

EASTERN OREGON REGIONAL AIRPORT AT PENDLETON

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 PE-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 PE-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 PE-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 Eastern Oregon Regional Airport at Pendleton 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 PE-1. Airport Layout, Dimensions and Pavement Cross-Sections.
Eastern Oregon Regional Airport at Pendleton

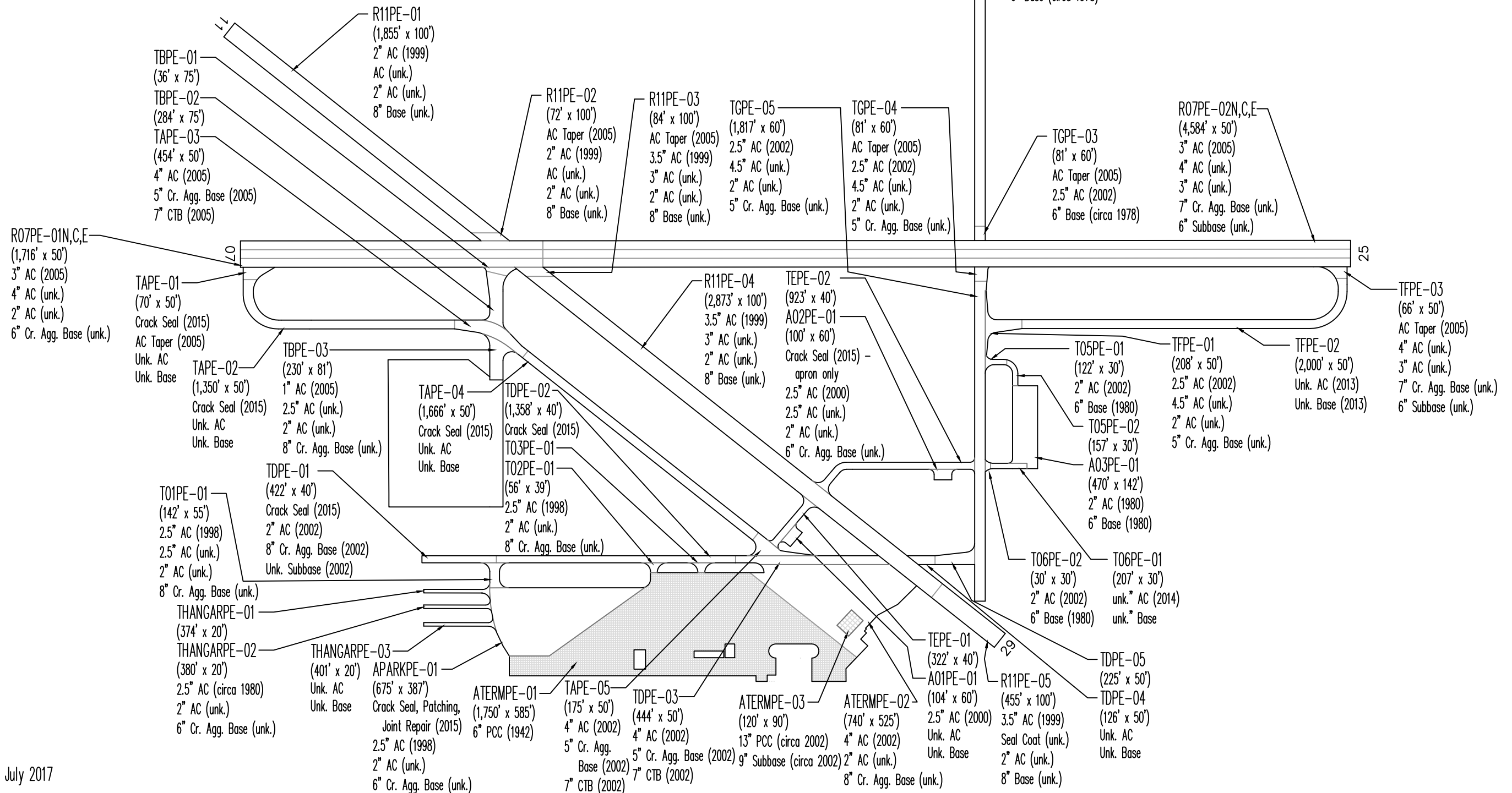
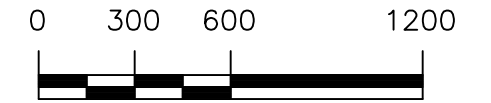
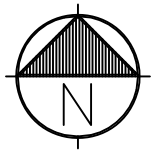
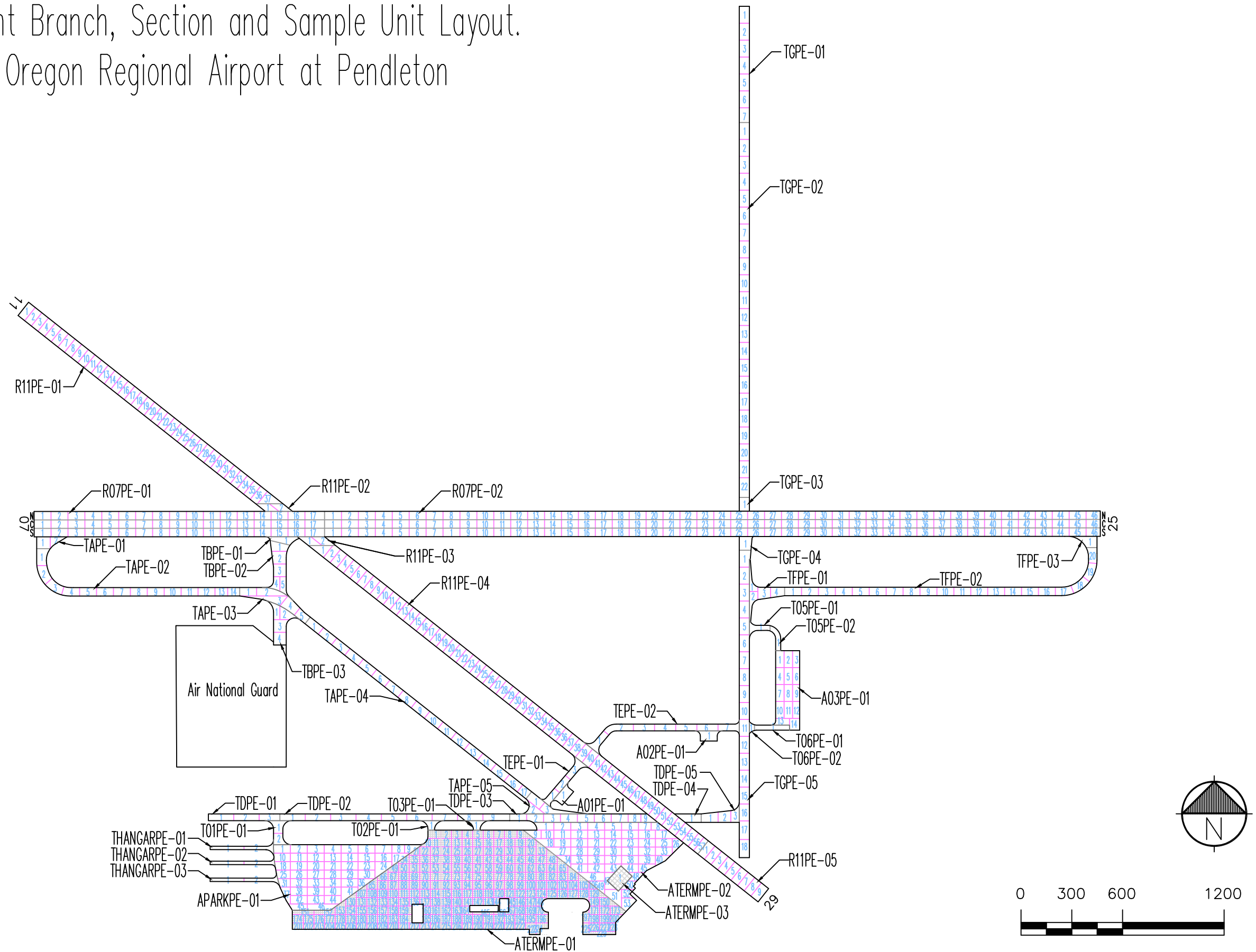


Figure PE-2. Pavement Branch, Section and Sample Unit Layout.
Eastern Oregon Regional Airport at Pendleton



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 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 PE-3.

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

Branch	Section	Inspections		Forecast	
		2014	2017	2022	2027
A01PE	1	54	74	59	44
A02PE	1	59	57	42	27
A03PE	1	18	30	28	26
APARKPE	1	79	73	64	56
ATERMPE	1	78	82	81	81
ATERMPE	2	54	55	40	25
ATERMPE	3	50	71	69	67
R07PE	01C	51	56	54	52
R07PE	01N	52	55	53	51
R07PE	01S	50	59	57	55
R07PE	02C	57	49	47	45
R07PE	02N	58	59	57	55
R07PE	02S	55	54	52	50
R11PE	1	75	80	62	61
R11PE	2	47	42	40	38
R11PE	3	59	47	45	43
R11PE	4	81	75	62	61
R11PE	5	81	74	62	60
T01PE	1	31	50	48	44
T02PE	1	59	68	49	47
T03PE	1	47	51	48	44
T05PE	1	59	49	40	27
T05PE	2	25	30	21	14

Figure PE-3. Pavement Condition in June 2017.
Eastern Oregon Regional Airport at Pendleton

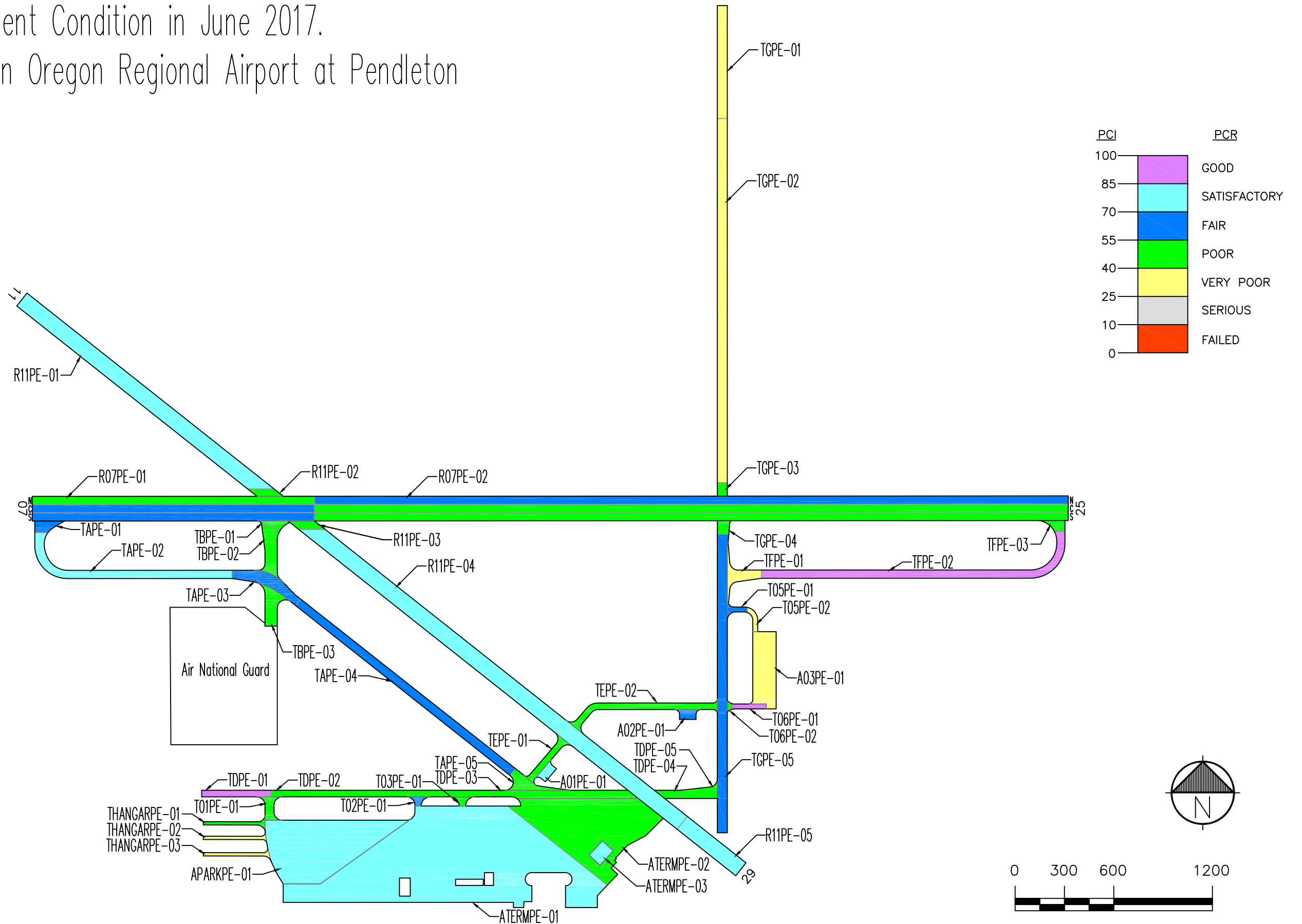
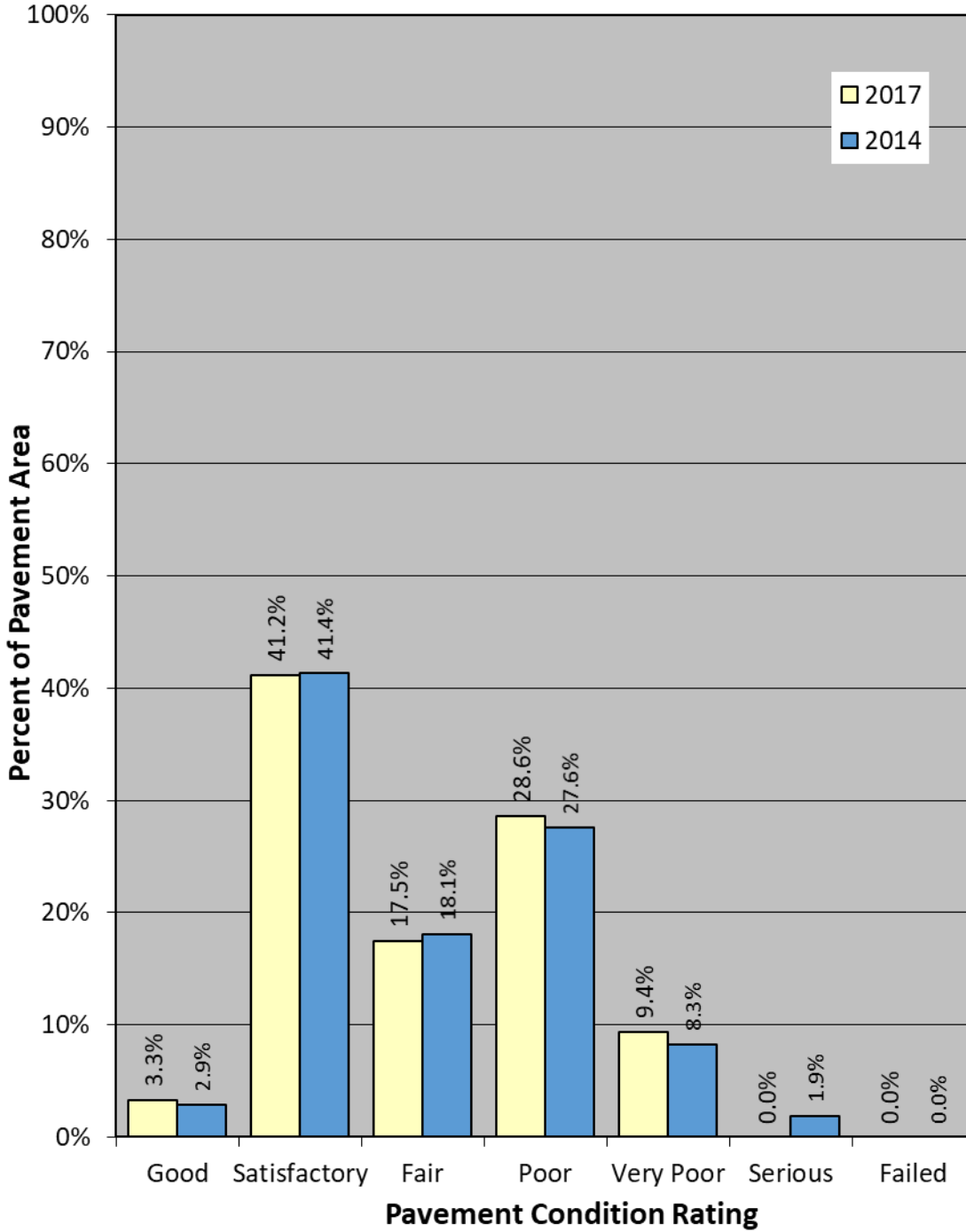


Table 1. Past, Present and Future Pavement Condition Indices.

Branch	Section	Inspections		Forecast	
		2014	2017	2022	2027
T06PE	1	94	90	72	58
T06PE	2	42	42	38	34
TAPE	1	68	63	49	46
TAPE	2	77	71	58	52
TAPE	3	40	61	53	52
TAPE	4	68	62	54	52
TAPE	5	60	52	48	45
TBPE	1	42	44	40	36
TBPE	2	43	47	43	39
TBPE	3	42	55	49	45
TDPE	1	78	86	68	56
TDPE	2	66	55	49	45
TDPE	3	50	50	43	30
TDPE	4	84	51	46	34
TDPE	5	59	52	48	45
TEPE	1	46	45	41	37
TEPE	2	49	48	44	40
TFPE	1	50	40	36	32
TFPE	2	100	95	63	49
TFPE	3	47	41	37	33
TGPE	1	37	35	23	16
TGPE	2	36	37	33	29
TGPE	3	37	49	47	43
TGPE	4	59	47	43	39
TGPE	5	48	56	49	45
THANGARPE	1	50	55	52	52
THANGARPE	2	36	33	22	15
THANGARPE	3	39	39	26	19

Section PCIs at Eastern Oregon Regional Airport at Pendleton range from a low of 30 (a PCR of “Very Poor”) to a high of 95 (a PCR of “Good”). The area-weighted average PCI for all airport pavements is 64, corresponding to an overall PCR of “Fair”. Figure PE-4 shows how much pavement area is associated with each Pavement Condition Rating category. The condition distribution from the 2014 inspection is also included.

**Figure PE-4. Distribution of Pavement Condition
Eastern Oregon Regional Airport at Pendleton**



The primary distresses observed during the inspection of asphalt concrete pavements were: weathering, block cracking, longitudinal and transverse cracking, patching, raveling, alligator cracking, and rutting, with an isolated occurrence of depressions. The primary distresses observed during the inspection of portland cement concrete pavements were: joint spalls, linear cracking, corner breaks, joint seal damage, corner spalls, small patches, large patches, and shrinkage cracks.

A graphical representation of the projected PCIs listed in Table 1 is shown in Figure PE-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:

- 287,485 linear feet of asphalt concrete crack sealing
- 1,700 linear feet of asphalt concrete wide crack repair
- 2,250 square feet of deep (full-depth) asphalt concrete patching
- 69,035 square feet of shallow asphalt concrete patching
- 1,555 square feet of asphalt concrete leveling patching
- 207 square feet of portland cement concrete partial depth 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 PE-6.

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2018	A01PE	01	Slurry Seal	6,552	\$0.31	\$2,031
2018	A02PE	01	Slurry Seal	6,386	\$0.31	\$1,980
2018	A03PE	01	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	64,366	\$10.30	\$662,970
2018	APARKPE	01	Slurry Seal	222,195	\$0.31	\$68,880
2018	ATERMPE	02	Slurry Seal	215,011	\$0.31	\$66,653
2018	R07PE	01C	2" AC Overlay	85,800	\$2.50	\$214,500
2018	R07PE	01N	2" AC Overlay	85,800	\$2.50	\$214,500
2018	R07PE	01S	2" AC Overlay	85,800	\$2.50	\$214,500
2018	R07PE	02C	2" AC Overlay	229,200	\$2.50	\$573,000
2018	R07PE	02N	2" AC Overlay	229,200	\$2.50	\$573,000
2018	R07PE	02S	2" AC Overlay	229,200	\$2.50	\$573,000
2018	R11PE	01	Slurry Seal	185,482	\$0.31	\$57,499
2018	R11PE	02	2" AC Overlay	7,240	\$2.50	\$18,100
2018	R11PE	03	2" AC Overlay	8,366	\$2.50	\$20,915
2018	R11PE	04	Slurry Seal	287,278	\$0.31	\$89,056
2018	R11PE	05	Slurry Seal	45,500	\$0.31	\$14,105
2018	T01PE	01	2" AC Overlay	9,460	\$2.50	\$23,650
2018	T02PE	01	Slurry Seal	3,337	\$0.31	\$1,034
2018	T03PE	01	2" AC Overlay	3,523	\$2.50	\$8,808
2018	T05PE	01	2" AC Overlay	4,547	\$2.50	\$11,368
2018	T05PE	02	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	4,647	\$10.30	\$47,864
2018	T06PE	02	2" AC Overlay	1,426	\$2.50	\$3,565
2018	TAPE	01	2" AC Overlay	8,714	\$2.50	\$21,785
2018	TAPE	02	Slurry Seal	69,943	\$0.31	\$21,682
2018	TAPE	03	2" AC Overlay	29,019	\$2.50	\$72,548
2018	TAPE	04	2" AC Overlay	86,517	\$2.50	\$216,293
2018	TAPE	05	2" AC Overlay	15,782	\$2.50	\$39,455

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2018	TBPE	01	2" AC Overlay	5,702	\$2.50	\$14,255
2018	TBPE	02	2" AC Overlay	24,401	\$2.50	\$61,003
2018	TBPE	03	2" AC Overlay	20,140	\$2.50	\$50,350
2018	TDPE	01	Slurry Seal	16,893	\$0.31	\$5,237
2018	TDPE	02	2" AC Overlay	54,309	\$2.50	\$135,773
2018	TDPE	03	2" AC Overlay	40,941	\$2.50	\$102,353
2018	TDPE	04	2" AC Overlay	6,325	\$2.50	\$15,813
2018	TDPE	05	2" AC Overlay	14,508	\$2.50	\$36,270
2018	TEPE	01	2" AC Overlay	14,258	\$2.50	\$35,645
2018	TEPE	02	2" AC Overlay	38,236	\$2.50	\$95,590
2018	TFPE	01	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	17,902	\$10.30	\$184,391
2018	TFPE	03	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	6,247	\$10.30	\$64,344
2018	TGPE	01	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	41,220	\$10.30	\$424,566
2018	TGPE	02	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	132,987	\$10.30	\$1,369,766
2018	TGPE	03	2" AC Overlay	4,860	\$2.50	\$12,150
2018	TGPE	04	2" AC Overlay	5,936	\$2.50	\$14,840
2018	TGPE	05	2" AC Overlay	109,405	\$2.50	\$273,513
2018	THANGARPE	01	2" AC Overlay	8,262	\$2.50	\$20,655
2018	THANGARPE	02	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	78,883	\$10.30	\$812,495
2018	THANGARPE	03	4" AC over 5" Crushed Aggregate Base over 7" Cement Treated Subbase	8,490	\$10.30	\$87,447
2018 Total						\$7,649,193
2019	TFPE	02	Slurry Seal	100,288	\$0.31	\$31,089
2019 Total						\$31,089
2020	T06PE	01	Slurry Seal	6,224	\$0.31	\$1,929
2020 Total						\$1,929
TOTAL						\$8,228,081

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.