

# BAKER CITY MUNICIPAL 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

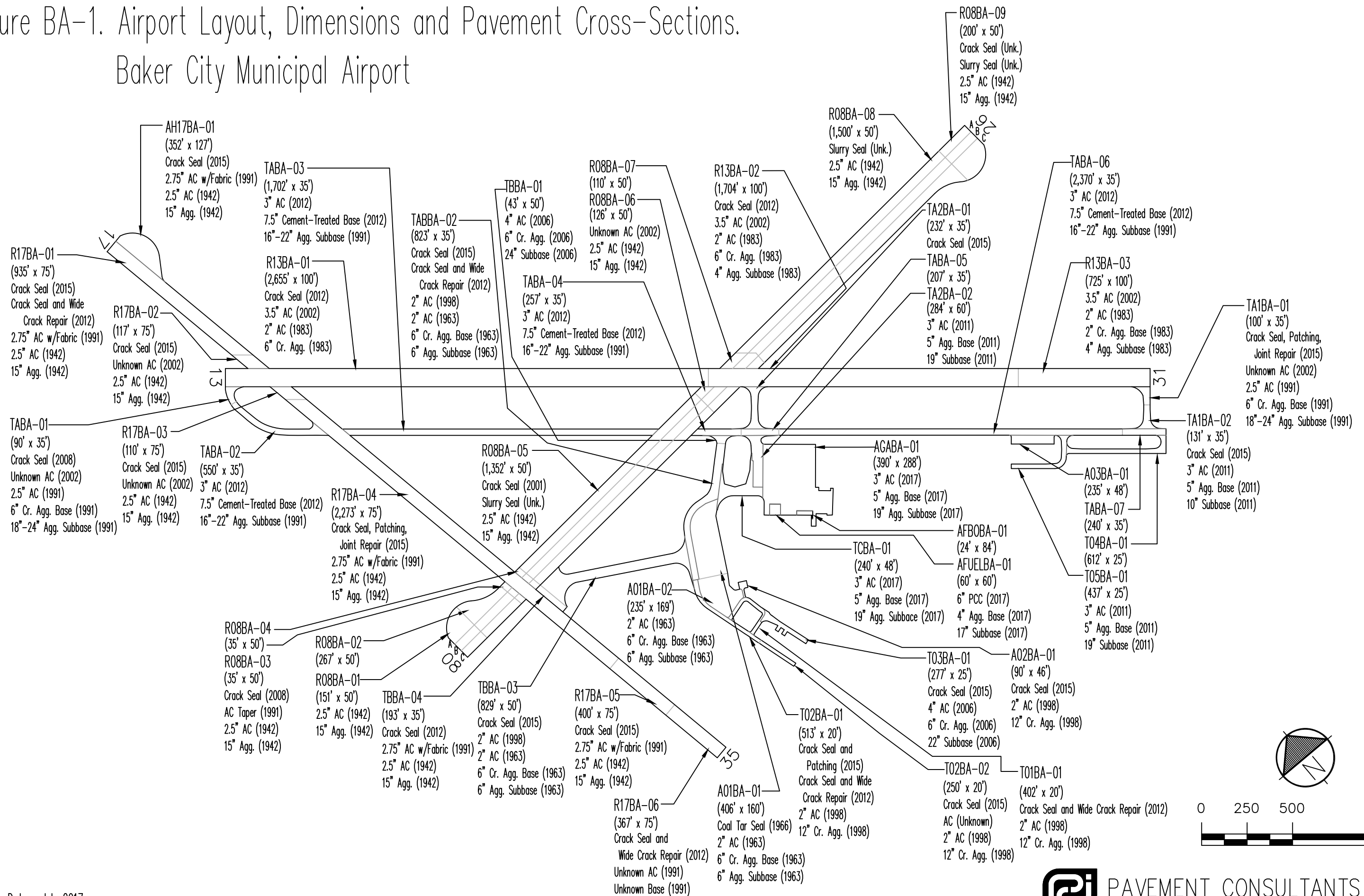
To determine how your pavements were constructed and their age, a records review was conducted. Figure BA-1 shows the records review results. This figure identifies pavement boundaries, dimensions, pavement layer types, thicknesses and dates of construction. The most recent construction date for each pavement can also be found in the Section Condition Report in Appendix 2. Figure BA-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 BA-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 Baker City Municipal Airport in June 2017. 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.

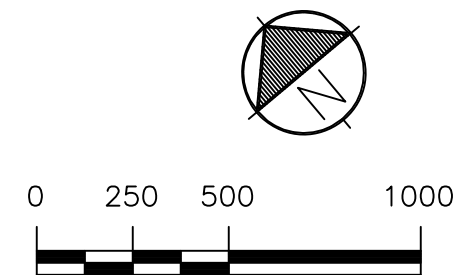
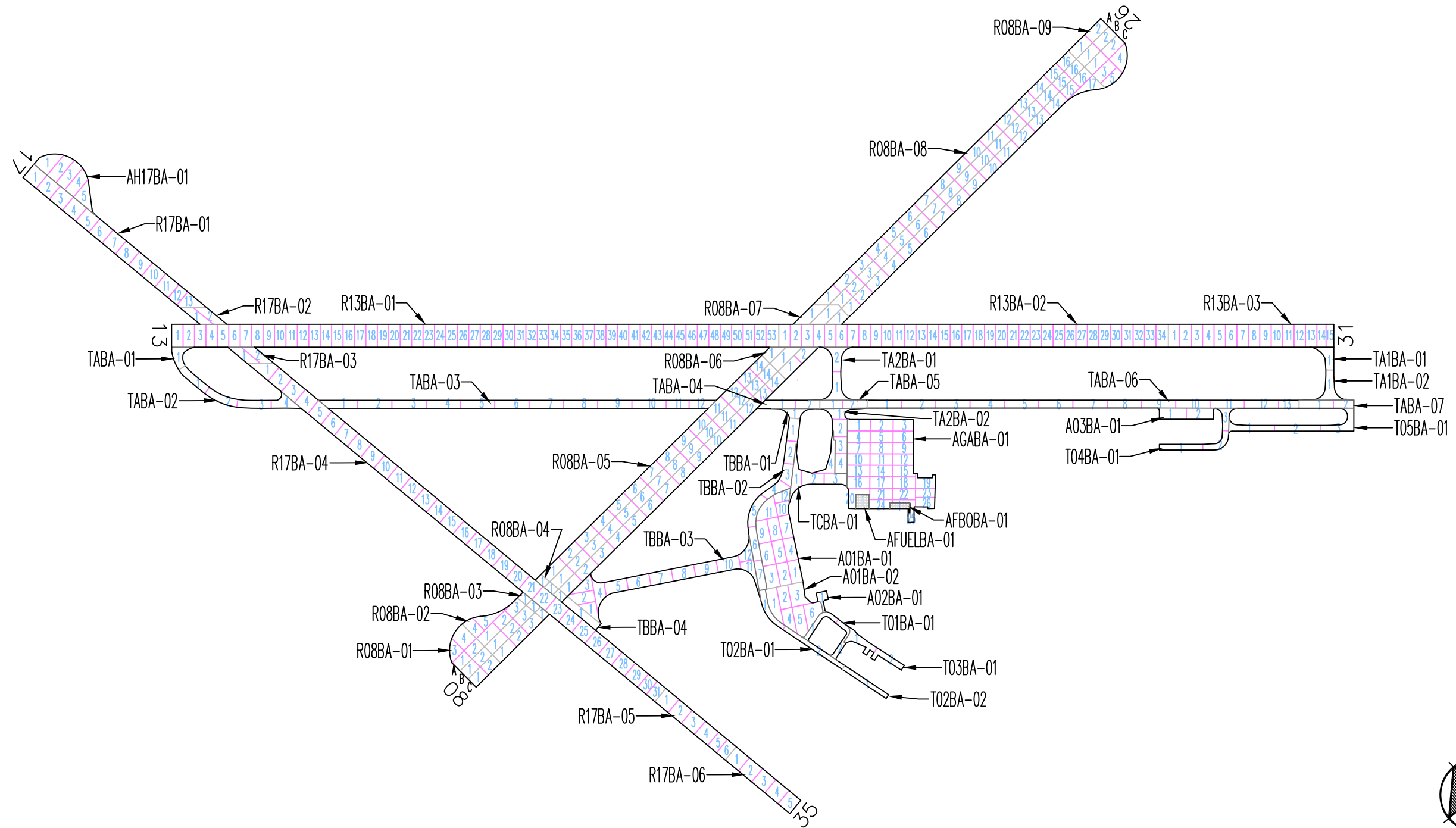
The PAVER database updated during this project ensures your airport complies with the “record keeping and information retrieval” requirements of FAA’s PMMP guidelines.

Figure BA-1. Airport Layout, Dimensions and Pavement Cross-Sections.  
Baker City Municipal Airport



Drawing Date: July 2017

Figure BA-2. Pavement Branch, Section and Sample Unit Layout.  
 Baker City Municipal Airport



Drawing Date: July 2017

## 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 2022 and 2027. 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 BA-3.

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

Branch	Section	Inspections			Forecast	
		2011	2014	2017	2022	2027
A01BA	01	37	42	24	16	11
A01BA	02	7	0	6	4	2
A02BA	01	87	72	61	57	52
A03BA	01	100	95	87	76	70
AFBOBA	01	---	---	100	93	88
AFUELBA	01	---	---	100	93	88
AGABA	01	---	---	100	84	75
AH17BA	01	84	59	71	59	55
R08BA	01A	12	24	38	36	35
R08BA	01B	12	24	38	36	35
R08BA	01C	12	23	38	36	35
R08BA	02A	13	37	38	36	35
R08BA	02B	13	39	38	36	35
R08BA	02C	13	33	38	36	35
R08BA	03A	54	58	71	68	67
R08BA	03B	58	51	69	68	67
R08BA	03C	59	47	63	62	61
R08BA	04A	58	65	72	68	67
R08BA	04B	58	65	74	68	67
R08BA	04C	48	65	69	68	67
R08BA	05A	18	68	82	73	67
R08BA	05B	16	47	69	65	64
R08BA	05C	20	71	84	75	68
R08BA	06A	100	60	84	82	78

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

Branch	Section	Inspections			Forecast	
		2011	2014	2017	2022	2027
R08BA	06B	100	78	82	81	73
R08BA	06C	79	82	79	70	68
R08BA	07A	100	94	86	82	79
R08BA	07B	100	94	79	70	68
R08BA	07C	100	94	85	82	79
R08BA	08A	1	1	25	23	22
R08BA	08B	1	1	25	23	22
R08BA	08C	1	1	25	23	22
R08BA	09A	3	11	25	23	22
R08BA	09B	1	10	25	23	22
R08BA	09C	1	11	25	23	22
R13BA	01	99	91	89	82	81
R13BA	02	99	89	82	81	73
R13BA	03	100	89	81	73	68
R17BA	01	72	62	73	68	67
R17BA	02	100	92	85	82	79
R17BA	03	92	85	81	73	68
R17BA	04	71	65	75	68	67
R17BA	05	71	73	73	68	67
R17BA	06	61	60	71	66	64
T01BA	01	79	50	59	48	38
T02BA	01	83	78	62	53	42
T02BA	02	100	88	83	72	61
T03BA	01	100	91	86	78	72
T04BA	01	100	96	94	85	77
T05BA	01	100	92	93	84	76
TA1BA	01	100	59	78	67	55
TA1BA	02	100	83	94	85	77
TA2BA	01	100	91	87	78	72
TA2BA	02	100	95	94	85	77
TABA	01	100	94	86	75	64
TABA	02	100	100	100	92	82
TABA	03	100	100	98	89	80
TABA	04	100	100	100	92	82
TABA	05	100	88	89	80	73
TABA	06	100	100	98	89	80
TABA	07	100	94	94	85	77
TBBA	01	89	100	100	92	82

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

Branch	Section	Inspections			Forecast	
		2011	2014	2017	2022	2027
TBBA	02	72	73	67	55	42
TBBA	03	70	59	60	47	34
TBBA	04	70	49	60	47	34
TCBA	01	---	---	100	92	82

Section PCIs at Baker City Municipal Airport range from a low of 6 (a PCR of “Failed”) to a high of 100 (a PCR of “Good”). The area-weighted average PCI for all airport pavements is 71, corresponding to an overall PCR of “Satisfactory”. Figure BA-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 2011 and 2014.

The primary distresses observed during the inspection of asphalt concrete pavements were: weathering, longitudinal and transverse cracking, block cracking, patching, and alligator cracking with isolated occurrences of bleeding and raveling. The concrete pavements are new and showed no distress.

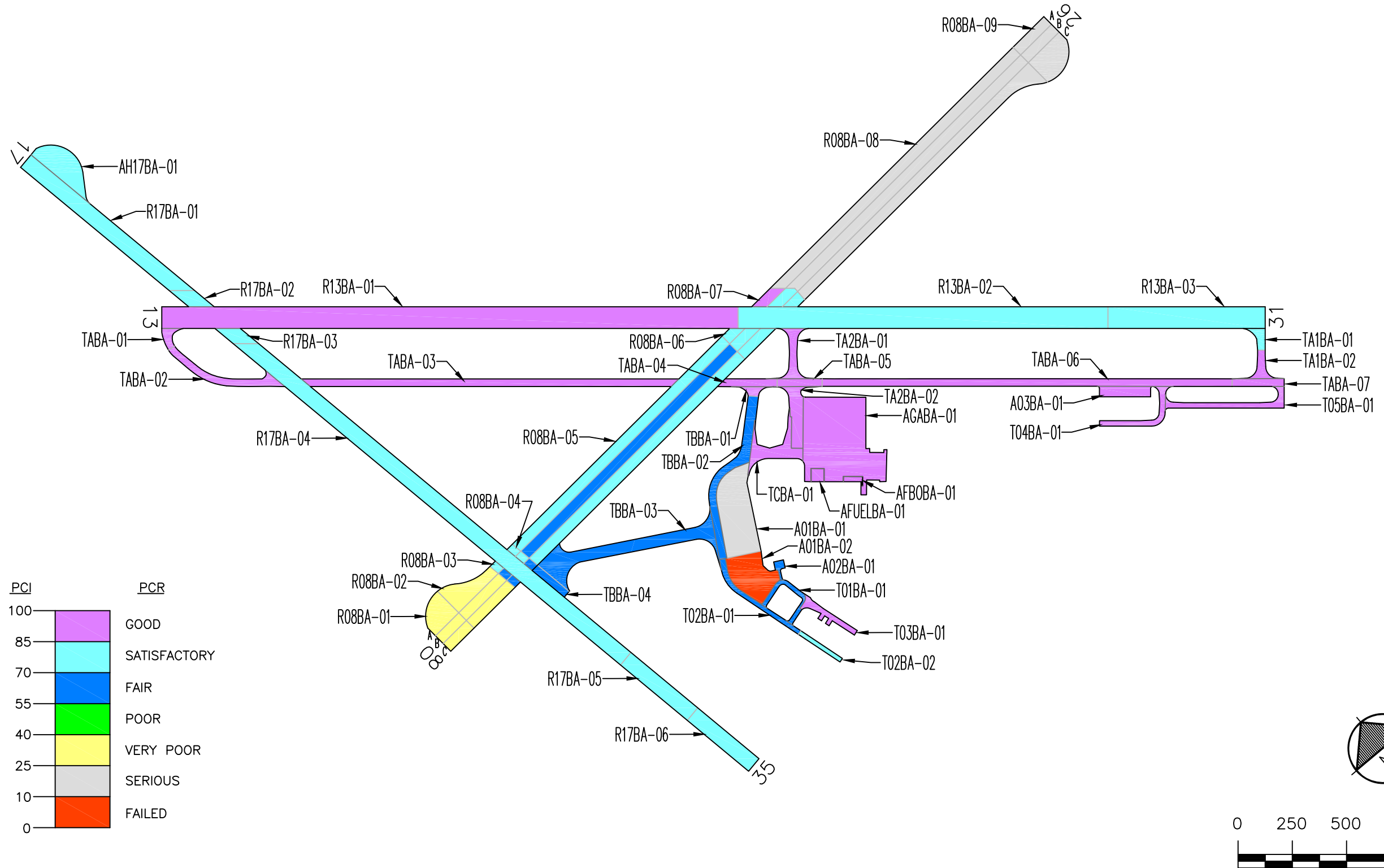
A graphical representation of the projected PCIs listed in Table 1 is shown in Figure BA-5.

## **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.

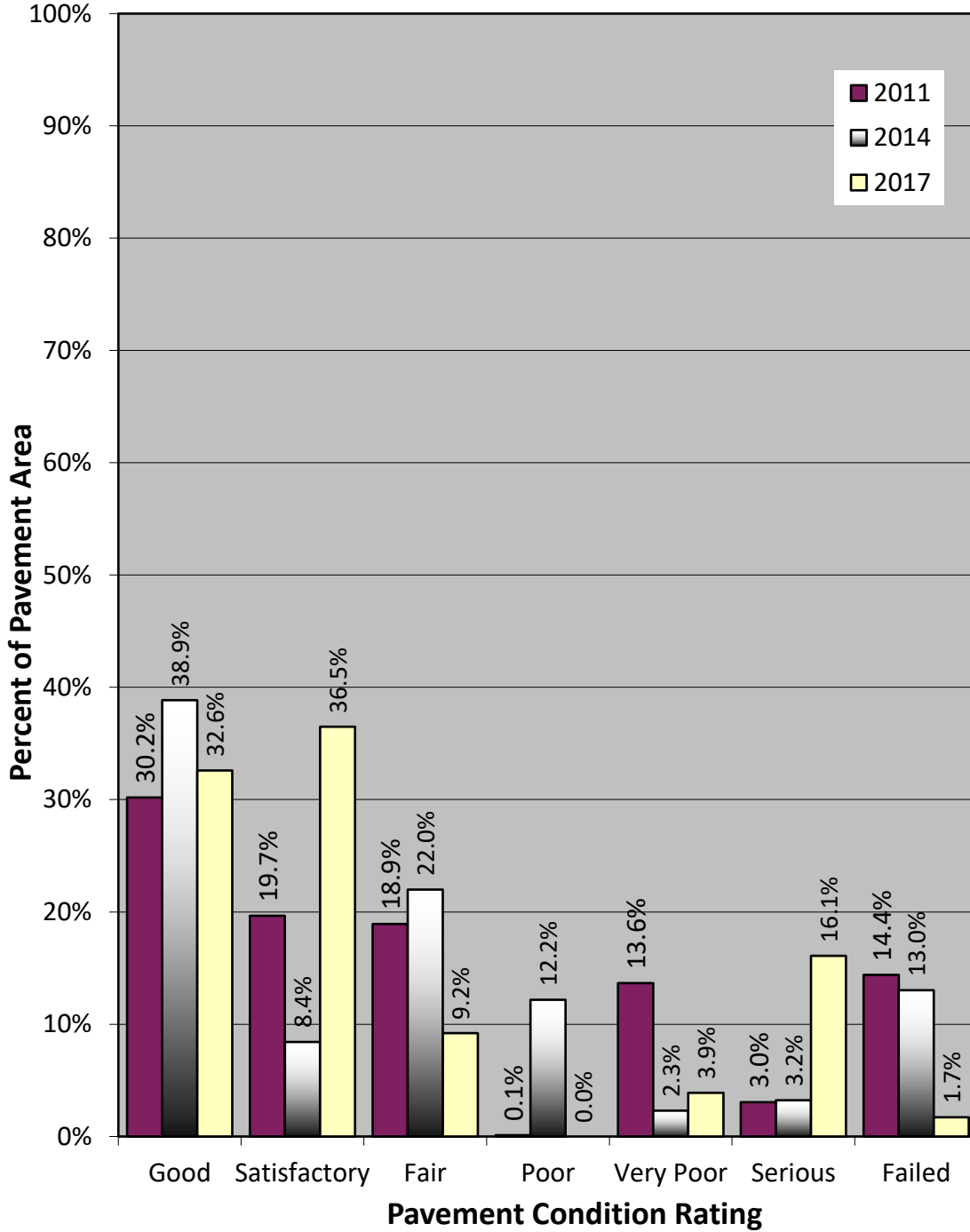
The recommended localized maintenance activities to be applied are selected by the PAVER software based on a Distress Maintenance Policy established for the Oregon airport system. The report results indicate that, over your entire airport, the following quantities of localized maintenance are needed:

Figure BA-3. Pavement Condition in June 2017.  
Baker City Municipal Airport



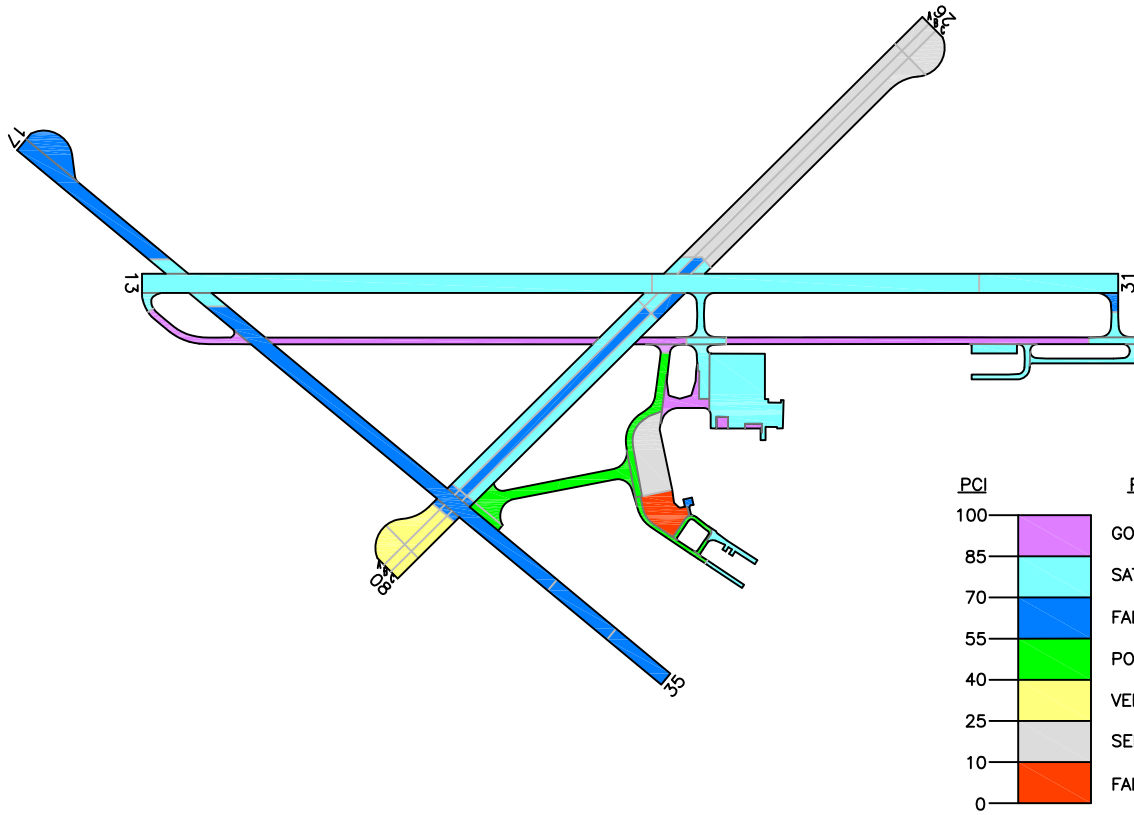
Drawing Date: July 2017

**Figure BA-4. Distribution of Pavement Condition  
Baker City Municipal Airport**

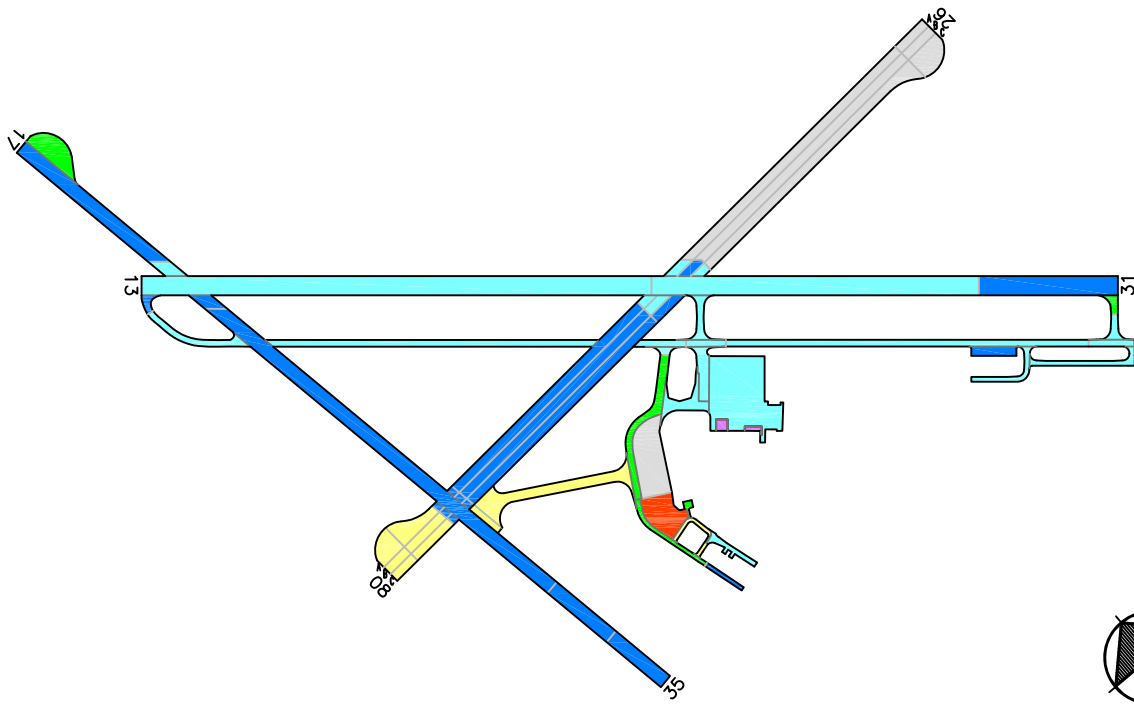




**Predicted Condition in 2022.**



**Predicted Condition in 2027.**



Drawing Date: July 2017

 PAVEMENT CONSULTANTS INC.

**Figure BA-5. Future Pavement Condition.**

- 95,311 linear feet of asphalt concrete crack sealing
- 44,510 linear feet of asphalt concrete wide crack repair
- 18,726 square feet of deep (full-depth) asphalt concrete patching

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 2018 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 BA-6.

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2018	A01BA	01	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	59,913	\$12.05	\$721,952
2018	A01BA	02	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	36,018	\$12.05	\$434,017
2018	A02BA	01	Slurry Seal	2,331	\$0.31	\$723
2018	A03BA	01	Slurry Seal	11,428	\$0.31	\$3,543
2018	AH17BA	01	Slurry Seal	29,930	\$0.31	\$9,278
2018	R08BA	01A	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	17,694	\$12.05	\$213,213
2018	R08BA	01B	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	7,550	\$12.05	\$90,978
2018	R08BA	01C	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	7,547	\$12.05	\$90,941
2018	R08BA	02A	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	21,654	\$12.05	\$260,931

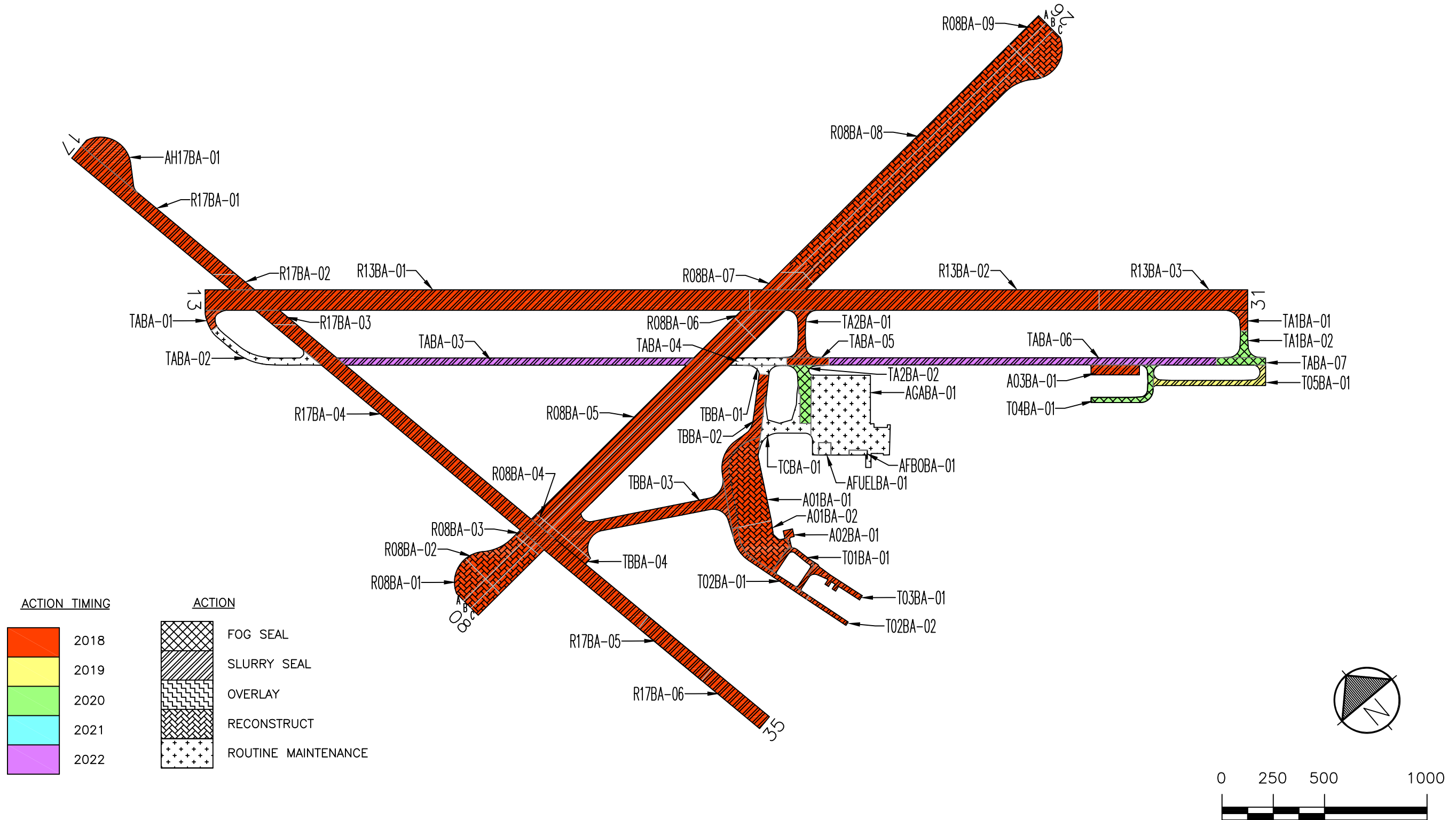
**Table 2. Five-Year Global Maintenance and Rehabilitation Plan.**

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2018	R08BA	02B	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	12,976	\$12.05	\$156,361
2018	R08BA	02C	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	13,221	\$12.05	\$159,313
2018	R08BA	03A	Slurry Seal	1,758	\$0.31	\$545
2018	R08BA	03B	Slurry Seal	1,758	\$0.31	\$545
2018	R08BA	03C	Slurry Seal	1,758	\$0.31	\$545
2018	R08BA	04A	Slurry Seal	1,758	\$0.31	\$545
2018	R08BA	04B	Slurry Seal	1,758	\$0.31	\$545
2018	R08BA	04C	Slurry Seal	1,758	\$0.31	\$545
2018	R08BA	05A	Slurry Seal	67,600	\$0.31	\$20,956
2018	R08BA	05B	Slurry Seal	67,600	\$0.31	\$20,956
2018	R08BA	05C	Slurry Seal	67,600	\$0.31	\$20,956
2018	R08BA	06A	Slurry Seal	3,760	\$0.31	\$1,166
2018	R08BA	06B	Slurry Seal	6,281	\$0.31	\$1,947
2018	R08BA	06C	Slurry Seal	8,802	\$0.31	\$2,729
2018	R08BA	07A	Slurry Seal	6,043	\$0.31	\$1,873
2018	R08BA	07B	Slurry Seal	5,828	\$0.31	\$1,807
2018	R08BA	07C	Slurry Seal	3,617	\$0.31	\$1,121
2018	R08BA	08A	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	77,571	\$12.05	\$934,731
2018	R08BA	08B	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	75,278	\$12.05	\$907,100
2018	R08BA	08C	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	79,773	\$12.05	\$961,265
2018	R08BA	09A	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	10,000	\$12.05	\$120,500
2018	R08BA	09B	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	10,000	\$12.05	\$120,500
2018	R08BA	09C	3" AC over 5" Aggregate Base over 19" Aggregate Subbase	24,265	\$12.05	\$292,393

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2018	R13BA	01	Slurry Seal	265,590	\$0.31	\$82,333
2018	R13BA	02	Slurry Seal	170,436	\$0.31	\$52,835
2018	R13BA	03	Slurry Seal	72,430	\$0.31	\$22,453
2018	R17BA	01	Slurry Seal	70,104	\$0.31	\$21,732
2018	R17BA	02	Slurry Seal	8,775	\$0.31	\$2,720
2018	R17BA	03	Slurry Seal	8,270	\$0.31	\$2,564
2018	R17BA	04	Slurry Seal	170,498	\$0.31	\$52,854
2018	R17BA	05	Slurry Seal	30,000	\$0.31	\$9,300
2018	R17BA	06	Slurry Seal	27,525	\$0.31	\$8,533
2018	T01BA	01	Slurry Seal	7,834	\$0.31	\$2,429
2018	T02BA	01	Slurry Seal	11,290	\$0.31	\$3,500
2018	T02BA	02	Slurry Seal	4,650	\$0.31	\$1,441
2018	T03BA	01	Slurry Seal	9,540	\$0.31	\$2,957
2018	TA1BA	01	Slurry Seal	4,785	\$0.31	\$1,483
2018	TA2BA	01	Slurry Seal	11,896	\$0.31	\$3,688
2018	TABA	01	Slurry Seal	4,460	\$0.31	\$1,383
2018	TABA	05	Slurry Seal	7,381	\$0.31	\$2,288
2018	TBBA	02	Slurry Seal	32,921	\$0.31	\$10,205
2018	TBBA	03	Slurry Seal	57,800	\$0.31	\$17,918
2018	TBBA	04	Slurry Seal	6,693	\$0.31	\$2,075
2018 Total						\$5,859,208
2019	T05BA	01	Slurry Seal	12,104	\$0.31	\$3,752
2019 Total						\$3,752
2020	T04BA	01	Fog Seal	16,884	\$0.19	\$3,208
2020	TA1BA	02	Fog Seal	6,594	\$0.19	\$1,253
2020	TA2BA	02	Fog Seal	17,270	\$0.19	\$3,281
2020	TABA	07	Fog Seal	8,513	\$0.19	\$1,617
2020 Total						\$9,359
2022	TABA	03	Slurry Seal	59,564	\$0.31	\$18,465
2022	TABA	06	Slurry Seal	65,716	\$0.31	\$20,372
2022 Total						\$38,837
<b>TOTAL</b>						<b>\$5,911,156</b>

Figure BA-6. Five-Year Pavement Management Plan.  
Baker City Municipal Airport



Drawing Date: July 2017

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 2020.

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.