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Comparison of PASER and PCI pavement distress indices

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Comparison of PASER and PCI Pavement Distress Indices

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Introduction

The purpose of this report is to compare two different systems of asphalt pavement rating, Pavement Surface Evaluation and Rating (PASER) which is described in the *PASER Manual for Asphalt Roads*[5] and Pavement Condition Index (PCI) which is described in the book *Pavement Management for Airports, Roads, and Parking Lots*[4]. PASER data used in this report was collected in the fall term of 2009 while PCI data was collected in the fall term of 2010. The PASER method consists of a team performing a ride-over survey of a pavement network and rating each pavement segment based on the type and variety of distresses seen. For the data analyzed in this report, the team consisted of undergraduate students from the Michigan Tech Pavement Enterprise pavement management team and the author. The PCI method uses a sample of pavement segments from throughout the pavement network being rated based on actual measurements of the pavement distresses. The PCI survey was performed strictly by the author. Both of these methods are currently used by various organizations to help manage pavement and determine where to invest resources to keep the network in reasonable condition. This report will also discuss various articles pertaining to pavement rating.

Literature Review

Methods for effectively evaluating pavement distresses has been an issue to those in pavement related industries for a considerable amount of time. *The Unified Pavement Distress Index for Managing Flexible Pavements* was an early attempt to evaluate pavements using "fuzzy sets" which grade pavements A through E for various distresses and use the "fuzzy sets" to compute a Unified Pavement Distress Index from 0 to 1 with 1 being the worst.[3] These "fuzzy sets" are mathematical equations which place weights on the various pavement distresses to compute the final rating, similar in form to the indices discussed in the article, *Assessing the Agreement among Pavement Condition Indexes*[2].

Of further interest is the correlation between various Pavement Condition Indices. In an article published in the Journal of Transportation Engineering, six different pavement condition systems were compared. It was found that what may appear to be similar indices can provide significantly different results.[2] In this article the authors performed surveys of several pavement sections using the Texas Department of Transportation's condition score (CS) and distress score (DS), the South Dakota Department of Transportation's surface condition index (SCI), the Ohio Department of Transportation's pavement condition rating (PCR), Pennsylvania Department of Transportation's overall pavement index (OPI), and the Oregon Department of Transportation's overall index (OI). The authors concluded that significant differences can exist between pavement distress indices and that these differences generally result from distress types considered, weighting factors and mathematical forms of each index.[2]

PASER and PCI are two pavement evaluation systems which were developed after the use of "fuzzy sets" as other means to interpret the various distresses found in pavements. Both of these systems attempt to take the mathematical calculations out of the pavement evaluators' hands. The PCI method does this through the use of charts which give rating deduct values based on density and severity of various distresses. These deduct values are based on the percent of the pavement section affected and the severity of the distress. Using charts provided in *Pavement Management for Airports, Roads, and Parking Lots*, deduct values for each distress are determined. PASER pavement rating involves no calculation what so ever. By performing a drive over survey of the pavement network and providing raters with a detailed list describing what types of distresses are found at various ratings, PASER has made pavement rating possible for people of various backgrounds and qualifications to effectively rate pavement.

An issue of considerable importance when performing a pavement evaluation is that of the training of those performing the analysis. Allotment of resources from many agencies depends on the data that is provided by the pavement rater. It is highly suggested that agencies should establish thresholds limiting the differences between raters.[1]

Network Selection

The Pavement network to be evaluated was determined to be the local roads in Houghton, MI, bounded by Mac Innes Drive, Sharon Avenue, Agate Street, and US-41. Using Google Earth it was determined that this network consisted of approximately 4. 7 miles of asphalt pavement. This equates to approximately 24,700 linear feet of pavement. For the PASER rating, the network was broken down into 52 segments, most of which end at intersections.

For the purpose of rating using the PCI method, the pavement was broken down into segments of 2500 square feet, +/- 1000 square feet. For ease of breaking down the pavement 100 linear foot segments were used. When broken down into segments of 100 feet, with any remaining pavement at the end of a street becoming its own segment, a total of 250 measurable segments. Using a Network Level Analysis as described on page 25 of *Pavement Management for Airports, Roads, and Parking Lots*, it was determined that 10 percent of these segments would be rated using the PCI method.

The network is pictured in Figure 1 with the approximate locations of the PCI surveys.

Figure 1: Map of Study Area (©2011 Europa Technologies, ©2011 Google, Image USDA Farm Agency,)

PASER Analysis

PASER analysis of a pavement is based upon a scale of 1 to 10; with 10 representing brand new pavement. Based on the approximate amount of each varying type of pavement distress observed a rating is given as shown in Table 1. Certain distresses, such as alligator cracking, greatly reduce the rating while other distresses do not impact the rating as much.

The PASER survey was performed by undergraduate students in the Michigan Tech Pavement Enterprise with the help of the author of this report. All students were given a short training course by Tim Colling of the Local Technical Assistance Program where students learned to identify the various pavement distresses associated with PASER ratings. One student had previous experience with PASER ratings while working for a county transportation department.

By reviewing the PASER ratings for each segment, an average rating for the network was determined to be 4.4, as shown in Table 2. This was determined by multiplying the length of each segment by its PASER rating, and averaging the results by dividing the sum of the products by the total length of pavement in the network. Based upon the

standard PASER rating system, a rating of 4.4 qualifies the overall pavement network as being in fair condition.

Table 1: PASER Pavement Evaluation Criteria

Surface Rating	Visible Distress	General condition/treatment measures
10 Excellent	None.	New construction.
9 Excellent	None.	Recent overlay. Like new.
8 Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open less that 1/4").	Recent sealcoat or new cold mix. Little or no maintenance required.
7 Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open 1/4") due to reflection or paving joints. Transverse cracks (open 1/4") spaced 10' or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open 1/4"-1/2") spaced 10' or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.
5 Fair	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open 1/2") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealcoat or thin non-structural overlay (less than 2").
4 Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50 % of surface). Patching in fair condition. Slight rutting or distortions (1" to 2" deep). Occasional potholes.	Significant aging and first signs of need for strengthening. Would benefit from a structural overlay (2" or more).
3 Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25 % of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" to 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
2 Very Poor	Alligator cracking (over 25 % of surface). Severe distortions (over 2" deep). Extensive patching in poor condition. Potholes.	Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.
1 Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

Table 2: PASER Ratings for the Pavement Network

Road Name	Segment Name	From Desc	To Desc	Length	Rating
10th Ave	10th Ave	Agate	Birch	0.159	3
11th Ave	11th Ave	Agate	Birch	0.158	5
12th Ave	12th Ave	Agate		0.169	5
5th Ave	5th Ave	Agate		0.046	6
5th Ave	5th Ave	Emerald	Garnet	0.118	2
5th Ave	5th Ave	Garnet	Vivian	0.049	2
6th Ave	6th Ave	Agate	Emerald	0.129	4
6th Ave	6th Ave	Emerald		0.03	6
6th Ave	6th Ave	Garnet	Vivian	0.054	2
7th Ave	7th Ave	Agate St	Copper St	0.189	3
7th Ave	7th Ave	Copper St	Garnet	0.077	4
7th Ave	7th Ave	Garnet	Clark St	0.116	4
7th Ave	7th Ave	Clark St	Blanche St	0.09	6
7th Ave	7th Ave	Blanche St	East St	0.051	6
7th Ave	7th Ave	East St	Macinnes	0.069	6
8th Ave	8th Ave	Agate	Copper	0.195	5
Birch St	Birch St	10th	11th Ave	0.041	6
Birch St	Birch St	11th Ave	12th	0.052	6
Birch St	Birch St	12th		0.118	2
Blanche St	Blanche St	7th	Townsend	0.088	2
Clark St	Clark St	7th	Townsend	0.131	2
Copper St	Copper St	7th		0.092	5
East St	East St	7th	Townsend	0.084	3
Emerald St	Emerald St	Houghton	Jasper	0.03	8
Emerald St	Emerald St	Jasper	Ruby Ave	0.027	8
Emerald St	Emerald St	Ruby Ave	College	0.031	8
Emerald St	Emerald St	6th	5th	0.05	5
Emerald St	Emerald St	5th	Houghton	0.055	5
Garnet St	Garnet St	Sharon	Hickory	0.077	4
Garnet St	Garnet St	Hickory	Hickory Ln	0.111	4
Garnet St	Garnet St	Hickory Ln		0.087	4
Garnet St	Garnet St		7th	0.114	6
Garnet St	Garnet St	7th	Houghton	0.16	6
Hickory Ln	Hickory Ln	Garnet	Garnet	0.271	4
E Houghton Ave	E Houghton Ave	Franklin	Emerald	0.308	6
E Houghton Ave	E Houghton Ave	Emerald	Pearl	0.098	7
E Houghton Ave	E Houghton Ave	Pearl	Townsend	0.143	6

Table 2 Continued					
Hubbell St	Hubbell St	7th	Townsend	0.101	2
Jasper Ave	Jasper Ave	Agate		0.049	5
Jasper Ave	Jasper Ave		Emerald St	0.049	3
Jasper Ave	Jasper Ave	Emerald St		0.049	7
Jasper Ave	Jasper Ave		Pearl	0.048	5
Pearl St	Pearl St	Houghton	Jasper Ave	0.029	6
Pearl St	Pearl St	Jasper Ave	Ruby	0.028	5
Pearl St	Pearl St	Ruby	College	0.032	5
Ruby Ave	Ruby Ave	Agate	Emerald	0.098	5
Ruby Ave	Ruby Ave	Emerald	Pearl	0.096	5
Ruby Ave	Ruby Ave	Pearl	Vivian	0.092	5
Vivian St	Vivian St	7th	6th	0.065	2
Vivian St	Vivian St	6th	5th	0.04	2
Vivian St	Vivian St	5th	Houghton	0.043	2
Vivian St	Vivian St	Houghton	Ruby	0.046	2
			Length Weighted Average		4.429839

PCI Segment Selection

In order to provide a representative (not random) sample of the pavement network, each street within the network was broken down into 100 foot segments and 25 segments were selected for the network. To provide a representative sample of the network, depending on the length of the street each street had one or two segments randomly selected to be rated. North-South street segments were numbered starting in the North and East-West street segments were numbered starting in the West. This was used as a starting point for the ratings, but it was determined that if after a ride through of the street the segment did not seem to be representative of the pavement another segment would be chosen. However, this course of action was not determined to be necessary.

PCI Analysis

PCI[5] Analysis was performed by the author in the fall of 2010 by measuring the severity of 19 different pavement distresses, most of which have 3 severity levels. Severity of each type of distress is typically differentiated by a measurable value, such as the depth of a pothole. The distresses measured for PCI Analysis were Alligator Cracking, Bleeding, Block Cracking, Bumps and Sags, Corrugation, Depression, Edge Cracking, Jt. Reflection Cracking, Lane/Shoulder Drop Off, Longitudinal and Transverse Cracking, Patching and Utility Cut Patching, Polished Aggregate, Potholes, Railroad Crossing,

Rutting, Shoving, Slippage Cracking, Swell, and Weathering/Raveling. Each type of distress varies greatly in how it effects the overall rating of the pavement i.e., low level raveling over the entire segment will not affect the rating nearly as much as a moderate severity pot hole. This is largely due to the fact that certain distresses do not indicate pavement failure while others indicate that something is structurally wrong with the pavement. Most of the pavement distresses observed were climate based. Low level Weathering/Raveling was very prevalent throughout the entire pavement network. Distresses such as rutting, bleeding and reflection cracking were non-existent. This is due to the light loads that are typically seen on local access roads.

The total amount of each type of distress found in each pavement segment was summed and gave a density in percent of each distress (at various severity levels) found in each segment. Using charts provided in Appendix B of *Pavement Management for Airports, Roads, and Parking Lots*[4], each distress provided a deduct value ranging from 0 to 100, 100 being the highest possible severity. These deduct values were then summed to provide a total deduct value. The total deduct value then needed to be corrected through the iterative method outlined on pages 37 and 38 of *Pavement Management for Airports, Roads, and Parking Lots.*[4] The calculation of each evaluated segments Pavement Condition Index can be seen in Appendix 2. The figure below is a summary of the standard breakdown of the correlation between a pavements PCI rating and the quality of the asphalt.

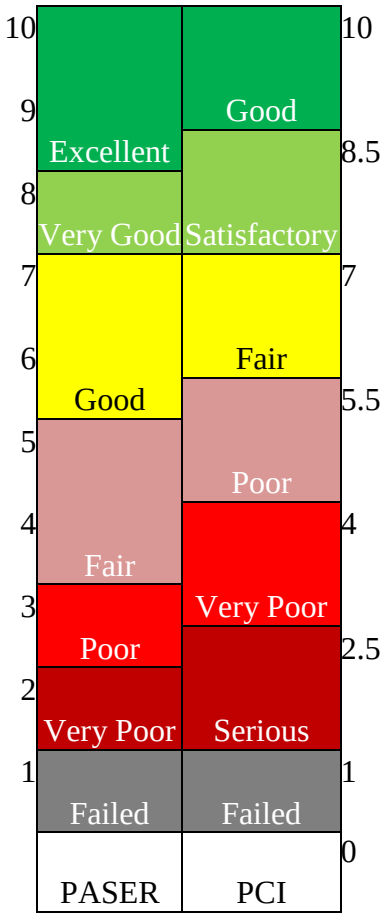

Figure 2: Breakdown of PASER and Base 10 PCI Ratings

The PCI survey data was collected by Tim Barrette in the fall of 2010. No formal training in collecting PCI data occurred. The student did however perform a sample PCI survey with Dr. Bernie Alkire in fall of 2009.

Comparison of PASER and PCI Ratings

As was discussed earlier, PASER analysis of the pavement network yielded a rating of 4.4 (the average for the segments from which a PCI survey was performed is 4.5), while the PCI method yielded a rating 53.56, which can be seen in Table 3 on the next page. The network average alone was determined to not be a strong enough indication of any relationship between the systems as it doesn't describe the relationship between the segment ratings. To further compare the results of the two rating systems, the ratings for each segment analyzed using PCI was compared to its corresponding PASER segment. For the sake of comparison, the PCI rating was divided by 10 to provide a more direct correlation with the PASER rating system. The results are shown in Table 3 and Figure 3.

Table 3: Comparison of PASER and PCI Ratings for evaluated Segments

No.	RoadName	FromDesc	ToDesc	PASER	Length	PCI	Base 10 PCI	Appendix 1
1	5th Ave	Agate		6	0.046	2	0.2	Table 1
2	5th Ave	Garnet	Vivian	2	0.049	80	8	Table2
3	6th Ave	Garnet	Vivian	2	0.054	55	5.5	Table 3
4	7th Ave	Garnet	Clark St	4	0.116	42	4.2	Table 4
5	7th Ave	Blanche St	East St	6	0.051	38	3.8	Table 5
6	8th Ave	Agate	Copper	5	0.195	82	8.2	Table 6
7	10th Ave	Agate	Birch	3	0.159	63	6.3	Table 7
8	11th Ave	Agate	Birch	5	0.158	84	8.4	Table 8
9	12th Ave	Agate		5	0.169	20	2	Table 9
10	Birch St	11th Ave	12th	6	0.052	82	8.2	Table 10
11	Blanche St	7th	Townsend	2	0.088	62	6.2	Table 11
12	Clark St	7th	Townsend	2	0.131	0	0	Table 12
13	Jasper Ave	Emerald St		7	0.049	67	6.7	Table 13
14	Hubbell St	7th	Townsend	2	0.101	40	4	Table 14
15	E Houghton Ave	Emerald	Pearl	7	0.098	82	8.2	Table 15
16	E Houghton Ave	Pearl	Townsend	6	0.143	3	0.3	Table 16
17	Hickory Ln	Garnet	Garnet	4	0.271	58	5.8	Table 17
18	Garnet St		7th	6	0.114	78	7.8	Table 18
19	Garnet St	7th	Houghton	6	0.16	52	5.2	Table 19
20	Emerald St	Houghton	Jasper	8	0.03	89	8.9	Table 20
21	Emerald St	6th	5th	5	0.05	81	8.1	Table 21
22	Vivian St	Houghton	Ruby	2	0.046	24	2.4	Table 22
23	Ruby Ave	Emerald	Pearl	5	0.096	16	1.6	Table 23
24	East St	7th	Townsend	3	0.084	56	5.6	Table 24
25	Copper St	7th		5	0.092	82	8.2	Table 25
	Network Average			4.488854727		53.52	5.352	

As Table 3 showed, there is not a strong correlation between the PASER and PCI rating systems for each pavement segment. Using Microsoft Excel, a plot of segment numbers versus ratings was created and is shown in Figure 3. A correlation of 0.225 was calculated, indicating a very weak correlation between the pavement rating systems. It is also worth noting that even when both types of ratings are compared on a scale with a base of 10, the corresponding pavement qualities do not necessarily match.

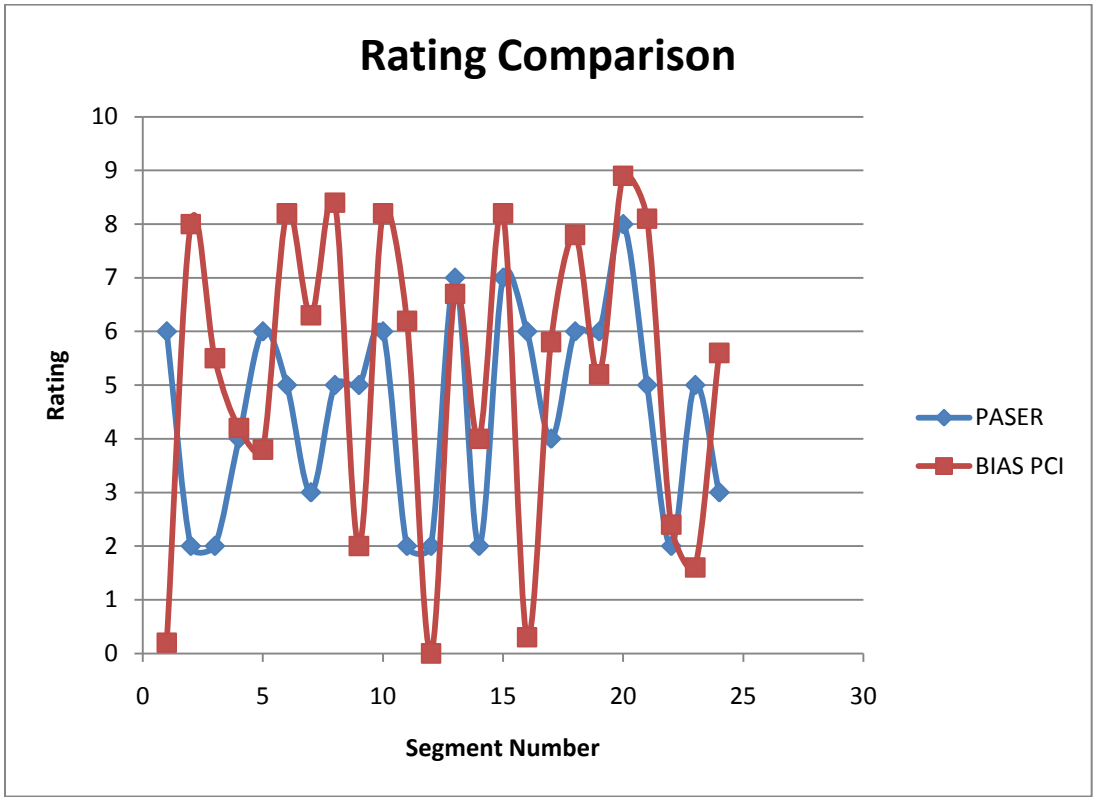

Figure 3: Comparison of PASER and Base 10 PCI Pavement Ratings

The distribution of the pavement ratings for the entire network is shown in Figure 4. This provides and accurate picture of the percentage of the pavement network that each rating represents for both methods of rating the pavement.

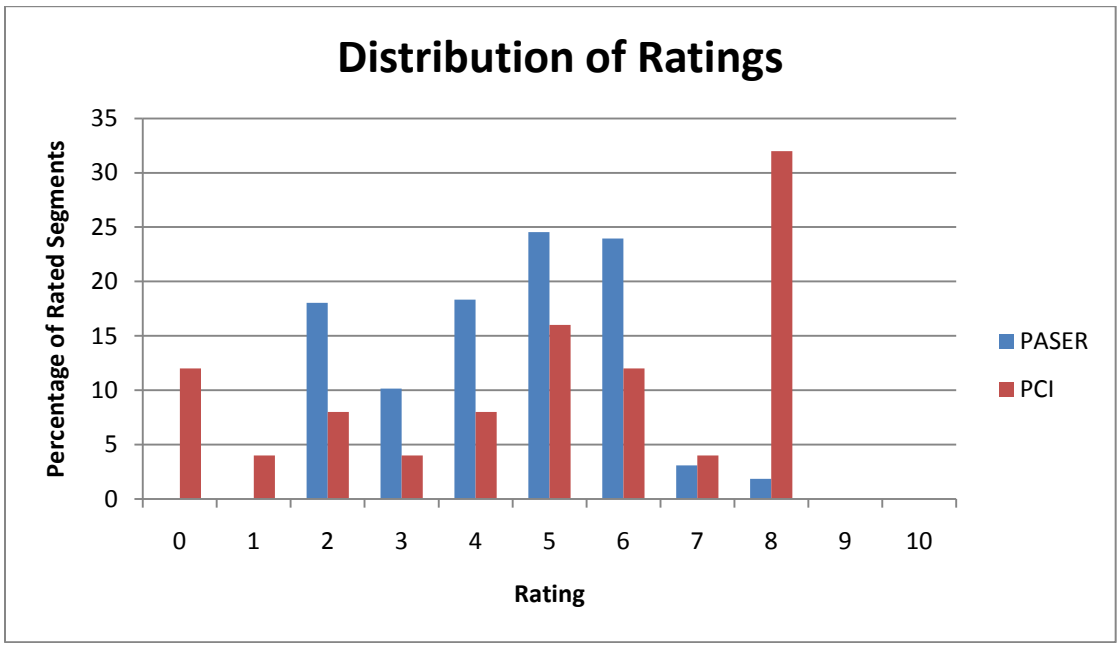

Figure 4: Distribution of Pavement Ratings

To further compare the relationship between the PASER and Base 10 Scale PCI ratings, a scatter plot was made with PASER ratings on the x axis and the PCI rating for the matching segment on the y axis. Segments whose ratings match would fall on the 1:1 equaity line. As Figure 4 illustrates, very few segments fall on the equality line.

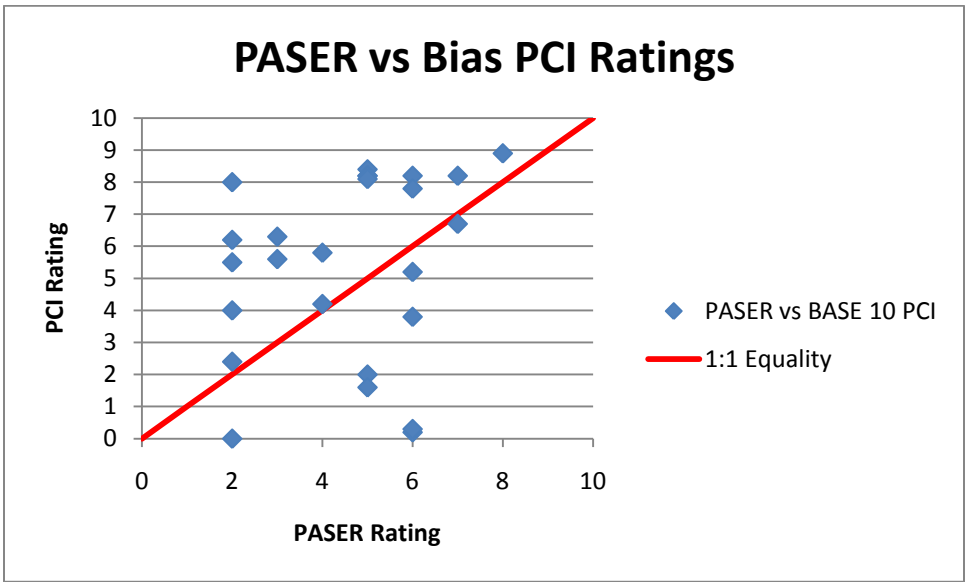

Figure 5: PASER and Base 10 PCI Rating Equality

There are several possible reasons why PASER and PCI do not show a strong correlation. First, the weights for various distresses do not correlate well between the rating systems. Because of this, a certain amount of disagreement between the indices could be expected. The amount of samples used for the PCI survey may not have been enough to provide a good indication of the condition of the individual pavement segments and the overall pavement network. The surveys were performed a year apart which may have led to a difference in the distresses observed. The PASER survey group received formal training while the author had little training in performing the PCI surveys. Finally, the roadway segments used for the PASER analysis were predetermined in RoadSoft, an asset management program used by the Pavement Enterprise at Michigan Tech. Had the segmenting been done differently, a stronger correlation may be found. Finally, several pavement segments stood out as strong outliers in the rating comparison. The distresses found in these outliers have very different outcomes for each distress index.
Of particular interest are the 5th and 6th Avenue segments between Garnet and Vivian streets (segments 5 and 6), Emerald Street between 5th and 6th Avenues (segment 16), and Houghton Avenue between Pearl Street and Townsend Drive (segment 21). There are several possible causes to the extremely large discrepancies between the two types of ratings.

In the case of 5th Avenue, a large distress which was classified as a pothole was present. Although the severity of the pothole was determined to be moderate, the deduct value for the distress was 120. This pothole only represented less than 3 percent of the pavement surface. After all distresses were classified and the corrected deduct value was found, the PCI rating for this pavement was determined to be 2, suggesting a failed pavement. When this pavement segment was PASER evaluated the rating was 6, suggesting pavement in good condition. This rating differential may have occurred because when averaged out, potholes did not represent the entire pavement using PASER and therefore were not given as much consideration as they were in the PCI segment. It is also possible that while performing PASER evaluation of the pavement, the distress was not identified as a pothole.

On 6th Avenue, moderate block cracking and light raveling were detected over 100 percent of the PCI rated segment. This segment received a PCI of 55 due to the amount of block cracking present. When PASER rated the segment was determined to be a 2. This seems to indicate that alligator cracking exists in portions of the segment which were not evaluated using PCI.

On Emerald Street, a PCI rating of 81 was determined based on the amount of distress, the primary distress being raveling. As defined in the PASER manual, slight raveling of a pavement will reduce its rating to 6. Any other distresses present in the pavement would easily reduce its rating to 5.

Houghton Avenue received a PCI rating of 3, mostly due to a single, high-severity pothole. The pavement received a PASER rating of 6, due to the fact that a single

pothole only does not necessarily reduce a pavements rating unless the potholes occur occasionally throughout the pavement segment.

The correlation of the rating systems was rechecked after throwing out the above listed segments in an attempt to see how the ratings would be affected. Using Microsoft Excel, a correlation coefficient of 0.41 was calculated. This correlation is still not very strong, but shows that due to the stressing of different types of distresses by the PASER and PCI rating systems, a strong correlation may not be possible.

Finally, as PCI analysis was performed strictly on a network basis, not enough samples were taken to accurately compare them to PASER ratings on a street or street segment basis.

Conclusions

As previously discussed, network level analysis did not produce a correlation between PCI and PASER ratings for individual segments; however, looking strictly at the network average, PCI and PASER yield similar results. In the particular case of the local access streets in Houghton, MI, both systems yielded the results that the pavements are bordering between poor and fair condition. Low severity raveling was by far the most prevalent distress observed in PCI analysis, a distress that may have went largely unobserved when performing the PASER analysis. The PASER and PCI surveys were performed by students with limited experience in collecting the data which may have resulted in improperly identifying some of the pavement distresses and in doing so adding inaccuracy to the data.

Recommendations

A better method for comparing these pavement evaluating systems may have been to examine the systems at a project, or individual street, level. By providing more PCI samples per street, data may have correlated more with the PASER data. Doing this, however, was outside of the scope of the report and therefore this research should be conducted at a future date to better establish the correlation between PASER and PCI evaluation techniques.

References

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Appendix I-Condition Survey Data Sheets

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 1

BRANCH	5th	SECTION	3	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2200

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
19L	2200									2200	100	16
13M	60	1	1							62	2.8	120
1M	50	60								110	5	38
1H	60									60	2.7	45

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 2

BRANCH	5th	SECTION	16	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2200

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
3L	20	100	40							160	7.3	7
10L	3	10	7							20	0.91	3
19L	2200									2200	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 3

BRANCH	6th	Section	18	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2000

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
3M	2000									2000	100	43
19L	2000	1	1							2000	100	16

SPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 4

BRANCH	7th	SECTION	16	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1M	3	3								6	0.25	11
9H	100	20								120	5	20
9L	50									50	2.1	7
9M	30									30	1.25	5
10M	13									13	0.54	5
10L	13	6	12	15	11	4	8			79	3.3	8
3L	720									720	30	17
7L	30									30	1.25	4
13L	1									1	0	0
19L	2400									2400	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 5

BRANCH	7th	SECTION	24	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1L	400									400	17	40
3L	2000									2000	83	26
4M	9									9	0.375	15
11L	9	56								65	2.7	6
10L	80									80	3.3	9
19L	2400									2400	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 6

BRANCH	8th	SECTION	4	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2200

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
3L	40									40	1.8	3
19L	2200									2200	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 7

BRANCH	10th	SECTION	5	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1L	9	36	15	1						143	6	28
10L	100	12	6							118	5	11
4L	9	9								18	0.75	6
19L	2400									2400	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS CONDITION SURVEY DATA SHEET FOR SAMPLE UNIT							**Table 8**
BRANCH	11th	SECTION	4	SAMPLE UNIT			
SURVEYED BY		DATE		SAMPLE AREA		2400	

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
10L	24									24	0.01	0
19L	2400									2400	100	16
10M	1									1	0	0

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 9

BRANCH	12th	SECTION	2	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1L	1700									1700	71	57
3L	50									50	2	2
7M	3									3	0	0
10L	100									100	4	10
13M	1									1	0	0
1M	400									400	17	54
19L	2400									2400	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 10

BRANCH	Birch	SECTION	11	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2200

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
19L	2200									2200	100	16
10L	22									22	1	3

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 11

BRANCH	Blanche	SECTION	2	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2200

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1L	25	6	6	12						49	2.2	18
4L	6									6	0.27	0
11L	240	70	3	9						322	15	20
11M	3	40	30	4						77	3.5	18
10L	4									4	0.18	0
19L	1500									1500	68	14

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 12

BRANCH	Clark	SECTION	4	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling
5. Corrugation	10. Long & Trans Cracking	15. Rutting	

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1L	1	15								16	0.67	8
1M	40	25								65	2.7	31
3L	144									144	6	6
4H	192									192	8	95
10L	11									11	0.46	0
10M	24	11								35	1.45	12
11L	0.25	2	9	1	1	3	1	3		20.25	0.84	2
19L	2400									2400	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 13

BRANCH	Jasper	SECTION	7	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2000

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
3L	1700									1700	85	26
19L	2000									2000	100	16
11L	2									2	0.125	0
11M	12									12	0.6	7

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 14

BRANCH	Hubbell	SECTION	1	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		3400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1L	20	15	6	6	10					57	1.7	16
10M	6	3	20	8	17					54	1.6	12
11L	3	2	2	6						13	0.38	0
19H	80									80	2.6	23
17H	4									4	0.12	5
11M	3									3	0.09	3
19L	3320									3320	98	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 15

BRANCH	Houghton	SECTION	15	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
19L	2400									2400	100	16
10L	50									50	2.1	6

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 16

BRANCH	Houghton	SECTION	6	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		3800

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
1M	3	1	9							13	0.34	13
3L	2400									2400	63	23
10L	30									30	0.8	2
10H	8	3	45	2	2					60	1.6	25
11H	1									1	0	0
13H	0.5	8								8.5	0.22	73
19H	500									500	13.2	67
19L	3300									3300	87	15

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 17

BRANCH	Hickory	SECTION	7	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2200

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
10L	100	21	7	20	4	22	15	11	15	215	10	17
1L	250									250	10	34
19L	2200									2200	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 18

BRANCH	Garnet	SECTION	13	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
10L	24	6	2	6	3					41	1.7	5
9H	20	20								40	1.67	9
9L	40									40	1.67	3
19L	2400									2400	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 19

BRANCH	Garnet	SECTION	2	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2200

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
11L	3	3	1	1						8	0.36	0
3L	1320									1320	60	23
19L	2200									2200	100	16
3M	680									680	40	31
11M	3									3	0.14	3

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 20

BRANCH	Emerald2	SECTION	5	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2800

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
19L	933	90								1023	37	11

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 21

BRANCH	Emerald 1	Section	4	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2800

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
19L	1900									1900	68	14
1L	54	16	9							79	2.8	1
3L	100									100	3.6	4
10L	4	30	24							58	2.1	6
11L	1									1	0	0

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 22

BRANCH	Vivian	SECTION	3	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2800

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
3M	1400									1400	50	34
3L	1160									1160	41	19
11L	1	1.5	1	1	2	2	2			24	0.85	2
13L	1	1								2	0.08	19
13H	2	0.5								2.5	0.09	53
19L	600	300	60	400						2260	81	14

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 23

BRANCH	Ruby	SECTION	5	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
3M	1800									1800	75	40
1L	9									9	0.375	5
11L	10	6	15	20						51	2.125	5
13H	4	1								5	0.21	72
13M	1	0.5								1.5	0.06	25
7L	50									50	2.1	3

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 24

BRANCH	East	SECTION	3	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2400

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving	
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking	
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell	
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling	
5. Corrugation	10. Long & Trans Cracking	15. Rutting		

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
3M	2100									2100	88	42
19L	2400									2400	100	16

ASPHALT SURFACED ROADS AND PARKING LOTS
CONDITION SURVEY DATA SHEET
FOR SAMPLE UNIT

Table 25

BRANCH	Copper	SECTION	1	SAMPLE UNIT		
SURVEYED BY		DATE		SAMPLE AREA		2000

1. Alligator Cracking	6. Depression	11. Patching & Util Cut Patching	16. Shoving		
2. Bleeding	7. Edge Cracking	12. Polished Aggregate	17. Slippage Cracking		
3. Block Cracking	8. Jt. Reflection Cracking	13. Potholes	18. Swell		
4. Bumps and Sags	9. Lane Shoulder Drop Off	14. Railroad Crossing	19. Weathering/Raveling		
5. Corrugation	10. Long & Trans Cracking	15. Rutting			

DISTRESS SEVERITY	QUANTITY									TOTAL	DENSITY %	DEDUCT VALUE
19L	2000									2000	100	16
10L	18	5	5	10						38	1.9	6

Appendix II-PCI Calculation Iterations

Table 1: 7th Ave. Section 16												
#	Deduct Values									Total	q	CDV
1	20	17	16	11	8	7	5	5	4	93	9	40
2	20	17	16	11	8	7	5	5	2	91	8	40
3	20	17	16	11	8	7	5	2	2	88	7	42
4	20	17	16	11	8	7	2	2	2	85	6	41
5	20	17	16	11	8	2	2	2	2	80	5	40
6	20	17	16	11	2	2	2	2	2	74	4	40
7	20	17	16	2	2	2	2	2	2	65	3	36
8	20	17	2	2	2	2	2	2	2	51	2	37
9	20	2	2	2	2	2	2	2	2	36	1	37
											CDV=	42
											PCI=	58

Table 2: Houghton Ave. Section 6												
#	Deduct Values									Total	q	CDV
1	73	67	25	23	15	13	2			218	6	96
2	73	67	25	23	15	2	2			207	5	95
3	73	67	25	23	2	2	2			194	4	97
4	73	67	25	2	2	2	2			173	3	97
5	73	67	2	2	2	2	2			150	2	94
6	73	2	2	2	2	2	2			85	1	85
7												
8												
9												
											CDV=	97
											PCI=	3

Table 3: 5th Ave. Section 1												
#	Deduct Values									Total	q	CDV
1	120	45	38	16						219	4	98
2	120	17	16	2						155	3	94
3	120	17	2	2						141	2	89
4	120	2	2	2						126	1	100
5												
6												
7												
8												
9												
											CDV=	100
											PCI=	0

Table 4: 11th Ave. Section 4												
#	Deduct Values									Total	q	CDV
1	16									16	1	16
2												
3												
4												
5												
6												
7												
8												
9												
											CDV=	16
											PCI=	84

Table 5: 12th Ave. Section 2												
#	Deduct Values									Total	q	CDV
1	57	54	16	10	2					139	4	77
2	57	54	16	2	2					131	3	78
3	57	54	2	2	2					117	2	80
4	57	2	2	2	2					65	1	65
5												
6												
7												
8												
9												
											CDV=	80
											PCI=	20

Table 6: Jasper Section 7												
#	Deduct Values									Total	q	CDV
1	26	16	7							49	3	32
2	26	16	2							44	2	33
3	26	2	2							30	1	30
4												
5												
6												
7												
8												
9												
											CDV=	33
											PCI=	67

Table 7: Hickory Section 7												
#	Deduct Values									Total	q	CDV
1	34	17	16							67	3	42
2	34	17	2							53	2	39
3	34	2	2							38	1	38
4												
5												
6												
7												
8												
9												
											CDV=	42
											PCI=	58

Table 8 10th Ave. Section 5												
#	Deduct Values									Total	q	CDV
1	28	16	11	6						61	4	33
2	28	16	11	2						57	3	37
3	28	16	2	2						48	2	36
4	28	2	2	2						34	1	34
5												
6												
7												
8												
9												
											CDV=	37
											PCI=	63

Table 9: 7th Ave. Section 24												
#	Deduct Values									Total	q	CDV
1	40	26	16	15	9	6				112	6	62
2	40	26	16	15	9	2				108	5	58
3	40	26	16	15	2	2				101	4	58
4	40	26	16	2	2	2				88	3	56
5	40	26	2	2	2	2				74	2	52
6	40	2	2	2	2	2				50	1	50
7												
8												
9												
											CDV=	62
											PCI=	38

Table 10: 6th Ave. Section 18												
#	Deduct Values									Total	q	CDV
1	43	16								59	2	42
2	43	2								45	1	45
3												
4												
5												
6												
7												
8												
9												
											CDV=	45
											PCI=	55

Table 11: Houghton Ave. Section 15												
#	Deduct Values									Total	q	CDV
1	16	6								22	2	14
2	16	2								18	1	18
3												
4												
5												
6												
7												
8												
9												
											CDV=	18
											PCI=	82

Table 12: 5th Ave. Section 16												
#	Deduct Values									Total	q	CDV
1	16	7	3							26	3	14
2	16	7	2							25	2	19
3	16	2	2							20	1	20
4												
5												
6												
7												
8												
9												
											CDV=	20
											PCI=	80

Table 13: 8th Ave. Section 4												
#	Deduct Values									Total	q	CDV
1	16	3								19	9	13
2	16	2								18	8	18
3												
4												
5												
6												
7												
8												
9												
											CDV=	18
											PCI=	82

Table 14: Emerald (Western) St. Section 4												
#	Deduct Values									Total	q	CDV
1	14	6	4	1						25	3	14
2	14	6	2	1						23	2	17
3	14	2	2	1						19	1	19
4												
5												
6												
7												
8												
9												
											CDV=	19
											PCI=	81

Table 15: Emerald (Eastern) St. Section 5												
#	Deduct Values									Total	q	CDV
1	11									11	1	11
2												
3												
4												
5												
6												
7												
8												
9												
											CDV=	11
											PCI=	89

Table 16: Vivian St. Section 3												
#	Deduct Values									Total	q	CDV
1	53	34	19	19	14	2				141	5	70
2	53	34	19	19	2	2				129	4	76
3	53	34	19	2	2	2				112	3	70
4	53	34	2	2	2	2				95	2	68
5	53	2	2	2	2	2				63	1	63
6												
7												
8												
9												
											CDV=	76
											PCI=	24

Table 17: Clark St. Section 4												
#	Deduct Values									Total	q	CDV
1	95	31	16	12	8	6	2			170	6	82
2	95	31	16	12	8	2	2			166	5	84
3	95	31	16	12	2	2	2			160	4	87
4	95	31	16	2	2	2	2			150	3	88
5	95	31	2	2	2	2	2			136	2	88
6	95	2	2	2	2	2	2			107	1	100
7												
8												
9												
											CDV=	100
											PCI=	0

Table 18: Blanche St. Section 2												
#	Deduct Values									Total	q	CDV
1	20	18	18	14						70	4	38
2	20	18	18	2						58	3	37
3	20	18	2	2						42	2	32
4	20	2	2	2						26	1	26
5												
6												
7												
8												
9												
											CDV=	38
											PCI=	62

Table 19: Hubbell St. Section 1												
#	Deduct Values									Total	q	CDV
1	33	23	16	16	12	5	3			108	7	52
2	33	23	16	16	12	5	2			107	6	52
3	33	23	16	16	12	2	2			104	5	60
4	33	23	16	16	2	2	2			94	4	54
5	33	23	16	2	2	2	2			80	3	50
6	33	23	2	2	2	2	2			66	2	48
7	33	2	2	2	2	2	2			45	1	45
8												
9												
											CDV=	60
											PCI=	40

Table 20: East St. Section 3												
#	Deduct Values									Total	q	CDV
1	42	16								58	2	43
2	42	2								44	1	44
3												
4												
5												
6												
7												
8												
9												
											CDV=	44
											PCI=	56

Table 21: Copper St. Section 1												
#	Deduct Values									Total	q	CDV
1	16	6								22	2	15
2	16	2								18	1	18
3												
4												
5												
6												
7												
8												
9												
											CDV=	18
											PCI=	82

Table 22: Garnet St. Section 13												
#	Deduct Values									Total	q	CDV
1	16	9	5	3						33	4	14
2	20	17	16	2						55	3	35
3	20	17	2	2						41	2	28
4	20	2	2	2						26	1	26
5												
6												
7												
8												
9												
											CDV=	35
											PCI=	65

Table 23: Ruby St.												
#	Deduct Values									Total	q	CDV
1	72	40	25	5	5	3				150	6	72
2	72	40	25	5	5	2				149	5	78
3	72	40	25	5	2	2				146	4	82
4	72	40	25	2	2	2				143	3	84
5	72	40	2	2	2	2				120	2	82
6	72	2	2	2	2	2				82	1	82
7												
8												
9												
											CDV=	84
											PCI=	16

Table 24: Garnet St. Section 2												
#	Deduct Values									Total	q	CDV
1	31	23	16	3						73	4	37
2	31	23	16	2						72	3	48
3	31	23	2	2						58	2	42
4	31	2	2	2						37	1	37
5												
6												
7												
8												
9												
											CDV=	48
											PCI=	52

Table 25: Birch St. Section												
#	Deduct Values									Total	q	CDV
1	16	3								19	2	12
2	16	2								18	1	18
3												
4												
5												
6												
7												
8												
9												
											CDV=	18
											PCI=	82