

# SCAPPOOSE INDUSTRIAL AIRPARK

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 are in compliance 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

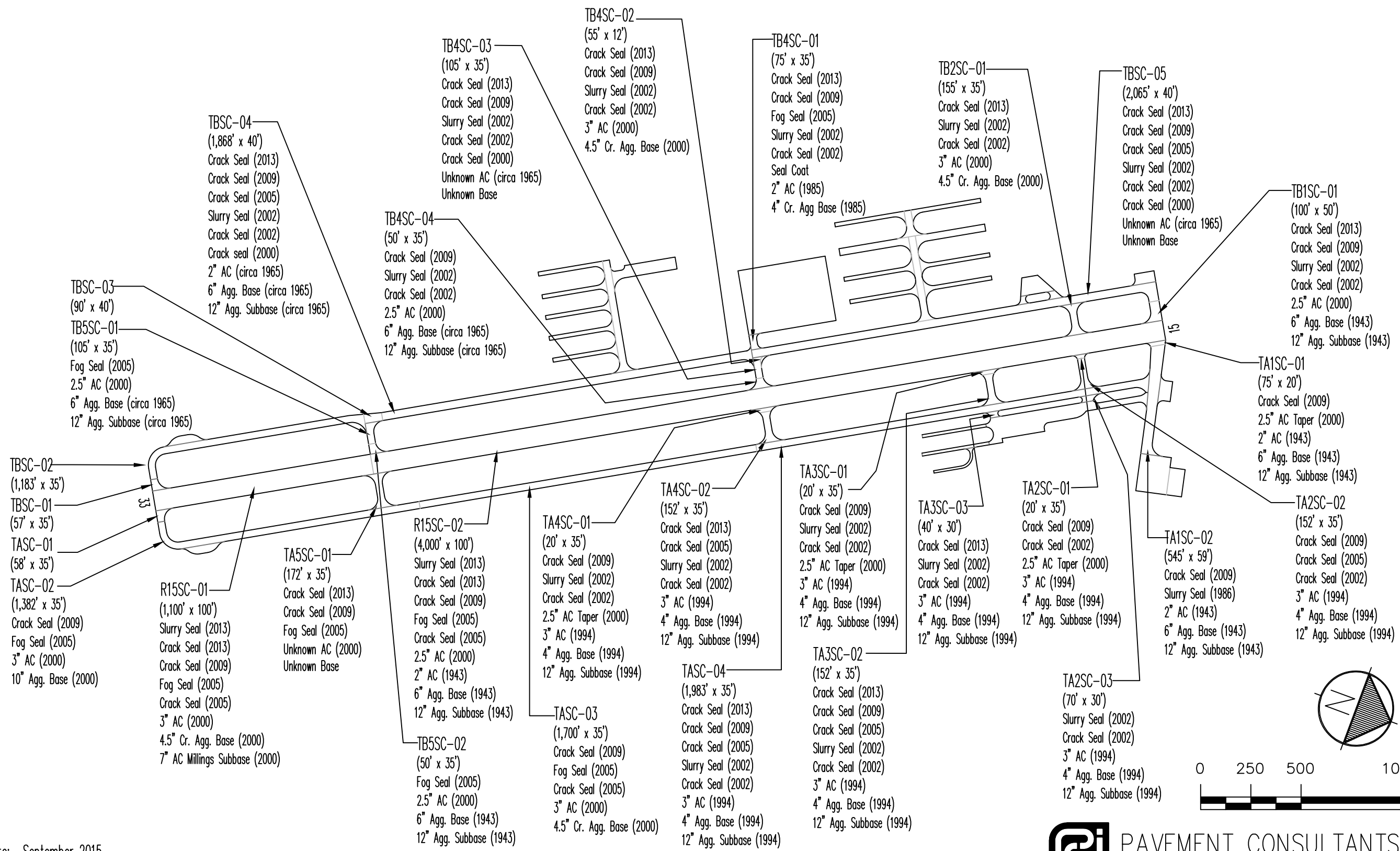
To determine how your pavements were constructed and their age, a records review was conducted. Figures SC-1A and SC-1B show the records review results. These figures identify pavement boundaries, dimensions, pavement layer types, thicknesses and dates of construction. The most recent construction date for each pavement can also be found in the Section Condition Report in Appendix 2. Figures SC-1A and SC-1B 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 SC-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 Micro PAVER database.

Using the branch, section and sample unit divisions established, a visual condition survey was conducted at Scappoose Industrial Airpark in September 2015. 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 Micro PAVER software for analysis. These data are reproduced in the Re-Inspection Report attached as Appendix 4.

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

Figure SC-1A. Airport Layout, Dimensions and Pavement Cross-Sections – Runways and Taxiways.  
Scappoose Industrial Airpark



Drawing Date: September 2015

Figure SC-1B. Airport Layout, Dimensions and Pavement Cross-Sections – Aprons and Hangar Areas.

Scappoose Industrial Airpark

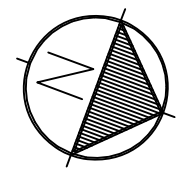
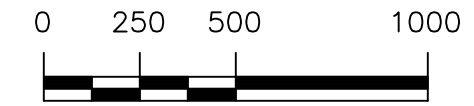
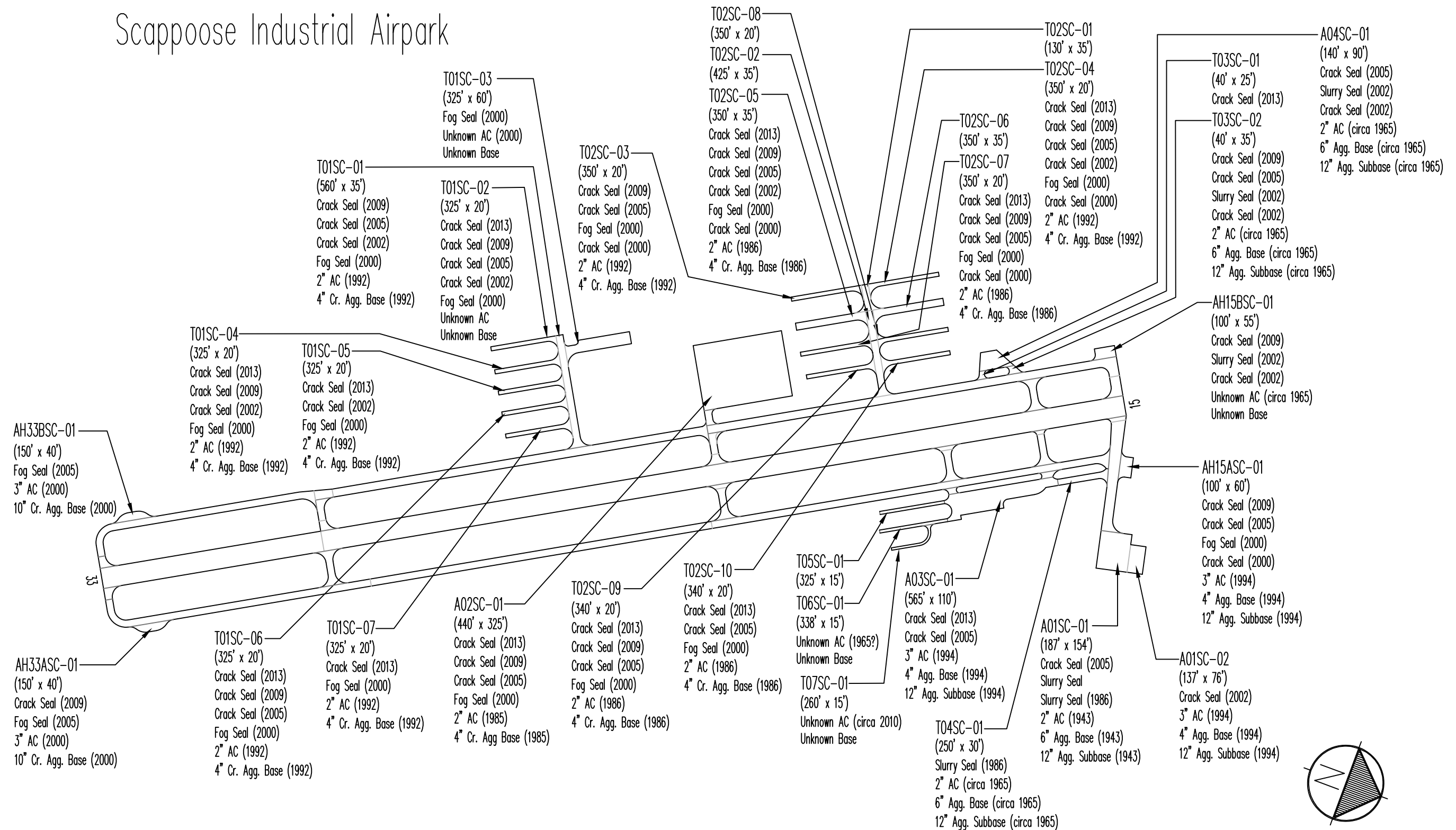
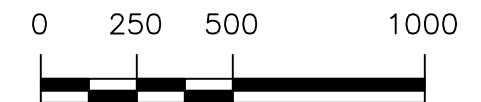
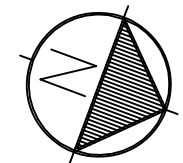
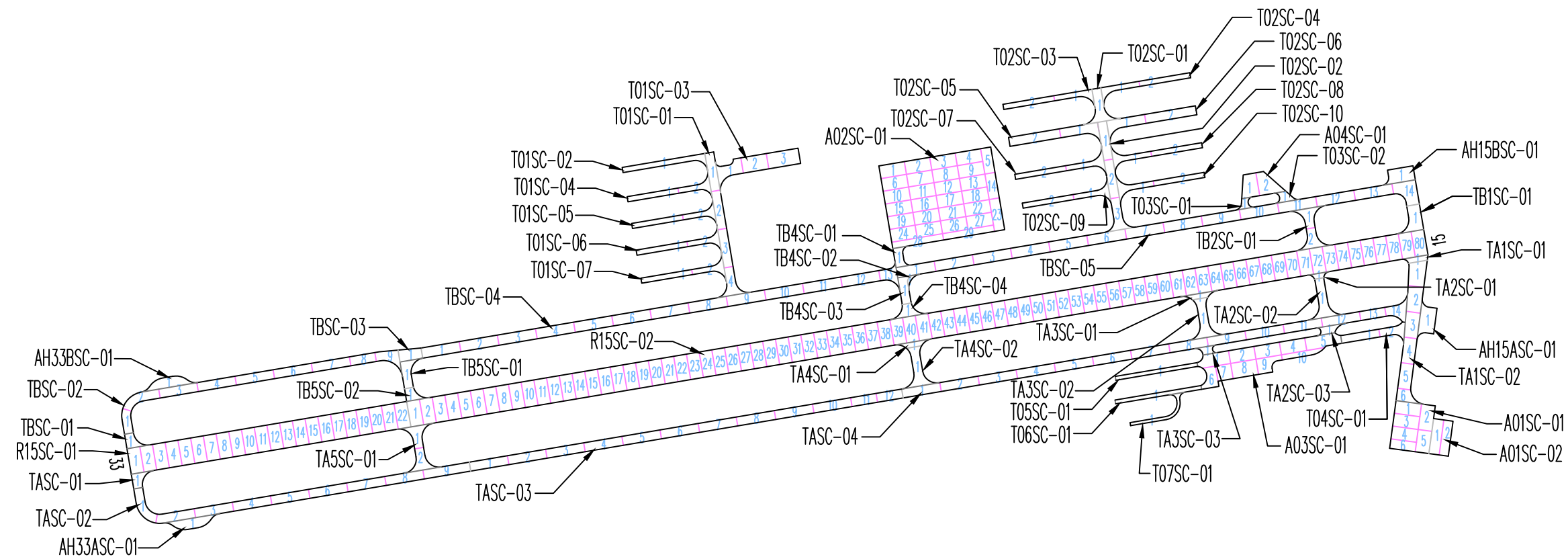


Figure SC-2. Pavement Branch, Section and Sample Unit Layout.  
Scappoose Industrial Airpark



Drawing Date: September 2015

## RESULTS

Using the data collected during the visual inspection, the Micro 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 2020 and 2025. The projections were based on pavement deterioration models developed by Micro 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 PCR is shown graphically in Figure SC-3.

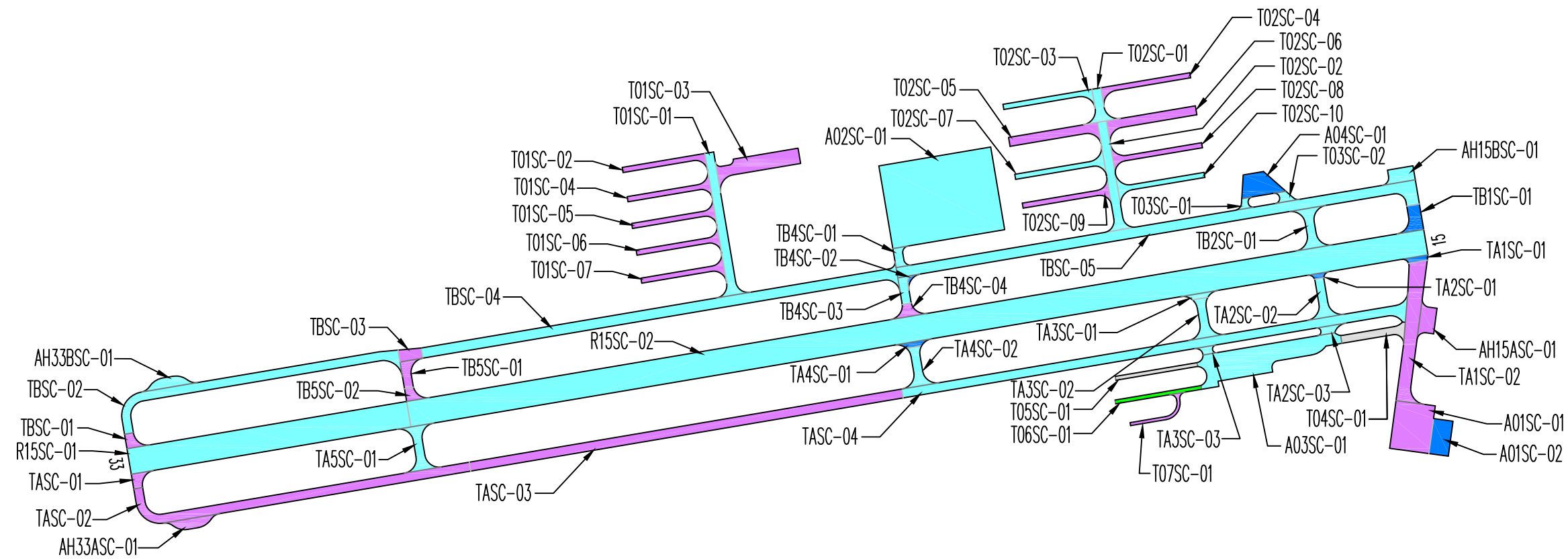
**Table 1. Past, Present and Future Pavement Condition Indices.**

Branch	Section	Inspections			Forecast	
		2008	2012	2015	2020	2025
A01SC	1	90	97	96	87	78
A01SC	2	64	64	64	59	54
A02SC	1	96	80	82	75	68
A03SC	1	83	77	73	67	62
A04SC	1	70	45	58	54	49
AH15ASC	1	90	87	86	78	71
AH15BSC	1	93	84	77	71	65
AH33ASC	1	79	92	88	80	73
AH33BSC	1	100	100	78	71	65
R15SC	1	84	70	81	76	74
R15SC	2	82	75	80	73	69
T01SC	1	89	89	83	79	77
T01SC	2	91	85	86	81	78
T01SC	3	100	100	98	90	84
T01SC	4	96	87	96	89	83
T01SC	5	100	91	95	88	82
T01SC	6	97	89	90	84	80
T01SC	7	100	87	95	88	82
T02SC	1	73	84	78	76	73
T02SC	2	82	86	80	77	75
T02SC	3	89	91	85	80	77
T02SC	4	85	86	92	85	80
T02SC	5	71	84	86	81	78
T02SC	6	90	83	86	81	78

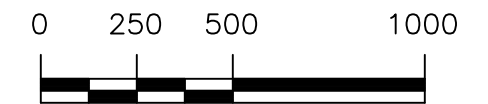
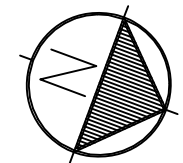
**Table 1. Past, Present and Future Pavement Condition Indices.**

Branch	Section	Inspections			Forecast	
		2008	2012	2015	2020	2025
T02SC	7	70	85	82	79	76
T02SC	8	75	87	89	83	79
T02SC	9	79	84	88	82	79
T02SC	10	100	83	81	78	75
T03SC	1	78	80	73	69	63
T03SC	2	75	64	74	71	65
T04SC	1	8	22	21	17	13
T05SC	1	8	4	11	7	3
T06SC	1	0	44	44	39	37
T07SC	1	---	---	100	92	85
TA1SC	1	93	87	64	64	64
TA1SC	2	86	98	97	89	83
TA2SC	1	86	88	64	64	64
TA2SC	2	85	71	84	80	77
TA2SC	3	100	100	82	79	76
TA3SC	1	89	89	73	73	73
TA3SC	2	95	78	74	71	65
TA3SC	3	100	82	77	75	71
TA4SC	1	90	89	70	70	70
TA4SC	2	100	82	80	77	75
TA5SC	1	95	80	71	66	59
TASC	1	87	94	86	81	78
TASC	2	81	93	90	84	80
TASC	3	86	93	88	82	79
TASC	4	89	95	85	80	77
TB1SC	1	92	84	68	62	55
TB2SC	1	91	86	83	79	77
TB4SC	1	91	92	85	80	77
TB4SC	2	71	71	66	60	52
TB4SC	3	87	78	83	79	77
TB4SC	4	88	95	88	82	79
TB5SC	1	100	100	89	83	79
TB5SC	2	100	100	97	89	83
TBSC	1	87	94	86	81	78
TBSC	2	91	93	83	79	77
TBSC	3	100	100	95	88	82
TBSC	4	81	81	81	78	75
TBSC	5	83	72	82	79	76

Figure SC-3. Pavement Condition in September 2015.  
Scappoose Industrial Airpark



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



Drawing Date: September 2015

Section PCIs at Scappoose Industrial Airpark range from a low of 11 (a PCR of “Serious”) to a high of 100 (a PCR of “Good”). The area-weighted average PCI for all airport pavements is 82, corresponding to an overall PCR of “Satisfactory”. Figure SC-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 2008 and 2012.

The primary distresses observed during the inspection were: longitudinal and transverse cracking, patching, block cracking, raveling and alligator cracking with an isolated occurrence of depressions.

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

## RECOMMENDATIONS

Data collected during the visual condition survey were used by the Micro 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.

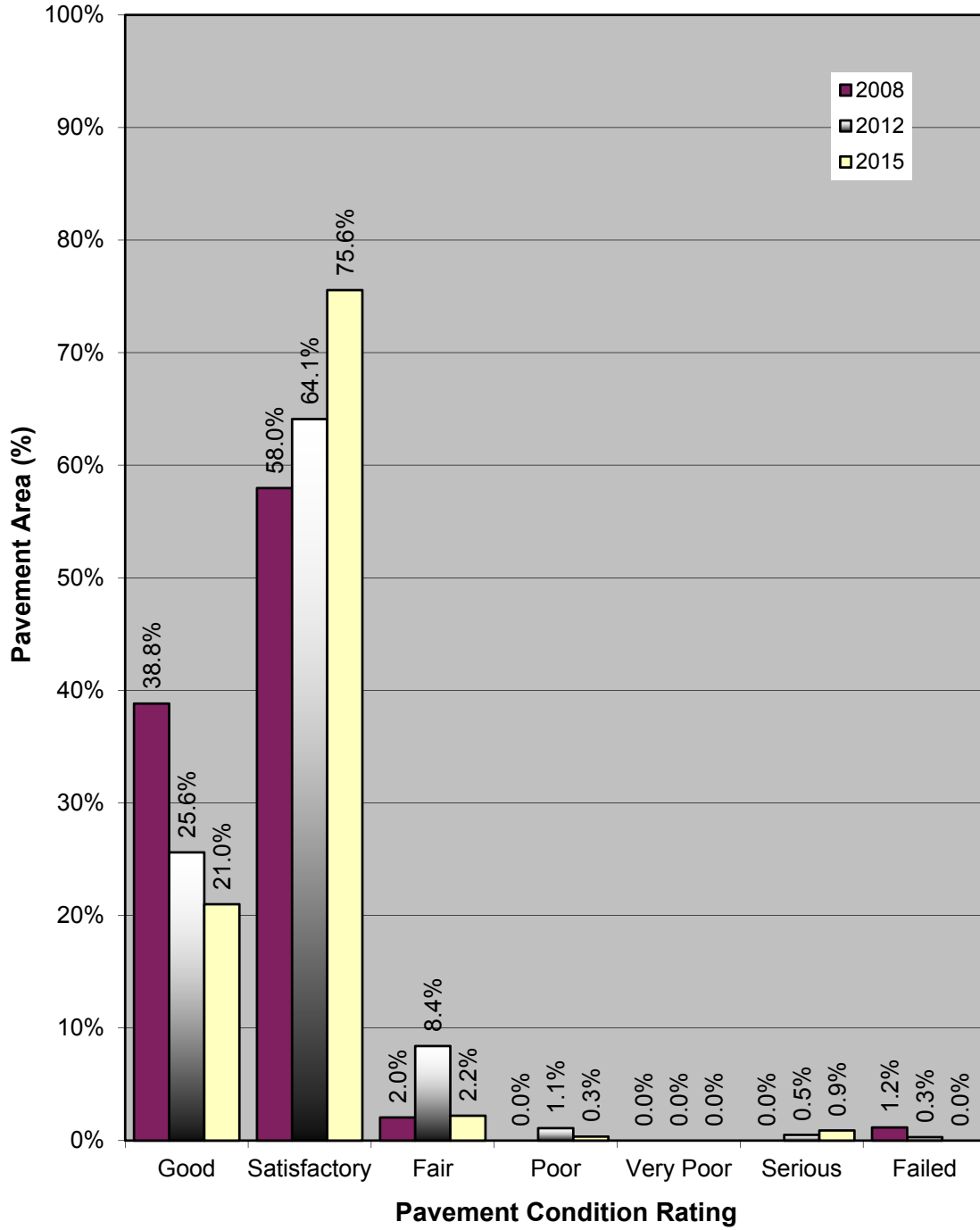
The recommended localized maintenance activities to be applied are selected by the Micro PAVER software based on a Distress Maintenance Policy established for the Oregon airport system. The report results indicate that, over your entire airport, the following quantities of localized maintenance are needed:

- 12,786 linear feet of asphalt concrete crack sealing
- 21 linear feet of wide crack sealing/repair
- 502 square feet of asphalt concrete deep patching.

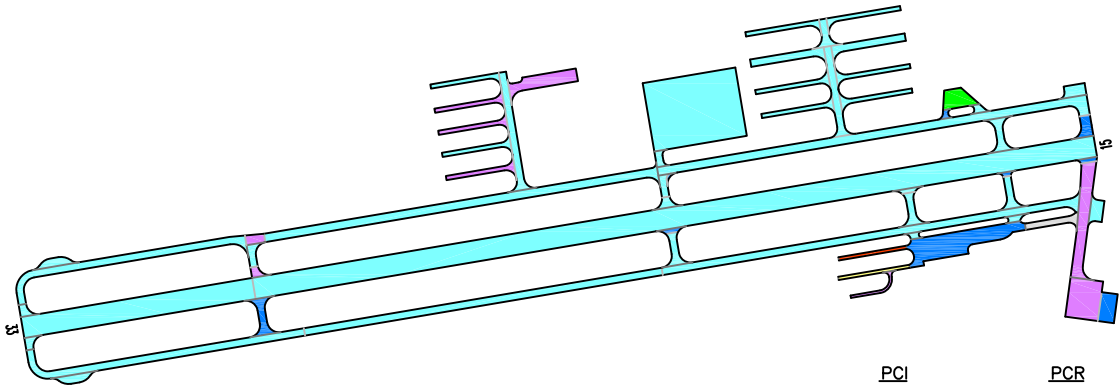
The Micro PAVER software can also identify and schedule recommended global (applied over an entire section) maintenance activities such as fog seals, slurry seals and other surface treatments, as well as major rehabilitation activities such as asphalt concrete overlays and complete reconstruction. Micro PAVER schedules global maintenance on a user-defined interval. To schedule major rehabilitation Micro 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.



**Figure SC-4. Pavement Condition Distribution  
Scappoose Industrial Airpark**

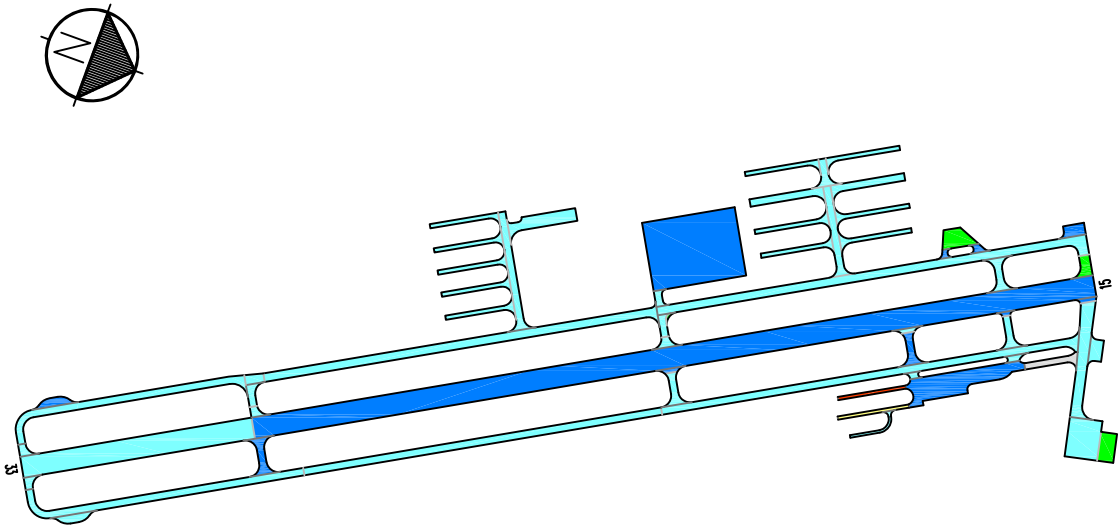


**Predicted Condition in 2020.**



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

**Predicted Condition in 2025.**



Drawing Date: September 2015



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

During this project a 5-year program outlining recommended global maintenance and rehabilitation was developed. The program begins in the year 2016 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 SC-6.

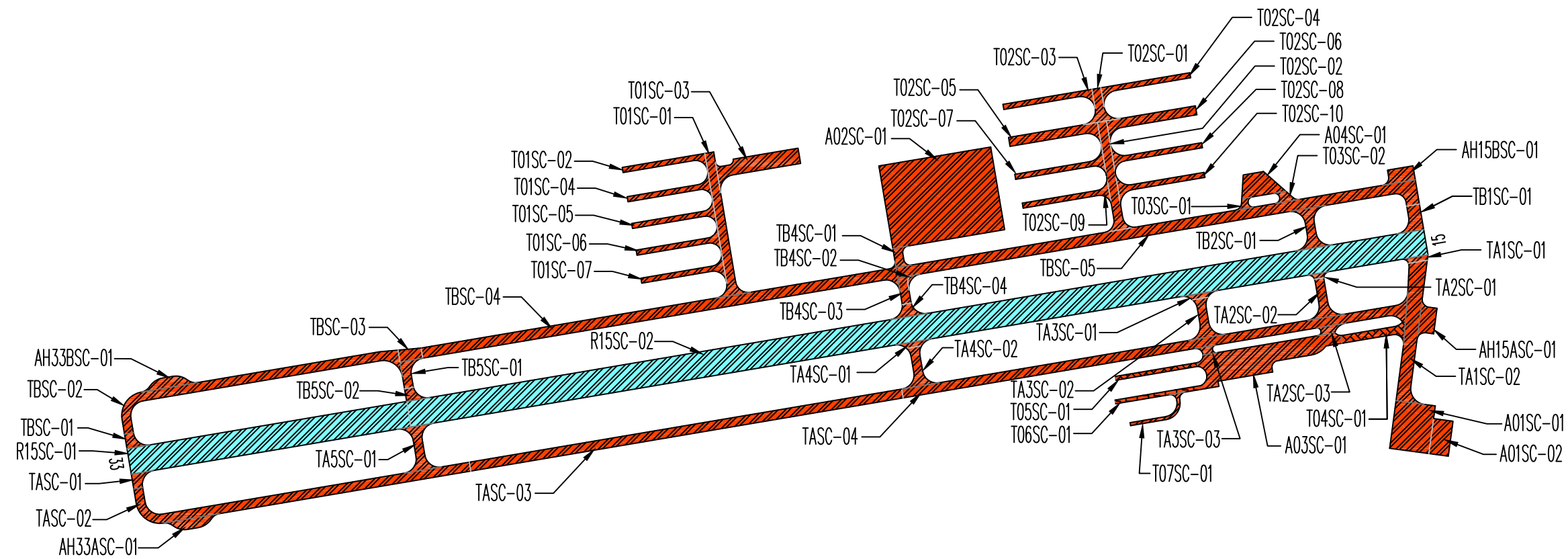
**Table 2. Five-Year Global Maintenance and Rehabilitation Plan.**

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2016	A01SC	1	Slurry Seal	28,688	0.25	\$7,172
2016	A01SC	2	Slurry Seal	10,392	0.25	\$2,598
2016	A02SC	1	Slurry Seal	143,000	0.25	\$35,750
2016	A03SC	1	Slurry Seal	48,096	0.25	\$12,024
2016	A04SC	1	Slurry Seal	11,406	0.25	\$2,852
2016	AH15ASC	1	Slurry Seal	6,525	0.25	\$1,631
2016	AH15BSC	1	Slurry Seal	5,693	0.25	\$1,423
2016	AH33ASC	1	Slurry Seal	5,573	0.25	\$1,393
2016	AH33BSC	1	Slurry Seal	5,533	0.25	\$1,383
2016	T01SC	1	Slurry Seal	20,673	0.25	\$5,168
2016	T01SC	2	Slurry Seal	6,984	0.25	\$1,746
2016	T01SC	3	Slurry Seal	19,044	0.25	\$4,761
2016	T01SC	4	Slurry Seal	7,372	0.25	\$1,843
2016	T01SC	5	Slurry Seal	7,275	0.25	\$1,819
2016	T01SC	6	Slurry Seal	7,322	0.25	\$1,831
2016	T01SC	7	Slurry Seal	7,471	0.25	\$1,868
2016	T02SC	1	Slurry Seal	5,848	0.25	\$1,462
2016	T02SC	2	Slurry Seal	15,744	0.25	\$3,936
2016	T02SC	3	Slurry Seal	7,649	0.25	\$1,912
2016	T02SC	4	Slurry Seal	7,649	0.25	\$1,912
2016	T02SC	5	Slurry Seal	12,899	0.25	\$3,225
2016	T02SC	6	Slurry Seal	12,899	0.25	\$3,225
2016	T02SC	7	Slurry Seal	8,084	0.25	\$2,021
2016	T02SC	8	Slurry Seal	8,084	0.25	\$2,021
2016	T02SC	9	Slurry Seal	7,669	0.25	\$1,917
2016	T02SC	10	Slurry Seal	8,098	0.25	\$2,025
2016	T03SC	1	Slurry Seal	1,330	0.25	\$333
2016	T03SC	2	Slurry Seal	1,971	0.25	\$493
2016	T04SC	1	Reconstruct with 3" AC over 10" Aggregate Base	8,189	7.65	\$62,646
2016	T05SC	1	Reconstruct with 3" AC over 10" Aggregate Base	4,875	7.65	\$37,294

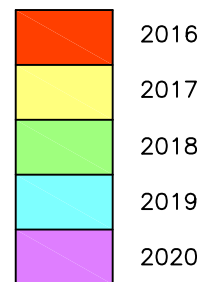
**Table 2. Five-Year Global Maintenance and Rehabilitation Plan.**

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2016	T06SC	1	2" AC Overlay	5,070	2.50	\$12,675
2016	T07SC	1	Slurry Seal	3,996	0.25	\$999
2016	TA1SC	1	Slurry Seal	1,654	0.25	\$414
2016	TA1SC	2	Slurry Seal	30,550	0.25	\$7,638
2016	TA2SC	1	Slurry Seal	967	0.25	\$242
2016	TA2SC	2	Slurry Seal	6,638	0.25	\$1,660
2016	TA2SC	3	Slurry Seal	2,067	0.25	\$517
2016	TA3SC	1	Slurry Seal	1,720	0.25	\$430
2016	TA3SC	2	Slurry Seal	6,914	0.25	\$1,729
2016	TA3SC	3	Slurry Seal	1,459	0.25	\$365
2016	TA4SC	1	Slurry Seal	1,720	0.25	\$430
2016	TA4SC	2	Slurry Seal	6,914	0.25	\$1,729
2016	TA5SC	1	Slurry Seal	8,634	0.25	\$2,159
2016	TASC	1	Slurry Seal	2,679	0.25	\$670
2016	TASC	2	Slurry Seal	48,381	0.25	\$12,095
2016	TASC	3	Slurry Seal	59,522	0.25	\$14,881
2016	TASC	4	Slurry Seal	70,718	0.25	\$17,680
2016	TB1SC	1	Slurry Seal	5,649	0.25	\$1,412
2016	TB2SC	1	Slurry Seal	8,022	0.25	\$2,006
2016	TB4SC	1	Slurry Seal	2,893	0.25	\$723
2016	TB4SC	2	Slurry Seal	515	0.25	\$129
2016	TB4SC	3	Slurry Seal	3,810	0.25	\$953
2016	TB4SC	4	Slurry Seal	3,048	0.25	\$762
2016	TB5SC	1	Slurry Seal	4,325	0.25	\$1,081
2016	TB5SC	2	Slurry Seal	2,399	0.25	\$600
2016	TBSC	1	Slurry Seal	2,644	0.25	\$661
2016	TBSC	2	Slurry Seal	42,420	0.25	\$10,605
2016	TBSC	3	Slurry Seal	3,888	0.25	\$972
2016	TBSC	4	Slurry Seal	75,510	0.25	\$18,878
2016	TBSC	5	Slurry Seal	84,787	0.25	\$21,197
<b>2016 Total</b>						<b>\$345,968</b>
2019	R15SC	1	Slurry Seal	110,000	0.25	\$27,500
2019	R15SC	2	Slurry Seal	400,000	0.25	\$100,000
<b>2019 Total</b>						<b>\$127,500</b>
<b>5-Year Total</b>						<b>\$473,468</b>

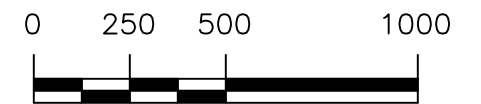
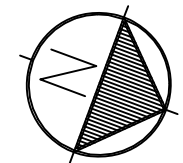
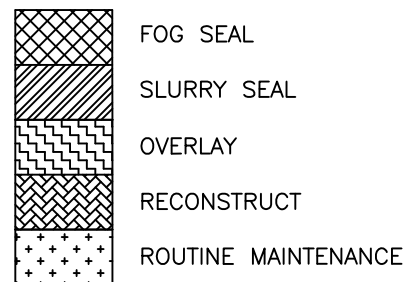
Figure SC-6. Five-Year Pavement Management Plan.  
Scappoose Industrial Airpark



**ACTION TIMING**



**ACTION**



Drawing Date: September 2015

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 2018.

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.