Alaska DOT&PF

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Alaska Airport
Pavement Management Program
2025 Statewide Summary Report

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ACKNOWLEDGEMENTS

The team responsible for implementing the Alaska Airport Pavement Management Program (PMP) includes Alaska Department of Transportation and Public Facilities (Alaska DOT&PF) staff joined by a team of consulting engineers. The team was led by Mr. Andrew Pavey, Pavement Management Engineer for Alaska DOT&PF, who managed the three-year implementation of the Alaska Airport PMP. Mr. Pavey coordinated team activities within the Alaska DOT&PF and the FAA Alaskan Region, as necessary. He also performed pavement condition index (PCI) surveys at several airports and provided technical review for all deliverables for the project.

The prime consultant for the PMP implementation was Mr. John Duval, PE through his consulting firm, Duval Engineering LLC (Duval). Duval was assisted by Mr. Newton Bingham, PE and Mr. Jim Horn, PE of NJB Engineering, Inc. (NJB) and Mr. Tyler Rossow, PE, Mr. Ryan Wordekemper, EIT, and Mr. Ryan Barr of TR Consulting Services (TRCS). TRCS personnel conducted PCI surveys at the participating airports, performed PMP analysis using the PAVER software, produced maps and drafted much of the individual airport reports and this statewide summary report. NJB team members performed records review in support of pavement network definition and pavement classification rating (PCR) analysis as well as drafting much of the unit cost analysis which is appended to this report. Duval and NJB personnel performed PCR analysis and reporting.

It is fitting that we honor the legacy of Dr. M.Y. “Mo” Shahin, PE, who passed away in 2025. Dr. Shahin was a pioneer of pavement management and founded the PAVER pavement management system. His groundbreaking work in developing the PCI methodology and advancing pavement evaluation practices had a profound and lasting impact on infrastructure management across the United States and internationally. His contributions laid the foundation for data-driven pavement preservation strategies, and his influence will continue to guide the work of pavement professionals worldwide. Notably, Dr. Shahin incorporated data from the Alaska pavement database as a default dataset within the PAVER system and frequently referenced it in his training sessions, highlighting the role of the Alaska Airport PMP in shaping national pavement management practices.

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Alaska Department of Transportation and Public Facilities Program Background

Airports participating in the Airport Improvement Program (AIP) Grant Program are required by the Federal Aviation Administration (FAA) to develop and implement a pavement maintenance program to be eligible for funding per FAA Advisory Circular (AC) 150/5380-6C *Guidelines and Procedures for Maintenance of Airport Pavements* and AC 150/5380-7B *Airport Pavement Management Program (PMP)*. This program requires detailed inspection of airport pavement conditions annually, or every three years if the pavement is inspected according to the Pavement Condition Index (PCI) survey procedure specified in ASTM D5340-20 *Standard Test Method for Airport Pavement Condition Index Surveys*.

The Alaska Department of Transportation and Public Facilities (Alaska DOT&PF) has fully implemented a comprehensive Pavement Management Program in accordance with AC 150/5380-7B. This initiative involved mapping the pavement network, conducting pavement inspections, database administration, engineering analysis, and budgeting and prioritization activities across 54 paved public-use airports located in three regions (Northern, Central, and Southcoast) throughout the state of Alaska.

The primary objective of the PMP is to implement a data-driven system that allows cost-effective planning, budgeting, and project prioritization for maintenance and rehabilitation of airport pavements in Alaska. The findings of this PMP—alternative budget scenarios—are presented in this report and can be utilized by Alaska DOT&PF and the FAA to identify, prioritize, budget, and schedule pavement maintenance, repair, and major rehabilitation projects.

Summary of Results

Guidelines set by the Alaska State Legislature require airports to maintain minimum PCI condition ratings of 70 for runways and 60 for taxiways and aprons. Between the fall of 2022 through the fall of 2024, Alaska DOT&PF and contract personnel conducted pavement inspections at all 54 paved airports maintained by the State of Alaska.

Since the inspections occur on a three-year cycle, it is important to display the results in present-day form. This means that even though the inspections are conducted across multiple years, the data is adjusted to reflect current conditions, ensuring that decision-makers have the most accurate information available.

Thus, the tables and figures shown throughout this report represent data predicted as of October 1, 2025. The predictions are based on the inspection data and incorporate factors such as anticipated pavement deterioration and planned maintenance activities. This forward-looking approach helps in proactive planning and resource allocation for pavement maintenance and rehabilitation.

The overall area-weighted average condition for Statewide Alaska airport system is **72** or **Satisfactory**, according to the scale shown in Table 1.

Table 1—Pavement Condition Index Scale and Color Legend

ASTM PCI Color Legend	PCI Range	PCI Rating
	85-100	Good
	70-84	Satisfactory
	55-69	Fair
	40-54	Poor
	25-39	Very Poor
	10-24	Serious
	0-9	Failed

Figure 1 summarizes the pavement condition for the 54 paved airports within the PMP. The pavement condition distribution by area is 28% Good, 33% Satisfactory, 25% Fair, 9% Poor, 4% Very Poor, 1% Serious, and less than 1% Failed.

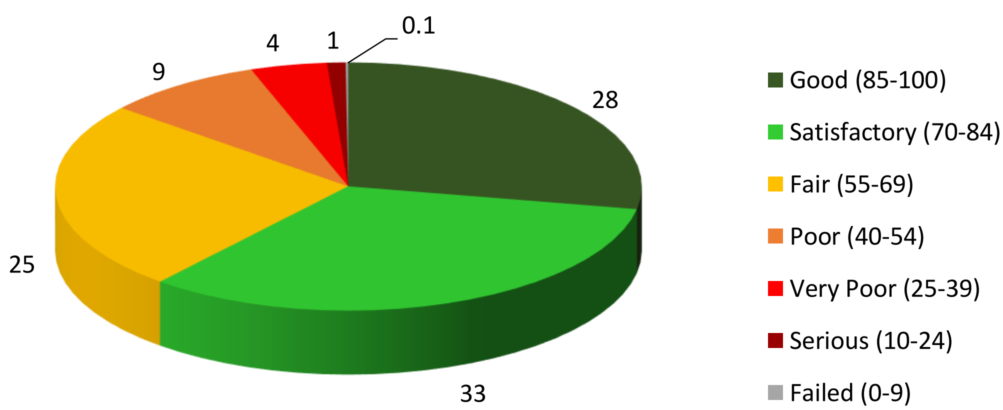

Figure 1—Statewide Alaska Airport PCI Survey Results by Percent Area

Five-Year Rehabilitation Needs

PAVER is a decision-making tool for the development of cost-effective maintenance and rehabilitation (M&R) alternatives. The software can identify when and where M&R work is required and how much it will cost. M&R plans can be developed either by assuming an annual budget or by specifying a desired pavement condition.

We used PAVER to develop and analyze five alternative budget scenarios over a five-year period from 2026 to 2030. The purpose of these alternatives is to develop funding scenarios and determine the resulting PCI as well as the effect on M&R backlog. The backlog is the total unfunded M&R requirements, which can be further described as the accumulation of sections that are under the critical PCI and require major M&R.

The best way to determine this value is to look at the stopgap maintenance plan (patching and crack sealing only), where no major M&R is performed. Since no funding is being allocated to major M&R, the unfunded amount in the first year is the current backlog of the program. This value is **$1.03B** and can be seen as the overall M&R backlog of major work and can be used as a reference point to evaluate the effectiveness of each budget scenario.

Based on our five-year analysis, the following conclusions for each of the five scenarios are listed below and summarized in Table 2.

Scenario 1. **Eliminate Backlog in 5 Years**: The current (2025) M&R backlog for the 54 airports in the Alaska Airport PMP is $1.03B. An average annual expenditure of **$306M** is necessary to achieve the goal of eliminating the backlog over a five-year period. This level of investment would result in an average PCI of **83** in 2030. The total amount funded over the five-year analysis period is **$1,530M** and would result in a backlog of **zero** dollars.

Scenario 2. **Maintain Backlog**: Alaska DOT&PF expends approximately $109.25M per year for pavement M&R. Funding sources for this budget include federal AIP funds in addition to state funds. Under this scenario, an additional $50.75M in newly allocated annual funding would raise total expenditures to **$160M** per year. At this level of investment, the PCI at the end of the five-year analysis period will be **74**. The total amount funded over the five-year analysis period is **$800M** and would result in a backlog of **$854M.**

Scenario 3. **Maintain Current PCI of 72**. To stabilize the condition of the airport pavement system at its current PCI of 72, an average annual budget of **$124M** is required over a period of five years. At this level of investment, the PCI at the end of the five-year analysis period will be **73**. The total amount funded over the five-year analysis period is **$619M** and would result in a backlog of **$1,069M.**

Scenario 4. **Maintain Current Budget**: Alaska DOT&PF expends approximately **$109.25M** per year for pavement M&R. Funding sources for this budget include federal AIP funds in addition to state funds. At this level of investment, the PCI at the end of the five-year analysis period will be **72**. The total amount funded over the five-year analysis period is **$546M** and would result in a backlog of **$1,156M.**

Scenario 5. **Stopgap Maintenance Only**: If only stopgap maintenance, such as patching and crack sealing, is performed for the next five years, the annual expenditure will be an average of **$12M**. At this level of investment, the PCI at the end of the five-year analysis period will drop to **62**. The total amount funded over the five-year analysis period is **$58M** and would result in the backlog increasing from $1.03B to **$2,047M.**

Table 2—Summary of Five-Year Budget Analyses

Scenario	Title	Description	Annual Funded M&R ($M)	Total Five-Year Funded M&R ($M)	Resulting Backlog ($M)	Resulting PCI
1	**Eliminate Backlog**	Eliminate the M&R backlog for the airport pavement system after five years.	**306**	**1,530**	**0**	**83**
2	**Maintain Backlog**	Stabilize the M&R backlog for the airport pavement system after five years.	**160**	**800**	**853**	**74**
3	**Maintain Current PCI 72**	Stabilize the average PCI of the airport pavement system at the current level of 72.	**124**	**619**	**1,069**	**73**
4	**Maintain Current Budget**	Maintain M&R funding at the current annual budget.	**109.25**	**546**	**1,156**	**72**
5	**Stopgap Maintenance Only**	Perform only the minimum maintenance needed to maintain safe pavements.	**12**	**58**	**2,047**	**62**

Figure 2 the consequence of the five alternative budget scenarios on the resulting condition of the Alaska airport pavement system over the five-year period 2026 to 2030.

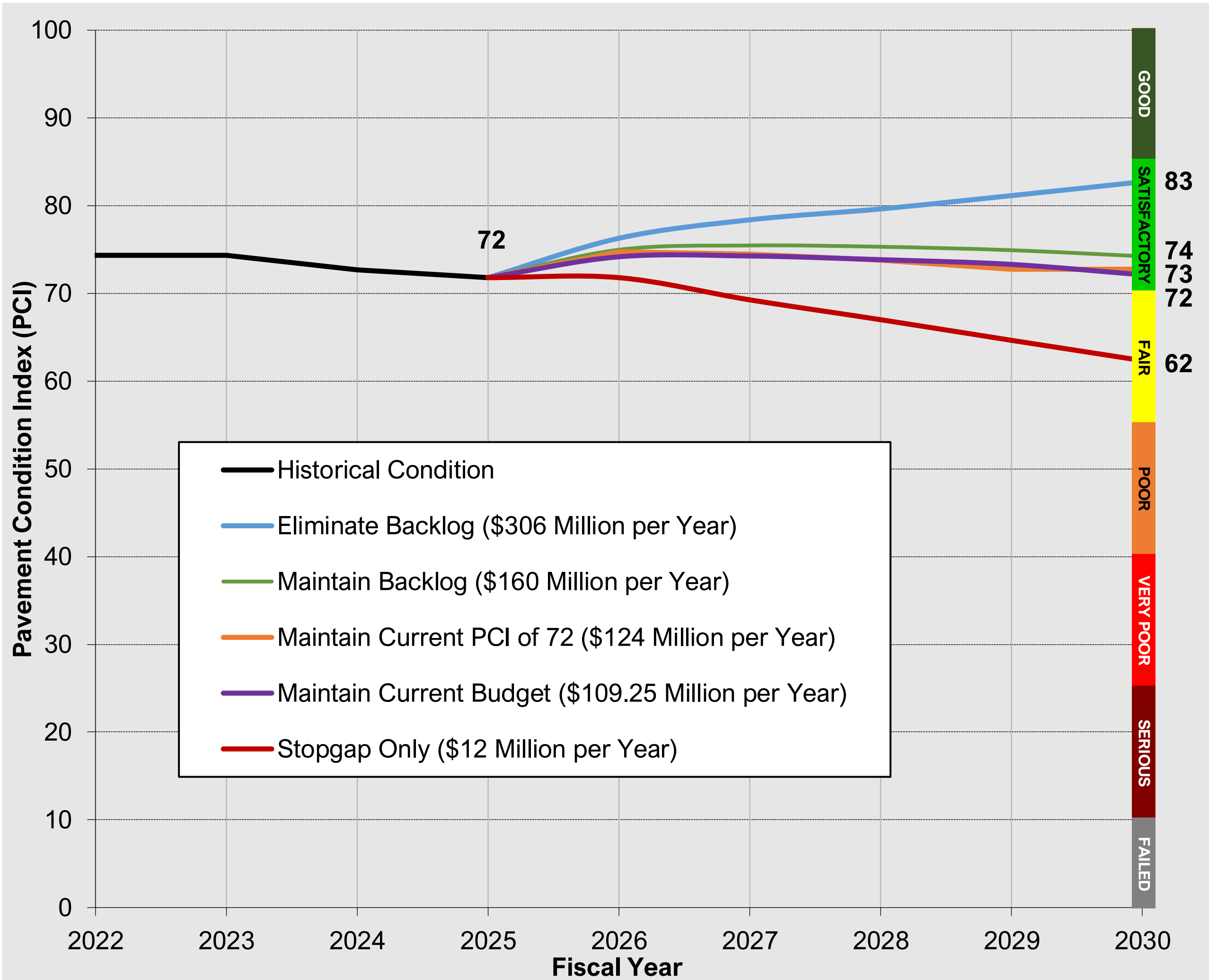

Figure 2—Consequence of Alternative Pavement M&R Budget Scenarios

Recommendations

We recommend that Alaska DOT&PF strive for a PCI of at least 70 for the Alaska airport pavement system. M&R activities planned and programmed by the Department in past years, and funded by the FAA through the AIP program, have resulted in a relatively high average PCI of 72 across a system of 54 airports in Alaska. This is a remarkable achievement and Alaska DOT&PF should take stock of the high condition of its airport pavement system.

With an average PCI of 72, the pavement system condition is approaching the critical PCI of 70. Although the PCI is still above this critical threshold, the system will benefit more from a sustained pavement preservation program than from major rehabilitation efforts. A pavement preservation approach takes advantage of lower-cost technologies, such as seal coats, to preserve and protect a structurally sound pavement in a high state of condition. Since pavement preservation treatments cost only a fraction of the price of major work, such as mill/overlay, the preservation approach is to apply these treatments "early and often." Routine, regular application of seal coats, in concert with crack sealing and patching, is a widely accepted strategy of preserving the high condition of a pavement network at a reasonable cost.

Therefore, we strongly recommend that Alaska DOT&PF adopt **Budget Scenario 3—Maintain Current PCI of 72**. At an annual cost of $124 million, this scenario represents a 13.5% increase over the current annual budget of $109.25 million for pavement M&R. While modest, this increase offers a highly cost-effective alternative to other scenarios. Moreover, Budget Scenario 3 is projected to reduce backlog growth by approximately $86 million over the five-year period, compared to **Budget Scenario 4—Maintain Current Budget**.

In alignment with FAA AIP guidance and with the DOT&PF goal of preserving airport pavement, as the application of seal coats or slurry seal is explicitly eligible for AIP funding at any eligible airport when justified. Ongoing pavement condition assessment and lifecycle cost analysis, such as associated with this PMP, help to provide such justification. Seal coats and slurry seals help to preserve pavements in good condition, extending service life while minimizing long-term rehabilitation costs. We recommend the Department act proactively to invest in the use of seal coats and slurry seals as part of a comprehensive program to protect critical infrastructure assets, enhance safety, and optimize the use of taxpayer funds.

INTRODUCTION

Background

Alaska is a vast state that is heavily reliant upon air transportation to serve its citizens. At 586,412 square miles, Alaska is the largest state in the United States of America.[1] Even larger than the state itself is the airspace controlled by the FAA Alaskan Region, which amounts to 2,427,971 square miles.[2]

In terms of passenger traffic, the FAA reports for 2023 a total of 5,107,220 enplanements at Alaska airports, broken down as follows.

Table 3—2023 Enplanements at Alaska Airports

Airport Classification	2023 Enplanements
Primary	4,727,382
Non-primary Commercial Service	200,632
General Aviation	179,206
Total	**5,107,220**

The 2023 enplanements are approximately seven times (7x) the population of the state. This is a considerably higher ratio than in the lower 48 contiguous states where the typical ratio of annual enplanements to population is two (2x). Nearly 85% of the communities rely on air transportation for year-round access for transportation, medical supplies, food, and mail.[3] Clearly, aviation plays a critical transportation role in serving communities in the State of Alaska.[4]

Alaska boasts a multitude of climate zones that are influenced by four main factors:

- Northerly latitude
- Elevation above sea level
- Proximity to the ocean
- Seasonal distribution of sea ice along western and northern boundaries[5]

An extensive variety of aircraft use Alaska airports, from small single engine aircraft to passenger jet and military aircraft. The typical general aviation (GA) aircraft operated in Alaska is relatively small, such as the Cessna C206 Stationair with a maximum takeoff weight of 3,789 lb.[6]

[1] State of Alaska (2024), "Geography of Alaska," Alaska Kids' Corner, Official Alaska State Website, accessed on January 20, 2024: https://alaska.gov/Kids/learn/aboutgeography.htm.
[2] Federal Aviation Administration (2023), "Alaskan Region Aviation Fact Sheet," FAA Alaskan Region, accessed on January 20, 2024: https://www.faa.gov/sites/faa.gov/files/2023_Alaskan_Region_Aviation_Fact_Sheet.pdf.
[3] State of Alaska (2024), "Alaska Cornerstone Plan", Official Alaska State Website, accessed on January 20, 2024: https://dot.alaska.gov/documents/FAA_Strategic_Plan_AAIP.pdf
[4] Federal Aviation Administration (2022), "CY2022 Enplanements at All Airports," FAA Airports, Planning & Capacity, accessed on January 20, 2024: https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/cy22_all_enplanements.
[5] National Oceanic and Atmospheric Administration (2022), "Alaska," NOAA National Centers for Environmental Information, State Climate Summaries 2022, accessed on January 20, 2024: https://statesummaries.ncics.org/chapter/ak/.
[6] Cessna (2024), "Cessna Turbo Stationair HD Specifications," Textron Aviation, accessed on January 20, 2024: https://cessna.txtav.com/en/piston/cessna-turbo-stationair-hd#_model-specs.

Another typical GA aircraft is the Beechcraft King Air 260, a twin-turboprop regional airliner with a maximum takeoff weight of 12,500 lb.[7] Military frequently use Alaska airports for training and other purposes. The Lockheed C-130 cargo aircraft, with a maximum operating weight of 155,000 lb., is commonly sighted at airports throughout the state.[8] At commercial airports throughout Alaska, including Kodiak, Atka, Iliamna, Fairbanks, and Juneau, large aircraft operate regularly, including the Boeing B737 with a maximum takeoff weight of 195,200 lbs. (B737-9 MAX).[9] The variety of aircraft utilizing the airport system in Alaska is extensive.

In the face of the challenges of geography, climate, and aircraft traffic variation, Alaska DOT&PF must plan, budget, and schedule pavement M&R projects to ensure that its system of airports remains capable of serving as a critical transportation link for Alaskan communities.

Purpose and History of Program

Airport pavement infrastructure represents a large capital investment in the State of Alaska, whose major objective is to build and maintain safe, strong, smooth, and skid-resistant pavement surfaces for aircraft. As soon as construction is complete, pavements begin gradual deterioration due to surface weathering, fatigue, drainage, and differential movement of pavement layers. Faulty construction techniques, sub-standard materials, or poor workmanship can accelerate this deterioration process. Over time, pavements may also be subjected to loads much greater than those for which they were originally designed, or they may experience a considerable increase in aircraft traffic volume, both of which contribute to premature pavement deterioration.

Pavement condition is assessed using the PCI methodology as defined in the FAA Advisory Circular 150/5380-7B *Airport Pavement Management Program (PMP)* using the documented procedures set forth by ASTM D5340-20 *Standard Test Method for Airport Pavement Condition Index Surveys.* Pavement deterioration, in accordance with ASTM D5340-20, is characterized in terms of distinct distress types, severity level of distress, and quantity of distress. This information is utilized to calculate a PCI value that represents the overall condition of the pavement in a numeric index that ranges from 0 (a condition category of "Failed") to 100 ("Good"). The PCI methodology analyzes an overall measure of the pavement condition and provides an indication of the degree of maintenance, repair, or rehabilitation efforts that will be required to sustain functional pavement.

Around the year 2000, Alaska DOT&PF implemented PCI inspections to understand the pavement conditions at public airports within the Alaska Aviation System (AAS), to systematically update pavement infrastructure information, and to assist airport operators with recommendations of pavement maintenance, repair, and major rehabilitation needs. Alaska DOT&PF selected the industry available non-proprietary software package known as PAVER (formerly MicroPAVER). The PAVER Pavement Management System (PMS) was developed by the U.S. Army Corps of Engineers Construction Engineering Research Laboratory and was sponsored by the FAA, Federal Highway Administration, U.S. Army, U.S. Air Force, and U.S. Navy to meet the objectives of an effective pavement management system.

[7] Beechcraft (2024), "King Air 260 Specifications," Textron Aviation, accessed on January 20, 2024: https://beechcraft.txtav.com/en/king-air-260.
[8] US Army Corps of Engineers (2015), "Aircraft Characteristics for Airfield Pavement Design and Evaluation, Air Force and Army Aircraft, TSC Report 13-2, Change 1, Transportation Systems Center, Omaha, Nebraska.
[9] Boeing Commercial Airplanes (2024), "737 MAX—Airplane Characteristics for Airport Planning," Document No. D6-38A004, Rev J, Seal Beach, California, downloaded on February 10, 2025: https://www.boeing.com/commercial/airports/plan_manuals.page.

Pavement Management Program Implementation

The PMP addresses the requirements of maintaining an effective pavement management program for all participating airports. Network-level management of pavement assets provides insight into the overall condition of the network (current and future), short-term and long-term budget needs, and knowledge of the pavement assets that are under consideration for projects. A network-level evaluation can support the identification of maintenance, repair, and major rehabilitation needs and budgetary planning-level opinions of probable construction costs.

The key elements of an effective pavement management program include, but are not limited to:

- Establish a pavement inventory with pavement structure and pavement condition information
- Utilize an objective and repeatable process for evaluating PCI
- Capability to customize M&R policies and prioritization
- Capability to model both past and future pavement conditions
- M&R planning with ability to specify budget constraints or target PCI goals

Federal Aviation Administration Requirements

Airports participating in the AIP Grant Program are required by the FAA to implement a PMP. FAA **Advisory Circulars AC 150/5380-6C** and **AC 150/5380-7B** provide technical guidance on PMP development, inspection protocols, and data reporting standards.

To properly implement an airport PMP, Alaska DOT&PF conducts detailed inspections of airport pavement conditions using trained personnel. The FAA mandates annual inspections using the PASER method. However, if pavement evaluations are conducted using the Pavement Condition Index (PCI) survey procedure in accordance with ASTM D5340, the FAA permits an extended inspection interval of three years, recognizing the increased rigor and reliability of PCI-based assessments.

Airport Improvement Program

The Airport Improvement Program is a federal grant program administered by the FAA that provides funding to public-use airports for planning and capital improvements. AIP supports projects that enhance airport safety, capacity, security, and environmental sustainability. Eligible projects include runway and taxiway rehabilitation (including seal coats and slurry seals), lighting upgrades, and drainage improvements.

To qualify for AIP funding, airports must be included in the National Plan of Integrated Airport Systems (NPIAS) and comply with FAA program requirements. One key requirement is the development and implementation of a PMP, which ensures that pavement infrastructure is maintained in a cost-effective and performance-driven manner. PMP compliance is essential for continued eligibility and access to federal funding under AIP. Figure 3 presents the breakdown of AIP funding allocated to Alaska from 2010 through 2025 into three categories: pavement, gravel, and other. The pavement and gravel categories reflect only airport surfaces included under the Alaska DOT&PF PMP, while the “other” category encompasses a broader range of infrastructure investments such as lighting, drainage, facilities, and Anchorage International Airport (AIA) projects. The data is presented in both actual dollars and present-day (2025) inflation-adjusted dollars, allowing for a comparison of funding trends over the 15-year period based on constant 2025 dollars. This funding profile provides insight into how federal investment priorities have shifted, particularly with respect to pavement infrastructure.

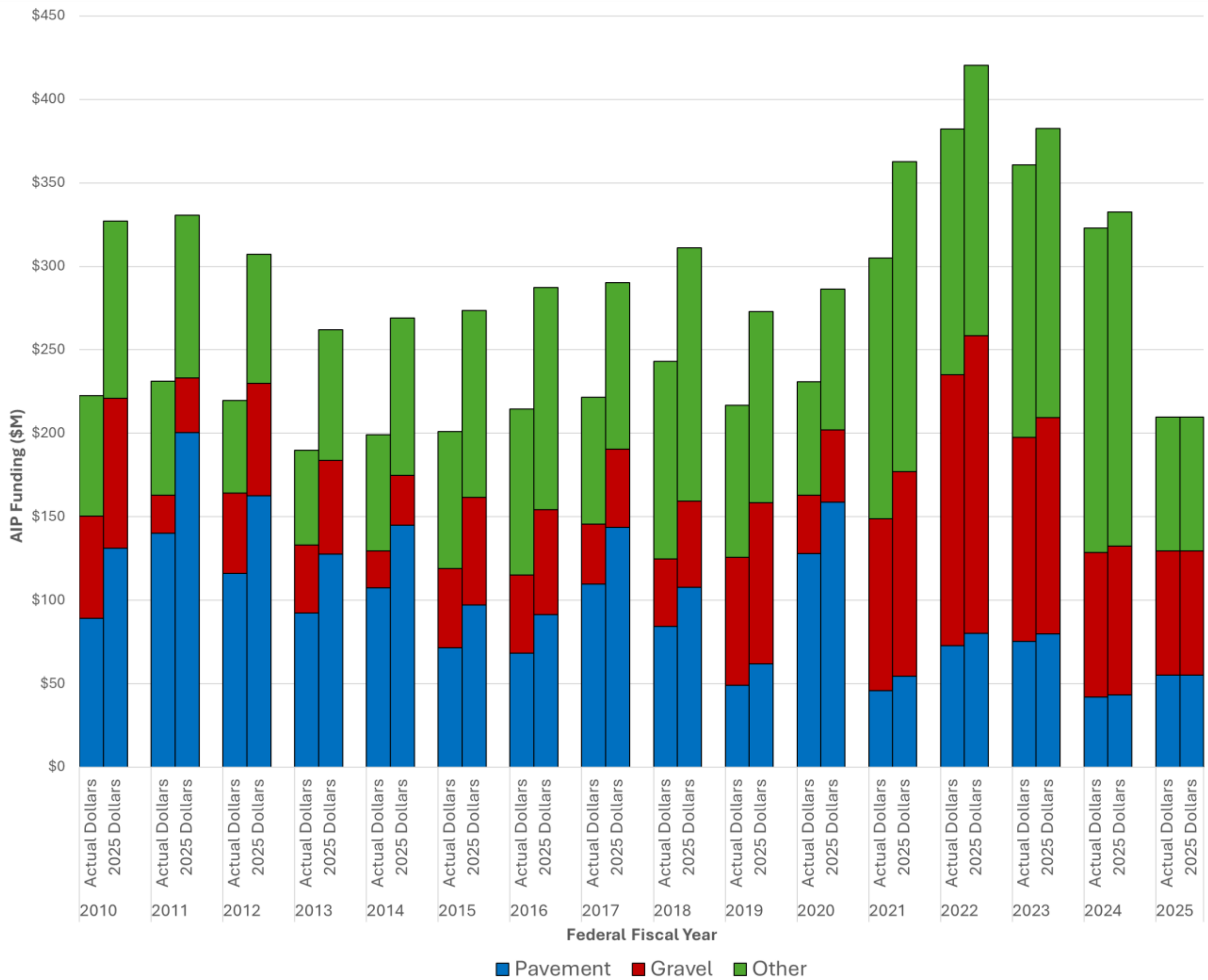

Figure 3—All Airport Improvement Program Funding in Alaska 2010 to 2025[10]

Between 2010 and 2020, the average annual AIP expenditure for pavement-related projects was approximately $96 million, reflecting a strong federal commitment to maintaining and rehabilitating paved airport surfaces in Alaska. However, from 2020 to 2025, the average AIP expenditure for pavements declined to approximately $58 million per year, a 40% reduction. This drop suggests a shift in funding emphasis or possible constraints in available federal resources for pavement-specific improvements.

To better understand the impact of this change, constant 2025 dollar values are shown alongside actual dollar values. [11] When adjusted to 2025 dollars, the average annual pavement expenditure from 2010 to 2020 is approximately $130 million, while the 2020 to 2025 average is only $63 million, an approximate 50% decrease.

While total AIP funding generally trends upward over the 15-year period, notable peaks occur in 2022 and 2023, likely reflecting one-time federal stimulus or infrastructure initiatives. The "other" category

[10] AIP Funding as Reported in the Alaska Aviation System Plan https://www.alaskaasp.com/
[11] Constant 2025 dollar values were computed using the US Inflation Calculator website: https://www.usinflationcalculator.com/

consistently receives the largest share of funding, suggesting a broader emphasis on lighting systems, navigational aids, facility upgrades and funding for AIA projects.

Figure 4 provides a breakdown of AIP funding in the pavement category as shown in Figure 3, further categorizing these pavement expenditures into four key project types: Preservation, Rehabilitation, Reconstruction, and New Construction. This expanded view reveals how pavement investment priorities have evolved over time. In the early years of the dataset, funding was heavily concentrated on New Construction, reflecting a emphasis on expanding the infrastructure of the Alaska airport pavement system. However, over the period 2010 to 2025, the funding profile shifts markedly toward Reconstruction, indicating a change in emphasis toward rebuilding and restoring aging airport pavement assets rather than expanding the airport pavement footprint.

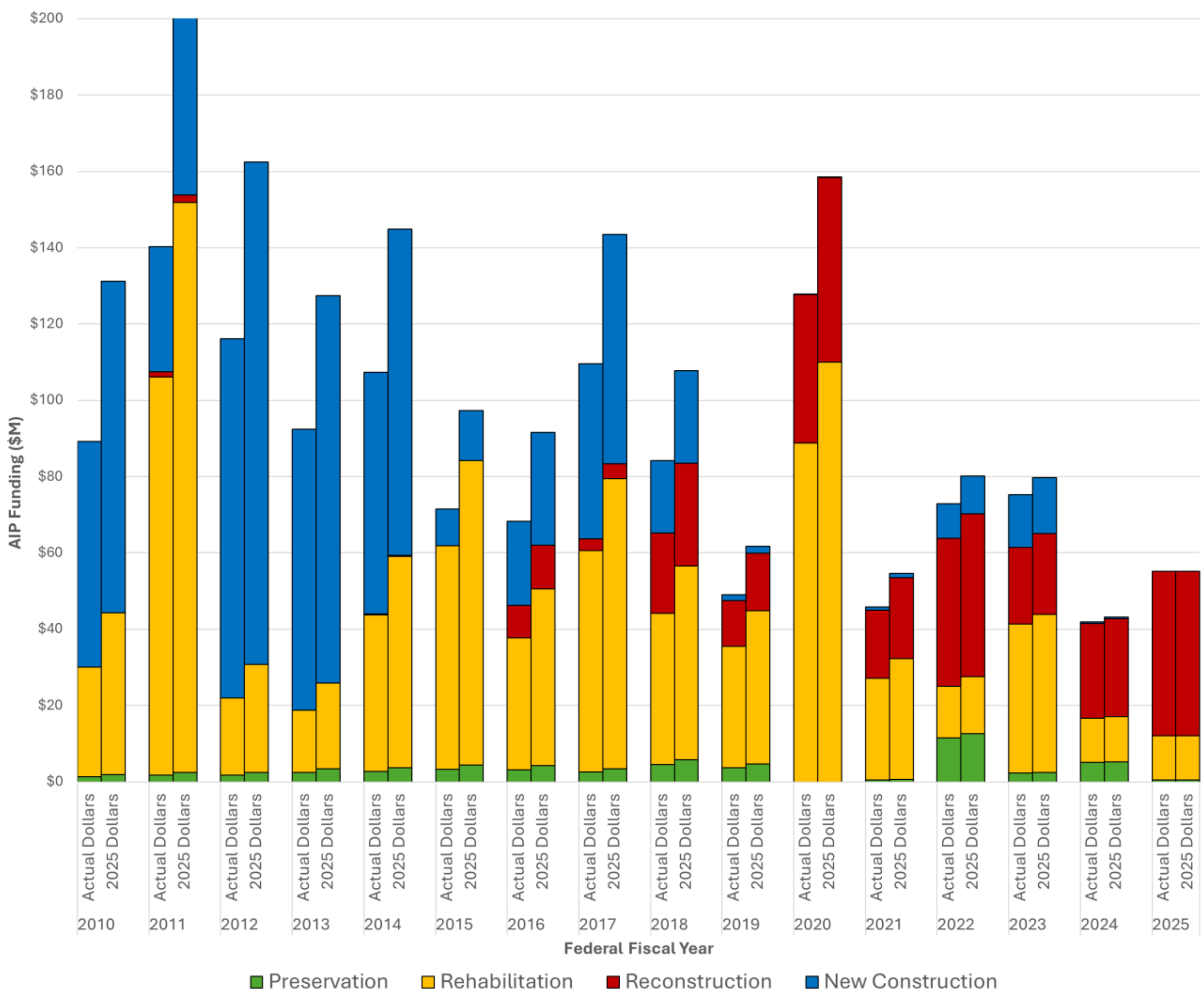

Figure 4—Airport Improvement Program Funding for Pavement Projects in Alaska 2010 to 2025

Three more trends are observable from the data shown in Figure 4: 1) the small size of Preservation funding over the study period, and 2) the apparent increase and then reduction in Rehabilitation funding from 2010 to 2025, and 3) the dominance of Reconstruction and Rehabilitation funding over the latter six years of the study. Firstly, Preservation funding has not been a large component of the AIP program. This may be due to statutory restrictions on the use of AIP funds for construction and rehabilitation. (Even funding for seal coats and slurry seal treatments is justified within the AIP program by designating these activities as Rehabilitation.) Secondly, it appears that there is an initial rise in funding for Rehabilitation projects during the first half of the period followed by a decline in funding during the latter half of the period. Lastly, over the past six years, AIP funding to the State of Alaska is predominantly for Reconstruction and Rehabilitation of the existing airport pavement system, not for New Construction.

Finally, one can see from the data presented in Figure 4, that AIP funding for airport pavements in the State of Alaska is on the decline. Furthermore, the increasing share of Reconstruction funding in recent years underscores one of the consequences of deferring maintenance, which is that the network condition deteriorates to the point where Reconstruction becomes the only viable option. This fact underscores the importance of lifecycle-based investment strategies to preserve long-term asset value.

Connecting Funding Trends to Pavement Performance

Figure 5 presents the historical PCI for the Alaska airport pavement system from 2010 through 2025. The PCI steadily increased from approximately 71 in 2010 to a peak of 79 in 2018, reflecting the impact of robust federal investment in New Construction during the early years of the dataset. This upward trend suggests that the expansion of paved infrastructure combined with targeted rehabilitation efforts successfully elevated the overall pavement performance across the network.

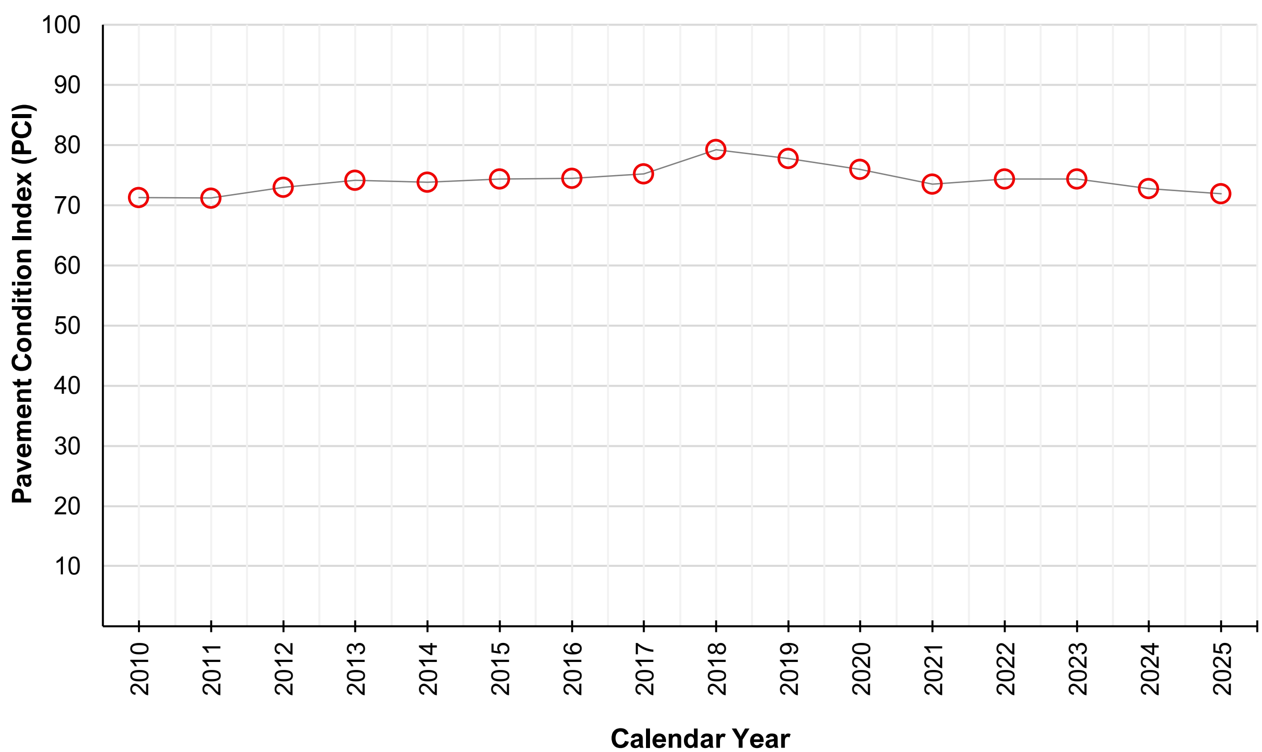

Figure 5—Historical PCI, 2010-2025

However, beginning in about 2019 the PCI enters a gradual decline, returning to its approximate 2010 value by 2025. This downturn coincides with the previously discussed shift in AIP funding priorities from New Construction to Reconstruction, together with a reduction in overall pavement-related AIP expenditures. As a larger share of AIP pavement funding is used for Reconstruction, the amount available for Rehabilitation and Preservation is reduced.

We recommend that the Department strive to find the proper balance between Reconstruction, Rehabilitation and Preservation funding. Regular activities such as crack sealing, seal coats, and slurry treatments can go a long way toward keeping good pavements in good condition, regardless of whether the funding is categorized as Preservation or Rehabilitation.

METHODOLOGY

An effective PMP incorporates both the regular collection of pavement condition information and the historical records from State of Alaska staff. This chapter of the report defines the specific methods utilized as part of the PMP System Implementation to meet the requirements of an effective PMP as defined by the FAA AC 150/5380-7B.

Airport Pavement Database

The Alaska Airport PMP utilizes the database capabilities in the PAVER 7.1.3 software program. The PAVER database includes a network-level inventory of the eligible pavements at the participating airport. PAVER consists of a set of engineering tools for conducting pavement condition surveys, predicting past and future conditions, and developing work plans with the objective of optimizing spending. PAVER is non-proprietary, industry standard software that has been in use since the late 1970s when it was developed to inventory and manage M&R for the vast Department of Defense pavement network. It is a state-of-the-art scalable platform that can be used for agencies of any size.

Airport Pavement Inventory

The current Alaska Airport PAVER database encompasses approximately 109 million square feet (sf) of airport pavement (of which approximately 1.8 million sf is considered inactive or closed and is not included in the summary results) across three distinct Alaska DOT&PF regions. Figure 6 displays the 54 paved public-use airports within their respective region. Table 4 lists the 54 airports, their respective inspection year, the number of active paved runways, and their respective inventoried pavement area.

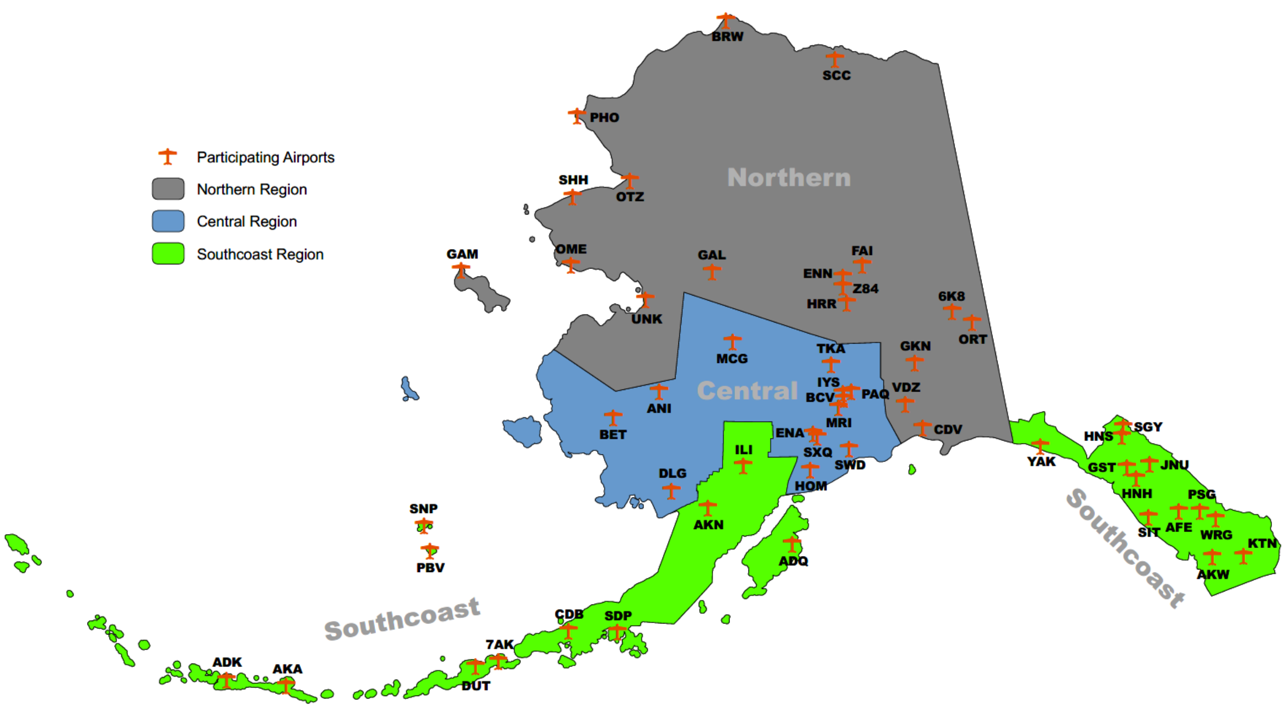

Figure 6—Alaska Airport Locations Relative to Alaska DOT&PF Regions

Table 4—Alaska DOT&PF Paved Public Use Airports

FAA ID	Airport Name	PCI Inspection Year	Number of Active Paved Runways	Airport Pavement Area (million square ft)
Northern Region				
BRW	Barrow	2024	1	2.47
Z84	Clear	2023	1	0.64
CDV	Cordova	2024	1	1.90
SCC	Deadhorse	2023	1	3.02
FAI	Fairbanks	2024	2	9.64
GAL	Galena	2024	1	2.11
GAM	Gambell	2024	1	0.56
GKN	Gulkana	2023	1	0.92
HRR	Healy River	2023	1	0.49
OTZ	Kotzebue	2024	1	1.99
ENN	Nenana*	2022	1	0.87
OME	Nome	2024	2	2.97
ORT	Northway	2022	1	0.83
PHO	Point Hope	2024	1	0.45
SHH	Shishmaref	2024	1	0.48
6K8	Tok Junction	2022	1	0.41
UNK	Unalakleet	2024	2	1.51
VDZ	Valdez	2022	1	2.36
Central Region				
ANI	Aniak	2024	1	1.10
BET	Bethel	2024	3	4.31
BCV	Birchwood	2024	2	1.99
DLG	Dillingham	2023	1	1.97
HOM	Homer	2020	1	1.59
ENA	Kenai*	2024	1	4.25
MCG	McGrath	2023	1	1.31
MRI	Merrill*	2024	2	3.86
PAQ	Palmer*	2022	2	3.82
SWD	Seward	2024	2	1.20
SXQ	Soldotna*	2024	1	3.09
TKA	Talkeetna	2023	1	0.80
IYS	Wasilla*	2024	1	1.81

*Indicates local, non-state-owned airports

Table 4—Alaska DOT&PF Paved Public Use Airports (cont.)

FAA ID	Airport Name	PCI Inspection Year	Number of Active Paved Runways	Airport Pavement Area (million square ft)
Southcoast Region				
ADK	Adak	2023	2	4.04
7AK	Akutan	2024	1	0.45
AKA	Atka	2023	1	0.59
CDB	Cold Bay	2023	2	3.13
GST	Gustavus	2023	2	2.44
HNS	Haines	2024	1	1.06
HNH	Hoonah	2024	1	0.60
ILI	Iliamna	2022	2	1.71
JNU	Juneau*	2024	1	4.89
AFE	Kake	2024	1	0.53
KTN	Ketchikan	2022	1	2.36
AKN	King Salmon	2024	2	3.21
AKW	Klawock	2022	1	0.90
ADQ	Kodiak	2023	3	4.40
PSG	Petersburg	2022	1	1.44
PBV	Saint George	2023	1	0.93
SNP	Saint Paul	2023	1	1.31
SDP	Sand Point	2023	1	1.36
SIT	Sitka	2022	1	2.12
SGY	Skagway	2024	1	1.00
DUT	Unalaska	2024	1	0.92
WRG	Wrangell	2022	1	1.48
YAK	Yakutat	2024	2	3.53

*Indicates local, non-state-owned airports

In addition to the pavement inventory, we also collected a series of tabular data on an individual airport basis, capturing unique information to enhance the Airport PMP. We developed a way to store, categorize, and compare copious data collected and stored in PAVER as well as the FAA, Alaska Aviation System Plan (AAPS), and Western Regional Climate Center (WRCC) websites. The information was then used to help develop custom prediction models, unit costs, and maintenance and rehabilitation planning. **Appendix A** showcases the attribute table that was developed.

Pavement Definition

An effective pavement management program must establish a pavement hierarchy in which a pavement network can be subdivided into smaller, manageable working units. The functional use of each pavement, as well as information from historical construction documents are used to help define the limits of the smaller working units. A critical input for a pavement inventory and network definition is the date of last major construction or rehabilitation, as this type of work will reset the PCI of that pavement area to a value of 100. The following paragraphs define the common terms used in PMPs and explain their application for this implementation.

Pavement Network - A pavement network is a logical unit for organizing pavements into a structure for the purpose of pavement management. For the PMP, a network represents the pavement assets that are maintained by Alaska DOT&PF at an individual airport.

Pavement Branch - A pavement branch is a readily identifiable part of the pavement network that has a distinct functional classification. For example, within an airport pavement network, each runway, taxiway, and apron are separate branches. Each branch consists of one or more sections, each with distinct pavement characteristics.

Pavement Section - A pavement section is defined by its characteristics, which include surface type (asphalt or concrete), rank (primary, secondary, tertiary), pavement structure (material type and thickness), construction history, age, condition, and traffic type and/or volume. The section is the smallest management unit of a pavement network where maintenance, repair, or major rehabilitation treatments are considered.

Pavement Sample Unit - A pavement sample unit is a distinct subdivision of a pavement section that has a standard size range of 5,000 contiguous sf (±2,000 sf) for asphalt pavements or 20 contiguous slabs (±8 slabs) for concrete pavements. A sample unit is the smallest subdivision of a pavement network and is physically inspected during field assessments to establish the PCI. Depending on the total number of sample units within a section, a corresponding number of sample units must be inspected (at a minimum), as shown in Table 5.

Table 5—Sampling Rate

Number of Total Sample Units in Section	Sampling Rate
1 to 5	1
6 to 10	2
11 to 15	3
16 to 40	4
Over 40	10%

Pavement Work History

In accordance with the FAA AC 150/5380-7B, it is best practice that airports maintain records of all construction and maintenance (preventive, stopgap, and major) related to the pavement infrastructure. These records should consist of:

- Location and limits of repair/construction
- Types and severities of repaired distresses
- Work type, date, material, thickness, cost; and
- Supporting documents (e.g., contract documents, construction drawings, as-builts, specifications, bid tabulations, and photograph records).

Alaska DOT&PF staff with the assistance of participating airport staff were asked to provide documentation regarding the historical work performed at each airport, most importantly construction drawings and bid tabulations. This information is used to identify location, limits, work type, pavement cross-sections, and the associated construction costs. The historical data collected during this task was entered into the PAVER database. The database includes the following fields for historical information:

- Project name / number (AIP project number)
- Work Category (localized, global, major)
- Work type performed (i.e., reconstruction, mill and overlay, surface seal, crack seal, etc.)
- Date of construction/rehabilitation
- Pavement surface type (asphalt concrete, portland cement concrete)
- Section area (limits of work)
- Comments (pavements cross-section)

The PMP PAVER database accuracy is limited to the recorded documentation provided by the State and participating airport staff. State planners should rely on this information as a planning tool and defer to final as-built plans, record drawings, and/or construction reports for pavement construction records.

Aircraft Traffic

The structural capacity of a pavement section depends upon the type and amount of aircraft traffic. This is true for both the engineering design of the pavement section as well as evaluation and reporting of the strength of an existing pavement. Specifically, for the computation of the Pavement Classification Rating, which is the standard method of reporting pavement strength to the aviation community, we relied upon the Department to provide the aircraft fleet mix for each airport. We then computed the PCR in general accordance with the procedures described in FAA Advisory Circular 150/5335-5D as detailed in Appendix D.

Pavement Condition Index

The PCI survey is a standardized procedure for visually inspecting pavement samples by recording distress types, quantities, and severities in accordance with the methods described in ASTM D5340-20 and FAA AC 150/5380-7B.

For each inspected sample, the quantity and severity of defined distresses are recorded and analyzed in accordance with ASTM D5340-20, which identifies 17 flexible pavement (AC) distress types and 16 rigid pavement (PCC) distress types. Table 6 identifies these distress types.

Table 6—PAVER Distress Codes for Flexible and Rigid Pavements

Code	AC Pavement Distresses	Code	PCC Pavement Distresses
41	Alligator Cracking	61	Blowup
42	Bleeding	62	Corner Break
43	Block Cracking	63	Linear Cracking
44	Corrugation	64	Durability Cracking
45	Depression	65	Joint Seal Damage
46	Jet Blast	66	Small Patch
47	Joint Reflection Cracking	67	Large Patch & Utility Cut
48	Longitudinal & Transverse Cracking	68	Popouts
49	Oil Spillage	69	Pumping
50	Patching	70	Scaling
51	Polished Aggregate	71	Faulting
52	Raveling	72	Shattered Slab
53	Rutting	73	Shrinkage Cracking
54	Shoving	74	Joint Spalling
55	Slippage Cracking	75	Corner Spalling
56	Swell	76	Alkali Silica Reaction (ASR)
57	Weathering		

The PAVER User Guide clarifies that each distress type falls into one of three categories, as displayed in Table 7.

Table 7—Pavement Distress Categories

Distress Category	AC Distress Type	PCC Distress Type
Load	• Alligator Cracking • Rutting	• Corner Break • Linear Cracking • Shattered Slab
Climate/ Durability	• Block Cracking • Joint Reflection Cracking • Longitudinal and Transverse Cracking • Patching • Raveling • Weathering	• Blowup • Durability Cracking • Joint Seal Damage

Table 7—Pavement Distress Categories (cont.)

Distress Category	AC Distress Type	PCC Distress Type
Other (Construction/ Drainage/ Material)	• Bleeding • Corrugation • Depression • Jet Blast • Oil Spillage • Polished Aggregate • Shoving • Slippage Cracking • Swell	• Small Patch • Large Patch and Utility Cut • Popouts • Pumping • Scaling • Faulting • Shrinkage Cracking • Joint Spalling • Corner Spalling • Alkali Silica Reaction

Any given distress may have more than one contributing factor. For example, depressions may result from inadequate compaction during construction, unstable subgrade conditions such as degradation due to thawing permafrost, or prolonged point loads from parked aircraft or equipment. In some cases, a distress may be initiated by one mechanism but progress to a higher severity due to another. Therefore, engineering judgment is essential in evaluating the underlying causes and progression of each distress.

To obtain the section PCI, the distresses and PCI of each inspected sample unit get extrapolated over the entire section. Distresses found in sample units classified as “additional,” which are defined as non-representative instead of random, are not extrapolated over the entire section but merely added to the extrapolated quantity. Table 8 gives a detailed description of each PCI rating category and shows the seven-category PCI scale.

Section 4.1 of ASTM D5340-20 governing PCI surveys offers this caution:

> *“The PCI is a numerical indicator that rates the surface condition of the pavement. The PCI provides a measure of the present condition of the pavement based on the distress observed on the surface of the pavement which also indicates the structural integrity and surface operational condition (localized roughness and safety). The PCI cannot measure the structural capacity; neither does it provide direct measurement of skid resistance or roughness. It provides an objective and rational basis for determining maintenance and repair needs and priorities. Continuous monitoring of the PCI is used to establish the rate of pavement deterioration, which permits early identification of major rehabilitation needs. The PCI provides feedback on pavement performance for validation or improvement of current pavement design and maintenance procedures.”* [12]

Therefore, it is imperative that engineers and planners treat the PCI as a tool that will assist them during the M&R planning process. Any major project should always be preceded by an up-to-date

[12] ASTM International (2020), *Standard Test Method for Airport Pavement Condition Index Surveys*, D5340-20, Volume 04.03: Road And Paving Materials; Vehicle-pavement Systems, West Conshohocken, Pennsylvania.

detailed project level evaluation of the pavement in order re-evaluate maintenance needs prior to the project design process.

Table 8—PCI Rating Scale

ASTM PCI Color Legend	PCI Range	Work Type	PCI Ratings and Definition
(dark green)	**85-100**	**Preventative Maintenance**	**Good:** Pavement has minor or no distresses and should require only routine maintenance.
(green)	**70-84**	**Preventative / Corrective Maintenance**	**Satisfactory:** Pavement has scattered low-severity distresses that should require only routine maintenance.
(yellow)	**55-69**	**Rehabilitation**	**Fair:** Pavement has a combination of low- and medium-severity distresses. Near-term maintenance and repair needs may range from routine to major.
(orange)	**40-54**	**Reconstruct**	**Poor:** Pavement has low-, medium-, and high-severity distress that cause some operational problems. Near-term M&R needs will be major.
(red)	**25-39**		**Very Poor:** Pavement has medium- and high-severity distresses that cause considerable maintenance & operational problems. Near-term M&R needs will be major.
(dark red)	**10-24**		**Serious:** Pavement has high-severity distresses that cause operational restrictions; immediate repairs are needed.
(gray)	**0-9**		**Failed:** Pavement deterioration has progressed to the point that safe aircraft operations are no longer possible; complete reconstruction is required.

A pavement life cycle is the relationship between its condition and age. A properly designed pavement will usually have a slow deterioration rate during the first part of its life, then at some age and condition value, the pavement deterioration rate will increase rapidly. This point in the life of a pavement is called the critical condition or critical PCI. Identifying the critical PCI and performing M&R before it reaches this point is the key to saving M&R dollars, as the cost to repair pavements increases dramatically beyond this point. Critical PCI values represent a condition level above which Alaska DOT&PF managers should strive to maintain for as long as possible.

Pavement Life Cycle and the Critical PCI

A critical PCI is defined as the PCI value at which the rate of PCI loss increases with time or the cost of applying localized preventive maintenance increases significantly. Figure 7 shows a typical pavement life cycle, asserting that if preventive maintenance is performed while the PCI is above critical, the cost will be significantly lower than waiting to repair pavements until after deterioration has accelerated. It also displays the typical range of the critical PCI, which is 55 to 70.

Guidelines set by the Alaska State Legislature require maintaining minimum PCI condition ratings of 70 for runways and 60 for taxiways and aprons.

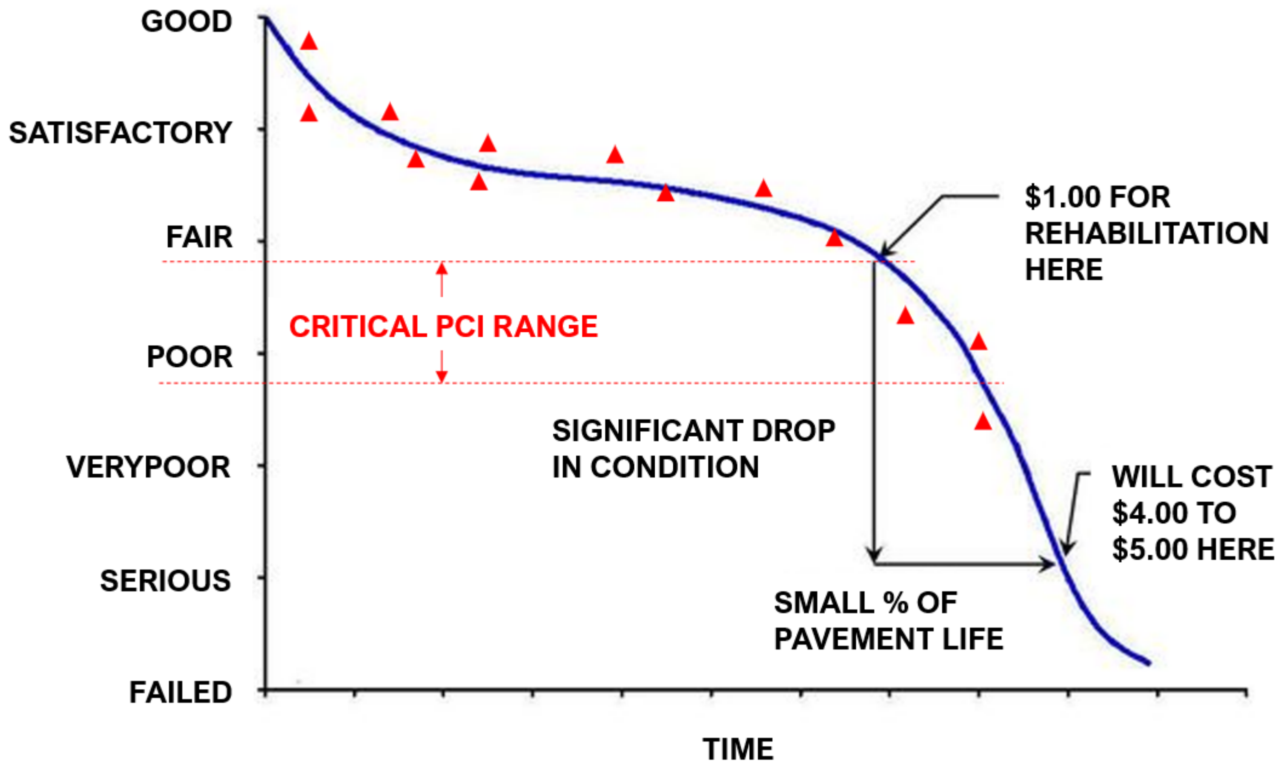

Figure 7—Typical Pavement Deterioration Curve[13]

*Figure is for conceptual purposes only – costs depicted are not specific to Alaska airport pavements

[13] Pavement Management for Airports, Roads, and Parking Lots, M.Y. Shahin, Second Edition, Springer, 2005.

Revised Critical PCI Threshold for Pavement Modeling

As outlined by the Alaska State Legislature, minimum PCI requirements are set at 70 for runways and 60 for taxiways and aprons. While these standards serve as foundational benchmarks, our current modeling framework introduces a tiered classification system to reflect operational priorities and optimize maintenance planning.

Runways:

- Primary Classification: PCI - 70
- Secondary Classification: PCI - 65
- Tertiary Classification: PCI - 60

Taxiways and Aprons:

- Primary Classification: PCI - 60
- Secondary Classification: PCI - 55
- Tertiary Classification: PCI - 50

This tiered approach allows for more precise modeling of pavement performance across asset types and usage intensities. It also supports prioritized planning by identifying critical segments earlier, tailoring M&R activities to meet both fiscal constraints and safety requirements while remaining aligned with the intent of legislative guidelines.

PREDICTION MODELS

Pavement prediction models, also known as performance models or family curves, are generated within PAVER based on an analysis of historical PCI survey data and construction records. Pavements in the same region with similar characteristics such as branch use and surface type generally follow the same deterioration life cycle pattern. Similar pavements are grouped into families and performance models are generated for each family by analyzing numerous PCI vs. pavement age data points from historical inspections. A deterioration curve is fit to the data and its correlation is evaluated based on statistical measures.

The same family curve generated using the look-back procedure described above can be used in a forward-looking capacity to predict future pavement conditions. For a particular future year, one can use the performance model to predict the future condition of a pavement section. Then the future PCI is compared to established PCI trigger values to determine whether the pavement section is eligible for pavement preservation, major work, or reconstruction.

Custom Prediction Models

Initial performance models developed for the Alaska PMP received further successive refinements after careful review and analysis of the historical PCI survey data. We also consulted with Alaska DOT&PF maintenance and operations (M&O) staff to understand the availability of pavement treatment capabilities, geography, susceptibility to severe storm events and access to the road network to improve the accuracy of the models. Through this process, 19 unique performance models were developed and are summarized in Table 9. Additional information on the development of performance models is presented in **Appendix B.**

Three subregional distinctions were developed around the relative deterioration rate based on the slope of the runway straight line deterioration curve, resulting in five performance models for asphalt pavements for each of the three DOT&PF Regions. Some airports demonstrate decades of performance with less than one PCI point per year deterioration of runway pavements, while other airports experience a deterioration rate of two PCI points per year or more. These differences were not clearly linked to the specific geographical location of the airport; therefore, the subregional distinction is based solely on the deterioration rate.

Furthermore, all asphalt pavement prediction models were refined to distinguish between branch use, with one model for runways and another for parking aprons and taxiways. This refinement doubled the number of family curves for asphalt pavements from 9 to 18. Finally, a single custom model was created for all concrete pavements throughout the State of Alaska, bringing the total number of performance models to 19.

Table 9—Alaska PMP Prediction Models

Alaska DOT&PF Region	Sub Region	Branch Use	Years to reach a PCI of 70	Years to reach a PCI of 60
Central	Low Runway Deterioration	Runway	16	22
		Apron / Taxiway	18	29
	Moderate Runway Deterioration	Runway	14	19
		Apron / Taxiway	18	25
	High Runway Deterioration	Runway	5	13
		Apron / Taxiway	9.5	15.5
Northern	Low Runway Deterioration	Runway	22	26
		Apron / Taxiway	15.5	21
	Moderate Runway Deterioration	Runway	12	17.5
		Apron / Taxiway	11	20.5
	High Runway Deterioration	Runway	6	11
		Apron / Taxiway	7	11
Southcoast	Very Low Runway Deterioration	Runway	28	37
		Apron / Taxiway	28	36
	Low Runway Deterioration	Runway	17	23
		Apron / Taxiway	19	29
	Moderate Runway Deterioration	Runway	11.5	18
		Apron / Taxiway	12	17
All Concrete			28	34

AIRPORT PAVEMENT CONDITIONS

Airport Pavement Inspections

Alaska DOT&PF began the process of implementing a comprehensive PMP beginning in 2022, which involves conducting PCI inspections in conformance with ASTM D5340 and FAA AC 150/5380-6B. The pavements at all 54 airports in the Alaska Airport PMP have received up-to-date pavement inspections conducted by Alaska DOT&PF and contract personnel. Since the inspections occur on a three-year cycle, it is important to display the results in present-day form. This means that even though the inspections are conducted over multiple years, the data is adjusted to reflect current conditions, ensuring that decision-makers have the most accurate information available. Thus, the tables and figures shown throughout this report represent data predicted as of October 1, 2025. The predictions are based on the inspection data and incorporate factors such as anticipated pavement deterioration and planned maintenance activities. This forward-looking approach helps in proactive planning and resource allocation for pavement maintenance and rehabilitation.

Alaska Statewide Summary of Airport Pavement Condition

The overall average pavement condition of the Alaska airport system is **72** or **"Satisfactory"**. As shown in Figure 8, the pavement condition distribution by area is 28% "Good", 33% "Satisfactory", 25% "Fair", 9% "Poor", 4% "Very Poor", 1% "Serious", and less than 1% "Failed".

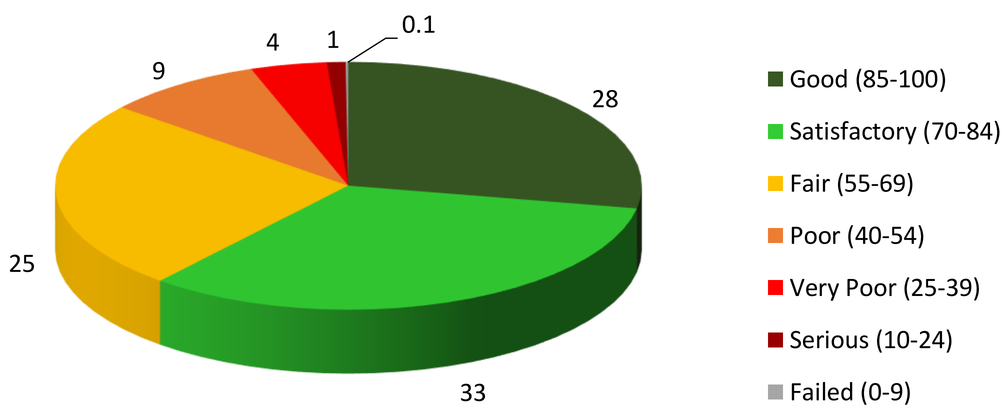

Figure 8—Alaska Airport PCI Summary

An analysis of the Alaska airport pavement condition with respect to pavement age is presented in Table 10 and Figure 9 as follows. Unsurprisingly, across the system, PCI declines with pavement age.

Table 10—Alaska Airport Condition by Age of Pavement

Age at Time of Report (yrs)	Pavement Area (sf)	Pavement Area (%)	Sections	Sections (%)	PCI
00-02	7,508,820	7.0	77	7.3	93
03-05	11,041,776	10.3	114	10.8	88
06-10	21,292,553	19.8	206	19.6	82
11-15	18,210,511	17.0	157	14.9	75
16-20	23,946,803	22.3	207	19.7	65
21-25	10,250,796	9.6	130	12.4	62
26-30	5,459,070	5.1	66	6.3	51
31-35	4,361,075	4.1	37	3.5	47
36-40	2,117,652	2.0	27	2.6	52
41-50	1,655,540	1.5	19	1.8	46
Over 50	1,436,371	1.3	12	1.1	33
All Inspected	**107,439,962**	**100**	**1,054**	**100**	**72**

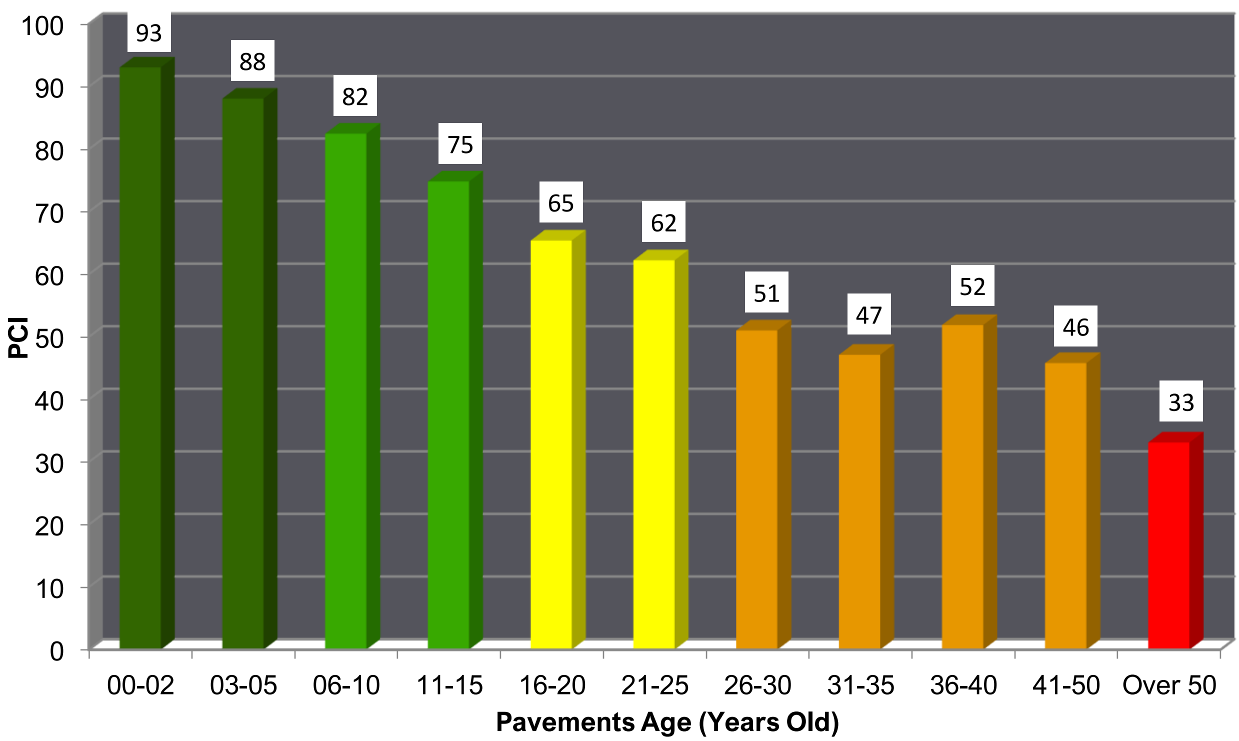

Figure 9—Alaska Airport Condition by Age

Alaska Regional Summaries of Airport Pavement Condition

Figure 10 through Figure 12 present the area-weighted pavement conditions distribution by area for each of the three Regions, Northern, Central, and Southcoast (respectively).

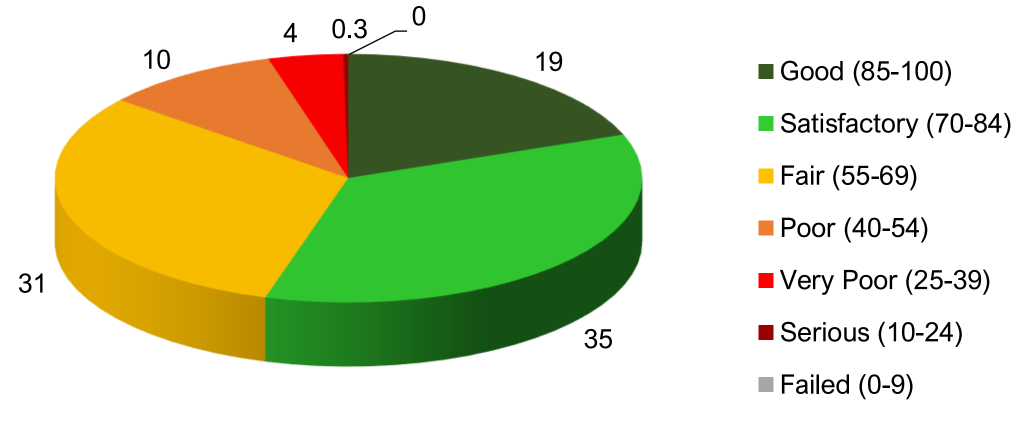

Figure 10—Northern Region Airport PCI Results by Percent Area

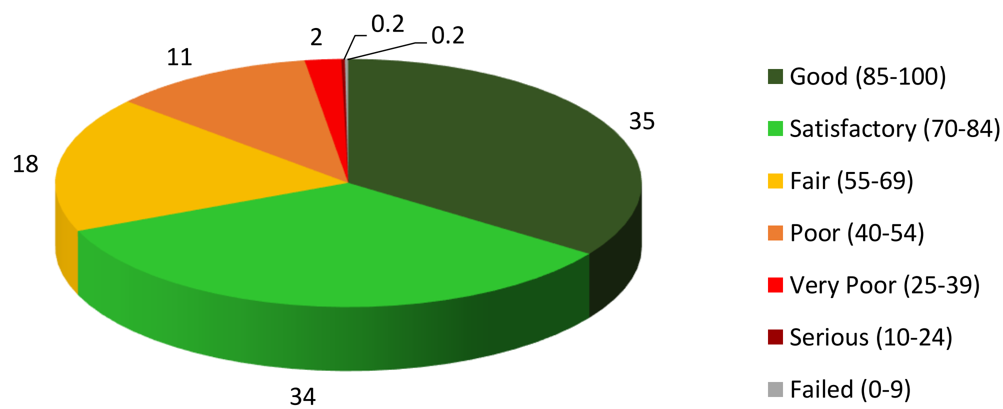

Figure 11—Central Region Airport PCI Results by Percent Area

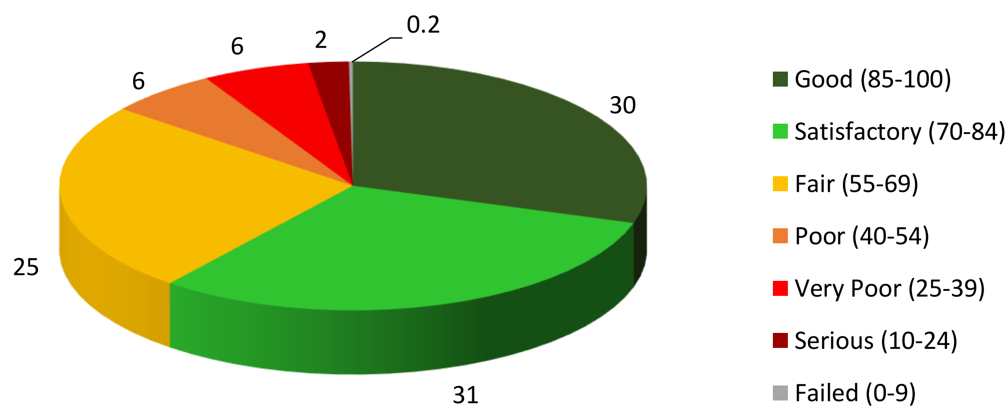

Figure 12—Southcoast Region Airport PCI Results by Percent Area

Figure 13 and Figure 14 present the regional-level area-weighted pavement conditions displayed by branch use and section rank (respectively).

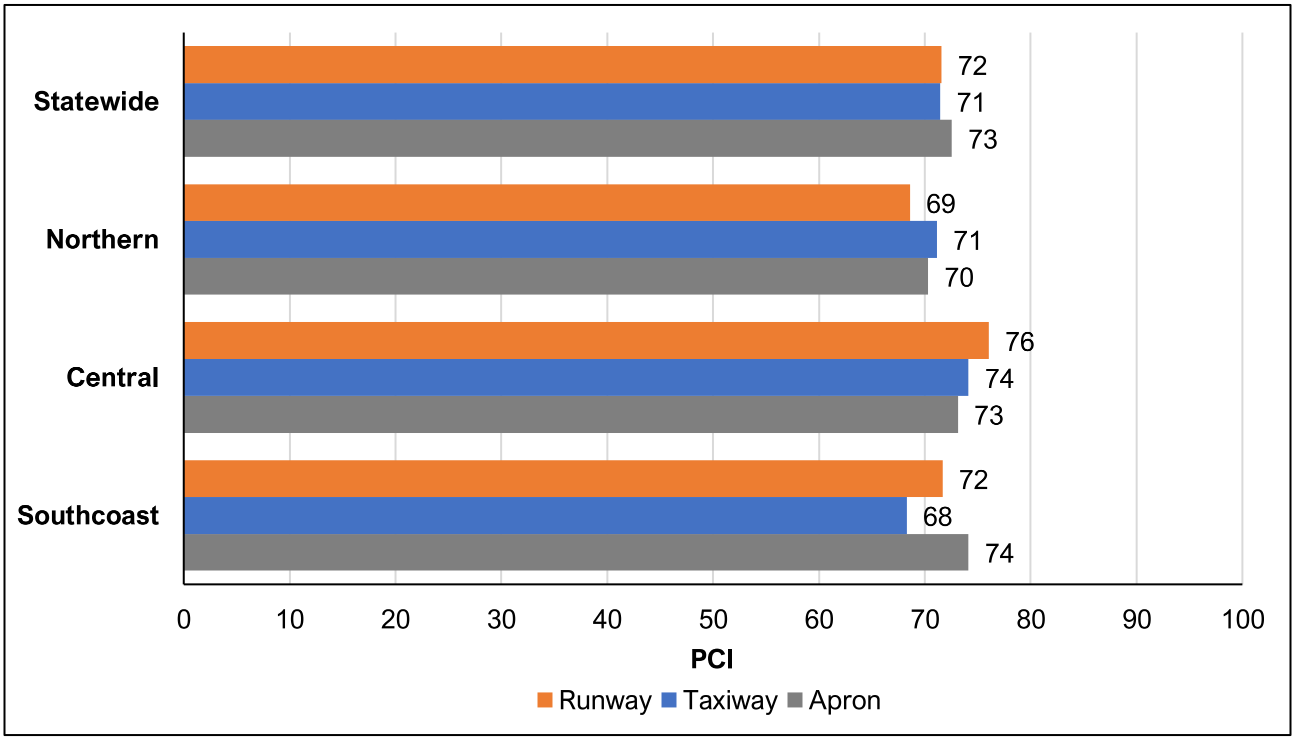

Figure 13—Alaska Airport Pavement Condition by Branch Use

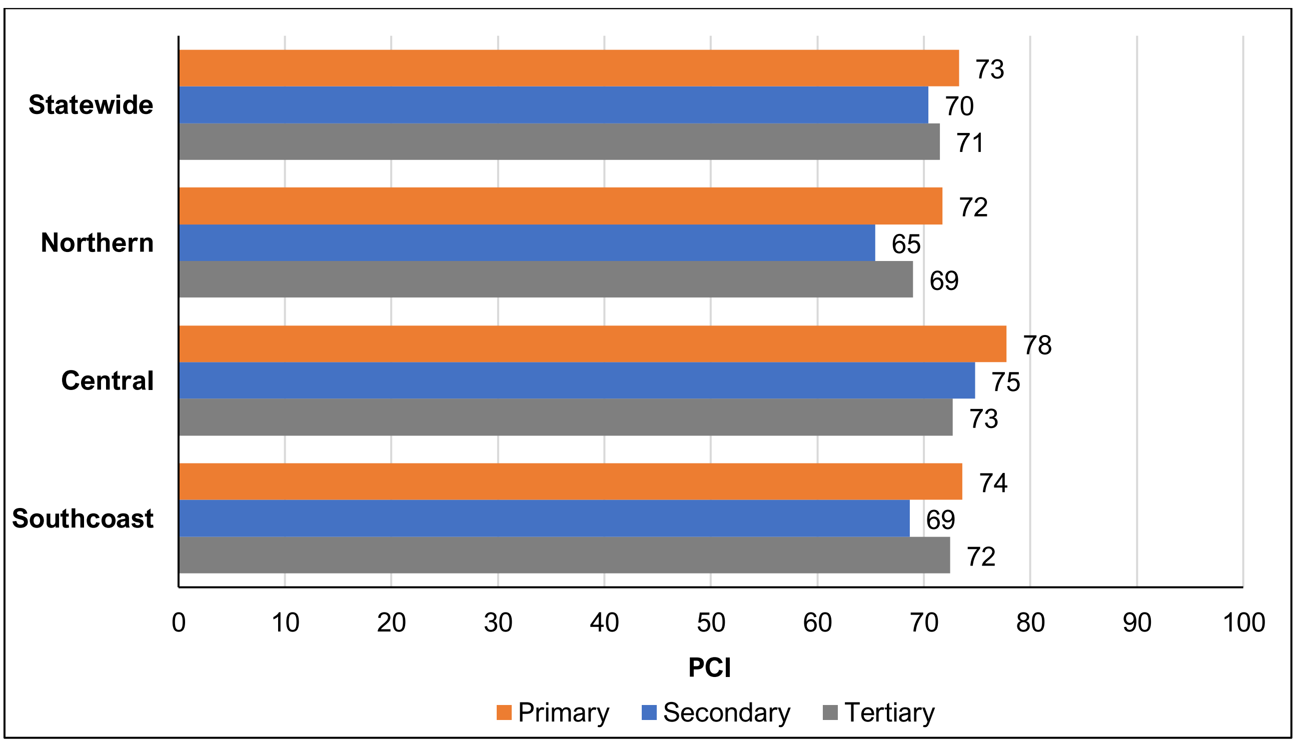

Figure 14—Alaska Airport Pavement Condition by Section Rank

Table 11 summarizes the pavement conditions by airport and branch use.

Table 11—Pavement Condition Summary by Airport and Branch Use

FAA ID	Airport	Runway PCI	Taxiway PCI	Apron PCI	Network PCI
Northern Region					
BRW	Barrow	82	73	52	71
Z84	Clear	47	58	48	48
CDV	Cordova	63	78	84	69
SCC	Deadhorse	72	74	70	72
FAI	Fairbanks	72	71	76	73
GAL	Galena	69	72	68	69
GAM	Gambell	75	81	82	76
GKN	Gulkana	72	74	83	75
HRR	Healy River	38	39	35	37
OTZ	Kotzebue	83	85	88	85
ENN	Nenana*	59	56	53	57
OME	Nome	87	64	66	79
ORT	Northway	36	33	40	36
PHO	Point Hope	91	95	95	92
SHH	Shishmaref	62	78	73	63
6K8	Tok Junction	28	51	56	44
UNK	Unalakleet	54	57	60	56
VDZ	Valdez	49	73	72	63
Central Region					
ANI	Aniak	86	88	87	87
BET	Bethel	80	79	66	74
BCV	Birchwood	76	85	70	75
DLG	Dillingham	82	80	77	80
HOM	Homer	98	91	91	94
ENA	Kenai*	48	65	73	63
MCG	McGrath	89	87	67	82
MRI	Merrill*	67	69	84	76
PAQ	Palmer*	86	73	63	71
SWD	Seward	53	56	58	55
SXQ	Soldotna*	92	80	77	81
TKA	Talkeetna	76	79	78	77
IYS	Wasilla*	61	66	74	70

*Indicates local, non-state-owned airports

Table 11—Pavement Condition Summary by Airport and Branch Use (cont.)

FAA ID	Airport	Runway PCI	Taxiway PCI	Apron PCI	Network PCI
Southcoast Region					
ADK	Adak	35	32	85	40
7AK	Akutan	88	78	80	86
AKA	Atka	69	79	79	71
CDB	Cold Bay	87	83	79	85
GST	Gustavus	94	91	91	93
HNS	Haines	55	64	84	68
HNH	Hoonah	51	51	59	55
ILI	Iliamna	57	62	65	60
JNU	Juneau*	72	74	86	78
AFE	Kake	89	67	61	82
KTN	Ketchikan	60	83	82	71
AKN	King Salmon	80	66	57	72
AKW	Klawock	69	68	67	68
ADQ	Kodiak	72	68	96	74
PSG	Petersburg	63	69	77	66
PBV	Saint George	81	77	83	81
SNP	Saint Paul	83	78	77	81
SDP	Sand Point	80	74	82	80
SIT	Sitka	86	65	78	80
SGY	Skagway	60	63	63	62
DUT	Unalaska	86	29	21	56
WRG	Wrangell	69	72	84	73
YAK	Yakutat	61	69	44	57

*Indicates local, non-state-owned airports

Pavement Condition Forecast

Utilizing the prediction models described previously, we used PAVER to forecast pavement conditions over a 10-year period spanning from 2025 to 2034, assuming that only routine preventive maintenance is performed on the pavements. Table 12 and Figure 15 are the 5-year and 10-year state and regional PCI forecasts in tabular and graphical format, respectively. The PCI for the Central and Southcoast Regions stay the same moving into 2025 due to ongoing construction on Homer, Juneau, and Kodiak.

Table 12—Alaska Airport Pavement 10-Year PCI Forecast

Region	Current	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Statewide	72	71	69	67	66	64	62	61	59	58	56
Northern	70	67	65	63	62	60	58	56	54	52	51
Central	74	73	71	69	68	66	64	63	61	60	58
Southcoast	72	72	71	69	68	66	65	63	62	60	59

5-Year PCI **10-Year PCI**

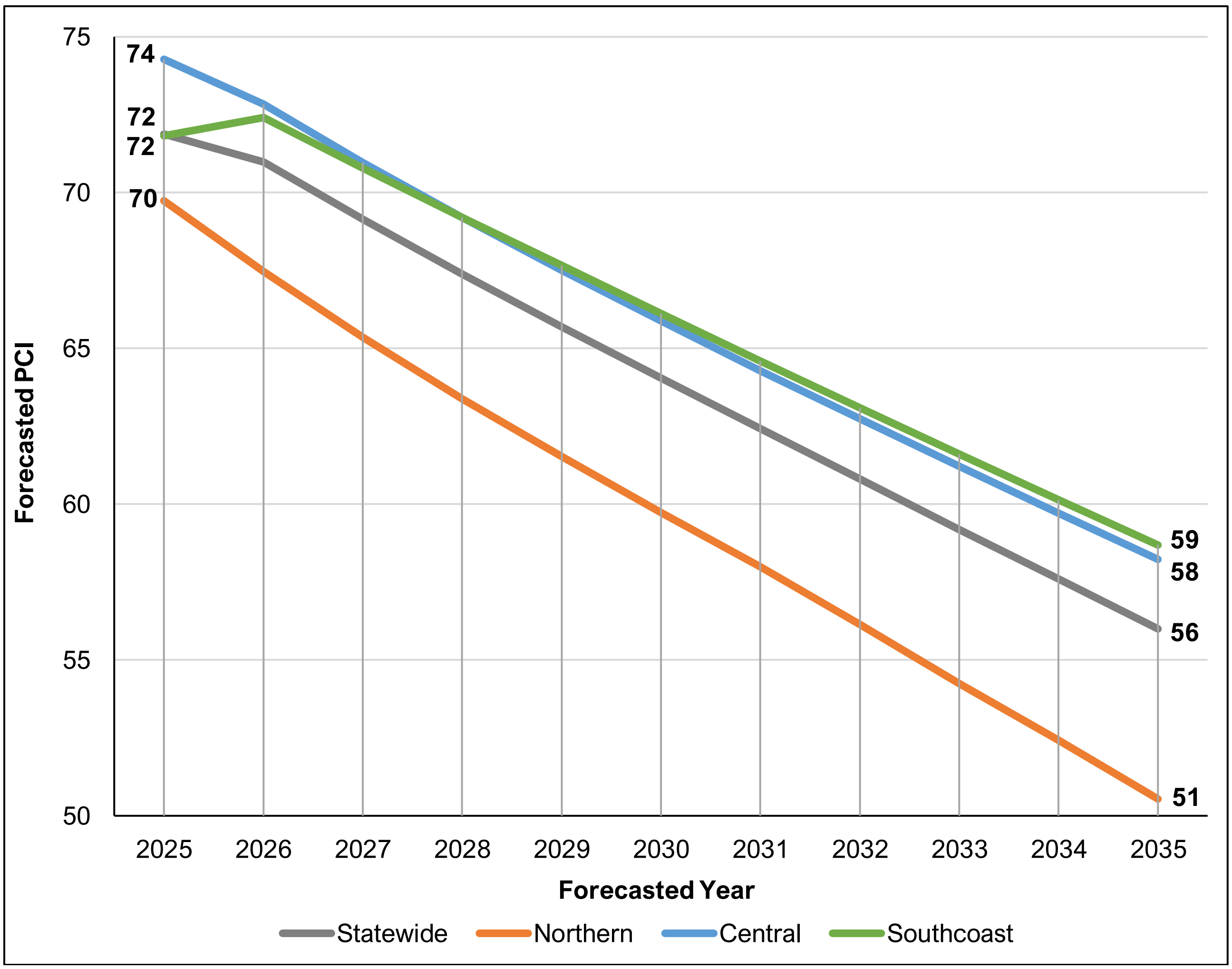

Figure 15—Alaska Airport Pavement 10-Year PCI Forecast

Individual Airport Pavement Inspection Reports

Detailed reports for each individual airport pavement network are generated after their inspection. For airport pavement inspection reports published starting in 2023, the organization of the reports is as follows:

- Airport Maps
    - Pavement Condition Index
    - Sample Unit PCI
    - 5-Year Predicted PCI
    - 10-Year Predicted PCI
    - Pavement Age at Inspection
    - Pavement Crack Seal Condition
- Airport Pavement Inspection Notes by Branch
- Branch Condition Report
- Branch Use Condition Report
- Section Condition Report
- Section Condition Report (Summary by Age Category)
- Work History Report
- Physical Property Data Table
- Pavement Classification Rating
- References

Individual airport reports can be found on the Alaska Department of Transportation and Public Facilities website https://dot.alaska.gov/stwddes/asset_mgmt/airport_pave.shtml. Under the "**Airports Pavement Condition Data"** window there is a dropdown list in which you can access the latest Airport Pavement Condition Reports for each of the 54 airports.

MAINTENANCE AND REHABILITATION PLANNING

For the PMP to be effective, the program must be unique to Alaska DOT&PF maintenance policies, M&R prioritization, and construction unit costs. Each of these factors will influence the development of long-term M&R strategies, including their associated budgetary requirements. Therefore, it is essential that the information in the database is accurate so that the proper long-term M&R strategy can be selected. The following tables regarding distress maintenance policies, M&R prioritization, and unit costs were customized specifically for the Alaska DOT&PF PAVER database.

Maintenance and Rehabilitation Work Types

PAVER uses four distinct work type policies when applying funds for M&R planning. Each policy is defined below and describes which pavement they will be applied to.

- **Localized Preventive M&R** - Defined as distress maintenance activities performed with the primary objective of slowing the rate of deterioration. This policy is applied to pavements above the critical PCI. A typical example of localized preventive work is crack sealing, which targets individual distresses to prevent moisture infiltration and further degradation. These treatments are essential for preserving pavement condition and delaying the need for more extensive rehabilitation.
- **Localized Stopgap (Safety) M&R -** Defined as the localized M&R needed to keep the pavement in operational and safe condition. This policy is applied to pavements below the critical PCI. A typical example of stopgap work is patching, which addresses isolated failures such as raveled out areas or spalls to restore surface continuity and mitigate risks to aircraft operations. These treatments are not intended to improve long term performance, but rather to maintain minimum serviceability until more comprehensive rehabilitation can be scheduled.
- **Global Preventive M&R -** Defined as activities, typically surface treatments, applied to entire pavement sections with the primary objective of slowing the rate of deterioration. This policy is applied to pavements above the critical PCI, where proactive preservation can extend service life and delay costly rehabilitation. A prime example is the use of P-608, which is an emulsified asphalt seal coat.
- **Major M&R -** Activities applied to the entire pavement section to correct or improve existing structural or functional requirements. It is also used to upgrade pavements below the critical PCI. Examples of major M&R include rehabilitation, such as mill-and-overlay or structural overlays, and full-depth reconstruction, where the pavement structure is rebuilt to restore load bearing capacity and operational performance.

Distress Maintenance Policies

Distress maintenance policies are used to determine what work will be recommended per recorded distress in any given section. The two types of localized maintenance policies are preventive and stopgap. Preventive policies are for sections having a PCI value above the critical value and are designed to provide preventive repair when it is beneficial to the life of the pavement. Stopgap policies are for sections that have a PCI below the critical value and are designed to repair any safety hazards to keep the pavement in operational condition. Table 13 and Table 14 list the localized preventive and stopgap maintenance policies for AC and PCC pavements, respectively. These policies are used to determine the localized maintenance recommendations in this PMP.

Table 13—AC Pavement Localized Preventive and Stopgap Maintenance and Repair Policy

Distress	Severity	Description	Preventive Work Type	Stopgap Work Type
41	Low	Alligator Cracking	-	-
41	Medium	Alligator Cracking	Patching - AC Deep	-
41	High	Alligator Cracking	Patching - AC Deep	Patching - AC Deep
42	N/A	Bleeding	Patching - AC Shallow	-
43	Low	Block Cracking	-	-
43	Medium	Block Cracking	Crack Sealing – AC	-
43	High	Block Cracking	Patching - AC Deep	Crack Sealing - AC
44	Low	Corrugation	Patching - AC Shallow	-
44	Medium	Corrugation	Patching - AC Shallow	-
44	High	Corrugation	Patching - AC Shallow	Patching - AC Shallow
45	Low	Depression	Patching - AC Deep	-
45	Medium	Depression	Patching - AC Deep	-
45	High	Depression	Patching - AC Deep	Patching - AC Deep
46	N/A	Jet Blast	-	-
47	Low	Jt. Reflective Cracking	-	-
47	Medium	Jt. Reflective Cracking	Crack Sealing - AC	-
47	High	Jt. Reflective Cracking	Crack Sealing - AC	Crack Sealing - AC
48	Low	L&T Cracking	-	-
48	Medium	L&T Cracking	Crack Sealing - AC	-
48	High	L&T Cracking	Crack Sealing - AC	Crack Sealing - AC
49	N/A	Oil Spillage	Patching - AC Deep	-
50	Low	Patching	-	-
50	Medium	Patching	Patching - AC Deep	-
50	High	Patching	Patching - AC Deep	Patching - AC Deep
51	N/A	Polished Aggregate	-	-
52	Low	Raveling	-	-
52	Medium	Raveling	-	-
52	High	Raveling	Patching - AC Shallow	Patching - AC Shallow
53	Low	Rutting	Patching - AC Deep	-
53	Medium	Rutting	Patching - AC Deep	-
53	High	Rutting	Patching - AC Deep	Patching - AC Deep
54	Low	Shoving	Grinding (Localized)	-
54	Medium	Shoving	Grinding (Localized)	-
54	High	Shoving	Grinding (Localized)	Grinding (Localized)
55	N/A	Slippage Cracking	Patching - AC Deep	Patching - AC Deep
56	Low	Swelling	Patching - AC Deep	-
56	Medium	Swelling	Patching - AC Deep	-
56	High	Swelling	Patching - AC Deep	Patching - AC Deep
57	Low	Weathering	-	-
57	Medium	Weathering	-	-
57	High	Weathering	-	-

(-) No action required—monitor pavement.

Table 14—PCC Pavement Localized Preventive and Stopgap Maintenance and Repair Policy

Distress	Severity	Description	Preventive Work Type	Stopgap Work Type
61	Low	Blow-up	Patching - PCC Full Depth	-
61	Medium	Blow-up	Patching - PCC Full Depth	Patching - PCC Full Depth
61	High	Blow-up	Patching - PCC Full Depth	Slab Replacement - PCC
62	Low	Corner Break	Crack Sealing - PCC	-
62	Medium	Corner Break	Patching - PCC Full Depth	-
62	High	Corner Break	Patching - PCC Full Depth	Patching - PCC Full Depth
63	Low	Linear Cracking	-	-
63	Medium	Linear Cracking	Crack Sealing - PCC	Crack Sealing - PCC
63	High	Linear Cracking	Patching - PCC Partial Depth	Patching - PCC Full Depth
64	Low	Durability Cracking	-	-
64	Medium	Durability Cracking	Patching - PCC Full Depth	Patching - PCC Full Depth
64	High	Durability Cracking	Slab Replacement - PCC	Slab Replacement - PCC
65	Low	Jt. Seal Damage	-	-
65	Medium	Jt. Seal Damage	Joint Seal (Localized)	-
65	High	Jt. Seal Damage	Joint Seal (Localized)	-
66	Low	Small Patch	-	-
66	Medium	Small Patch	Patching - PCC Partial Depth	-
66	High	Small Patch	Patching - PCC Partial Depth	Patching - PCC Partial Depth
67	Low	Large Patch	-	-
67	Medium	Large Patch	Patching - PCC Full Depth	-
67	High	Large Patch	Patching - PCC Full Depth	Patching - PCC Full Depth
68	N/A	Popouts	-	-
69	N/A	Pumping	Joint Seal (Localized)	-
70	Low	Scaling	-	-
70	Medium	Scaling	Patching - PCC Partial Depth	-
70	High	Scaling	Slab Replacement - PCC	Slab Replacement - PCC
71	Low	Faulting	-	-
71	Medium	Faulting	Grinding (Localized)	-
71	High	Faulting	Grinding (Localized)	Grinding (Localized)
72	Low	Shattered Slab	-	-
72	Medium	Shattered Slab	Slab Replacement - PCC	-
72	High	Shattered Slab	Slab Replacement - PCC	Slab Replacement - PCC
73	N/A	Shrinkage Cracking	-	-
74	Low	Joint Spall	-	-
74	Medium	Joint Spall	Patching - PCC Partial Depth	-
74	High	Joint Spall	Patching - PCC Partial Depth	Patching - PCC Partial Depth
75	Low	Corner Spall	-	-
75	Medium	Corner Spall	Patching - PCC Partial Depth	-
75	High	Corner Spall	Patching - PCC Partial Depth	Patching - PCC Partial Depth
76	Low	ASR	-	-
76	Medium	ASR	Slab Replacement - PCC	-
76	High	ASR	Slab Replacement - PCC	Slab Replacement - PCC

(-) No action required—monitor pavement.

Pavement Branch Use and Section Rank Prioritization

Pavement branches and sections are prioritized to establish their relative importance during the M&R budget analysis. The highest priority branch use for any airport is the runway, followed by taxiways and then aprons. Section rank refers to the relative importance assigned to multiple pavements having the same branch use. Each pavement section is assigned a rank of primary (P), secondary (S) or tertiary (T). As an example, an airport with two runways might rank the more heavily used jet service runway as primary and the general aviation runway as secondary or tertiary.

The combination of the branch use and the section rank is used to define the priority of each section during the M&R budget analysis. Table 15 presents the branch use and section rank prioritization matrix used in budget analysis for the Alaska Airport PMP.

Table 15—M&R Work Priority by Branch Use and Section Rank

Branch Use	Section Rank		
	Primary	Secondary	Tertiary
Runway	1	3	7
Taxiway	2	4	8
Apron	5	6	9

Unit Costs

Derivation of appropriate pavement M&R unit costs is not trivial and is described in full in a separate report, **Appendix C**. A brief description of the process follows.

First, pavement unit costs were derived from a sample of actual construction projects completed by Alaska DOT&PF during the period 2005 to 2024. We carefully reviewed the projects, assigned them to a category of work, removed any miscellaneous costs unrelated to pavement M&R (i.e., fencing, access roads, building, generators, etc.), and computed a unit cost for the pavement treatment based on the pavement area constructed. We then developed a method of standardizing pavement M&R costs around the state to a specific location—Anchorage—by use of published heating fuel prices. Lastly, we ensured that unit costs were inflation adjusted to a standard year of analysis—2024.

Through this process, unit costs for a range of pavement M&R treatments were developed for three categories: Localized Pavement Preservation and Corrective Maintenance (Table 16), Global Surface Treatments (Table 17) , and Major Rehabilitation or Reconstruction (Table 18). These unit costs are used for a variety of purposes in PAVER including the analysis of alternative M&R budget scenarios.

Table 16—Anchorage Localized M&R Work Unit Costs

Localized Work Type	Cost	Units
Crack Sealing - AC	$5.30	ft
Grinding (Localized)	$10.18	ft
Joint Seal (Localized)	$5.30	ft
Patching - AC Deep	$14.85	sf
Patching - AC Shallow	$6.90	sf
Crack Sealing - PCC	$5.30	ft
Patching - PCC Full Depth	$53.05	sf
Patching - PCC Partial Depth	$13.79	sf
Slab Replacement - PCC	$38.19	sf

Table 17—Anchorage Global M&R Work Unit Costs

Global Work Type	Cost ($/sf)
Emulsified Asphalt Seal Coat (P-608)	$0.54
Rapid Cure Seal Coat (P-608-R)	$0.54
Sand Seal (P-633)	$1.28

Table 18—Anchorage Major M&R Work Unit Costs

Rehabilitation Work Type	Unit Cost ($/sf)
Minor Rehabilitation - AC	$11.92
Major Rehabilitation - AC	$18.87
Complete Reconstruction - AC	$39.47
Minor Rehabilitation - PCC	$29.81
Major Rehabilitation - PCC	$40.44
Complete Reconstruction - PCC	$83.86

Cost by Condition

The maintenance policies in Table 13 and Table 14 are used in the budget plans and represent what localized repairs are needed immediately. While this is helpful knowledge for an engineer, pavement manager, or M&O staff, planning a five-year budget requires incorporation of work categories like major M&R. A five-year work plan computes the required budget by applying the cost to repair based on PCI.

The PAVER software (versions 7.1 and greater) introduced capabilities to model these localized costs by plotting the inspection PCI vs. the localized cost per area to repair using the distress maintenance policies. PAVER then applies segmented lines of best fit to the data points and automatically generates cost by condition tables. Table 19 shows the Anchorage-based AC and PCC preventive maintenance cost by condition while Table 20 presents the Anchorage-based AC and PCC stopgap maintenance cost by condition.

Table 19—Anchorage Localized Preventive Cost ($/sf) by Condition Values

Condition	AC	PCC
0	$5.73	$7.23
10	$2.37	$2.39
20	$1.05	$1.10
30	$0.56	$0.90
40	$0.34	$0.78
50	$0.19	$0.52
60	$0.09	$0.24
70	$0.04	$0.09
80	$0.03	$0.07
90	$0.02	$0.05
100	$0.00	$0.00

Table 20—Anchorage Localized Stopgap Cost ($/sf) by Condition Values

Condition	AC	PCC
0	$1.57	$19.72
10	$0.90	$8.76
20	$0.52	$3.74
30	$0.30	$1.60
40	$0.16	$0.72
50	$0.08	$0.32
60	$0.03	$0.13
70	$0.02	$0.06
80	$0.01	$0.05
90	$0.01	$0.04
100	$0.00	$0.00

The major M&R cost by condition is a relationship between minor and major M&R requirements for a range of PCI values. Pavement sections with PCI values greater than 70 generally require preventive/preservation treatments while pavements with PCI values less than 30 require complete reconstruction. As such, the associated costs are near constant for PCI values at or above 70 and at or below 30. For PCI values between 70 and 55 pavements require minor rehabilitation while PCI values between 55 and 30 require major rehabilitation. Rehabilitation allows for additional work such as patching, milling or any other remedial work that must be accomplished prior to an overlay. As such, the rehabilitation costs of pavements with a PCI between 70 and 30 are interpolated. Table 21 presents the Anchorage-based AC and PCC major M&R cost by condition.

Table 21—Anchorage Major M&R Cost ($/sf) by Condition Values

Condition	AC	PCC
0	$39.47	$83.86
10	$39.47	$83.86
20	$39.47	$83.86
30	$39.47	$83.86
40	$32.61	$70.47
50	$25.75	$57.07
60	$18.89	$43.68
70	$12.03	$30.28
80	$12.01	$30.14
90	$11.99	$30.06
100	$11.92	$29.81

Five-Year Rehabilitation Needs

PAVER is a decision-making tool for the development of cost-effective M&R alternatives. The software can identify when and where M&R work is required and how much it will cost. PAVER M&R plans can be developed either by assuming an annual budget or by specifying a desired pavement condition.

We used PAVER to develop and analyze five alternative budget scenarios over a five-year period from 2026 to 2030. The purpose of these alternatives is to develop funding scenarios and determine the resulting PCI as well as the effect on M&R backlog. The backlog is the total unfunded M&R requirements, which can be further described as the accumulation of sections that are under the critical PCI and require major M&R.

The best way to determine this value is to look at the stopgap maintenance plan (patching and crack sealing only), where no major M&R is performed. Since no funding is being allocated to major M&R, the unfunded amount in the first year is the current backlog of the program. This value is **$1.03B** and can be seen as the overall M&R backlog of major work and can be used as a reference point to evaluate the effectiveness of each budget scenario.

Budget Scenario 1—Eliminate Backlog in Five Years

An average annual expenditure of **$306M** is necessary to achieve the goal of eliminating the backlog over a five-year period. This level of investment would result in an average PCI of **83**. The total amount funded over the five-year analysis period is **$1,530M** and would result in a backlog of **zero** dollars. A summary of this budget is presented in Table 22**.**

Table 22—Budget Scenario 1—Eliminate Backlog in Five Years ($M)

Date of Plan	Funded M&R Work Type				Total Funded M&R	Total Unfunded M&R	Total Funded & Unfunded M&R	PCI	
	Localized Stopgap	Localized Preventive	Global	Major				Before Work	After Work
2026	$5.66	$4.12	$14.05	$285.40	$309	$686	$995	72	76
2027	$5.27	$4.24	$2.37	$297.37	$309	$544	$853	74	78
2028	$3.59	$4.61	$3.62	$297.36	$309	$377	$686	76	80
2029	$1.72	$5.01	$2.35	$300.10	$309	$203	$512	77	81
2030	$0.00	$5.47	$0.52	$287.53	$294	$0	$294	79	83
Total	**$16**	**$23**	**$23**	**$1,468**	**$1,530**	**-**	**$1,530**	**72**	**83**

Figure 16 displays the impact on the PCI over time with respect to the total funded and unfunded M&R.

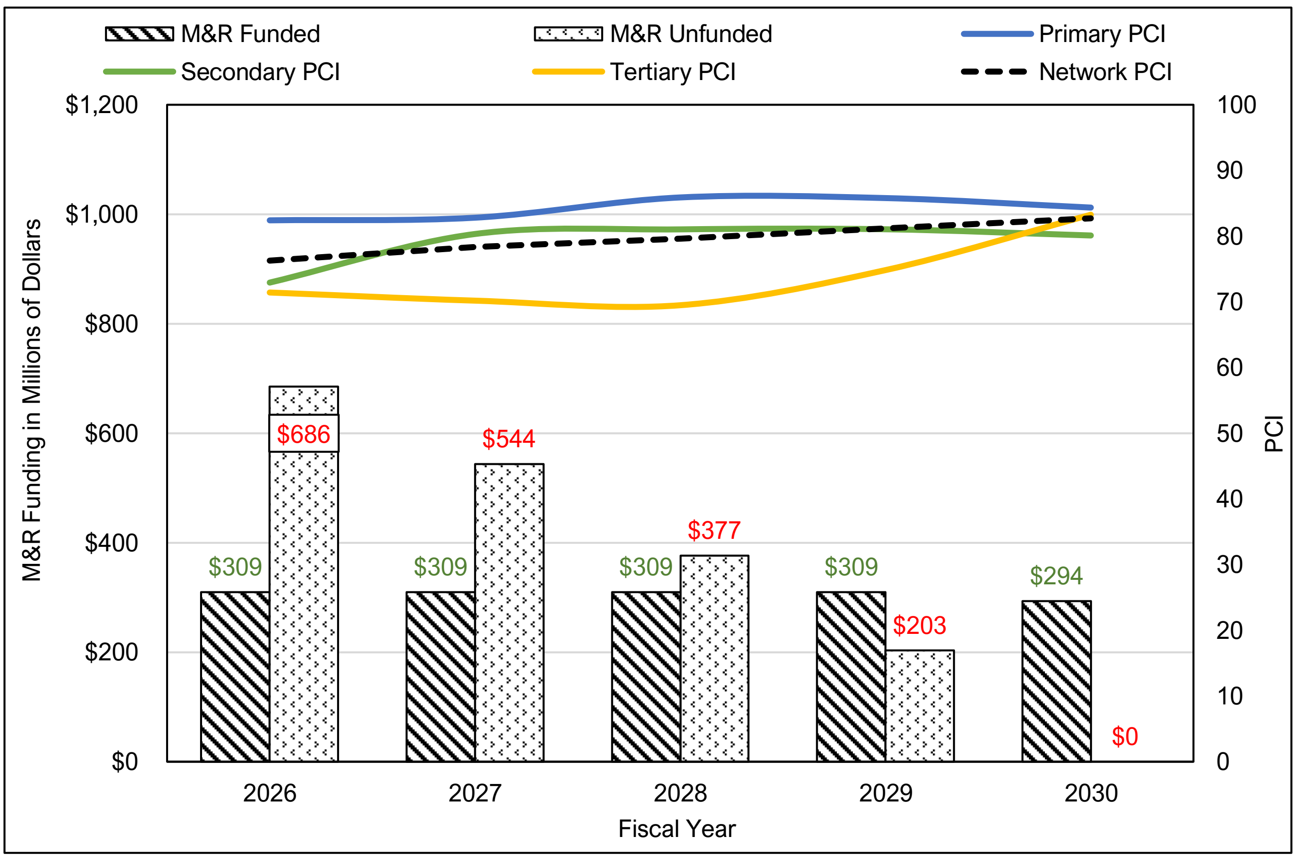

Figure 16—Budget Scenario 1—Eliminate Backlog in Five Years

Budget Scenario 2—Maintain Backlog

Alaska DOT&PF expends approximately $109.25M per year for pavement M&R. Funding sources for this budget include federal AIP funds in addition to state funds. Under this scenario, an additional $50.75M in newly allocated annual funding would raise total expenditures to **$160M** per year. At this level of investment, the PCI at the end of the five-year analysis period will be **74.** The total amount funded over the five-year analysis period is **$800M** and would result in a backlog of **$854M.** A summary of this budget is presented in Table 23.

Table 23—Budget Scenario 2—Maintain Backlog ($M)

Date of Plan	Funded M&R Work Type				Total Funded M&R	Total Unfunded M&R	Total Funded & Unfunded M&R	PCI	
	Localized Stopgap	Localized Preventive	Global	Major				Before Work	After Work
2026	$6.53	$4.12	$14.05	$135.23	$160	$836	$996	72	75
2027	$7.21	$4.21	$2.37	$146.07	$160	$853	$1,013	73	75
2028	$8.29	$4.47	$3.62	$143.61	$160	$861	$1,021	73	75
2029	$9.60	$4.76	$2.35	$143.20	$160	$873	$1,033	73	75
2030	$10.68	$5.05	$0.52	$143.72	$160	$854	$1,014	73	74
Total	**$42**	**$23**	**$23**	**$712**	**$800**	**-**	**$1,653**	**72**	**74**

Figure 17 displays the impact on the PCI over time with respect to the total funded and unfunded M&R.

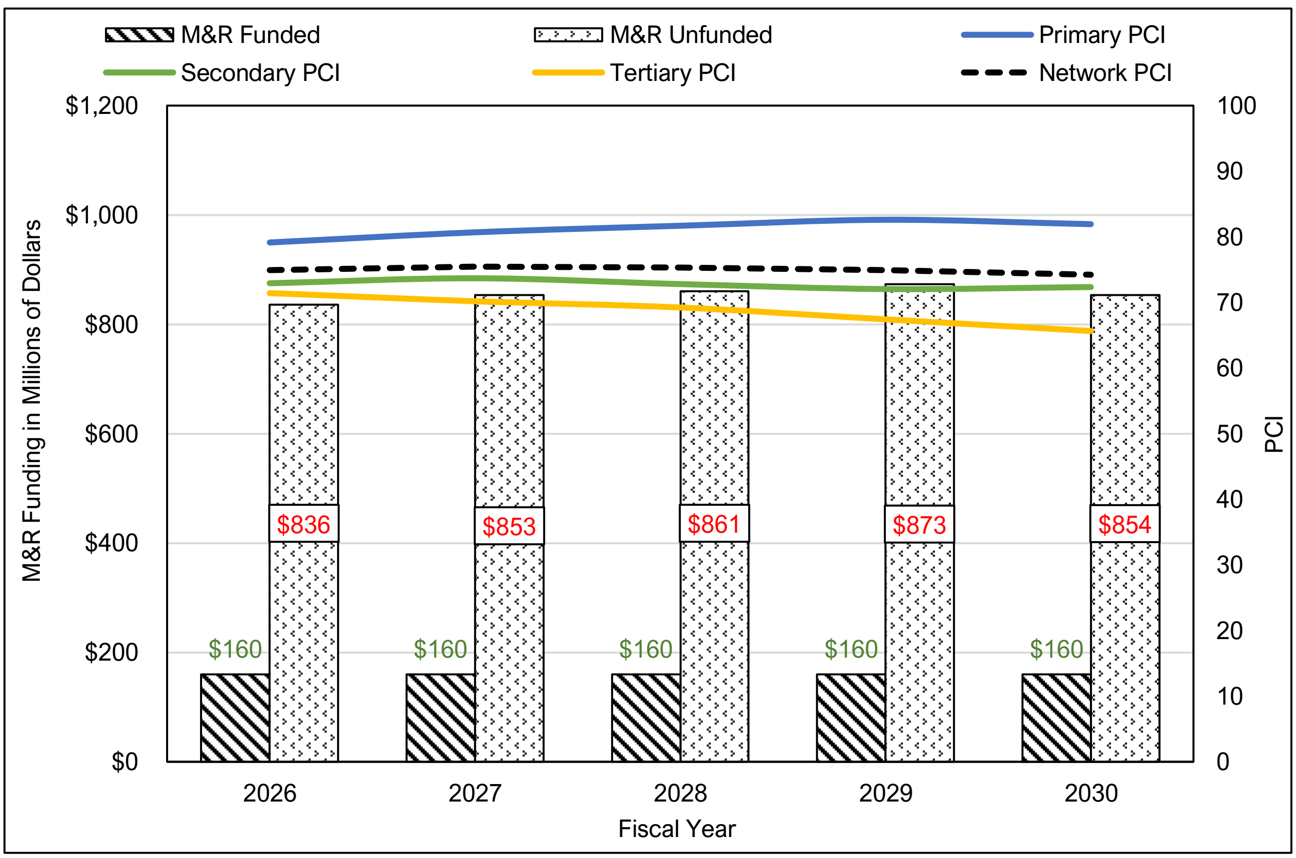

Figure 17—Budget Scenario 2—Maintain Backlog

Budget Scenario 3—Maintain Current PCI of 72

To stabilize the condition of the airport pavement system at its current PCI of 72, an average annual budget of **$124M** is required over a period of five years. At this level of investment, the PCI at the end of the five-year analysis period will be **73**. The total amount funded over the five-year analysis period is **$619M** and would result in a backlog of **$1,069M.** A summary of this budget is presented in Table 24.

Table 24—Budget Scenario 3— Maintain Current PCI ($M)

Date of Plan	Funded M&R Work Type				Total Funded M&R	Total Unfunded M&R	Total Funded & Unfunded M&R	PCI	
	Localized Stopgap	Localized Preventive	Global	Major				Before Work	After Work
2026	$6.60	$4.12	$14.05	$98.99	$124	$872	$996	72	74
2027	$7.59	$4.20	$2.37	$109.63	$124	$930	$1,054	72	75
2028	$8.96	$4.43	$3.62	$106.76	$124	$979	$1,102	73	74
2029	$10.46	$4.69	$2.35	$106.25	$124	$1,036	$1,160	72	74
2030	$12.29	$4.94	$0.52	$106.03	$124	$1,069	$1,193	72	73
Total	**$46**	**$22**	**$23**	**$528**	**$619**	**-**	**$1,688**	**72**	**73**

Figure 18 displays the impact on the PCI over time with respect to the total funded and unfunded M&R.

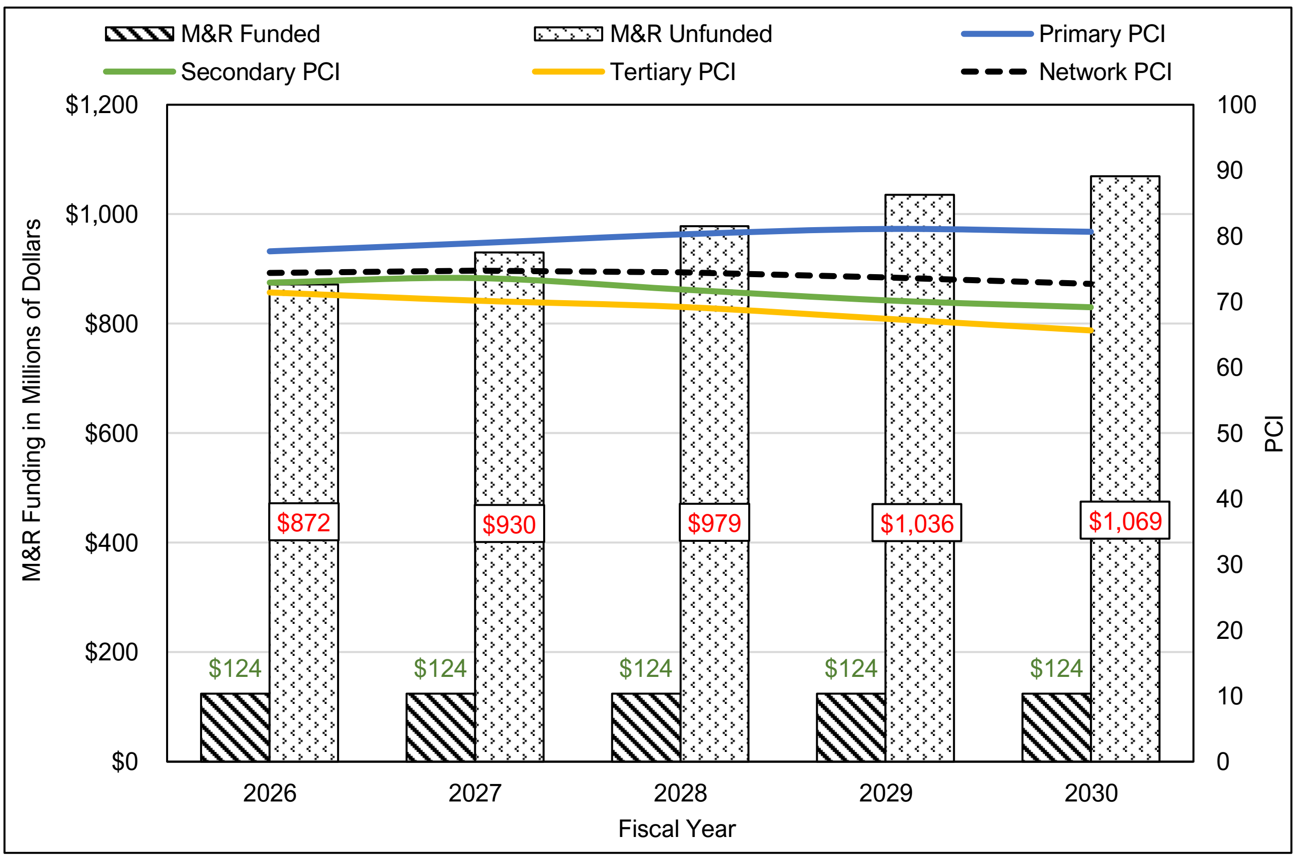

Figure 18—Budget Scenario 3— Maintain Current PCI ($M)

Budget Scenario 4—Maintain Current Budget

Alaska DOT&PF expends approximately **$109.25M** per year for pavement M&R. Funding sources for this budget include federal AIP funds in addition to state funds. At this level of investment, the PCI at the end of the five-year analysis period will be **72.** The total amount funded over the five-year analysis period is **$546M** and would result in a backlog of **$1,156M.** A summary of this budget is presented in Table 25.

Table 25—Budget Scenario 4—Maintain Current Budget ($M)

Date of Plan	Funded M&R Work Type				Total Funded M&R	Total Unfunded M&R	Total Funded & Unfunded M&R	PCI	
	Localized Stopgap	Localized Preventive	Global	Major				Before Work	After Work
2026	$6.63	$4.12	$14.05	$84.38	$109	$887	$996	72	74
2027	$7.66	$4.19	$2.37	$95.00	$109	$960	$1,070	72	74
2028	$9.12	$4.42	$3.62	$92.07	$109	$1,027	$1,136	72	74
2029	$10.87	$4.65	$2.35	$91.34	$109	$1,104	$1,213	72	73
2030	$12.79	$4.89	$0.52	$90.99	$109	$1,156	$1,265	71	72
Total	**$47**	**$22**	**$23**	**$454**	**$546**	**-**	**$1,702**	**72**	**72**

Figure 19 displays the impact on the PCI over time with respect to the total funded and unfunded M&R.

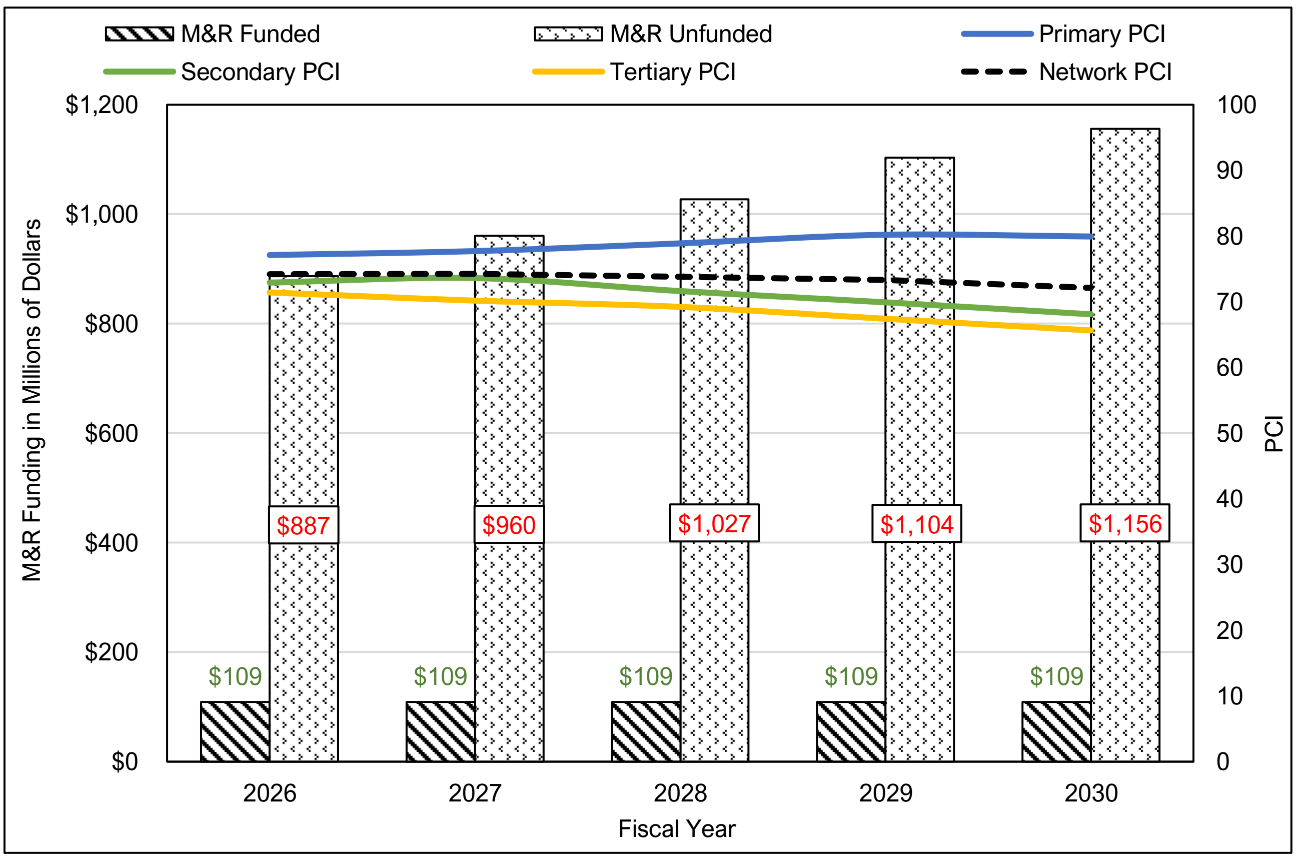

Figure 19—Budget Scenario 4—Maintain Current Budget

Budget Scenario 5—Stopgap Maintenance Only

If only stopgap maintenance, such as patching and crack sealing, is performed for the next five years, the annual expenditure will be an average of **$12M**. At this level of investment, the PCI at the end of the five-year analysis period will drop to **62**. The total amount funded over the five-year analysis period is **$58M** and would result in the backlog increasing from $1,031M to **$2,047M**. A summary of this budget is presented in Table 26.

Table 26—Budget Scenario 5—Stopgap Maintenance Only ($M)

Date of Plan	Funded M&R Work Type				Total Funded M&R	Total Unfunded M&R	Total Funded & Unfunded M&R	PCI	
	Localized Stopgap	Localized Preventive	Global	Major				Before Work	After Work
2026	$6.79	-	-	-	$7	$1,031	$1,037	72	72
2027	$8.63	-	-	-	$9	$1,264	$1,273	69	69
2028	$10.80	-	-	-	$11	$1,497	$1,508	67	67
2029	$13.79	-	-	-	$14	$1,734	$1,747	65	65
2030	$17.89	-	-	-	$18	$2,047	$2,065	62	62
Total	**$58**	**-**	**-**	**-**	**$58**	**-**	**$2,105**	**72**	**62**

Figure 20 displays the impact on the PCI over time with respect to the total funded and unfunded M&R.

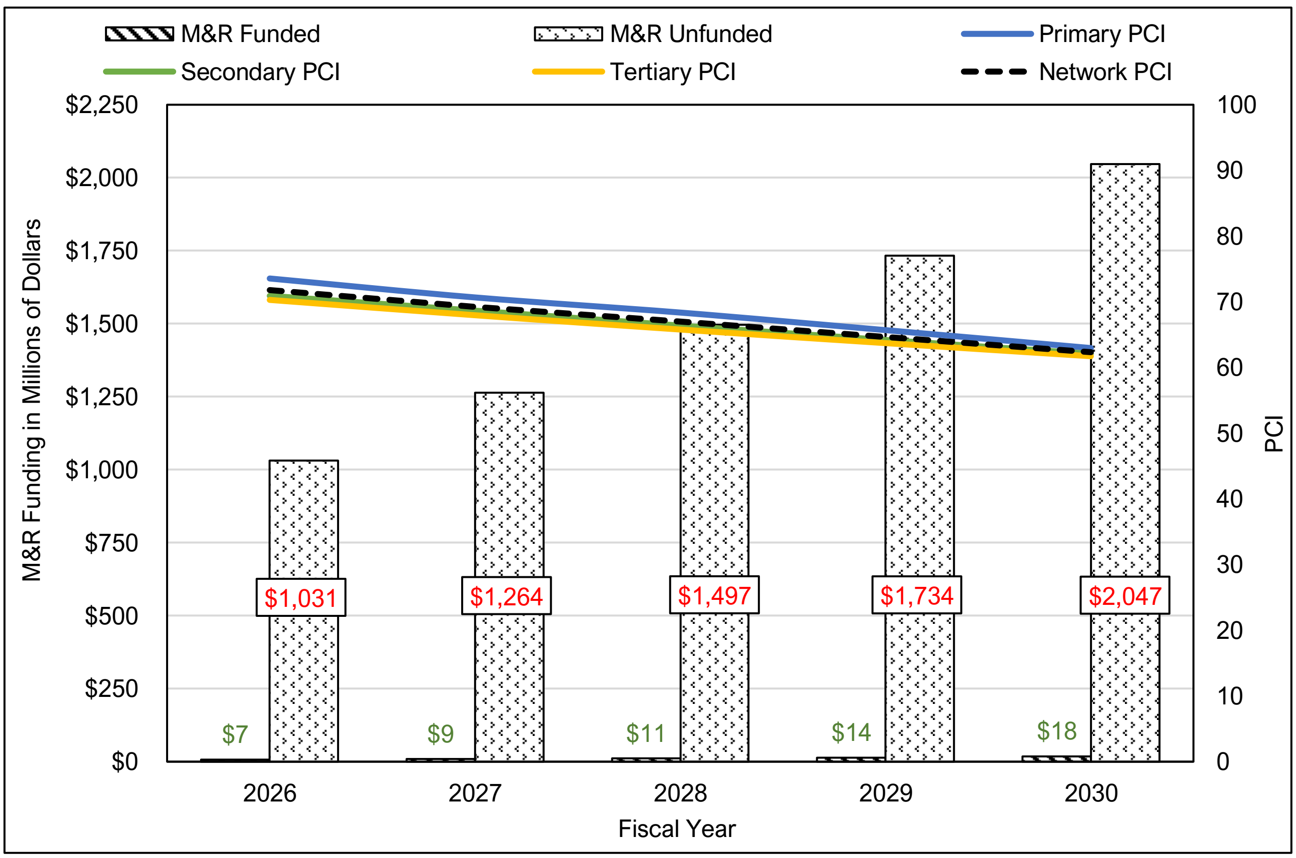

Figure 20—Budget Scenario 5—Stopgap Maintenance Only

Ten-Year Rehabilitation Analysis

To evaluate long-term outcomes beyond the initial planning horizon, we extended the analysis to cover a 10-year period from 2026 to 2035. Specifically, we modeled a scenario based on the **Eliminate Backlog in 5 Years** strategy, which front-loads major M&R investments to fully address the existing $1.03B backlog by 2030. The second half of the analysis (2031-2035) was designed to assess the implications of maintaining the network once the backlog has been eliminated.

This approach enabled us to examine how the pavement system responds when aggressive early investment is followed by reduced or stabilized funding levels. The objective was to assess whether eliminating the backlog leads to sustained improvements in overall pavement condition, while also evaluating the potential for deferred maintenance to reaccumulate once funding is scaled back.

To achieve backlog elimination within the first five years, an average annual expenditure of **$306M** is required. This level of investment yields an average PCI of **83** and a total funding commitment of **$1,530M** over the 2026-2030 period. By the end of this phase, the backlog is reduced to **zero**, indicating that all sections below the critical PCI threshold have received appropriate major M&R.

In the subsequent five-year period (2031-2035), the required annual expenditure drops significantly to **$115M** to maintain the network at a **zero**-dollar backlog. This reduced investment level sustains an average PCI of **80**, with a total funding requirement of **$573M** over the five years. The relatively modest funding in this phase reflects the reduced need for major interventions once the network has been stabilized.

The results of this extended analysis provide valuable insight into the long-term cost-effectiveness of backlog elimination. They demonstrate that early, targeted investment not only improves overall pavement condition but also reduces future funding requirements—supporting more strategic, sustainable decision-making for airport pavement management. A summary of this budget scenario is presented in Table 27.

Table 27—Ten Year Rehabilitation Analysis ($M)

Date of Plan	Funded M&R Work Type				Total Funded M&R	Total Unfunded M&R	Total Funded & Unfunded M&R	PCI	
	Localized Stopgap	Localized Preventive	Global	Major				Before Work	After Work
2026	$5.66	$4.12	$14.05	$285.40	$309	$686	$995	72	76
2027	$5.27	$4.24	$2.37	$297.37	$309	$544	$853	74	78
2028	$3.59	$4.61	$3.62	$297.36	$309	$377	$686	76	80
2029	$1.72	$5.01	$2.35	$300.10	$309	$203	$512	77	81
2030	$0	$5.47	$0.52	$287.53	$294	$0	$294	79	83
2031	$0	$5.83	$13.51	$93.47	$113	$0	$113	81	82
2032	$0	$6.21	$4.49	$71.15	$82	$0	$82	80	81
2033	$0	$6.55	$9.07	$94.94	$111	$0	$111	79	81
2034	$0	$6.76	$4.38	$131.67	$143	$0	$143	79	81
2035	$0	$7.09	$1.91	$116.15	$125	$0	$125	79	80
Total	**$16**	**$56**	**$56**	**$1,975**	**$2,104**	**-**	**$2,104**	**72**	**80**

Figure 21 displays the impact on the PCI over time with respect to the total funded and unfunded M&R.

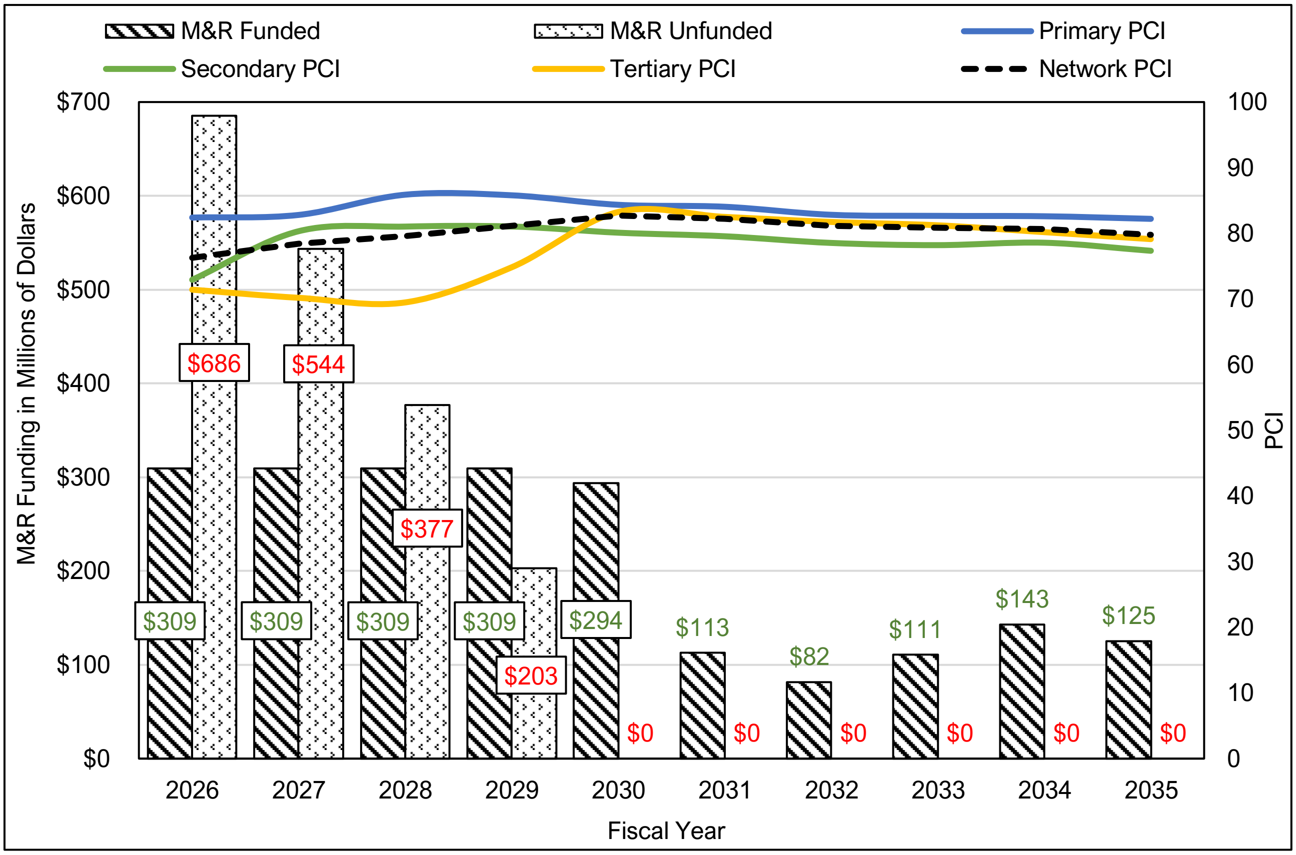

Figure 21—Ten Year Rehabilitation Analysis

PAVEMENT CLASSIFICATION RATINGS

The Aircraft Classification Rating - Pavement Classification Rating (ACR-PCR) method for reporting pavement strength was developed by the International Civil Aviation Organization (ICAO). The purpose of the ACR-PCR method is to provide aviation authorities around the globe with a unified and straightforward method of reporting and evaluating pavement strength.

In the ACR-PCR method, one compares the relative loading effect of an aircraft (Aircraft Classification Rating or ACR) to the relative strength of the pavement for unrestricted aircraft operations (Pavement Classification Rating or PCR). ACRs and PCRs are computed for a specific combination of pavement type, aircraft tire pressure, and subgrade soil strength. ACRs and PCRs may be computed for two types of pavements, four tire pressure categories, four subgrade strength categories, and two evaluation types.

As an ICAO member state, the United States, through the FAA, is committed to publishing PCRs for its public-use airports. Furthermore, the FAA has tied US airports' future eligibility for AIP funding to the requirement to assign and publish PCRs for paved runways. This requirement appears in a letter from the FAA Office of Safety and Standards to Airport Sponsors, dated April 29, 2022.

To fulfill FAA requirements, PCRs were computed for each airport in the Alaska Airport PMP. Generally, PCRs were computed at the same time PCI inspections were performed. PCRs were computed for all paved runways evaluated during this project. Please see **Appendix D** for a discussion of the methodology used and a summary of the PCRs computed.

CONCLUSIONS

The Alaska Airport PMP is fully implemented using the PAVER software. Of the 54 public-use airports with paved runways represented in the PMP, all have received FAA-compliant PCI inspections, database inventory updates, GIS map updates, and related activities during the period 2022 to 2025. In addition, as part of this project, the Alaska DOT&PF has published PCRs for all public-use paved runways in Alaska.

We conclude that the area-weighted average pavement condition of the Alaska airport system is **72** or **Satisfactory** condition. This rating represents the actively utilized pavements on the airside portion of all airports included in the PMP. A small number of closed or inactive pavements were excluded from analysis.

The 2025 M&R backlog for the 54 paved public-use airports in the Alaska Airport PMP is **$1.03B**.

We used the Alaska Airport PMP to predict future pavement conditions over the five-year period from 2026 to 2030. We analyzed five alternative budget scenarios that established various constraints including budget levels and resulting pavement conditions. Based on our five-year analysis, the following conclusions for each of the five scenarios are presented in Table 28.

Table 28—Summary of Five-Year Budget Analyses

Scenario	Title	Description	Annual Funded M&R ($M)	Total Five-Year Funded M&R ($M)	Resulting Backlog ($M)	Resulting PCI
1	**Eliminate Backlog**	Eliminate the M&R backlog for the airport pavement system after five years.	**306**	**1,530**	**0**	**83**
2	**Maintain Backlog**	Stabilize the M&R backlog for the airport pavement system after five years.	**160**	**800**	**853**	**74**
3	**Maintain Current PCI 72**	Stabilize the average PCI of the airport pavement system at the current level of 72.	**124**	**619**	**1,069**	**73**
4	**Maintain Current Budget**	Maintain M&R funding at the current annual budget.	**109.25**	**546**	**1,156**	**72**
5	**Stopgap Maintenance Only**	Perform only the minimum maintenance needed to maintain safe pavements.	**12**	**58**	**2,047**	**62**

Figure 22 shows the consequence of the five alternative budget scenarios on the resulting condition of the Alaska airport pavement system over the five-year period 2026 to 2030.

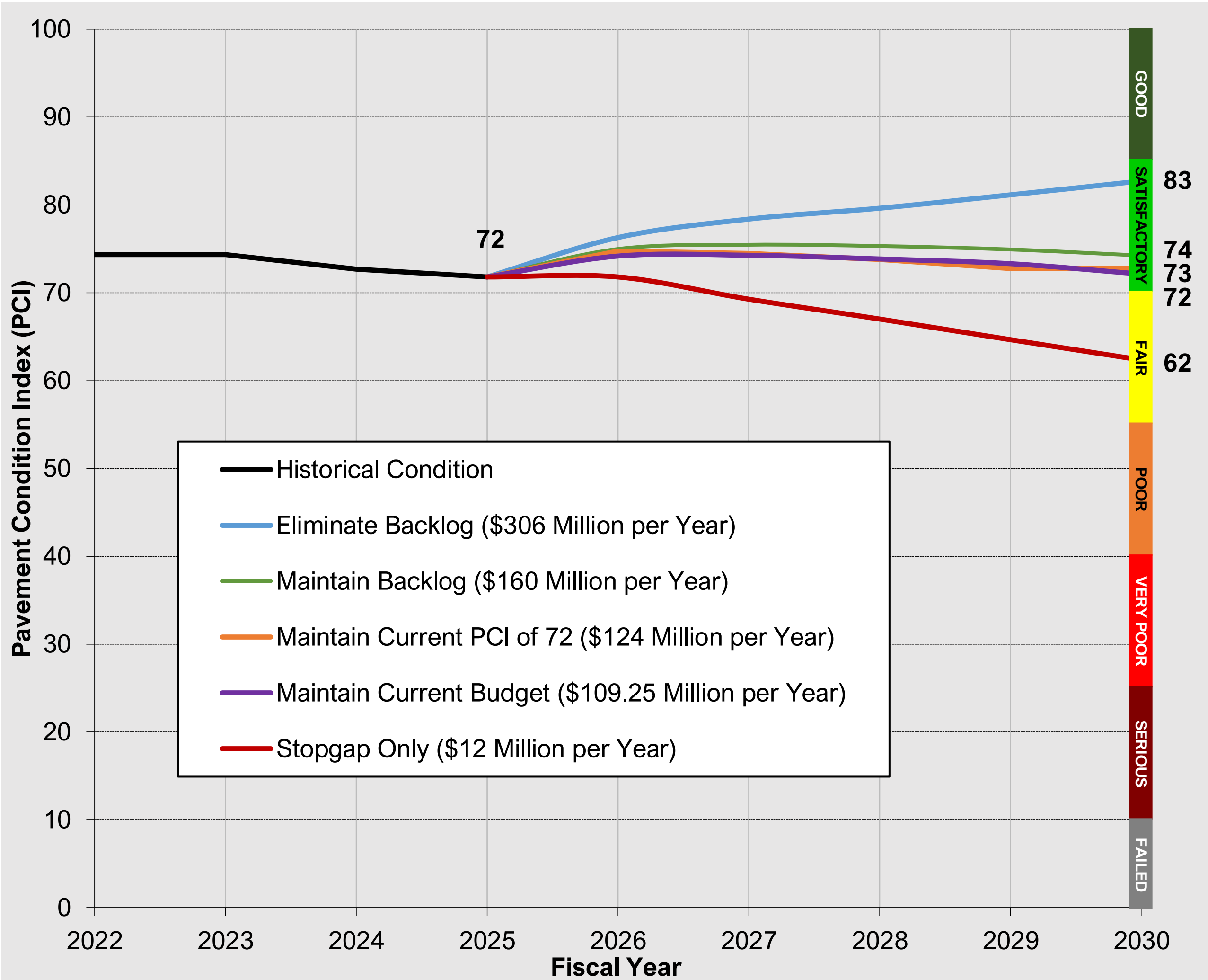

Figure 22—Consequence of Alternative Pavement M&R Budget Scenarios

RECOMMENDATIONS

Adopt Budget Scenario No. 3—Maintain Current PCI of 72

We recommend that Alaska DOT&PF strive for a PCI of at least 70 for the Alaska airport pavement system. M&R activities planned and programmed by the Department in past years, and funded by the FAA through the AIP program, have resulted in a relatively high average PCI of 72 across a system of 54 airports in Alaska. This is a remarkable achievement and Alaska DOT&PF should take stock of the relatively high condition of its airport pavement system.

With an average PCI of 72, the pavement system condition is approaching the critical PCI of 70. Although the PCI is still above this critical threshold, the system will benefit more from a sustained pavement preservation program than from major rehabilitation efforts. The pavement preservation approach takes advantage of lower-cost technologies, such as seal coats, to preserve and protect a structurally sound pavement in a relatively high state of condition. Since pavement preservation treatments cost only a fraction of the price of major work, such as mill/overlay, the preservation approach is to apply these treatments “early and often.” Routine, regular application of seal coats, in concert with crack sealing and patching, is a widely accepted strategy of preserving the high condition of a pavement network at a reasonable cost.

It is important to note that the current annual budget of $109.25 million reflects a historic average investment level, which has not consistently been met in recent years. Continued underinvestment in airport pavements increases the risk of declining system performance and growing maintenance needs. While there are competing demands for limited AIP funds, any decision to maintain investment below the recommended level should be made with a clear understanding of the long-term impact on pavement conditions and the rate of backlog growth.

Therefore, we strongly recommend that Alaska DOT&PF adopt **Budget Scenario 3—Maintain Current PCI of 72**. At an annual cost of $124 million, this scenario represents a 13.5% increase over the current annual budget of $109.25 million for pavement M&R. While modest, this increase offers a highly cost-effective alternative to other scenarios. Moreover, Budget Scenario 3 is projected to reduce backlog growth by approximately $86 million over the five-year period, compared to **Budget Scenario 4—Maintain Current Budget**.

Consistent with FAA guidance, investment in annual seal coating is strongly recommended as a cost-effective strategy for maintaining airport pavements in good and fair condition. Seal coating helps preserve surface integrity, slow deterioration, and extend pavement life, reducing the need for more expensive minor or major rehabilitation and reconstruction. By prioritizing routine maintenance through global treatments, DOT&PF can enhance infrastructure longevity and ensure a safer, more reliable transportation network within existing budget frameworks.

Continuing Pavement Management Plan Implementation

This report is being submitted in the third year of a three-year project to fully implement the Alaska Airport PMP across 54 airports. The PAVER database is fully implemented and has been used to produce the results discussed in this report. Alaska DOT&PF has made great strides toward its goals in this arena. We recommend that the Department continues its efforts to fully implement the Alaska Airport PMP across the entire system of 54 airports. On an annual basis, the Department should update essential components of the Alaska Airport PMP to ensure that the PMP can provide reliable decision support in analysis of various M&R budget alternatives. Recommended activities include:

- Utilize the most current version of the PAVER software.
- Update and maintain detailed records on localized, global, and major pavement construction projects (year, scope, cost, construction documents).
- Adjust inventory records to reflect recent changes due to construction.
- Update airport traffic data and fleet mix, including the type and number of operations of the range of aircraft using the pavement at each airport.
- Verify or update current distress maintenance policies.
- Update unit costs, which can vary year-to-year based on inflation, fuel costs, construction methods and materials.
- Update prediction models to forecast future pavement conditions more accurately. Pavement deterioration is affected by many factors including environment, surface condition, structural condition, and changes in the aircraft fleet mix.

In the event that Alaska DOT&PF continues the same level of M&R funding during the five-year period from 2025 to 2029, **Appendix E** provides the PAVER-recommended M&R work plan details for Budget Scenario No. 4—Maintain Current Budget.

Continue PCI Survey Inspections

We recommend that Alaska DOT&PF continue to perform annual PCI surveys on one-third of the airports in the Alaska PMP. Inspections should conform to ASTM D5340. Pavement inspections allow the Department to regularly monitor conditions and update airport pavement facility records.

Potential Cost-Effective Improvements

Alaska DOT&PF has been actively implementing innovative technologies and revising construction specifications to extend pavement service life and reduce the rate of pavement condition deterioration across the airport network. These initiatives reflect a strategic shift toward performance-based practices and preventive maintenance. Key improvements include:

- **Use of Polymer-Modified Asphalt Binder -** Incorporating a polymer-modified asphalt (PMA) into asphalt mixtures for airport pavement construction will improve the resilience of asphalt concrete pavements affected by the extreme weather conditions in Alaska. This enhancement will mitigate thermal cracking at low ambient temperatures and reduce surface raveling, which will reduce the possibility of the pavement surface generating foreign object debris. Reducing raveling will also result in longer-lasting pavements with lower PCI deterioration rates.
- **Enhanced Construction Specifications -** Updated specifications now include price incentives for achieving higher longitudinal joint density and surface sealing to minimize raveling. Longitudinal joints are particularly susceptible to cracking and raveling, and a considerable amount of pavement distresses originates at the longitudinal joints. By incentivizing improved joint compaction and surface sealing, the Alaska DOT&PF stands to benefit from reduced pavement degradation and longer pavement life. Data is currently being collected to quantify the benefits of higher density relative to PCI deterioration. National publications and the DOT&PF report “Innovative Pavement Design Study” (authored by Andrew Pavey) cite the expected benefits to be expected.
- **Seal Coats and Slurry Seals are Eligible for FAA Funding –** The FAA clearly identifies that that global pavement preservation treatments (specifically seal coats and slurry sealing) are eligible for FAA funding after the pavement is at least three years old. In the past, the FAA guidance, which can be found in the AIP Handbook, stated that these products were eligible after the pavement was at least ten years old. At the revised frequency of three years, the current FAA guidance empowers the Alaska DOT&PF to implement a broader range of lifecycle-based rehabilitation strategies earlier in the pavement life. With FAA support, DOT&PF can now apply global treatments modeled in PAVER to preserve and extend pavement performance, aligning with proactive asset management principles.

These advancements present the Alaska DOT&PF with an opportunity to better manage airport pavement assets through timely maintenance and repair projects selected with a goal of maximizing the cost-effectiveness of limited financial resources. Continued analysis of potential cost-effective improvements will be included in future cost reports and Statewide Summary Reports, following the completion of additional inspections and the availability of more comprehensive performance data. These future evaluations will help refine treatment strategies and support data-driven decision making for long term airport pavement sustainability in the State of Alaska.

♦ ♦ ♦

Appendix A

Alaska Airport
Pavement Management Program

2025 Attribute Table

September 2025

TABLE OF CONTENTS

LIST OF FIGURES

GLOSSARY OF TERMS AND ABBREVIATIONS

AASP: Alaska Aviation System Plan.

AC: Asphalt Concrete Pavement.

AIP: Airport Improvement Program.

CS: Commercial Service air transport.

DOT&PF: Department of Transportation and Public Facilities.

FAA: Federal Aviation Administration.

GA: General Aviation air transport.

HMA: Hot Mix Asphalt.

ICAO: International Civil Aviation Organization.

ICAO Code: consists of 4 letters. Certain classifications among countries and regions are used in creating these codes. The first letter stands for the region in which the airport is located, the second is for the country. The other two letters are generally given in order.

Maintenance Provider

> **Contract**: includes airports owned and operated by DOT&PF but with day-to-day maintenance activities provided through DOT&PF funded contract. Contract airports may still require some maintenance services to be provided by DOT&PF as well as possibly other contractors, i.e. electrical, building, heavy re-surfacing repairs, large scale brushing, or other repairs that may be outside the scope of the standard maintenance contract.
> **DOT M&O**: includes airports with onsite DOT&PF maintenance crews or airports maintained by DOT&PF crews from satellite maintenance stations.
> **Local Sponsor**: includes airports not owned and/or operated by DOT&PF.
> **N/A**: includes airports where ownership and/or maintenance is uncertain.

M&O District: Maintenance and Operations District.

NPIAS: National Plan of Integrated Airport Systems.

> **FAA NPIAS**: The Federal Aviation Administration National Plan of Integrated Airport Systems identifies airports, the roles they serve, and eligibility for federal funding under the Airport Improvement Program (AIP).
> **AASP NPIAS**: The Alaska Aviation System Plan classifications take into account the unique characteristics of Alaska to further clarify the specific role an airport fulfills in the state transportation system.

OR&EE: Overrun and Elephant Ear describe areas on a runway with limited aviation operations.

Part 139: U.S. airports serving certain air carrier operations are required to be certificated by the Federal Aviation Administration.

PCC: Portland cement concrete pavement.

PMP: Pavement Management Program.

WRCC: Western Regional Climate Center.

INTRODUCTION

This report documents the development of tabular data collected on an individual airport basis for use in the Airport PMP. We created a way to store, categorize, and compare copious data collected from PAVER as well as the Federal Aviation Administration (FAA), Alaska Aviation System Plan (AASP), and the Western Regional Climate Center (WRCC) websites. The information was then used to help develop custom prediction models, unit costs, and maintenance and rehabilitation plans. Table 1 through Table 7 group data into categories to sort the information on a per airport basis.

Table 1 - General PAVER and Airport Information

PAVER Network ID	Airport Name	FAA Site ID	FAA ID	ICAO Code	NPIAS Number	Network Area (SF) as of (10/1/2025)
Adak	Adak Airport	50009.*A	ADK	PADK	02-0001	4,036,542
Akutan	Akutan Airport	50022.1*A	7AK	PAUT	02-0005	445,948
Aniak	Aniak Airport	50038.*A	ANI	PANI	02-0019	1,099,403
Atka	Atka Airport	50040.5*A	AKA	PAAK	02-0394	590,000
Barrow	Wiley Post-Will Rogers Airport	50054.3*A	BRW	PABR	02-0026	2,466,328
Bethel	Bethel Airport	50061.1*A	BET	PABE	02-0029	4,305,386
Birchwood	Birchwood Airport	50069.*A	BCV	PABV	02-0034	1,994,695
Clear	Clear Airport	50109.01*A	Z84	PACL	02-0420	635,013
Cold Bay	Cold Bay Airport	50114.*A	CDB	PACD	02-0065	3,129,240
Cordova	Merle K. (Mudhole) Smith Airport	50124.*A	CDV	PACV	02-0067	1,900,713
Deadhorse	Deadhorse Airport	50140.7*A	SCC	PASC	02-0339	3,023,013
Dillingham	Dillingham Airport	50153.*A	DLG	PADL	02-0078	1,966,900
Fairbanks	Fairbanks International Airport	50219.*A	FAI	PAFA	02-0096	9,639,257
Galena	Galena Airport	50258.*A	GAL	PAGA	02-0102	2,105,726
Gambell	Gambell Airport	50260.*A	GAM	PAGM	02-0103	564,150
Gulkana	Gulkana Airport	50281.*A	GKN	PAGK	02-0110	924,952
Gustavus	Gustavus Airport	50284.*A	GST	PAGS	02-0111	2,439,952
Haines	Haines Airport	50296.*A	HNS	PAHN	02-0112	1,055,266
Healy R.	Healy River Airport	50308.*A	HRR	PAHV	02-0414	489,782
Homer	Homer Airport	50320.*A	HOM	PAHO	02-0122	1,591,705
Hoonah	Hoonah Airport	50321.01*A	HNH	PAOH	02-0125	597,958
Iliamna	Iliamna Airport	50340.*A	ILI	PAIL	02-0132	1,713,282
Juneau	Juneau International Airport	50385.*A	JNU	PAJN	02-0133	4,889,678
Kake	Kake Airport	50393.01*A	AFE	PAFE	02-0398	528,469
Kenai	Kenai Municipal Airport	50410.*A	ENA	PAEN	02-0142	4,246,828
Ketchikan	Ketchikan International Airport	50412.03*A	KTN	PAKT	02-0144	2,363,965
KingSalmon	King Salmon Airport	50416.*A	AKN	PAKN	02-0148	3,207,433
Klawock	Klawock Airport	50420.01*A	AKW	PAKW	02-0154	896,900
Kodiak	Kodiak Airport	50425.*A	ADQ	PADQ	02-0158	4,399,012
Kotzebue	Kotzebue (Ralph Wein Memorial) Airport	50429.*A	OTZ	PAOT	02-0160	1,985,801
McGrath	McGrath Airport	50467.*A	MCG	PAMC	02-0176	1,311,478
Merrill	Merrill Field	50035.*A	MRI	PAMR	02-0015	3,864,020
Nenana	Nenana Municipal Airport	50524.*A	ENN	PANN	02-0191	870,345
Nome	Nome Airport	50540.*A	OME	PAOM	02-0199	2,965,700
Northway	Northway Airport	50544.*A	ORT	PAOR	02-0203	826,441
Palmer	Palmer Airport (Palmer, Alaska)	50584.*A	PAQ	PAAQ	02-0211	3,821,448
Petersburg	Petersburg (James A. Johnson) Airport	50590.2*A	PSG	PAPG	02-0340	1,440,226
Point Hope	Point Hope Airport	50601.*A	PHO	PAPO	02-0226	454,414
Sand Point	Sand Point Airport	50684.4*A	SDP	PASD	02-0253	1,363,350
Seward	Seward Airport	50696.*A	SWD	PAWD	02-0259	1,204,641
Shishmaref	Shishmaref Airport	50701.01*A	SHH	PASH	02-0404	475,032
Sitka	Sitka Rocky Gutierrez Airport	50703.*A	SIT	PASI	02-0268	2,117,332
Skagway	Skagway Airport	50704.*A	SGY	PAGY	02-0270	1,003,684
Soldotna	Soldotna Municipal Airport	50713.2*A	SXQ	PASX	02-0274	3,088,691
StGeorge	Saint George Airport	50680.4*A	PBV	PAPB	02-0416	932,650
StPaul	Saint Paul Airport	50682.*A	SNP	PASN	02-0277	1,311,035
Talkeetna	Talkeetna Airport	50738.*A	TKA	PATK	02-0287	804,604
Tok	Tok Junction Airport	50764.72*A	6K8	PFTO	02-0412	407,166
Unalakleet	Unalakleet	50799.*A	UNK	PAUN	02-0309	1,508,949
Unalaska	Unalaska/Dutch Harbor Airport	50801.*A	DUT	PADU	02-0082	919,344
Valdez	Valdez Airport	50825.1*A	VDZ	PAVD	02-0311	2,360,605
Wasilla	Wasilla Airport	50870.3*A	IYS	PAWS	02-0417	1,807,157
Wrangell	Wrangell Airport	50905.2*A	WRG	PAWG	02-0323	1,481,277
Yakutat	Yakutat Airport	50920.*A	YAK	PAYA	02-0327	3,534,815

Table 2 - Family Curves / Models and Deterioration

PAVER Network ID	Family Model Sub Region	Number of Paved Runways	Runway Straight Line Deterioration (No OR&EE)	Runway 6100 – AC (No OR&EE)	Runway 6200 – AC (No OR&EE)	Runway 6200 - PCC (No OR&EE)	Runway 6300 - AC (No OR&EE)
Adak	Southcoast Low Deterioration	2	2.01	1.9	2.06		
Akutan	Southcoast Very Low Deterioration	1	0.72	0.72			
Aniak	Central Moderate Deterioration	1	3.96	3.96			
Atka	Southcoast Low Deterioration	1	2.12	2.12			
Barrow	Northern High Deterioration	1	4.22	4.22			
Bethel	Central High Deterioration	2	2.80	3.00			3.15
Birchwood	Central Low Deterioration	2	1.59	1.65	1.55		
Clear	Northern Low Deterioration	1	1.79	1.79			
Cold Bay	Southcoast Very Low Deterioration	2	1.52	1.65	0.98		
Cordova	Northern Low Deterioration	1	1.39	1.39			
Deadhorse	Northern Moderate Deterioration	1	3.83	3.83			
Dillingham	Central Moderate Deterioration	1	3.40	3.40			
Fairbanks	Northern Moderate Deterioration	2	2.36	2.33	2.51		
Galena	Northern High Deterioration	1	2.08	2.08			
Gambell	Northern Moderate Deterioration	1	2.48	2.48			
Gulkana	Northern Low Deterioration	1	2.12	2.12			
Gustavus	Southcoast Very Low/Low Deterioration	2	1.05	0.88	1.32		
Haines	Southcoast Low Deterioration	1	1.50	1.50			
Healy R.	Northern Moderate Deterioration	1	2.26	2.26			
Homer	Central Low Deterioration	1	1.69	1.69			
Hoonah	Southcoast Low Deterioration	1	1.50	1.50			
Iliamna	Southcoast Low Deterioration	2	2.05	2.05	2.05		
Juneau	Southcoast Moderate Deterioration	1	2.54	2.54			
Kake	Southcoast Low Deterioration	1	1.53	1.53			
Kenai	Central High Deterioration	1	3.58	3.58			
Ketchikan	Southcoast Moderate Deterioration	1	3.16	3.16			
KingSalmon	Southcoast Low/Moderate Deterioration	2	2.76	1.43	3.46		
Klawock	Southcoast Low Deterioration	1	1.40	1.40			
Kodiak	Southcoast Low Deterioration	3	2.10	2.64	1.62		2.2
Kotzebue	Northern Low Deterioration	1	2.93	2.93			
McGrath	Central Moderate Deterioration	1	2.79	2.79			
Merrill	Central Moderate Deterioration	2	2.00	1.97	2.04		
Nenana	Northern Low Deterioration	1	1.67	1.67			
Nome	Northern Moderate Deterioration	2	3.23	3.38	3.04		
Northway	Northern High Deterioration	1	5.45	5.45			
Palmer	Central Low Deterioration	2	1.66	1.83	1.44		
Petersburg	Southcoast Moderate Deterioration	1	2.60	2.60			
Point Hope	Northern Moderate Deterioration	1	3.56	3.56			
Sand Point	Southcoast Very Low Deterioration	1	0.75	0.75			
Seward	Central Low Deterioration	2	1.41	1.39	1.44		
Shishmaref	Northern High Deterioration	1	4.88	4.88			
Sitka	Southcoast Low Deterioration	1	1.74	1.74			
Skagway	Southcoast Low Deterioration	1	1.64	1.64			
Soldotna	Central Moderate Deterioration	1	1.98	1.98			
StGeorge	Southcoast Very Low Deterioration	1	0.71	0.71			
StPaul	Southcoast Very Low Deterioration	1	0.66	0.66			
Talkeetna	Central Moderate Deterioration	1	2.34	2.34			
Tok	Northern High Deterioration	1	4.44	4.44			
Unalakleet	Northern Moderate Deterioration	2	2.88	2.69	3.07		
Unalaska	Southcoast Very Low Deterioration	1	4.82	4.82			
Valdez	Northern Moderate Deterioration	1	2.71	2.71			
Wasilla	Central Low Deterioration	1	1.77	1.77			
Wrangell	Southcoast Low Deterioration	1	2.07	2.07			
Yakutat	Southcoast Very Low/Moderate Deterioration/PCC	2	2.32	3.66	1.06	0.77	

Table 3 - Alaska Department of Transportation Information

PAVER Network ID	Region	M&O District	AASP Classification	Maintenance Provider	AASP NPIAS Airport Category	AASP NPIAS Airport Sub Category
Adak	Southcoast	Kodiak-Aleutian	Community Off-Road	DOT M&O	CS	Nonprimary
Akutan	Southcoast	Kodiak-Aleutian	Community Off-Road	DOT M&O	GA	Basic
Aniak	Central	Southwest	Regional Hub	DOT M&O	CS	Non hub
Atka	Southcoast	Kodiak-Aleutian	Community Off-Road	Contract	GA	Basic
Barrow	Northern	Dalton	Regional Hub	DOT M&O	CS	Non hub
Bethel	Central	Southwest	Regional Hub	DOT M&O	CS	Non hub
Birchwood	Central	Anchorage	Local High Activity	DOT M&O	GA	Local
Clear	Northern	Denali / Rural	Local Low Activity	DOT M&O	GA	Unclassified
Cold Bay	Southcoast	Kodiak-Aleutian	Regional Hub	DOT M&O	CS	Nonprimary
Cordova	Northern	Valdez	Regional Hub	DOT M&O	CS	Non hub
Deadhorse	Northern	Dalton	Regional Hub	DOT M&O	CS	Non hub
Dillingham	Central	Southwest	Regional Hub	DOT M&O	CS	Non hub
Fairbanks	Northern	AIAS	Medium & Small Hub	DOT M&O	CS	Small Hub
Galena	Northern	Denali / Rural	Regional Hub	DOT M&O	CS	Nonprimary
Gambell	Northern	Western	Community Off-Road	Contract	CS	Nonprimary
Gulkana	Northern	Tazlina	Community On-Road	DOT M&O	GA	Local
Gustavus	Southcoast	Southeast	Regional Hub	DOT M&O	CS	Non hub
Haines	Southcoast	Southeast	Community On-Road	DOT M&O	CS	Non hub
Healy R.	Northern	Denali / Rural	Community On-Road	DOT M&O	GA	Basic
Homer	Central	Kenai Peninsula	Regional Hub	DOT M&O	CS	Non hub
Hoonah	Southcoast	Southeast	Community Off-Road	DOT M&O	CS	Nonprimary
Iliamna	Southcoast	Kodiak-Aleutian	Regional Hub	DOT M&O	CS	Nonprimary
Juneau	Southcoast	-	Medium & Small Hub	Local Sponsor	CS	Non hub
Kake	Southcoast	Southeast	Community Off-Road	DOT M&O	GA	Basic
Kenai	Central	-	Regional Hub	Local Sponsor	CS	Non hub
Ketchikan	Southcoast	Southeast	Regional Hub	Contract	CS	Non hub
KingSalmon	Southcoast	Kodiak-Aleutian	Regional Hub	DOT M&O	CS	Non hub
Klawock	Southcoast	Southeast	Community Off-Road	DOT M&O	CS	Non hub
Kodiak	Southcoast	Kodiak-Aleutian	Regional Hub	DOT M&O	CS	Non hub
Kotzebue	Northern	Western	Regional Hub	DOT M&O	CS	Non hub
McGrath	Central	Southwest	Regional Hub	DOT M&O	GA	Local
Merrill	Central	-	Local High Activity	-	CS	Non hub
Nenana	Northern	-	Local High Activity	-	GA	Basic
Nome	Northern	Western	Regional Hub	DOT M&O	CS	Non hub
Northway	Northern	Tok	Community On-Road	DOT M&O	GA	Basic
Palmer	Central	-	Community On-Road	-	GA	Local
Petersburg	Southcoast	Southeast	Regional Hub	DOT M&O	CS	Non hub
Point Hope	Northern	Western	Community Off-Road	Contract	CS	Nonprimary
Sand Point	Southcoast	Kodiak-Aleutian	Community Off-Road	DOT M&O	CS	Nonprimary
Seward	Central	Kenai Peninsula	Community On-Road	DOT M&O	GA	Local
Shishmaref	Northern	Western	Community Off-Road	Contract	CS	Nonprimary
Sitka	Southcoast	Southeast	Regional Hub	DOT M&O	CS	Non hub
Skagway	Southcoast	Southeast	Community On-Road	DOT M&O	CS	Nonprimary
Soldotna	Central	-	Local High Activity	-	GA	Local
StGeorge	Southcoast	Kodiak-Aleutian	Community Off-Road	Contract	GA	Basic
StPaul	Southcoast	Kodiak-Aleutian	Community Off-Road	Contract	CS	Nonprimary
Talkeetna	Central	Matanuska-Susitna	Community On-Road	DOT M&O	GA	Local
Tok	Northern	Tok	Community On-Road	DOT M&O	GA	Local
Unalakleet	Northern	Western	Regional Hub	DOT M&O	CS	Non hub
Unalaska	Southcoast	Kodiak-Aleutian	Regional Hub	DOT M&O	CS	Non hub
Valdez	Northern	Valdez	Regional Hub	DOT M&O	CS	Non hub
Wasilla	Central	-	Local High Activity	-	GA	Local
Wrangell	Southcoast	Southeast	Regional Hub	DOT M&O	CS	Non hub
Yakutat	Southcoast	Southeast	Regional Hub	DOT M&O	CS	Non hub

Table 4 - Federal Aviation Administration Information

PAVER Network ID	NPIAS Airport Category	Airport Category	Enplanements					
			(CY24)	(CY23)	(CY22)	(CY21)	(CY20)*	(CY19)
Adak	GA	None	2,179	2,149	2,616	2,205	1,611	3,159
Akutan	GA	None	2,225	2,236	1,739	1,275	1,057	3,068
Aniak	CS	None	5,579	4,707	4,971	3,935	2,672	13,854
Atka	GA	None	276	318	246	183	102	271
Barrow	P	Non hub	43,364	41,579	37,530	31,898	22,238	46,289
Bethel	P	Non hub	165,846	153,548	142,256	105,877	64,648	160,874
Birchwood	No Data	No Data	No Data	No Data	No Data	No Data	No Data	6
Clear	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Cold Bay	CS	None	3,543	3,023	3,240	3,814	6,323	8,004
Cordova	P	Non hub	18,641	18,244	16,844	15,058	10,264	19,388
Deadhorse	P	Non hub	96,967	82,296	73,334	64,245	67,676	71,822
Dillingham	P	Non hub	34,656	34,815	33,151	25,988	13,900	35,486
Fairbanks	P	Small Hub	574,012	548,679	513,160	450,694	233,484	562,420
Galena	P	Non hub	11,852	11,758	10,381	7,978	4,166	11,870
Gambell	CS	None	2,855	3,142	2,842	1,963	1,707	3,477
Gulkana	GA	None	367	303	420	408	150	31
Gustavus	P	Non hub	10,074	9,584	10,179	10,305	2,959	11,130
Haines	CS	None	6,362	6,306	7,253	7,206	4,093	10,013
Healy R.	GA	None	1,625	1,656	1,431	558	166	147
Homer	P	Non hub	27,482	34,682	35,407	30,972	9,677	46,367
Hoonah	CS	None	5,667	5,790	5,950	5,575	4,472	8,056
Iliamna	CS	None	5,544	5,749	4,280	3,933	2,900	6,446
Juneau	P	Non hub	436,457	440,279	403,587	306,512	164,447	459,191
Kake	CS	None	3,372	3,605	No Data	2,552	1,642	3,509
Kenai	P	Non hub	75,395	67,062	75,180	68,044	33,053	95,239
Ketchikan	P	Non hub	152,082	148,645	143,786	117,728	65,793	137,090
KingSalmon	P	Non hub	39,289	38,021	37,874	29,914	17,254	44,244
Klawock	P	Non hub	16,224	16,733	16,167	14,157	10,077	12,980
Kodiak	P	Non hub	86,579	85,183	82,913	72,905	40,218	85,655
Kotzebue	P	Non hub	60,547	60,124	56,851	46,305	30,633	67,876
McGrath	CS	None	2,676	2,575	2,700	2,228	1,207	2,388
Merrill	P	Non hub	32,601	30,269	31,905	22,907	23,025	26,505
Nenana	GA	None	9	3	No Data	24	No Data	10
Nome	P	Non hub	69,593	66,883	62,785	46,645	30,274	65,087
Northway	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Palmer	GA	None	3	2	32	1	7	214
Petersburg	P	Non hub	25,209	24,921	23,955	20,690	11,726	23,479
Point Hope	CS	None	3,998	4,052	3,572	2,844	2,012	4,151
Sand Point	CS	None	3,075	2,818	2,552	1,874	1,176	4,385
Seward	GA	None	9	6	10	14	21	6
Shishmaref	CS	None	3,282	3,477	3,552	2,822	1,603	4,072
Sitka	P	Non hub	98,066	96,214	94,648	80,366	38,343	90,839
Skagway	CS	None	4,607	4,953	5,293	3,082	1,807	8,044
Soldotna	GA	None	14	2	19	15	9	4
StGeorge	GA	None	256	274	247	198	108	389
StPaul	GA	None	1,620	1,775	1,769	1,533	652	3,056
Talkeetna	No Data	No Data	No Data	No Data	7	No Data	No Data	2
Tok	GA	None	407	486	406	298	277	202
Unalakleet	CS	None	7,030	8,312	8,137	6,594	4,359	15,911
Unalaska	P	Non hub	22,712	19,201	21,034	19,099	10,072	27,232
Valdez	CS	None	2,874	4,235	5,557	5,195	1,116	9,401
Wasilla	GA	None	7	16	No Data	No Data	28	7
Wrangell	P	Non hub	14,560	14,323	13,337	12,100	7,102	14,776
Yakutat	P	Non hub	11,923	12,105	12,139	10,899	5,959	12,808

*Enplanement values were affected due to COVID

Table 5 – Alaska Weather Conditions[1]

PAVER Network ID	Frozen Months	Frost Depth (Ft)	Temp: Max (°C)	Temp: Min (°C)	Annual Precipitation (in)	Runway Bound Base (Y/N)
Adak	0	0	16	-3	54.1	N
Akutan	0	0	27	-15	61	N
Aniak	6.5	Perm F	29	-48	19	N
Atka	3	1	16	-3	61	N
Barrow	8.2	Perm F	24	-46	5.4	N
Bethel	6.2	Perm F	29	-43	19.7	N
Birchwood	5.5	7	29	-32	15	Y
Clear	6.5	Perm F	29	-48	13	N
Cold Bay	3	2	22	-21	38	N
Cordova	2	1.5	27	-29	91	N
Deadhorse	8	Perm F	24	-46	4	N
Dillingham	6	9.5	29	-34	25	Y
Fairbanks	6.5	Perm F	32	-51	11.7	N
Galena	7	Perm F	29	-51	13	N
Gambell	7.5	Perm F	18	-30	18	N
Gulkana	6.5	Perm F	29	-48	11.8	N
Gustavus	4	2	29	-26	56	N
Haines	4	3	32	-26	48	N
Healy R.	6.5	10	29	-43	15	N
Homer	4.5	4	24	-26	23.9	N
Hoonah	0	0	26.7	-15.0	62	N
Iliamna	5	10	27	-40	25.6	N
Juneau	2	1	29	-24	67	N
Kake	3.5	1.5	24	-18	54	N
Kenai	5	6	27	-40	19	N
Ketchikan	0	0	29	-18	154	N
KingSalmon	5.5	7	28	-40	21.4	Y
Klawock	0	0	21	-9	88	N
Kodiak	3	0.5	24	-18	59	Y
Kotzebue	7	Perm F	27	-46	10	N
McGrath	6.5	10	29	-51	18.1	Y
Merrill	6	7	32	-34	16.4	N
Nenana	7	Perm F	32	-51	11	N
Nome	6.5	Perm F	27	-43	16	N
Northway	6.5	Perm F	29	-54	10	N
Palmer	5	6	27	-34	16	N
Petersburg	0	0	27	-23	105	N
Point Hope	8	Perm F	21	-46	6	N
Sand Point	0	0	21	-15	45	N
Seward	5	3	29	-23	69.7	N
Shishmaref	8	Perm F	18	-29	11	N
Sitka	0	0	24	-13	86	N
Skagway	4	3	29	-23	26	N
Soldotna	5.5	7	24	-34	17	N
StGeorge	5	7	16	-23	24.3	Y
StPaul	5	7	16	-23	24.3	Y
Talkeetna	6.4	10	29	-43	26.5	N
Tok	6.5	Perm F	32	-54	10	N
Unalakleet	7	Perm F	29	-43	13	N
Unalaska	0	0	27	-15	61	N
Valdez	4	2	24	-21	67.9	N
Wasilla	5	7	27	-37	18	N
Wrangell	0	0	28	-21	82	N
Yakutat	4	1.5	27	-26	140.4	N

[1]Temperature and Precipitation data collected using (https://wrcc.dri.edu/summary/Climsmak.html)

Table 6 - Form 5010 and Airport Questionnaire

PAVER Network ID	Part 139 (Y/N)	On Road Network (Y/N)	Crack Seal Frequency (Years)	Seal EQ Onsite (Y/N/M)	Treatment Candidate (Y/N)	Runway Year Paved	Runway current Age on 10/01/25
Adak	Y	N	none	Y	Y	6/1/1990	35.4
Akutan	N	N	5	N	Y	8/31/2012	13.1
Aniak	N	N	3	Y	N	7/6/2019	6.2
Atka	N	N	none	N	Y	9/1/2009	16.1
Barrow	Y	N	1	Y	N	7/1/2022	3.3
Bethel	Y	N	1	Y	N	7/1/2023	2.3
Birchwood	N	Y	5	M	Y	9/1/2012	13.1
Clear	N	Y	5	N	Y	9/1/1996	29.1
Cold Bay	Y	N	none	N	Y	8/15/2018	7.1
Cordova	Y	N	1	Y	Y	9/1/1998	27.1
Deadhorse	Y	Y	1	Y	Y	8/1/2012	13.2
Dillingham	Y	N	1	Y	Y	7/1/2018	7.3
Fairbanks	Y	Y	1	Y	Y	7/1/2008	17.3
Galena	N	N	3	Y	Y	7/1/2018	7.3
Gambell	N	N	5	M	N	7/11/2018	7.2
Gulkana	N	Y	3	N	N	6/1/2007	18.3
Gustavus	Y	Y	none	N	Y	8/1/2022	3.2
Haines	N	Y	none	N	N	9/1/1992	33.1
Healy R.	N	Y	3	N	Y	8/31/1996	29.1
Homer	Y	Y	1	M	N	5/1/2025	0.4
Hoonah	N	N	none	N	Y	8/4/2002	23.2
Iliamna	N	N	Bi-annual	Y	Y	8/1/2003	22.2
Juneau	Y	Y	1	Y	Y	4/1/2015	10.5
Kake	N	N	none	N	N	9/1/2018	7.1
Kenai	Y	Y	3	N	Y	8/1/2006	19.2
Ketchikan	Y	Y	3	N	Y	8/1/2008	17.2
KingSalmon	Y	N	annual	Y	Y	7/14/2018	7.2
Klawock	N	N	none	N	N	9/1/2008	17.1
Kodiak	Y	Y	none	N	Y	8/1/2012	13.2
Kotzebue	Y	N	1	Y	N	9/1/2011	14.1
McGrath	N	N	3	Y	N	8/1/2022	3.2
Merrill	N	Y	3	N	Y	6/1/2005	20.3
Nenana	N	Y	3	N	Y	8/7/2003	22.2
Nome	Y	Y	1	Y	Y	7/1/2022	3.3
Northway	N	Y	3	N	Y	9/1/2009	16.1
Palmer	N	Y	3	N	Y	7/11/2017	8.2
Petersburg	Y	N	none	N	Y	8/1/2010	15.2
Point Hope	N	N	5	M	N	7/1/2024	1.3
Sand Point	Y	N	none	N	Y	6/1/2006	19.3
Seward	N	Y	5	M	Y	9/1/1983	42.1
Shishmaref	N	N	5	Y	N	8/17/2016	9.1
Sitka	Y	N	none	N	N	9/1/2012	13.1
Skagway	N	Y	none	N	Y	8/1/2000	25.2
Soldotna	N	Y	3	N	Y	6/1/2022	3.3
StGeorge	N	N	none	N	Y	8/30/2006	19.1
StPaul	N	N	none	N	Y	7/1/2005	20.3
Talkeetna	N	Y	5	M	Y	8/1/2017	8.2
Tok	N	Y	5	N	Y	7/25/2008	17.2
Unalakleet	N	N	5	Y	Y	8/1/2009	16.2
Unalaska	Y	N	1	Y	Y	8/1/2014	11.2
Valdez	Y	Y	1	Y	Y	9/30/2006	19.0
Wasilla	N	Y	3	N	Y	8/1/2021	4.2
Wrangell	Y	N	none	M	Y	6/1/2007	18.3
Yakutat	Y	N	none	M	Y	3/16/2016	9.6

Table 7 – Maintenance and Rehabilitation Information

PAVER Network ID	Crack Seal (Y/N)	Cold Patch (Y/N)	HMA Patch (Y/N)	Seal Coat (Y/N)	HMA Overlay (Y/N)	Mill & Fill (Y/N)	Mill, Stabilize Base, Pave (Y/N)	Reconst. Rebuild Str Sect. (Y/N)	Fuel Factor Group	Fuel Factor
Adak	Y	Y	N	Y	Y	Y	N	N	Southcoast Island	2.07
Akutan	Y	Y	N	Y	Y	Y	N	N	Southcoast	1.16
Aniak	Y	Y	N	Y	Y	Y	Y	Y	Western / Northern	2.34
Atka	Y	Y	N	Y	Y	Y	Y	N	Southcoast Island	2.07
Barrow	Y	Y	N	Y	Y	Y	Y	Y	Western / Northern	1.97
Bethel	Y	Y	N	Y	Y	Y	Y	Y	Western / Northern	1.87
Birchwood	Y	Y	Y	Y	Y	Y	Y	N	Anchorage	1.00
Clear	Y	Y	N	Y	Y	Y	N	N	Central Interior	1.07
Cold Bay	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.39
Cordova	Y	Y	N	Y	Y	Y	Y	N	Central Interior	1.13
Deadhorse	Y	Y	N	Y	Y	Y	Y	Y	Western / Northern	2.07
Dillingham	Y	Y	N	Y	Y	Y	N	N	Western / Northern	1.86
Fairbanks	Y	Y	Y	Y	Y	Y	Y	Y	Central Interior	1.19
Galena	Y	Y	N	Y	Y	Y	Y	Y	Western / Northern	2.21
Gambell	Y	Y	N	Y	Y	Y	Y	Y	Northwest	1.90
Gulkana	Y	Y	N	Y	Y	Y	Y	Y	Central Interior	1.00
Gustavus	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.24
Haines	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.24
Healy R.	Y	Y	N	Y	Y	Y	Y	N	Central Interior	0.98
Homer	Y	Y	Y	Y	Y	Y	Y	N	Central Interior	1.04
Hoonah	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.29
Iliamna	Y	Y	N	Y	Y	Y	Y	N	Western / Northern	2.17
Juneau	Y	Y	Y	Y	Y	Y	Y	N	Southcoast	1.37
Kake	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.37
Kenai	Y	Y	Y	Y	Y	Y	Y	N	Central Interior	1.04
Ketchikan	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.25
KingSalmon	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.79
Klawock	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.24
Kodiak	Y	Y	Y	Y	Y	Y	N	N	Southcoast	1.15
Kotzebue	Y	Y	N	Y	Y	Y	Y	-	Western / Northern	2.13
McGrath	Y	Y	N	Y	Y	Y	N	N	Western / Northern	2.26
Merrill	Y	Y	N	Y	Y	Y	Y	-	Anchorage	1.00
Nenana	Y	Y	N	Y	Y	Y	N	N	Central Interior	1.06
Nome	Y	Y	N	Y	Y	Y	Y	-	Northwest	1.58
Northway	Y	Y	N	Y	Y	Y	N	N	Central Interior	1.07
Palmer	Y	Y	Y	Y	Y	Y	Y	N	Anchorage	1.00
Petersburg	Y	Y	N	Y	Y	Y	Y	-	Southcoast	1.25
Point Hope	Y	Y	N	Y	Y	Y	N	N	Western / Northern	2.09
Sand Point	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.15
Seward	Y	Y	N	Y	Y	Y	Y	Y	Central Interior	1.04
Shishmaref	Y	Y	N	Y	Y	Y	Y	N	Northwest	1.76
Sitka	Y	Y	N	Y	Y	Y	Y	-	Southcoast	1.31
Skagway	Y	Y	N	Y	Y	Y	Y	N	Southcoast	1.24
Soldotna	Y	Y	Y	Y	Y	Y	Y	Y	Central Interior	1.04
StGeorge	Y	Y	N	Y	Y	Y	N	N	Southcoast Island	2.75
StPaul	Y	Y	N	Y	Y	Y	N	N	Southcoast Island	2.75
Talkeetna	Y	Y	N	Y	Y	Y	Y	Y	Central Interior	1.04
Tok	Y	Y	N	Y	Y	Y	N	N	Central Interior	1.07
Unalakleet	Y	Y	N	Y	Y	Y	N	N	Northwest	1.58
Unalaska	Y	Y	N	Y	Y	Y	Y	Y	Southcoast	1.25
Valdez	Y	Y	Y	Y	Y	Y	Y	Y	Central Interior	1.12
Wasilla	Y	Y	Y	Y	Y	Y	N	N	Anchorage	1.00
Wrangell	Y	Y	N	Y	Y	Y	Y	Y	Southcoast	1.26
Yakutat	Y	Y	N	Y	Y	Y	Y	Y	Southcoast	1.24

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Appendix B
Alaska Airport
Pavement Management Program
2025 Prediction Model Report

September 2025

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Pavement prediction models, also known as performance models or family curves, are developed within the PAVER software by analyzing historical data from PCI surveys and construction records. Pavements in the same region with similar characteristics, such as branch use and surface type, generally follow similar deterioration patterns. By grouping these pavements with similar characteristics into families, analysts can generate performance models for each family by examining numerous PCI versus pavement age data points from historical inspections. A deterioration curve is fitted to this data, and its correlation is evaluated using statistical measures.

The same family curve generated using the look-back procedure described above can be used in a forward-looking capacity to predict future pavement conditions as shown in Figure 1. For a particular future year, one can use the performance model to predict the future condition of a pavement section. The predicted future PCI is then compared to predefined PCI trigger values to determine whether the pavement section qualifies for preservation, major work, or reconstruction.

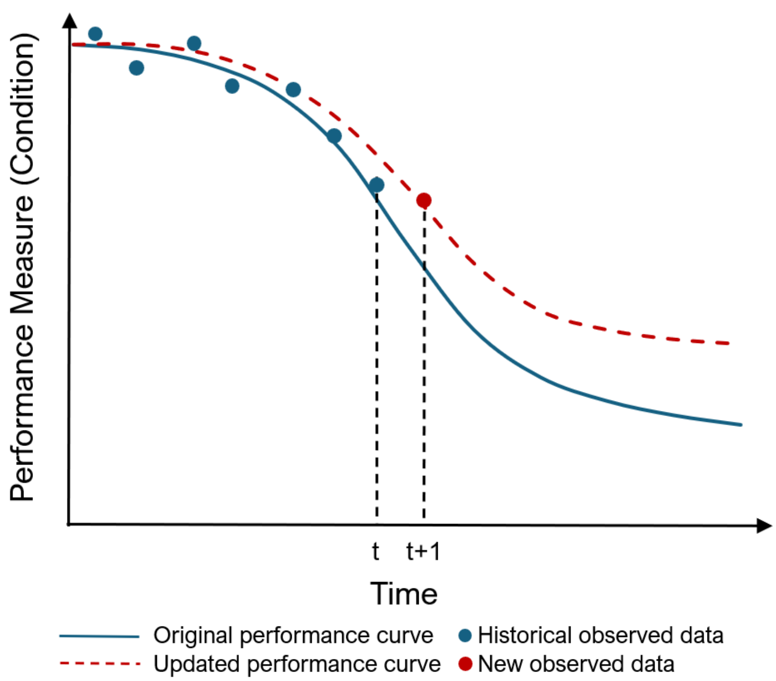


Figure 1—Development of an Updated Performance Curve from Historical Data

DEVELOPMENT OF CUSTOM PREDICTION MODELS FOR ALASKA PMP

From the fall of 2022 to the fall of 2024, Alaska DOT&PF and contracted personnel conducted pavement inspections at all 54 paved airports maintained by the State of Alaska. All data collected during these inspections have been used to produce the models included in this report. Initial performance models developed for the Alaska PMP underwent further successive refinements after careful review and analysis of the historical PCI survey data. We also consulted with Alaska DOT&PF maintenance and operations (M&O) staff to understand the availability of pavement treatment capabilities, geography, susceptibility to severe storm events, and access to the road network to improve the accuracy of the models.

Step 1—Group Airports by Alaska DOT&PF Region

The first attempt at refining the prediction models involved grouping airports together by each of the three regions designated by the Alaska DOT&PF (Northern, Central, Southcoast) shown in Figure 2.

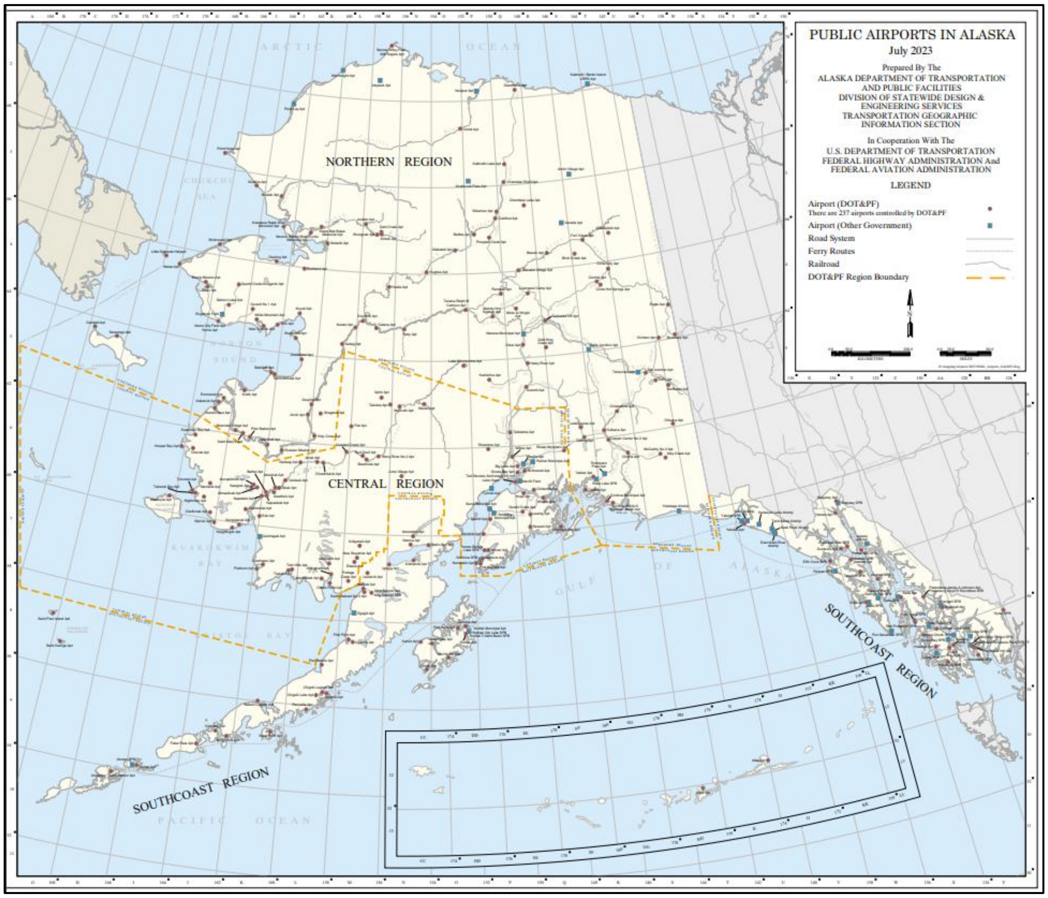


Figure 2—Alaska DOT&PF Region Boundaries[1]

Step 2—Separate Air Carrier Airports from General Aviation Airports

In addition to separating airports by Alaska DOT&PF administrative regions, we distinguished between airports that provide air carrier passenger operations and those airports that did not. The FAA provides an Airport Operating Certificate to airports to allow them to serve airlines providing passenger operations. These Part 139 certificated airports are required to comply with safety and emergency response requirements that are not required at general aviation airports.[2]

We created groups of airports based on the distinctions described in steps 1 and 2 and created runway prediction models for each group. While some improvement was noted, the prediction models still contained a significant number of outlier data points, indicating that further refinement was necessary.

[1] State of Alaska (2024), "Public Airports in Alaska", Official Alaska State Website, accessed on January 20, 2024: https://dot.alaska.gov/stwddes/gis/dataproducts/Public_Airports.pdf

[2] Federal Aviation Administration (2024), "Part 139 Airport Certification," US Department of Transportation, webpage, accessed on January 24, 2024 at: https://www.faa.gov/airports/airport_safety/part139_cert#guidance

Step 3—Create Subregional Categories

Refinement of the family curves continued by comparison and contrast of past performance among the airports within each of the three regions. In Step 3 we took a closer look at the geographical differences within each region to determine whether further geographic separation would improve the performance models. We developed a straight-line deterioration model for each airport and used this measure to confirm the geographical groupings within each region.

Central Region: We established a boundary in the Central Region that separates airports in the East from those in the West, as shown in Figure 3. The boundary separates airports in the East Subregion (highlighted blue), including the Kenai Peninsula and the vicinity around Anchorage north to Talkeetna, from those in the West Subregion. Upon establishing this boundary, the following distinguishing characteristics became apparent for most of the airports within the East and West Subregions:

Table 1—Central Region Airport Characteristics

Characteristic	East Subregion	West Subregion
On Alaska Road Network	Yes	No
Air Carrier Passenger Service	No	Yes
No. of Frozen Months per Year	<= 6	>= 6
Frost Penetration (ft)	< 7 avg	> 7 or permafrost
Runway PCI Straight-Line Deterioration (pts/yr)	2	3.5

Figure 3—Alaska Central East and West Subregions

Northern Region: In a similar manner, for the Central Region we established a boundary within the Northern Region to distinguish between those airports in a Coastal zone (highlighted red) in contrast to those in the Interior (highlighted blue) as shown in Figure 4. Based on a review of weather data and passenger enplanement statistics, it became apparent that the airports experience differences in environmental conditions and rates of pavement deterioration. The following distinguishing characteristics are apparent for most of the airports within the Coastal and Interior Subregions:

Table 2—Northern Region Airport Characteristics

Characteristic	Coastal Subregion	Interior Subregion
Western or Dalton M&O Districts	Yes	No
No. of Frozen Months per Year	>= 7	<= 7
On Alaska Road Network	No	Yes
Runway PCI Straight-Line Deterioration (pts/yr)	3.8	2

There were several outlier airports that did not exactly meet these subregional definitions. The outlier airports (highlighted grey) are all within the Tok M&O District, have runway PCIs of less than 40 and have very high runway straight-line deterioration rates. We excluded these outlier data points during the development of the Coastal and Interior Subregion prediction models.

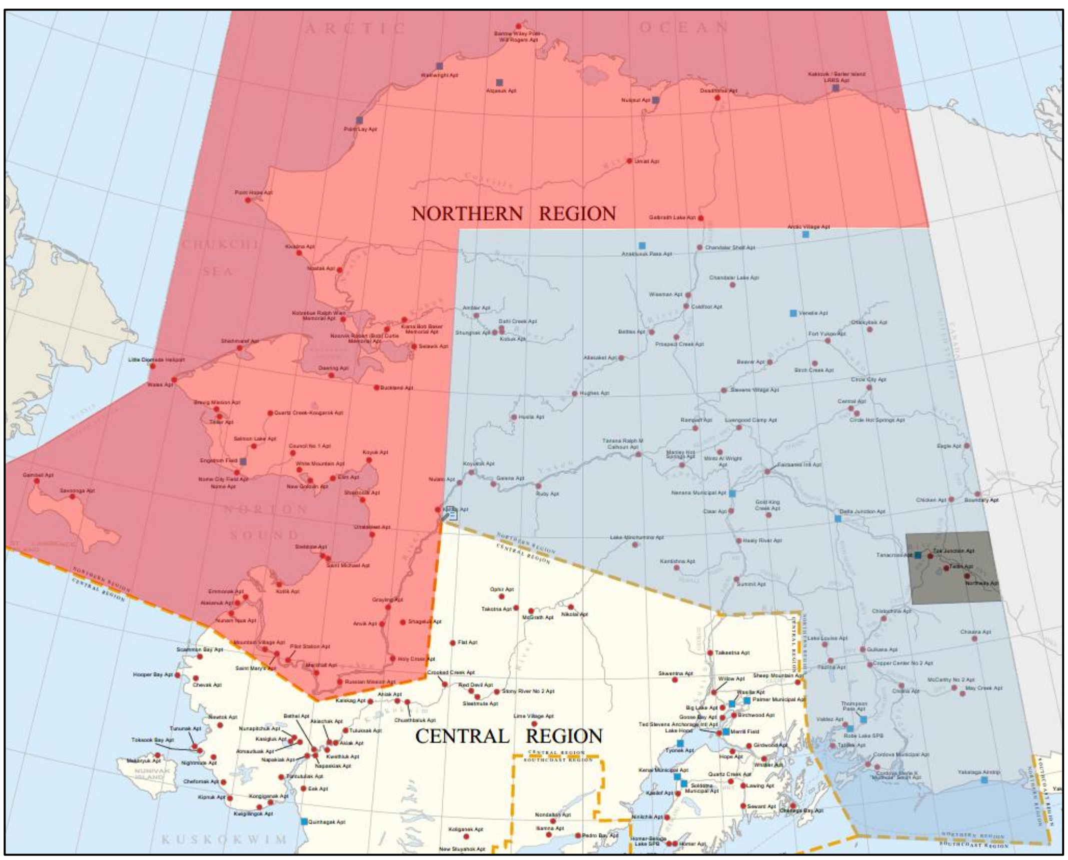


Figure 4—Alaska Northern Subregions

Southcoast Region: The Southcoast region is a vast geographic area that includes the Aleutian Island chain. We initially attempted to refine the performance models around geographic differences, such as Aleutian Island and Continental, but since all the airports in the Southcoast region are influenced by cold, wet weather patterns due to their proximity to the water, the underlying rationale for the geographic separation did not make as much sense as for the other regions. Furthermore, when we attempted an East and West boundary, we observed that the generated prediction models did not conform well to the traditional shape of a pavement deterioration curve and had a high number of outlier data points.

Rather than rely on geographic difference, we explored the direct use of the runway straight-line PCI deterioration model as a method of categorizing each individual runway within the region as shown in Table 3. Of the 23 airports in the Southcoast Region, seven have multiple runways. Since these runways do not always have the same deterioration rate, so we generated a straight-line deterioration rate for each runway. This resulted in three distinct ranges of runway deterioration. A low rate of deterioration less than 1 PCI point per year (highlighted green), a moderate deterioration rate between 1 and 2 PCI points per year (highlighted orange), and a high rate of deterioration of more than 2 PCI points per year (highlighted yellow) as shown in Figure 5.

Table 3—Southcoast Region Airport Characteristics

Characteristic	Low	Moderate	High
Runway PCI Straight-Line Deterioration (pts/yr)	< 1	1-2	> 2

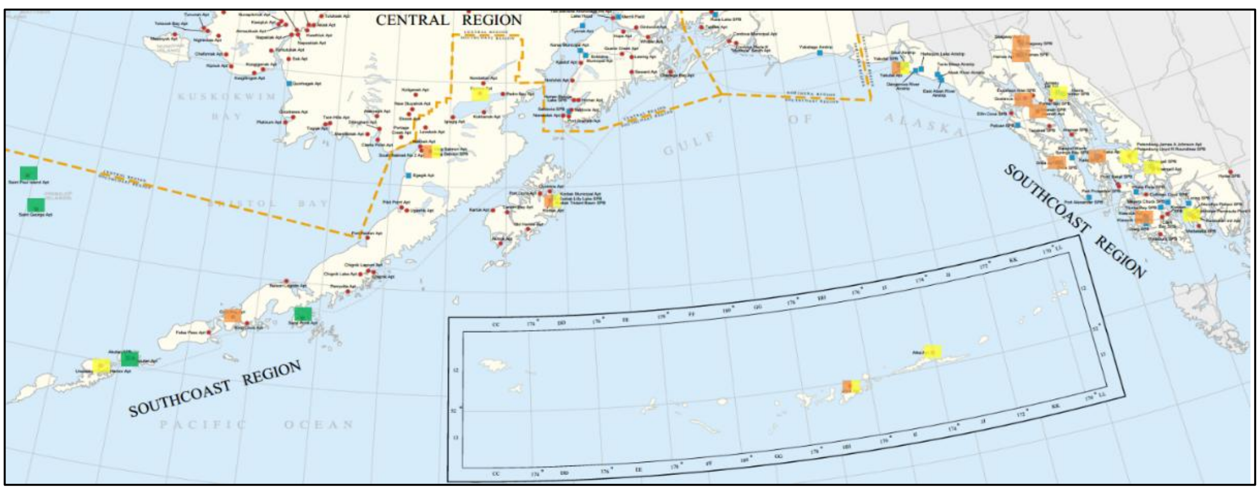


Figure 5—Alaska Southcoast Subregions

Step 4—Prediction Model for Concrete Pavements

The last area of refinement within the Alaska PMP was to separate airport pavement sections constructed of portland cement concrete (PCC) from those constructed of asphalt concrete (AC). PCC pavements represent less than two percent of the pavements within the Alaska PMP by area, so a single concrete model was developed for use by all concrete pavements.

PREDICTION MODEL SUMMARY

Following the series of refinements outlined in the preceding steps, the project team adopted the Southcoast Region methodology of applying runway straight-line PCI deterioration models. This approach was extended across all three Alaska DOT&PF Regions by designating each deterioration designation as a Sub Region within its respective Alaska DOT&PF region. The decision to standardize this modeling framework was based on its demonstrated effectiveness in capturing region-specific deterioration trends while maintaining consistency in predictive analysis across the statewide network.

This methodology resulted in grouping the airports in the Alaska PMP into a total of nine categories for use in categorizing AC pavements. For each AC pavement category, we developed two prediction models based on branch use as either a runway or apron/taxiway pavement. This resulted in 18 models for AC airport pavements. With the addition of a single PCC model, this resulted in a total of 19 unique family curves developed for use in the Alaska PMP, as detailed in Table 4.

Further, Table 2 in Appendix A (page 4) shows each airport with respect to the prediction model Sub Region they are assigned to.

Table 4—Alaska PMP Prediction Models

Alaska DOT&PF Region	Sub Region	Branch Use	Years to reach a PCI of 70	Years to reach a PCI of 60
Central	Low Runway Deterioration	Runway	16	22
		Apron / Taxiway	18	29
	Moderate Runway Deterioration	Runway	14	19
		Apron / Taxiway	18	25
	High Runway Deterioration	Runway	5	13
		Apron / Taxiway	9.5	15.5
Northern	Low Runway Deterioration	Runway	22	26
		Apron / Taxiway	15.5	21
	Moderate Runway Deterioration	Runway	12	17.5
		Apron / Taxiway	11	20.5
	High Runway Deterioration	Runway	6	11
		Apron / Taxiway	7	11
Southcoast	Very Low Runway Deterioration	Runway	28	37
		Apron / Taxiway	28	36
	Low Runway Deterioration	Runway	17	23
		Apron / Taxiway	19	29
	Moderate Runway Deterioration	Runway	11.5	18
		Apron / Taxiway	12	17
All Concrete			28	34

Figure 6 through Figure 24Figure 24 are graphical depictions of the family curves in the PAVER software. Each prediction model is characterized by an equation and relevant statistics that describe the closeness of fit.

Central Low Deterioration

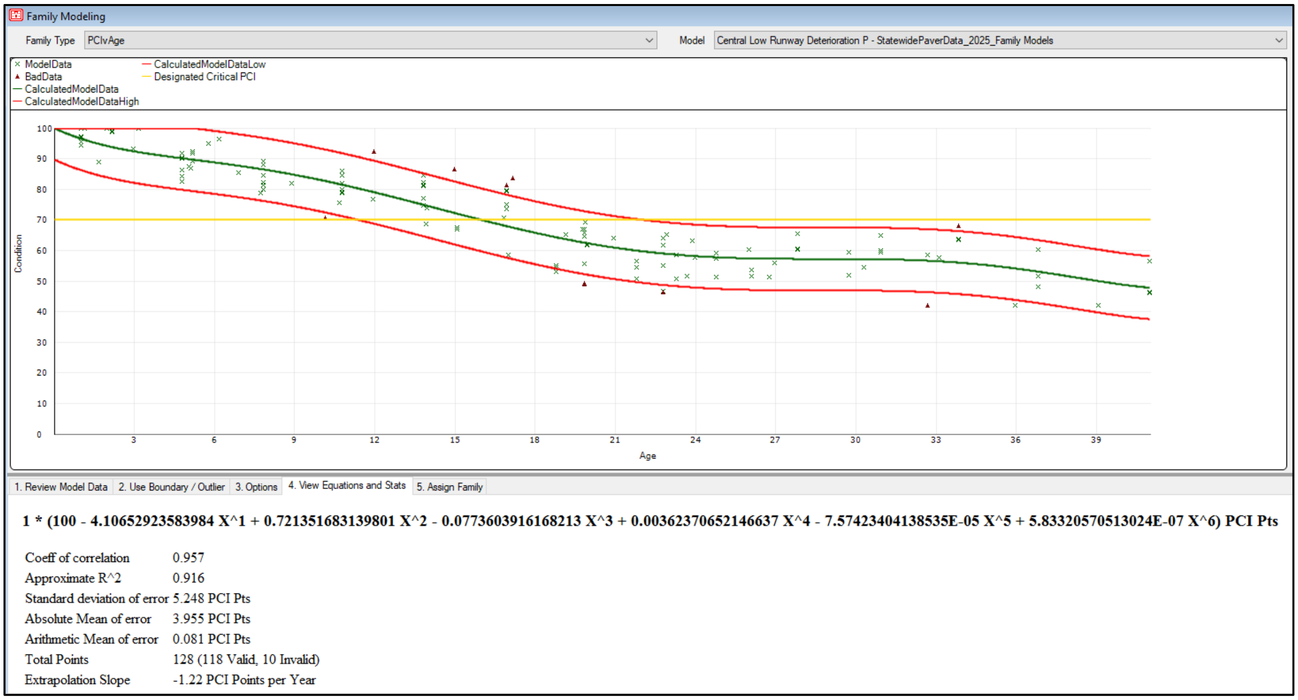


Figure 6—Central Low Deterioration Runway Model

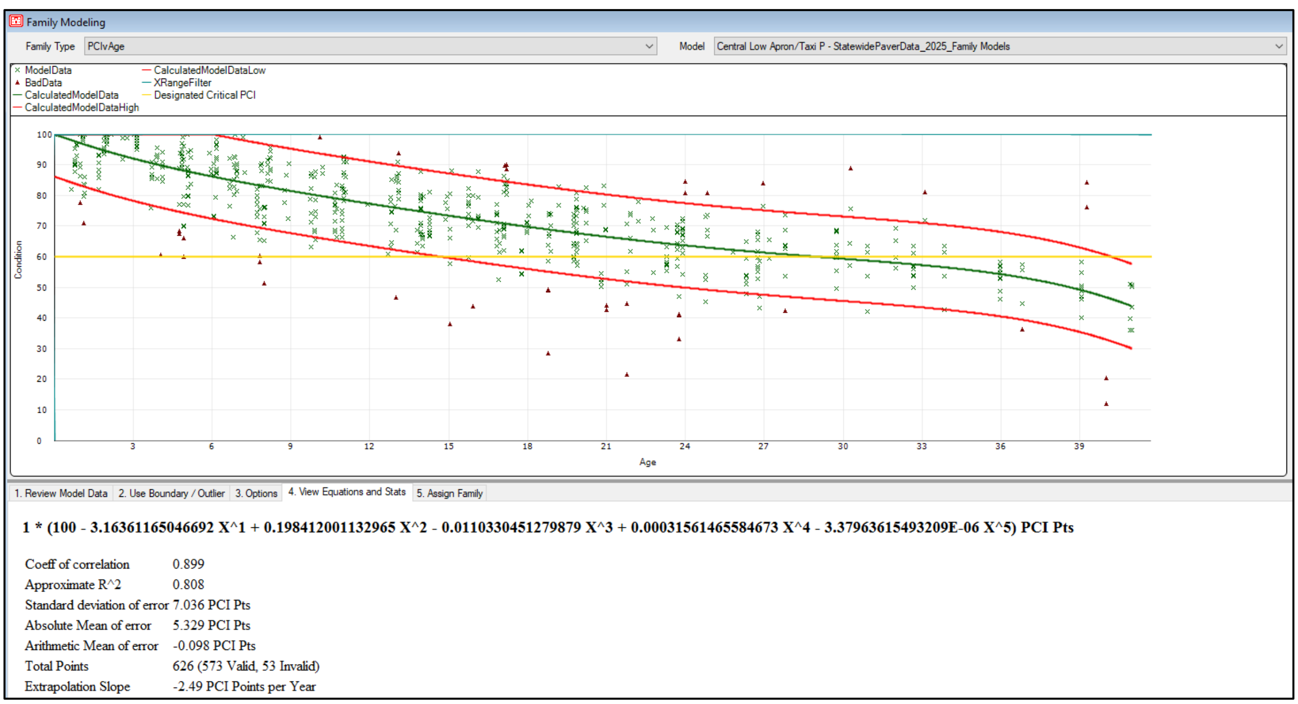
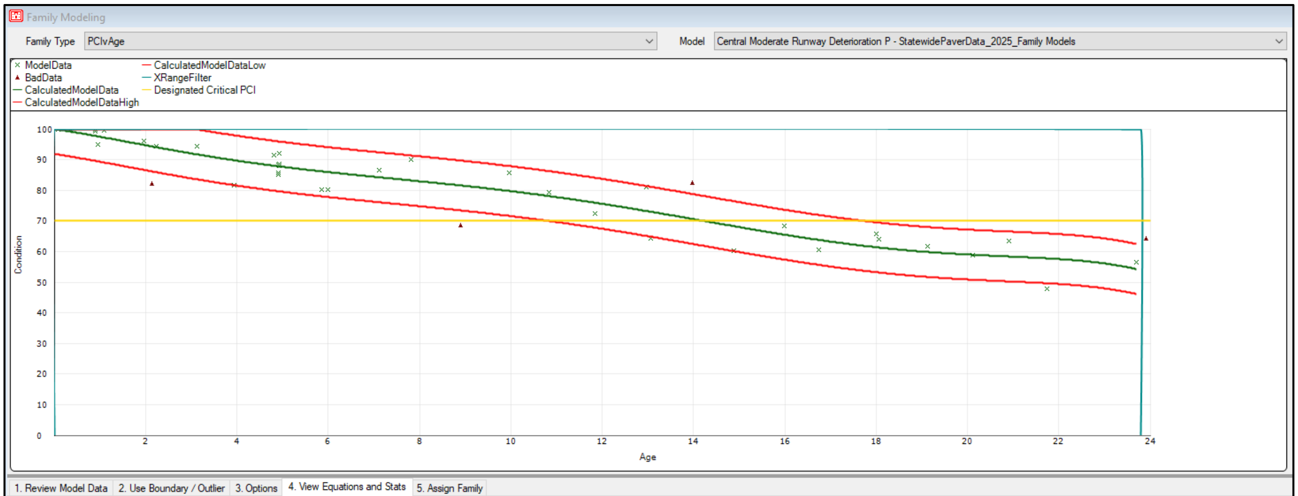


Figure 7—Central Low Deterioration Apron and Taxiway Model

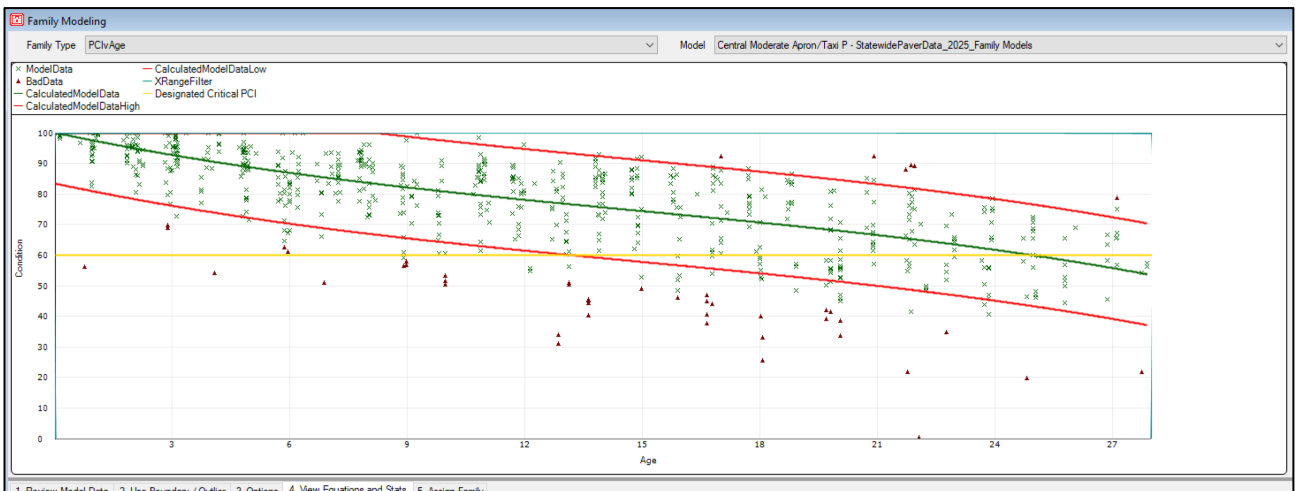
Central Moderate Deterioration



1 * (100 - 2.18947315216064 X^1 - 0.435180366039276 X^2 + 0.127656847238541 X^3 - 0.012868638150394 X^4 + 0.00054358976194635 X^5 - 8.20118111732882E-06 X^6) PCI Pts

Coeff of correlation	0.969
Approximate R^2	0.938
Standard deviation of error	4.156 PCI Pts
Absolute Mean of error	2.647 PCI Pts
Arithmetic Mean of error	0.093 PCI Pts
Total Points	41 (37 Valid, 4 Invalid)
Extrapolation Slope	-1.41 PCI Points per Year

Figure 8— Central Moderate Deterioration Runway Model



1 * (100 - 2.71089649200439 X^1 + 0.100561790168285 X^2 - 0.00225356291048229 X^3) PCI Pts

Coeff of correlation	0.829
Approximate R^2	0.687
Standard deviation of error	8.483 PCI Pts
Absolute Mean of error	6.237 PCI Pts
Arithmetic Mean of error	-0.148 PCI Pts
Total Points	737 (643 Valid, 94 Invalid)
Extrapolation Slope	-2.11 PCI Points per Year

Figure 9— Central Moderate Deterioration Apron and Taxiway Model

Central High Deterioration

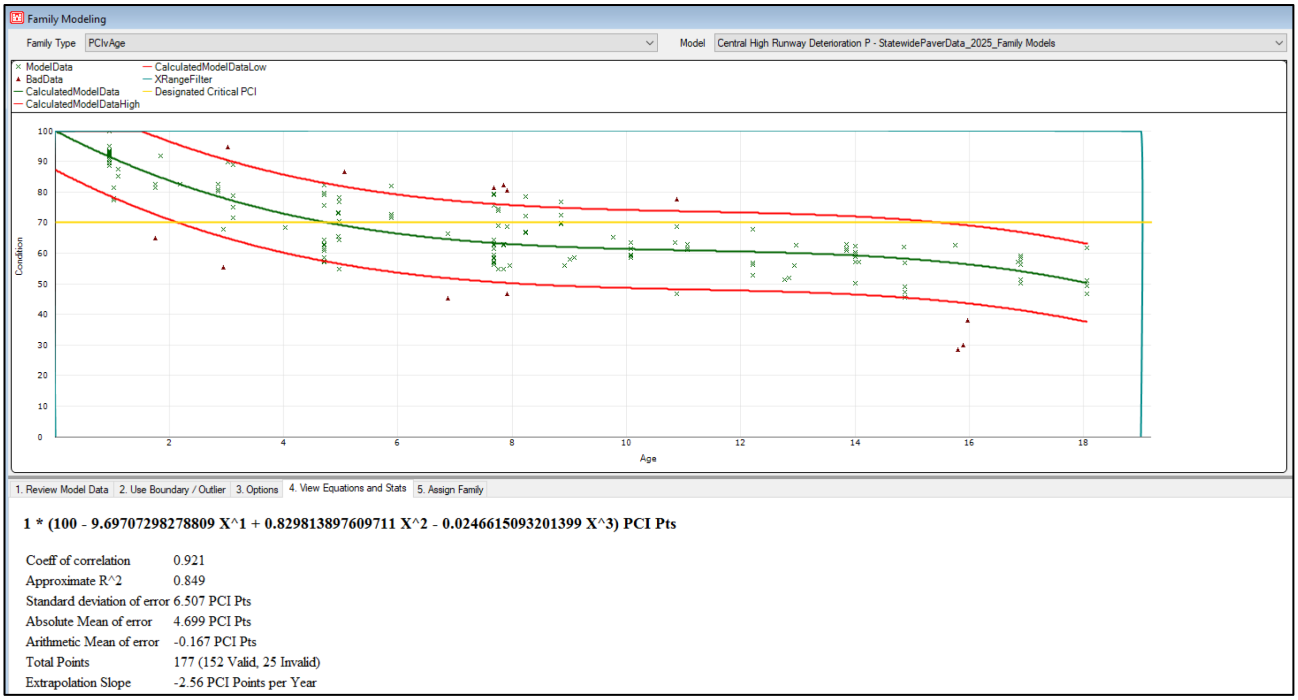


Figure 10— Central High Deterioration Runway Model

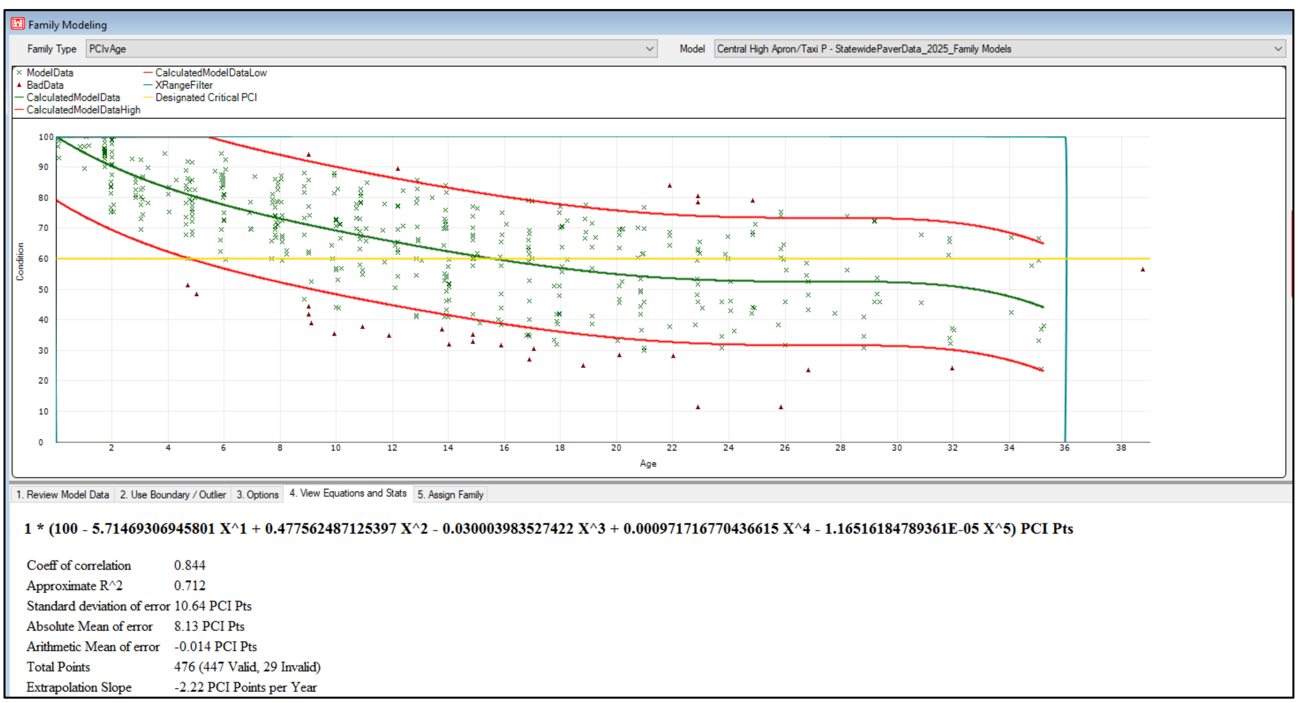


Figure 11— Central High Deterioration Apron and Taxiway Model

Northern Low Deterioration

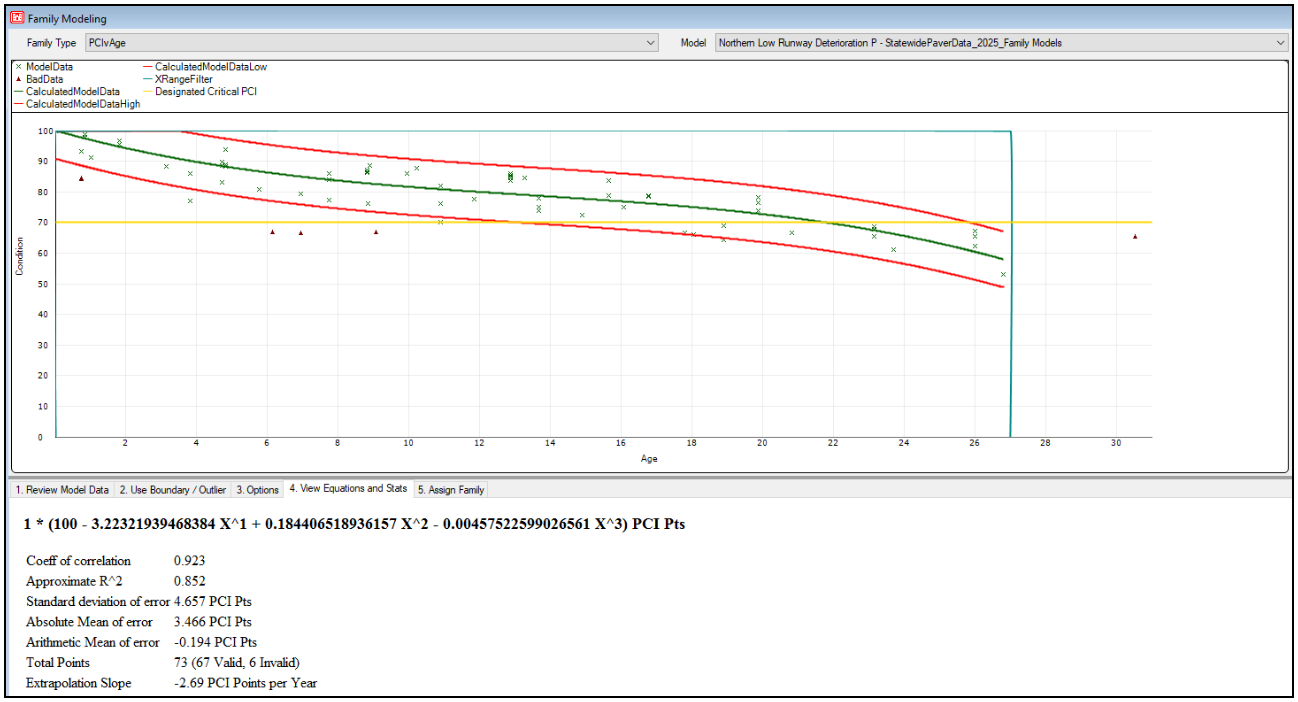


Figure 12—Northern Low Deterioration Runway Model

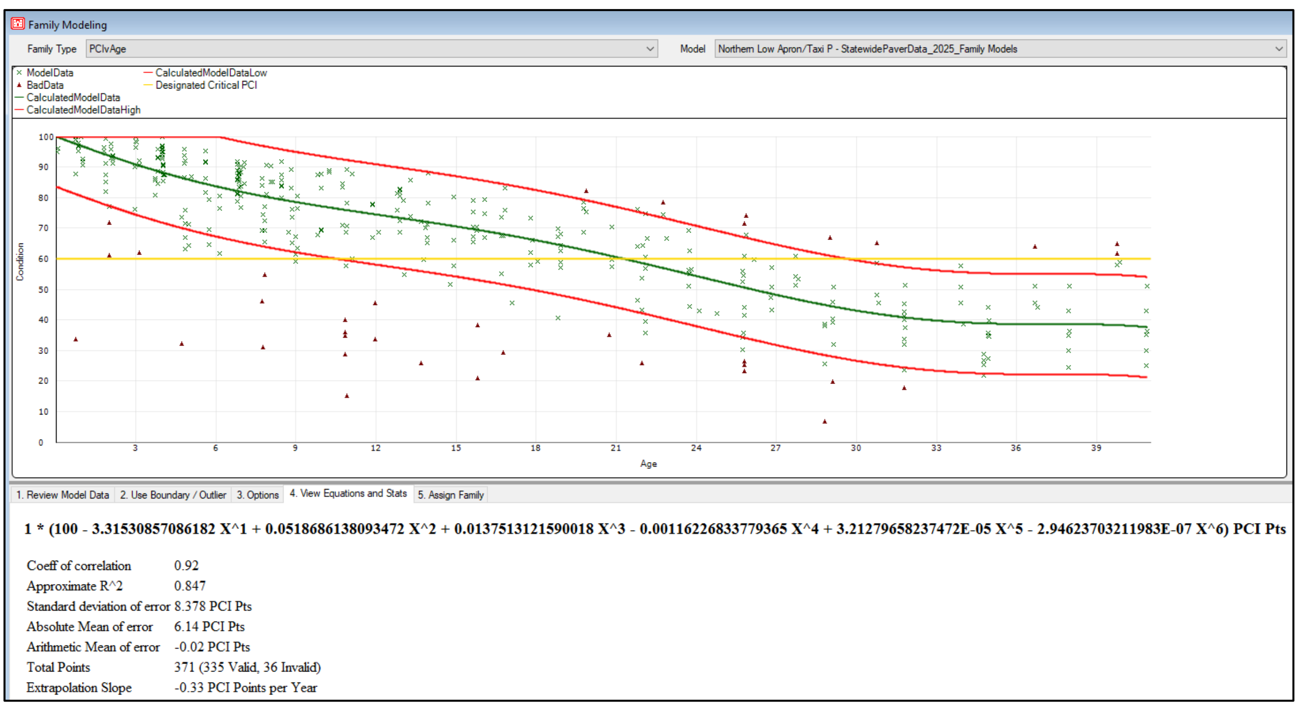


Figure 13—Northern Low Deterioration Apron and Taxiway Model

Northern Moderate Deterioration

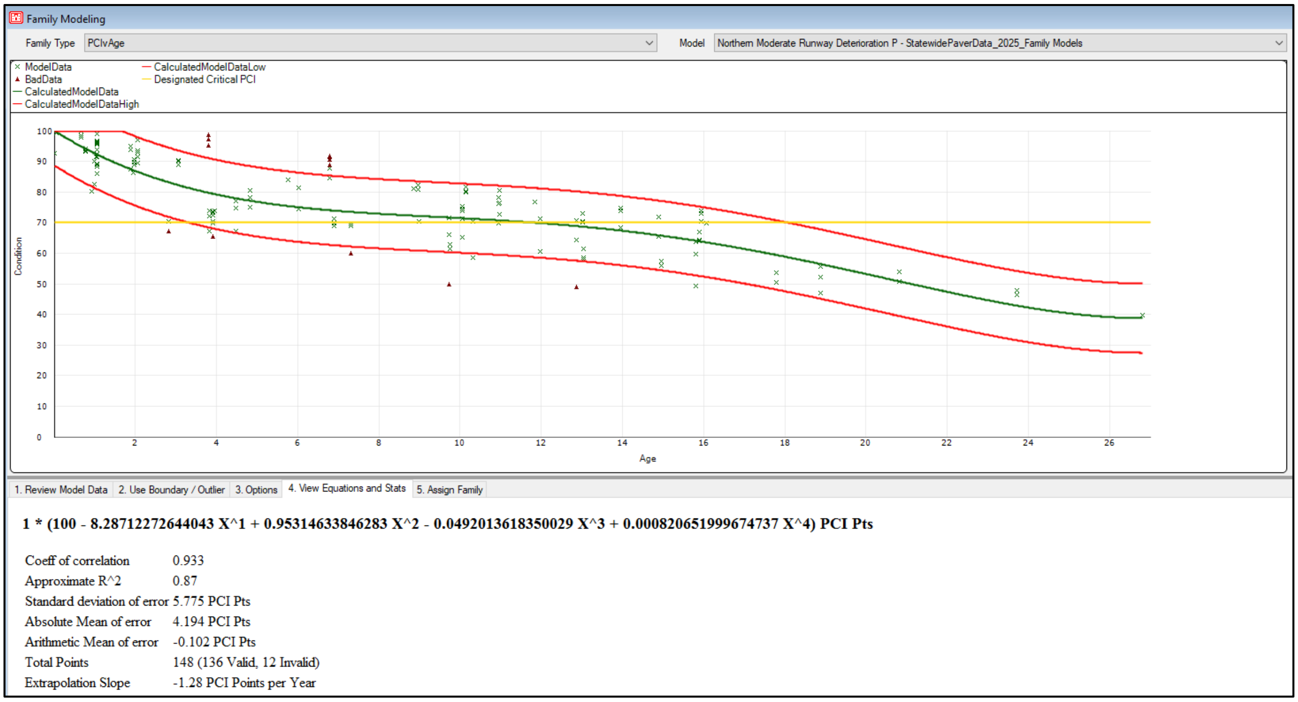


Figure 14—Northern Moderate Deterioration Runway Model

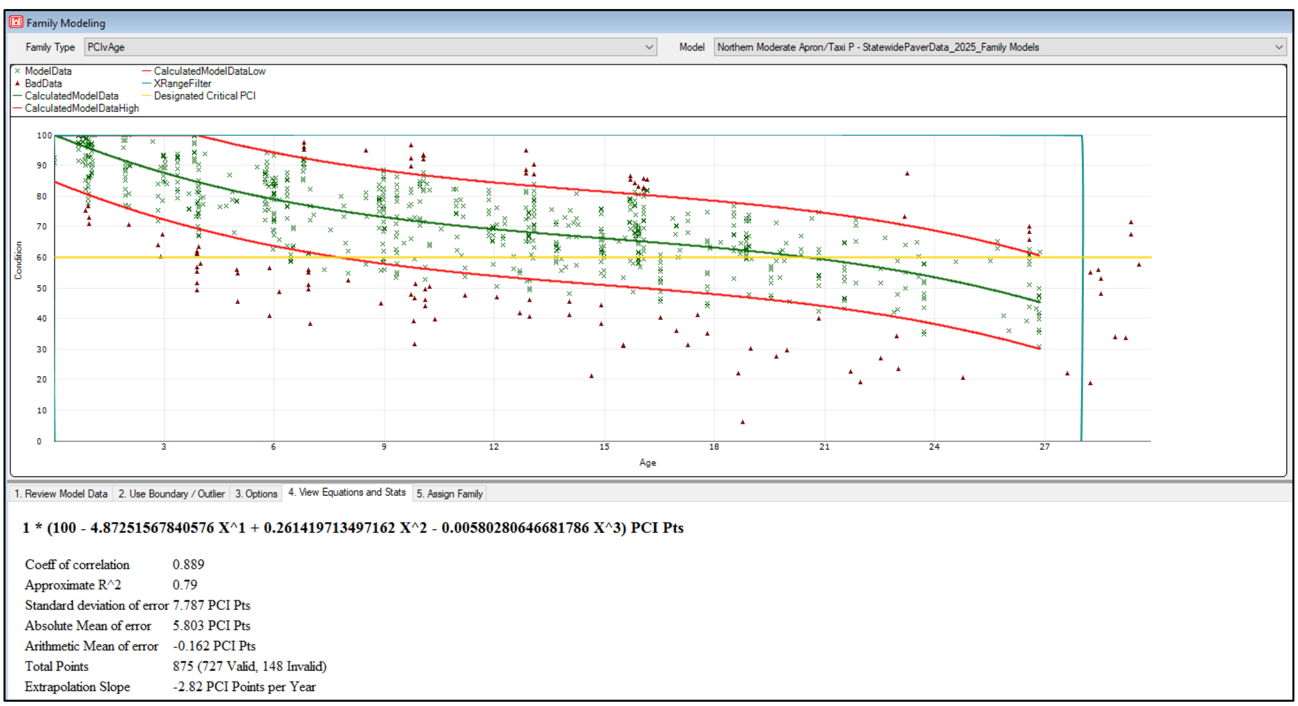
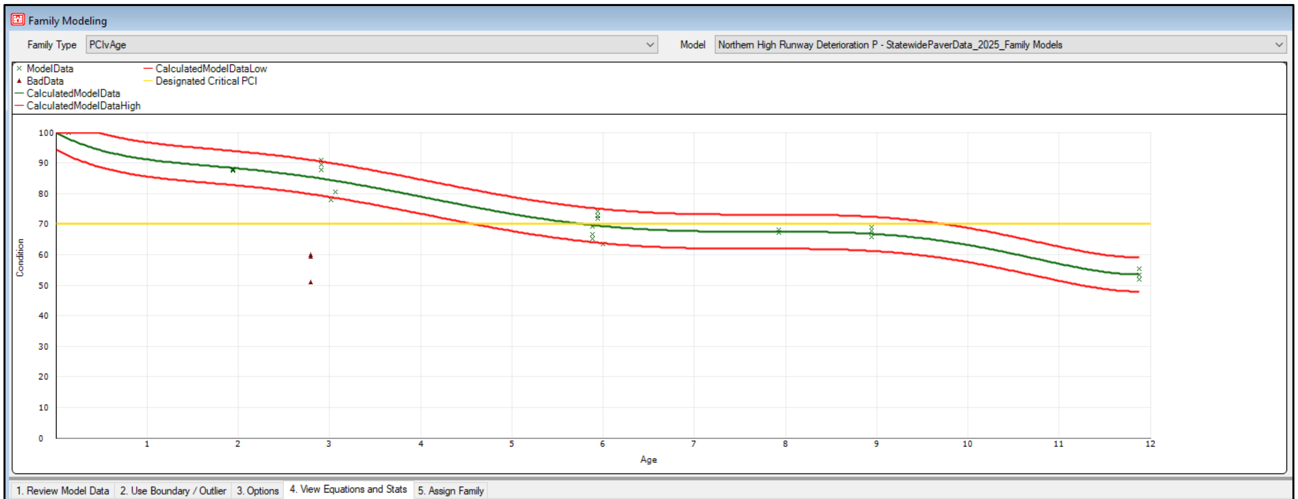


Figure 15—Northern Moderate Deterioration Apron and Taxiway Model

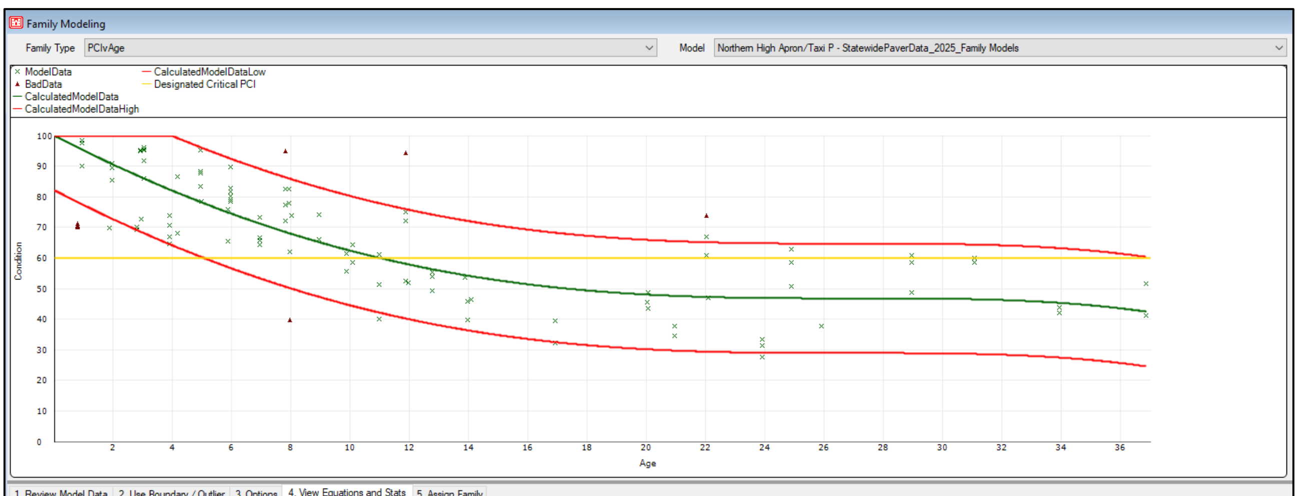
Northern High Deterioration



$$1 * (100 - 16.2469825744629 X^1 + 10.5481290817261 X^2 - 3.73083472251892 X^3 + 0.604251027107239 X^4 - 0.0446876659989357 X^5 + 0.00122789631132036 X^6) \text{ PCI Pts}$$

Coeff of correlation	0.987
Approximate R^2	0.974
Standard deviation of error	2.851 PCI Pts
Absolute Mean of error	1.652 PCI Pts
Arithmetic Mean of error	0.042 PCI Pts
Total Points	30 (27 Valid, 3 Invalid)
Extrapolation Slope	-4.47 PCI Points per Year

Figure 16—Northern High Deterioration Runway Model



$$1 * (100 - 4.98637676239014 X^1 + 0.115707442164421 X^2 + 0.00113796081859618 X^3 - 4.76374698337168E{-}05 X^4) \text{ PCI Pts}$$

Coeff of correlation	0.91
Approximate R^2	0.828
Standard deviation of error	9.121 PCI Pts
Absolute Mean of error	6.568 PCI Pts
Arithmetic Mean of error	-0.086 PCI Pts
Total Points	110 (102 Valid, 8 Invalid)
Extrapolation Slope	-0.97 PCI Points per Year

Figure 17—Northern High Deterioration Apron and Taxiway Model

Southcoast Very Low Deterioration

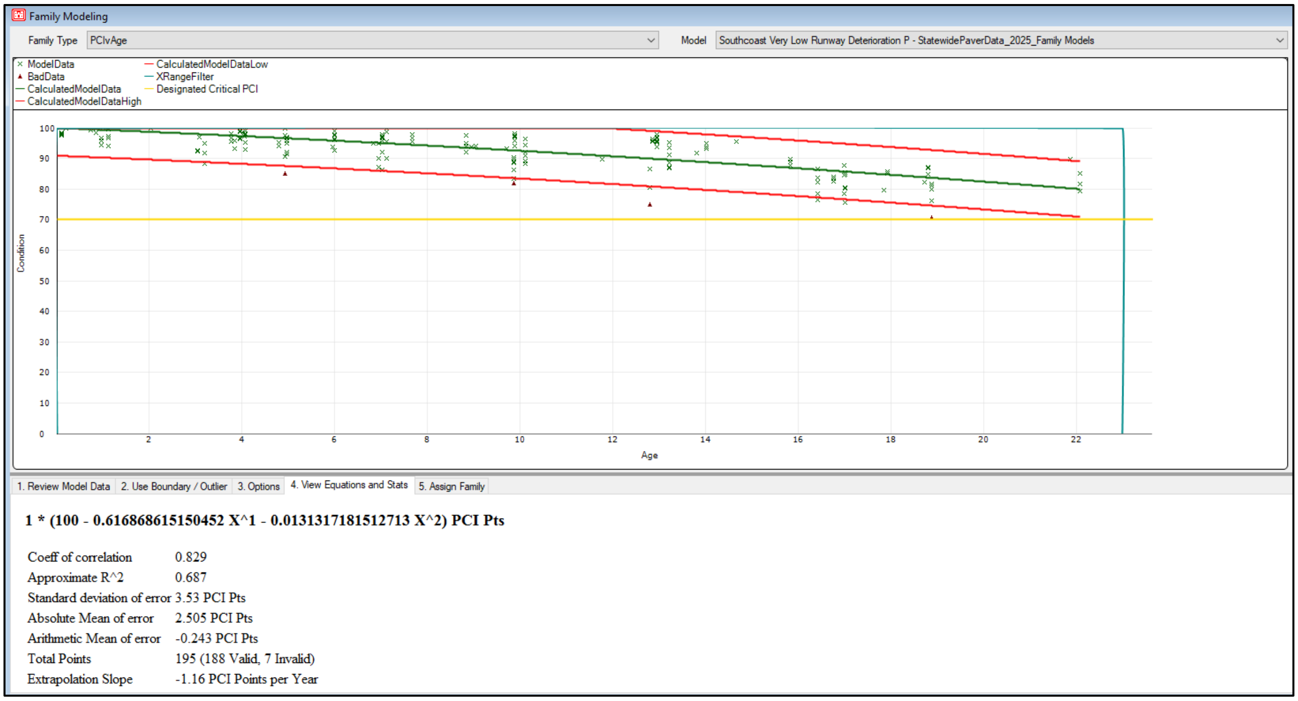


Figure 18—Southcoast Very Low Deterioration Runway Model

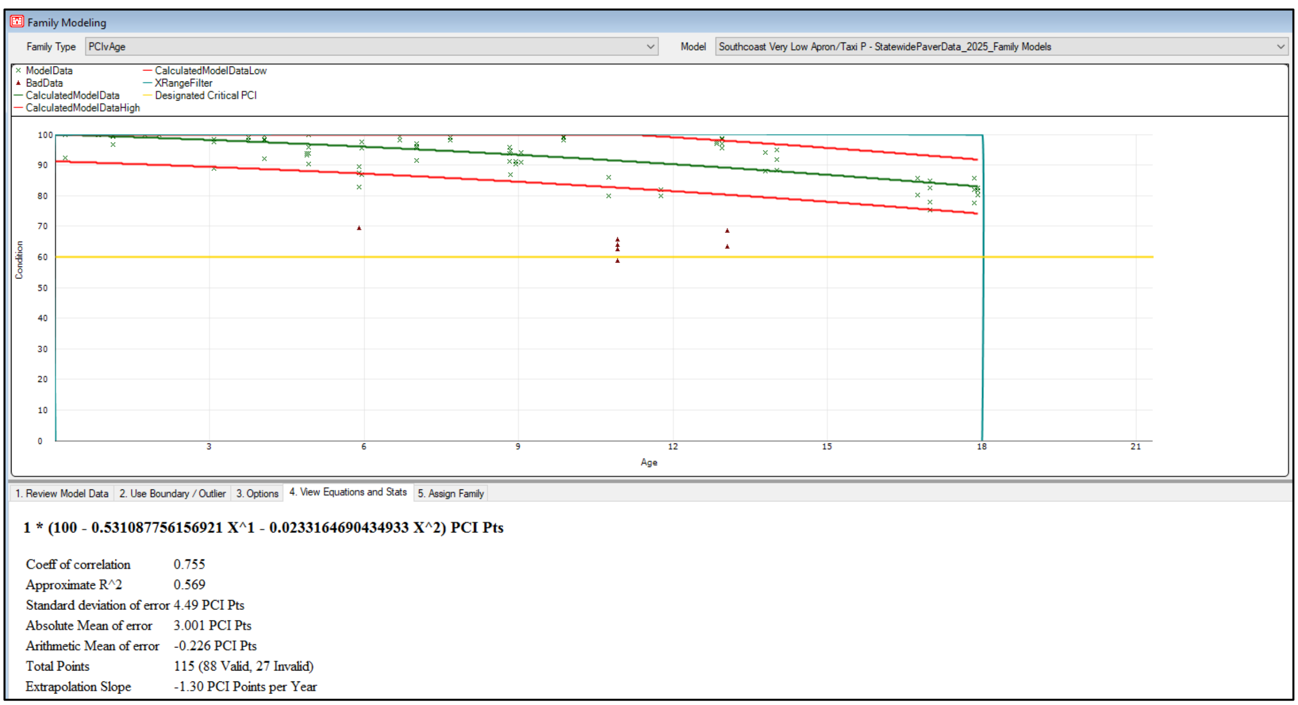


Figure 19—Southcoast Very Low Deterioration Apron and Taxiway Model

Southcoast Low Deterioration

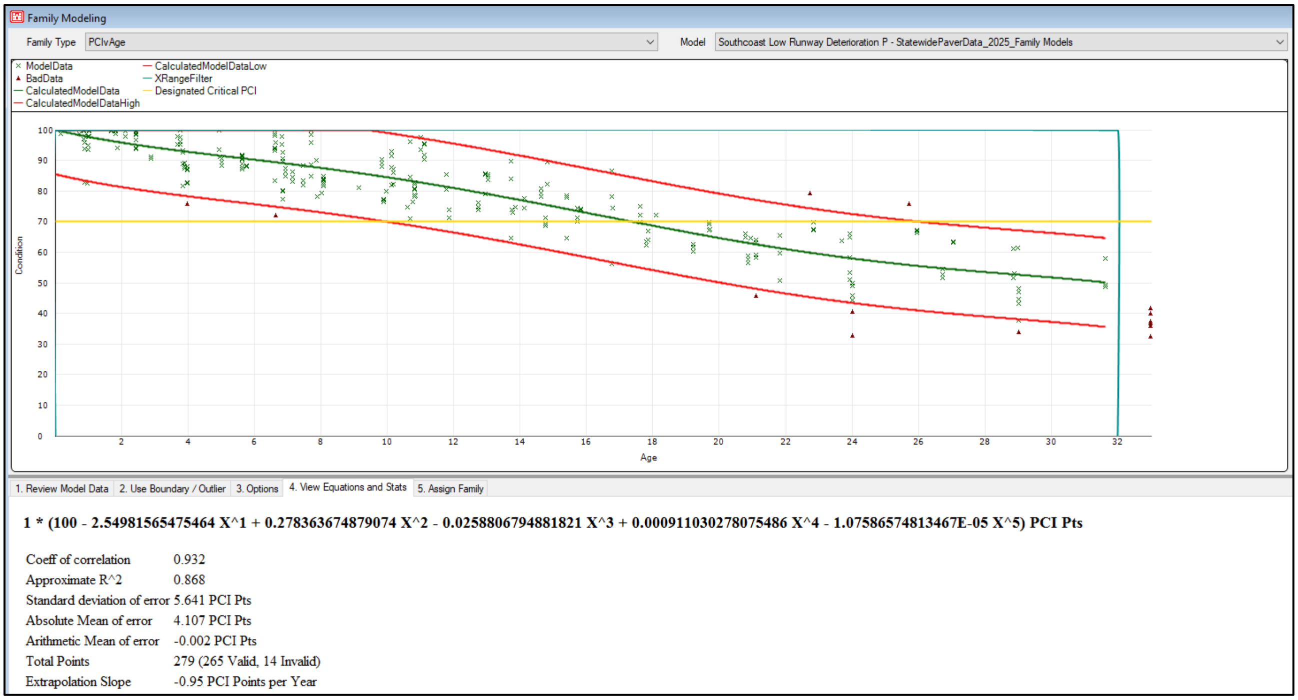


Figure 20—Southcoast Low Deterioration Runway Model

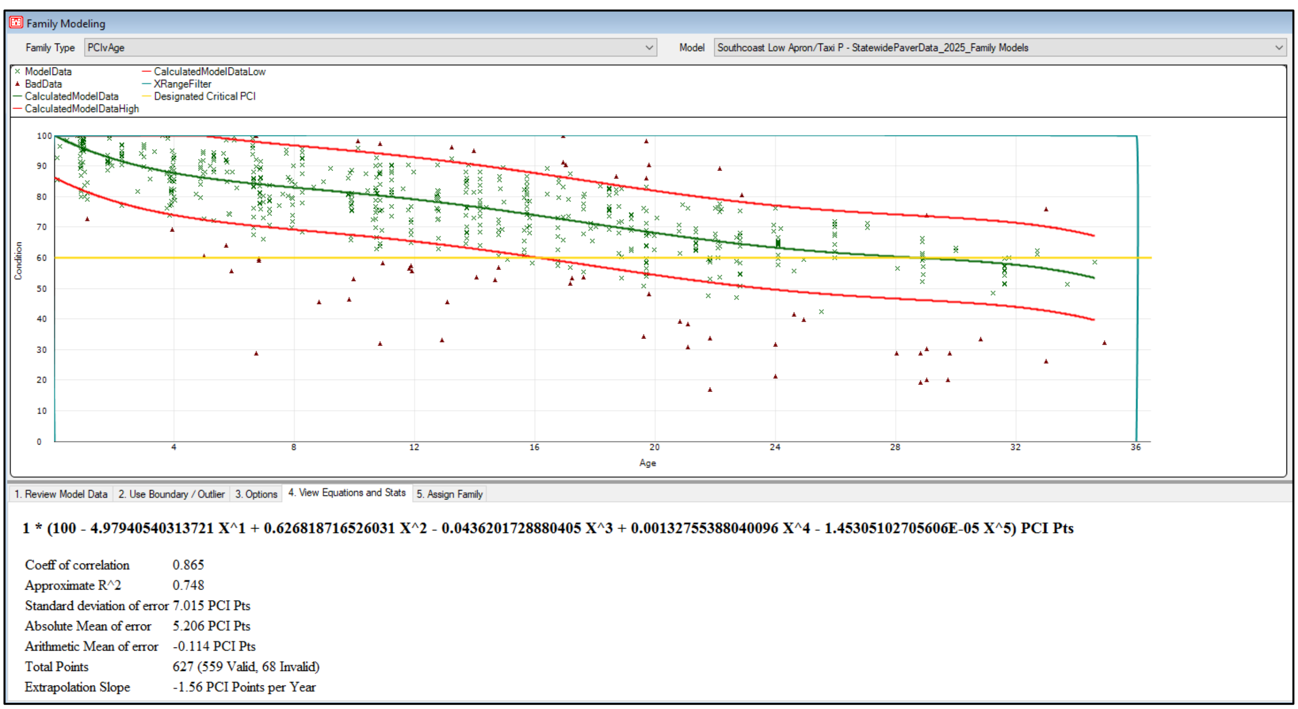


Figure 21—Southcoast Low Deterioration Apron and Taxiway Model

Southcoast Moderate Deterioration

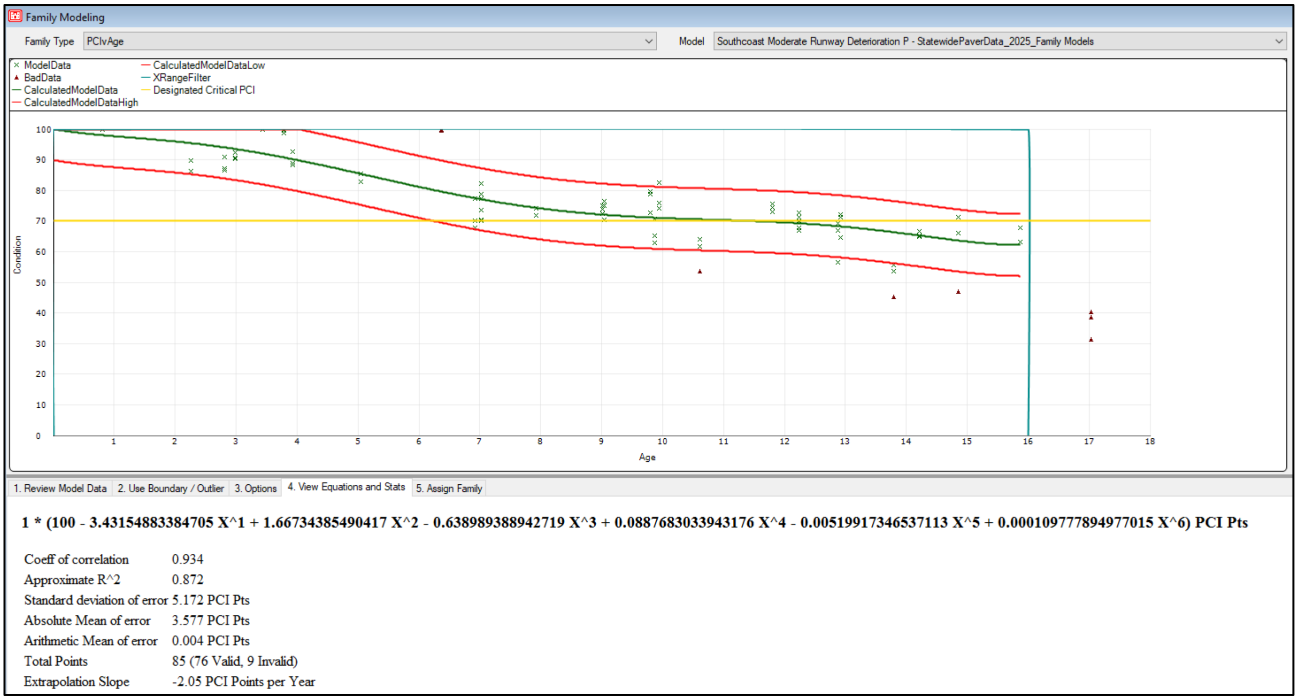


Figure 22—Southcoast Moderate Deterioration Runway Model

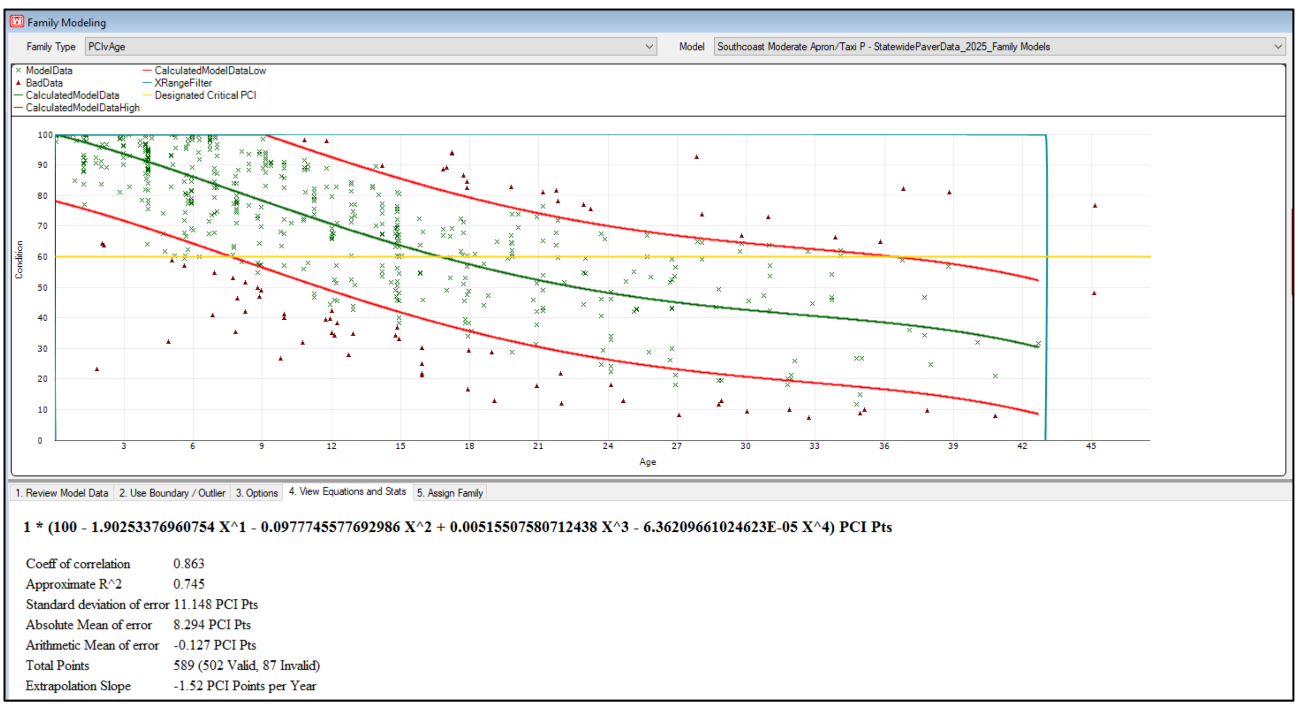


Figure 23—Southcoast Moderate Deterioration Apron and Taxiway Model

All Concrete

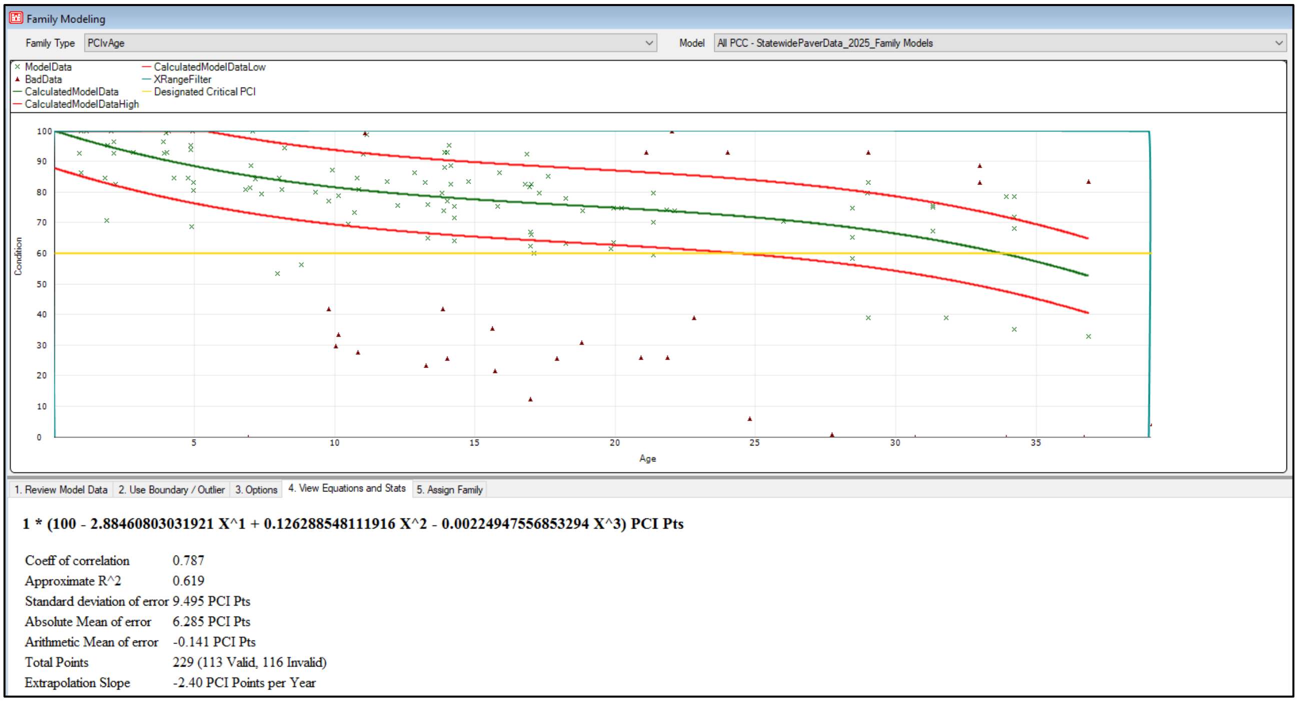


Figure 24—Concrete Model

Pavement Life Cycle and the Critical PCI

A Critical PCI is defined as the PCI value at which the rate of PCI loss increases with time or the cost of applying localized preventive maintenance increases significantly. Figure 25Figure 25 shows a typical pavement life cycle, asserting that if preventive maintenance is performed while the PCI is above critical, the cost will be significantly lower than waiting to repair pavements until after deterioration has accelerated. It also displays the typical range of the critical PCI, which is 55 to 70.

Guidelines set by the Alaska State Legislature require maintaining minimum PCI condition ratings of 70 for runways and 60 for taxiways and aprons.

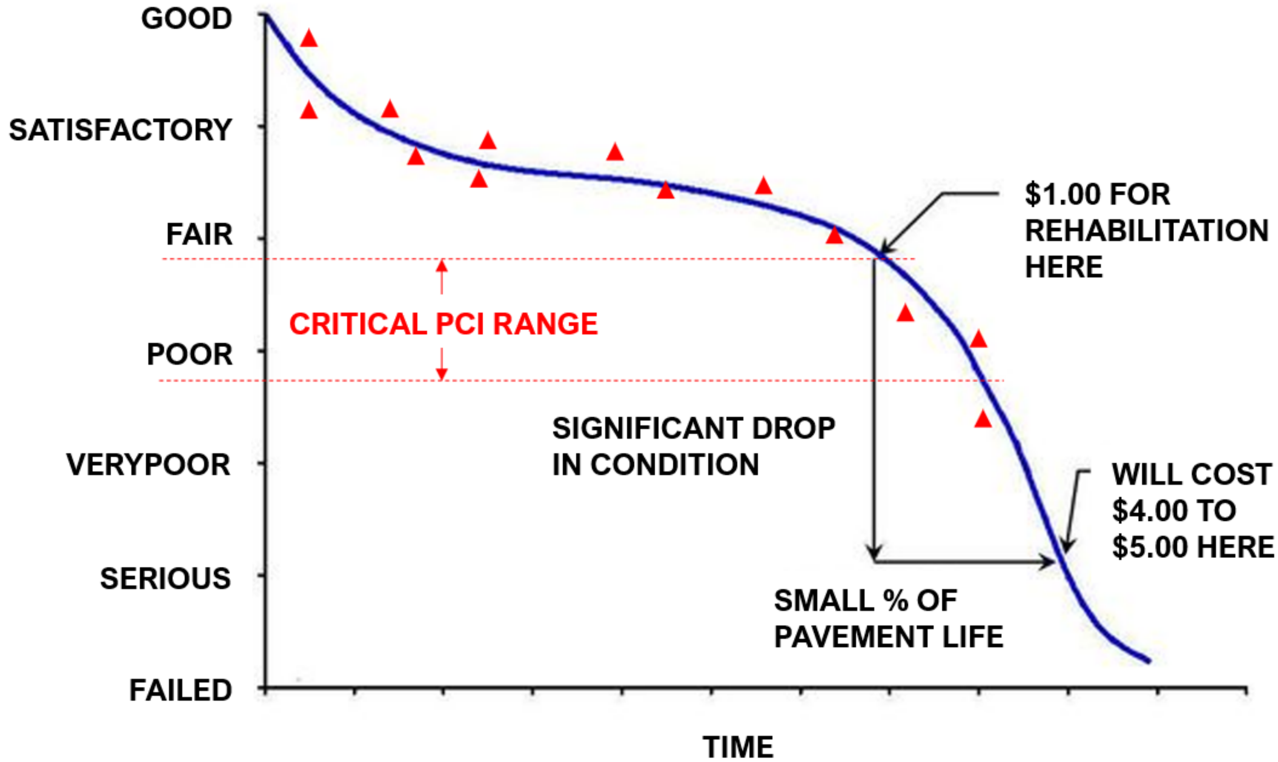


Figure 25—Typical Pavement Deterioration Curve[3]

*Figure is for conceptual purposes only – costs depicted are not specific to Alaska airport pavements

[3] Pavement Management for Airports, Roads, and Parking Lots, M.Y. Shahin, Second Edition, Springer, 2005.

Revised Critical PCI Threshold for Pavement Modeling

As outlined by the Alaska State Legislature, minimum PCI requirements are set at 70 for runways and 60 for taxiways and aprons. While these standards serve as foundational benchmarks, our current modeling framework introduces a tiered classification system to reflect operational priorities and optimize maintenance planning.

Runways:

- Primary Classification: PCI - 70
- Secondary Classification: PCI - 65
- Tertiary Classification: PCI - 60

Taxiways and Aprons:

- Primary Classification: PCI - 60
- Secondary Classification: PCI - 55
- Tertiary Classification: PCI - 50

This tiered approach allows for more precise modeling of pavement performance across asset types and usage intensities. It also supports proactive planning by identifying critical segments earlier, tailoring M&R activities to meet both fiscal constraints and safety requirements while remaining aligned with the intent of legislative guidelines.

SUMMARY

A reliable pavement performance model is crucial for effective pavement management, forming a robust foundation for timely and informed maintenance and rehabilitation decisions. Pavement performance deterioration is a dynamic process influenced by various factors, including traffic load, weather conditions, and material properties. Because of this complexity, regular inspections are essential to capture the evolving state of the pavement and ensure that performance data is consistently updated. By doing so, we can accurately predict future pavement conditions and optimize maintenance strategies. We are pleased to announce the completion of our pavement prediction models, which are specifically designed for the Alaska PMP. These models will enhance our ability to manage and maintain Alaska's airport network more efficiently.

♦ ♦ ♦

Appendix C
Alaska Airport
Pavement Management Program
2025 Unit Cost Analysis Report

September 2025

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INTRODUCTION

This report presents updated pavement treatment unit costs for application within the Alaska Airport Pavement Management Program (PMP). These unit costs are integrated into the PAVER software to support the prediction of annual pavement maintenance and repair (M&R) budgets for paved airports across Alaska.

Originally drafted in 2024, the report aimed to inform statewide M&R budget recommendations for Alaska DOT&PF managed paved airports. Subsequent refinements were made in February 2025 and September 2025 to ensure continued accuracy and relevance. Specifically, we have reviewed and revised our analysis of heating fuel costs for indexing pavement M&R costs at the airports that are widely dispersed throughout Alaska. In addition, we introduced the Consumer Price Index (CPI) as a new method of analysis in estimating the escalation of unit costs in future years.

Derivation of appropriate pavement M&R unit costs is not trivial. First, pavement unit costs were derived from a sample of actual construction projects completed by Alaska Department of Transportation and Public Facilities (Alaska DOT&PF) during the period 2005 to 2023. We carefully reviewed the projects, assigned them to a category of work, removed any costs unrelated to pavement M&R (i.e. fencing, access roads, building, generators, etc.), and computed a unit cost for the pavement treatment based on the pavement area constructed. We then developed a method of standardizing pavement M&R costs around the state to a single location—Anchorage—by use of published heating fuel prices. Lastly, we ensured that unit costs were adjusted to a standard year of analysis—2023.

Through this process, we developed unit costs for a variety of pavement M&R treatments in four categories: Pavement Preservation and Corrective Maintenance, Rehabilitation, Reconstruction and Permafrost Reconstruction and Repair.

With the inclusion of additional airport surveys conducted in 2024 and integration of updated PCI data into the PAVER software, the existing unit cost data requires refinement. While recent airport improvement project costs help validate previously established M&R treatment unit costs, future predictions must be evaluated using:

- Anchorage Consumer Price Index (CPI)
- Alaska Asphalt Price Index (API)
- Division of Community and Regional Affairs (DCRA) Heating Fuel Cost

BACKGROUND

The recommendations shown in Figure 1 are based on maintaining the airports at the Legislative standards[1]. Note that a series of preservation treatments can extend the pavement life more economically than waiting until more major preservation treatments are required.

Guideline for Determination of Action to be Taken for a Given PCI Rating		
Runways	**Taxiways/Aprons**	**Action**
100 - 70	100 - 60	Preventative Maintenance
69 - 40	59 - 40	Corrective Maintenance/Rehabilitate
39 - 0	39 - 0	Reconstruct

Figure 1—Alaska Maintenance Definitions of Recommendations

Alaska DOT&PF uses the PCI to set policies to determine the type of pavement treatment to be applied but is constrained by budgets that are available. The PAVER software is used to generate optimal solutions for airport pavement management decisions.

Pavement preservation treatments are applied to the surface of the existing pavement and include crack sealing, asphalt patching of localized distresses, seal coats to control weathering or raveling, etc. These treatments do not affect other operating systems at an airport such as lighting. They take a short lead time to implement, have relatively low unit costs, and may not raise the PCI but will retard the pavement deterioration to extend the useful life.

Pavement rehabilitation is the cost-effective repair which may strengthen the pavements structural layers. Rehabilitation is triggered when the pavement PCI falls into the range of 40 to 69. As a result of rehabilitation, the PAVER software resets the pavement PCI to 100, however, the condition after rehabilitation is dependent on the quality of construction and the overlaid surface. Rehabilitation activities generally provide a long-term benefit to the pavement in contrast to the short-term benefit provided by surface treatments. Rehabilitation improves performance methods and materials to extend the useful life of the pavement. Consequently, the unit costs of rehabilitation activities are much higher than those of preservation treatments. Also, and take a longer lead time for Alaska DOT&PF to accomplish this work.

Pavement reconstruction is required when the PCI is below 40, but reconstruction may be economical when PCI values range from 40-54 and requires rebuilding the entire pavement (structural section). A long lead time is required to design and reconstruct a pavement section as all the related components are affected such as utilities, right of way, environmental issues, maintaining airport functionality during construction. Thus, a very high unit cost is generated. Again, PAVER resets the PCI to 100 for Reconstruction, but it depends on the quality of the construction and materials.

[1] Pavement Management and Preservation Airport Pavement Condition Reporting, Official Alaska State Website, accessed on January 20, 2024: https://dot.alaska.gov/stwddes/asset_mgmt/airport_pave.shtml

LITERATURE REVIEW

We conducted a review of relevant literature on the topic of pavement preservation treatments. In particular there are two specific studies that appear relevant to the development of unit costs for airport M&R in Alaska:

1. Airport Cooperative Research Program Synthesis 22, ***"Common Airport Pavement Maintenance Practices,"*** was published in 2011 and provides a review of the effectiveness of surface treatments in airport applications.
2. An Alaska DOT&PF Research funded a 2012 report that establishes unit costs, service life and treatment timing for pavement preservation treatments in Alaska. Report No. FHWA-AK-RD-12-14, ***"Develop Guidelines for Pavement Preservation Treatments and for Building a Pavement Preservation Program Platform for Alaska"***, was authored by R. Gary Hicks, DingXin Cheng, Hannele Zubeck, Jenny Liu, and Tony Mullins.

The following summary statements describe essential findings from the Alaska DOT&PF funded report, which appears to be highly relevant to pavement preservation on Alaska airports.

- A wide range of surface treatments and other preservation treatments have been used successfully in cold climates.
- Unit costs for many treatments are presented, but the costs are for the lower 48.
- Five preservation treatments have been used in the State of Alaska, including:
  1. Thin HMA overlays
  2. Chip seals
  3. Slurry seal and Microsurfacing
  4. Crack sealing
  5. Saw cut and seal joints

While the preservation treatments listed above have been used in the State of Alaska, chip seals, slurry seals, and microsurfacing are not commonly used on airport projects. The timing between the treatments and the service life do not necessarily match. Current policy and available funding affect the spacing between the treatments in addition to the actual pavement surface condition. Typical treatment timing, as reported by Hicks et. al. is presented in Figure 2.

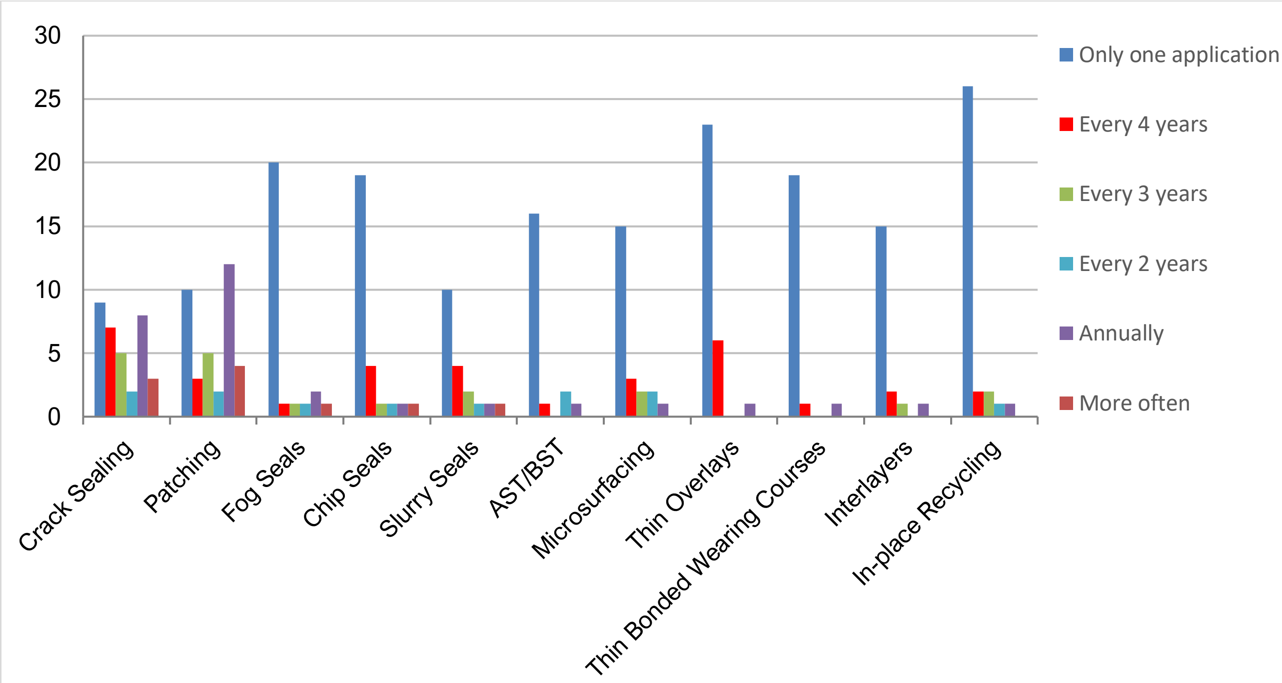


Figure 2—Typical Treatment Timing

The average service life of the various surface treatments as assessed by Hicks et. al. is presented in Figure 3.

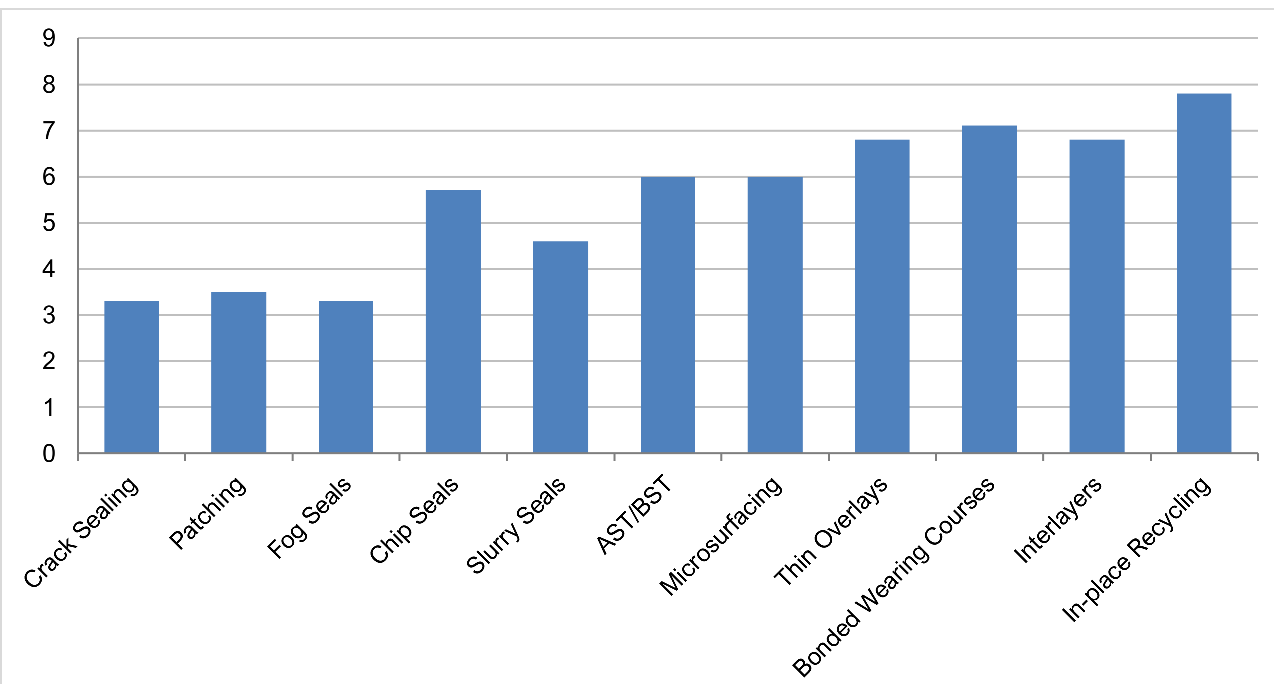


Figure 3—Average Treatment Service Life

Hicks et. al. developed summaries of treatment costs which are shown in Table 1 and Table 2.

Table 1—Summary of Treatment Costs (2010)

	Crack Sealing	Patching	Fog Seals	Chip Seals	Slurry Seals	AST/BST	Microsurfacing	Thin Overlays	Bonded Wearing Courses	Interlayers	In-place Recycling
USA											
Maine	7,500/ mile		17,000/ mile				91,800/ mile	150,000/mile			500,000/ mile
Michigan	4,500/ mile		0.50/yd^2	1.51/yd^2 (single chip seal)			3.50/yd^2 (two course)	60/ton	5.5/yd^2		
Minnesota	2,500/mi le			26,000/ mile			37,000/ mile	60,000/ mile	65,000/ mile		400,000/ mile
New Hampshire	0.90/ lb			2.15/yd^2			3.00/yd^2	2.70/yd^2	6.0/yd^2	10.0/yd^2	6.0/yd^2
New York	5,000/lan e mile		10,000/ lane mile	20,000/ lane mile	15,000/ lane mile		40,000/ lane mile	50,000/ lane mile	50,000/ lane mile		120,000/ lane mile
Wisconsin (Dane County)	5,000/lan e mile	8,000/ lane mile	varies	13,000/ lane mile	varies		28,000/ lane mile	40,000/ lane mile			
Canada											
Entire Country	2-4 /m	30-40 /m^2	11 /m^2	10 /m^2	11 /m2	16 /m^2	7 /m^2	20 /m^2	45 /m^2		50 /m^2
British Colombia	10 /m	20/m^2		10/m^2	120,000/ lane km	100,000/ lane km	10/m	20/m^2		10/m^2	$120,000/ lane km
Northern Canada		300/km				50,000/km	75,000/km	225,000/ km		250,000/km	
Nordic Countries											
Denmark	3.40/m	37.00/m	1.80/m^2	5.80/m^2		5.60/m^2			24.80/m^2	3.40/m	37.00/m
Sweden	37/m^2	22/m^2	2.3/m^2	2.4/m^2	2.4/m^2	2.0/m^2		9.0/m^2	9.8/m^2 (incl. surface planing)	13/m^2	6.8/m^2
Finland											3.0/m^2
China											
Northeast	2/m^2	2/m^2	1/m^2	2/m^2	1.5/m^2	1/m^2	4/m^2	7/m^2		8/m^2	

Table 2—Summary of Treatment Unit Costs (2010)

Treatment	Relative Cost ($ to $$$$)	Estimated Unit Cost
Crack filling	$	$0.10 to $1.20/ft
Crack sealing	$	$0.75 to $1.50/ft
Slurry seal	$$	$0.75 to $1.00/yd^2
Microsurfacing (single-course)	$$	$1.50 to $3.00/yd^2
Chip seal (single-course)	$$(conventional)	$1.50 to $2.00/yd^2 (conventional)
Chip seal (single-course)	$$$ (polymer modified)	$2.00 to $4.00/yd^2 (polymer modified)
Ultra-thin bonded wearing course	$$$	$4.00 to $6.00/yd^2
Thin HMA overlay (dense-graded)	$$$	$3.00 to $6.00/yd^2
Cold milling and thin HMA overlay	$$$	$5.00 to $10.00/yd^2
Ultra-thin HMA overlay	$$	$2.00 to $3.00/yd^2
Hot in-place recycling (excluding thin HMA overlay for surface recycle and remixing types)	$$/$$$	$2.00 to $7.00/yd^2
Cold in-place recycling (excluding thin HMA overlay)	$$	$1.25 to $3.00/yd^2
Profile milling	$	$0.35 to $0.75/yd^2
Ultra-thin whitetopping	$$$$	$15.00 to $25.00/yd^2
Note: $ = low cost; $$ = moderate cost; $$$ = high cost; $$$$ = very high cost.		

ALASKA DOT&PF STAFF INTERVIEWS

A questionnaire was sent to the Alaska DOT&PF Headquarters and Regions in the winter of 2022-2023, requesting information and cost data on the preservation treatments used by Maintenance and Operations (M&O) offices on airport pavements. Responses indicate that typically only crack sealing and localized pavement patching are performed by M&O staff when material and equipment are available. Furthermore, unit cost information is not available from the State accounting system since only the total cost of a maintenance activity is reported without the associated number of linear feet or square feet treated. Preservation treatments (other than crack sealing and patching) are funded through the Federal Aviation Administration (FAA) Airport Improvement Program (AIP) and the work is typically performed through contract. Pavement inspection personnel met with airport managers during pavement condition inspection (PCI) surveys between 2022 and 2024, but no additional information was provided that would modify our initial findings.

Table 3 summarizes the responses to the M&O questionnaire sent to Alaska DOT&PF staff regarding pavement maintenance, rehabilitation, and reconstruction (M&R) activities.

Table 3—Summary of Responses to M&O Questionnaire

PAVER Network ID	Part 139 (Y/N)	On Road Network (Y/N)	Crack Seal Freq (Yr)	Seal Equip Onsite (Y/N/M)	Treatment Candidate (Y/N)	Crack Seal (Y/N)	Cold Patch (Y/N)	HMA Patch (Y/N)	Seal Coat (Y/N)	HMA Overlay (Y/N)	Mill & Fill (Y/N)	Mill, Stabilize Base, Pave (Y/N)	Reconstruct, Rebuild Str Section (Y/N)
Adak	Y	N	none	Y	Y	Y	Y	N	Y	Y	Y	N	N
Akutan	N	N	5	N	Y	Y	Y	N	Y	Y	Y	N	N
Aniak	N	N	3	Y	N	Y	Y	N	Y	Y	Y	Y	Y
Atka	N	N	none	N	Y	Y	Y	N	Y	Y	Y	Y	N
Barrow	Y	N	1	Y	N	Y	Y	N	Y	Y	Y	Y	Y
Bethel	Y	N	1	Y	N	Y	Y	N	Y	Y	Y	Y	Y
Birchwood	N	Y	5	M	Y	Y	Y	Y	Y	Y	Y	Y	N
Clear	N	Y	5	N	Y	Y	Y	N	Y	Y	Y	N	N
Cold Bay	Y	N	none	N	Y	Y	Y	N	Y	Y	Y	Y	N
Cordova	Y	N	1	Y	Y	Y	Y	N	Y	Y	Y	Y	N
Deadhorse	Y	Y	1	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Dillingham	Y	N	1	Y	Y	Y	Y	N	Y	Y	Y	N	N
Fairbanks	Y	Y	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Galena	N	N	3	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Gambell	N	N	5	M	N	Y	Y	N	Y	Y	Y	Y	Y
Gulkana	N	Y	3	N	N	Y	Y	N	Y	Y	Y	Y	Y
Gustavus	Y	Y	none	N	Y	Y	Y	N	Y	Y	Y	Y	N
Haines	N	Y	none	N	N	Y	Y	N	Y	Y	Y	Y	N
Healy R.	N	Y	3	N	Y	Y	Y	N	Y	Y	Y	Y	N
Homer	Y	Y	1	M	N	Y	Y	Y	Y	Y	Y	Y	N
Hoonah	N	N	none	N	Y	Y	Y	N	Y	Y	Y	Y	N
Iliamna	N	N	Bi-annual	Y	Y	Y	Y	N	Y	Y	Y	Y	N
Juneau	Y	Y	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Kake	N	N	none	N	N	Y	Y	N	Y	Y	Y	Y	N
Kenai	Y	Y	3	N	Y	Y	Y	Y	Y	Y	Y	Y	N
Ketchikan	Y	Y	3	N	Y	Y	Y	N	Y	Y	Y	Y	N
KingSalmon	Y	N	annual	Y	Y	Y	Y	N	Y	Y	Y	Y	N
Klawock	N	N	none	N	N	Y	Y	N	Y	Y	Y	Y	N
Kodiak	Y	Y	none	N	Y	Y	Y	Y	Y	Y	Y	N	N
Kotzebue	Y	N	1	Y	N	Y	Y	N	Y	Y	Y	Y	
McGrath	N	N	3	Y	N	Y	Y	N	Y	Y	Y	N	N
Merrill	N	Y	3	N	Y	Y	Y	N	Y	Y	Y	Y	
Nenana	N	Y	3	N	Y	Y	Y	N	Y	Y	Y	N	N
Nome	Y	Y	1	Y	Y	Y	Y	N	Y	Y	Y	Y	
Northway	N	Y	3	N	Y	Y	Y	N	Y	Y	Y	N	N
Palmer	N	Y	3	N	Y	Y	Y	Y	Y	Y	Y	Y	N
Petersburg	Y	N	none	N	Y	Y	Y	N	Y	Y	Y	Y	

Table 2—Summary of Responses to M&O Questionnaire (continued)

PAVER Network ID	Part 139 (Y/N)	On Road Network (Y/N)	Crack Seal Freq (Yr)	Seal Equip Onsite (Y/N/M)	Treatment Candidate (Y/N)	Crack Seal (Y/N)	Cold Patch (Y/N)	HMA Patch (Y/N)	Seal Coat (Y/N)	HMA Overlay (Y/N)	Mill & Fill (Y/N)	Mill, Stabilize Base, Pave (Y/N)	Reconstruct, Rebuild Str Section (Y/N)
Sand Point	Y	N	none	N	Y	Y	Y	N	Y	Y	Y	Y	N
Seward	N	Y	5	M	Y	Y	Y	N	Y	Y	Y	Y	Y
Shishmaref	N	N	5	Y	N	Y	Y	N	Y	Y	Y	Y	N
Sitka	Y	N	none	N	N	Y	Y	N	Y	Y	Y	Y	
Skagway	N	Y	none	N	Y	Y	Y	N	Y	Y	Y	Y	N
Soldotna	N	Y	3	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
StGeorge	N	N	none	N	Y	Y	Y	N	Y	Y	Y	N	N
StPaul	N	N	none	N	Y	Y	Y	N	Y	Y	Y	N	N
Talkeetna	N	Y	5	M	Y	Y	Y	N	Y	Y	Y	Y	Y
Tok	N	Y	5	N	Y	Y	Y	N	Y	Y	Y	N	N
Unalakleet	N	N	5	Y	Y	Y	Y	N	Y	Y	Y	N	N
Unalaska	Y	N	1	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Valdez	Y	Y	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wasilla	N	Y	3	N	Y	Y	Y	Y	Y	Y	Y	N	N
Wrangell	Y	N	none	M	Y	Y	Y	N	Y	Y	Y	Y	Y
Yakutat	Y	N	none	M	Y	Y	Y	N	Y	Y	Y	Y	Y

AIRPORT PAVEMENT PRESERVATION TREATMENTS

The following airport pavement treatments have been used in Alaska and were selected to develop unit cost data for use in the Alaska Airport PMP.

Pavement Preservation and Corrective Maintenance

- Crack Sealing/Joint Sealing
- Patching
- Grinding
- Slab Replacement

Global Surface Treatments

- Surface Seal
  - Emulsified Asphalt Seal Coat (P-608)
  - Rapid Cure Seal Coat (P-608-R)
  - Sand Seal (P-633)

Rehabilitation

- Minor Rehabilitation – AC
  - HMA Overlay
  - Mill and HMA Overlay
- Major Rehabilitation
  - Base Reclamation and HMA Overlay
  - Mill and Base Stabilization and HMA Overlay
  - Partial Depth Reconstruction

Reconstruction

- Complete Reconstruction
  - Reconstruct with Subgrade Conditioning
  - Reconstruct with Subgrade Recompaction and Repairs

EVALUATION OF ALASKA DOT&PF PROJECT COSTS

Alaska DOT&PF provided a list of 55 recent airport contracts including project cost data. The project information included enough information to understand the Alaska DOT&PF design and construction costs, the Contractor's price to perform the work, the type of pavement treatment, and the area of pavement treated.

Total Project Cost vs Pavement Treatment Cost

Based on our review and understanding of project costs, the Total Pavement Project Cost reported in each of the 55 contract packages is made up of two components: 1) Design Cost and 2) Construction Cost. The Construction Cost is further broken into those costs borne directly by Alaska DOT&PF and those costs performed by the Contractor and reflected in the Contract Price. To further complicate matters, the Construction Cost typically includes both the costs to perform the pavement treatment as well as costs to perform work unrelated to treatment of the pavement. These unrelated costs may include buildings, generators, security fence improvements, access roads, etc. To understand the actual treatment unit costs, one must analyze each project to understand the components of the contract and separate out the overhead costs and the costs to perform work unrelated to the pavement. The process can be summarized by the following two equations:

Equation No. 1:	TP	=	DC + AK_P + CP_P
Equation No. 2:	CC	=	(AK_P + AK_NP) + (CP_P + CP_NP)
where,	TP	=	Total Pavement Project Cost
	CC	=	Total Construction Cost
	CP	=	Contractor's Price = CP_P + CP_NP
	CP_P	=	Contractor's Price—Pavement Related
	CP_NP	=	Contractor's Price—Not Pavement Related
	DC	=	Design Costs
	AK	=	Alaska DOT&PF Construction Costs = AK_P + AK_NP
	AK_P	=	Alaska DOT&PF Construction Costs—Pavement Related
	AK_NP	=	Alaska DOT&PF Construction Costs—Not Pavement Related

Using these equations, we analyzed the costs of the 55 projects to solve for the Total Pavement Project Cost (TP). Once this cost was known, it was a straightforward matter to divide TP by the area of the pavement that was treated to find the unit cost of the pavement treatment. The following is an example of how this procedure was used to compute the unit cost of pavement rehabilitation treatment conducted as part of the 2009 Petersburg Airport Runway Safety Improvements.

Example—Pavement Treatment Unit Cost

Project No. 3-02-0219-013, #69360, **Runway Safety Improvements** was a 2009 project at Petersburg airport consisting of the following work scope: base reclamation, regrading, and HMA overlay. The following details of the project are of interest:

Area	=	932,240 sf
CP	=	$ 9,781,787
CP_NP	=	$ 739,800
AK_NP	=	$ 0
CC	=	$ 12,584,336
DC	=	$ 226,805
CP_P	=	$ 9,781,787 - $ 739,800 = $ 9,041,987
AK_P	=	CC – CP
	=	$ 12,584,336 – $ 9,781,787 = $ 2,802,549
TP	=	DC + AK_P + CP_P
	=	$ 226,805 + $ 2,802,549 + $ 9,041,987 = $ 12,071,341
Unit Cost	=	TP / Area
	=	$ 12,071,341 / 932,240 sf = **$12.95 / sf**

Standardize Costs for Geographic Location and Time

Two of the inherent difficulties in estimating pavement construction costs are the geographic variability of these costs throughout Alaska coupled with variability over time. To effectively use the unit cost data derived from the 55 reviewed construction project records, we standardized unit costs to the 2023 cost of construction in Anchorage by the following method.

To standardize costs for geography, we elected to create an index based on heating fuel as a proxy. The benefits of this method are as follows. First, the State of Alaska monitors and publishes the average cost of heating fuel in 100 communities throughout the state, so a ready source of data if available. Second, heating fuel is essentially the same as diesel fuel. Third, the price of diesel fuel is a major cost driver for construction projects.

Heating fuel costs are conducted and published by the Division of Community and Regional Affairs (DCRA) at https://gis.data.alaska.gov/search?tags=heating%2520fuel%2520prices . As discussed on the DCRA website, heating fuel is shipped throughout the state by truck, barge and even by air, depending on access to each community, and the price of heating fuel is highly dependent upon the cost of transporting the fuel to each community.

DCRA classifies fuel prices by region, listed as follows and shown in Figure 4**Error! Reference source not found.**:

- Southeast (SE)
- Southwest (SW)
- Gulf Coast (GC)
- Interior (INT)
- Western (W)
- Northwest (NW)
- Northern Slope (NS)
- South Central (SC)

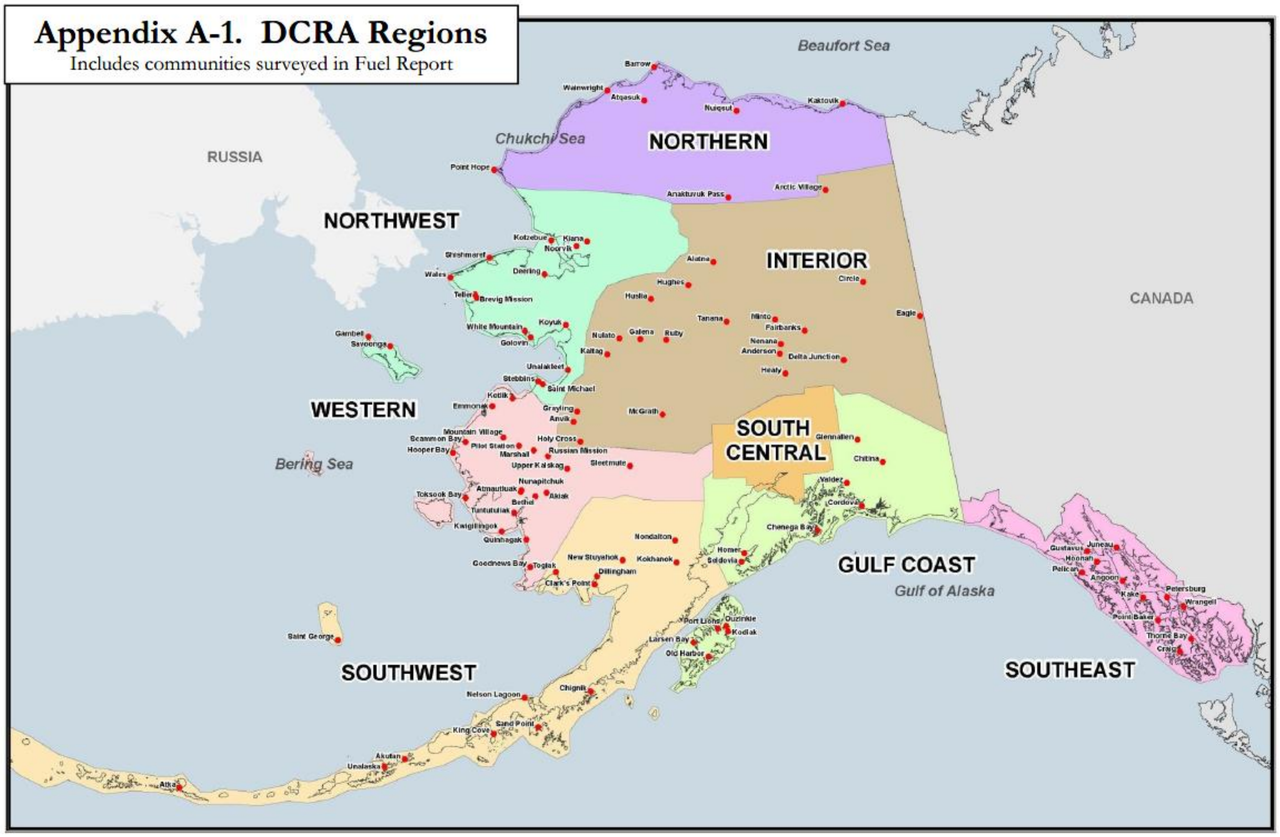


Figure 4—DCRA Regions

Note: Because national fuel surveys in 2005 included Southcentral Alaska only, the DCRA fuel survey was intentionally designed to report on fuel prices in unreported regions of Alaska. For this reason, the DCRA survey does not report on prices in the Anchorage/Mat-Su region (South Central).

DCRA also tracks the price of gasoline and publishes a comparison of the average prices of a gallon of regular gasoline in Anchorage along with the national average price in the US.

From these two sources of information, we computed the average heating fuel price for each of the seven DCRA regions during the period 2005 to 2025 as shown in Table 4.

Table 4—Regional Heating Fuel Cost by Year ($)

Year	Southeast	Southwest	Gulf Coast	Interior	Western	Northwest	Northern
2025	4.83	6.83	4.77	6.93	7.97	6.82	7.74
2024	5.25	6.84	5.26	7.01	7.76	6.53	7.45
2023	5.35	6.75	5.42	6.78	7.47	6.56	9.00
2022	4.73	5.49	4.90	5.84	6.57	5.44	6.92
2021	3.65	4.21	3.44	4.92	5.17	4.55	6.54
2020	3.67	4.90	3.42	5.07	5.18	4.95	6.54
2019	3.97	5.08	3.91	5.19	5.53	4.85	6.54
2018	3.76	4.16	3.76	5.13	5.31	4.50	6.54
2017	3.29	3.93	3.39	4.77	5.12	4.78	6.75
2016	3.29	4.34	3.37	4.99	5.64	5.14	6.73
2015	4.19	5.07	4.21	5.45	6.41	6.18	7.53
2014	4.60	5.75	4.85	5.39	6.54	6.23	7.53
2013	4.72	5.83	4.92	5.53	6.63	5.98	7.16
2012	4.66	5.92	4.81	5.23	6.59	6.16	6.68
2011	4.53	5.30	4.60	5.15	5.61	5.79	6.67
2010	3.64	4.71	3.92	4.86	4.96	5.58	6.34
2009	3.62	5.26	3.76	5.17	6.76	7.12	6.35
2008	5.30	5.78	5.00	5.71	6.34	6.12	5.68
2007	3.64	4.17	3.35	4.36	4.84	4.53	4.80
2006	3.31	3.98	2.96	3.98	4.72	4.40	4.46
2005	3.24	3.58	2.99	3.47	3.79	3.61	3.93

The regional heating fuel costs presented in Table 4 were used to standardize pavement costs for any project in Alaska during the period 2005 to 2025 to the cost of a current pavement treatment in Anchorage.

The calculation steps to standardize pavement treatment unit costs are as follows:

1. Compute the unit cost ($/sf) in the year of construction.
2. Factor up the unit cost from the year of construction to 2023 using the ratio of heating fuel prices.
3. To standardize the unit cost to Anchorage, multiply by the ratio of the 2023 heating fuel price in the Gulf Coast Region to the region of the project.

Example—Standardize 2009 Petersburg Pavement Treatment Unit Costs

As an example, we applied this methodology to the 2009 Petersburg project, which is in the Southcoast Region.

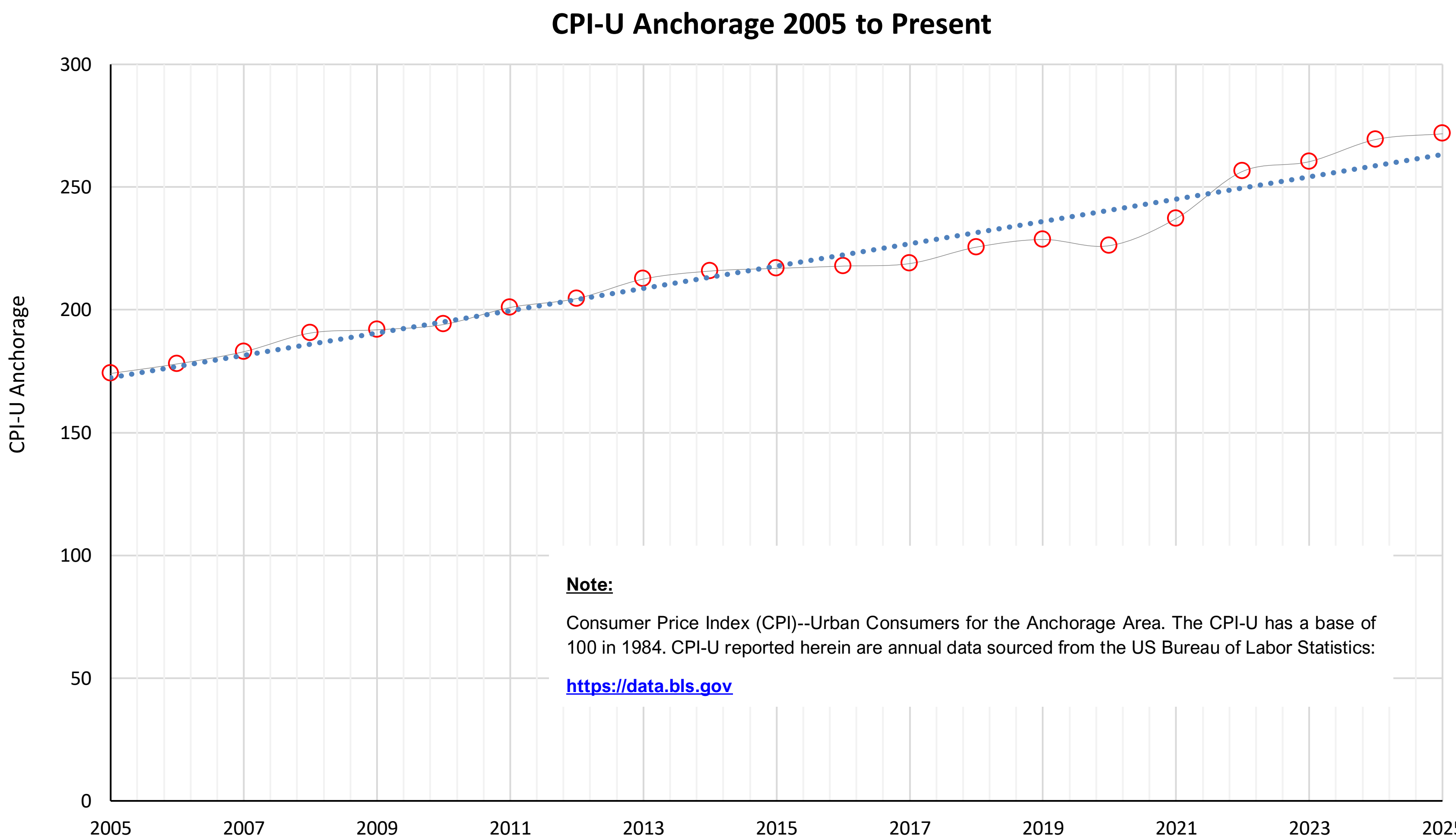
Step 1 **Establish Unit Cost for Year of Construction in Region of Construction**	Petersburg Airport Base Reclamation	Unit Cost
		2009 Petersburg
		$12.95 / sf

Step 2 **Bring Cost Forward to 2023**	Southcoast Heating Fuel Cost			Unit Cost
	2009	2023	Factor	2023 Petersburg
	$2.96/gal	$5.46/gal	1.845	$23.89 / sf

Step 3 **Standardize Cost to Anchorage (Gulf Coast)**	2023 Heating Fuel Costs			Unit Cost
	Southcoast Region	Gulf Coast Region	Factor	2023 Anchorage
	$5.46/gal	$4.71/gal	0.863	$20.61 / sf

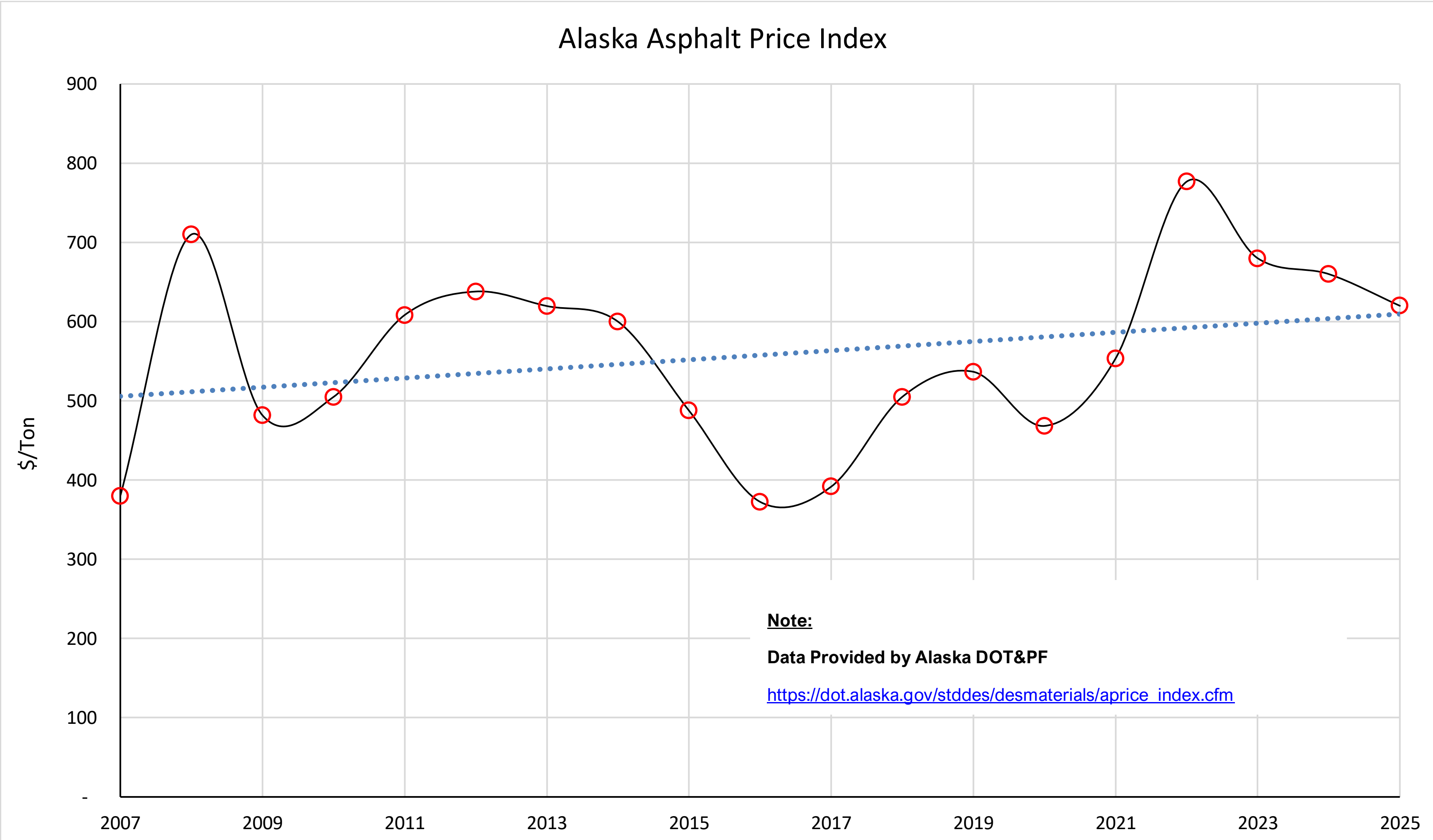
PROJECT COST INFLATION FACTORS

Consumer Price Index Anchorage Area 2005 to Present



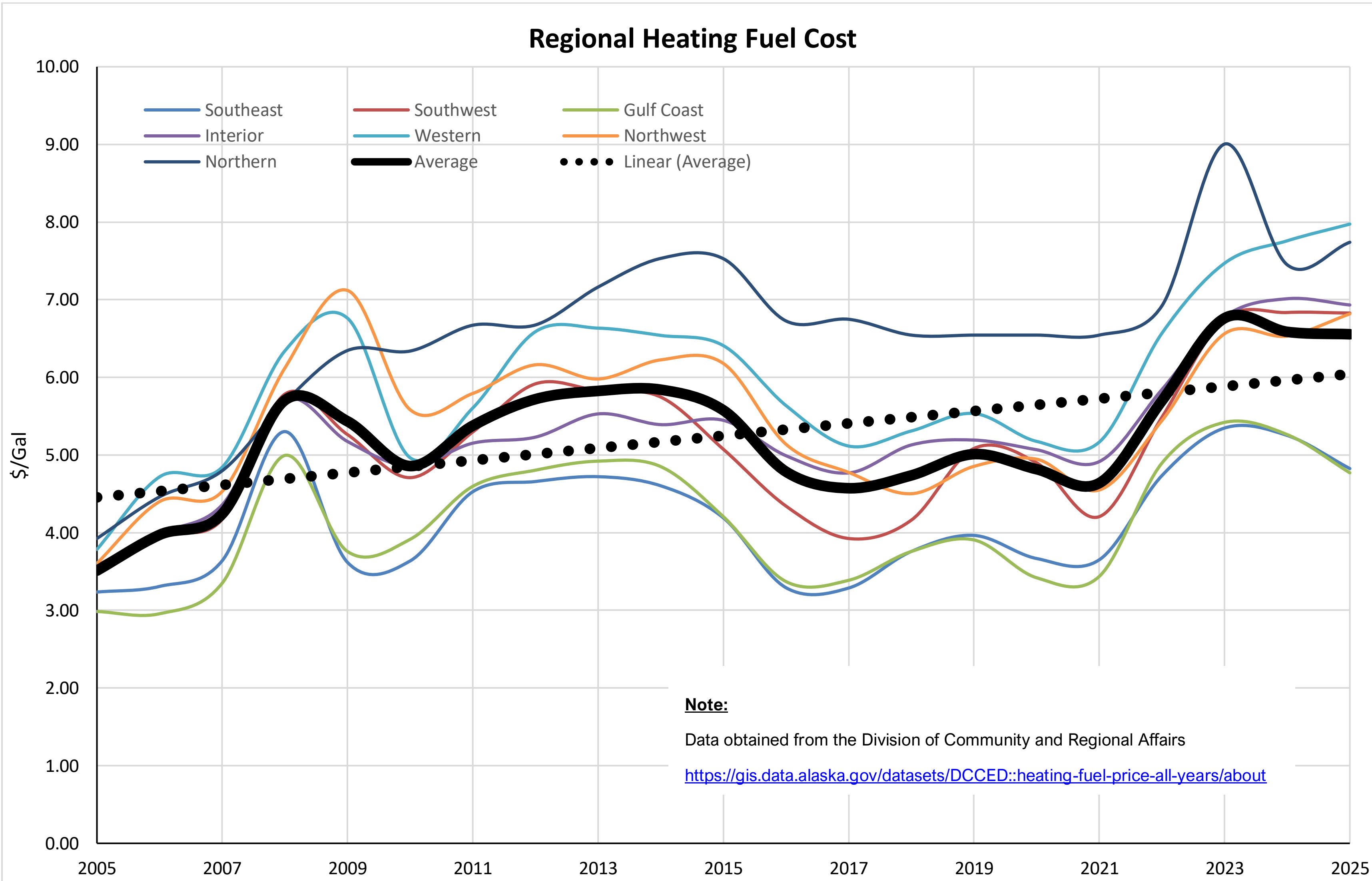
- From 2005 to 2025, CPI-U Anchorage increased an average of 2.11% per year based on the trendline shown.

Alaska Asphalt Price Index 2007 to Present



- Alaska API varies considerably. The trendline indicates an average annual increase of 1.03%.

Alaska Regional Heating Fuel Costs 2005 to Present



- Fuel prices vary considerably and a linear trendline indicates an annual average increase of 1.76%.

Alaska Flexible Pavement Design Manual

Chapter 8, Life Cycle Cost Analysis, Section 8.4 LCCA Using AKFPD, step 5 notes the following:

> *"The analysis period must be 35 years, and the discount rate must be 3%. These values may be changed by directive from the Chief Engineer."*

This discount rate is used to convert future costs to present worth in a life cycle cost analysis, this also can be used to develop future costs from the present costs as an inflation factor.

Summary of Project Cost Inflation Factors

The project team considered four different methods of assessing how inflation affects the unit cost of pavement preservation treatments in Alaska. The following is a summary of four inflation factors discussed above.

Table 5—Summary of Project Cost Inflation Factors

Source of Information	Average rate of change per year of the trendline
Consumer Price Index	2.11%
Asphalt Price Index	1.03%
Average Heating Fuel Cost	1.76%
Flexible Pavement Design Manual	3.00%

As shown in Table 5, the four methods used to estimate inflationary impacts on project costs produced rates ranging from 1.03% to 3.0%. While CPI is a broad index that reflects the totality of cost increases in the market, Heating Fuel Cost and Asphalt Price Index are more narrow indices that attempt to capture cost increases for specific materials. Neither of the three indices is perfect for our purpose and we are faced with a decision as to which factor is best for the Alaska DOT&PF to use for projecting pavement preservation treatment costs into the future. In consideration of the above sources to develop future cost data, and in discussion with the Alaska DOT&PF Project Manager, the project team established a 3.0% inflation factor for use in developing budgets for 5-year and 10-year models for this year's report.

STANDARDIZED 2025 PAVEMENT M&R CONSTRUCTION COSTS

Table 6 through Table 8 list unit costs within the PAVER database that are used to develop M&R plans. Localized M&R funds are allocated to each airport as part of AIP funding and are not tracked on a per-line-item basis. This approach makes it difficult to determine the unit costs for localized work, as the funds are dispersed in a more general manner. To address this challenge, the project team proposed comparing similar roadway localized costs to establish a more accurate baseline.

Alaska DOT&PF staff obtained unit cost data for the work types listed below. Upon review, it was determined that roadway work conducted in Anchorage typically incurs costs approximately twice those of the default unit costs for comparable roadway treatments in PAVER. Accordingly, a multiplier of 2 has been applied to all PAVER default airfield unit costs for both localized and global work types, as reflected in Table 6 and Table 7. Major M&R unit costs shown in Table 8 that were derived from a representative sample of Alaska DOT&PF construction projects completed between 2005 and 2023 were given the 3% inflation factor in 2024 and again in 2025.

Although some of the work types listed may not always be utilized in Alaska, the full suite of work types is used to develop cost by condition curves for the distress maintenance policies that are presently applied. This ensures that cost estimates remain consistent and reflective of actual maintenance practices in place.

Table 6—Anchorage Localized M&R Work Unit Costs

Localized Work Type	Cost	Units
Crack Sealing - AC	$5.30	ft
Grinding (Localized)	$10.18	ft
Joint Seal (Localized)	$5.30	ft
Patching - AC Deep	$14.85	sf
Patching - AC Shallow	$6.90	sf
Crack Sealing - PCC	$5.30	ft
Patching - PCC Full Depth	$53.05	sf
Patching - PCC Partial Depth	$13.79	sf
Slab Replacement - PCC	$38.19	sf

Table 7—Anchorage Global M&R Work Unit Costs

Global Work Type	Cost ($/sf)
Emulsified Asphalt Seal Coat (P-608)	$0.54
Rapid Cure Seal Coat (P-608-R)	$0.54
Sand Seal (P-633)	$1.28

Table 8—Anchorage Major M&R Work Unit Costs

Rehabilitation Work Type	Cost ($/sf)
Minor Rehabilitation - AC	$11.92
Major Rehabilitation - AC	$18.87
Complete Reconstruction - AC	$39.47
Minor Rehabilitation - PCC	$29.81
Major Rehabilitation - PCC	$40.44
Complete Reconstruction - PCC	$83.86

MODIFIED FUEL FACTORS

We observed several outlier airports when comparing the heating fuel price for individual airport locations in the seven DCRA regional groups. For example, Fairbanks and McGrath are both within the DCRA Interior Region, but the per gallon fuel price in 2025 are $4.32 in Fairbanks and $8.21 in McGrath (nearly double). Based on this observation, we modified the regional groupings slightly to better account for these outliers.

The area-weighted combined fuel factor was calculated by dividing the area-weighted average heating fuel cost for a group by the Anchorage heating fuel cost. The modified fuel factors shown in Table 9 and Figure 5.

Table 9—Modified Fuel Factor Groups

Modified Fuel Factor Group	Number of Airports	Modified Fuel Factor
Anchorage	4	1.00
Central Interior	14	1.10
Southcoast	18	1.31
Northwest	4	1.63
Western / Northern	10	2.05
Southcoast Island	4	2.29

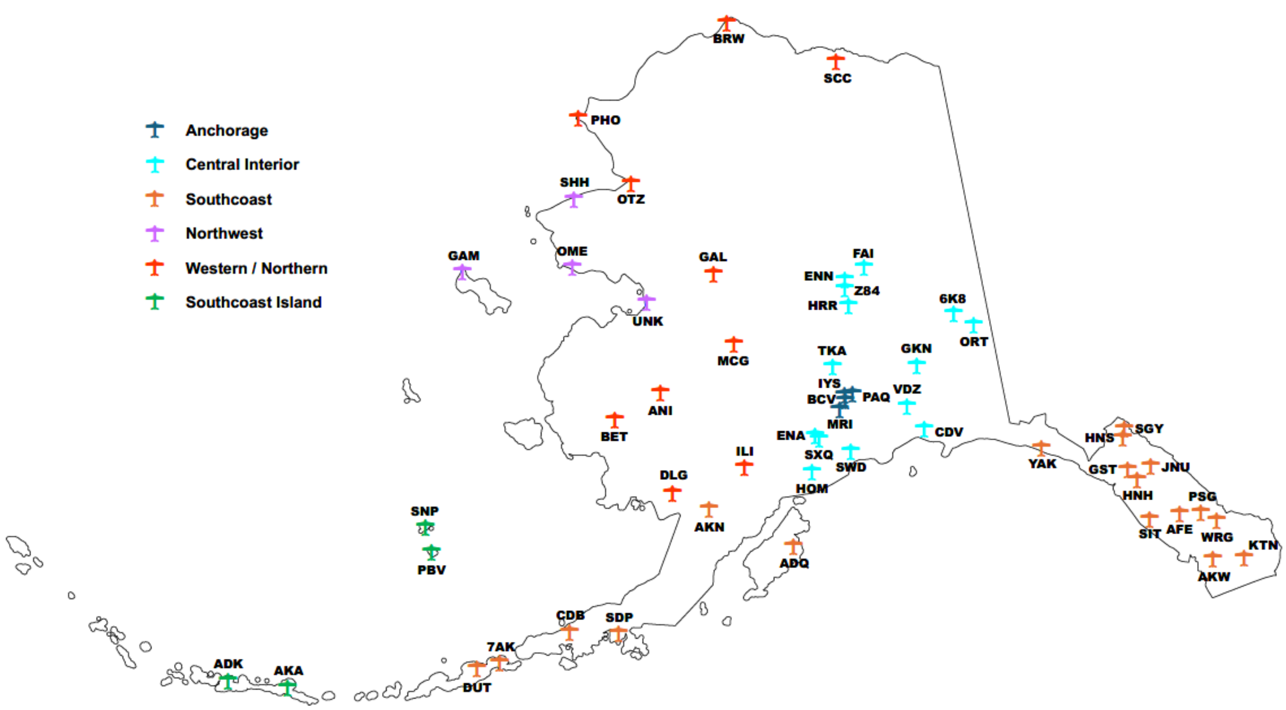


Figure 5—Airport Location Relative to Modified Fuel Factor Groups

Table 10 shows the fuel price and modified fuel factor for each airport relative to its assigned modified fuel factor group.

Table 10—Airport Assignments to Modified Fuel Factor Groups for Unit Cost Analysis

PAVER Network ID	Fuel Price ($/gal)	Fuel Factor	Modified Fuel Factor	Modified Fuel Factor Group
Birchwood	$3.90	1.00	1.00	Anchorage
Merrill	$4.09	1.00		
Palmer	$4.32	1.00		
Wasilla	$3.64	1.00		
Clear	$3.55	1.07	1.10	Central Interior
Cordova	$3.79	1.13		
Fairbanks	$3.79	1.19		
Gulkana	$3.83	1.00		
Healy R.	$3.90	0.98		
Homer	$3.79	1.04		
Kenai	$3.79	1.04		
Nenana	$3.79	1.06		
Northway	$3.90	1.07		
Seward	$4.05	1.04		
Soldotna	$4.20	1.04		
Talkeetna	$5.04	1.04		
Tok	$4.50	1.07		
Valdez	$4.50	1.12		
Akutan	$4.68	1.16	1.31	Southcoast
Cold Bay	$4.99	1.39		
Gustavus	$4.97	1.24		
Haines	$4.54	1.24		
Hoonah	$6.50	1.29		
Juneau	$4.49	1.37		
Kake	$4.16	1.37		
Ketchikan	$4.54	1.25		
King Salmon	$4.77	1.79		
Klawock	$4.50	1.24		
Kodiak	$4.52	1.15		
Petersburg	$4.58	1.25		
Sitka	$4.50	1.31		
Skagway	$4.16	1.24		
Unalaska	$5.74	1.25		
Wrangell	$5.74	1.26		
Yakutat	$6.90	1.24		
Sand Point	$6.39	1.15		
Nome	$6.75	1.58	1.63	Northwest
Unalakleet	$7.88	1.58		
Gambell	$8.04	1.90		
Shishmaref	$8.21	1.76		
Dillingham	$8.50	1.86	2.05	Western / Northern
Iliamna	$6.78	2.17		
Galena	$7.60	2.21		
McGrath	$7.73	2.26		
Aniak	$7.50	2.34		
Bethel	$7.15	1.87		
Point Hope	$7.50	2.09		
Kotzebue	$7.50	2.13		
Deadhorse	$9.99	2.07		
Barrow	$9.99	1.97		
Adak	$3.90	2.07	2.29	Southcoast Island
Atka	$4.09	2.07		
Saint George	$4.32	2.75		
Saint Paul	$3.64	2.75		

SUMMARY

This report documents the development of pavement treatment unit costs for use in the Airport Pavement Management Program. Unit costs are used within the PAVER database to predict annual pavement maintenance and repair budgets for paved airports within Alaska.

Derivation of appropriate pavement M&R unit costs is not trivial. First, pavement unit costs were derived from a sample of actual construction projects completed by Alaska DOT&PF during the period 2005 to 2023. We carefully reviewed the projects, assigned work categories, removed costs unrelated to pavement M&R, and computed a unit cost for the pavement treatment based on the area treated. We then developed a method of standardizing pavement M&R costs around the state to a single location—Anchorage—by use of published heating fuel prices. Lastly, we ensured that unit costs were adjusted to a standard year of analysis—2023—and further escalated to reflect inflationary impacts. To better represent remote or atypical sites, modified fuel factor groupings were developed to capture variability at outlier airports.

Through this process, unit costs for a range of pavement M&R treatments were developed for three categories: Localized Pavement Preservation and Corrective Maintenance Global Surface Treatments, and Major Rehabilitation or Reconstruction. These unit costs are used for a variety of purposes in PAVER including the analysis of alternative M&R budget scenarios.

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Appendix D
Alaska Airport
Pavement Management Program
2025 Pavement Classification Ratings

September 2025

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INTRODUCTION

The **Aircraft Classification Rating - Pavement Classification Rating (ACR-PCR)** method for reporting pavement strength was developed by the International Civil Aviation Organization (ICAO). The purpose of the ACR-PCR method is to provide aviation authorities around the globe with a unified and straightforward method of reporting and evaluating pavement strength.

In the ACR-PCR method, one compares the relative loading effect of an aircraft (Aircraft Classification Rating or ACR) to the relative strength of the pavement for unrestricted aircraft operations (Pavement Classification Rating or PCR). ACRs and PCRs are computed for a specific combination of pavement type, aircraft tire pressure, and subgrade soil strength. ACRs and PCRs may be computed for two types of pavements, four tire pressure categories, four subgrade strength categories, and two evaluation types, as shown in Table 1.

Table 1—PCR Codes [1]

Pavement Category	Code	Notes	
Rigid	R	Portland Cement Concrete	
Flexible	F	Asphalt Concrete	
Tire Pressure Category	**Code**	**Tire Pressure Range**	
Unlimited	W	No pressure limit	
High	X	Pressure limited to 254 psi	
Medium	Y	Pressure limited to 181 psi	
Low	Z	Pressure limited to 73 psi	
Subgrade Strength Category	**Code**	**Elastic Modulus (E) (psi)**	**Represents E (psi)**
High	A	29,008	E > 21,756
Medium	B	17,405	14,504 < E < 21,756
Low	C	11,603	8,702 < E < 14,504
Ultra Low	D	7,252	E < 8,702
Evaluation Category	**Code**	**Notes**	
Technical Study	T	Computation used to determine PCR	
Using Aircraft	U	Maximum ACR from among current fleet	

[1] Federal Aviation Administration (2022), *Standardized Method of Reporting Airport Pavement Strength – PCR*, Advisory Circular 150/5335-5D, US Department of Transportation, Washington, DC, April 29, 2022.

Aircraft manufacturers typically publish ACRs for aircraft at a range of aircraft weights. Airport authorities then must compute a PCR for the public-use airport pavements. As a member of ICAO, the US is obligated to report runway pavement strength in terms of PCR. The FAA developed the FAARFIELD software as a standardized method for computing PCR for US civil airport authorities.

Furthermore, the FAA has tied US airports' future eligibility for AIP funding to the requirement to assign and publish PCRs for paved runways. This requirement appears in a letter from the FAA Office of Safety and Standards to Airport Sponsors, dated April 29, 2022, based on the following statement:

> *"Effective with the publication of AC 150/5335-5D, the FAA requires all public use paved runways at all 14 CFR Part 139 certificated airports to be assigned gross weight and PCR data by September 30, 2024. Furthermore, the FAA requires that all airports assign gross weight and PCR data to airport pavements as part of projects funded with federal grant monies that* ***include pavement management****, rehabilitation or reconstruction."* [2] ***(bold emphasis added)***

To fulfill this requirement, PCRs are being computed for each airport in the Alaska Airport PMP. Generally, PCRs have been computed at the same time PCI inspections were performed. Runway PCRs are published in individual airport reports beginning in 2023 through 2025.

METHODOLOGY

FAA Advisory Circular 150/5335-5D, *Standardized Method of Reporting, Airport Pavement Strength – PCR*, establishes the methodology for computed PCRs for FAA-funded airport pavements. For technical evaluations of PCR, the FAA method is embodied in FAARFIELD, which is the FAA software that conducts both airport pavement thickness design and pavement strength reporting using PCR.

Computation of the runway pavement PCR follows a stepwise process, as follows:

1. The pavement must be divided into individual sections of the same age, pavement type, and structural section.
2. For each pavement section on the runway, the following inputs are required:
    a. Pavement surface type and thickness.
    b. Base layer material type and thickness (and whether stabilized or not).
    c. Subbase layer material type and thickness (and whether stabilized or not).
    d. Subgrade soil type and strength or stiffness.
3. Develop an aircraft fleet mix for the airport.
4. Compute PCR for each runway section using FAARFIELD.
5. Typically, the lowest section PCR is selected to be published for the runway.

[2] Federal Aviation Administration (2022). Letter to Airport Sponsors, Office of Airport Safety and Standards, AAS-110, US Department of Transportation, Washington DC, April 29, 2022.

PHYSICAL PROPERTY DATA

For this study, we established the physical property data (thickness, type, and strength properties) of each runway pavement section based upon a desktop review of available Alaska DOT&PF as-built construction records and other reports. Careful review of as-built construction plans, geologic studies, geotechnical engineering project reports, and related documents allowed the development of an understanding of the current runway structure. This required our engineers to consider how the airport was constructed over time, including strengthening, lengthening, widening, and otherwise reconfiguring the airport pavement system over a period of several decades. Based on our review of the available documents, we established a physical property data (PPD) table to summarize our understanding of the pavement sections for the airport runway. The following is the PPD established for Gustavus Airport which is presented as an example of the PPD tables developed for this project.

Table 2—Gustavus Airport Physical Property Data Table

		Pavement		Base		Subbase		Subgrade	
Branch ID	**Section ID**	**Thick (in)**	**Type**	**Thick (in)**	**Type**	**Thick (in)**	**Type**	**Type**	**CBR**
Runway 11/29 6100	6100-01	4.5	P-401	6	P-209	-	-	SP-SM	10
	6100-03	4.5	P-401	6	P-209	-	-	SP-SM	10
	6100-05	4.5	P-401	6	P-209	-	-	SP-SM	10
	6100-06	3	P-401	8	P-209	-	-	SP-SM	10
	6100-07	2	P-401	8	P-209	-	-	SP-SM	10
Runway 2/20 6200	6200-01	4	P-401	10	P-209	5	P-154	SP-SM	10
	6200-02	4	P-401	6	P-209	9	P-154	SP-SM	10
	6200-03	4	P-401	6	P-209	9	P-154	SP-SM	10

The data from the PPD was then entered into the FAARFIELD software. We entered each unique runway section into FAARFIELD separately. In the case that more than one section shared the same section as reported in the PPD, we only entered one section. For the Gustavus Airport PPD shown above, a total of five sections were entered into FAARFIELD, three sections for RW 11/29 and two sections for RW 2/20.

AIRCRAFT FLEET MIX

The aircraft fleet mix for each airport was established based on review of the previous five years of data from two separate sources. The primary source was a report produced from an analysis of FAA Aviation System Performance Metrics (ASPM) records for the period 2016 to 2022, with the data grouped by airport calendar year. This data included a list of each aircraft that filed a flight plan with the FAA to travel to or from one of the airports of interest in the Alaska Airport PMP. The second source was produced from the Traffic Flow Management System Counts, which is affiliated with the ASPM system but includes only DoD aircraft. Due to the proximity of two large air bases in the state, Joint Base Elmendorf-Richardson and Eielsen Air Force Base, there are frequent training missions to Alaska public use airports by military aircraft. Using the data from these two sources, we established a fleet mix for each airport and entered that fleet mix into FAARFIELD.

A FAARFIELD screenshot is presented in Figure 1 to demonstrate how the PPD and aircraft fleet mix data were entered into FAARFIELD.

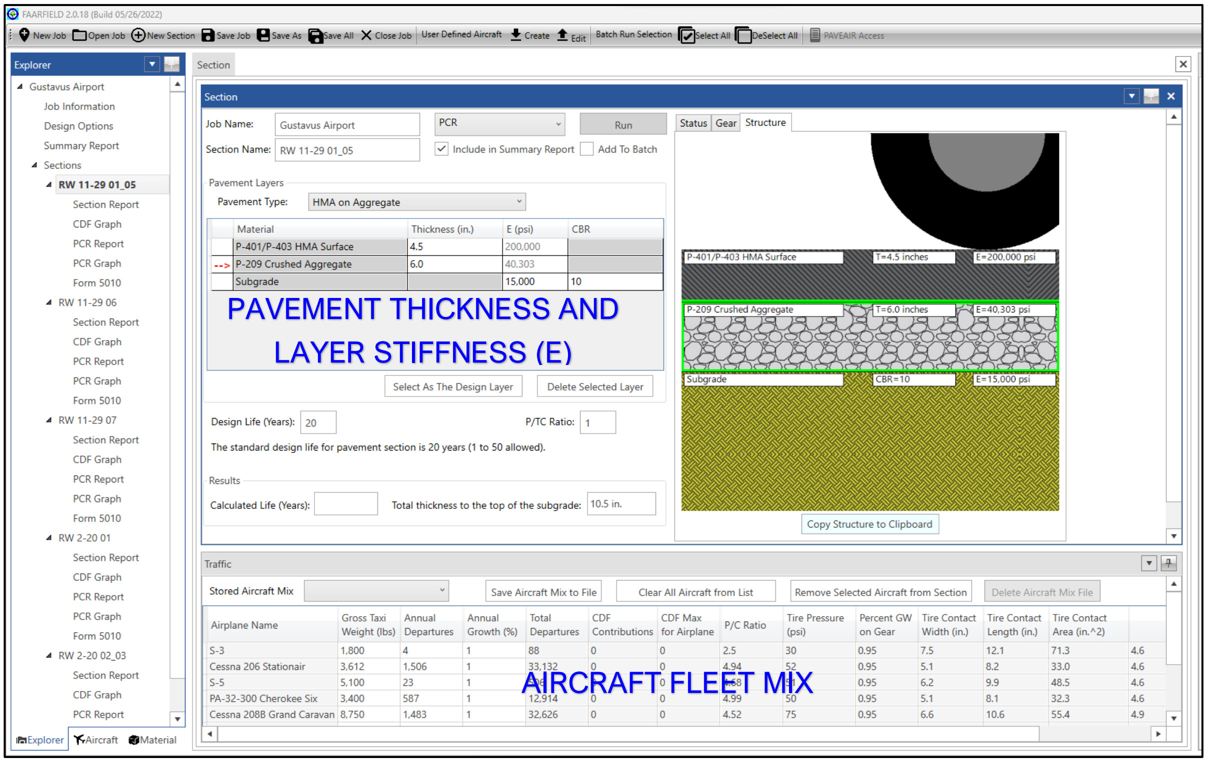

Figure 1—FAARFIELD Screenshot Showing PCR Input Data for Gustavus Airport

FAARFIELD OUTPUT

We ran FAARFIELD to compute the PCR for each runway at the airports under consideration during the study year. FAARFIELD computes the PCR and identifies the controlling aircraft for the PCR. We computed PCRs for 22 runways evaluated in 2023, 10 runways in 2024, and 17 in 2025 for a total of 49 of the 54 airports with paved runways managed by the Alaska DOT&PF as presented in Table 3.

The runway PCRs presented in Table 3 were computed based on the methodology detailed in FAA AC 150/5335-5D. In some cases, PCRs were adjusted based on engineering judgement or the needs of the Alaska DOT&PF. For this reason, the PCRs in the above tables may not be the same as those published in the individual airport reports for these airports. Moreover, where a difference in the PCR exists between this document and the individual airport reports, the PCR reported in the individual airport report shall take precedence.

Table 3—Runway PCRs Computed for Alaska Airports

Airport	RW	Year			PCR	Airport	RW	Year			PCR
		2023	2024	2025				2023	2024	202	
Adak	5/23	♦			2482/F/B/W/T	Klawock	2/20	♦			575/F/B/X/T
Akutan	9/27			♦	235/F/A/X/T	Kodiak	1/19	♦			1424/F/C/W/T
Aniak	11/29		♦		882/F/B/X/T	Kodiak	8/26	♦			1301/F/C/W/T
Atka	16/34	♦			509/F/C/X/T	Kodiak	11/29	♦			739/F/C/W/T
Barrow	8/26			♦	786/F/A/X/T	Kotzebue	9/27		♦		710/F/B/X/T
Bethel	1L/19R		♦		530/F/C/X/T	McGrath	16/34	♦			991/F/C/W/T
Bethel	1R/19L		♦		360/F/C/X/T	Merrill	7/25			♦	610/F/C/X/T
Cold Bay	8/26	♦			1137/F/B/W/T	Merrill	16/34			♦	580/F/C/X/T
Cold Bay	15/33	♦			1023/F/B/W/T	Nome	10/28			♦	916F/A/X/T
Cordova	9/27			♦	977/F/A/X/T	Nome	3/21			♦	1742/F/A/X/T
Deadhorse	6/24	♦			403/F/A/X/T	Petersburg	5/23	♦			418/F/B/X/T
Dillingham	1/19	♦			738/F/C/W/T	Point Hope	3/21		♦		527/F/B/X/T
Fairbanks	2L/20R			♦	670/F/B/X/T	Sand Point	13/31	♦			1018/F/A/W/T
Fairbanks	2R/20L			♦	570/F/B/X/T	Shishmaref	5/23		♦		239/F/C/X/T
Galena	8/26			♦	620/F/A/X/T	Sitka	11/29	♦			461/F/B/X/T
Gambell	16/34		♦		221/F/C/X/T	Skagway	2/20			♦	223/F/B/X/T
Gustavus	11/29	♦			418/F/B/X/T	St George	11/29	♦			520/F/C/W/T
Gustavus	2/20	♦			237/F/B/X/T	St Paul	18/36	♦			878/F/C/W/T
Hoonah	6/24			♦	161/F/A/X/T	Unalakleet	8/26			♦	448/F/B/X/T
Iliamna	8/26	♦			334/F/C/W/T	Unalakleet	15/33			♦	448/F/B/X/T
Iliamna	18/36	♦			334/F/C/W/T	Wasilla	4/22		♦		129/F/D/X/U
Juneau	8/26			♦	892/F/A/X/T	Wrangell	10/28	♦			384/F/A/X/T
Ketchikan	11/29	♦			635/F/B/X/T	Yakutat	2/20			♦	135/F/B/X/T
King Salmon	12/30		♦		550/F/B/X/T	Yakutat	11/29			♦	480/F/D/X/T
King Salmon	18/36		♦		1170/F/B/X/T						

LIMITATIONS

The preferred method for establishing the PPD for runway sections is to conduct a program of pavement coring and testing to measure layer thickness and estimate layer strength. Rather than perform field testing as described above, we conducted a desktop review of the available construction records. In the case of conflicting or missing data, we completed the PPD based on conservative assumptions and estimates. In addition, for airports with pavement base, subbase, or subgrade layers constructed of frost-susceptible materials, we conservatively reduced the reported strength of the layer to that during the thaw-weakened condition. For these reasons, the PCRs presented in Table 3 are conservatively low in some cases.

In one or two cases, when we compared the computed PCRs to the ACRs of using aircraft on a runway, and the runway did not exhibit any load-related damage, it became clear that the conservative assumptions and estimates used in our calculations had resulted in a PCR that did not represent the actual runway strength. In these cases, we reverted to the ACR of the using aircraft as the PCR. The one or two cases where this occurred are noted in the individual airport reports.

SUMMARY

Runway PCRs were computed in conformance with the guidance in FAA AC 150/5335-5D and have been published for airports inspected in 2022 through 2025. The PCRs are published in the individual airport reports for each airport.

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Appendix E
Alaska Airport
Pavement Management Program
2025 PAVER Work Plan Details

September 2025

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INTRODUCTION

We recommend that Alaska DOT&PF strive for a PCI of at least 70 for the Alaska airport pavement system. M&R activities planned and programmed by the Department in past years, and funded by the FAA through the AIP program, have resulted in a relatively high average PCI of 72 across a system of 54 airports in Alaska. This is a remarkable achievement and Alaska DOT&PF should take stock of the relatively high condition of its airport pavement system.

With an average PCI of 72, the pavement system's condition is approaching the critical PCI of 70. Although the PCI is still above this critical threshold, the system will benefit more from a sustained pavement preservation program than from major rehabilitation efforts. The pavement preservation approach takes advantage of lower-cost technologies, such as seal coats, to preserve and protect a structurally sound pavement in a relatively high state of condition. Since pavement preservation treatments cost only a fraction of the price of major work, such as mill/overlay, the preservation approach is to apply these treatments “early and often.” Routine, regular application of seal coats, in concert with crack sealing and patching, is a widely accepted strategy of preserving the high condition of a pavement network at a reasonable cost.

Therefore, we strongly recommend that Alaska DOT&PF adopt **Budget Scenario 3—Maintain Current PCI of 72**. At an annual cost of $124 million, this scenario represents a 13.5% increase over the current annual budget of $109.25 million for pavement M&R. While modest, this increase offers a highly cost-effective alternative to other scenarios. Moreover, Budget Scenario 3 is projected to reduce backlog growth by approximately $86 million over the five-year period, compared to **Budget Scenario 4—Maintain Current Budget**.

However, if Alaska DOT&PF elects to continue with the current $109.25 million annual budget during the 2026–2030 period, we have provided the PAVER-recommended M&R details for **Budget Scenario 4—Maintain Current Budget**. While this scenario aligns with historical funding levels, it may not be sufficient to sustain the current average PCI of 72. Over time, deferred maintenance and limited preservation treatments can accelerate pavement deterioration, leading to increased repair costs and a growing backlog. Without proactive investment, the system risks falling below the critical PCI threshold of 70, which would necessitate more frequent and costly rehabilitation efforts. The following tables and figures summarize how the PMP recommends allocating funds under this scenario, given the constraints of the existing budget.

MAINTAIN CURRENT BUDGET WORK PLAN DETAILS

Summary of Budget Scenario 4 - Maintain Current Budget

Alaska DOT&PF expends approximately **$109.25M** per year for pavement M&R. Funding sources for this budget include federal AIP funds in addition to state funds. At this level of investment, the PCI at the end of the five-year analysis period will be **72.** The total amount funded over the five-year analysis period is **$546M** and would result in a backlog of **$1.56B.** An overall summary of this budget is shown in Table 1. Table 2 and 3 depict the total funded per airport by M&R work type and by year, respectively. Tables 4 through 8 display the major M&R per section for each year.

Table 1 - Budget Scenario 4 - Maintain Current Budget ($M)

Date of Plan	Funded M&R Work Type				Total Funded	Total Unfunded	Total Funded and Unfunded	PCI	
	Localized Stopgap	Localized Preventive	Global	Major				Before Work	After Work
2026	$6.63	$4.12	$14.05	$84.38	$109	$887	$996	72	74
2027	$7.66	$4.19	$2.37	$95.00	$109	$960	$1,070	72	74
2028	$9.12	$4.42	$3.62	$92.07	$109	$1,027	$1,136	72	74
2029	$10.87	$4.65	$2.35	$91.34	$109	$1,104	$1,213	72	73
2030	$12.79	$4.89	$0.52	$90.99	$109	$1,156	$1,265	71	72
Total	**$47**	**$22**	**$23**	**$454**	**$546**	**-**	**$1,702**	**72**	**72**

Figure 1 displays the impact on the PCI over time with respect to the total funded and unfunded M&R.

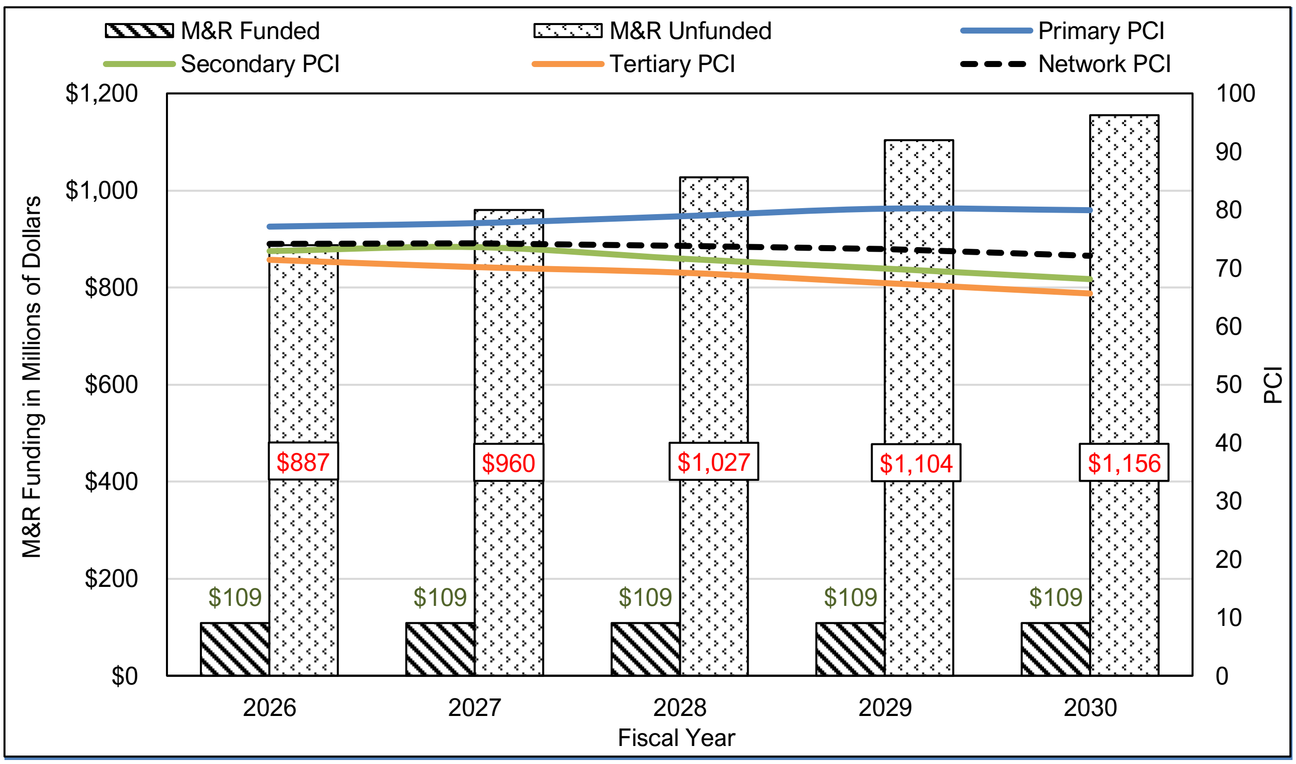


Figure 1 - Budget Scenario 5—Maintain Current Budget

Table 2 - Total Funded per Airport by M&R Work Type (2026 through 2030)

Network ID	Funding by M&R Work Type				Total
	Localized Stopgap	Localized Preventive	Global	Major	
Adak	$7,279,394	$227,354	$116,956	$52,210,315	$59,834,020
Akutan	$0	$84,963	$76,998	$0	$161,961
Aniak	$0	$331,183	$488,460	$0	$819,644
Atka	$4,882	$428,807	$136,400	$0	$570,088
Barrow	$791,661	$481,568	$374,832	$42,485,948	$44,134,010
Bethel	$639,483	$1,633,499	$1,579,173	$40,669,163	$44,521,319
Birchwood	$760,860	$237,137	$587,174	$0	$1,585,171
Clear	$560,901	$43,126	$10,482	$0	$614,509
Cold Bay	$192,328	$598,669	$393,757	$0	$1,184,754
Cordova	$61,691	$225,831	$292,190	$28,113,196	$28,692,908
Deadhorse	$0	$1,276,150	$1,217,483	$20,020,369	$22,514,002
Dillingham	$0	$692,357	$1,037,735	$0	$1,730,093
Fairbanks	$575,062	$1,671,427	$1,723,208	$68,301,287	$72,270,984
Galena	$858,436	$663,416	$1,257,288	$0	$2,779,140
Gambell	$0	$169,344	$100,452	$0	$269,795
Gulkana	$0	$230,727	$234,464	$0	$465,191
Gustavus	$0	$369,943	$829,756	$0	$1,199,699
Haines	$0	$131,539	$333,503	$13,300,000	$13,765,042
Healy R.	$856,426	$0	$0	$0	$856,426
Homer	$0	$204,894	$252,259	$0	$457,153
Hoonah	$330,806	$33,433	$0	$698,588	$1,062,826
Iliamna	$662,213	$582,374	$0	$0	$1,244,587
Juneau	$842,754	$788,918	$1,224,296	$36,127,126	$38,983,093
Kake	$0	$154,238	$1,573	$0	$155,810
Kenai	$1,561,200	$874,492	$1,023,469	$0	$3,459,161
Ketchikan	$349,563	$284,760	$759,300	$31,764,013	$33,157,636
King Salmon	$484,881	$858,488	$37,164	$0	$1,380,532
Klawock	$73,349	$225,220	$0	$0	$298,569
Kodiak	$80,001	$560,668	$185,724	$33,928,195	$34,754,588
Kotzebue	$29,470	$595,139	$1,142,134	$0	$1,766,743
McGrath	$983,260	$443,576	$668,673	$0	$2,095,509
Merrill	$206,112	$725,477	$1,245,433	$0	$2,177,022
Nenana	$377,763	$126,769	$0	$0	$504,532
Nome	$866,310	$776,638	$626,794	$538,607	$2,808,348
Northway	$1,440,324	$3,908	$0	$0	$1,444,232
Palmer	$868,847	$725,565	$784,738	$0	$2,379,149
Petersburg	$39,262	$211,265	$186,944	$24,410,097	$24,847,567
Point Hope	$0	$140,638	$168,131	$0	$308,769
Sand Point	$0	$306,222	$412,263	$0	$718,484
Seward	$670,021	$111,312	$27,264	$0	$808,598
Shishmaref	$499,703	$68,841	$45,672	$0	$614,215
Sitka	$356,263	$458,543	$461,545	$6,245,890	$7,522,241
Skagway	$100,234	$393,701	$0	$0	$493,935
Soldotna	$359,646	$452,326	$1,248,394	$0	$2,060,366
StGeorge	$0	$352,995	$230,205	$0	$583,200
StPaul	$878,467	$483,328	$368,496	$0	$1,730,291
Talkeetna	$7,570	$145,435	$314,330	$0	$467,335
Tok	$734,574	$27,930	$80,535	$0	$843,039
Unalakleet	$1,133,636	$297,785	$0	$0	$1,431,421
Unalaska	$0	$103,521	$12,864	$0	$116,384
Valdez	$112,154	$256,541	$0	$28,550,000	$28,918,695
Wasilla	$87,242	$458,663	$258,381	$0	$804,286
Wrangell	$14,627	$199,302	$290,164	$19,717,568	$20,221,661
Yakutat	$20,328,887	$333,488	$66,378	$6,688,835	$27,417,588
Total:	**$47,060,261**	**$22,263,429**	**$22,913,434**	**$453,769,197**	**$546,006,320**

Table 3 - Total Funded per Airport by Year (2026 through 2030)

Network ID	Funding by Year					Total
	2026	2027	2028	2029	2030	
Adak	$1,409,032	$1,410,988	$1,559,285	$1,715,087	$53,739,627	$59,834,020
Akutan	$92,325	$15,851	$16,852	$17,909	$19,024	$161,961
Aniak	$102,047	$378,294	$131,229	$134,077	$73,997	$819,644
Atka	$197,188	$73,814	$85,699	$99,735	$113,653	$570,088
Barrow	$239,077	$652,618	$30,057,468	$8,594,026	$4,590,821	$44,134,010
Bethel	$1,281,089	$14,920,187	$18,732,222	$9,033,696	$554,125	$44,521,319
Birchwood	$152,355	$179,524	$403,896	$275,421	$573,975	$1,585,171
Clear	$96,797	$99,695	$115,506	$138,981	$163,529	$614,509
Cold Bay	$524,487	$141,335	$157,262	$173,390	$188,280	$1,184,754
Cordova	$11,895,412	$612,703	$16,060,537	$55,296	$68,959	$28,692,908
Deadhorse	$11,189,740	$234,805	$262,457	$286,848	$10,540,153	$22,514,002
Dillingham	$1,161,135	$125,003	$135,494	$147,600	$160,860	$1,730,093
Fairbanks	$10,012,829	$4,845,756	$8,948,187	$47,046,637	$1,417,574	$72,270,984
Galena	$1,524,509	$274,331	$310,105	$302,763	$367,433	$2,779,140
Gambell	$131,392	$31,664	$33,393	$35,134	$38,212	$269,795
Gulkana	$268,547	$36,200	$43,900	$52,862	$63,682	$465,191
Gustavus	$59,495	$67,400	$84,423	$887,304	$101,077	$1,199,699
Haines	$13,614,686	$21,101	$62,060	$31,679	$35,516	$13,765,042
Healy R.	$119,690	$141,846	$167,500	$196,052	$231,339	$856,426
Homer	$255,317	$55,070	$42,430	$49,996	$54,339	$457,153
Hoonah	$55,872	$64,159	$72,661	$80,891	$789,243	$1,062,826
Iliamna	$196,791	$222,272	$248,103	$274,572	$302,849	$1,244,587
Juneau	$8,322,051	$817,517	$11,756,540	$11,089,953	$6,997,032	$38,983,093
Kake	$26,182	$28,036	$30,373	$34,748	$36,471	$155,810
Kenai	$1,379,581	$403,451	$474,146	$554,253	$647,729	$3,459,161
Ketchikan	$10,385,583	$21,876,883	$112,682	$607,296	$175,192	$33,157,636
King Salmon	$253,110	$245,704	$267,384	$309,145	$305,189	$1,380,532
Klawock	$60,082	$52,774	$59,443	$60,182	$66,088	$298,569
Kodiak	$300,366	$6,260,201	$6,938,479	$16,346,223	$4,909,320	$34,754,588
Kotzebue	$299,002	$298,391	$902,399	$129,008	$137,943	$1,766,743
McGrath	$421,645	$455,632	$362,557	$558,100	$297,575	$2,095,509
Merrill	$806,108	$242,009	$348,392	$581,959	$198,553	$2,177,022
Nenana	$72,419	$86,687	$106,823	$112,894	$125,710	$504,532
Nome	$801,591	$881,298	$321,514	$380,262	$423,683	$2,808,348
Northway	$219,475	$247,561	$280,539	$322,174	$374,484	$1,444,232
Palmer	$681,263	$416,832	$318,373	$357,398	$605,284	$2,379,149
Petersburg	$23,095,559	$42,812	$53,800	$55,499	$1,599,898	$24,847,567
Point Hope	$21,939	$25,915	$28,492	$199,656	$32,767	$308,769
Sand Point	$468,227	$57,022	$60,524	$64,356	$68,355	$718,484
Seward	$142,830	$133,878	$153,889	$176,398	$201,603	$808,598
Shishmaref	$115,243	$89,356	$94,423	$135,486	$179,708	$614,215
Sitka	$612,392	$159,623	$2,928,171	$730,005	$3,092,049	$7,522,241
Skagway	$81,090	$88,865	$98,317	$107,806	$117,857	$493,935
Soldotna	$864,014	$202,928	$342,611	$443,162	$207,651	$2,060,366
StGeorge	$294,893	$66,850	$70,247	$73,770	$77,439	$583,200
StPaul	$559,983	$227,678	$267,560	$308,325	$366,745	$1,730,291
Talkeetna	$341,732	$28,269	$31,208	$37,135	$28,990	$467,335
Tok	$196,011	$129,285	$150,110	$172,183	$195,450	$843,039
Unalakleet	$180,288	$221,968	$279,781	$342,536	$406,847	$1,431,421
Unalaska	$16,797	$18,586	$33,396	$22,576	$25,029	$116,384
Valdez	$174,019	$28,550,000	$43,276	$71,698	$79,702	$28,918,695
Wasilla	$236,914	$93,065	$105,477	$247,277	$121,552	$804,286
Wrangell	$578,207	$19,015,729	$539,467	$40,317	$47,941	$20,221,661
Yakutat	$2,581,470	$3,153,598	$3,933,040	$4,900,574	$12,848,906	$27,417,588
Total:	**$109,169,879**	**$109,223,017**	**$109,224,099**	**$109,202,314**	**$109,187,010**	**$546,006,320**

Table 4 - 2026 Major M&R by Section

Alaska DOT&PF Region	Network ID	Branch ID	Branch Use	Section ID	Section Rank	Area (Sqft)	PCI Before Work	Major M&R Cost
Northern	Cordova	6100	Runway	6100-01	Primary	281,250	63.36	$5,131,844
Northern	Cordova	6100	Runway	6100-03	Primary	281,250	61.27	$5,575,057
Northern	Cordova	6100	Runway	6100-05	Primary	36,742	56.38	$863,785
Northern	Deadhorse	6100	Runway	6100-02	Primary	325,000	66.19	$9,758,729
Northern	Fairbanks	100	Taxiway	0100-04	Primary	29,850	59.91	$622,309
Northern	Fairbanks	150	Taxiway	0150-02	Primary	8,309	59.53	$175,606
Northern	Fairbanks	6100	Runway	6100-03	Primary	590,000	68.23	$8,599,004
Southcoast	Haines	100	Taxiway	0100-03	Secondary	114,891	48.22	$2,597,016
Southcoast	Haines	200	Taxiway	0200-02	Secondary	5,224	58.50	$118,084
Southcoast	Haines	300	Taxiway	0300-01	Secondary	13,800	58.35	$311,938
Southcoast	Haines	400	Taxiway	0400-01	Secondary	17,038	53.36	$385,130
Southcoast	Haines	500	Taxiway	0500-01	Secondary	16,434	50.82	$371,477
Southcoast	Haines	4200	Apron	4200-01	Secondary	21,000	51.88	$474,688
Southcoast	Haines	6100	Runway	6100-01	Secondary	360,000	55.40	$8,137,501
Southcoast	Haines	6100	Runway	6100-02	Secondary	40,000	46.67	$904,167
Southcoast	Juneau	6100	Runway	6100-1B	Primary	442,850	68.27	$7,671,732
Southcoast	Ketchikan	6100	Runway	6100-01	Primary	375,000	59.31	$9,513,607
Southcoast	Petersburg	6100	Runway	6100-01	Primary	300,000	59.77	$7,486,963
Southcoast	Petersburg	6100	Runway	6100-01W	Primary	20,000	60.43	$487,277
Southcoast	Petersburg	6100	Runway	6100-03	Primary	300,000	63.36	$6,519,815
Southcoast	Petersburg	6100	Runway	6100-03W	Primary	20,000	62.65	$447,406
Southcoast	Petersburg	6100	Runway	6100-05	Primary	300,000	59.77	$7,486,963
Southcoast	Petersburg	6100	Runway	6100-05W	Primary	20,000	62.65	$447,406
Southcoast	Wrangell	100	Taxiway	0100-03	Primary	11,515	59.74	$287,685
							2026 Total	**$84,375,187**

Table 5 - 2027 Major M&R by Section

Alaska DOT&PF Region	Network ID	Branch ID	Branch Use	Section I D	Section Rank	Area (Sqft)	PCI Before Work	Major M&R Cost
Central	Bethel	500	Taxiway	0500-02	Primary	33,128	53.91	$1,013,247
Central	Bethel	700	Taxiway	0700-03	Primary	71,829	40.87	$2,196,949
Central	Bethel	4100	Apron	4100-03	Primary	70,433	37.64	$2,154,251
Central	Bethel	4200	Apron	4200-01	Primary	235,270	52.54	$7,195,925
Central	Bethel	4500	Apron	4500-01	Secondary	45,000	28.77	$1,376,362
Northern	Cordova	6100	Runway	6100-04	Primary	37,535	69.42	$528,780
Northern	Fairbanks	120	Taxiway	0120-HS	Primary	2,975	57.55	$158,273
Northern	Fairbanks	130	Taxiway	0130-01	Primary	20,192	59.04	$447,232
Northern	Fairbanks	1400	Taxiway	1400-03	Primary	30,692	59.88	$659,774
Northern	Fairbanks	1600	Taxiway	1600-03	Primary	128,757	58.18	$2,937,828
Southcoast	Juneau	510	Taxiway	0510-04	Primary	13,600	54.82	$411,858
Southcoast	Ketchikan	6100	Runway	6100-03	Primary	375,000	56.28	$10,849,976
Southcoast	Ketchikan	6100	Runway	6100-05	Primary	375,000	56.05	$10,929,753
Southcoast	Kodiak	6100	Runway	6100-03	Primary	375,500	69.92	$6,127,071
Northern	Nome	500	Taxiway	0500-01	Primary	11,558	59.63	$371,471
Northern	Nome	500	Taxiway	0500-03	Primary	3,667	47.96	$167,135
Northern	Valdez	100	Taxiway	0100-01	Secondary	397,500	71.86	$4,807,507
Northern	Valdez	100	Taxiway	0100-02	Secondary	64,500	69.62	$780,086
Northern	Valdez	100	Taxiway	0100-03	Secondary	64,000	69.40	$774,039
Northern	Valdez	300	Taxiway	0300-01	Secondary	70,075	64.67	$847,512
Northern	Valdez	400	Taxiway	0400-01	Secondary	48,820	70.43	$590,447
Northern	Valdez	4100	Apron	4100-01	Secondary	96,600	66.01	$1,168,315
Northern	Valdez	4200	Apron	4200-01	Tertiary	168,160	63.42	$2,033,787
Northern	Valdez	4300	Apron	4300-01	Tertiary	30,450	63.20	$368,273
Northern	Valdez	4300	Apron	4300-02	Tertiary	445,500	73.40	$5,388,036
Northern	Valdez	6100	Runway	6100-01	Secondary	325,000	50.99	$3,930,666
Northern	Valdez	6100	Runway	6100-03	Secondary	325,000	39.05	$3,930,666
Northern	Valdez	6100	Runway	6100-05	Secondary	325,000	46.00	$3,930,666
Southcoast	Wrangell	6100	Runway	6100-01	Primary	300,000	68.35	$5,330,777
Southcoast	Wrangell	6100	Runway	6100-03	Primary	300,000	57.17	$8,433,026
Southcoast	Wrangell	6100	Runway	6100-05	Primary	300,000	68.97	$5,158,738
							2027 Total	**$94,998,425**

Table 6 - 2028 Major M&R by Section

Alaska DOT&PF Region	Network ID	Branch ID	Branch Use	Section ID	Section Rank	Area (Sqft)	PCI Before Work	Major M&R Cost
Northern	Barrow	6100	Runway	6100-01	Primary	295,000	69.35	$8,006,878
Northern	Barrow	6100	Runway	6100-03	Primary	295,000	69.25	$8,050,881
Northern	Barrow	6100	Runway	6100-05	Primary	295,000	69.45	$7,962,875
Northern	Barrow	6100	Runway	6100-07	Primary	28,490	68.47	$810,671
Northern	Barrow	6100	Runway	6100-08	Primary	90,000	68.92	$2,500,502
Northern	Barrow	6100	Runway	6100-09	Primary	90,000	68.84	$2,511,242
Central	Bethel	6100	Runway	6100-01	Primary	418,700	69.83	$11,064,559
Central	Bethel	6100	Runway	6100-03	Primary	91,023	69.50	$2,450,177
Central	Bethel	6100	Runway	6100-06	Primary	31,000	70.00	$811,345
Central	Bethel	6100	Runway	6100-08	Primary	20,500	69.25	$559,468
Central	Bethel	6100	Runway	6100-09	Primary	22,000	68.88	$612,546
Central	Bethel	6100	Runway	6100-11	Primary	26,250	69.83	$693,682
Central	Bethel	6100	Runway	6100-14	Primary	37,000	68.52	$1,050,060
Central	Bethel	6100	Runway	6100-15	Primary	35,500	69.95	$931,768
Northern	Cordova	6100	Runway	6100-02	Primary	562,500	51.97	$16,013,730
Northern	Fairbanks	120	Taxiway	0120-01	Primary	149,900	59.84	$3,323,806
Northern	Fairbanks	200	Taxiway	0200-03	Primary	35,301	56.68	$871,978
Northern	Fairbanks	700	Taxiway	0700-02	Primary	35,769	55.85	$907,287
Northern	Fairbanks	1300	Taxiway	1300-02	Primary	35,491	53.18	$976,036
Northern	Fairbanks	1400	Taxiway	1400-02	Primary	36,350	51.66	$1,043,857
Southcoast	Juneau	300	Taxiway	0300-01	Primary	92,494	54.16	$2,943,249
Southcoast	Juneau	600	Taxiway	0600-01	Primary	12,163	52.61	$404,999
Southcoast	Juneau	6100	Runway	6100-1C	Primary	442,850	69.79	$7,497,656
Southcoast	Kodiak	6100	Runway	6100-02	Primary	375,500	68.56	$6,797,400
Southcoast	Sitka	200	Taxiway	0200-02	Primary	104,510	59.75	$2,769,039
Southcoast	Wrangell	6100	Runway	6100-07	Primary	30,000	69.81	$507,342
							2028 Total	**$92,073,033**

Table 7 - 2029 Major M&R by Section

Alaska DOT&PF Region	Network ID	Branch ID	Branch Use	Section ID	Section Rank	Area (Sqft)	PCI Before Work	Major M&R Cost
Northern	Barrow	100	Taxiway	0100-02	Primary	127,418	59.09	$5,570,640
Northern	Barrow	200	Taxiway	0200-02	Primary	32,821	48.59	$1,964,381
Northern	Barrow	6100	Runway	6100-06	Primary	28,184	69.06	$800,475
Central	Bethel	6100	Runway	6100-02	Primary	91,009	67.80	$2,760,995
Central	Bethel	6100	Runway	6100-04	Primary	31,000	67.16	$970,947
Central	Bethel	6100	Runway	6100-05	Primary	31,000	67.10	$973,805
Central	Bethel	6100	Runway	6100-07	Primary	21,250	67.32	$660,345
Central	Bethel	6100	Runway	6100-10	Primary	31,250	67.38	$968,215
Central	Bethel	6100	Runway	6100-12	Primary	31,250	67.00	$986,459
Central	Bethel	6100	Runway	6100-13	Primary	36,250	67.80	$1,099,738
Central	Bethel	6100	Runway	6100-16	Primary	5,000	69.54	$138,322
Northern	Fairbanks	100	Taxiway	0100-01	Primary	324,943	51.41	$9,678,202
Northern	Fairbanks	100	Taxiway	0100-02	Primary	479,250	51.22	$14,349,156
Northern	Fairbanks	130	Taxiway	0130-02	Primary	11,908	59.24	$277,850
Northern	Fairbanks	140	Taxiway	0140-02	Primary	8,512	59.88	$194,122
Northern	Fairbanks	150	Taxiway	0150-01	Primary	17,798	58.58	$424,960
Northern	Fairbanks	600	Taxiway	0600-02	Primary	50,387	49.10	$1,596,690
Northern	Fairbanks	800	Taxiway	0800-02	Primary	42,172	48.54	$1,355,853
Northern	Fairbanks	1600	Taxiway	1600-02	Primary	49,326	59.40	$1,144,423
Northern	Fairbanks	6100	Runway	6100-01	Primary	590,000	69.83	$8,618,586
Northern	Fairbanks	6100	Runway	6100-05	Primary	590,000	69.01	$9,017,196
Southcoast	Juneau	510	Taxiway	0510-02	Primary	20,233	41.66	$911,508
Southcoast	Juneau	510	Taxiway	0510-05	Primary	41,639	47.11	$1,652,932
Southcoast	Juneau	6100	Runway	6100-1A	Primary	442,850	69.22	$7,970,282
Southcoast	Ketchikan	200	Taxiway	0200-01	Primary	16,800	59.01	$470,676
Southcoast	Kodiak	6100	Runway	6100-01	Primary	375,500	68.53	$7,012,377
Southcoast	Kodiak	6300	Runway	6300-02	Primary	243,750	68.20	$4,630,907
Southcoast	Kodiak	6300	Runway	6300-03	Primary	243,750	68.42	$4,578,287
Southcoast	Sitka	6100	Runway	6100-07	Primary	30,000	68.60	$558,183
							2029 Total	**$91,336,510**

Table 8 - 2030 Major M&R by Section

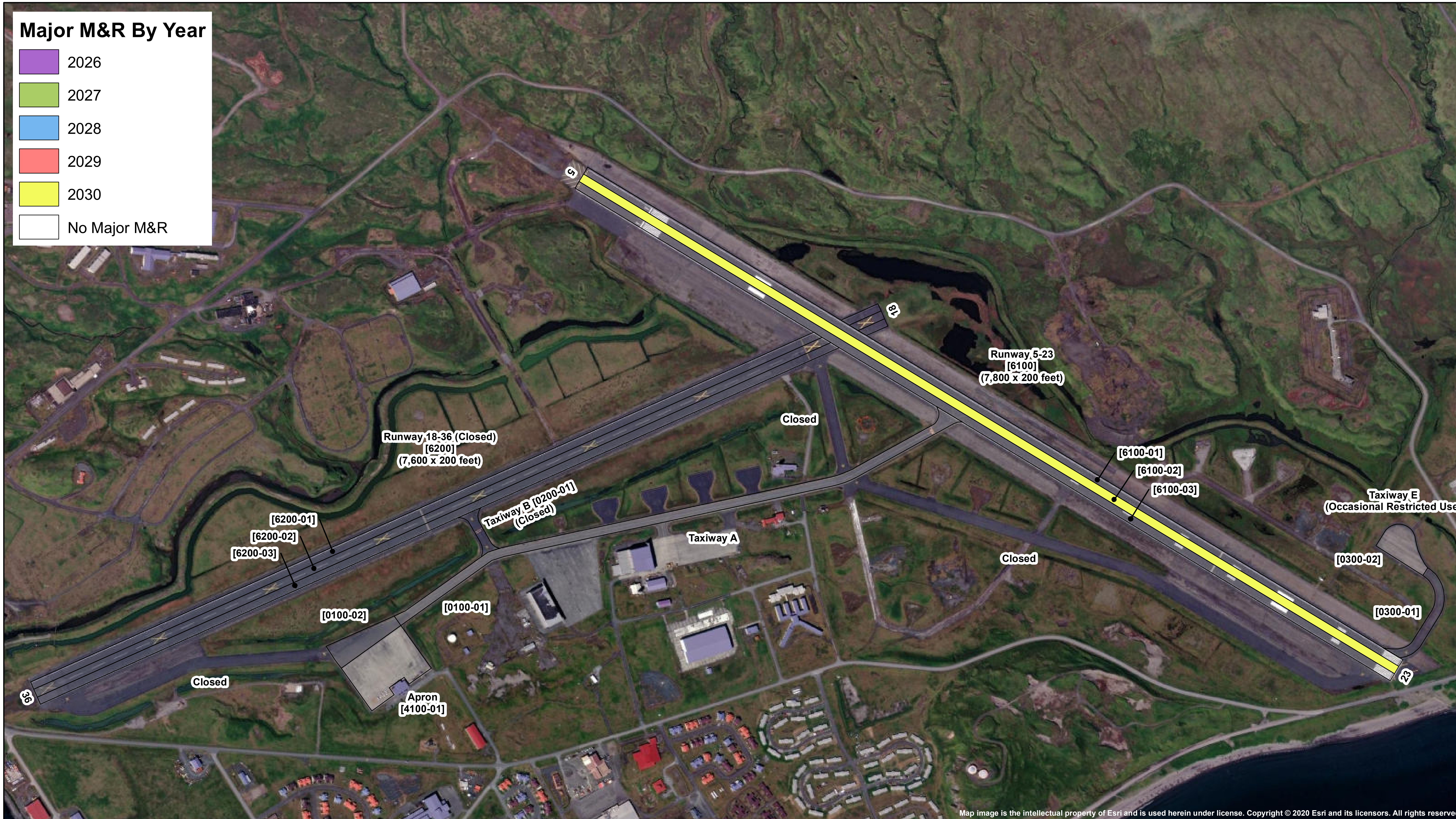
Alaska DOT&PF Region	Network ID	Branch ID	Branch Use	Section ID	Section Rank	Area (Sqft)	PCI Before Work	Major M&R Cost
Southcoast	Adak	6100	Runway	6100-02	Primary	546,000	33.45	$52,210,315
Northern	Barrow	200	Taxiway	0200-01	Primary	67,000	46.92	$4,307,403
Northern	Deadhorse	1000	Taxiway	1000-01	Primary	25,078	59.86	$1,098,730
Northern	Deadhorse	6100	Runway	6100-03	Primary	325,000	69.73	$9,162,911
Northern	Fairbanks	160	Taxiway	0160-01	Primary	15,174	59.64	$359,526
Northern	Fairbanks	800	Taxiway	0800-01	Primary	23,169	58.99	$561,737
Southcoast	Hoonah	6100	Runway	6100-02	Secondary	27,525	62.45	$698,588
Southcoast	Juneau	100	Taxiway	0100-05	Primary	33,525	58.33	$990,470
Southcoast	Juneau	200	Taxiway	0200-01	Primary	70,317	47.14	$2,872,959
Southcoast	Juneau	510	Taxiway	0510-03	Primary	11,600	41.65	$538,382
Southcoast	Juneau	700	Taxiway	0700-01	Primary	77,353	58.64	$2,261,099
Southcoast	Kodiak	6300	Runway	6300-01	Primary	243,750	68.15	$4,782,152
Southcoast	Petersburg	100	Taxiway	0100-01	Primary	53,430	59.15	$1,534,266
Southcoast	Sitka	100	Taxiway	0100-01	Primary	63,175	41.86	$2,918,668
Southcoast	Yakutat	6100	Runway	6100-01	Primary	54,600	69.62	$990,081
Southcoast	Yakutat	6100	Runway	6100-09	Primary	241,000	69.28	$4,452,953
Southcoast	Yakutat	6100	Runway	6100-11	Primary	51,000	69.85	$912,945
Southcoast	Yakutat	6200	Runway	6200-07	Secondary	13,750	63.61	$332,856
							2030 Total	**$90,986,042**

SUMMARY

Maintenance and Rehabilitation (M&R) plans were developed using the PAVER software, which integrates inventory data, pavement inspection results, maintenance policies, unit cost information, and predictive modeling of future pavement conditions. These plans provide a data driven foundation for prioritizing and scheduling pavement treatments across the Alaska airport system.

When implementing these plans, Alaska DOT&PF staff must account for the geographic distribution of individual airports and the associated mobilization factors. Remote locations, seasonal constraints, and logistical challenges can significantly influence project feasibility, cost, and timing. Tailoring M&R strategies to these site-specific considerations will be essential to ensure efficient resource allocation and sustained pavement performance across the network.

♦ ♦ ♦



Adak Airport

Airport Code: ADK
Site Number: 50009.*A

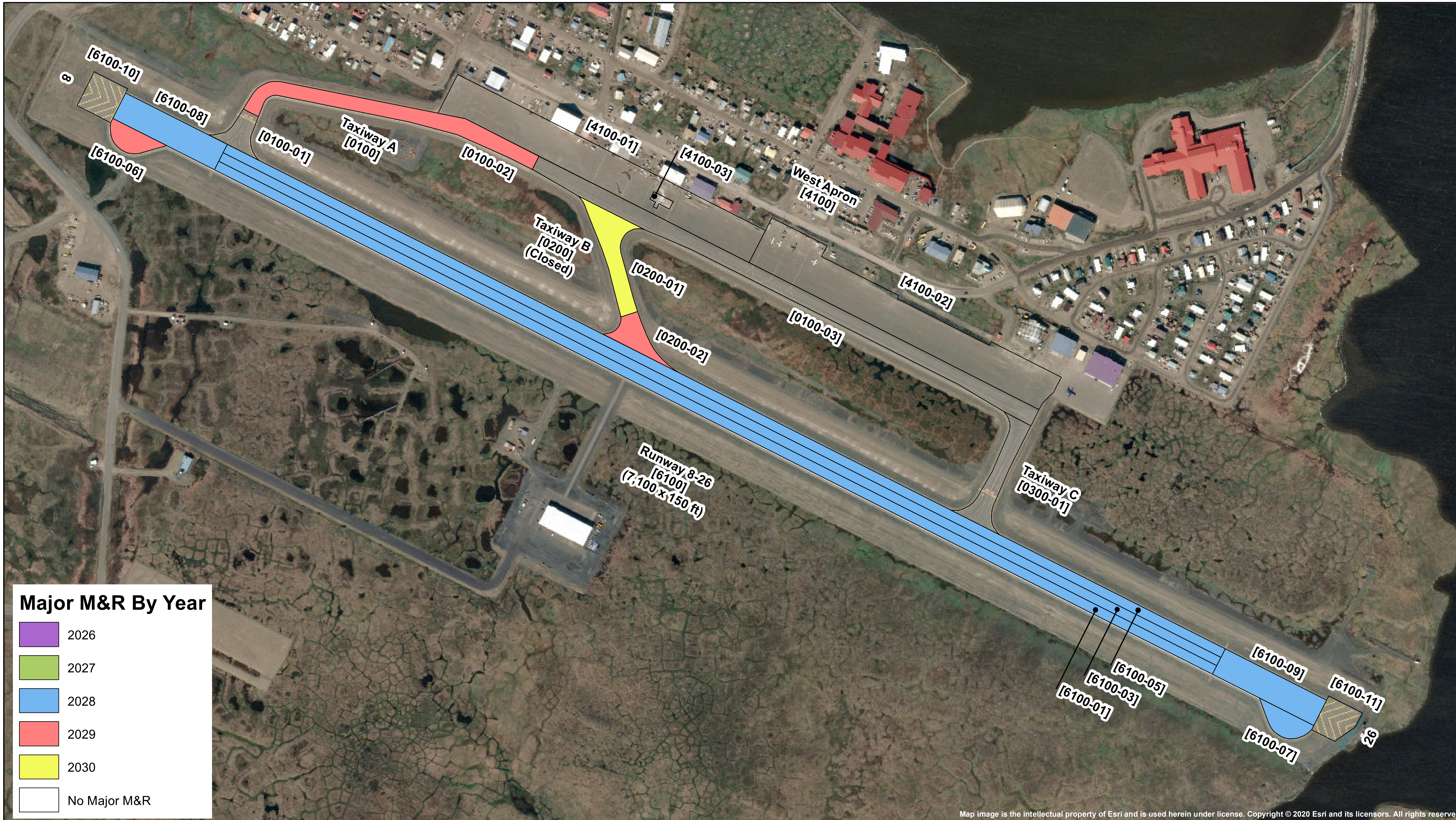
Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results

0 500 1,000 2,000
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.1



Barrow Airport

Airport Code: BRW
Site Number: 50054.3*A

Major Maintenance and Rehabilitation (M&R)

N W E S

2025 PAVER Results

0 350 700 1,400
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.2

Bethel Airport

Airport Code: BET
Site Number: 50061.1*A

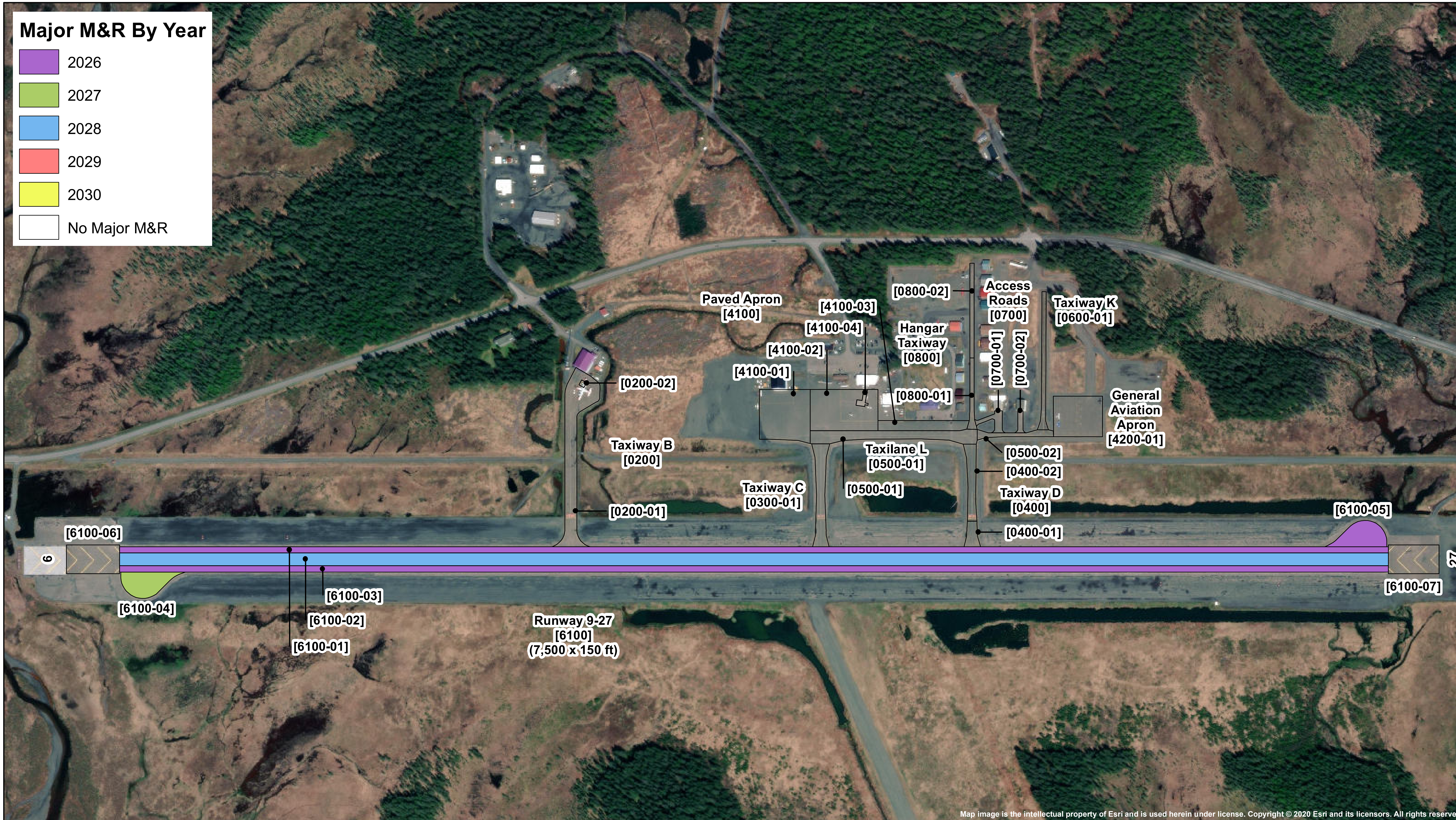
Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results

0 350 700 1,400
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.3



Cordova Airport

Airport Code: CDV

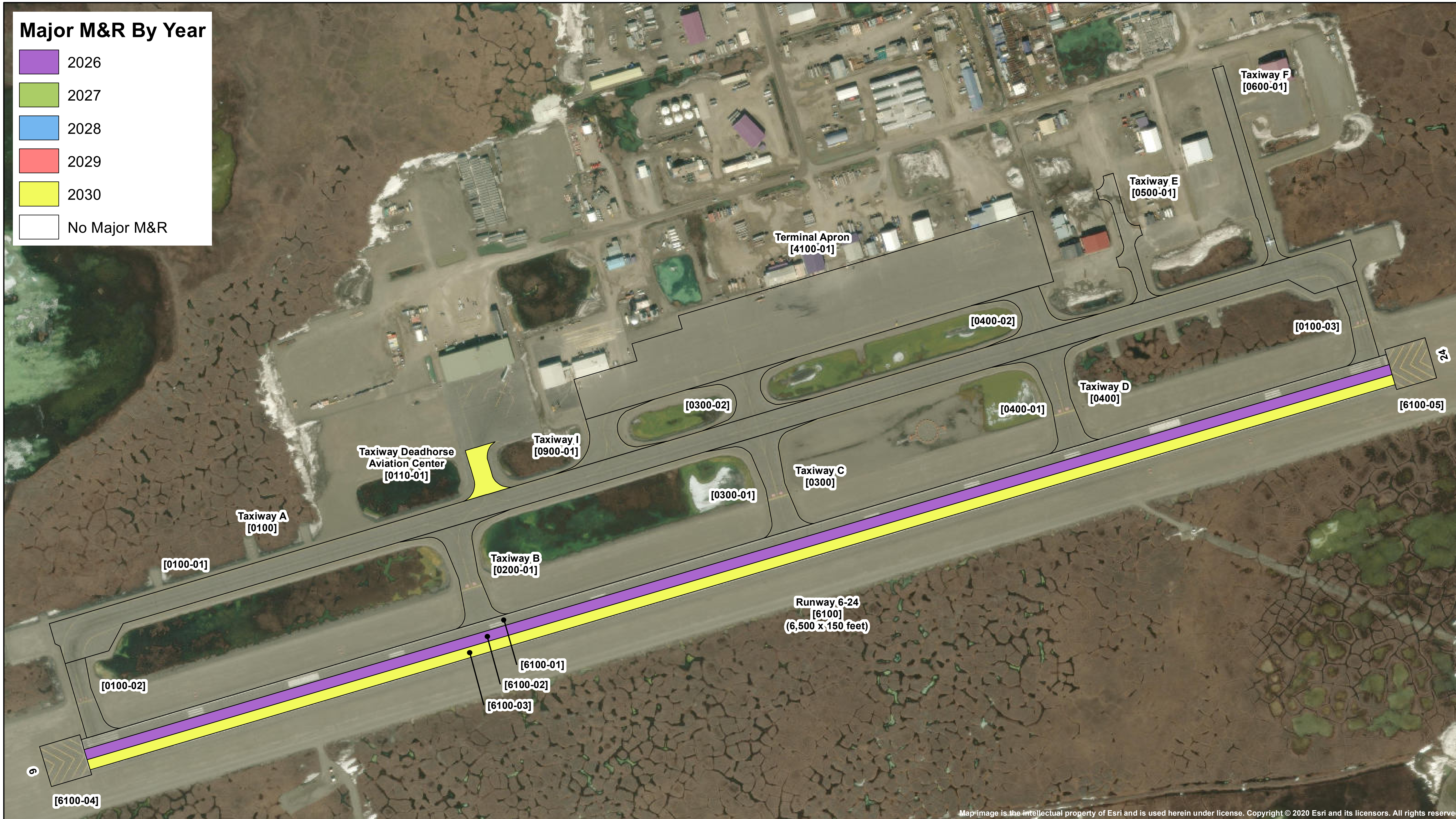
Site Number: 50124.*A

Major Maintenance and Rehabilitation (M&R)

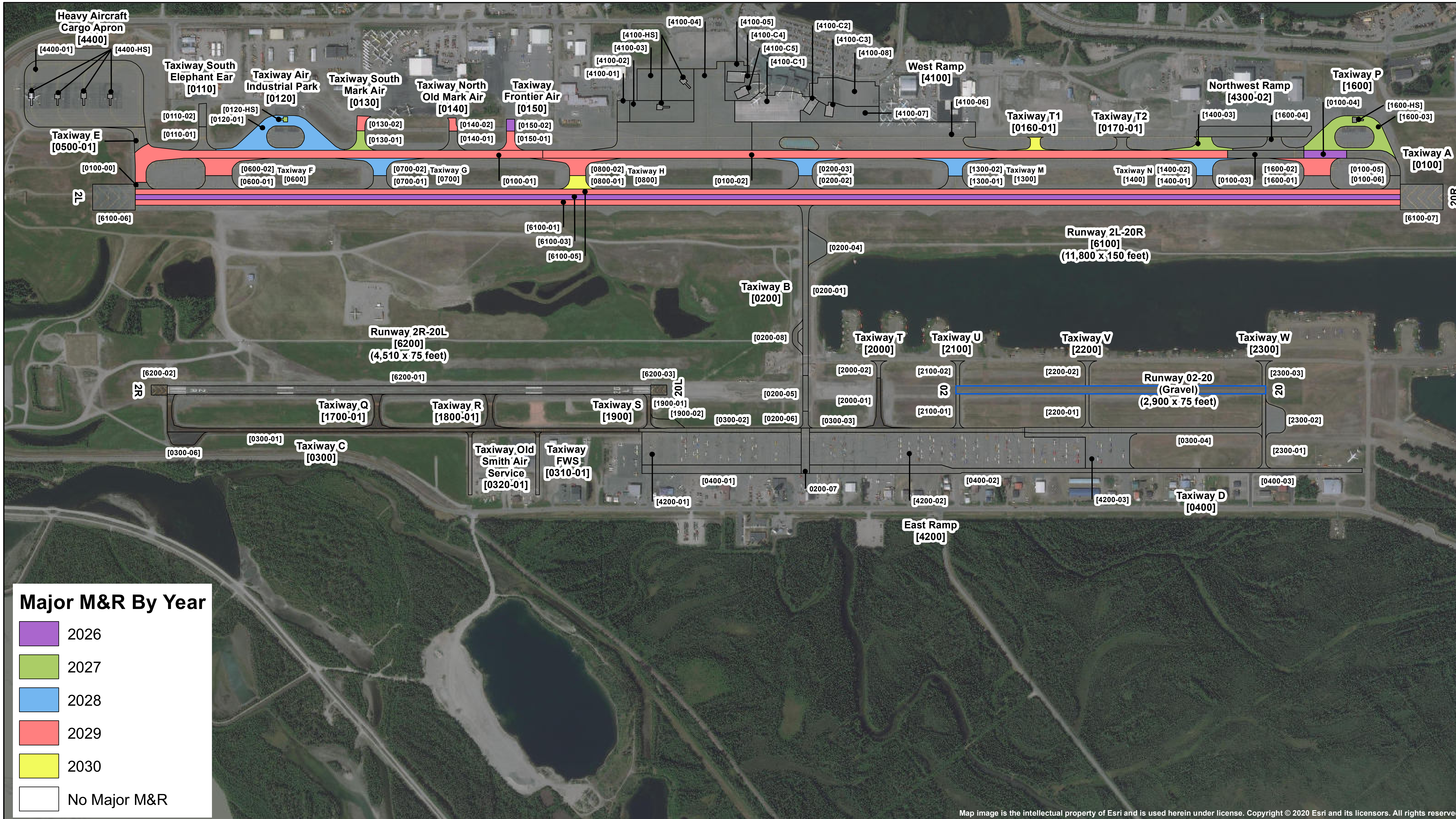
2025 PAVER Results

Map Created by Duval Engineering for AK DOT&PF

Map E.4



Deadhorse Airport Airport Code: SCC Site Number: 50140.7*A	Major Maintenance and Rehabilitation (M&R)	2025 PAVER Results	Map Created by Duval Engineering for AK DOT&PF Map E.5



Fairbanks International Airport

Airport Code: FAI
Site Number: 50219.*A

Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results

0 600 1,200 2,400
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.6

Haines Airport
Airport Code: HNS
Site Number: 50296.*A

Major Maintenance and Rehabilitation (M&R)

N W E S

2025 PAVER Results

0 200 400 800
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.7

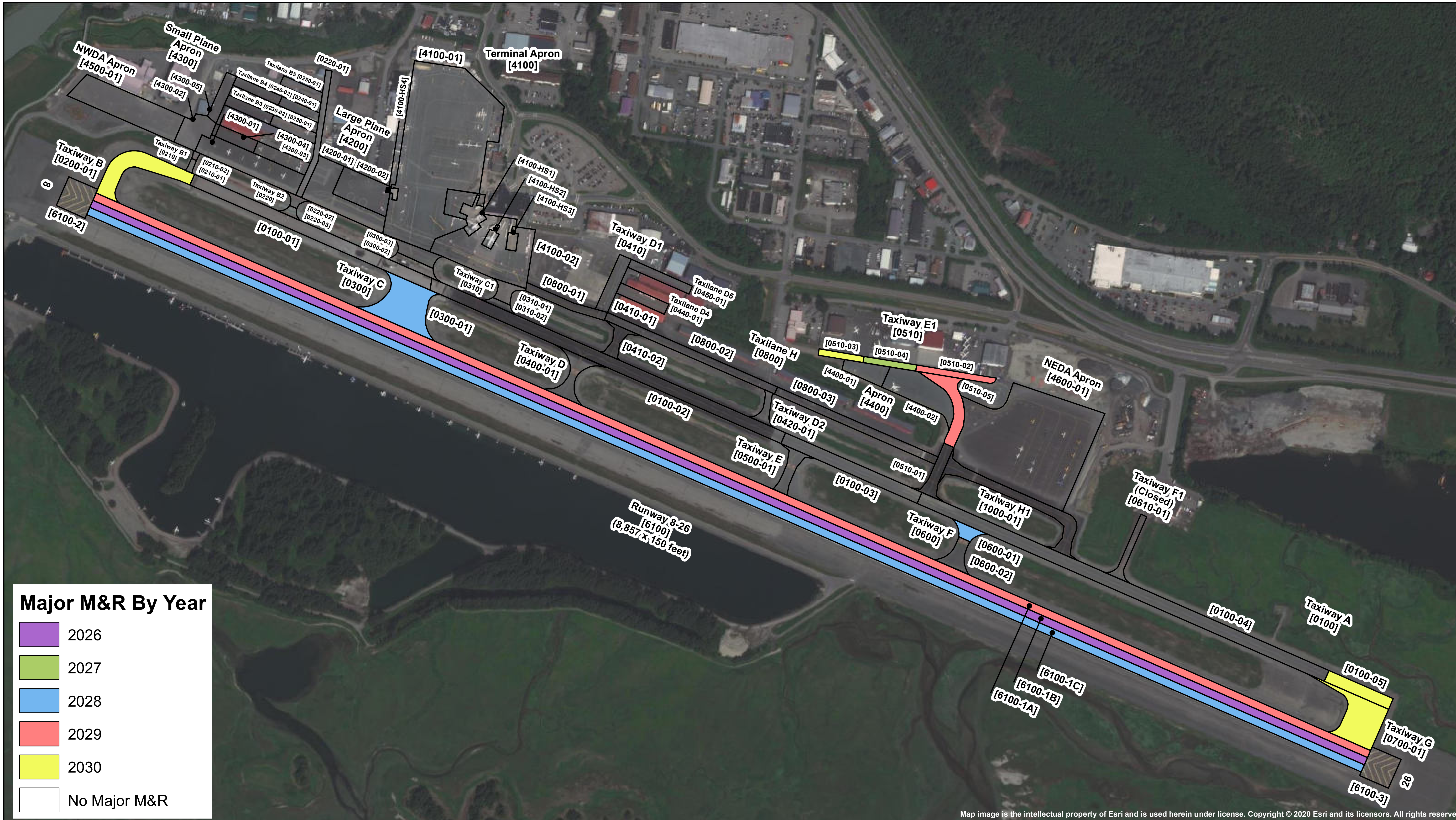
Hoonah Airport
Airport Code: HNH
Site Number: 50321.01*A

Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results
0 175 350 700
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.8



Juneau Municipal Airport

Airport Code: JNU
Site Number: 50285.*A

Major Maintenance and Rehabilitation (M&R)

N
W E
S

2025 PAVER Results

0 450 900 1,800
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.9

Ketchikan Airport
Airport Code: KTN
Site Number: 50412.03*A

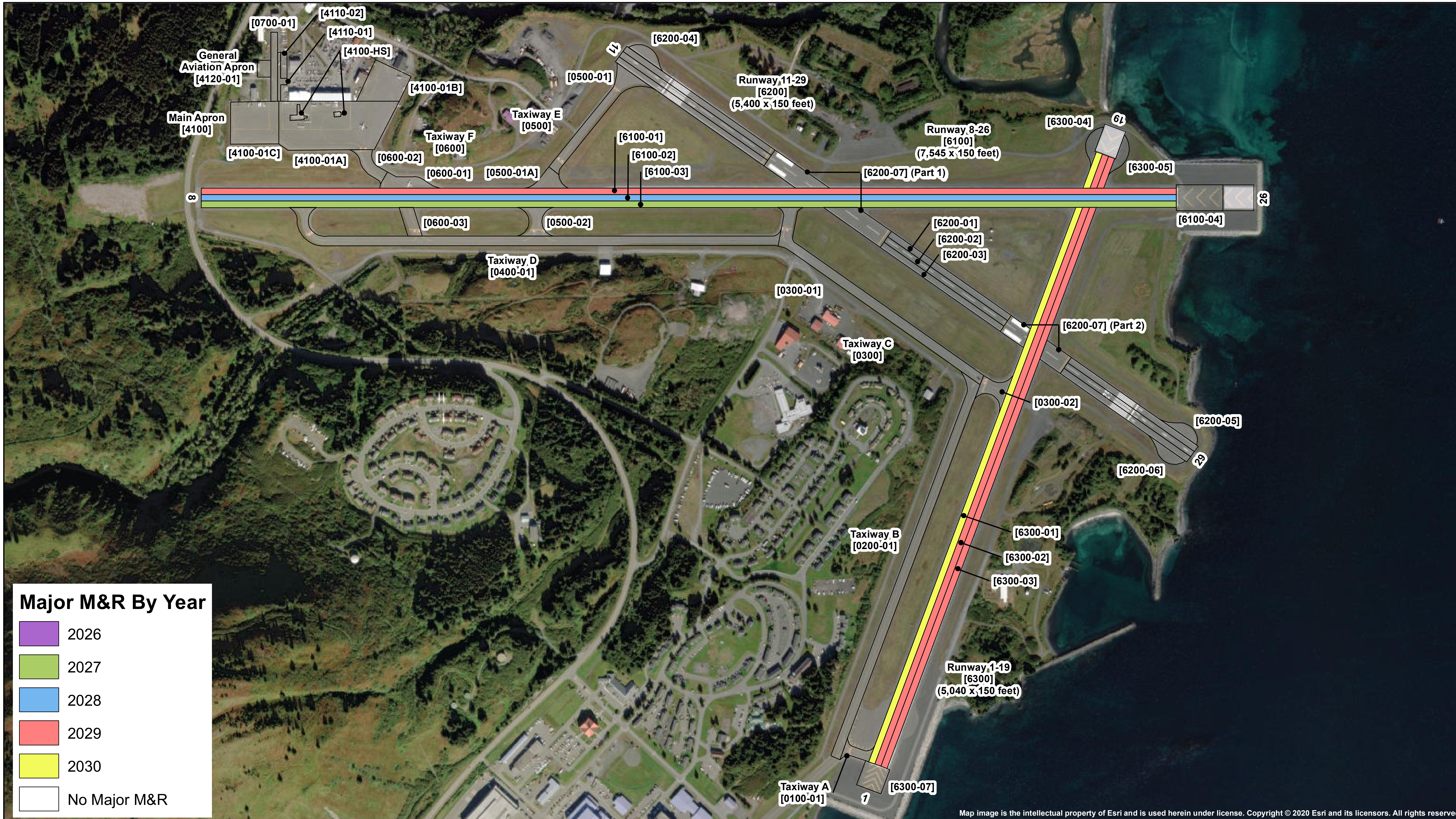
Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results

0 375 750 1,500
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.10



Kodiak Airport Airport Code: ADQ Site Number: 50425.*A	Major Maintenance and Rehabilitation (M&R)	2025 PAVER Results 0 500 1,000 2,000 Feet	Map Created by Duval Engineering for AK DOT&PF Map E.11

Nome Airport

Airport Code: OME
Site Number: 50540.*A

Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results

0 500 1,000 2,000
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.12

Petersburg Airport Airport Code: PSG Site Number: 50590.2*A	**Major Maintenance and Rehabilitation (M&R)**	N W E S **2025 PAVER Results** 0 300 600 1,200 Feet		Map Created by Duval Engineering for AK DOT&PF **Map E.13**

Sitka Airport

Airport Code: SIT

Site Number: 50703.*A

Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results

0 300 600 1,200

Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.14

Valdez Airport

Airport Code: VDZ

Site Number: 50825.1*A

Major Maintenance and Rehabilitation (M&R)

N W E S

2025 PAVER Results

0 300 600 1,200

Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.15

Wrangell Airport

Airport Code: WRG
Site Number: 50905.2*A

Major Maintenance and Rehabilitation (M&R)

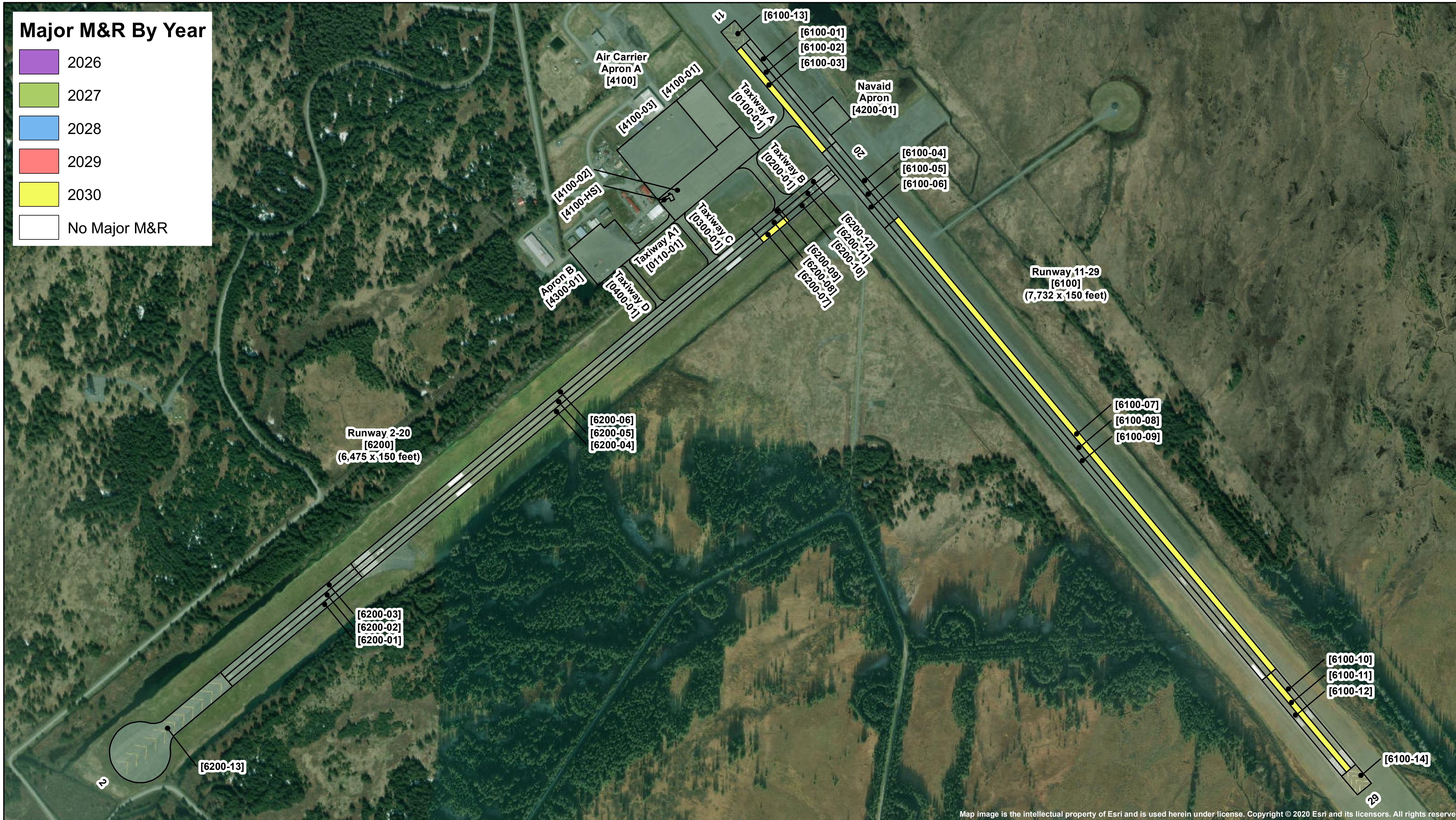
2025 PAVER Results

N W E S

0 300 600 1,200
Feet

Map Created by Duval Engineering for AK DOT&PF

Map E.16



Yakutat Airport

Airport Code: YAK

Site Number: 50920.*A

Major Maintenance and Rehabilitation (M&R)

2025 PAVER Results

Map Created by Duval Engineering for AK DOT&PF

Map E.17