

# TOLEDO STATE AIRPORT

This report describes how your Pavement Maintenance Management Program (PMMP) was developed. Your Program was developed as part of the Oregon Continuous Aviation System Plan sponsored in part by the Oregon Department of Aviation and the Federal Aviation Administration (FAA). The information and data contained in this report ensures you comply with the requirements of FAA Grant Assurance Number 11 which states that any airport requesting federal funds for pavement improvement projects must have implemented a pavement maintenance management program.

## DATA COLLECTION

To determine how your pavements were constructed and their age, a records review was conducted. Figure TO-1 shows the records review results. This figure identifies pavement boundaries, dimensions, pavement layer types, thicknesses and dates of construction. The most recent construction date for each pavement can also be found in the Section Condition Report in Appendix 2. Figure TO-1 and the information contained in Appendices 1, 2 and 4 ensure that your airport complies with the “pavement inventory” requirement of FAA’s PMMP guidelines.

The pavements at your airport were divided into branches, sections and sample units in accordance with the methodology outlined in the current edition of ASTM D5430, *Standard Test Method for Airport Condition Index Surveys*. The branches, sections and sample units established at your airport are shown in Figure TO-2. A Branch Condition Report showing all branches, their associated areas, and their area-weighted average condition is provided in Appendix 1. Additionally, the Appendix 2 Section Condition Report provides information used to define each branch and section in the PAVER database.

Using the branch, section and sample unit divisions established, a visual condition survey was conducted at Toledo State Airport in May 2018. During the inspection, pavement defects were identified and measured in accordance with the methodology outlined in ASTM D5430. This inspection ensures your airport complies with the “detailed inspection” requirement of FAA’s PMMP guidelines. After collection, the data were entered into the PAVER software for analysis. These data are reproduced in the Re-Inspection Report attached as Appendix 4.

The PAVER database updated during this project ensures your airport complies with the “record keeping and information retrieval” requirements of FAA’s PMMP guidelines.

Figure T0-1. Airport Layout, Dimensions and Pavement Cross-Sections.  
Toledo State Airport

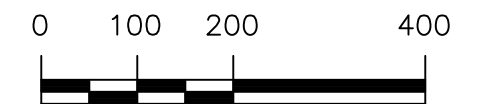
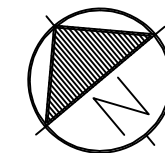
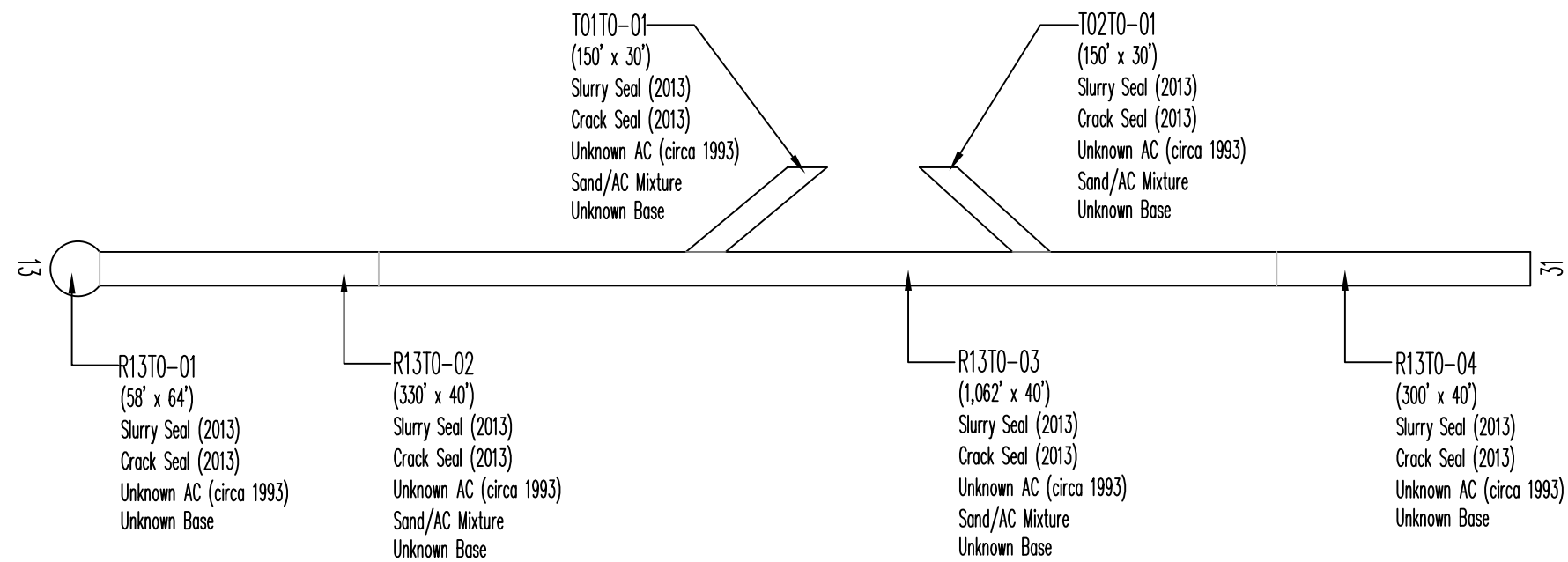
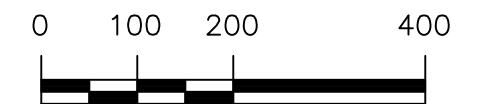
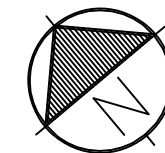
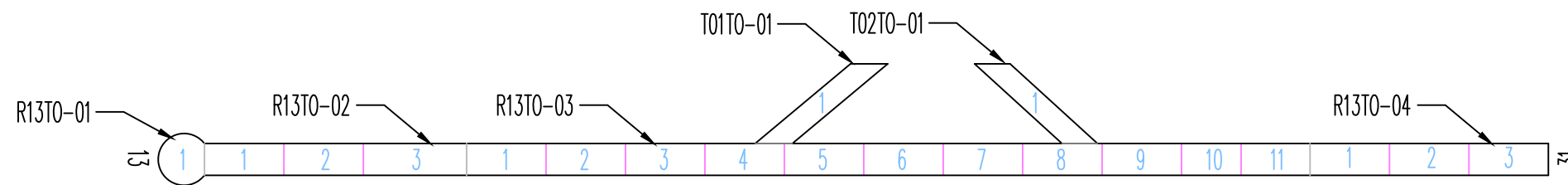


Figure T0-2. Pavement Branch, Section and Sample Unit Layout.  
Toledo State Airport



Drawing Date: September 2018

# RESULTS

Using the data collected during the visual inspection, the PAVER software was used to calculate an area-weighted average Pavement Condition Index (PCI) for each pavement section inspected using the sample units evaluated. Using each section’s PCI, a Pavement Condition Rating (PCR) was assigned. The PCIs measured during this inspection are shown in Table 1. The table also contains PCIs from past inspections as well as projected PCIs for 2023 and 2028. The projections were based on pavement deterioration models developed by PAVER using the inspection data from other pavements in the same airport category as your airport, located in the same climatic region, and with the same surface type and use.

The Branch Condition Report in Appendix 1 summarizes current pavement condition by branch while the Section Condition Report in Appendix 2 lists pavement condition by section. The current Pavement Condition Rating (PCR) is shown graphically in Figure TO-3.

**Table 1. Past, Present and Future Pavement Condition Indices.**

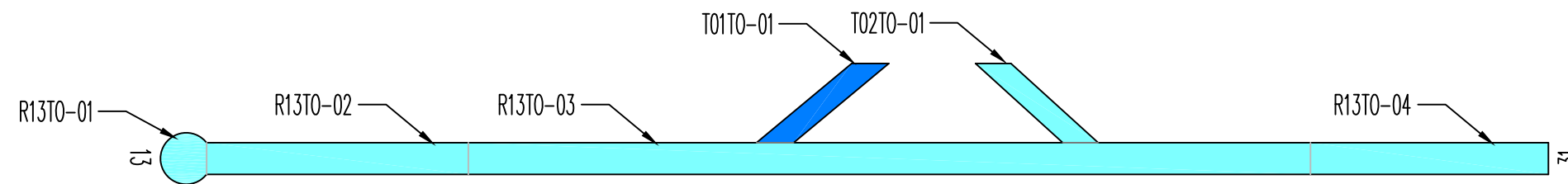
Branch	Section	Inspections			Forecast	
		2012	2015	2018	2023	2028
R13TO	01	69	87	76	76	75
R13TO	02	48	91	82	79	78
R13TO	03	77	85	77	77	76
R13TO	04	59	81	73	73	72
T01TO	01	47	68	66	58	49
T02TO	01	63	83	72	64	55

Section PCIs at Toledo State Airport range from a low of 66 (a PCR of “Fair”) to a high of 82 (a PCR of “Satisfactory”). The area-weighted average PCI for all airport pavements is 76, corresponding to an overall PCR of “Satisfactory”. Figure TO-4 shows how much pavement area is associated with each Pavement Condition Rating category and also shows pavement condition distribution from the inspections conducted in 2012 and 2018.

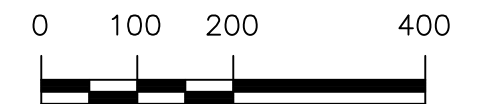
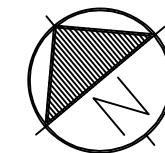
The primary distresses observed during the inspection were: longitudinal and transverse cracking and depressions.

A graphical representation of the projected PCIs listed in Table 1 is shown in Figure TO-5.

Figure T0-3. Pavement Condition in May 2018.  
Toledo State Airport

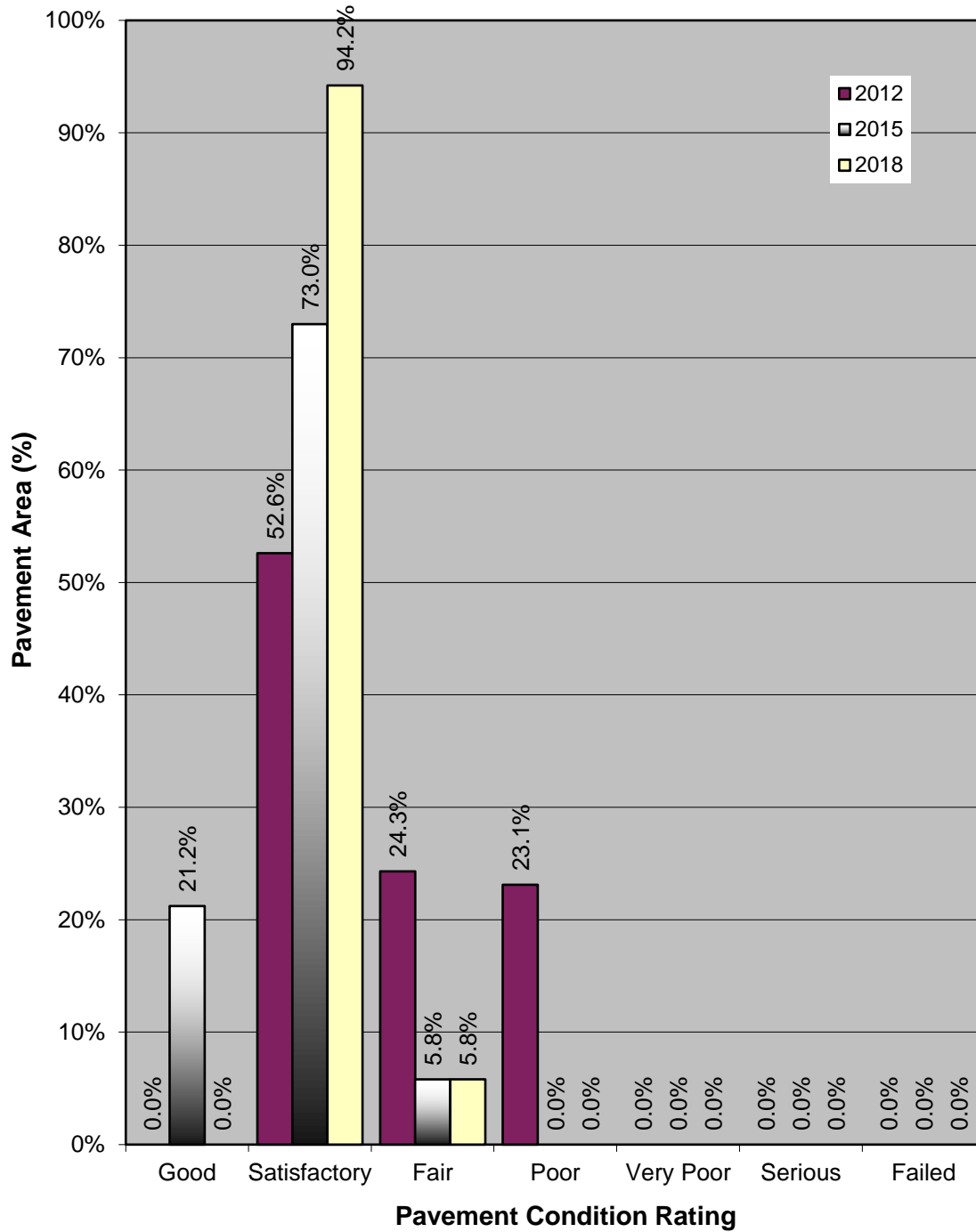


PCI	PCR
100	GOOD
85	SATISFACTORY
70	FAIR
55	POOR
40	VERY POOR
25	SERIOUS
10	FAILED
0	

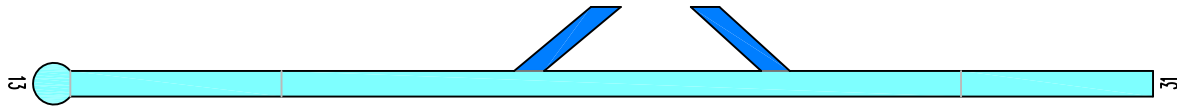


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**Figure TO-4. Pavement Condition Distribution  
Toledo State Airport**

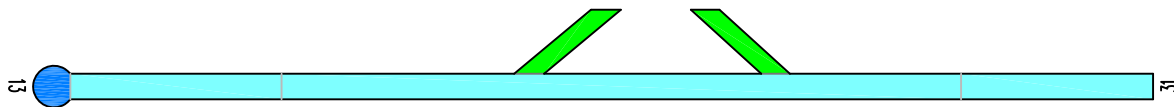


### Predicted Condition in 2023.



PCI	PCR
100	GOOD
85	SATISFACTORY
70	FAIR
55	POOR
40	VERY POOR
25	SERIOUS
10	FAILED
0	

### Predicted Condition in 2028.



Drawing Date: September 2018



Figure TO-5. Future Pavement Condition.

## RECOMMENDATIONS

Data collected during the visual condition survey were used by the PAVER software to generate the Network Maintenance Report contained in Appendix 3. This report identifies, for each pavement section, the recommended localized maintenance activities (i.e.-crack sealing, patching) that should be completed to repair the defects observed during the visual inspection. The repair quantities identified in the report were extrapolated to cover the entire pavement section, based on the distresses measured in the inspected sample units. If the repair activities identified are completed, the pavement deterioration rate will be slowed.

The recommended localized maintenance activities to be applied are selected by the PAVER software based on a Distress Maintenance Policy established for the Oregon airport system. The report results indicate that, over your entire airport, the following quantities of localized maintenance are needed:

- 2,383 linear feet of asphalt concrete crack sealing.

The PAVER software can also identify and schedule recommended global (applied over an entire section) maintenance activities such as fog seals, slurry seals and other surface treatments, as well as major rehabilitation activities such as asphalt concrete overlays and complete reconstruction. PAVER schedules global maintenance on a user-defined interval. To schedule major rehabilitation PAVER uses pavement deterioration models developed during this project. These models are used to estimate future pavement condition and to schedule rehabilitation based on a trigger PCI.

During this project a 5-year program outlining recommended global maintenance and rehabilitation was developed. The program begins in the year 2019 to allow time for project development. These recommendations are presented in Table 2, which identifies the pavement section requiring rehabilitation, the year the action should be completed, the type of action, and an associated cost. This information is also presented graphically in Figure TO-6.



**Table 2. Five-Year Global Maintenance and Rehabilitation Plan.**

<b>Year</b>	<b>Branch</b>	<b>Section</b>	<b>Action</b>	<b>Area (sf)</b>	<b>Unit Cost (\$/sf)</b>	<b>Total Cost (\$)</b>
2019	R13TO	01	Slurry Seal	3,130	\$0.31	\$970
2019	R13TO	02	Slurry Seal	14,006	\$0.31	\$4,342
2019	R13TO	03	Slurry Seal	42,480	\$0.31	\$13,169
2019	R13TO	04	Slurry Seal	12,000	\$0.31	\$3,720
2019	T01TO	01	Slurry Seal	4,686	\$0.31	\$1,453
2019	T02TO	01	Slurry Seal	4,460	\$0.31	\$1,383
<b>2019 Total</b>						<b>\$25,036</b>
<b>5-Year Total</b>						<b>\$25,036</b>

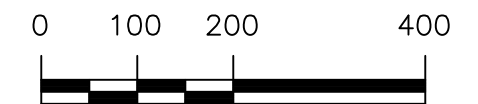
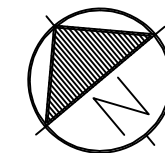
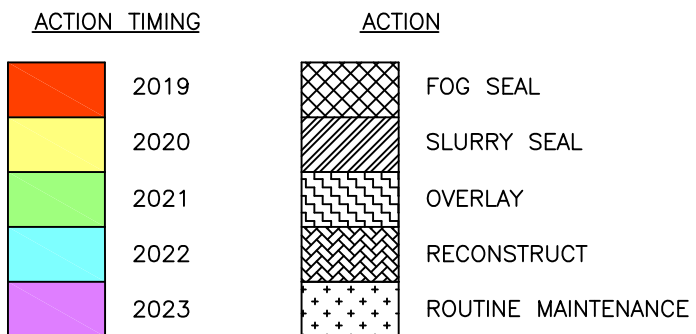
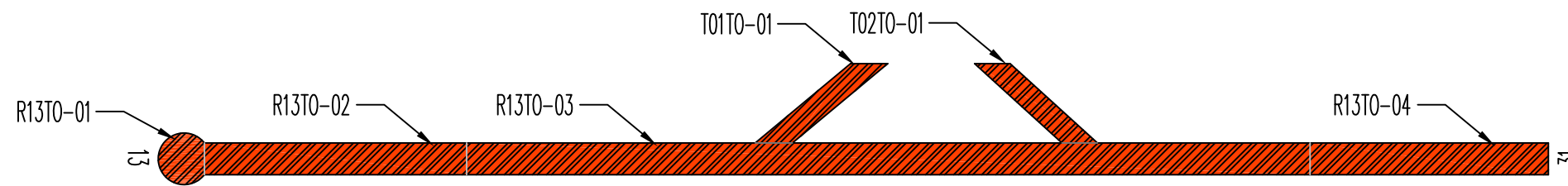
If the global maintenance and/or rehabilitation activities recommended in Table 2 are not completed, the localized maintenance activities identified in the Network Maintenance Report (Appendix 3) for that section should be done. Additionally, for those sections not listed in Table 2 as requiring global maintenance or rehabilitation, the localized maintenance activities outlined in the Network Maintenance Report should be completed. By completing the localized maintenance activities, pavement condition is improved, life is extended, deterioration is slowed and the length of time until major repair or rehabilitation is required is increased.

## **INSPECTION SCHEDULE**

To comply with the inspection schedule requirement of FAA Grant Assurance Number 11, a detailed visual inspection should be conducted every 3 years using the methodology described in ASTM D5430. The next scheduled detailed visual inspection should take place in 2021.

In addition, the FAA requires that a drive-by inspection be conducted monthly to detect unforeseen changes in pavement condition. The results of each drive-by inspection should be recorded and kept in a file. At a minimum, the date of the inspection and an indication of any maintenance performed since the last drive-by inspection should be recorded.

Figure T0-6. Five-Year Pavement Management Plan.  
Toledo State Airport



Drawing Date: September 2018