

Your Airport Report

NEHALEM BAY STATE 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 NB-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 NB-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 NB-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 Nehalem Bay State Airport in September 2015. 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 NB-1. Airport Layout, Dimensions and Pavement Cross-Sections.
Nehalem Bay State Airport

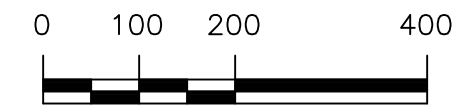
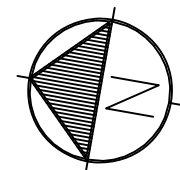
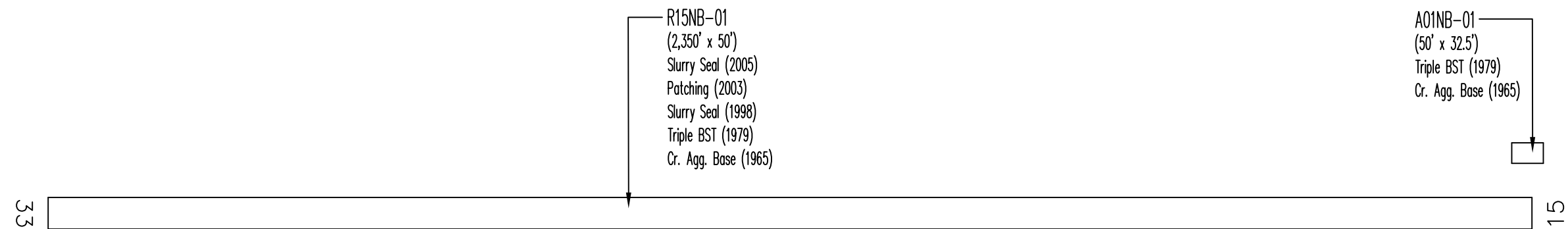
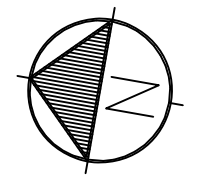
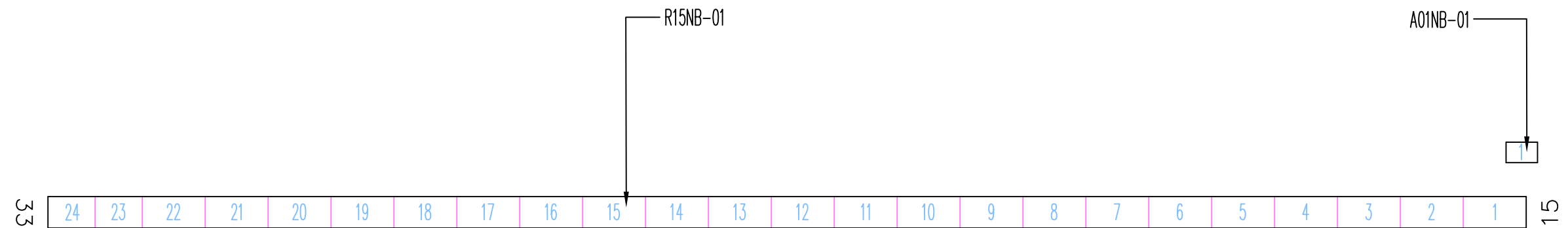


Figure NB-2. Pavement Branch, Section and Sample Unit Layout.
Nehalem Bay State Airport



Drawing Date: September 2015

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 2020 and 2025. 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 PCR is shown graphically in Figure NB-3.

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

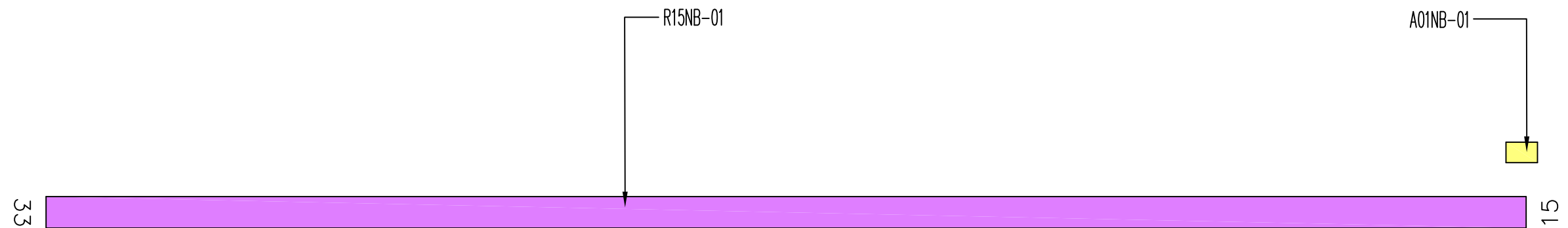
| Branch | Section | Inspections | | | Forecast | |
|--------|---------|-------------|------|------|----------|------|
| | | 2008 | 2012 | 2015 | 2020 | 2025 |
| A01NB | 1 | 14 | 22 | 33 | 24 | 16 |
| R15NB | 1 | 90 | 90 | 91 | 76 | 74 |

Section PCIs at Nehalem Bay State Airport range from a low of 33 (a PCR of "Very Poor") to a high of 91 (a PCR of "Good"). The area-weighted average PCI for all airport pavements is 90, corresponding to an overall PCR of "Good". Figure NB-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 2008 and 2012.

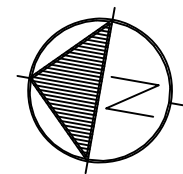
The primary distress observed during the inspection was longitudinal and transverse cracking, block cracking, depression, and raveling.

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

Figure NB-3. Pavement Condition in September 2015.
Nehalem Bay State Airport

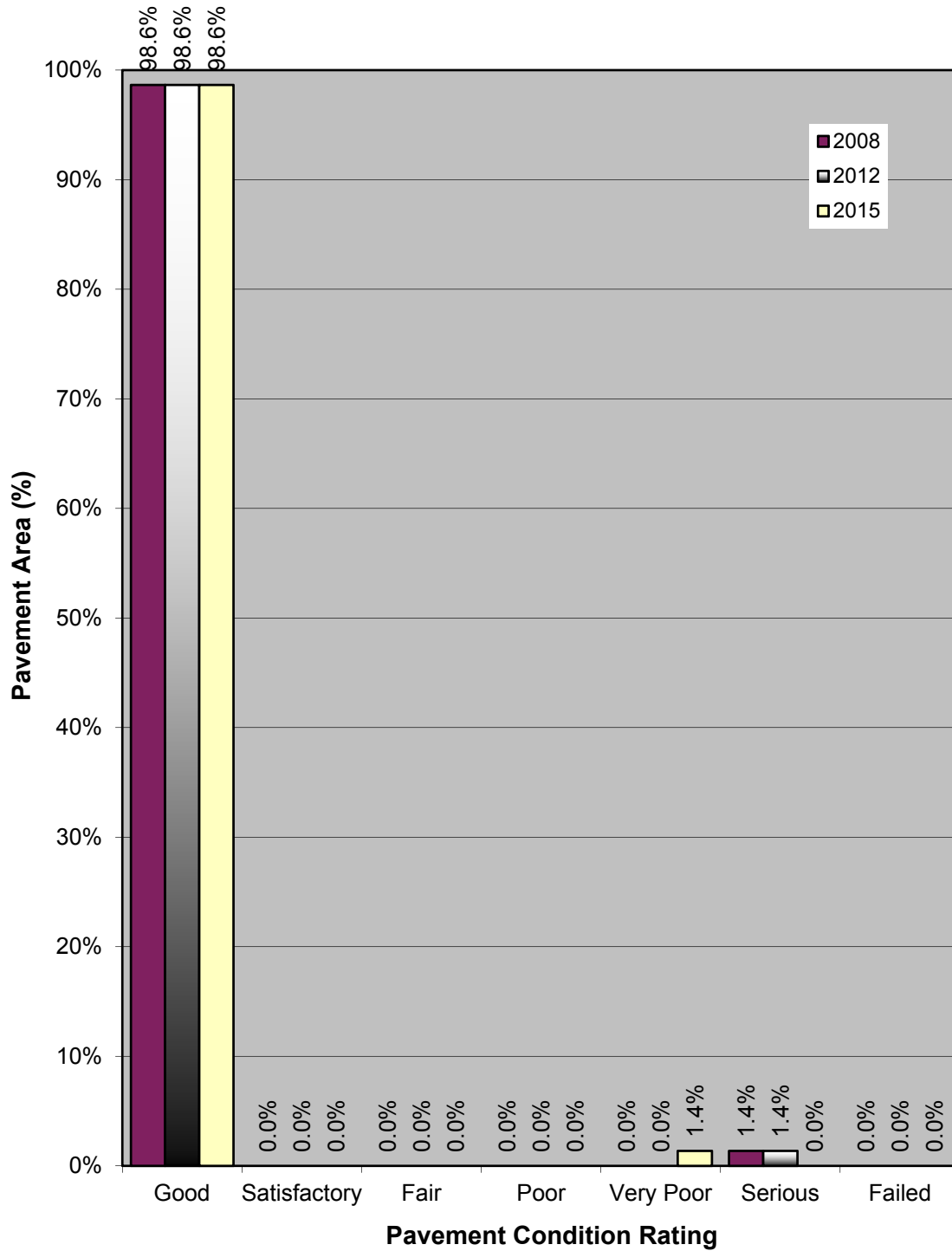


| PCI | PCR |
|-----|--------------|
| 100 | GOOD |
| 85 | SATISFACTORY |
| 70 | FAIR |
| 55 | POOR |
| 40 | VERY POOR |
| 25 | SERIOUS |
| 10 | FAILED |
| 0 | |

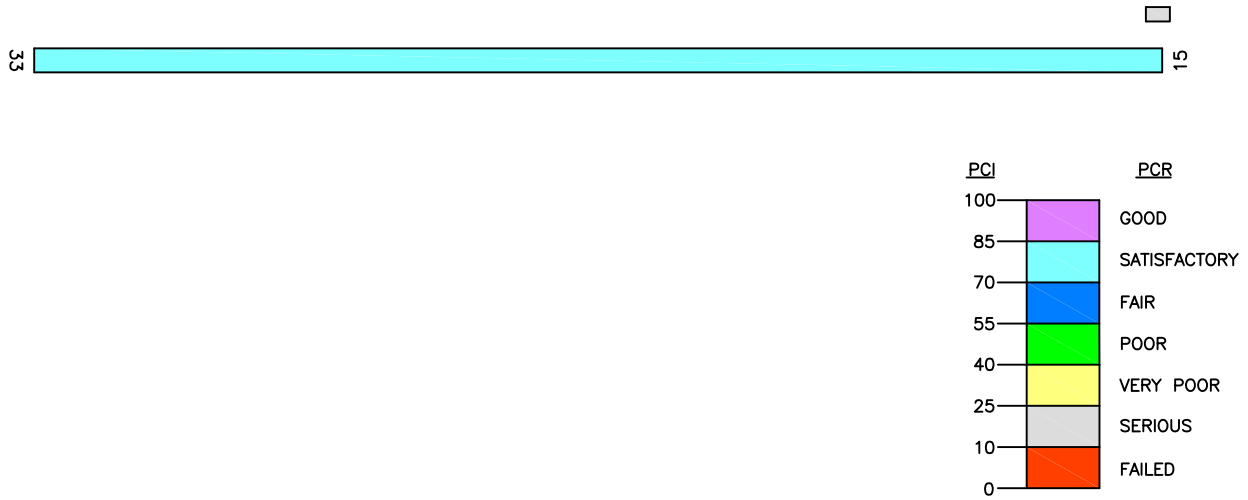


Drawing Date: September 2015

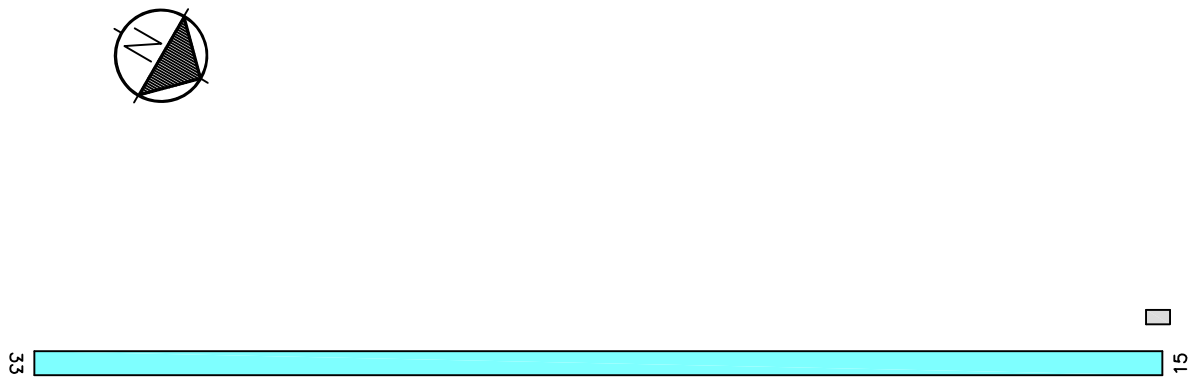
**Figure NB-4. Pavement Condition Distribution
Nehalem Bay State Airport**



Predicted Condition in 2020.



Predicted Condition in 2025.



Drawing Date: September 2015



Figure NB-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 quantities of localized maintenance are needed:

- 105 linear feet of asphalt concrete crack sealing

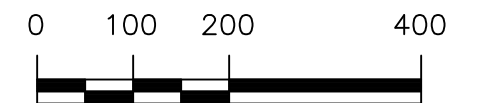
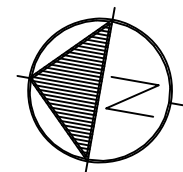
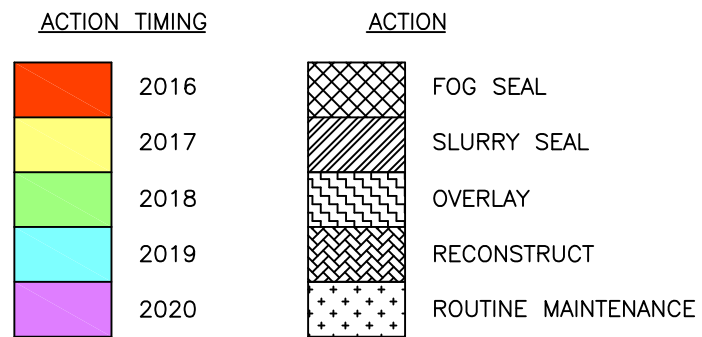
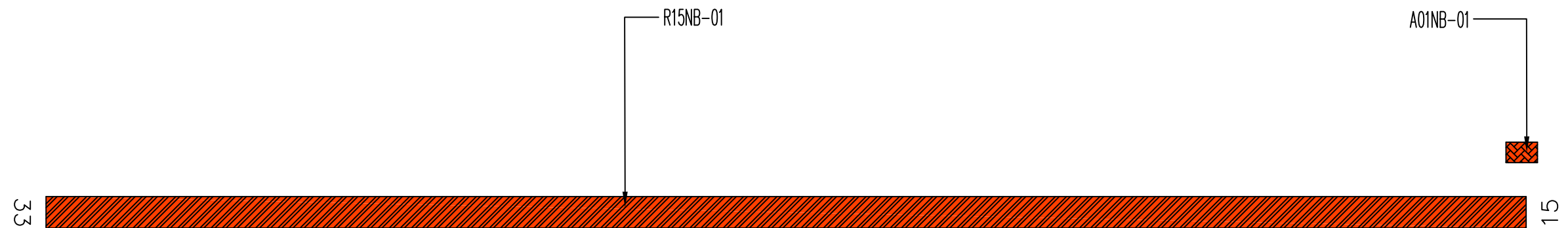
The Micro PAVER software can also identify and schedule recommended global (applied over an entire section) maintenance activities such as fog seals, slurry seals and other surface treatments, as well as major rehabilitation activities such as asphalt concrete overlays and complete reconstruction. Micro 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 2016 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 NB-6.

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

| Year | Branch | Section | Action | Area (sf) | Unit Cost (\$/sf) | Total Cost (\$) |
|---------------------|--------|---------|---|-----------|-------------------|-----------------|
| 2016 | A01NB | 01 | Reconstruct with 2" AC over 6" Aggregate Base | 1,625 | \$4.80 | \$7,800 |
| 2016 | R15NB | 01 | Slurry Seal | 117,500 | \$0.25 | \$29,375 |
| 2016 Total | | | | | | \$37,175 |
| 5-Year Total | | | | | | \$37,175 |

Figure NB-6. Five-Year Pavement Management Plan.
Nehalem Bay State Airport



Drawing Date: September 2015

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 2018.

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.

Appendix 1

Branch Condition Report

Date: 11 /3/2015

Branch Condition Report

1 of 2

Pavement Database: ODA2015 NetworkID: Nehalem

| Branch ID | Number of Sections | Sum Section Length (Ft) | Avg Section Width (Ft) | True Area (SqFt) | Use | Average PCI | PCI Standard Deviation | Weighted Average PCI |
|----------------------------------|--------------------|-------------------------|------------------------|------------------|--------|-------------|------------------------|----------------------|
| A01NB (Apron 01 Nehalem Bay) | 1 | 50.00 | 32.50 | 1,625.00 | APRON | 33.00 | 0.00 | 33.00 |
| R15NB (Runway 15/33 Nehalem Bay) | 1 | 2,350.00 | 50.00 | 117,500.00 | RUNWAY | 91.00 | 0.00 | 91.00 |

| Use Category | Number of Sections | Total Area (SqFt) | Arithmetic Average PCI | Average PCI STD. | Weighted Average PCI |
|---------------------|---------------------------|--------------------------|-------------------------------|-------------------------|-----------------------------|
| APRON | 1 | 1,625.00 | 33.00 | 0.00 | 33.00 |
| RUNWAY | 1 | 117,500.00 | 91.00 | 0.00 | 91.00 |
| All | 2 | 119,125.00 | 62.00 | 29.00 | 90.21 |

Appendix 2
Section Condition Report

Date: 11 /3/2015

Section Condition Report

1 of 2

Pavement Database: ODA2015 NetworkID: Nehalem

| Branch ID | Section ID | Last Const. Date | Surface | Use | Rank | Lanes | True Area (SqFt) | Last Inspection Date | Age At Inspection | PCI |
|----------------------------------|------------|------------------|---------|--------|------|-------|------------------|----------------------|-------------------|-------|
| A01NB (Apron 01 Nehalem Bay) | 01 | 08/01/1979 | ST | APRON | S | 0 | 1,625.00 | 09/19/2015 | 36 | 33.00 |
| R15NB (Runway 15/33 Nehalem Bay) | 01 | 08/01/1979 | ST | RUNWAY | P | 0 | 117,500.00 | 09/19/2015 | 36 | 91.00 |

| Age Category | Average Age At Inspection | Total Area (SqFt) | Number of Sections | Arithmetic Average PCI | PCI Standard Deviation | Weighted Average PCI |
|---------------------|----------------------------------|--------------------------|---------------------------|-------------------------------|-------------------------------|-----------------------------|
| 36-40 | 36.00 | 119,125.00 | 2 | 62.00 | 29.00 | 90.21 |
| All | 36.00 | 119,125.00 | 2 | 62.00 | 29.00 | 90.21 |

Appendix 3
Network Maintenance Report

Network Maintenance Report 2015
Nehalem Bay State Airport

| Network | Branch | Section | Distress | Severity | Action | Maint. Quantity | Unit | Unit Cost | Work Cost | Section Total Cost |
|---------|--------|---------|-------------------------|----------|--------------------|-----------------|------|-----------|-----------|--------------------|
| Nehalem | A01NB | 1 | Long. & Trans. Cracking | M | Crack Sealing - AC | 105 | Ft | \$1.00 | \$105 | \$105 |
| | | | | | | | | | Total | \$105 |

Appendix 4
Re-Inspection Report

Re-inspection Report

ODA2015

Report Generated Date: November 03, 2015

Network: Nehalem Name: Nehalem Bay State

Branch: A01NB Name: Apron 01 Nehalem Bay Use: APRON Area: 1,625.00SqFt

Section: 01 of 1 From: West of Runway 15 End To: Last Const.: 08/01/1979
Surface: ST Family: OR-Cat5-ST-Coast-AP-2015 Zone: 3S7 Category: A Rank: S
Area: 1,625.00SqFt Length: 50.00Ft Width: 32.50Ft
Shoulder: Street Type: Grade: 0.00 Lanes: 0

Section Comments:

Last Insp. Date: 09/19/2015 Total Samples: 1 Surveyed: 1

Conditions: PCI : 33

Inspection Comments:

Sample Number: 01 Type: R Area: 1,625.00SqFt PCI = 33

Sample Comments:

| | | | |
|-------------------------------------|---|---------------|-----------|
| 52 RAVELING | M | 1,625.00 SqFt | Comments: |
| 48 LONGITUDINAL/TRANSVERSE CRACKING | L | 105.00 Ft | Comments: |
| 48 LONGITUDINAL/TRANSVERSE CRACKING | M | 105.00 Ft | Comments: |

Re-inspection Report

ODA2015

Report Generated Date: November 03, 2015

Network: Nehalem Name: Nehalem Bay State

Branch: R15NB Name: Runway 15/33 Nehalem Bay Use: RUNWAY Area: 117,500.00SqFt

Section: 01 of 1 From: Runway 15 End To: Runway 33 End Last Const.: 08/01/1979
Surface: ST Family: OR-Cat5-ST-Coast-RW-2015 Zone: 3S7 Category: A Rank: P
Area: 117,500.00SqFt Length: 2,350.00Ft Width: 50.00Ft
Shoulder: Street Type: Grade: 0.00 Lanes: 0

Section Comments:

Last Insp. Date: 09/19/2015 Total Samples: 24 Surveyed: 5

Conditions: PCI : 91

Inspection Comments:

Sample Number: 01 Type: R Area: 5,000.00SqFt PCI = 81

Sample Comments:

48 LONGITUDINAL/TRANSVERSE CRACKING L 260.00 Ft Comments:

45 DEPRESSION L 30.00 SqFt Comments:

Sample Number: 06 Type: R Area: 5,000.00SqFt PCI = 96

Sample Comments:

48 LONGITUDINAL/TRANSVERSE CRACKING L 20.00 Ft Comments:

Sample Number: 12 Type: R Area: 5,000.00SqFt PCI = 97

Sample Comments:

48 LONGITUDINAL/TRANSVERSE CRACKING L 11.00 Ft Comments:

Sample Number: 16 Type: R Area: 5,000.00SqFt PCI = 91

Sample Comments:

48 LONGITUDINAL/TRANSVERSE CRACKING L 130.00 Ft Comments:

Sample Number: 20 Type: R Area: 5,000.00SqFt PCI = 89

Sample Comments:

48 LONGITUDINAL/TRANSVERSE CRACKING L 160.00 Ft Comments: