TILLAMOOK 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

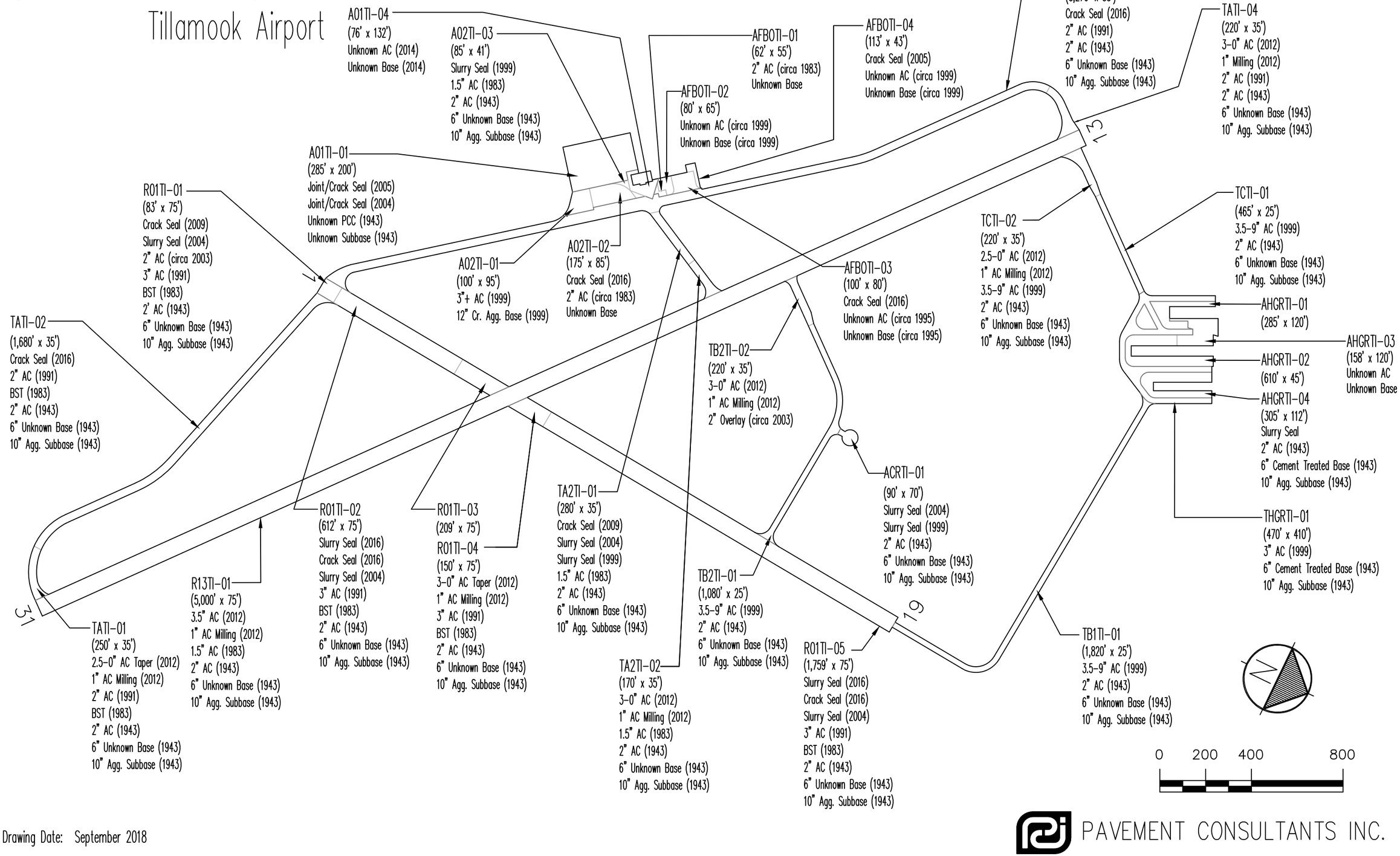
To determine how your pavements were constructed and their age, a records review was conducted. Figure TI-1 shows the records review results. This figure identifies pavement boundaries, dimensions, pavement layer types, thicknesses and dates of construction. The most recent construction date for each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

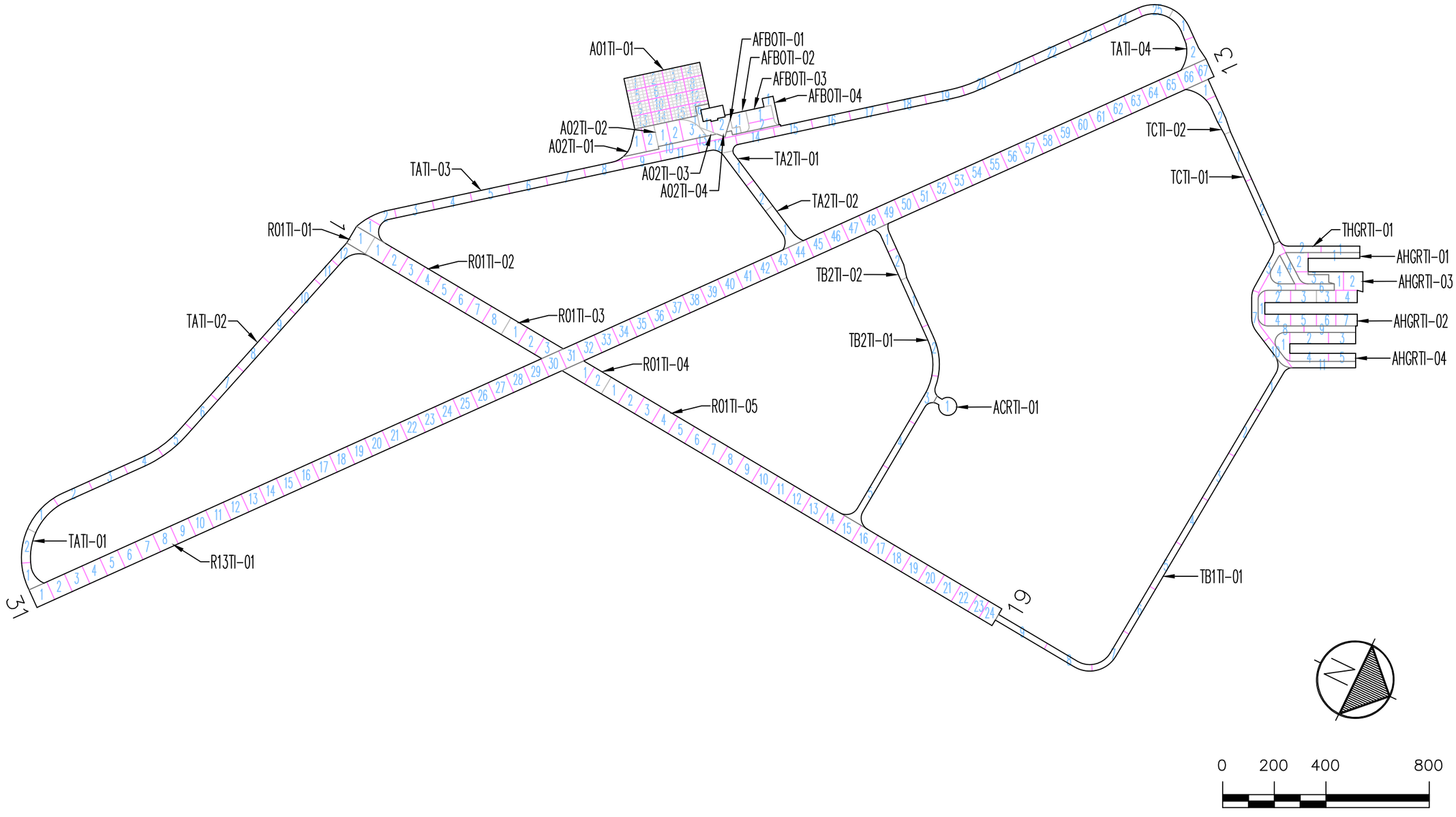
Figure TI-1. Airport Layout, Dimensions and Pavement Cross-Sections.
Tillamook Airport



Drawing Date: September 2018

PAVEMENT CONSULTANTS INC.

Figure TI-2. Pavement Branch, Section and Sample Unit Layout.
Tillamook Airport



Drawing Date: September 2018

PAVEMENT CONSULTANTS INC.

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 TI-3.

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

Branch	Section	Inspections			Forecast	
		2012	2015	2018	2023	2028
A01TI	01	77	81	81	79	77
A02TI	01	100	97	87	79	71
A02TI	02	65	64	38	30	23
A02TI	03	71	42	43	36	29
A02TI	04	---	100	93	85	77
ACRTI	01	59	57	54	51	49
AFBOTI	01	53	43	33	25	18
AFBOTI	02	90	61	59	54	51
AFBOTI	03	94	60	42	35	27
AFBOTI	04	88	77	68	61	56
AHGRTI	01	47	34	30	22	15
AHGRTI	02	47	42	18	10	3
AHGRTI	03	81	99	99	92	84
AHGRTI	04	47	33	29	21	14
R01TI	01	83	64	64	61	59
R01TI	02	89	82	80	67	54
R01TI	03	100	100	100	97	95
R01TI	04	100	100	99	96	94
R01TI	05	92	83	81	68	55
R13TI	01	100	100	99	96	94
TA2TI	01	64	54	52	49	47
TA2TI	02	100	100	100	97	95
TATI	01	100	100	100	97	95
TATI	02	85	71	62	59	57

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

Branch	Section	Inspections			Forecast	
		2012	2015	2018	2023	2028
TATI	03	84	66	65	62	60
TATI	04	100	100	100	97	95
TB1TI	01	100	90	82	79	77
TB2TI	01	99	92	82	79	77
TB2TI	02	100	100	100	97	95
TCTI	01	100	96	81	78	76
TCTI	02	100	100	100	97	95
THGRTI	01	100	100	88	85	83

Section PCIs at Tillamook Airport range from a low of 18 (a PCR of "Serious") to a high of 100 (a PCR of "Good"). The area-weighted average PCI for all airport pavements is 81, corresponding to an overall PCR of "Satisfactory". Figure TI-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 2015.

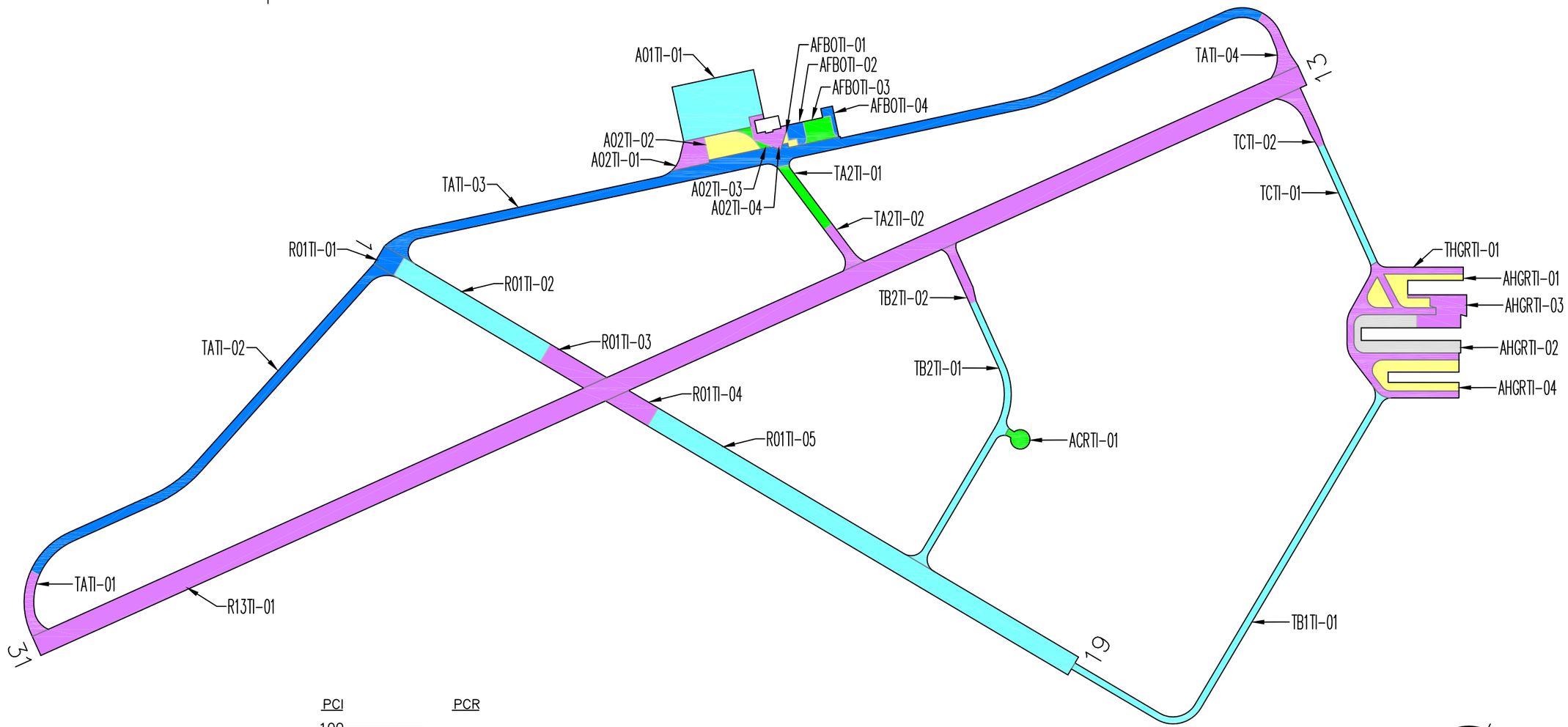
The primary distresses observed in the asphalt pavements during the inspection were: longitudinal and transverse cracking, block cracking, raveling, weathering, and depressions. Joint seal damage, small patches, shattered slabs, shrinkage cracks and linear cracking were observed in the concrete pavement.

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

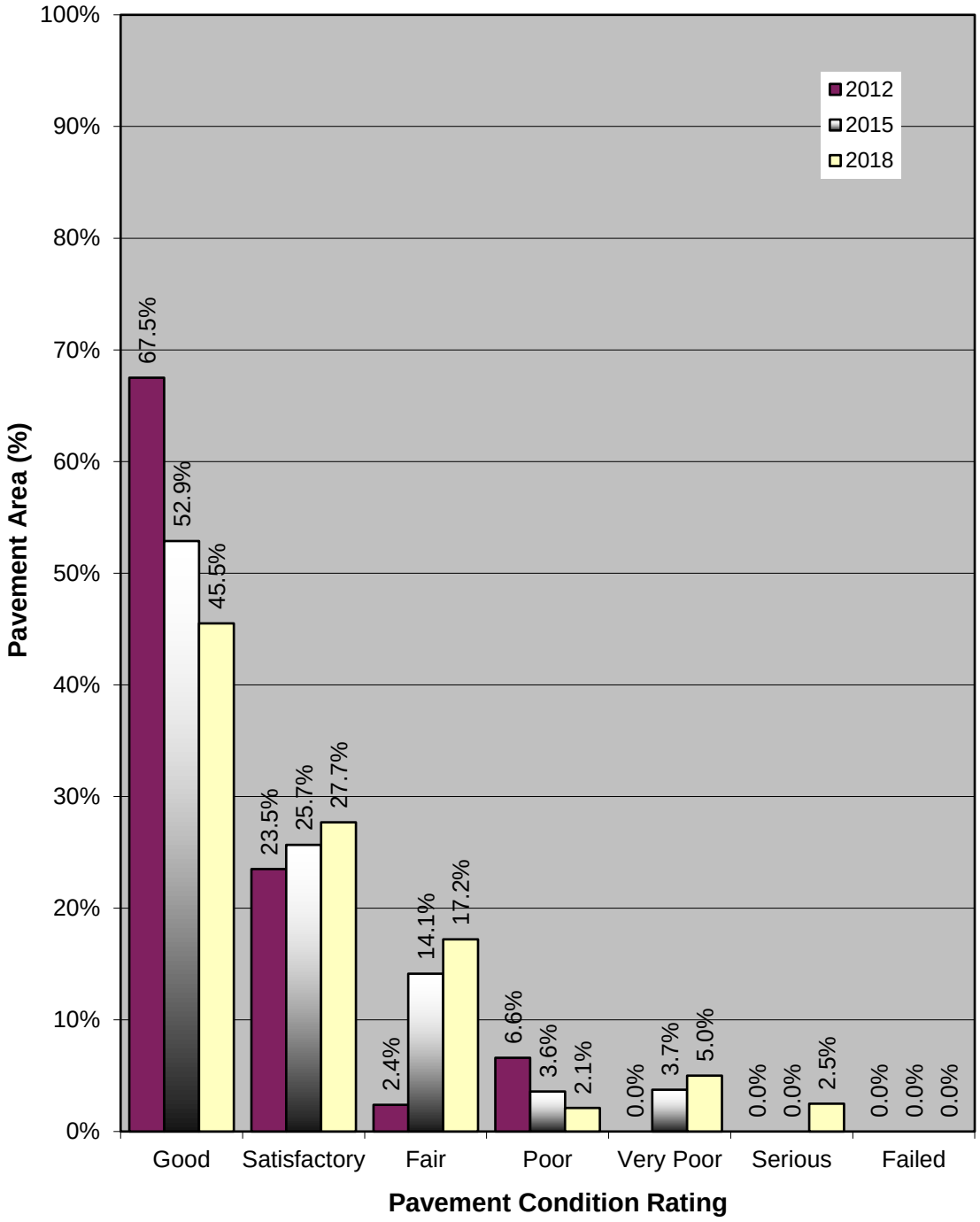
Figure TI-3. Pavement Condition in May 2018.
Tillamook Airport



Drawing Date: September 2018

PAVEMENT CONSULTANTS INC.

Figure TI-4. Pavement Condition Distribution
Tillamook Airport



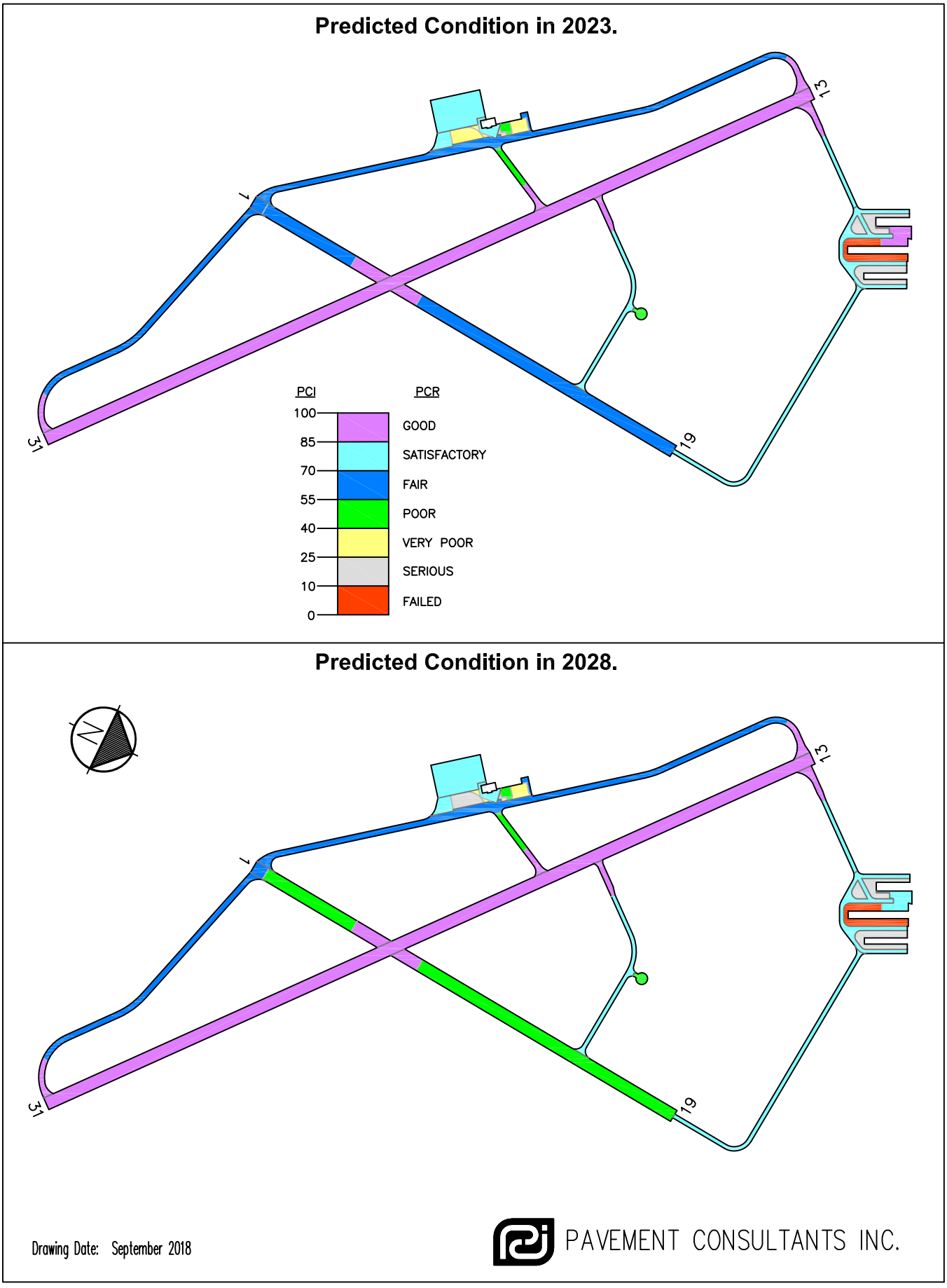


Figure TI-5. Future Pavement Condition.

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:

- 23,176 linear feet of asphalt concrete crack sealing
- 37,060 square feet of shallow 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 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 TI-6.

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

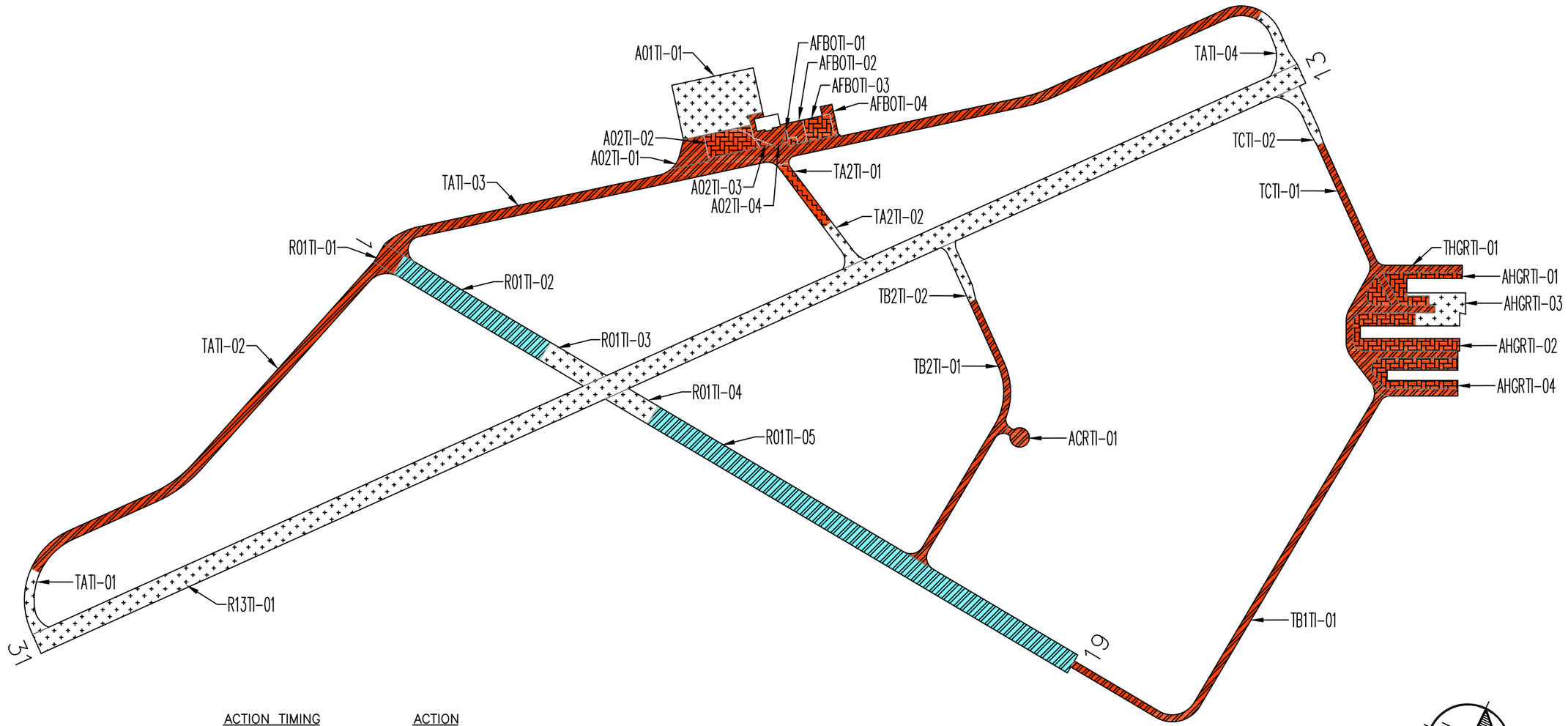
Year	Branch	Section	Action	Area (sf)	Unit Cost ($/sf)	Total Cost ($)
2019	A02TI	01	Slurry Seal	9,566	$0.31	$2,965
2019	A02TI	02	2" AC over 8" Crushed Aggregate Base over 10" Aggregate Subbase	13,861	$8.30	$115,046
2019	A02TI	03	2" AC over 8" Crushed Aggregate Base over 10" Aggregate Subbase	1,965	$8.30	$16,310
2019	A02TI	04	Slurry Seal	7,423	$0.31	$2,301
2019	ACRTI	01	Slurry Seal	4,395	$0.31	$1,362
2019	AFBOTI	01	2" AC over 8" Crushed Aggregate Base over 10" Aggregate Subbase	1,405	$8.30	$11,662
2019	AFBOTI	02	Slurry Seal	4,273	$0.31	$1,325
2019	AFBOTI	03	2" AC over 8" Crushed Aggregate Base over 10" Aggregate Subbase	8,171	$8.30	$67,819
2019	AFBOTI	04	Slurry Seal	2,534	$0.31	$786

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

Year	Branch	Section	Action	Area (sf)	Unit Cost ($/sf)	Total Cost ($)
2019	AHGRTI	01	2" AC over 8" Crushed Aggregate Base over 10" Aggregate Subbase	19,828	$8.30	$164,572
2019	AHGRTI	02	2" AC over 8" Crushed Aggregate Base over 10" Aggregate Subbase	28,720	$8.30	$238,376
2019	AHGRTI	04	2" AC over 8" Crushed Aggregate Base over 10" Aggregate Subbase	23,678	$8.30	$196,527
2019	R01TI	01	Slurry Seal	6,225	$0.31	$1,930
2019	TA2TI	01	2" AC Overlay	9,574	$2.50	$23,935
2019	TATI	02	Slurry Seal	59,942	$0.31	$18,582
2019	TATI	03	Slurry Seal	127,382	$0.31	$39,488
2019	TB1TI	01	Slurry Seal	45,928	$0.31	$14,238
2019	TB2TI	01	Slurry Seal	28,164	$0.31	$8,731
2019	TCTI	01	Slurry Seal	11,699	$0.31	$3,627
2019	THGRTI	01	Slurry Seal	49,984	$0.31	$15,495
					2019 Total	**$945,077**
2022	R01TI	02	Slurry Seal	45,918	$0.31	$14,235
2022	R01TI	05	Slurry Seal	131,916	$0.31	$40,894
					2022 Total	**$55,129**
					5-Year Total	**$1,000,206**

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.

Figure TI-6. Five-Year Pavement Management Plan.
Tillamook Airport



Drawing Date: September 2018

PAVEMENT CONSULTANTS INC.

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.