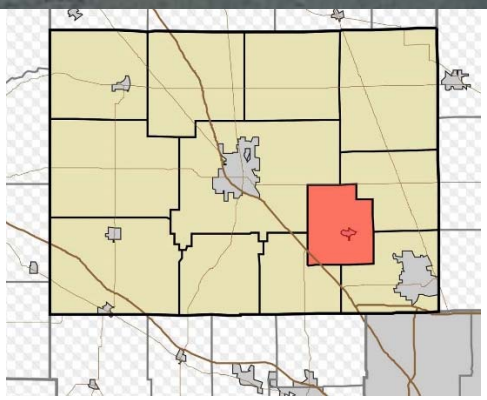
November 24, 2015

PAVEMENT SURFACE EVALUATIONAND RATING STUDY – WHITESTOWN, INDIANA

2015 - PASER

PREPARED FOR:

TOWN OF WHITESTOWN
BOONE COUNTY, INDIANA



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Section A

PASER RATING MAINTENANCE RECOMMENDATIONS A-1
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PAVEMENT SURFACE EVALUATION AND RATING STUDY (PASER)

Whitestown, Indiana

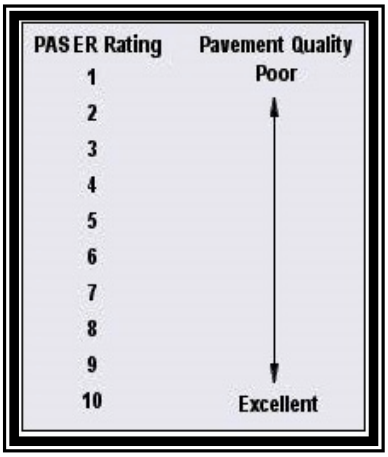
By Greg R. Wendling, P.E.
USI Consultants, Inc.
November 24, 2015

A. PURPOSE OF REPORT:

The purpose of this report is to provide the Town of Whitestown an accurate assessment of their current roadway condition, and help guide upcoming roadway maintenance and repairs.

The scope of this project was to evaluate all asphalt and concrete roadways within the Town of Whitestown's jurisdiction, utilizing the PASER guidelines. The Complete PASER Manual for evaluating HMA and concrete roadways is attached to this report in Appendix B.

B. WHAT IS THE PASER SYSTEM ?:



The Pavement Surface Evaluation and Rating (PASER) system visually evaluates the condition of road segments. The PASER system rates each segment on a scale of 1 – 10 with 1 being the worst condition and 10 being the best condition (new pavement). Ratings of 1 to 3 indicate Poor Condition, 4 to 5 represent Fair, and 6 to 10 represent Good Condition.

PASER also recommends needed maintenance or repair, based on the condition of the roadway. A description of visible distress and recommended treatment measures are provided on a summary sheet, page A-1 of the appendix.

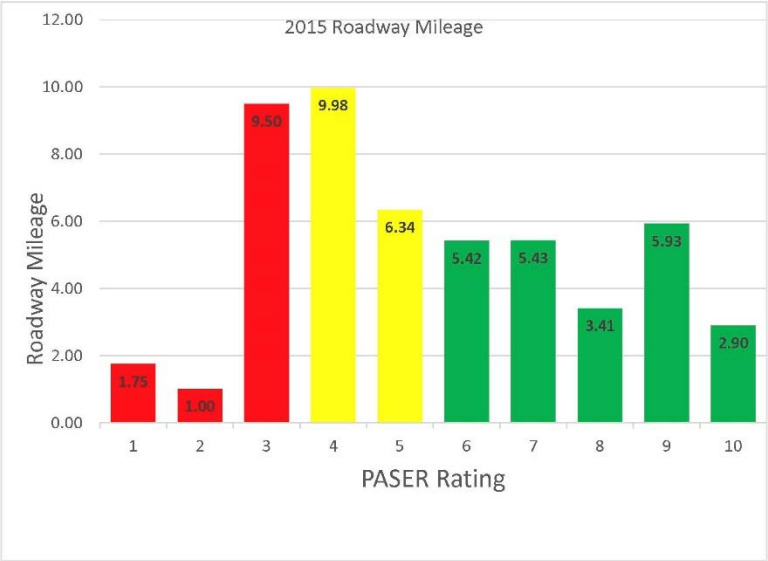
C. STUDY METHODOLOGY:

USI utilized a two-man data collection team. Data for the 2015 year was collected between July 15 and July 28. Each roadway segment was driven, width measured, abnormalities noted, and photographed. The data collection team was looking closely at each roadway segment for surface defects, such as raveling or polishing, surface deformation, such as rutting or rippling, cracks and areas of patching At the end of the segment, the team discussed the roadway and documented on a data collection sheet the factors that resulted in the segment rating. All segments were entered into a spreadsheet that will allow for easy data presentation. The spreadsheet also includes direct hyperlinks to the photograph of the roadway and the data collection sheet.

D. WHITESTOWN ROADWAY NETWORK:

Whitestown is responsible for over 51 miles of roadway. There a 0.5mile of concrete roads, with the remainder being asphalt roads. This roadway PASER study covers both HMA and concrete roadways.

Results of the 2015 PASER Ratings are shown below in chart form



A color coded map of the Whitestown's road network is included on page A-2 of the Appendix

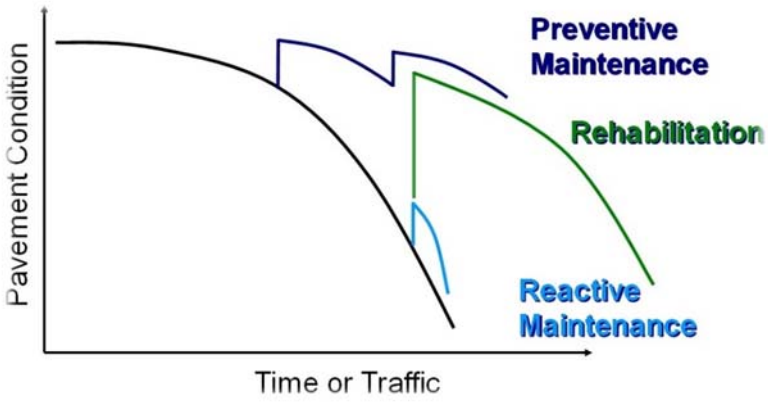
E. HOW TO USE THE PASER DATA:

The 2015 PASER data is in spreadsheet form, as well as shapefiles provided for use in the Whitestown's GIS system. Whitestown personnel can easily sort this data in a variety of ways. Possible data sorting scenarios include the following:

-All Data sorted by PASER rating (low to high)
-Collector Roads sorted by PASER rating
-Roads requiring reconstruction sorted by Traffic Volume
-numerous other scenarios, as desired by the Town of Whitestown

F. PAVEMENT MAINTENANCE:

Left alone pavements will typically deteriorate over time at an ever-increasing rate. Maintenance and rehabilitation can slow or reverse this deterioration. The degree to which this occurs is dependent on the type of maintenance or rehabilitation as well as the timing of such actions. In general, an early and systematic maintenance and rehabilitation plan is the most cost effective and results in the



greatest extension of useful pavement life. This concept is further illustrated in the figure to the right and the tables below outline the proposed maintenance on Whitestown's Roadways and the estimated costs associated with the implementation of such a program. Maintenance items such as crack sealing and seal coating are low cost treatments that can be performed on higher PASER rated roadways to keep the pavement in good condition and extend the overall life of the pavement.

G. COST CONSIDERATIONS:

Improvements to Whitestown's Roadways Rated 4 or Below: Structural improvements are recommended for Roadways Rated 4 or below. The adjacent table shows the assumptions made, and are based on PASER recommendations. Note: for cost consideration purposes, the concrete roadways and HMA roadways are being treated the same, as the concrete roadways make up such a small percentage of Whitestown's roadway network.

Recommended Improvements based on PASER Ratings	
PASER Rating	Proposed Treatment
1	Reconstruct with 8" HMA
2	Reconstruct with 8" HMA
3	Mill, Overlay with 2" HMA, full depth patching of 25%
4	Mill, Overlay with 1.5" HMA, full depth patching of 5%

The following table summarizes the anticipated costs associated with Whitestown's roads with PASER ratings of 4 or below:

COST SUMMARY			
PASER Rating	Number of Lane Miles*	Cost of Treatment per Lane Mile*	Total Cost of Improvements
1	3.2	$371,000	$1,190,000
2	1.6	$371,000	$590,000
3	20.4	$146,000	$2,980,000
4	25.7	$76,000	$1,950,000
			$6,710,000

**A Lane Mile is defined as one 11' lane times 1 mile in length (i.e. A 20' wide roadway one mile in length equals 1.82 Lane Miles.*

H. FUTURE USE OF PASER DATA:

The data collected and the tools developed through this study provide a baseline for the condition of the Whitestown roadway network at the time of this study. However, the conditions of roadways are always changing, therefore, it is recommended that Whitestown make PASER evaluations a regular part of their maintenance program. Routine inspections should be performed and all pavements should be evaluated and conditions documented at least once every two years. The baseline information developed through this study, combined with data obtained through subsequent PASER Evaluations will provide Whitestown with useful information on the adequacy of current roadway maintenance and reconstruction practices. It is recommended that Whitestown evaluate their roadway system on a two year cycle.

I. RECOMMENDATIONS:

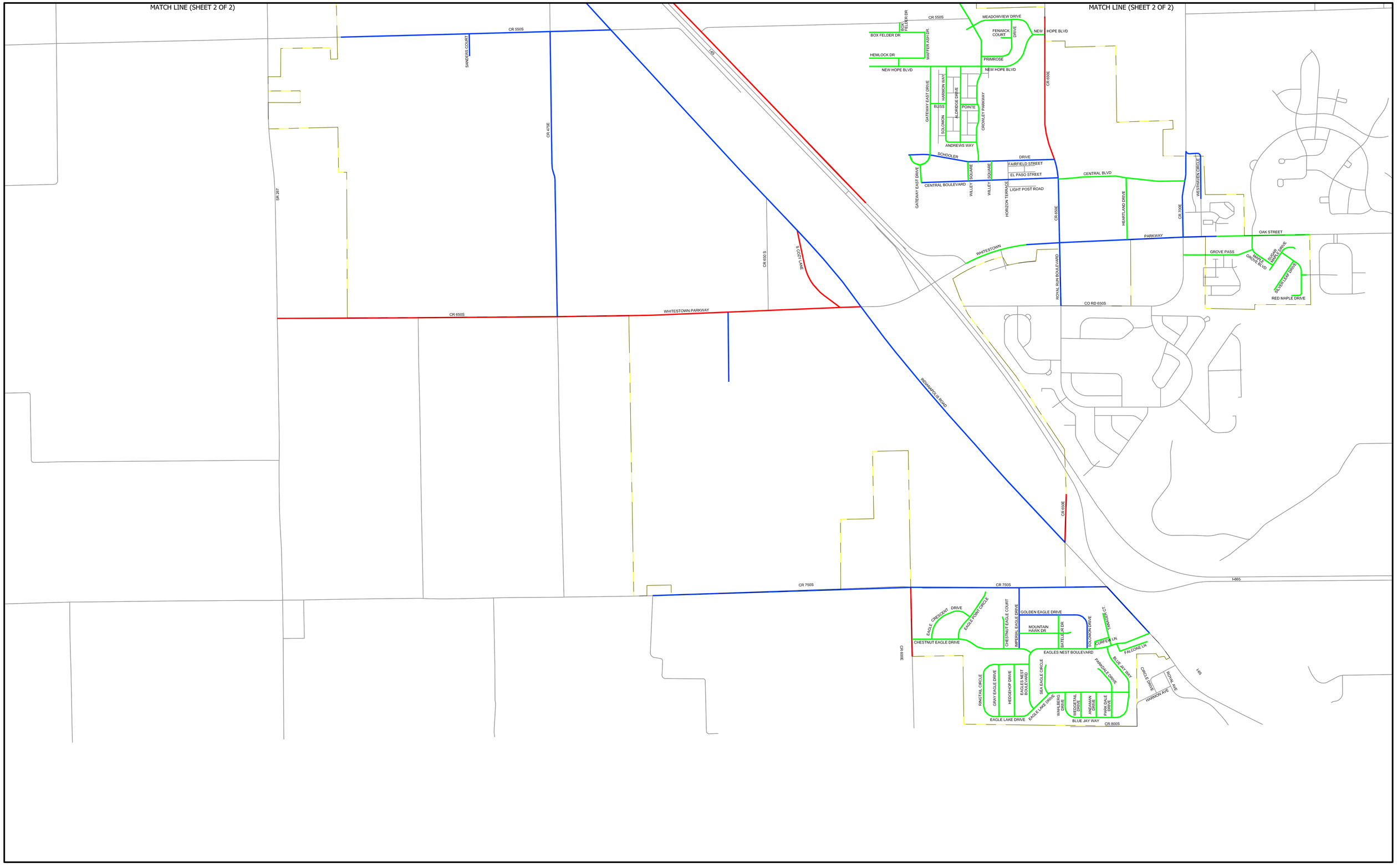
It is recommended that Whitestone utilize this PASER data as a tool to assist with a complete Pavement Maintenance Program, which includes reconstructing the roadways that have failed, rehabilitating roadways before they fail, and maintaining roadways with crack sealing and seal coating before they need rehabilitation.

Appendix A

Rating system

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 than ¼″).	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 ¼″) due to reflection or paving joints. Transverse cracks (open ¼″) 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 ¼″–½″). Transverse cracks (open ¼″–½″), some spaced less than 10′. First sign of block cracking. Sight to moderate flushing or polishing. Occasional patching in good 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 ½″ or more) 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 (½″ deep or less).	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 (greater than ½″ but less than 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 rutting or distortions (2″ or more 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.

** Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.*



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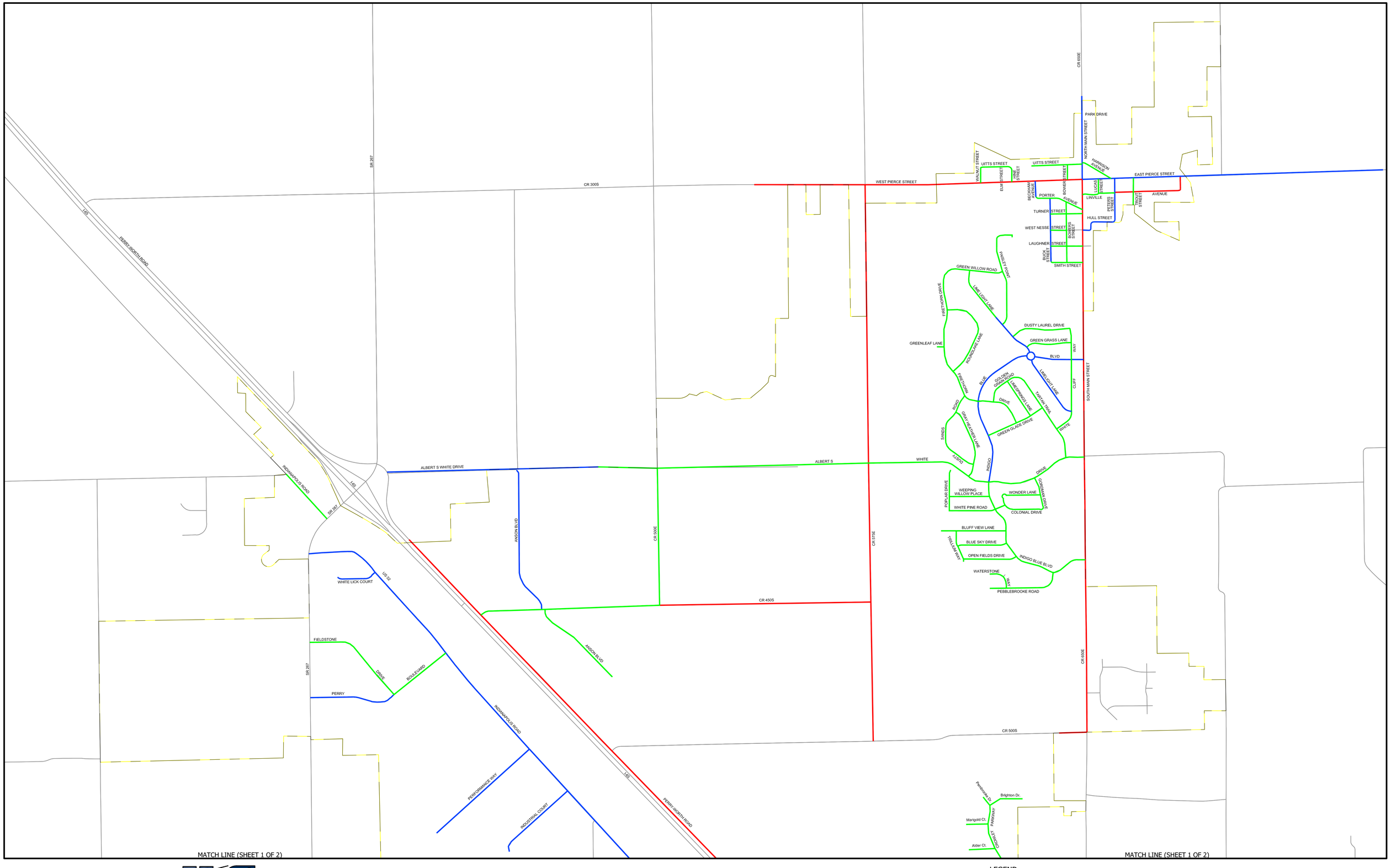
Whitestown PASER Rating Road Inventory

LEGEND
- 1-3 (POOR)
- 4-5 (FAIR)
- 6-10 (GOOD)
- CORPORATE LIMIT

N W E S

0 750 1500 3000
SCALE: 1 in. = 750 ft.



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