

STARK'S TWIN OAKS 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 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 SK-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 SK-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 SK-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 Stark’s Twin Oaks Airpark in July 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 SK-1. Airport Layout, Dimensions and Pavement Cross-Sections.
Stark's Twin Oaks Airpark

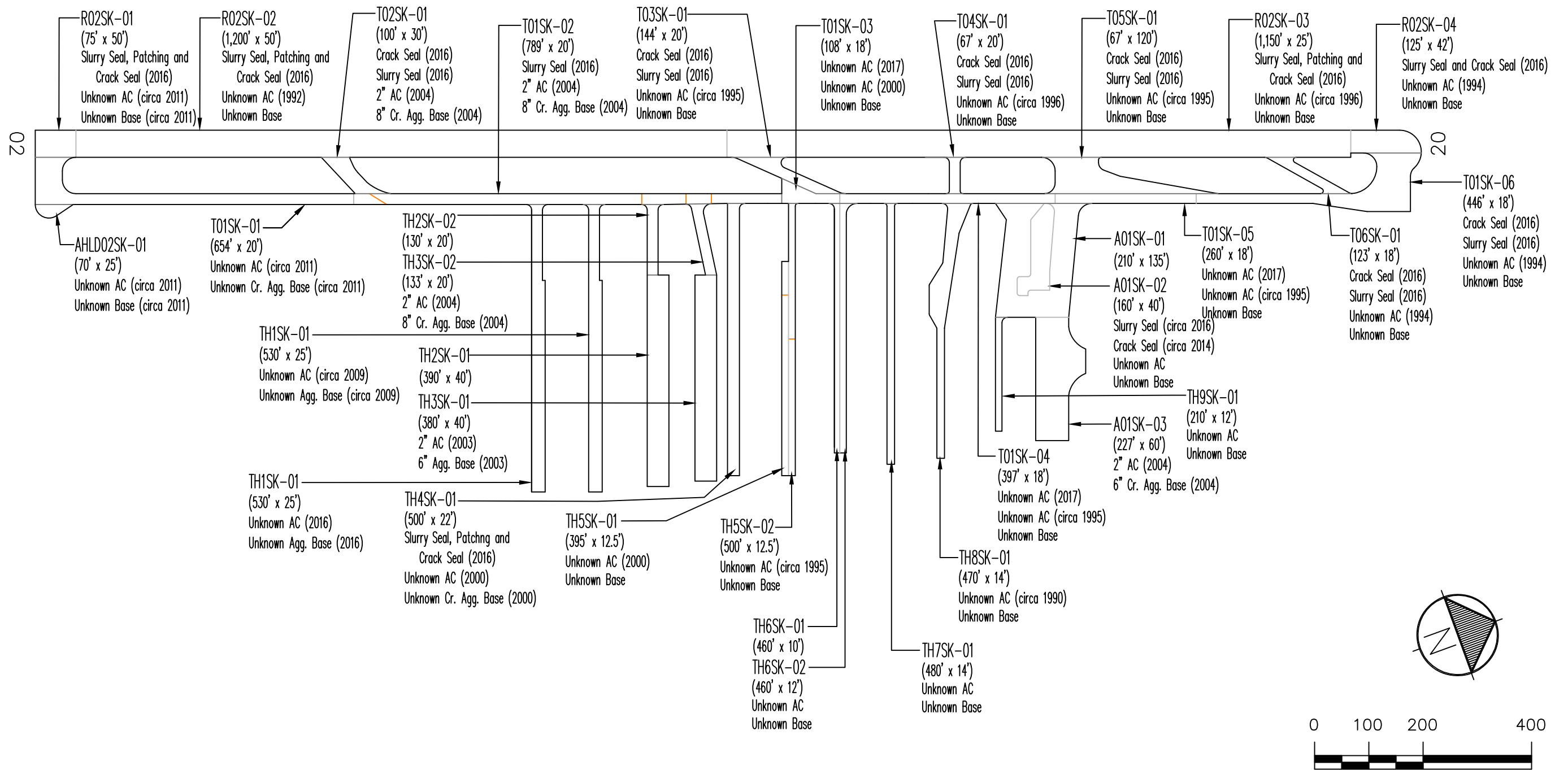
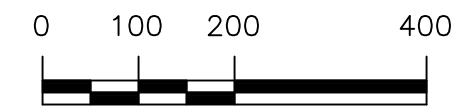
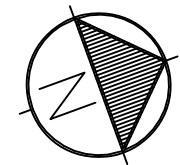
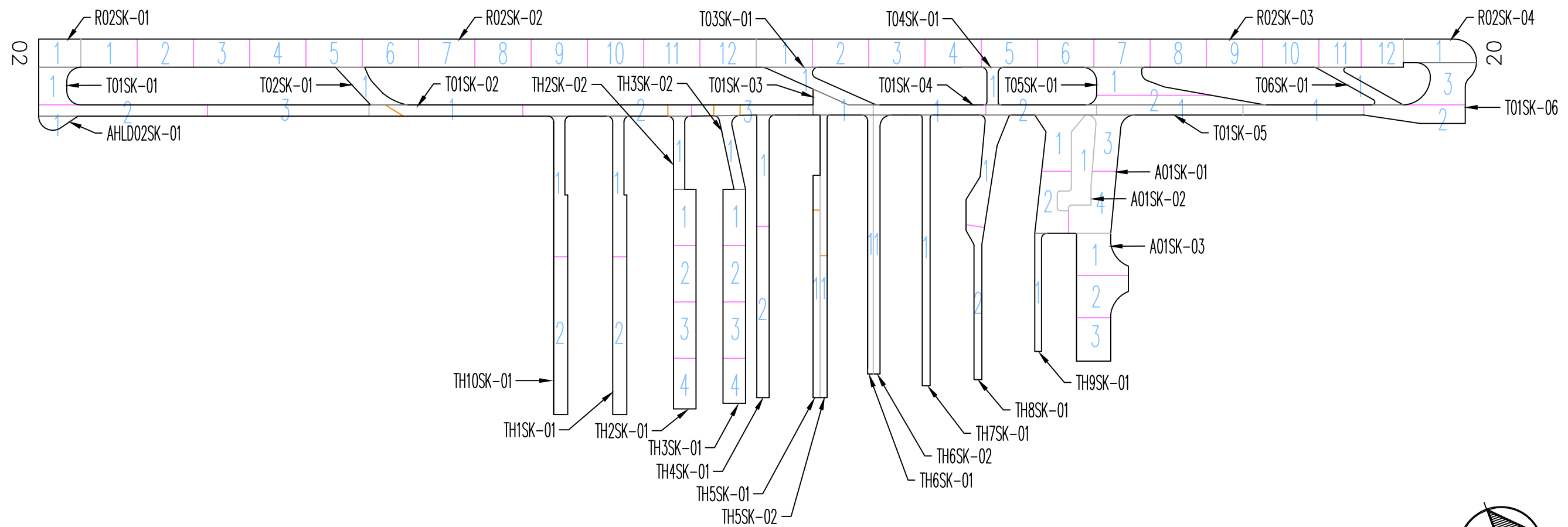


Figure SK-2. Pavement Branch, Section and Sample Unit Layout.
Stark's Twin Oaks Airpark



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 SK-3.

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

Branch	Section	Inspections			Forecast	
		2012	2015	2018	2023	2028
A01SK	01	69	75	90	80	73
A01SK	02	71	77	87	78	72
A01SK	03	98	94	84	76	71
AHLD02SK	01	100	100	100	87	77
R02SK	01	100	100	100	93	87
R02SK	02	80	63	82	79	78
R02SK	03	88	81	90	85	81
R02SK	04	86	77	79	78	78
T01SK	01	100	100	94	81	75
T01SK	02	98	92	88	77	74
T01SK	03	---	---	100	92	84
T01SK	04	---	---	100	92	84
T01SK	05	---	---	100	92	84
T01SK	06	73	72	86	77	73
T02SK	01	95	89	90	79	74
T03SK	01	78	79	79	74	72
T04SK	01	77	72	91	79	74
T05SK	01	80	80	89	78	74
T06SK	01	89	81	80	74	72
TH10SK	01	---	---	100	90	78
TH1SK	01	100	90	77	74	71
TH2SK	01	100	71	68	58	44
TH2SK	02	---	---	47	35	33
TH3SK	01	94	78	68	58	44

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

Branch	Section	Inspections			Forecast	
		2012	2015	2018	2023	2028
TH3SK	02	---	---	78	74	72
TH4SK	01	85	84	81	75	73
TH5SK	01	86	78	51	39	33
TH5SK	02	82	57	34	32	30
TH6SK	01	64	64	64	52	39
TH6SK	02	64	64	54	41	34
TH7SK	01	57	25	17	15	13
TH8SK	01	63	30	50	38	33
TH9SK	01	69	64	64	52	39

Section PCIs at Stark’s Twin Oaks Airpark range from a low of 17 (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 SK-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 during the inspection were: longitudinal and transverse cracking, weathering, alligator cracking, depressions, patching and raveling.

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

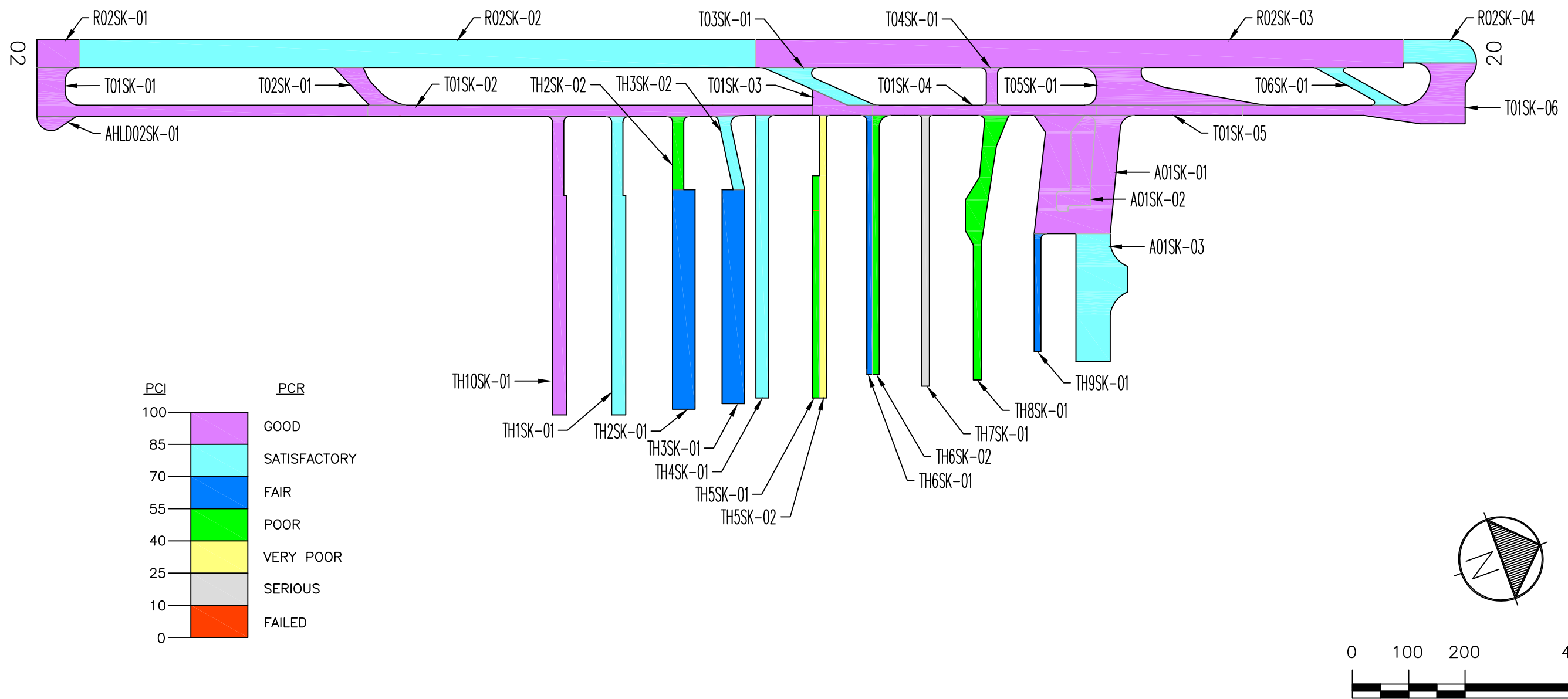
RECOMMENDATIONS

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.

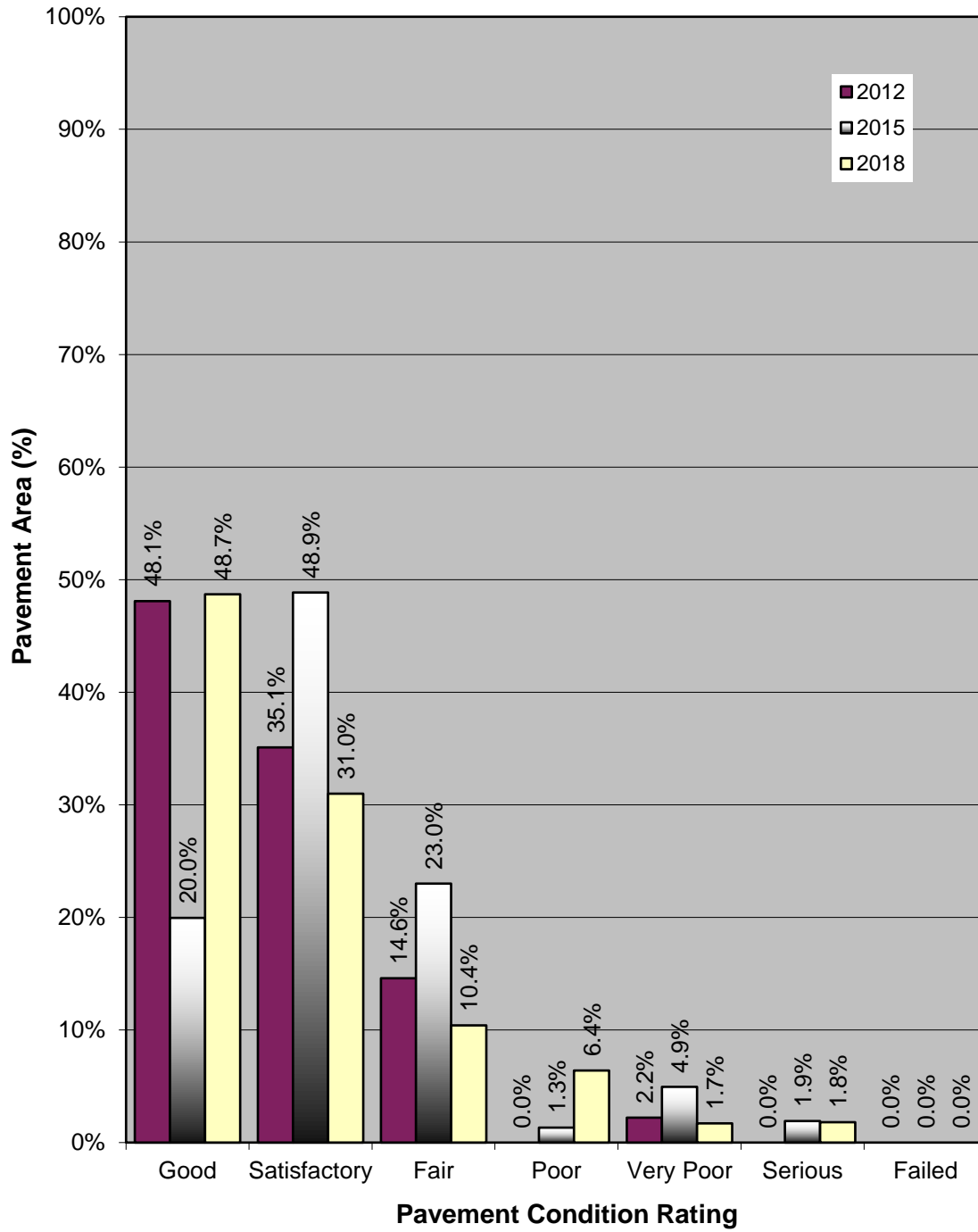
The recommended localized maintenance activities to be applied are selected by the PAVER software based on a Distress Maintenance Policy established for the Oregon airport system. The report results indicate that, over your entire airport, the following quantities of localized maintenance are needed:

- 2,070 linear feet of asphalt concrete crack sealing
- 702 square feet of asphalt concrete deep patching.

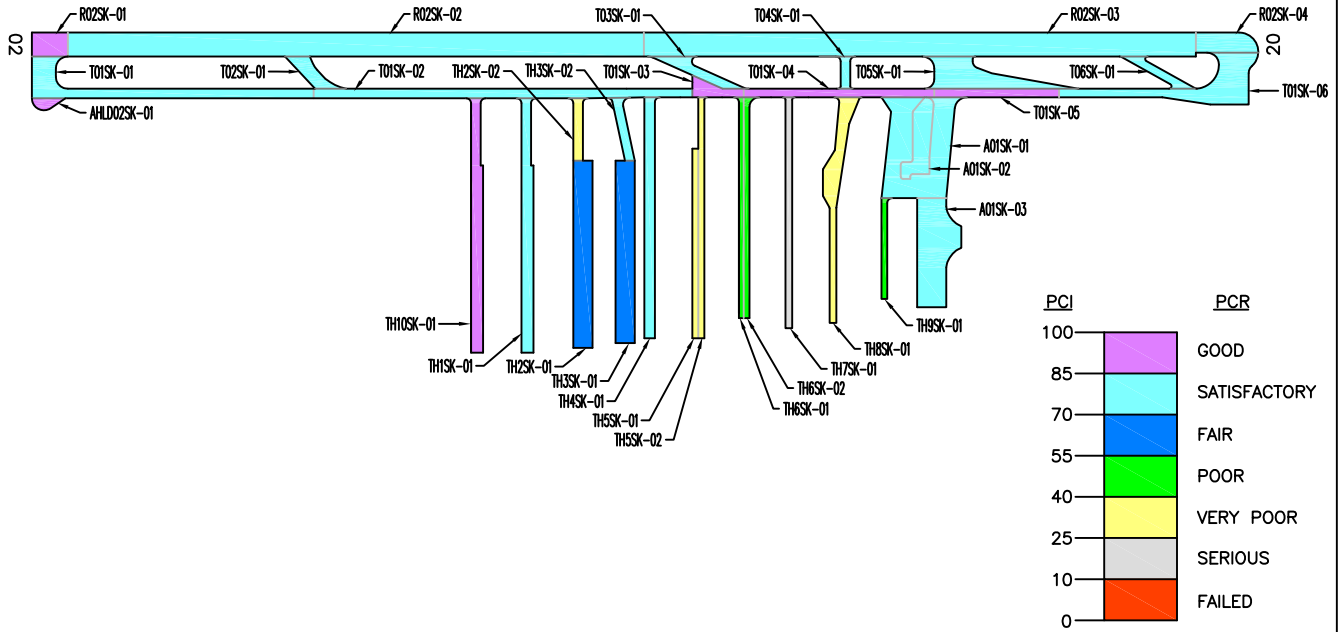
Figure SK-3. Pavement Condition in July 2018.
Stark's Twin Oaks Airpark



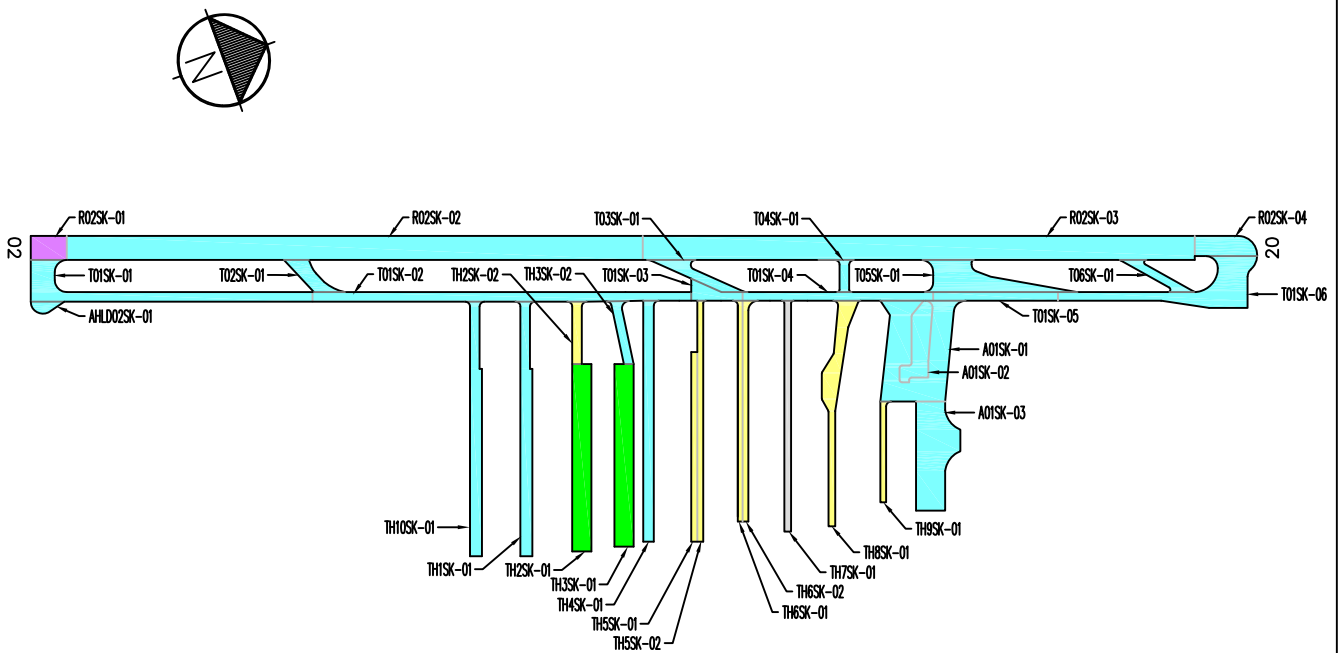
**Figure SK-4. Pavement Condition Distribution
Stark's Twin Oaks Airpark**



Predicted Condition in 2023.



Predicted Condition in 2028.



Drawing Date: September 2018

PAVEMENT CONSULTANTS INC.

Figure SK-5. Future Pavement Condition.

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 SK-6.

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2019	A01SK	03	Slurry Seal	16,016	\$0.31	\$4,965
2019	T06SK	01	Slurry Seal	2,570	\$0.31	\$797
2019	TH1SK	01	Slurry Seal	12,593	\$0.31	\$3,904
2019	TH2SK	01	Slurry Seal	15,600	\$0.31	\$4,836
2019	TH2SK	02	2" AC Overlay	2,642	\$2.50	\$6,605
2019	TH3SK	01	Slurry Seal	15,200	\$0.31	\$4,712
2019	TH3SK	02	Slurry Seal	2,766	\$0.31	\$857
2019	TH4SK	01	Slurry Seal	11,065	\$0.31	\$3,430
2019	TH5SK	01	2" AC Overlay	4,937	\$2.50	\$12,343
2019	TH5SK	02	2" AC over 8" Crushed Aggregate Base	6,280	\$5.70	\$35,796
2019	TH6SK	01	Slurry Seal	4,621	\$0.31	\$1,433
2019	TH6SK	02	Slurry Seal	5,605	\$0.31	\$1,738
2019	TH7SK	01	2" AC over 8" Crushed Aggregate Base	6,744	\$5.70	\$38,441
2019	TH8SK	01	2" AC Overlay	10,313	\$2.50	\$25,783
2019	TH9SK	01	Slurry Seal	2,541	\$0.31	\$788
2019 Total						\$146,426
2020	T01SK	01	Slurry Seal	15,358	\$0.31	\$4,761
2020 Total						\$4,761
2022	A01SK	01	Slurry Seal	21,840	\$0.31	\$6,770
2022	A01SK	02	Slurry Seal	6,617	\$0.31	\$2,051
2022	AHLD02SK	01	Slurry Seal	1,143	\$0.31	\$354
2022	R02SK	02	Slurry Seal	60,000	\$0.31	\$18,600

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2022	R02SK	03	Slurry Seal	57,500	\$0.31	\$17,825
2022	R02SK	04	Slurry Seal	5,117	\$0.31	\$1,586
2022	T01SK	02	Slurry Seal	15,462	\$0.31	\$4,793
2022	T01SK	06	Slurry Seal	14,845	\$0.31	\$4,602
2022	T02SK	01	Slurry Seal	3,029	\$0.31	\$939
2022	T03SK	01	Slurry Seal	3,623	\$0.31	\$1,123
2022	T04SK	01	Slurry Seal	1,394	\$0.31	\$432
2022	T05SK	01	Slurry Seal	10,065	\$0.31	\$3,120
2022 Total						\$62,197
5-Year Total						\$213,384

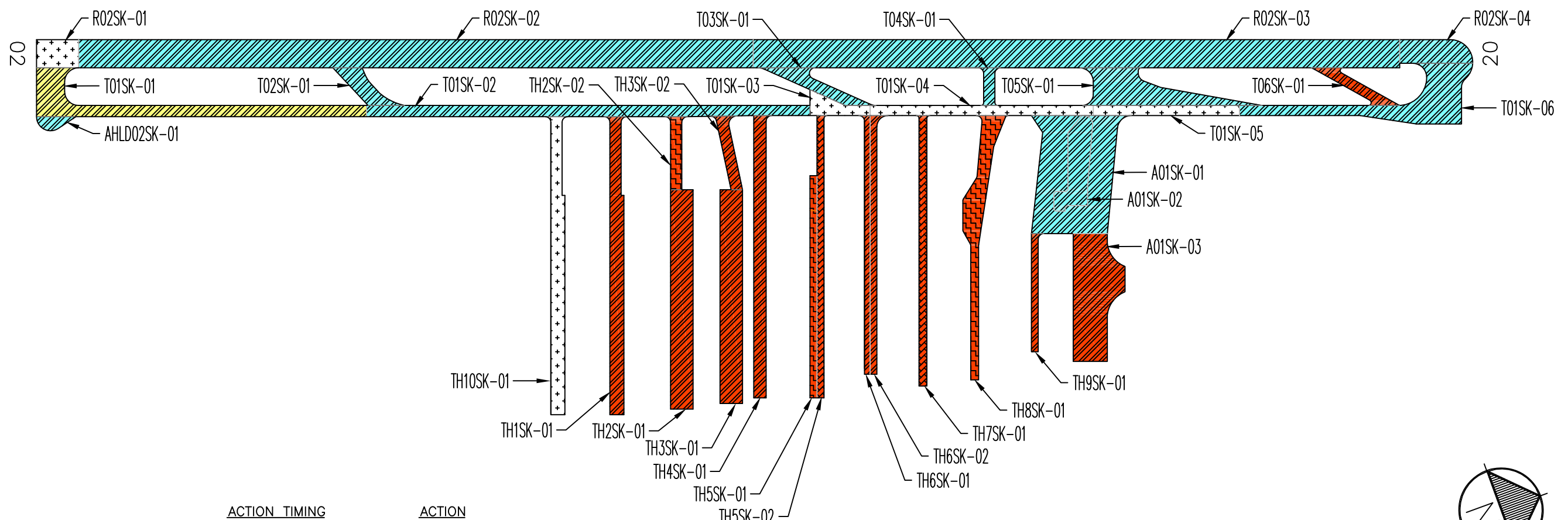
If the global maintenance and/or rehabilitation activities recommended in Table 2 are not completed, the localized maintenance activities identified in the Network Maintenance Report (Appendix 3) for that section should be done. Additionally, for those sections not listed in Table 2 as requiring global 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 SK-6. Five-Year Pavement Management Plan.
Stark's Twin Oaks Airpark

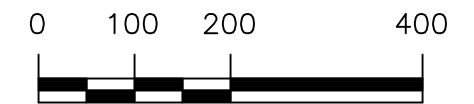
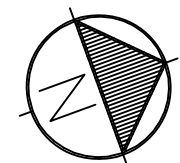


ACTION TIMING

2019
2020
2021
2022
2023

ACTION

FOG SEAL
SLURRY SEAL
OVERLAY
RECONSTRUCT
ROUTINE MAINTENANCE



Drawing Date: September 2018