type:	R	Area:	33.00 Slabs	PCI:	98
66	SMALL PATCH		L		4.00 Slabs		

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	CTA1	Name:	Connecting Taxiway A1	Use:	TAXIWAY	Area:	61,900 SqFt
Section:	001	of 1	From:	RWY	To:	PTA	Last Const.: 1/15/2001
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	61,900 SqFt	Length:	369Ft	Width:	150Ft		
Slabs:	330	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	7,599Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	12	Surveyed:	6		
Conditions:	PCI: 100						
Sample Number:	100	Type:	R	Area:	24.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	103	Type:	R	Area:	24.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	200	Type:	R	Area:	24.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	203	Type:	R	Area:	24.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	301	Type:	R	Area:	24.00 Slabs	PCI:	100
	<No Distress>						
Sample Number:	302	Type:	R	Area:	24.00 Slabs	PCI:	100
	<No Distress>						

Network:	BXM	Name:	Brunswick Executive Airport						
Branch:	CTA2	Name:	Connecting Taxiway A2	Use:	TAXIWAY	Area:	33,150 SqFt		
Section:	001	of	1	From:	RWY	To:	PTA	Last Const.:	1/15/1996
Surface:	AC	Family:	2019 MAINE AC RW-TW		Zone:	Category:	Rank: P		
Area:	33,150 SqFt	Length:	360Ft	Width:	75 Ft				
Slabs:	Slab Length:	Ft	Slab Width:	Ft	Joint Length:	Ft			
Shoulder:	Street Type:	Grade:	0	Lanes:	0				
Last Insp. Date:	10/30/2018	Total Samples:	7	Surveyed:	4				
Conditions:	PCI: 82								
Sample Number:	100	Type:	R	Area:	3750.00 SqFt	PCI:	76		
48	L & T CR	L	403.00	Ft					
Sample Number:	102	Type:	R	Area:	3750.00 SqFt	PCI:	81		
48	L & T CR	M	37.00	Ft					
48	L & T CR	L	167.00	Ft					
Sample Number:	104	Type:	R	Area:	3750.00 SqFt	PCI:	84		
50	PATCHING	L	225.00	SqFt					
48	L & T CR	L	62.00	Ft					
Sample Number:	106	Type:	R	Area:	3750.00 SqFt	PCI:	86		
48	L & T CR	M	19.00	Ft					
48	L & T CR	L	99.00	Ft					

Network:	BXM	Name:	Brunswick Executive Airport						
Branch:	CTA3	Name:	Connecting Taxiway A3	Use:	TAXIWAY	Area:	29,350 SqFt		
Section:	001	of	1	From:	RWY	To:	PTA	Last Const.:	1/15/1996
Surface:	AC	Family:	2019 MAINE AC RW-TW	Zone:		Category:		Rank:	P
Area:	29,350 SqFt	Length:	360Ft	Width:	75Ft				
Slabs:		Slab Length:	Ft	Slab Width:	Ft	Joint Length:	Ft		
Shoulder:		Street Type:		Grade:	0	Lanes:	0		
Last Insp. Date:	10/30/2018	Total Samples:	7	Surveyed:	4				
Conditions:	PCI: 71								
Sample Number:	100	Type:	R	Area:	3750.00 SqFt	PCI:	73		
48	L & T CR		L	491.00	Ft				
Sample Number:	101	Type:	R	Area:	3750.00 SqFt	PCI:	72		
48	L & T CR		L	366.00	Ft				
48	L & T CR		M	19.00	Ft				
Sample Number:	103	Type:	R	Area:	3750.00 SqFt	PCI:	74		
48	L & T CR		L	321.00	Ft				
53	RUTTING		L	24.00	SqFt				
Sample Number:	104	Type:	R	Area:	3750.00 SqFt	PCI:	66		
48	L & T CR		L	382.00	Ft				
53	RUTTING		L	43.00	SqFt				
53	RUTTING		M	7.00	SqFt				

Network:	BXM	Name:	Brunswick Executive Airport						
Branch:	CTA4	Name:	Connecting Taxiway A4	Use:	TAXIWAY	Area:	61,200 SqFt		
Section:	001	of	1	From:	RWY	To:	PTA	Last Const.:	6/1/2004
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:		Rank:	P
Area:	61,200 SqFt	Length:	360Ft	Width:	150Ft				
Slabs:	326	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	7,410Ft		
Shoulder:		Street Type:		Grade:	0	Lanes:	0		
Last Insp. Date:	10/30/2018	Total Samples:	12	Surveyed:	6				
Conditions:	PCI: 96								
Sample Number:	100	Type:	R	Area:	24.00 Slabs	PCI:	93		
63	LINEAR CR		L	1.00	Slabs				
66	SMALL PATCH		L	4.00	Slabs				
Sample Number:	102	Type:	R	Area:	24.00 Slabs	PCI:	92		
66	SMALL PATCH		L	9.00	Slabs				
67	LARGE PATCH		L	1.00	Slabs				
Sample Number:	200	Type:	R	Area:	24.00 Slabs	PCI:	100		
<No Distress>									
Sample Number:	201	Type:	R	Area:	24.00 Slabs	PCI:	100		
<No Distress>									
Sample Number:	203	Type:	R	Area:	24.00 Slabs	PCI:	96		
67	LARGE PATCH		L	1.00	Slabs				
66	SMALL PATCH		L	1.00	Slabs				
Sample Number:	302	Type:	R	Area:	24.00 Slabs	PCI:	95		
66	SMALL PATCH		L	1.00	Slabs				
67	LARGE PATCH		L	1.00	Slabs				
73	SHRINKAGE CR		N	1.00	Slabs				

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	PTA	Name:	Parallel Taxiway A	Use:	TAXIWAY	Area:	600,000 SqFt
Section:	001	of 3	From:	CTH	To:	002	Last Const.: 1/15/1999
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	37,500 SqFt	Length:	500Ft	Width:	75 Ft		
Slabs:	200	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	4,925 Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	1/1/2018	Total Samples:	6	Surveyed:	4		
Conditions:	PCI: 91						
Sample Number:	100	Type:	R	Area:	36.00 Slabs	PCI:	92
67	LARGE PATCH		L	2.00	Slabs		
62	CORNER BREAK		L	1.00	Slabs		
66	SMALL PATCH		L	5.00	Slabs		
Sample Number:	101	Type:	R	Area:	36.00 Slabs	PCI:	86
67	LARGE PATCH		L	6.00	Slabs		
75	CORNER SPALL		L	2.00	Slabs		
66	SMALL PATCH		L	6.00	Slabs		
Sample Number:	102	Type:	R	Area:	36.00 Slabs	PCI:	91
75	CORNER SPALL		L	1.00	Slabs		
66	SMALL PATCH		L	7.00	Slabs		
67	LARGE PATCH		L	3.00	Slabs		
Sample Number:	103	Type:	R	Area:	36.00 Slabs	PCI:	97
66	SMALL PATCH		L	6.00	Slabs		

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	PTA	Name:	Parallel Taxiway A	Use:	TAXIWAY	Area:	600,000 SqFt
Section:	002	of 3	From:	001	To:	003	Last Const.: 1/15/1996
Surface:	AC	Family:	2019 MAINE AC RW-TW	Zone:		Category:	Rank: P
Area:	525,000 SqFt	Length:	7,000Ft	Width:	75 Ft		
Slabs:		Slab Length:	Ft	Slab Width:	Ft	Joint Length:	Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	140	Surveyed:	14		
Conditions:	PCI: 67						
Sample Number:	108	Type:	R	Area:	3750.00 SqFt	PCI:	65
48	L & T CR		H	12.00	Ft		
48	L & T CR		L	594.00	Ft		
48	L & T CR		M	37.00	Ft		
Sample Number:	117	Type:	R	Area:	3750.00 SqFt	PCI:	64
48	L & T CR		M	33.00	Ft		
48	L & T CR		L	641.00	Ft		
Sample Number:	126	Type:	R	Area:	3750.00 SqFt	PCI:	63
48	L & T CR		L	699.00	Ft		
48	L & T CR		M	20.00	Ft		
Sample Number:	135	Type:	R	Area:	3750.00 SqFt	PCI:	61
48	L & T CR		M	17.00	Ft		
48	L & T CR		L	807.00	Ft		
Sample Number:	144	Type:	R	Area:	3750.00 SqFt	PCI:	62
48	L & T CR		L	538.00	Ft		
48	L & T CR		M	41.00	Ft		
41	ALLIGATOR CR		L	44.00	SqFt		
Sample Number:	153	Type:	R	Area:	3750.00 SqFt	PCI:	80
48	L & T CR		L	301.00	Ft		
Sample Number:	162	Type:	R	Area:	3750.00 SqFt	PCI:	75
48	L & T CR		L	297.00	Ft		
48	L & T CR		M	10.00	Ft		
Sample Number:	171	Type:	R	Area:	3750.00 SqFt	PCI:	71
48	L & T CR		M	31.00	Ft		
48	L & T CR		L	387.00	Ft		
Sample Number:	181	Type:	R	Area:	3750.00 SqFt	PCI:	49
41	ALLIGATOR CR		M	64.00	SqFt		
48	L & T CR		L	245.00	Ft		
53	RUTTING		L	90.00	SqFt		
41	ALLIGATOR CR		L	45.00	SqFt		
Sample Number:	191	Type:	R	Area:	3750.00 SqFt	PCI:	72
48	L & T CR		L	298.00	Ft		
41	ALLIGATOR CR		L	47.00	SqFt		
Sample Number:	201	Type:	R	Area:	3750.00 SqFt	PCI:	67
48	L & T CR		H	9.00	Ft		
48	L & T CR		L	528.00	Ft		
48	L & T CR		M	34.00	Ft		
Sample Number:	211	Type:	R	Area:	3750.00 SqFt	PCI:	64
48	L & T CR		L	462.00	Ft		
48	L & T CR		M	55.00	Ft		
41	ALLIGATOR CR		L	13.00	SqFt		
Sample Number:	221	Type:	R	Area:	3750.00 SqFt	PCI:	73
48	L & T CR		L	347.00	Ft		
48	L & T CR		M	46.00	Ft		
Sample Number:	231	Type:	R	Area:	3750.00 SqFt	PCI:	69
48	L & T CR		M	11.00	Ft		
48	L & T CR		L	448.00	Ft		

Network:	BXM	Name:	Brunswick Executive Airport						
Branch:	PTA	Name:	Parallel Taxiway A	Use:	TAXIWAY	Area:	600,000 SqFt		
Section:	003	of 3	From:	01	To:	CTE	Last Const.:	1/15/1999	
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:		Rank:	P
Area:	37,500 SqFt	Length:	500Ft	Width:	75 Ft				
Slabs:	200	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	4,925 Ft		
Shoulder:		Street Type:		Grade:	0	Lanes:	0		
Last Insp. Date:	10/30/2018	Total Samples:	6	Surveyed:	4				
Conditions:	PCI: 86								
Sample Number:	246	Type:	R	Area:	6.00 Slabs	PCI:	91		
66	SMALL PATCH		L		4.00 Slabs				
Sample Number:	247	Type:	R	Area:	36.00 Slabs	PCI:	95		
66	SMALL PATCH		L		3.00 Slabs				
67	LARGE PATCH		L		2.00 Slabs				
Sample Number:	248	Type:	R	Area:	36.00 Slabs	PCI:	72		
66	SMALL PATCH		M		1.00 Slabs				
67	LARGE PATCH		M		4.00 Slabs				
73	SHRINKAGE CR		N		1.00 Slabs				
66	SMALL PATCH		L		6.00 Slabs				
63	LINEAR CR		M		1.00 Slabs				
Sample Number:	249	Type:	R	Area:	36.00 Slabs	PCI:	91		
66	SMALL PATCH		M		1.00 Slabs				
75	CORNER SPALL		M		1.00 Slabs				
66	SMALL PATCH		L		11.00 Slabs				

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	RWY0119	Name:	Runway 1-19	Use:	RUNWAY	Area:	1,600,000 SqFt
Section:	001	of 4	From:	END	To:	002	Last Const.: 1/15/2001
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	100,000 SqFt	Length:	500Ft	Width:	200 Ft		
Slabs:	533	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	13,967 Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	24	Surveyed:	8		
Conditions:	PCI: 97						
Sample Number:	100	Type:	R	Area:	24.00 Slabs	PCI:	94
63	LINEAR CR		L	1.00	Slabs		
66	SMALL PATCH		L	2.00	Slabs		
Sample Number:	104	Type:	R	Area:	24.00 Slabs	PCI:	94
63	LINEAR CR		L	1.00	Slabs		
66	SMALL PATCH		L	3.00	Slabs		
Sample Number:	200	Type:	R	Area:	24.00 Slabs	PCI:	99
66	SMALL PATCH		L	1.00	Slabs		
Sample Number:	203	Type:	R	Area:	24.00 Slabs	PCI:	99
66	SMALL PATCH		L	1.00	Slabs		
Sample Number:	301	Type:	R	Area:	24.00 Slabs	PCI:	99
66	SMALL PATCH		L	1.00	Slabs		
Sample Number:	304	Type:	R	Area:	24.00 Slabs	PCI:	99
66	SMALL PATCH		L	1.00	Slabs		
Sample Number:	402	Type:	R	Area:	24.00 Slabs	PCI:	97
73	SHRINKAGE CR		N	2.00	Slabs		
66	SMALL PATCH		L	2.00	Slabs		
Sample Number:	404	Type:	R	Area:	24.00 Slabs	PCI:	98
73	SHRINKAGE CR		N	1.00	Slabs		
66	SMALL PATCH		L	1.00	Slabs		

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	RWY0119	Name:	Runway 1-19	Use:	RUNWAY	Area:	1,600,000 SqFt
Section:	002	of 4	From:	001	To:	003	Last Const.: 1/15/2004
Surface:	AC	Family:	2019 MAINE AC RW-TW		Zone:	Category:	Rank: P
Area:	350,000 SqFt	Length:	7,000Ft	Width:	50Ft		
Slabs:	Slab Length:	Ft	Slab Width:	Ft	Joint Length:	Ft	
Shoulder:	Street Type:	Grade:	0	Lanes:	0		
Last Insp. Date:	10/31/2018	TotalSamples:	70	Surveyed:	8		
Conditions:	PCI: 68						
Sample Number:	101	Type:	R	Area:	5000.00 SqFt	PCI:	64
48	L & T CR	M	100.00	Ft			
48	L & T CR	L	858.00	Ft			
Sample Number:	109	Type:	R	Area:	5000.00 SqFt	PCI:	70
48	L & T CR	L	493.00	Ft			
48	L & T CR	M	200.00	Ft			
Sample Number:	117	Type:	R	Area:	5000.00 SqFt	PCI:	66
44	CORRUGATION	L	439.00	SqFt			
48	L & T CR	M	208.00	Ft			
Sample Number:	125	Type:	R	Area:	5000.00 SqFt	PCI:	74
48	L & T CR	M	171.00	Ft			
48	L & T CR	L	311.00	Ft			
Sample Number:	134	Type:	R	Area:	5000.00 SqFt	PCI:	68
48	L & T CR	L	658.00	Ft			
48	L & T CR	M	143.00	Ft			
Sample Number:	142	Type:	R	Area:	5000.00 SqFt	PCI:	69
48	L & T CR	M	121.00	Ft			
48	L & T CR	L	599.00	Ft			
Sample Number:	151	Type:	R	Area:	5000.00 SqFt	PCI:	67
48	L & T CR	L	647.00	Ft			
48	L & T CR	M	200.00	Ft			
Sample Number:	167	Type:	R	Area:	5000.00 SqFt	PCI:	67
48	L & T CR	L	729.00	Ft			
48	L & T CR	M	184.00	Ft			

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	RWY0119	Name:	Runway 1-19	Use:	RUNWAY	Area:	1,600,000 SqFt
Section:	003	of 4	From:	002	To:	END	Last Const.: 1/15/1952
Surface:	PCC	Family:	2019 MAINE PCC	Zone:		Category:	Rank: P
Area:	100,000 SqFt	Length:	500Ft	Width:	200 Ft		
Slabs:	533	Slab Length:	15 Ft	Slab Width:	12 Ft	Joint Length:	13,967 Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/30/2018	Total Samples:	24	Surveyed:	7		
Conditions:	PCI: 92						
Sample Number:	100	Type:	R	Area:	24.00 Slabs	PCI:	98
66	SMALL PATCH		L		3.00 Slabs		
Sample Number:	103	Type:	R	Area:	24.00 Slabs	PCI:	87
67	LARGE PATCH		L		5.00 Slabs		
66	SMALL PATCH		L		4.00 Slabs		
Sample Number:	201	Type:	R	Area:	24.00 Slabs	PCI:	97
66	SMALL PATCH		L		4.00 Slabs		
Sample Number:	204	Type:	R	Area:	24.00 Slabs	PCI:	92
67	LARGE PATCH		L		2.00 Slabs		
66	SMALL PATCH		L		5.00 Slabs		
Sample Number:	300	Type:	R	Area:	24.00 Slabs	PCI:	89
67	LARGE PATCH		L		3.00 Slabs		
66	SMALL PATCH		L		6.00 Slabs		
Sample Number:	304	Type:	R	Area:	24.00 Slabs	PCI:	88
67	LARGE PATCH		L		3.00 Slabs		
66	SMALL PATCH		L		7.00 Slabs		
Sample Number:	401	Type:	R	Area:	24.00 Slabs	PCI:	95
63	LINEAR CR		L		1.00 Slabs		
66	SMALL PATCH		L		1.00 Slabs		

Network:	BXM	Name:	Brunswick Executive Airport				
Branch:	RWY0119	Name:	Runway 1-19	Use:	RUNWAY	Area:	1,600,000 SqFt
Section:	004	of 4	From:	001	To:	003	Last Const.: 1/15/2004
Surface:	AC	Family:	2019 MAINE AC RW-TW	Zone:		Category:	Rank: P
Area:	1,050,000 SqFt	Length:	7,000Ft	Width:	150 Ft		
Slabs:		Slab Length:	Ft	Slab Width:	Ft	Joint Length:	Ft
Shoulder:		Street Type:		Grade:	0	Lanes:	0
Last Insp. Date:	10/31/2018	Total Samples:	280	Surveyed:	17		
Conditions:	PCI: 76						
Sample Number:	302	Type:	R	Area:	3750.00 SqFt	PCI:	74
48	L & T CR		L	325.00	Ft		
48	L & T CR		M	33.00	Ft		
Sample Number:	334	Type:	R	Area:	3750.00 SqFt	PCI:	76
48	L & T CR		L	272.00	Ft		
48	L & T CR		M	59.00	Ft		
Sample Number:	342	Type:	R	Area:	3750.00 SqFt	PCI:	79
48	L & T CR		M	73.00	Ft		
48	L & T CR		L	206.00	Ft		
Sample Number:	351	Type:	R	Area:	3750.00 SqFt	PCI:	75
48	L & T CR		M	34.00	Ft		
48	L & T CR		L	289.00	Ft		
Sample Number:	368	Type:	R	Area:	3750.00 SqFt	PCI:	75
48	L & T CR		L	285.00	Ft		
48	L & T CR		M	39.00	Ft		
Sample Number:	384	Type:	R	Area:	3750.00 SqFt	PCI:	76
48	L & T CR		L	263.00	Ft		
48	L & T CR		M	71.00	Ft		
Sample Number:	402	Type:	R	Area:	3750.00 SqFt	PCI:	80
48	L & T CR		L	299.00	Ft		
Sample Number:	418	Type:	R	Area:	3750.00 SqFt	PCI:	78
48	L & T CR		L	178.00	Ft		
48	L & T CR		M	83.00	Ft		
Sample Number:	434	Type:	R	Area:	3750.00 SqFt	PCI:	76
48	L & T CR		M	108.00	Ft		
48	L & T CR		L	264.00	Ft		
Sample Number:	518	Type:	R	Area:	3750.00 SqFt	PCI:	78
48	L & T CR		L	238.00	Ft		
48	L & T CR		M	64.00	Ft		
Sample Number:	534	Type:	R	Area:	3750.00 SqFt	PCI:	75
48	L & T CR		L	281.00	Ft		
48	L & T CR		M	41.00	Ft		
Sample Number:	542	Type:	R	Area:	3750.00 SqFt	PCI:	75
48	L & T CR		M	63.00	Ft		
48	L & T CR		L	287.00	Ft		
Sample Number:	551	Type:	R	Area:	3750.00 SqFt	PCI:	71
48	L & T CR		M	24.00	Ft		
48	L & T CR		L	403.00	Ft		
Sample Number:	568	Type:	R	Area:	3750.00 SqFt	PCI:	77
48	L & T CR		L	248.00	Ft		
48	L & T CR		M	31.00	Ft		
Sample Number:	584	Type:	R	Area:	3750.00 SqFt	PCI:	76
48	L & T CR		M	53.00	Ft		
48	L & T CR		L	265.00	Ft		
Sample Number:	618	Type:	R	Area:	3750.00 SqFt	PCI:	76
48	L & T CR		L	271.00	Ft		

48 L & T CR M 54.00 Ft

Sample Number: 634 **Type:** R **Area:** 3750.00 SqFt **PCI:** 74

48 L & T CR L 310.00 Ft

48 L & T CR M 71.00 Ft

Appendix D: Distress Identification

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This appendix lists and describes distress types most commonly identified during the PCI inspections of Maine airports. Note that the pictures provided in this appendix are for illustration purposes and do not necessarily reflect the conditions or pavements at this airport. Descriptions and measurement inspection criteria are provided herein.

Flexible (Asphalt) Pavement Distress

Example of Longitudinal and Transverse Cracking (L&T cracking)



Longitudinal and transverse cracks are caused by pavement aging, by construction, and by subsurface movement. Aging occurs as pavement loses some of its components to the atmosphere and becomes more brittle. Consistent application of pavement sealcoats can help to prevent the occurrence of age related cracks. Cracks will also develop along poorly constructed paving lane joints. Ensuring that joints are made when both sides are still hot, and near the same temperature, is one of the best ways to mitigate this potential problem. Seasonal movement caused by changes in moisture content or temperature differences can also cause pavement cracks. Asphalt pavement placed over a PCC pavement or cement stabilized base course may evidence reflective cracking from the underlying material. Longitudinal and transverse cracks are not caused by wheel loads, although traffic may worsen their condition.

Low severity longitudinal and transverse cracks are less than $\frac{1}{4}$ inch wide, or if sealed with suitable filler material in satisfactory condition can be any width, less than 3 inches, if they are not spalled. Maintenance usually is not indicated for low-severity cracking. Moderately spalled cracks and cracks wider than $\frac{1}{4}$ inch which are not satisfactorily sealed are at medium severity. Medium-severity cracks should be sealed with a high-quality crack filling material. Severely spalled cracks and cracks wider than 3 inches are at high severity. High-severity L&T cracks normally require patching.

Example of Block Cracking



Block cracking is longitudinal and transverse cracking that has established a pattern of blocks ranging in size from 1ft x 1ft to 10ft x 10ft. This distress typically happens in older asphalt pavements and is an indication that the bituminous binder has lost most of its flexibility. The severity determination is basically determined by the crack width criteria defined for longitudinal and transverse cracking. Crack sealing typically is used to repair block cracking; however, the amount of required sealant can be extensive due to the high density of cracks.

Example of Alligator Cracking



Alligator (or fatigue) cracks are a series of interconnected load-related cracks caused by fatigue of the asphalt surface. Alligator cracking is a significant structural distress and develops only in places subject to traffic loads. These cracks typically initiate at the bottom of the asphalt layer (where tensile strains

are highest) and propagate upward - so once a fatigue crack is visible, significant damage has already occurred.

At low severity, alligator cracks are evidenced by a series of parallel hairline cracks (usually in a wheel path). Further traffic and deterioration leads to the interconnection of these cracks. Medium severity alligator cracking is a well-defined pattern of interconnected cracks, some spalling may be present. High severity alligator cracks have lost aggregate interlock between adjacent pieces, the cracks may be severely spalled with FOD potential, and most likely the pieces will move freely under traffic. Alligator cracking is a structural failure and cannot be repaired with sealant, the proper repair is full-depth patching.

Example of Raveling/Weathering



Raveling and weathering are the wearing away of the pavement surface. Raveling is the condition where the mid- to large size aggregates are becoming dislodged; weathering is when the fine aggregate wears away exposing the edges of the larger aggregate. These distresses are usually evident over large areas and may occur together (pictured above) or separately. Raveling and weathering may indicate that the asphalt binder has hardened significantly.

Raveling – At low severity, the number of missing coarse aggregates (> 3/8 inch) is between 5-20 missing/yd², medium severity (pictured below where the missing coarse aggregates have been dotted with yellow paint) is 21-40 missing/yd², and high severity is > 40 missing/yd².



Weathering – At low severity, the coarse aggregate is slightly exposed due to the wearing away of the fine aggregate. At medium severity, the coarse aggregate is exposed up to $\frac{1}{4}$ the width of the longest side. At high severity, the coarse is exposed greater than $\frac{1}{4}$ the width of the longest side.

Low severity



Medium severity



High severity



Example of Patching



Patched areas are defined when a portion of the original pavement is replaced with a material intended as a semi-permanent repair. A patch is documented as a defect because it is considered a break in the integrity of the pavement structure. Patches are constructed for a variety of reasons including utility repairs, correcting grade issues, and addressing a defect in the original pavement. The severity level of patches is determined by the amount of distress (i.e. cracking, depression, weathering/raveling, etc.) occurring within the limits of the patched area.

Example of Rutting



Ruts are localized, load related, areas of pavement having elevations lower than the surrounding sections. Rutting is due to base and subgrade consolidation, caused by excessive wheel loads or poor compaction. Ruts indicate structural failure, and can cause hydroplaning. At low severity, ruts have an

average depth of ¼ to ½ inches. At medium severity, ruts have an average depth of ½ to 1 inch. High severity, ruts have an average depth greater than 1 inch. Full-depth patching is the appropriate repair for ruts.

Rigid (Concrete) Pavement Distress

Example of Longitudinal, Transverse, and Diagonal Cracking



LTD cracking is most often a result of externally applied loads and/or constrained temperature deformations. External loads cause LTD cracking through flexure. Temperature changes on restrained slabs will result in stresses due to friction or curling. When any of these stresses exceed the strength of the slab, cracking will occur. LTD cracking is recorded at low, medium, or high severity, depending on the width of crack opening and degree of deterioration. At low severity, the crack is less than 1/8th inch wide with little spalling and no corrective action is indicated. At medium severity, LTD cracks can be up to 1 inch wide with moderate spalling, and should be repaired and sealed using procedures similar to joint sealing. At high severity, cracks exceed 1 inch in width and may be severely spalled. High-severity LTD cracking is evidence of serious load failure of the slab, and correction may require patching or slab replacement. If the distress occurs in several adjacent slabs at medium or high severity, major rehabilitation of that pavement area is indicated.

When a slab is divided by LTD cracks into four or more pieces, the slab is said to be "divided" or "shattered." Shattered slab is a separate distress category and is indicative of significant structural failure as the slab loses its ability to distribute loads to subgrade and further slab deterioration can be expected. Shattered slabs are rated in three severities, with slab replacement recommended for medium and high severities.

Example of Shrinkage Cracking



Shrinkage cracks are small, nonworking (no spalling along edge) cracks that are visible at the surface but do not penetrate through the full depth of concrete. Shrinkage cracks most commonly occur shortly after construction due to concrete shrinkage during the curing process. Shrinkage cracks are usually so small that they are not visible until staining or material loss at crack edges begins to take place. Shrinkage cracks do not represent a structural weakness, and no corrective action is prescribed.

Example of Joint and Corner Spalling



Spalls at slab joints and corners are caused by excessive internal stress in the pavement. Spalls occur when these stresses exceed the shear strength of the concrete. Spalling usually results from thermal expansion during warm or hot weather. As slabs expand, they push against one another at joints. If the joints are filled with incompressibles, such as sand, or if adjacent slabs offset slightly, stresses can become severe, causing spalls. Spalling can be reduced significantly by conscientious maintenance of joint sealant.

Spall repair requires patching. The extent and severity of spalling on a pavement surface suggests appropriate action. For example, at low severity, spalled concrete remains securely in place in the slab. A low-severity spall should be monitored closely for further deterioration and should be patched when

spalled particles become loose in place, or at the next scheduled patching activity in the section. Medium- and high-severity spalls should be repaired immediately to prevent the incidence of FOD. If the pavement can be restored to serviceable condition, spalls should be carefully patched for long-term service. If the pavement is beyond repair, temporary patching should be considered to control FOD.

Example of Durability Cracking



Durability cracking (D-cracking) is caused by environmental factors, the most common of which is freezing/thawing. It usually appears as a pattern of hairline cracks running parallel to a joint or crack, or in a corner, where water tends to collect. This type of cracking eventually leads to disintegration of the pavement, creating FOD potential. At low severity, D-cracking is evident, but no disintegration has occurred. As the distress advances to medium severity, the distress pattern is evident over a significant area of the slab, and some disintegration and FOD potential exists. High severity durability cracking is evidenced by extensive cracking with loose and missing pieces and significant FOD potential.

Example of Joint Seal Damage



Joint seal damage is recorded at three severities: low, medium, and high. When joint sealant is in perfect condition (no damage), it is not a distress. At low severity, at least 10 percent of the sealant is debonded but still in contact with the joint edges (i.e., joint sealant is in serviceable condition but should

be monitored for evidence of more serious failure). Medium-severity joint seal damage is recorded when at least 10 percent of the sealant has visible gaps smaller than 1/8th inch and is an indicator that replacement should be programmed as soon as is practicable. In the meantime, aggressive inspection and sustaining maintenance is recommended to minimize subsurface damage from moisture penetration. At high severity, visible gaps exceed 1/8th inch and the amount and degree of joint seal damage is such that repair is no longer feasible. The only appropriate corrective action is sealant replacement.

On serviceable pavement, deteriorated joint sealant should be repaired or replaced to preserve pavement and subgrade integrity and prolong service life. The issue is not so clear-cut with unserviceable pavement. Pavement that can be restored to serviceable condition by maintenance activities such as patching and joint seal repair, or by slab replacement, should be so maintained as long as the process is cost-effective. However, when age and condition preclude economical return to serviceable condition by such means, joint seal repair would no longer be cost-effective and should be suspended except for an interim maintenance program to control FOD potential.

Joint sealant can stop the evidence of pumping (water forced to surface through joints and cracks) but will not correct the cause (voids under pavement).

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Appendix E: Maintenance Policies

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Table E1. Localized maintenance policy for asphalt surfaces.

Distress type	Distress severity	Maintenance treatment
Alligator cracking	Low	Monitor
	Medium	Patching - AC Deep
	High	Patching - AC Deep
Bleeding	N/A	Monitor
Block cracking	Low	Monitor
	Medium	Crack Sealing - AC
	High	Crack Sealing - AC
Corrugation	Low	Monitor
	Medium	Patching - AC Shallow
	High	Patching - AC Shallow
Depression	Low	Monitor
	Medium	Patching - AC Shallow
	High	Patching - AC Shallow
Jet blast	N/A	Monitor
Joint reflection cracking	Low	Monitor
	Medium	Crack Sealing - AC
	High	Crack Sealing - AC
Longitudinal & transverse cracking (L&T cracking)	Low	Monitor
	Medium	Crack Sealing - AC
	High	Crack Sealing - AC
Oil spillage	N/A	Patching - AC Shallow
Patching	Low	Monitor
	Medium	Patching - AC Shallow
	High	Patching - AC Shallow
Polished aggregate	N/A	Monitor
Raveling	Low	Surface Treatment
	Medium	Surface Treatment
	High	Patching - AC Shallow
Rutting	Low	Monitor
	Medium	Patching - AC Deep
	High	Patching - AC Deep
Shoving	Low	Monitor
	Medium	Patching - AC Shallow
	High	Patching - AC Shallow
Slippage cracking	N/A	Patching - AC Shallow
Swelling	Low	Monitor
	Medium	Patching - AC Shallow
	High	Patching - AC Shallow
Weathering	Low	Monitor
	Medium	Surface Treatment
	High	Surface Treatment

Table E2. Localized maintenance policy for PCC surfaces.

Distress type	Distress severity	Maintenance treatment
Blow up	Low	Slab Replacement - PCC
	Medium	Slab Replacement - PCC
	High	Slab Replacement - PCC
Corner break	Low	Monitor
	Medium	Patching - PCC Full Depth
	High	Patching - PCC Full Depth
Linear cracking	Low	Monitor
	Medium	Crack Sealing - PCC
	High	Slab Replacement - PCC
Durability cracking	Low	Monitor
	Medium	Patching - PCC Full Depth
	High	Slab Replacement - PCC
Joint seal damage	Low	Monitor
	Medium	Joint Seal (Localized)
	High	Joint Seal (Localized)
Small patch	Low	Monitor
	Medium	Monitor
	High	Patching - PCC Full Depth
Large patch	Low	Monitor
	Medium	Monitor
	High	Patching - PCC Full Depth
Popouts	N/A	Monitor
Pumping	N/A	Monitor
Scaling	Low	Monitor
	Medium	Monitor
	High	Slab Replacement - PCC
Faulting	Low	Monitor
	Medium	Monitor
	High	Grinding (Localized)
Shattered slab	Low	Monitor
	Medium	Slab Replacement - PCC
	High	Slab Replacement - PCC
Shrinkage cracking	N/A	Monitor
Joint spall	Low	Monitor
	Medium	Patching - PCC Partial Depth
	High	Patching - PCC Partial Depth
Corner spall	Low	Monitor
	Medium	Patching - PCC Partial Depth
	High	Patching - PCC Partial Depth
ASR	Low	Monitor
	Medium	Slab Replacement - PCC
	High	Slab Replacement - PCC

Appendix F: Maintenance Repair Guidelines

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General Comments

Ongoing inspections are the cornerstone of a maintenance management program. Crack sealing prevents surface water from entering the pavement structure and helps prevent the introduction of incompressible material into the paving joints and cracks, reducing the chances for spalls and further pavement deterioration.

Preservation of a pavement system will require a combination of preventive, sustaining, and restorative maintenance repairs. Preventive maintenance is primarily an inspection program, sustaining maintenance is an ongoing maintenance function, whose purpose is to seal newly formed cracks in areas where the sealant is in otherwise satisfactory condition. Restorative repairs are major work items, often performed under contract that typically involve complete removal and replacement of existing sealant.

Maintenance Activities

Flexible (Asphalt) Pavement

Longitudinal and transverse (L&T) cracks at medium severity ($>1/4$ " wide) should be filled with a good quality crack filler material. High-severity cracks must normally be patched. Cracks rated at low severity may be narrow-unsealed cracks or sealed cracks up to 3 inches wide. The PCI procedure does not distinguish between narrow unfilled cracks and wider filled cracks. When 25 percent or more of total crack quantity is at medium or high severity, a restorative program becomes cost-effective. When medium- or high-severity cracking constitutes less than 25 percent of the total, sustaining maintenance is usually more cost-effective.

Medium- and high-severity existing patches should be replaced with new patches. Small areas (usually less than 100 square feet per patch) of alligator cracking and rutting at medium and high severity may also be repaired by patching. Larger patches should be considered if equipment can be made available to accomplish the work. Patching to repair up to 10 percent of the surface of a pavement section that is otherwise serviceable can result in significant cost savings as compared to rehabilitation of the entire section.

PCC (Concrete) Pavement

Joint seal damage at medium and high severity should be repaired. If medium- and high-severity damage is limited to less than about 25 percent of total joint length, sustaining maintenance is recommended. If medium and high-severity damage exceeds about 25 percent of the total joint length, joint sealant should be removed and replaced under a restorative repair project.

Longitudinal/transverse/diagonal (LTD) cracks at low and medium severity should be considered for sealing as part of the joint sealing project. High-severity LTD cracks require sealing, patching, or slab replacement, depending on the extent of deterioration.

Small patches are most often placed to repair medium- and high-severity spalls or to replace deteriorated older patches. Restorative small patches are typically partial depth repairs, usually to load transfer steel. Large patches and corner breaks at medium and high severity should be repaired by full-depth large patches.

High-severity LTD cracks and shattered slabs are candidates for patching and slab replacement. Low-severity shattered slabs can be left in place pending further deterioration.

Pavement Failure

Before maintenance and repairs are attempted, it helps to have an understanding of the way pavement performs and deteriorates.

Environmental/Age-Related Deterioration

Seasonal temperature changes cause expansion and contraction of the pavement materials, causing the pavement to move up to 1 foot per 1,000 feet. Much of this movement can be witnessed as the opening and closing of existing transverse cracks.

The pavement thickness and type of subgrade plays a large role in the formation and spacing interval of transverse cracks. If the subgrade material is smooth or rounded, the pavement surface will move relatively freely, the transverse cracks will usually be spaced far apart (>60 feet). If the subgrade material is rough or angular the pavement surface will not move freely and transverse cracks will be spaced more closely (<40 feet). The distance between transverse cracks will also depend on the pavement thickness, as a thicker pavement can resist cracking for longer lengths, but around 50 feet is typical for general aviation airport pavements.

Age related distress deals with the pavement oxidation or loss of volatile components to the atmosphere. An oxidized pavement becomes more brittle with time. Surface treatments and seal coats are designed, in part, to provide a protective barrier and prevent this type of oxidation.

Materials Related Deterioration

Subsurface water can have the greatest impact on pavement deterioration. A wet subgrade greatly reduces the ability of a pavement to support wheel loads, and the results often show up as rutting and cracking. The fine materials in a wet base can be pumped up through the cracks and eventually result in a loss of subgrade support. This loss of support can be evidenced as corner breaks and faulting. Moisture inside a pavement system expands when it freezes; creating stresses that push and tear at the pavement. The following thaw cycles will leave voids in the pavement structure that enable further rutting and breaking. Repeated freeze/thaw cycles will eventually cause pavement to disintegrate. One of the best ways to assure pavement longevity is to provide drainage and keep the subgrade dry.

Aggregate is the biggest component of any pavement structure, and it is the contact between the aggregate particles that actually transfers the load and provides the strength. Aggregate durability and shape are major factors affecting pavement performance. Durability is the ability of the aggregate to perform satisfactorily over time and resist the detrimental effect of nature. Sharp, well-angled aggregate that interlock, compact densely, and resists movement are the most desirable.

Air Voids

Well-distributed interconnected air voids allow escape paths for freezing water and generally reduce susceptibility to freeze/thaw damage. In PCC pavements, closely spaced interconnected air voids provide the greatest degree of protection.

Asphalt pavements, on the other hand, only tolerate air voids as necessary. Air voids allow for expansion of the asphalt binder, but also allow water penetration into the pavement. Interconnected air voids are undesirable here because the voids allow air to penetrate the asphalt layers and oxidize the binder. As air voids increase, durability and flexibility decrease, but stability and skid resistance increase. Asphalt pavements should be designed and compacted so that air voids are not interconnected. The air voids should allow only for the expansion of the asphalt and aggregate without bleeding, and air voids should be kept low enough to prevent water and air from penetrating the asphalt layers.

Binders

Regardless of whether the pavement is asphalt or concrete, the binder material is mixed with the aggregate to coat all particles with a thin film. An asphalt coating allows the pavement to be flexible and still resist large movements. Durability of the asphalt pavement is increased by a thicker film because it is more resistant to age hardening; however, too thick of a film and the asphalt acts like a lubricant, promoting ruts, shoving, and bleeding. Specifications control aggregate and binder mix quantities, but each mix should be customized for materials available locally.

With a concrete pavement, the aggregate supports the load, but the cement binder interlocks with the aggregate to inhibit all movement. Hydration is the term for the chemical reaction of portland cement with water, and in the hydration process, dry cement particles react with water, to form gels, and then crystals, that grow and bond with the aggregate to form a rigid interlocking structure. Hydration can continue for years, but much of the ultimate strength will be reached within 28 days. Hydration is a sensitive chemical process, and typically, any admixtures used to accelerate the hydration process will reduce durability, and their use should be considered carefully or avoided.

Stress Distribution/Load Related Deterioration

PCC (rigid) and asphalt (flexible) pavements differ in the way loads are distributed. A concrete slab resists bending and transfers loads evenly, an asphalt pavement is designed to bend, and gradually spreads loads over wider areas. Rutting is a subgrade failure caused by a compressive yielding of the subgrade.

Load-related cracks can start at the top or bottom of a pavement section. In asphalt sections, load-related (fatigue) cracks start at the bottom. If a load-related crack reaches the surface, it usually indicates significant structural deficiency. In PCC pavement, corner breaks are caused by top tension, and the crack propagates downward. Mid-slab LTD cracks are examples of bottom tension.

Spalls can be caused by either wheel loads or environmental factors, anytime there is movement between adjacent slabs. If a small rock is allowed into a joint, a differential movement between adjacent slabs can cause a spall. Spalling can be minimized by keeping joint and crack sealant intact.

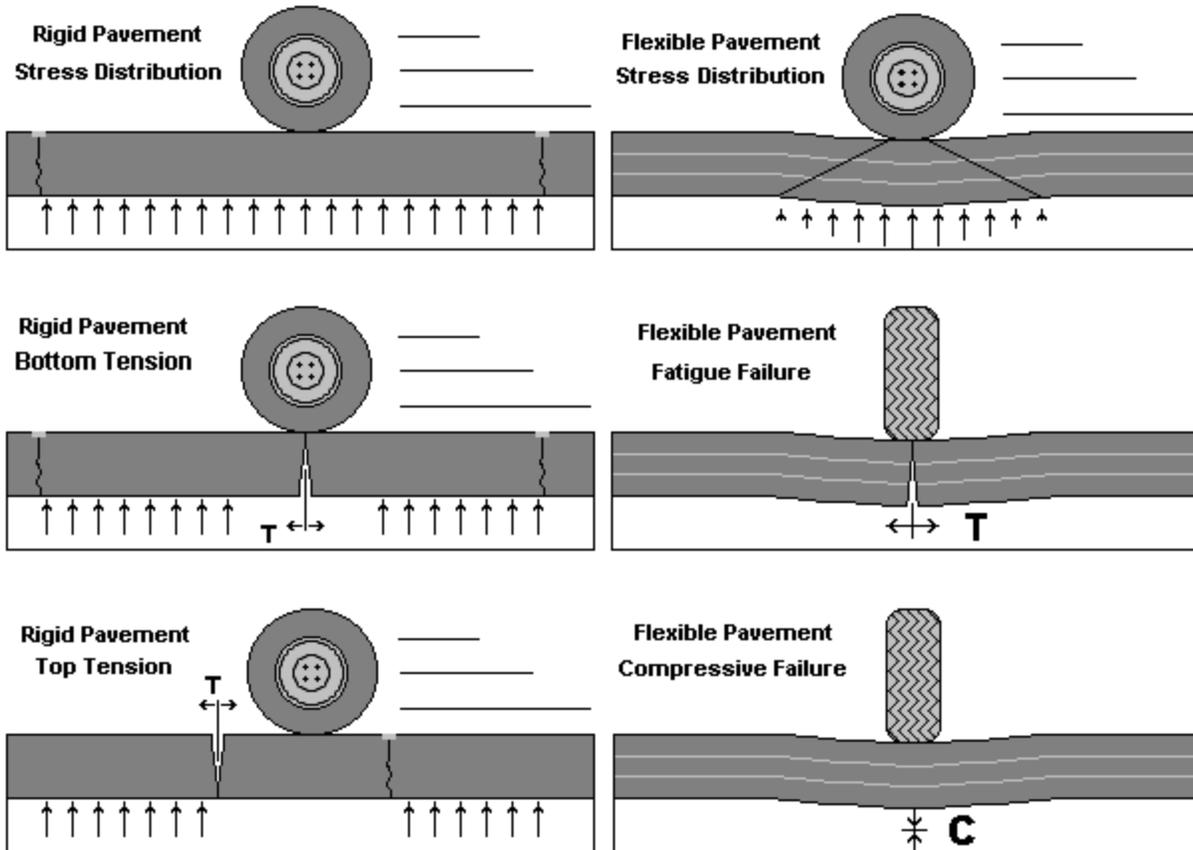


Figure 10. Pavement failure.

Points to Remember

Pavement wears out.

The longer a pavement remains in service, the greater the effort needed to keep it in service. A good maintenance and repair program will increase service life significantly, but cannot be expected to extend service life indefinitely.

Pavement moves.

Pavement moves in response to temperature changes. Transverse cracks can vary from nearly closed in the summer to open an inch or more in winter. This movement cannot be prevented. It must be understood and provided for during design and construction. The changing crack widths will dictate the reservoir size required for sealant. Measure cracks at their widest and narrowest states, then prepare adequate ($\frac{1}{2}$ - $1\frac{1}{2}$ inch) sealant reservoirs for crack sealing projects.

Longitudinal joints and cracks are important.

The most important reason for sealing cracks is to deny surface water access to the pavement and subgrade. Most water drains from centerline to shoulders. Longitudinal cracks, which run parallel to the centerline provide the greatest potential to divert water into the pavement structure, and must be sealed.

Sealing is not always the best answer.

The FAA maximum allowable open trench width on aircraft movement areas is three-inches; therefore, any crack wider than three-inches should be patched. A severe spall or a crack that has settled below the pavement elevation indicates a failure. If the pavement has disintegrated to the point that aggregate interlock is lost, sealant alone will not be sufficient, and patching should be considered.

Maintenance and repairs must be done correctly.

To achieve optimum results from repairs, proper preparation, use of quality materials, and proper application are essential. Any shortcuts will reduce the quality and effectiveness of the repairs. A rule of thumb is that proper maintenance will last twice as long as an unprepared area. Good maintenance takes time and deserves high-quality materials.

Schedule maintenance and repair activities carefully.

Any pavement defect can be corrected. Concentrate on repairs that are cost-effective, operationally important, and that extend service life. Some surface blemishes can be ignored safely, and many structural problems are beyond economical correction. When future rehabilitation is imminent, maintenance activities should be limited to only those that ensure continued safety and minimize foreign object damage (FOD) potential.

Equipment

Many excellent pavement repair and sealing products are available. Specialized tools and equipment help ensure quality repairs. This section reviews equipment compatible with airport needs.

Air Compressor

Used to remove sand and debris from prepared cracks and joints, the compressor should have a sustained capacity of 120 cubic feet per minute with a nozzle velocity of 100 psi. Trailer-mounted compressors typically have capacities in this range.

Concrete Saw

A saw capable of making a minimum 3-inch deep cut is required. The saw should be capable of making cuts in asphalt or concrete. Gasoline-powered 5-25 hp wheel mounted saws typically are preferred for this type of work, but electric and pneumatic tools are also available.

Heating Kettle

Applying sealant is the most time-consuming operation, and a sealing machine with heating and pressure application capabilities is a critical item in a sealing program. The capacity of the sealing equipment dictates the rate at which a crew progresses. For large sealing projects, a minimum 100 gallons/per hour sustained capacity is recommended. The unit should be a double boiler type, with mechanical agitators or continuous recirculation.

Router

A concrete saw can be used to prepare joints, but for random cracking, a mechanical router with a vertical impact mechanism is preferred. When cracks are being routed, this activity will dictate speed of the crew. Crack routers in the 25hp range are commonly used and are available from a variety of manufacturers.

Sand Cleaner

A sand blaster helps to clean loose particles and dust from prepared cracks. The unit must have sufficient force to expose fresh, vital pavement to bond with sealant and patching materials.

Vibratory Roller or Plate Compactor

Required to properly compact plant mixed and packaged patching materials. Small rollers are best for pothole type applications, plate compactors are best for large areas.

Other Equipment

Other general use equipment that can be helpful in a maintenance program includes bucket loaders, dump trucks, water tanks, and a power sweeper unit.

Materials

Pavement repair materials are constantly being introduced and improved. This section provides information on products compatible with airport needs.

Joint and Crack Sealer

Hot poured, pressure injected, polymeric rubberized asphalt sealant meeting ASTM D3405 specifications is suitable for most joint and crack sealing requirements. This product is relatively inexpensive, durable, and suitable for both PCC and asphalt pavements. Other, more expensive, hot applied sealants that promise longer life are being developed for specialty applications, and twin component cold applied sealants, similar to URASEAL 200, have also been used with success. Contact your local distributor.

Flexible Pavement Patch

Long-term patches should be made with a high-quality plant mixed hot asphalt having a ¾-inch maximum aggregate size and meeting FAA P401, or highest quality highway specifications. High-performance plant mixed cold patching products that can be stockpiled on-site have been developed. Low-quality packaged materials available from local hardware type stores should be avoided and only be used for temporary patches that maintain safety and service.

PCC Pavement Patch

Permanent patches in PCC pavement should be made with a minimum 6-bag mix of hi-early air-entrained cement with 1-inch maximum size aggregate. Concrete should have zero slump and a coarse texture. As with asphalt patches, low-quality packaged materials should only be used as temporary patches to maintain safety and service until a more permanent repair can be made.

Techniques

Crack Sealing

- Cracks over ¼ inches wide should be sealed. Cracks wider than 3 inches should be patched.
- Sealant depth above the backer rope should be equal to the width of the reservoir, or as recommended by the manufacturer.
- Routed cracks should be sand blasted, to prepare the vertical edges for bonding with the sealant. Clean cracks with compressed air prior to sealing.
- Backing material should always be placed into the cracks. Commercial products are available, and several sizes of rope should always be available to accommodate various crack sizes.
- Apply sealant after placing the backer rope. Follow the manufacturer’s instructions. Sealant should be applied to within ¼ inch of the pavement surface.
- The final activity is to clean the surrounding pavement areas. A vacuum sweeper works well for this. Allow the sealant time to set, before using a broom.

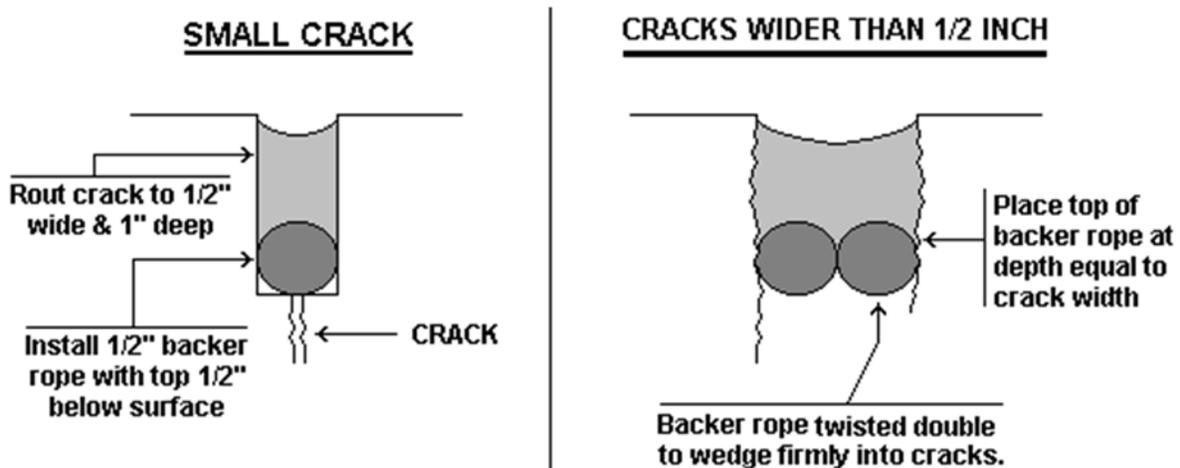


Figure 11. Crack sealing.

Note:

This crack sealing technique is meticulous in its design and procedure. It has a proven record of performance. Using backer rope forces the sealant into a predictable shape—narrow in the center and wide on the sides. This sealant profile allows the sealant to firmly bond with the vertical edges, yet stretch easily with pavement movement. In an effort to minimize labor requirements and reduce crack-sealing costs, an alternative procedure, the overband technique, is presented on the following page. This procedure can produce good results for up to 5 years.

Always remember that, within reasonable limits, thinner sealant material will stretch more easily with the pavement movement, and stay bonded longer.

Asphalt Pavement Crack Repair

Cracks wider than 3 inches should be patched. Cracks with secondary cracking and vertical movement should also be patched. Failed existing patches should be replaced. Crack repair can also repair small areas of alligator cracking and rutting. Crack repair differs from sealant in that it restores load-bearing capacity. Therefore, it must be constructed carefully to distribute stresses evenly and perform as an integral piece of the surrounding pavement. The crack repair must be wide enough to ensure that it bonds to fresh, vital pavement on all sides, and deep enough to reach fresh underlying layers, but never less than 3 inches.

- Examine the distressed area and mark the crack repair outline. This examination may require a pick or chisel to test the pavement integrity in and around the distressed area.
- The crack repair area should be cut out with a vertical saw cut not less than 3 inches deep.
- The enclosed pavement should then be removed, leaving the vertical sawed edges undamaged and providing a relatively even, flat floor at the appropriate depth.
- The sides and bottom should be sand cleaned and blown out with compressed air
- The sides and bottom should then be painted with a rapid curing asphalt tack coat. The tack coat may be sprayed on or applied with a brush or rag. Care should be taken to achieve complete coverage without allowing excess material to “pool” on the bottom.
- Allow tack coat to cure (about 2 to 4 hours) until it reaches a gummy consistency, which readily retains the impression of a fingerprint.
- Place hot mixed asphalt concrete evenly and mound slightly above surrounding pavement. Allow approximately ¼ inch of compaction for each inch of patch depth.
- Compact in place with vibratory roller or plate compactor. Asphalt concrete should not be compacted in layers greater than 6 inches. If crack repair depth is greater than 6 inches, asphalt concrete should be placed and compacted in successive layers.
- In deep, narrow cracks such as at joint reflective cracks, a sand asphalt mix may be required in lower layers to allow movement and prevent bridging the adjacent slabs.
- Considerable judgment is required in placing the asphalt concrete to achieve a fully compacted crack repair without creating a bump or depression. The ¼ inch per inch factor is a rule of thumb. Actual compression will vary with the mix. Experimentation and experience are required to achieve optimum results.

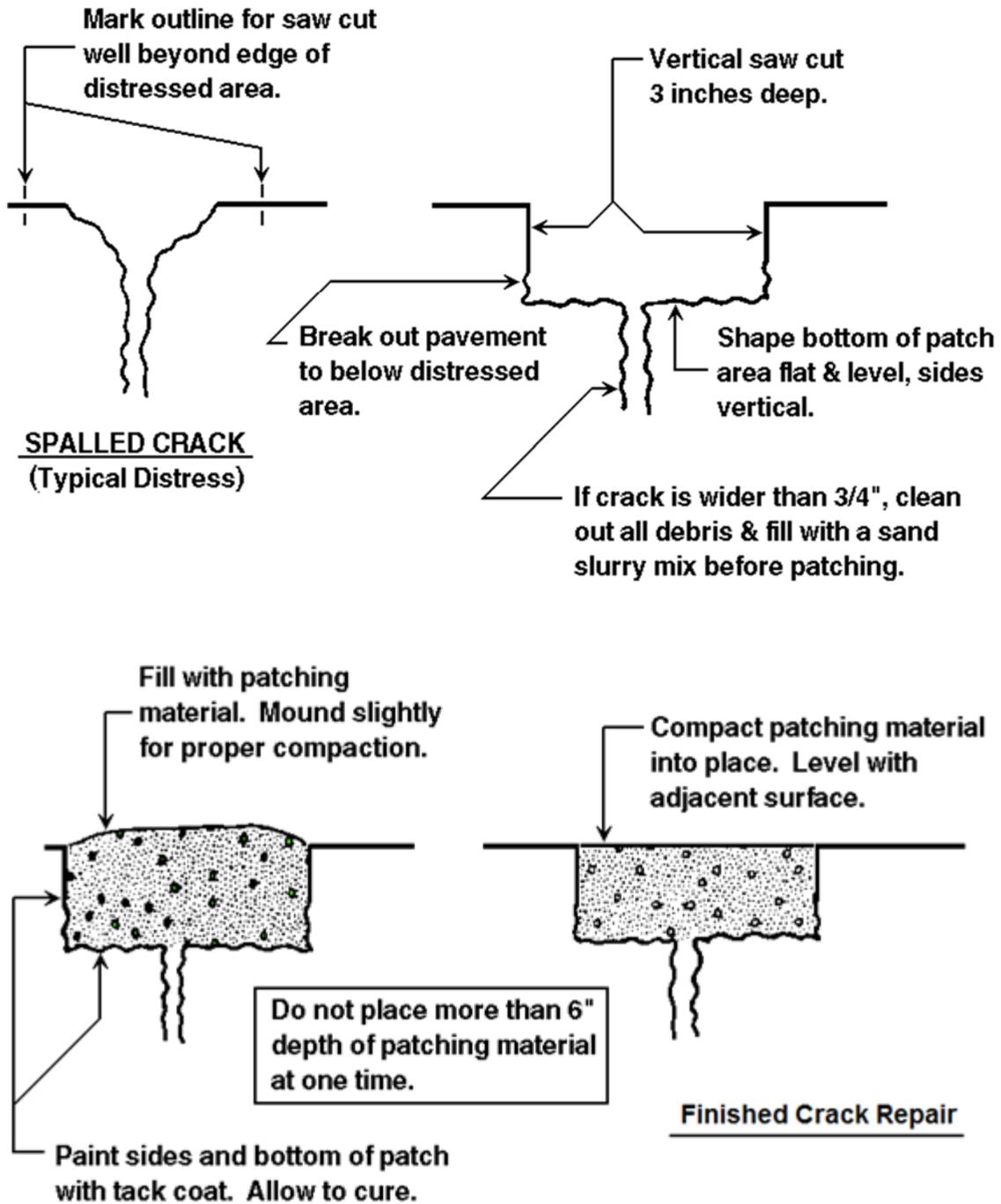


Figure 12. AC crack repair.

Patching (Asphalt Pavement)

Cracks wider than 3 inches should be patched. Cracks with secondary cracking and vertical movement should also be patched. Failed existing patches should be replaced. Patching can also repair small areas of alligator cracking and rutting. A patch differs from sealant in that it restores load-bearing capacity. Therefore, it must be constructed carefully to distribute stresses evenly and perform as an integral piece of the surrounding pavement. The patch must be wide enough to ensure that it bonds to fresh, vital pavement on all sides, and deep enough to reach fresh underlying layers, but never less than 3 inches.

- Examine the distressed area and mark the patch outline. This examination may require a pick or chisel to test the pavement integrity in and around the distressed area.
- The patch area should be cut out with a vertical saw cut not less than 3 inches deep.
- The enclosed pavement should then be removed, leaving the vertical sawed edges undamaged and providing a relatively even, flat floor at the appropriate depth.
- The sides and bottom should be sand cleaned and blown out with compressed air
- The sides and bottom should then be painted with a rapid curing asphalt tack coat. The tack coat may be sprayed on or applied with a brush or rag. Care should be taken to achieve complete coverage without allowing excess material to “pool” on the bottom.
- Allow tack coat to cure (about 2 to 4 hours) until it reaches a gummy consistency, which readily retains the impression of a fingerprint.
- Place hot mixed asphalt concrete evenly and mound slightly above surrounding pavement. Allow approximately ¼ inch of compaction for each inch of patch depth.
- Compact in place with vibratory roller or plate compactor. Asphalt concrete should not be compacted in layers greater than 6 inches. If patch depth is greater than 6 inches, asphalt concrete should be placed and compacted in successive layers.
- In deep, narrow patches such as at joint reflective cracks, a sand asphalt mix may be required in lower layers to allow movement and prevent bridging the adjacent slabs.
- Considerable judgment is required in placing the asphalt concrete to achieve a fully compacted patch without creating a bump or depression. The ¼ inch per inch factor is a rule of thumb. Actual compression will vary with the mix. Experimentation and experience are required to achieve optimum results.

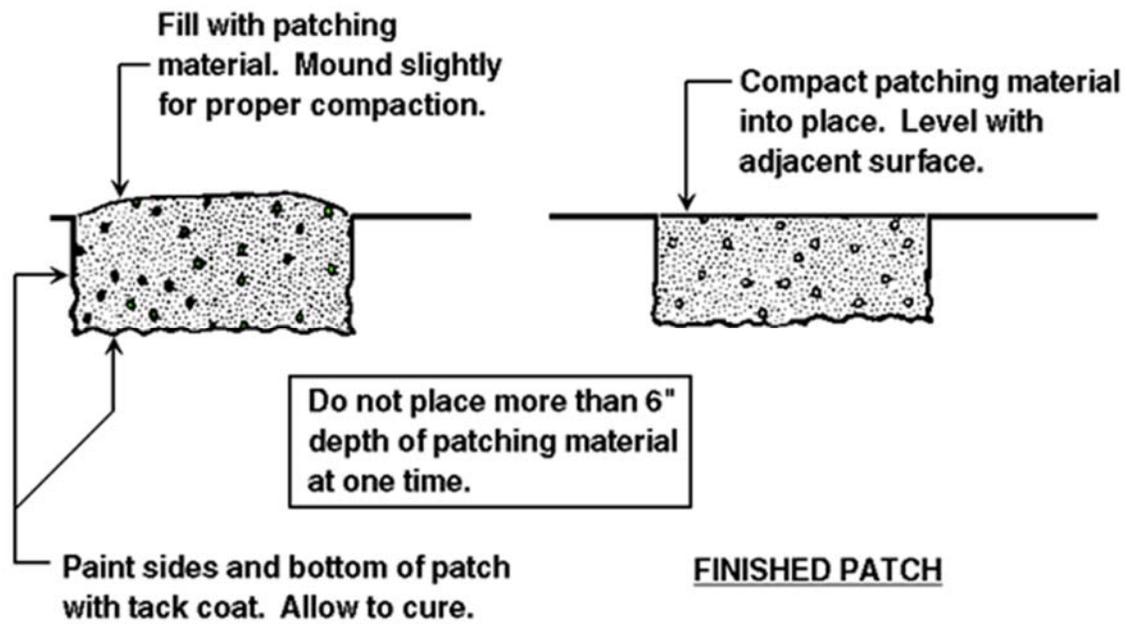
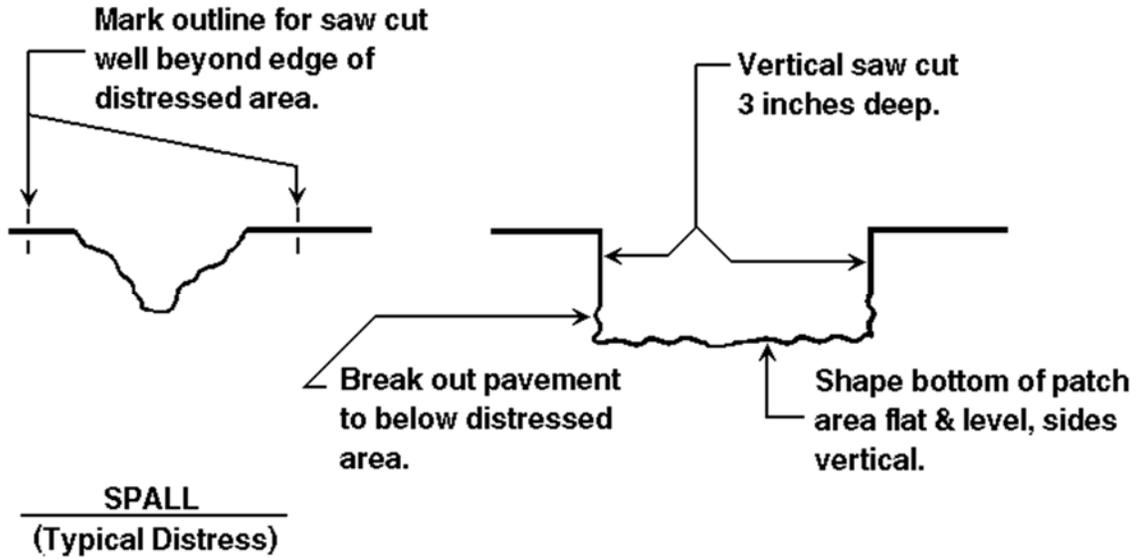
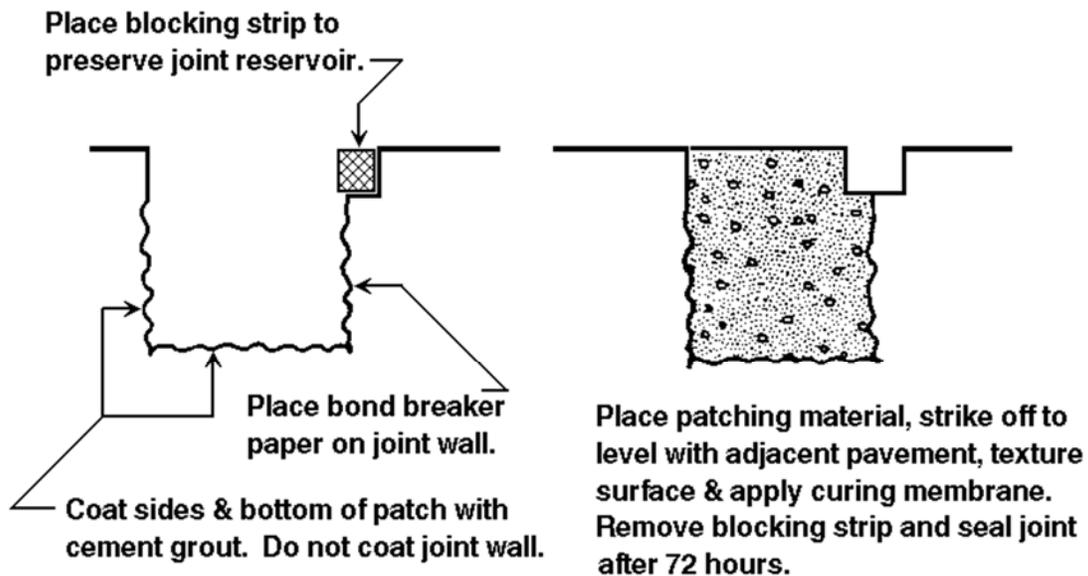
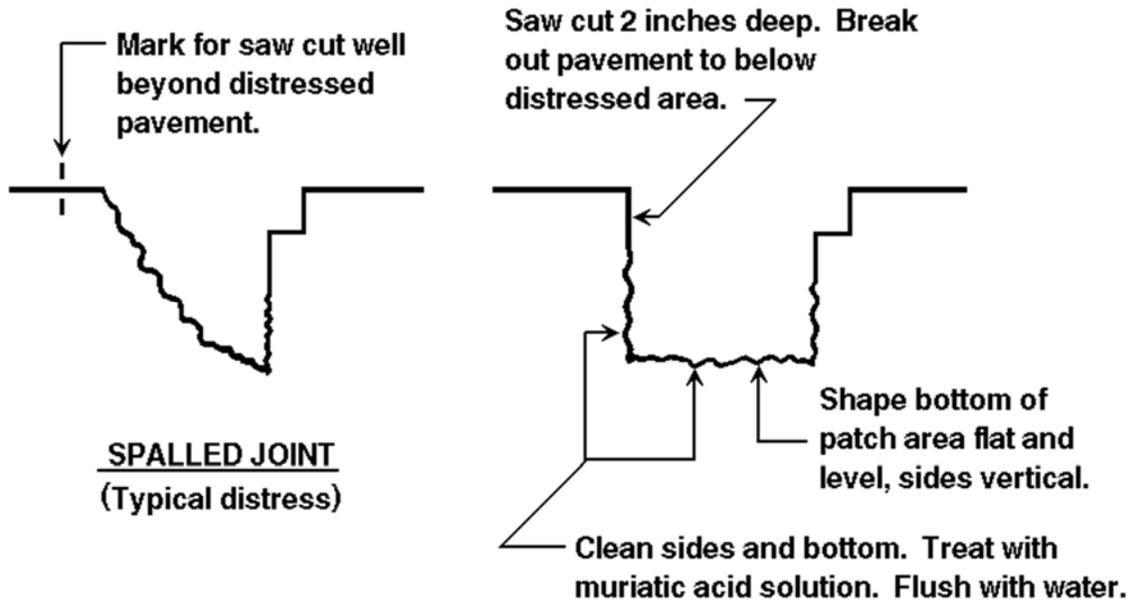


Figure 13. AC patch.

Patching (PCC)

The technique outlined here simulates a thin bonded PCC overlay. This procedure has been proven in service throughout the country.

- Examine the distressed area and mark the patch outline. This examination may require a pick or chisel to test pavement integrity in and around the distressed area.
- Saw cut the area to a depth of 2 inches. The enclosed area is then chipped or jack hammered to solid pavement, but not less than a 2-inch nominal depth.
- The sides and bottom are sand cleaned and air-blasted to expose vital, clean concrete.
- A 25 percent solution of muriatic acid is applied to all exposed surfaces within the patch.
- The muriatic acid solution is thoroughly flushed from the patch area with water.
- Compressed air is used to remove excess water from the area, but exposed concrete must be maintained in a moist condition.
- The sides and bottom of the area are then coated with approximately a 1/16-inch layer of cement grout applied at the consistency of paste. The grout acts as an adhesive to bond the fresh concrete to existing concrete.
- If the patch is adjacent to joints, the continuity of the joint must be maintained by placing inserts approximately the shape of the desired joint against the wall of the patch.
- Before concrete grout begins to dry, concrete is placed in the patch area and is compacted into position with hand tampers or a vibrating plate tamper.
- When the patch has been struck to the proper slope and elevation, a surface texture is applied to approximate the texture of adjacent pavement.
- Joint edges may be edged slightly to remove sharp edges. The patch should be covered with polyethylene or sprayed with a curing compound.
- Clean the surrounding pavement before concrete spillover has a chance to set up.
- The patch may be open to traffic in 72 hours.



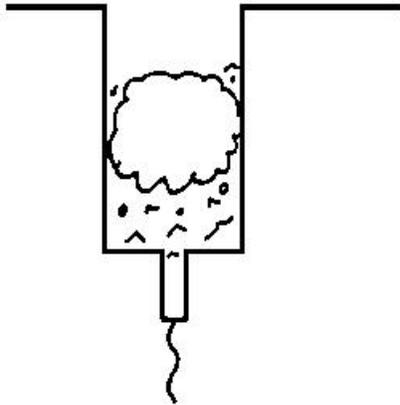
RIGID PAVEMENT
TYPICAL PATCH

Figure 14. PCC patch.

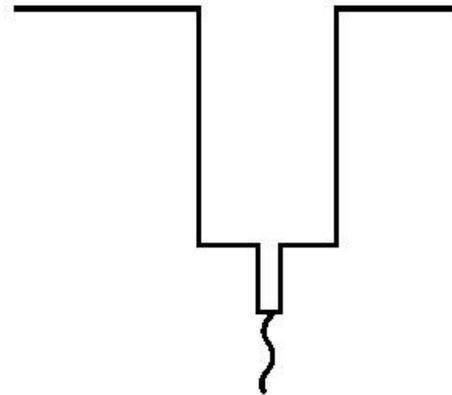
Joint Repair (PCC)

Seal joints in PCC pavement when existing sealant has deteriorated to a degree that allows water and incompressibles to enter the joint. Hairline cracks are not yet candidates for sealing.

- Rout a reservoir for the sealant. Sealant reservoir should be $\frac{1}{2}$ inch wide and 1 inch deep.
- For cracks wider than $\frac{1}{2}$ inch, the reservoir should be $\frac{1}{4}$ inch wider than the crack. Depth should be such that sealant above the backer rope is at most equal to reservoir width, or as recommended by manufacturer.
- Routed cracks should be sand cleaned, using fine sand at reduced pressure. Proper cleaning will expose fresh, vital pavement on the vertical crack edge.
- Immediately prior to sealing, cracks should be cleaned with compressed air. Ensure that all sand, debris, and incompressibles are removed from the crack. A small hand-held hook or plowing tool may be needed to dislodge some particles. Water cleaning is not recommended, simply because the drying time delays the sealing operation.
- After cleaning with compressed air, a backing material should be placed into the crack. The backer rope may be any compressible substance compatible with bituminous sealant material that will wedge into cracks at a designated depth and support the sealant. Several sizes should be immediately available in the field to accommodate various crack sizes.
- Sealant should be pressure applied with a wand type applicator to within $\frac{1}{4}$ inch of the pavement surface. Follow the equipment manufacturer's instructions.
- The final activity is to clean the surrounding pavement area. A vacuum sweeper works well. Brooms should not be used until the sealant has taken an initial set.

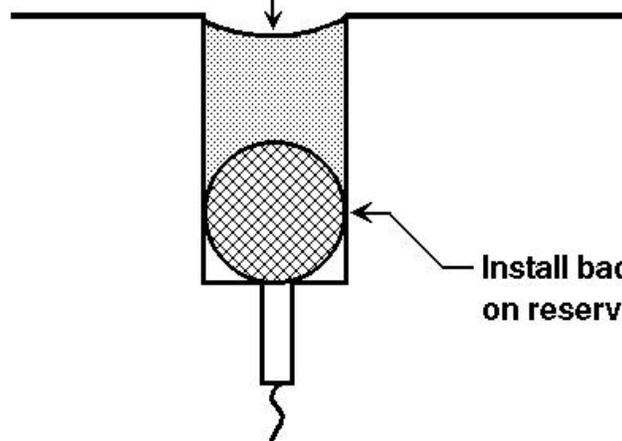


Typical joint with deficient sealant and a collection of debris & incompressibles.



Rout out old sealant, debris and incompressibles. Clean joint sides to expose fresh, clean concrete and stone. Retain existing reservoir shape.

Fill to 1/8" below surface.
Do not overfill.



Install backer rope
on reservoir shelf.

Figure 15. PCC joint/crack repair.

