LaGRANDE / UNION COUNTY 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 LG-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 LG-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 LG-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 LaGrande / Union County Airport June 2017 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 LG-1. Airport Layout, Dimensions and Pavement Cross-Sections.
LaGrande/Union County Airport

Drawing Date: July 2017

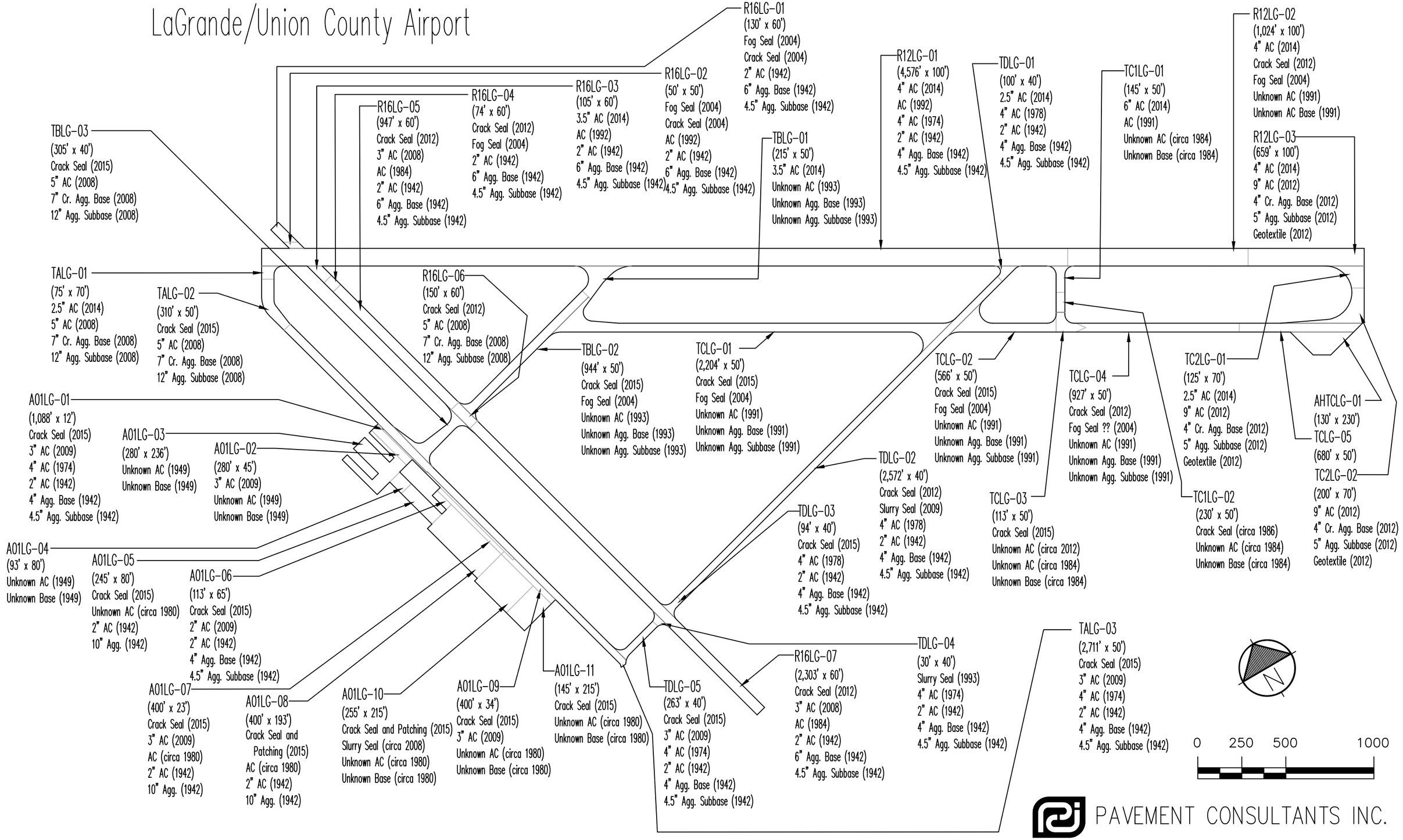

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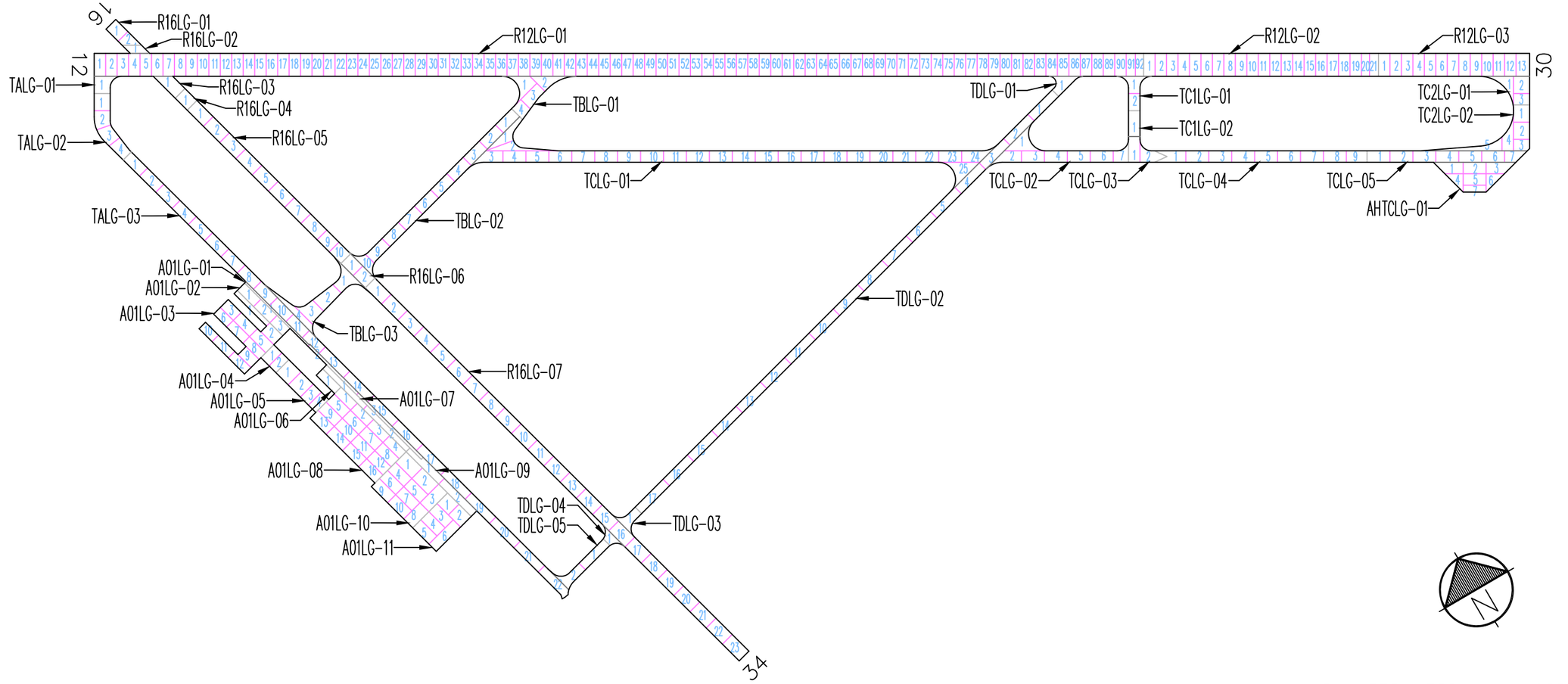
Figure LG-2. Pavement Branch, Section and Sample Unit Layout.
LaGrande/Union County Airport

Drawing Date: July 2017



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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.

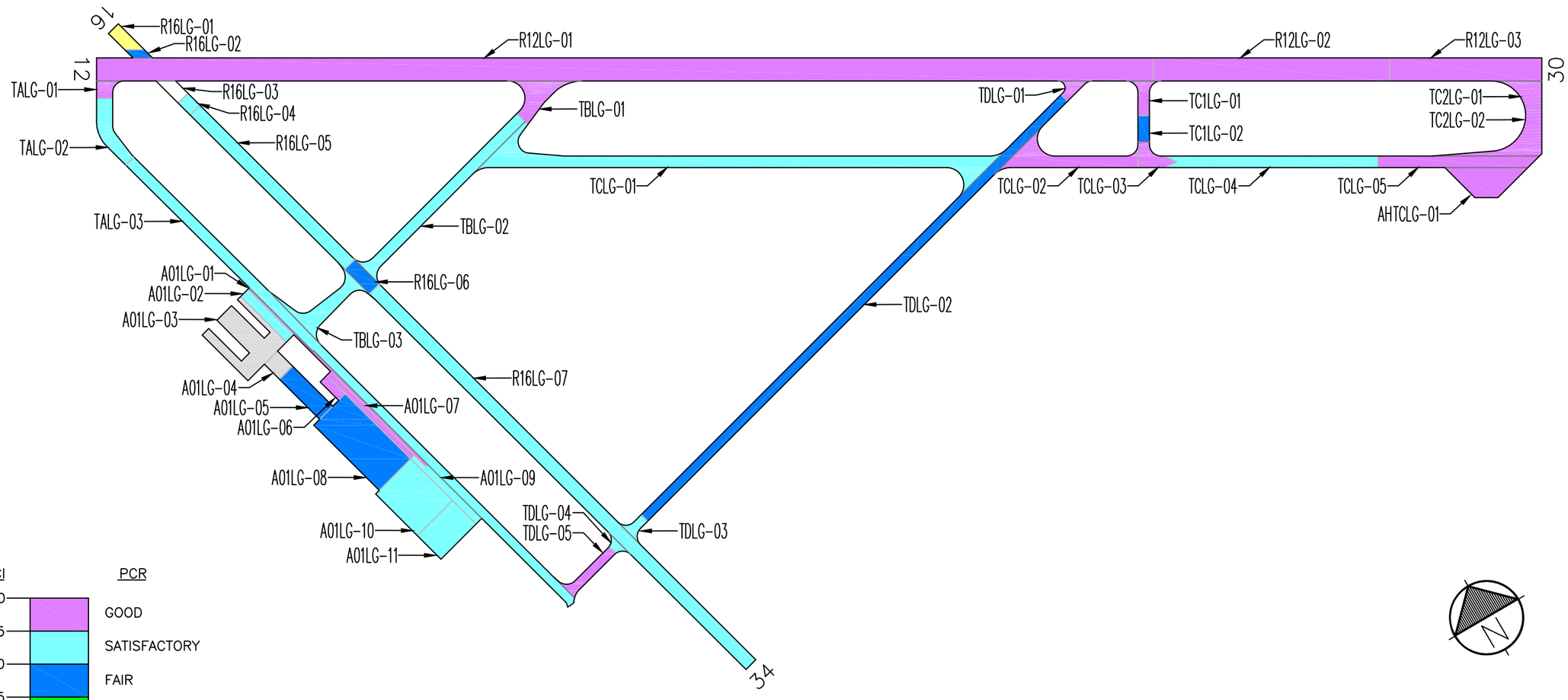
The Branch Condition Report in Appendix 1 summarizes current pavement condition by branch while the Section Condition Report in Appendix 2 lists pavement condition by section. The current Pavement Condition Rating (PCR) is shown graphically in Figure LG-3.

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

Branch	Section	Inspections			Forecast	
		2011	2014	2017	2022	2027
A01LG	01	100	84	100	86	68
A01LG	02	100	100	85	67	57
A01LG	03	5	7	13	10	8
A01LG	04	6	8	14	10	9
A01LG	05	61	62	69	58	55
A01LG	06	100	82	91	71	59
A01LG	07	100	90	94	74	60
A01LG	08	41	51	61	56	55
A01LG	09	83	72	78	62	56
A01LG	10	69	68	72	67	64
A01LG	11	59	64	73	68	64
AHTCLG	01	---	100	100	84	75
R12LG	01	---	100	98	84	82
R12LG	02	---	100	100	87	82
R12LG	03	---	100	100	87	82
R16LG	01	28	25	37	35	34
R16LG	02	40	61	66	65	64
R16LG	03	---	100	88	82	80
R16LG	04	100	92	72	66	65
R16LG	05	98	85	76	68	68
R16LG	06	94	91	69	65	64
R16LG	07	99	89	75	68	67
TALG	01	---	100	100	91	81

Figure LG-3. Pavement Condition in June 2017.
LaGrande/Union County Airport

Drawing Date: July 2017



PCI	PCR
100	GOOD
85	SATISFACTORY
70	FAIR
55	POOR
40	VERY POOR
25	SERIOUS
10	FAILED
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Table 1. Past, Present and Future Pavement Condition Indices.

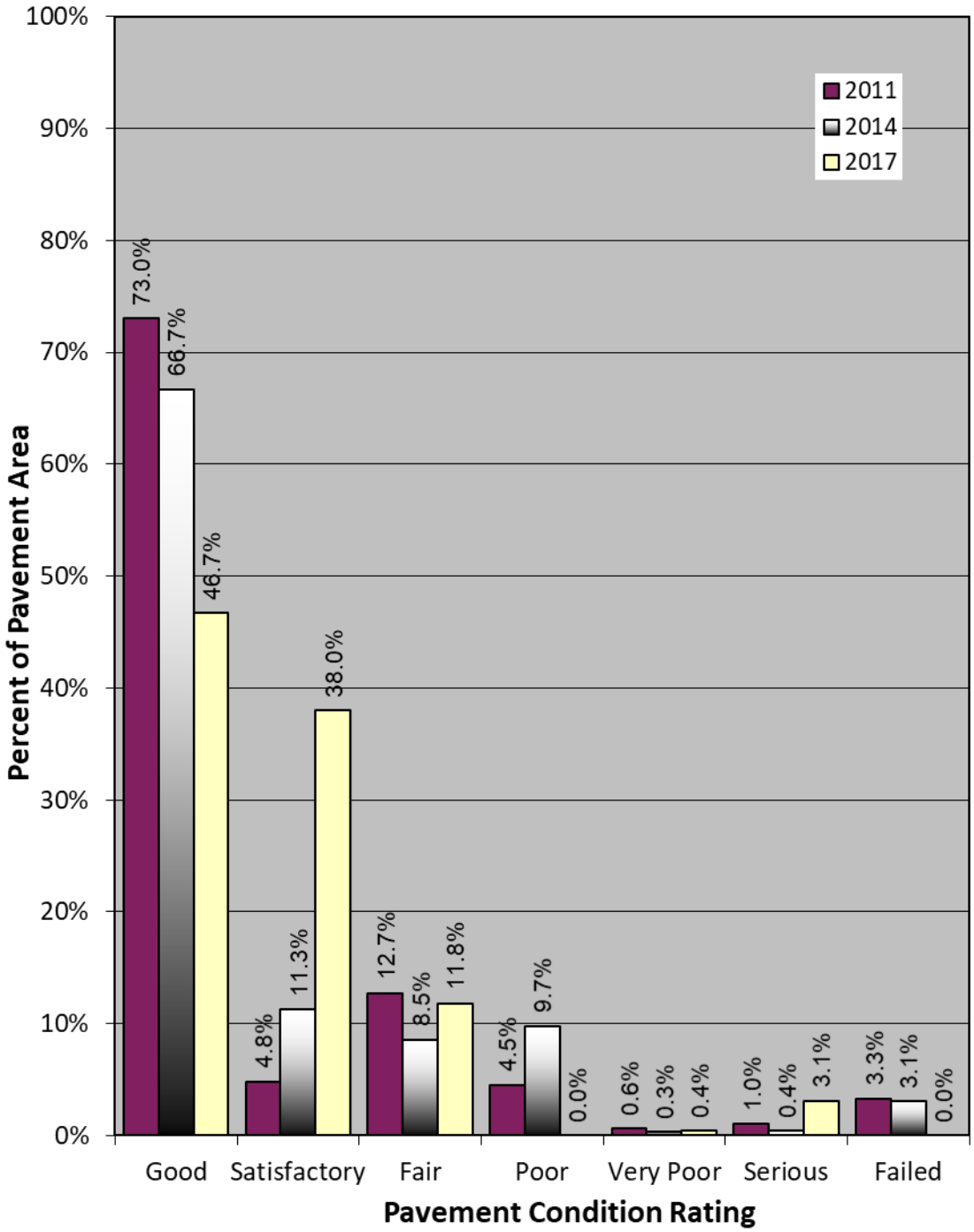
Branch	Section	Inspections			Forecast	
		2011	2014	2017	2022	2027
TALG	02	---	---	75	70	67
TALG	03	100	91	82	71	59
TBLG	01	000	100	97	87	77
TBLG	02	79	70	78	72	68
TBLG	03	98	83	81	74	69
TC1LG	01	---	100	100	91	81
TC1LG	02	24	26	59	48	38
TC2LG	01	---	100	97	87	77
TC2LG	02	---	98	100	92	82
TCLG	01	98	93	80	73	69
TCLG	02	100	88	86	78	72
TCLG	03	---	83	86	75	64
TCLG	04	100	95	76	71	67
TCLG	05	---	100	100	92	82
TDLG	01	---	100	100	91	81
TDLG	02	59	46	59	46	33
TDLG	03	100	95	82	71	59
TDLG	04	100	97	83	72	61
TDLG	05	100	93	89	79	68

Section PCIs at LaGrande (Union County) Airport range from a low of 13 (a PCR of “Serious”) to a high of 100 (a PCR of “Good”). The area-weighted average PCI for all airport pavements is 83, corresponding to an overall PCR of “Satisfactory”. Figure LG-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.

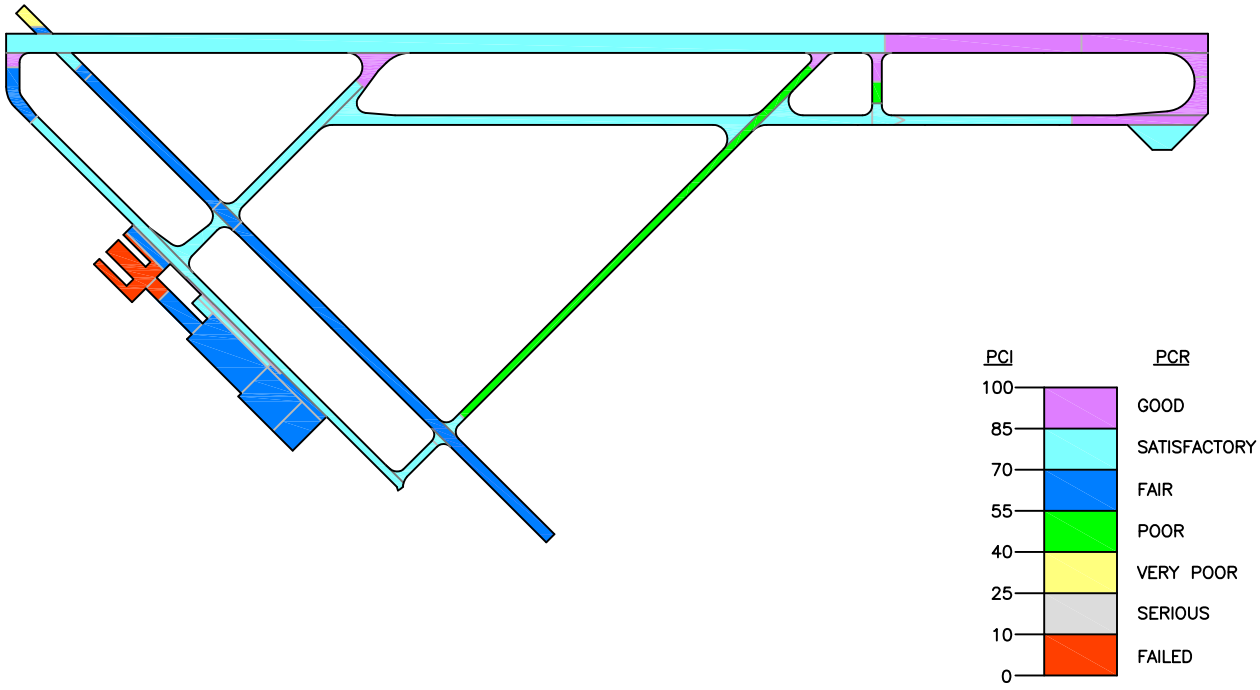
The primary distresses observed during the inspection were: longitudinal and transverse cracking, weathering, patching, raveling, depressions, block cracking, rutting and alligator cracking.

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

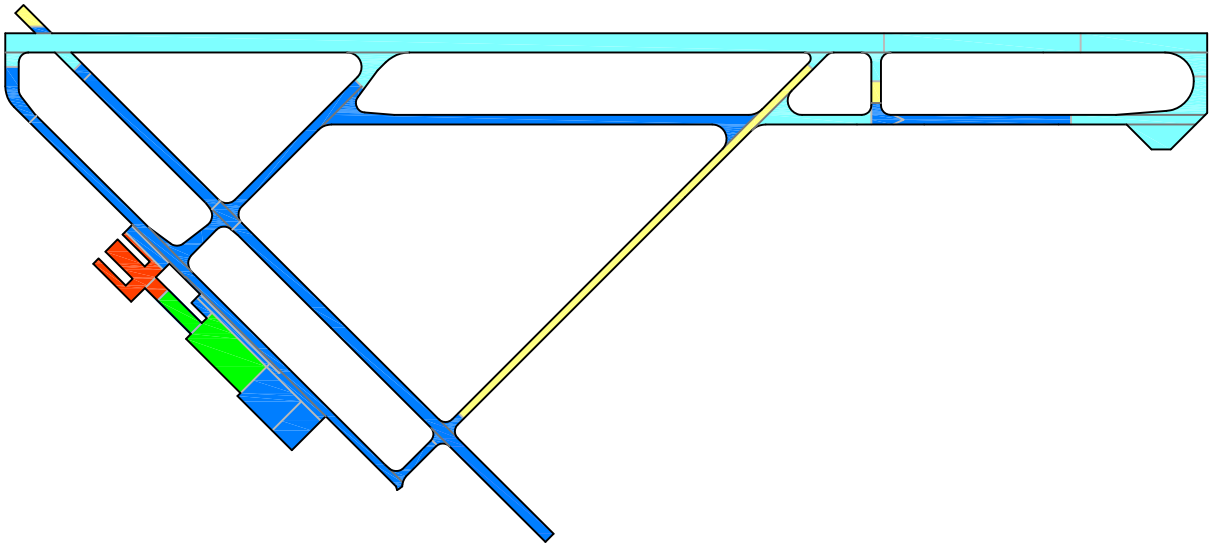
Figure LG-4. Distribution of Pavement Condition
LaGrande / Union County Airport



Predicted Condition in 2022.



Predicted Condition in 2027.



Drawing Date: July 2017

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Figure LG-5. Future Pavement Condition.

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:

- 13,618 linear feet of asphalt concrete crack sealing
- 25,923 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 LG-6.

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

Year	Branch	Section	Action	Area (sf)	Unit Cost ($/sf)	Total Cost ($)
2018	A01LG	01	Slurry Seal	11,524	$0.31	$3,572
2018	A01LG	02	Slurry Seal	12,600	$0.31	$3,906
2018	A01LG	03	5" AC over 7" Crushed Aggregate Base over 12" Aggregate Subbase	48,880	$12.60	$615,888
2018	A01LG	04	5" AC over 7" Crushed Aggregate Base over 12" Aggregate Subbase	7,440	$12.60	$93,744

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

Year	Branch	Section	Action	Area (sf)	Unit Cost ($/sf)	Total Cost ($)
2018	A01LG	05	Slurry Seal	19,600	$0.31	$6,076
2018	A01LG	06	Slurry Seal	4,529	$0.31	$1,404
2018	A01LG	07	Slurry Seal	12,089	$0.31	$3,748
2018	A01LG	08	Slurry Seal	77,012	$0.31	$23,874
2018	A01LG	09	Slurry Seal	13,070	$0.31	$4,052
2018	A01LG	10	Slurry Seal	54,850	$0.31	$17,003
2018	A01LG	11	Slurry Seal	31,240	$0.31	$9,684
2018	R16LG	01	5" AC over 7" Crushed Aggregate Base over 12" Aggregate Subbase	7,752	$12.60	$97,675
2018	R16LG	02	Slurry Seal	3,000	$0.31	$930
2018	R16LG	04	Slurry Seal	4,415	$0.31	$1,369
2018	R16LG	05	Slurry Seal	56,795	$0.31	$17,606
2018	R16LG	06	Slurry Seal	9,000	$0.31	$2,790
2018	R16LG	07	Slurry Seal	138,025	$0.31	$42,788
2018	TALG	02	Slurry Seal	15,500	$0.31	$4,805
2018	TALG	03	Slurry Seal	118,555	$0.31	$36,752
2018	TBLG	02	Slurry Seal	48,734	$0.31	$15,107
2018	TBLG	03	Slurry Seal	24,749	$0.31	$7,672
2018	TC1LG	02	Slurry Seal	5,650	$0.31	$1,751
2018	TCLG	01	Fog Seal	127,920	$0.19	$24,304
2018	TCLG	02	Slurry Seal	36,031	$0.31	$11,170
2018	TCLG	03	Slurry Seal	10,662	$0.31	$3,305
2018	TCLG	04	Fog Seal	44,975	$0.19	$8,545
2018	TDLG	02	Slurry Seal	102,870	$0.31	$31,890
2018	TDLG	03	Slurry Seal	4,844	$0.31	$1,502
2018	TDLG	04	Slurry Seal	2,746	$0.31	$851
2018	TDLG	05	Slurry Seal	11,367	$0.31	$3,524
					2018 Total	$1,097,287
2020	AHTCLG	01	Fog Seal	29,900	$0.19	$5,681
2020	TC2LG	02	Fog Seal	24,798	$0.19	$4,712
2020	TCLG	05	Fog Seal	33,710	$0.19	$6,405
					2020 Total	$16,797
2021	R12LG	01	Slurry Seal	457,600	$0.31	$141,855
2021	R12LG	02	Slurry Seal	102,400	$0.31	$31,744
2021	R12LG	03	Slurry Seal	65,921	$0.31	$20,435
2021	R16LG	03	Slurry Seal	6,337	$0.31	$1,964
2021	TALG	01	Slurry Seal	5,786	$0.31	$1,794

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

Year	Branch	Section	Action	Area (sf)	Unit Cost ($/sf)	Total Cost ($)
2021	TBLG	01	Slurry Seal	19,835	$0.31	$6,149
2021	TC1LG	01	Slurry Seal	8,573	$0.31	$2,658
2021	TC2LG	01	Slurry Seal	13,561	$0.31	$4,204
					2021Total	$210,803
					TOTAL	$1,324,887

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.

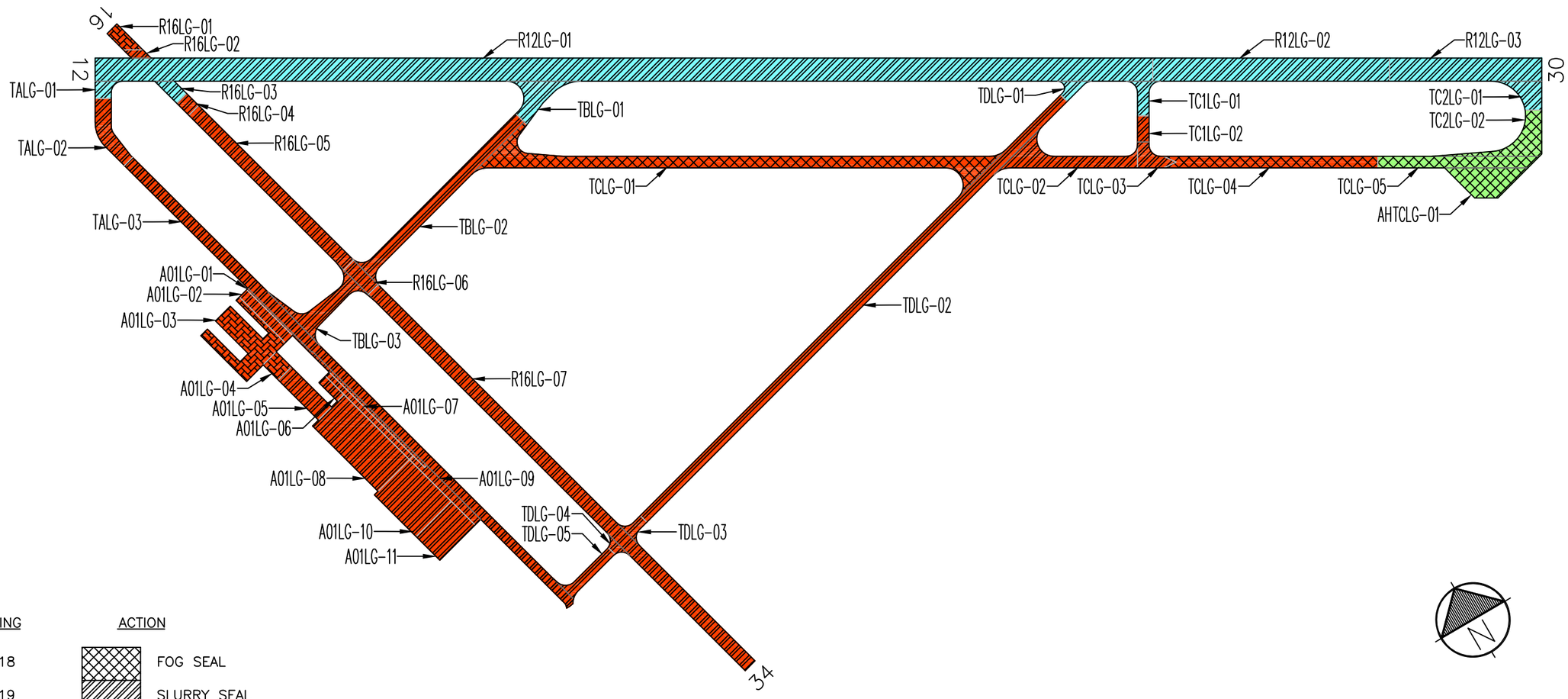
INSPECTION SCHEDULE

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.

Figure LG-6. Five-Year Pavement Management Plan.
LaGrande/Union County Airport

Drawing Date: July 2017



ACTION TIMING

- 2018
- 2019
- 2020
- 2021
- 2022

ACTION

- FOG SEAL
- SLURRY SEAL
- OVERLAY
- RECONSTRUCT
- ROUTINE MAINTENANCE

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