

GRANTS PASS 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 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

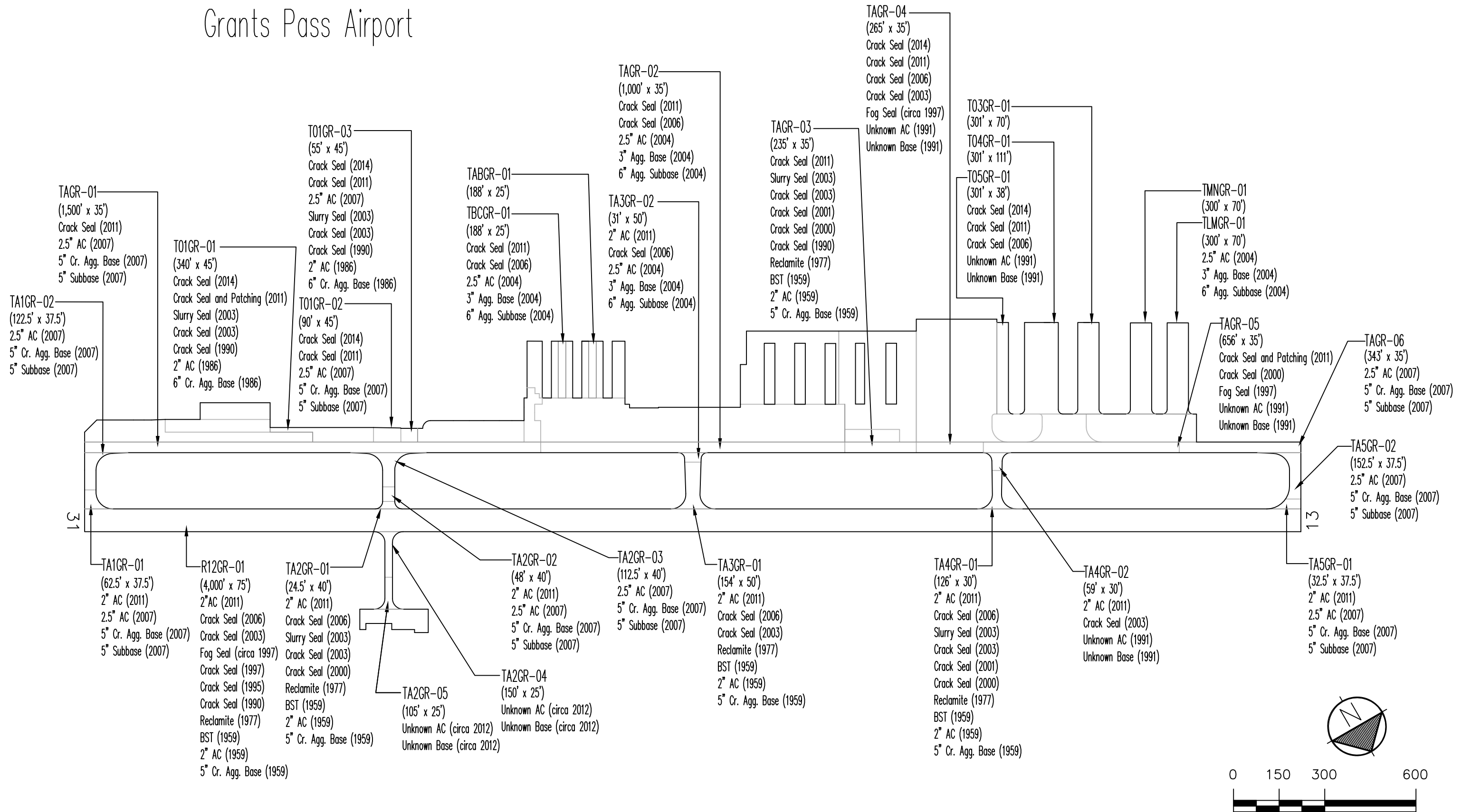
To determine how your pavements were constructed and their age, a records review was conducted. Figure GR-1 shows the records review results. This figure identifies pavement boundaries, dimensions, pavement layer types, thicknesses and dates of construction. The most recent construction date for each pavement can also be found in the Section Condition Report in Appendix 2. Figure GR-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 GR-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 Grants Pass Airport in July 2016. 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 GR-1A. Airport Layout, Dimensions and Pavement Cross-Sections.
Grants Pass Airport



Drawing Date: August 2016

Figure GR-1B. Airport Layout, Dimensions and Pavement Cross-Sections.
Grants Pass Airport

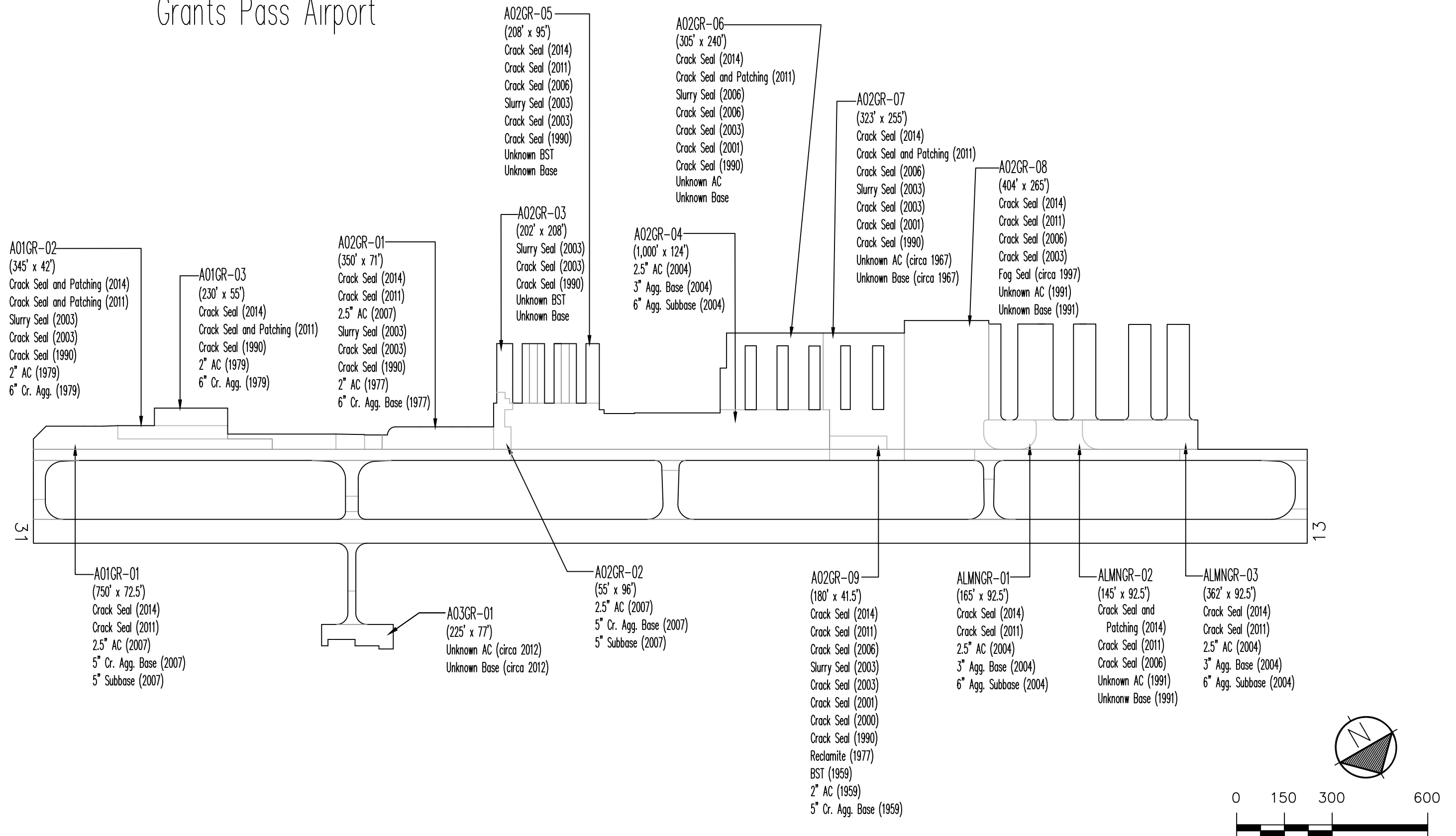
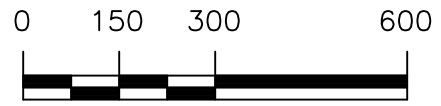
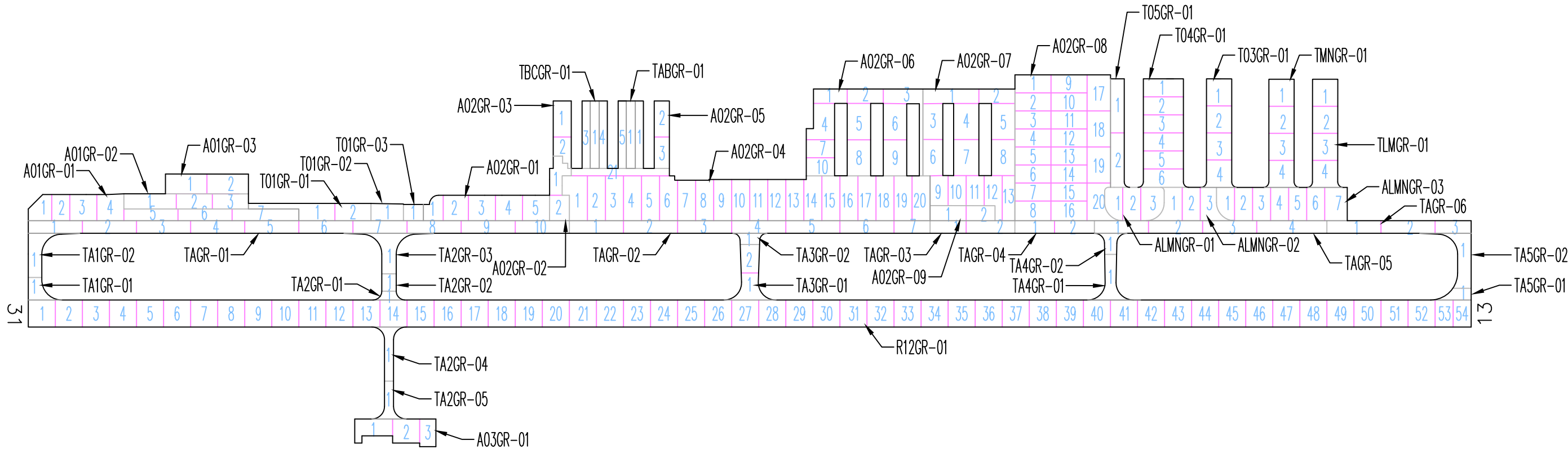


Figure GR-2. Pavement Branch, Section and Sample Unit Layout.
Grants Pass Airport



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 2021 and 2026. 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 Pavement Condition Rating (PCR) is shown graphically in Figure GR-3.

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

Branch	Section	Inspections			Forecast	
		2009	2013	2016	2021	2026
A01GR	1	100	88	89	80	73
A01GR	2	68	62	73	68	65
A01GR	3	69	64	63	62	62
A02GR	1	100	94	86	77	71
A02GR	2	100	100	92	82	74
A02GR	3	64	64	52	51	51
A02GR	4	100	100	98	86	78
A02GR	5	59	65	58	57	57
A02GR	6	63	64	67	64	63
A02GR	7	57	80	72	67	64
A02GR	8	83	74	73	68	65
A02GR	9	98	78	60	54	51
A03GR	1	---	100	93	83	75
ALMNGR	1	100	100	100	88	79
ALMNGR	2	74	62	66	64	62
ALMNGR	3	100	94	93	83	75
R13GR	1	63	100	94	86	81
T01GR	1	66	75	71	69	67
T01GR	2	100	92	87	78	72
T01GR	3	100	92	83	75	70
T03GR	1	85	73	79	73	69
T04GR	1	880	68	68	66	61
T05GR	1	81	76	74	70	68

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

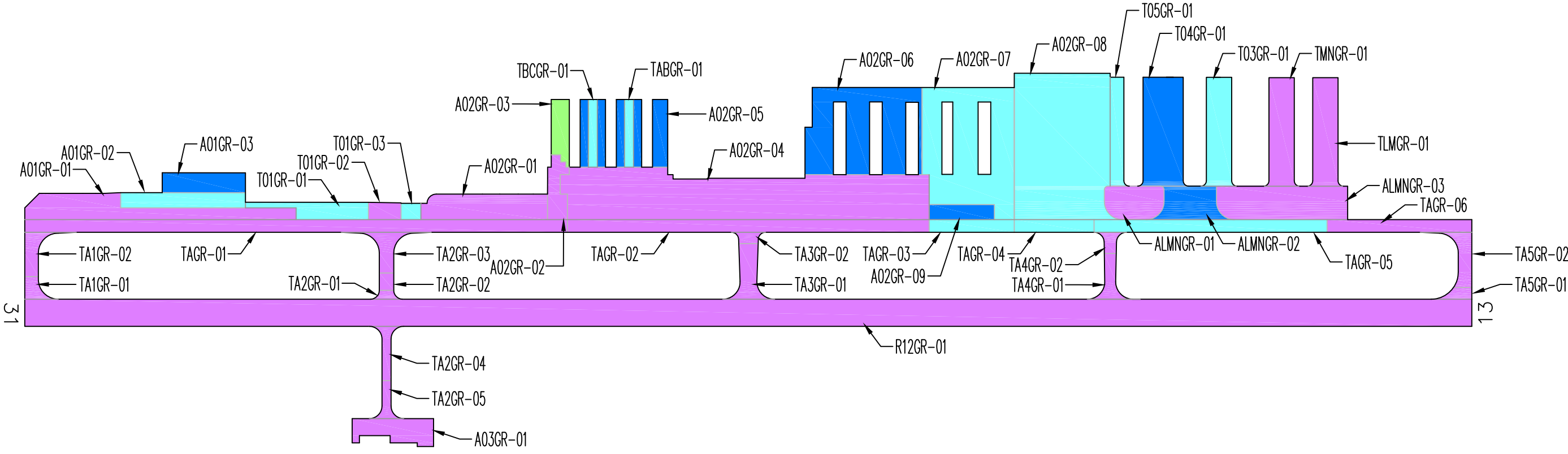
Branch	Section	Inspections			Forecast	
		2009	2013	2016	2021	2026
TA1GR	1	100	100	92	80	78
TA1GR	2	---	100	97	87	78
TA2GR	1	72	100	89	79	78
TA2GR	2	100	100	96	81	78
TA2GR	3	---	---	87	78	72
TA2GR	4	---	100	95	85	76
TA2GR	5	---	96	90	80	73
TA3GR	1	72	100	96	81	78
TA3GR	2	100	100	100	87	78
TA4GR	1	67	100	100	87	78
TA4GR	2	83	100	93	80	78
TA5GR	1	100	100	96	81	78
TA5GR	2	---	100	100	93	82
TABGR	1	100	91	84	76	71
TAGR	1	100	100	97	87	78
TAGR	2	100	100	98	89	79
TAGR	3	89	82	77	72	69
TAGR	4	89	73	84	76	71
TAGR	5	81	78	78	72	69
TAGR	6	100	95	92	82	74
TBCGR	1	100	89	77	72	69
TLMGR	1	100	100	98	89	79
TMNGR	1	100	100	99	90	80

Section PCIs at Grants Pass Airport range from a low of 52 (a PCR of “Poor”) to a high of 100 (a PCR of “Good”). The area-weighted average PCI for all airport pavements is 86, corresponding to an overall PCR of “Good”. Figure GR-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 2009 and 2013.

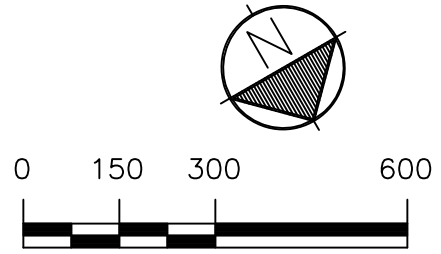
The primary distresses observed during the inspection were: longitudinal and transverse cracking, patching, weathering, and block cracking, with an isolated occurrence of depression.

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

Figure GR-3. Pavement Condition in July 2016.
Grants Pass Airport

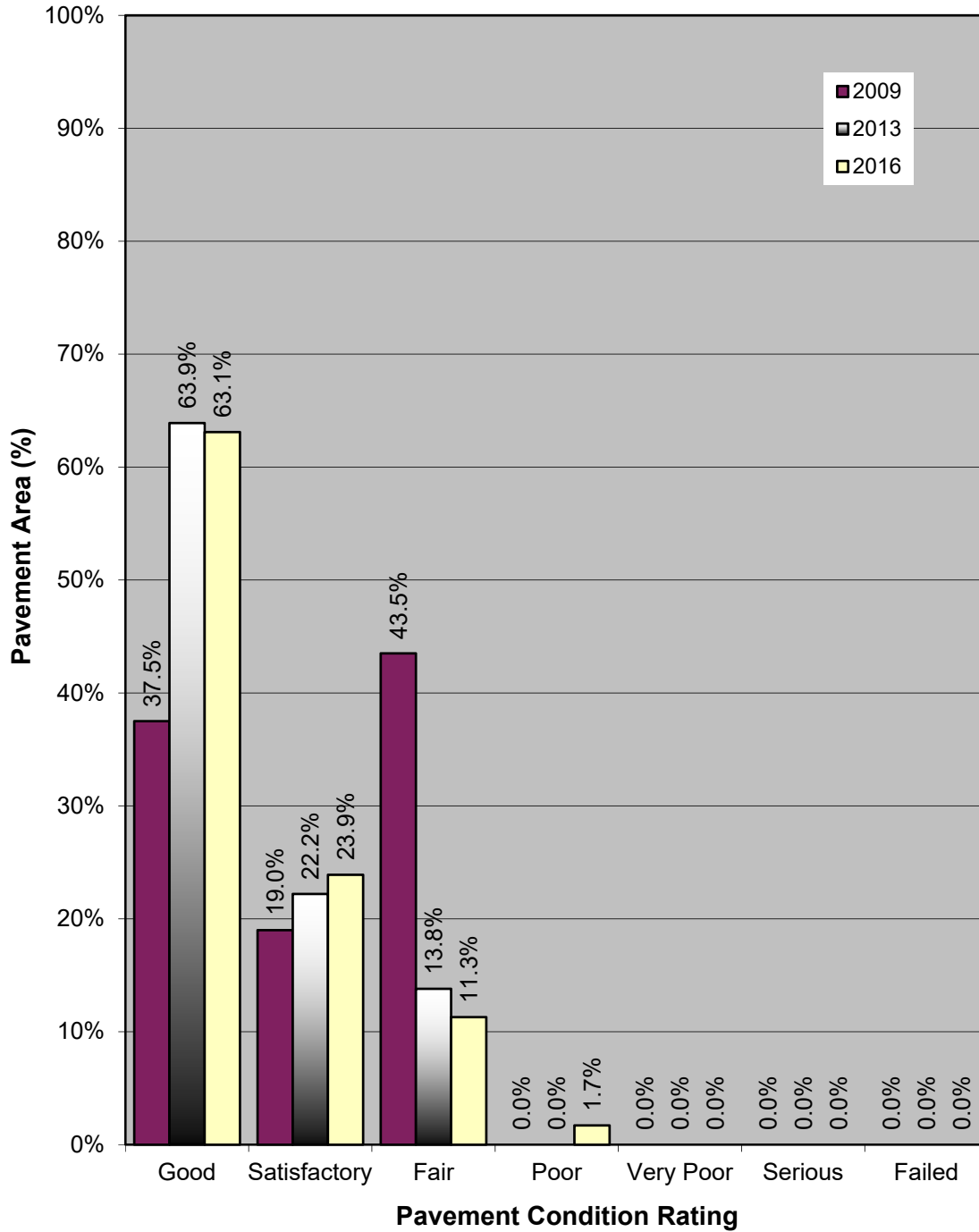


PCI	PCR
100	GOOD
85	SATISFACTORY
70	FAIR
55	POOR
40	VERY POOR
25	SERIOUS
10	FAILED
0	

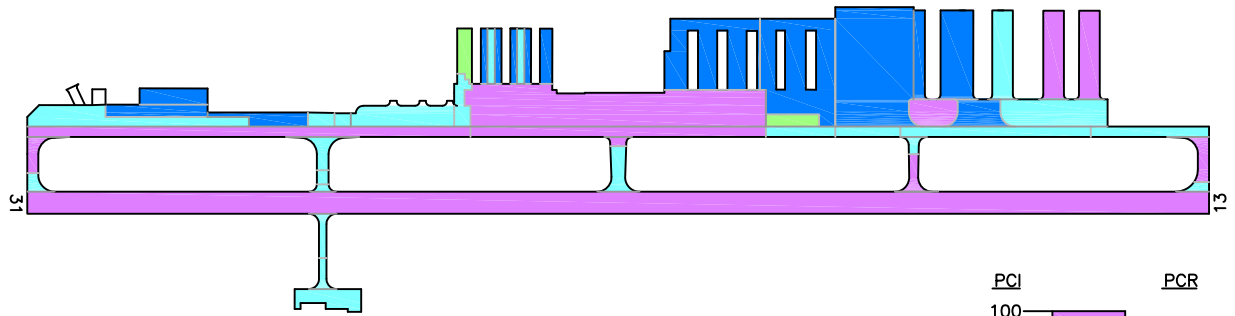


Drawing Date: August 2016

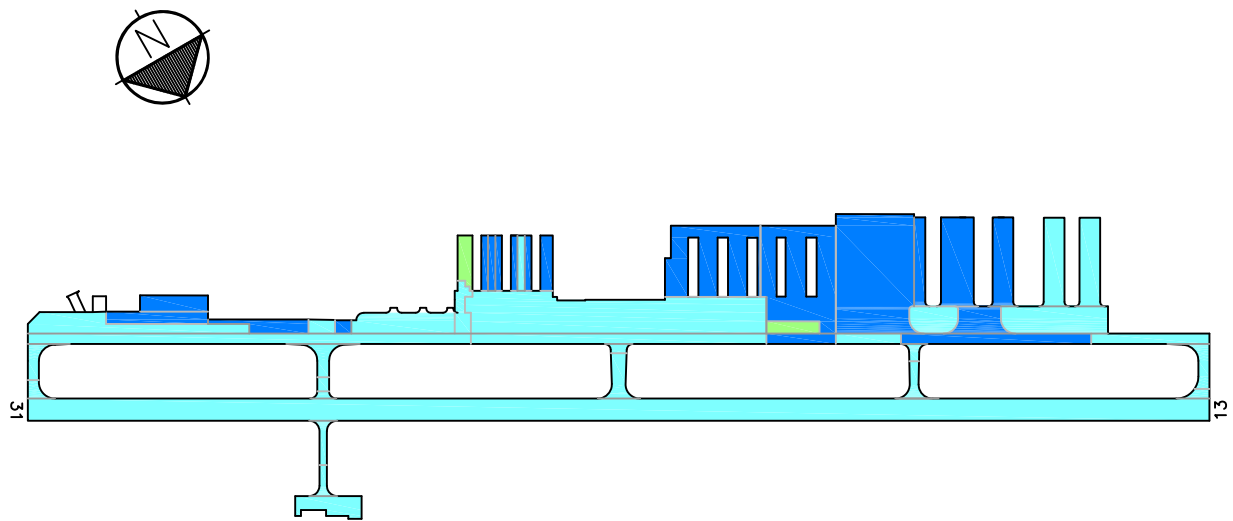
**Figure GR-4. Pavement Condition Distribution
Grants Pass Airport**



Predicted Condition in 2021.



Predicted Condition in 2026.



Drawing Date: August 2016

 PAVEMENT CONSULTANTS INC.

Figure GR-5. Future Pavement Condition.

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 quantity of localized maintenance is needed:

- 8,442 linear feet of asphalt concrete crack sealing.

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.

During this project a 5-year program outlining recommended global maintenance and rehabilitation was developed. The program begins in the year 2017 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 GR-6.

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2017	A01GR	01	Slurry Seal	34,216	\$0.31	\$10,470
2017	A01GR	02	Slurry Seal	14,440	\$0.31	\$4,419
2017	A01GR	03	Slurry Seal	12,650	\$0.31	\$3,871
2017	A02GR	01	Slurry Seal	24,105	\$0.31	\$7,376
2017	A02GR	02	Slurry Seal	8,073	\$0.31	\$2,470
2017	A02GR	03	Slurry Seal	20,891	\$0.31	\$6,393
2017	A02GR	04	Slurry Seal	127,147	\$0.31	\$38,907

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2017	A02GR	05	Slurry Seal	12,054	\$0.31	\$3,689
2017	A02GR	06	Slurry Seal	54,626	\$0.31	\$16,716
2017	A02GR	07	Slurry Seal	70,118	\$0.31	\$21,456
2017	A02GR	08	Slurry Seal	106,237	\$0.31	\$32,509
2017	A02GR	09	Slurry Seal	7,483	\$0.31	\$2,290
2017	ALMNGR	01	Slurry Seal	14,129	\$0.31	\$4,323
2017	ALMNGR	02	Slurry Seal	14,479	\$0.31	\$4,431
2017	ALMNGR	03	Slurry Seal	32,900	\$0.31	\$10,067
2017	R13GR	01	Slurry Seal	300,000	\$0.31	\$91,800
2017	T01GR	01	Slurry Seal	11,697	\$0.31	\$3,579
2017	T01GR	02	Slurry Seal	4,226	\$0.31	\$1,293
2017	T01GR	03	Slurry Seal	2,480	\$0.31	\$759
2017	T03GR	01	Slurry Seal	21,174	\$0.31	\$6,479
2017	T04GR	01	Slurry Seal	33,508	\$0.31	\$10,253
2017	T05GR	01	Slurry Seal	11,486	\$0.31	\$3,515
2017	TA1GR	01	Slurry Seal	2,993	\$0.31	\$916
2017	TA1GR	02	Slurry Seal	5,443	\$0.31	\$1,666
2017	TA2GR	01	Slurry Seal	1,237	\$0.31	\$379
2017	TA2GR	02	Slurry Seal	1,920	\$0.31	\$588
2017	TA2GR	03	Slurry Seal	6,205	\$0.31	\$1,899
2017	TA3GR	01	Slurry Seal	8,519	\$0.31	\$2,607
2017	TA3GR	02	Slurry Seal	1,868	\$0.31	\$572
2017	TA4GR	01	Slurry Seal	4,916	\$0.31	\$1,504
2017	TA4GR	02	Slurry Seal	2,316	\$0.31	\$709
2017	TA5GR	01	Slurry Seal	2,246	\$0.31	\$687
2017	TA5GR	02	Slurry Seal	6,752	\$0.31	\$2,066
2017	TABGR	01	Slurry Seal	4,674	\$0.31	\$1,430
2017	TAGR	01	Slurry Seal	52,500	\$0.31	\$16,065
2017	TAGR	02	Slurry Seal	35,000	\$0.31	\$10,710
2017	TAGR	03	Slurry Seal	8,225	\$0.31	\$2,517
2017	TAGR	04	Slurry Seal	7,718	\$0.31	\$2,362
2017	TAGR	05	Slurry Seal	22,553	\$0.31	\$6,901
2017	TAGR	06	Slurry Seal	14,000	\$0.31	\$4,284
2017	TBCGR	01	Slurry Seal	4,675	\$0.31	\$1,431
2017	TLMGR	01	Slurry Seal	21,097	\$0.31	\$6,456
2017	TMNGR	01	Slurry Seal	21,093	\$0.31	\$6,454
2017 Total						\$359,265
2018	A03GR	01	Slurry Seal	13,825	\$0.31	\$4,230

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

Year	Branch	Section	Action	Area (sf)	Unit Cost (\$/sf)	Total Cost (\$)
2018	TA2GR	04	Slurry Seal	4,275	\$0.31	\$1,308
2018	TA2GR	05	Slurry Seal	3,150	\$0.31	\$964
2018 Total						\$6,503
TOTAL						\$365,768

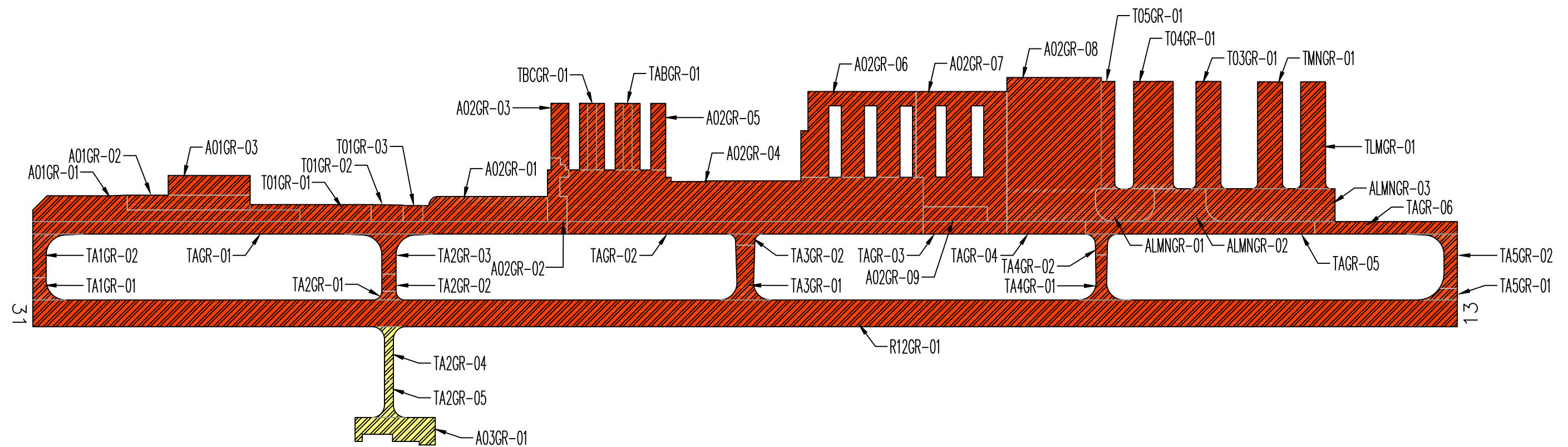
If the global maintenance and/or rehabilitation activities recommended in Table 2 are not completed, the localized maintenance activities identified in the Network Maintenance Report (Appendix 3) for that section should be done. Additionally, for those sections not listed in Table 2 as requiring global 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

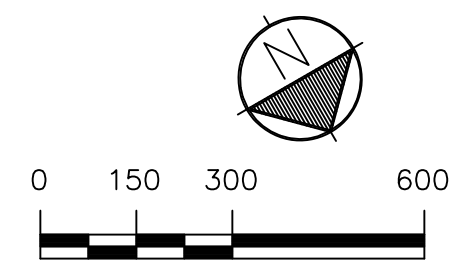
To comply with the inspection schedule requirement of FAA Grant Assurance Number 11, a detailed visual inspection should be conducted every 3 years using the methodology described in ASTM D5430. The next scheduled detailed visual inspection should take place in 2019.

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 GR-6. Five-Year Pavement Management Plan.
Grants Pass Airport



ACTION TIMING		ACTION	
	2017		FOG SEAL
	2018		SLURRY SEAL
	2019		OVERLAY
	2020		RECONSTRUCT
	2021		ROUTINE MAINTENANCE



Drawing Date: August 2016