WYOMING PAVEMENT MANAGEMENT PROGRAM (PMP)
SCOPE OF WORK

BACKGROUND

The objective of this project is to update and further the utilization of the current WYDOT airport pavement management program (PMP). This project is divided into three inspection groups, occurring over three years. Airports for each group are shown in Table 1. Although the complete project is a three year effort, the contractual obligation will be released as a two year commitment with an option to extend on a yearly basis for up to five total years.

SCOPE OF WORK

Following are the major work tasks that shall be completed during this project for each airport:

1. Kick-off Meeting
2. Database Inventory
   - 2.1. Database inventory
   - 2.2. Update existing PAVER™ database
   - 2.3. Review existing network definition
   - 2.4. Revise network definition maps
3. Pavement Condition Surveys
   - 3.1. Conduct Pavement Condition Index (PCI) inspections
   - 3.2. Update inventory portion of PAVER™ database
   - 3.3. Update condition portion of PAVER™ database
   - 3.4. Update network definition maps
   - 3.5. Create PCI condition maps
4. PAVER™ Customization
   - 4.1. User defined data fields
   - 4.2. Create pavement performance models
   - 4.3. Maintenance and rehabilitation policies
   - 4.4. Unit cost information
5. Data Analysis
   - 5.1. Analyze PCI data
   - 5.2. Prepare maintenance and rehabilitation plan
6. Results Delivery
   - 6.1. Prepare Results Spreadsheets
   - 6.2. Outreach
7. Interactive Data Exchange Application (IDEA)
   - 7.1. Continue Developing IDEA format as needed
   - 7.2. Update IDEA
8. GIS Integration
   - 8.1. Review existing WYDOT GIS
   - 8.2. Incorporate PMP into WYDOT GIS
9. Project Management
   - 9.1. Project management

Table 1. Project Airports by Year.

2026 Airports	2027 Airports	2028 Airports	2029 Airports	2030 Airports
Afton – Afton Municipal Airport	Buffalo-Johnson County Airport	Casper-Casper/Natrona County International Airport	Afton – Afton Municipal Airport	Buffalo-Johnson County Airport
Big Piney – Miley Memorial Airport	Cody – Yellowstone Regional Airport	Cheyenne – Cheyenne Regional Airport	Big Piney – Miley Memorial Airport	Cody – Yellowstone Regional Airport
Dubois – Dubois Municipal Airport	Cowley – North Big Horn County Airport	Dixon – Dixon Airport	Dubois – Dubois Municipal Airport	Cowley – North Big Horn County Airport
Evanston – Uinta County Burns Field	Gillette – Northeast Wyoming Regional Airport	Douglas-Converse County Airport	Evanston – Uinta County Burns Field	Gillette – Northeast Wyoming Regional Airport
Fort Bridger – Fort Bridger Airport	Greybull – South Big Horn County Airport	Guernsey – Camp Guernsey Airport	Fort Bridger – Fort Bridger Airport	Greybull – South Big Horn County Airport
Jackson – Jackson Hole Airport	Hulett – Hulett Municipal Airport	Laramie – Laramie Regional Airport	Jackson – Jackson Hole Airport	Hulett – Hulett Municipal Airport
Kemmerer – Kemmerer Municipal Airport	Newcastle- Mondell Field	Lusk-Lusk Municipal Airport	Kemmerer – Kemmerer Municipal Airport	Newcastle-Mondell Field
Lander – Hunt Field	Powell – Powell Municipal Airport	Pine Bluffs – Pine Bluffs Municipal Airport	Lander – Hunt Field	Powell – Powell Municipal Airport
Pinedale – Ralph Wenz Field	Sheridan-Sheridan County Airport	Rawlins – Rawlins Municipal Airport/Harvey Field	Pinedale – Ralph Wenz Field	Sheridan-Sheridan County Airport
Riverton – Central Wyoming Regional Airport	Thermopolis – Hot Springs County Airport	Saratoga – Shively Field	Riverton – Central Wyoming Regional Airport	Thermopolis – Hot Springs County Airport
Rock Springs – Southwest Wyoming Regional Airport	Worland – Worland Municipal Airport	Torrington – Torrington Municipal Airport	Rock Springs – Southwest Wyoming Regional Airport	Worland – Worland Municipal Airport
N/A	N/A	Wheatland – Phifer Airfield	N/A	N/A

1. Kick-Off Meeting

A kick-off meeting may be held with WYDOT at the beginning of each year of the project. During this meeting, the scope of work, work schedule, and project deliverables will be discussed. A project contact list shall be generated, and the chain of communication to be used throughout the project phase shall be established. The Consultant shall take minutes and deliver a formal copy of them to the WYDOT Project Manager for approval within 1 week of the completion of the meeting.

Cost Assumptions

- For the first year of the project, the meeting shall be conducted in person at WYDOT's offices.
- Kick-off meetings for years two, three, and four shall be conducted via teleconference call.

2. Database Inventory

2.1 Database Inventory

The Consultant shall review information provided by WYDOT pertaining to the pavement-related work completed at each of the project airports. During each phase, records for completed work shall be collected for all airports in the PMP. This shall include all airports, with airports identified for inspections collected as higher priority. This shall include all pavement-related work completed since the last time the inventory, work history, and mapping were updated for each airport in the system. Records for all work completed on the entire system of airports since the completion of the previous phase shall be collected by the Consultant from WYDOT Aeronautics.

Cost Assumptions

- WYDOT will assist the Consultant by providing access to all information that they have on file. This includes the pavement projects at each airport for the upcoming 5 years and record drawings of pavement projects completed (or anticipating completion) within the current and last year.
- It is anticipated that minimal contact with individual airports and consultants shall be required.
- No on site visits to individual airports will be conducted with this phase.
- WYDOT will provide the Consultant with the current PAVER™ database, mapping, and any existing geo-referenced data from the most recent PMP update.

2.2 Update Existing PAVER™ Database

The Consultant shall use the information collected during Task 2.1 to update the existing PAVER™ database. This shall include revisions to the existing pavement inventory and construction work history.

2.3 Review Existing Network Definition

The Consultant shall review the existing network definition to identify changes that need to be made to the branch, section, and sample unit boundaries and designations due to the findings of Task 2.1.

2.4 Revise or Create Network Definition Maps

The Consultant shall update the existing network definition maps as needed to incorporate the revisions identified during Task 2.3.

3. Pavement Condition Surveys

3.1 Conduct Pavement Condition Index (PCI) Inspections

The Consultant shall inspect the airports in each phase as identified in Table 1. All inspection shall be completed in accordance with the PCI procedure as documented in ASTM D5340 and Federal Aviation Administration Advisory Circular (FAA AC) 150/5380-6B. Table 2 presents the inspection sampling rate proposed for this project.

Table 2. Inspection Sampling Rate.

PCC Pavements		AC Pavements	
N	**n**	**N**	**n**
1 — 3	all	1 — 3	all
4	3	4	3
5 — 7	4	5 — 9	4
8 — 10	5	10 — 20	5
11 — 16	6	21 — 30	6
17 — 28	7	31 — 70	7
29 — 64	8	>70	10%, but $\leq$ 17
65 — 90	9		
> 90	10%, but $\leq$ 32		

Cost Assumptions

- Only airports identified in each year group shall be inspected during each corresponding year/phase, as listed in table1.
- Inspection crews shall consist of two qualified inspectors, with at least one being an experienced Consultant crew lead.
- Multiple field trips may be required. The average field trip shall extend for a period of 8 consecutive days.
- Field work shall be conducted on weekdays as well as weekends. There is no time in the budget for days off during an inspection trip.

3.2 Update Inventory Portion of PAVER™ Database

The Consultant shall update the inventory portion of the PAVER™ database as needed if changes to this information are observed during the condition surveys. The Consultant shall provide a listing of pavement areas to WYDOT where additional information is needed.

Cost Assumptions

- WYDOT will provide any information needed concerning historical pavement records where necessary revisions are identified during the condition surveys.

3.3 Update Condition Portion of PAVER™ Database

The Consultant shall update the Wyoming PAVER™ database with the collected PCI data.

3.4 Update Network Definition Maps

The Consultant shall update the network definition maps with any changes observed during the fieldwork.

3.5 Create PCI Condition Maps

Upon completion of the condition surveys, the Consultant shall prepare PCI condition maps for each airport included in the project. The maps shall be formatted for both electronic and hard copy viewing to meet the needs of all users.

Cost Assumptions

- The Consultant shall provide electronic copies of all revised and created mapping at the completion of each phase.

4. PAVER™ Customization

4.1 User Defined Data Fields

Current additional user-defined data pertaining to Wyoming's airport system shall be reviewed and updated to reflect any changes that have occurred since the last PMP update. The Consultant shall work with WYDOT to identify any changes to the additional data and customize the PAVER™ database as needed to reflect these changes, these may include additional data from other studies such as the design standards inventory or economic impact studies.

4.2Create Pavement Performance Models

Using the information collected during the field evaluation, the Consultant shall update the pavement performance models in PAVER™.

4.3 Maintenance and Rehabilitation Policies

Maintenance and rehabilitation policies are used to develop potential work types, treatment sets, quantities, and costs for localized maintenance and major rehabilitation pavement repairs. The Consultant shall work with WYDOT to review and update the appropriate maintenance and rehabilitation policies for portland cement concrete (PCC) and hot-mix asphalt concrete (AC) surfaced pavements based on current and historical WYDOT repair practices.

4.4 Unit Cost Information

The Consultant shall work with WYDOT to review and update the unit cost information for typical maintenance and rehabilitation activities.

At the conclusion of this task, send all customization information to WYDOT for review and approval.

Cost Assumptions

- The maintenance and rehabilitation policies and unit cost information developed during the first year of the contract shall be used in subsequent years with minimal revision or update required.

5. Data Analysis

5.1 Analyze PCI Data

Three aspects of the pavement condition data shall be analyzed: the PCI, the type of distress, and the rate of deterioration.

PCI. The PCI for each inspected sample unit shall be calculated, and section PCI values shall be extrapolated based on the sample unit information. The PCI provides a general sense of the pavement condition and the magnitude of work that shall be required to rehabilitate the pavement.

Type of Distress. The types of distress identified during the surveys shall also be analyzed. The types of distress present provide insight into the cause of the pavement deterioration. Distress types are characterized as load-related (such as alligator cracking), climate-related (such as weathering and raveling), and materials-related (such as durability cracking). Understanding the cause of distress allows a treatment to be selected that corrects the cause of deterioration.

Pavement Deterioration Rate. The deterioration rate helps identify those pavement sections that are failing faster than normal. Features exhibiting higher than normal deterioration rates warrant close monitoring and further evaluation.

5.2 Develop Maintenance and Rehabilitation Plan

Once PAVER™ has been updated to reflect conditions at Wyoming's airports and the entire inventory and distress data have been entered, PAVER™ and the Consultant's PRISM shall be used to produce a 5-year maintenance and rehabilitation (M&R) plan. The Consultant shall work closely with WYDOT to define the parameters used in performing this analysis. The Consultant shall show how different funding levels shall impact the condition of the overall network and the individual airports.

The Consultant shall develop and deliver the initial plan to WYDOT for review.

Cost Assumptions

- The meeting shall be held via web conference. The Consultant shall attend this meeting.
- PAVER™ and PRISM shall be used to perform all the analysis.
- Analysis of the system pavements shall be completed at the end of each phase incorporating the revised information for each of the system airports included in that phase.
- Up to four funding scenarios shall be analyzed: no money, unlimited funding, and two constrained funding scenarios as determined by WYDOT. We are currently using three funding scenarios: no money, unlimited funding, and the approved WACIP.

6. Results Delivery

6.1 Prepare Results Spreadsheets

Analysis results shall be prepared for each airport inspected at the end of each phase of work in the form of spreadsheets. The Consultant shall work with WYDOT to determine the format and information included within each spreadsheet.

Cost Assumptions

- A draft copy of each spreadsheet template shall be delivered to WYDOT for approval.
- The spreadsheet formats approved in phase one shall be used in phase two, three, and four.
- Spreadsheets and maps shall be delivered at the end of each phase only for airports inspected during that phase.

6.2 Outreach

Upon request by Aeronautics staff, the Consultant shall prepare an informational presentation that provides an explanation of the PMP, summary results, and an overview on the use of IDEA and results.

Cost Assumptions

- The informational presentation will be a maximum of one hour in length.
- A maximum of one webinar will be presented.

6.2 Other

The Aeronautics Division may occasionally have other pavement condition-related requests not outlined within this SOW. These tasks would be specifically outlined in a work directive or change order, and agreed upon by both the Division and the Consultant.

7. Interactive Data Exchange Application (IDEA)

7.1 Develop IDEA Format

IDEA is a web-based reporting deliverable that allows users to view and retrieve project information and results. The Consultant shall work with WYDOT to develop the format and design of their IDEA and customize it to meet their needs. It is anticipated that pavement inventory and condition data, color-coded PCI maps, photographs taken during the inspection, predicted condition data, and the M&R plan for each airport shall be incorporated into this program for easy retrieval of project information. Additionally, it is anticipated that summarized statewide condition and inventory statistics and analysis results shall be incorporated. The final product shall be hosted on WYDOT's website.

7.2 Update IDEA

IDEA combines the use of maps, photographs, and hypertext links to provide a tool that conveniently displays the PMP results through a web browser interface. Data displayed includes summarized system inventory and condition statistics, as well as individual airport pavement conditions, PCI distress details, photographs, and analysis results. During this task, the Consultant shall update WYDOT's IDEA to incorporate all data collected and analysis results.

Cost Assumptions

- At the end of each phase, the Consultant shall provide the necessary files for updating the current version of IDEA hosted on WYDOT's website
- During each annual phase, all airports currently in the PMP shall have their inventory, work history, and mapping updated. This information shall be incorporated in the updated version of IDEA at the end of each phase.
- No major changes to IDEA's format shall be made in phase two, three, and four of this project.

8. GIS Integration

8.1 Review Existing WYDOT GIS

The Consultant shall review the data currently stored within the existing WYDOT GIS to identify the format and structure required for incorporating additional data. Additionally, the Consultant shall work with WYDOT to identify additional sources of geo-referenced data that should be utilized as part of the PMP update.

8.2 Incorporate PMP into WYDOT GIS

Once all data is updated as part of the PMP, the Consultant shall incorporate the results into the existing WYDOT GIS.

Cost Assumptions

- Only data compiled as part of the PMP update shall be incorporated into the existing WYDOT GIS.
- Additional sources of pavement data identified for inclusion into the PMP update will be provided to the Consultant by WYDOT in a geo-referenced format efficient inclusion.

9. Project Management

9.1 Project Management

This task identifies the time and resources required to complete appropriate project management activities throughout the duration of project for the Consultant's Principal-In-Charge (PIC) and Project Manager. These activities include project setup, development and oversight of monthly progress reports, project schedule tracking, and management of subconsultants.