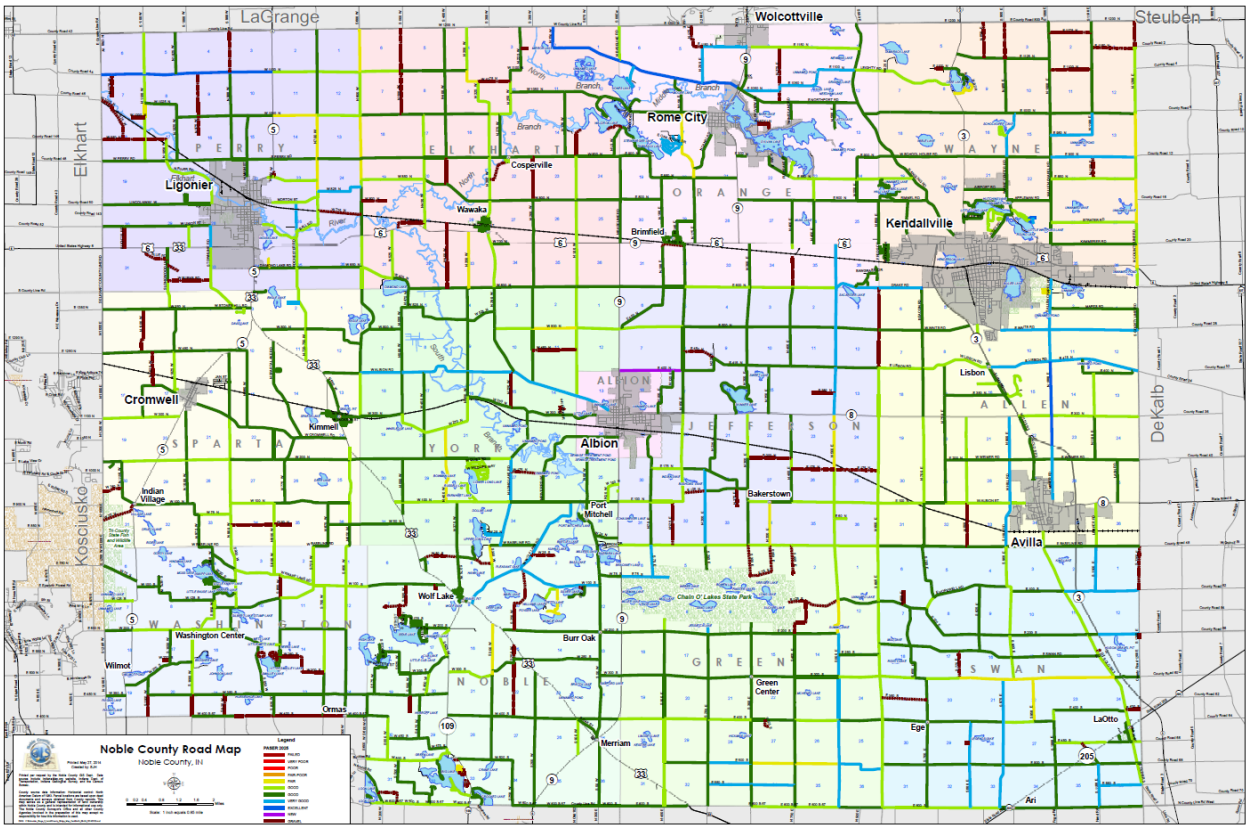
Noble County Highway Department

Transportation Asset Management - Highways

2025 Road Evaluation Report



2025 County Wide Road Rating Map

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Date: May 12, 2025

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Purpose

The Noble County Road Evaluation Report was developed as a diagnostic tool for the Noble County Pavement Management Program. This report provides road condition data, updated annually, to be utilized during funding prioritization and long-term transportation planning.

Roads are the foundation of any transportation network and keeping updated condition ratings is key in developing cost-effective strategies to maintain a serviceable highway network. The Pavement Asset Management Program consists of two basic components: (1) A comprehensive database, which contains current and historical information on pavement condition, pavement history and traffic volume and (2) an engineering method to determine pavement rehabilitation needs, detailed cost estimate of repairs and prioritization of roadway projects within the entire system. This report fulfills the former (1), while the annual Road Rehabilitation and Maintenance Plan fulfills the later (2).

Pavement Management

The Noble County Highway Department utilizes a combined version of the Pavement Surface Evaluation and Rating (PASER) tool, which uses both the Chip and Seal and Asphalt rating tools. The system was developed by the University of Wisconsin, Madison Transportation Information Center and endorsed by Indiana Local Technical Assistance Program (LTAP.)

PASER is a pavement rating system that uses a “1” to “10” rating scale. Condition ratings are assigned by visually assessing the cumulative pavement defects and deterioration for each individual road segment.

The rate at which pavement deteriorates depends on a variety of factors: the environment, traffic loading conditions, original construction quality, road design and maintenance procedures and frequency. Poor quality materials or poor construction procedures can significantly reduce the life of a pavement. On the other hand, the correct application of preservation techniques and rehabilitation can significantly extend pavement life at a fraction of the cost of reconstruction.

Periodic inspection is necessary to provide current evaluation data, to track pavement decay and predict future deterioration. Noble County conducts annual road condition inspections in the spring, typically in early April, weather dependent.

PASER Rating System

A roadway given the rating of “1” represents a roadway that has complete structural failure. The pavement surface with this rating displays excessive surface distress and loss of structural integrity; the roadway surface is failed and needs total reconstruction. A rating of “9” indicates the pavement surface is in excellent condition, displaying no visible signs of distress, and having a quality rating of new construction. A rating of "10" is used as a placeholder for new roads, while a rating of "0" is used to designate gravel roads.

Roads with PASER ratings of 8-9 (Excellent - Very Good) require only routine maintenance such as: ditch cleaning, shoulder grading and minor patching or sealing.

Roads with PASER ratings of 6-7 (Good) require preservation applications, such as crack sealing, surface sealing or pavement rejuvenation. These applications address minor deficiencies and provide additional protection at a fraction of the cost of reconstruction. Preservation techniques are the most cost-effective treatments to extend the surface life of roadways.

Roads with PASER ratings of 4-5 (Fair) require rehabilitation, such as patching, wedging or leveling using hot mix asphalt (HMA) combined with a complete surface seal, such as a double chip and seal or HMA overlay. The purpose of rehabilitation is to address minor structural issues and seal the roadway before it requires major reconstruction. Rehabilitation is more costly than preservation, but considerably more cost effective than reconstruction.

Roads with PASER ratings of 1-3 (Poor - Failed) require structural improvements, such as partial depth reconstruction (PDR), full depth reclamation (FDR) or reconstruction. These methods are the least cost-effective approach, but are required to regain structural integrity. See Figure 2 for more details on the modified PASER ratings.

Noble County Highway Network

The Noble County road network consists of 812.22 center-line miles of paved and gravel roads. This network does not include State Routes (US 33, US 6, SR 3, SR 5, SR 205, SR 109 and SR 9), city streets located inside incorporated cities/towns (Kendallville, Ligonier, Albion, Avilla, Rome City, Cromwell and Wolcottville) or private roads. The roads in the network have four different local classifications, Primary, Secondary, Rural and Residential (Town/Subdivision/Lake Roads), see *Figure 1 – Road Classifications*.

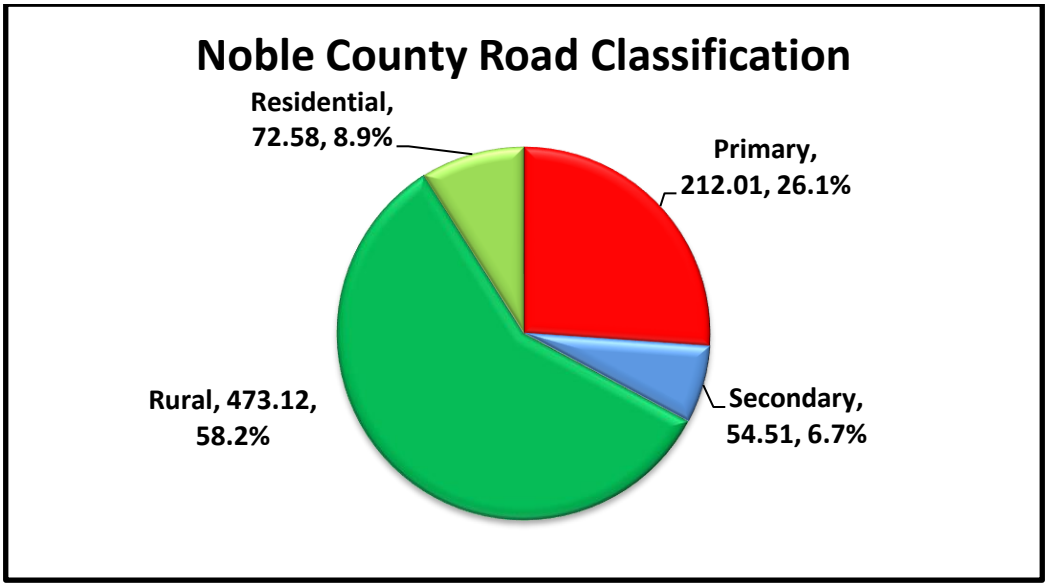

Figure 1 - Road Classifications

Rating	Definition	Visible Distress	Treatment Measures
10	Excellent	None.	New construction.
9	Excellent	None.	Recent overlay, reclamation or reconstruction.
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 1⁄4”).	Recent sealcoat or preservation application. Little or no maintenance required.
7	Good	Very slight or no raveling, surface shows some traffic wear. Minor longitudinal cracks due to reflection or paving joints. Transverse cracks spaced ~10’ or more apart, little or slight crack raveling. No patching or few patches.	First signs of aging. Maintain with crack filling or crack sealing.
6	Good	Slight raveling and traffic wear. Longitudinal cracks, some spaced less than 10’. First sign of block cracking. Slight to moderate flushing or polishing. Occasional patching.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.
5	Fair	Moderate to severe raveling. Longitudinal and transverse cracks show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs minor patching or wedging and surface seal or HMA overlay.
4	Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Severe block cracking. Patching in fair condition. Slight rutting or distortions.	Significant aging and in need of strengthening. Needs major patching or wedging and surface seal or HMA overlay.
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. Occasional potholes.	Needs patching and repair prior to major overlay (4"+) or reconstruction / reclamation.
2	Very Poor	Major alligator cracking. 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.	Needs total reconstruction.
0	Gravel	Gravel surface.	Periodic Grading

Figure 2 - Rating Table (based on PASER Asphalt and PASER Sealcoat Manuals)

Major and Minor Collectors (Primary Roads) consist of 26% of the road system. These roads are eligible for Federal Highway Administration funding for construction and reconstruction. These roads usually carry high volumes of traffic and provide connection between State Routes and Cities/Towns. Local Roads (Rural & Secondary) comprise of about 65% of the county road network and generally consist of the north-south, east-west "grid network" of roads. The remaining 9% are residential, consisting of Town, Subdivision, and Lake Area roads. These roads are located in unincorporated Towns (Kimmell, Wolf Lake, Wawaka, Brimfield, LaOtto, etc.), Subdivisions (Noble Hawk, Cobblestone, etc.), and around the numerous county lakes.

The County Highway Department is responsible for keeping road records for the County Arterial Highway System on the County GIS system. The County Arterial Highway System (or network) is certified by the Indiana Department of Transportation (INDOT), which allows Noble County to receive funding distributions from the State for road maintenance (Local Road & Street Funds and Motor Vehicle Highway Funds). The Highway Department monitors all additions, deletions, or revisions to the Arterial Highway System. On an annual basis, changes are submitted to the County Commissioners for approval and forwarded to INDOT for certification.

2025 Road Ratings

Using the PASER system, the road condition ratings were most recently compiled in May of 2025. Each county road was driven and rated utilizing visual inspection, the condition rating (1 to 10) was recorded in County GIS system. *Figure 3 - 2025 Road Ratings*, *Figure 4 - 2025 Road Condition* and *Table 1 - 2025 Road Ratings* shows the results of these ratings.

2025 County Wide Road Ratings			
Rating	Mileage	Percentage	Weight Rating
9 - Excellent	12.59	1.5%	0.15
8 - Very Good	72.02	8.9%	0.78
7 - Good	441.34	54.3%	4.16
6 - Good	187.50	23.1%	1.51
5 - Fair	29.53	3.6%	0.20
4 - Fair/Poor	0.00	0.0%	0.00
3 - Poor	0.00	0.0%	0.00
2 - Very Poor	0.00	0.0%	0.00
1 - Failed	0.00	0.0%	0.00
0 - Gravel	69.24	8.5%	N/A
Total:	812.22	100.0%	6.80

Table 1 - 2025 Road Ratings

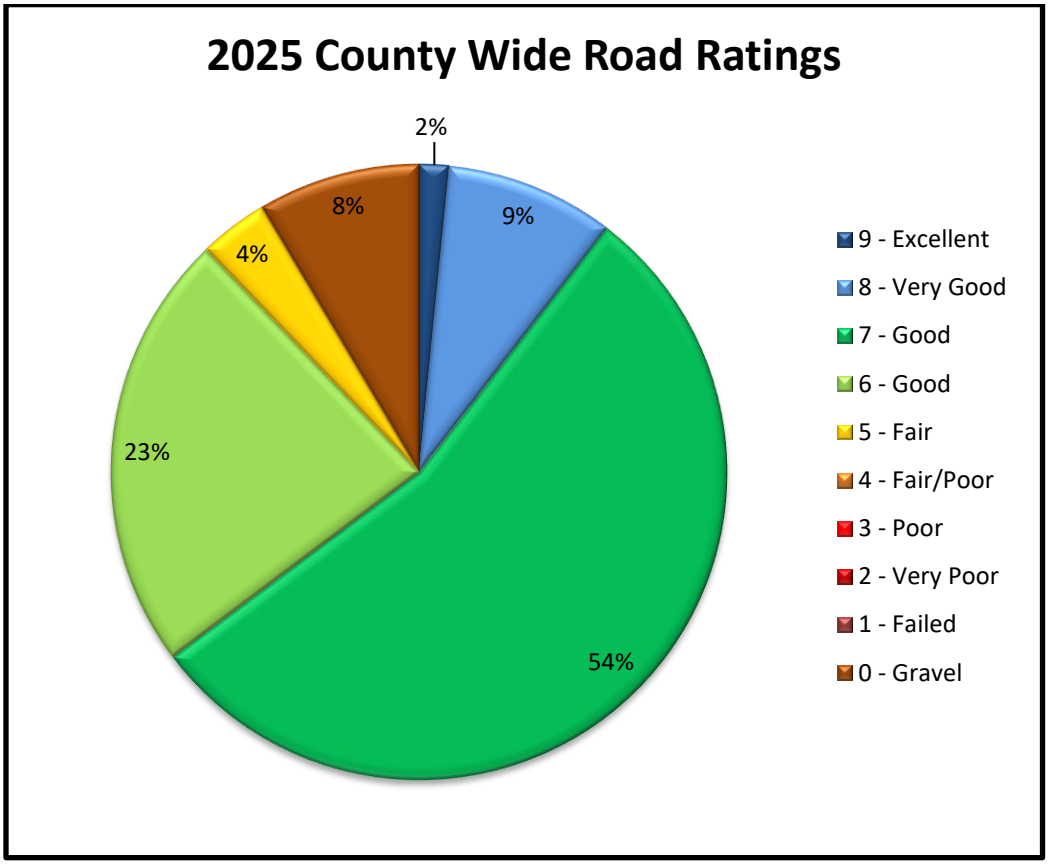

Figure 3 - 2025 County Wide Road Ratings

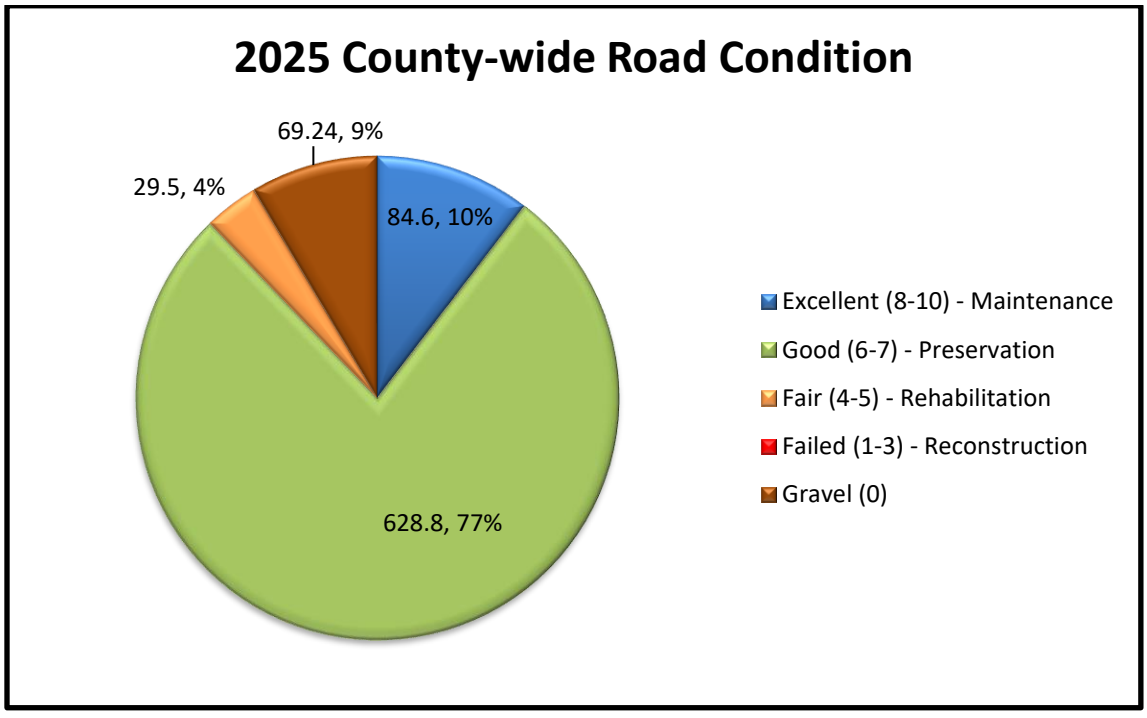

Figure 4 - 2025 County Wide Road Condition

Using this methodology, approximately 10% of the road network is in excellent to very good condition (Ratings 8, 9, and 10), 77% are in good condition (Ratings 6 and 7), 4% are in fair condition (Ratings 4 and 5) and 0% are in poor condition (Ratings 1, 2 and 3.) The remaining 9% are gravel roads which are not applicable. This correlates to an average rating of 6.80, which is a decrease from the 2024 rating of 6.88.

Primary Roads

A separate analysis was conducted for Primary Roads. *Figure 5 - 2025 Primary Road Ratings*, *Figure 6 - 2025 Primary Road Repairs* and *Table 2 - 2025 Primary Road Ratings* shows the results of these ratings.

2025 Primary Road Rating			
Rating	Mileage	Percentage	Weight Rating
9 - Excellent	8.35	3.9%	0.35
8 - Very Good	29.24	13.8%	1.10
7 - Good	114.12	53.8%	3.77
6 - Good	48.61	22.9%	1.38
5 - Fair	11.70	5.5%	0.28
4 - Fair/Poor	0.00	0.0%	0.00
3 - Poor	0.00	0.0%	0.00
2 - Very Poor	0.00	0.0%	0.00
1 - Failed	0.00	0.0%	0.00
0 - Gravel	0.00	0.0%	N/A
Total:	212.01	100.0%	6.88

Table 2 - 2025 Primary Road Ratings

Approximately 18% of the primary road network is in excellent to very good condition (Ratings 8, 9, and 10), 77% are in good condition (Ratings 6 and 7), 5% are in fair condition (Ratings 4 and 5) and 0% are in poor condition (Ratings 1, 2 and 3.) There are no gravel roads within the primary road network. This correlates to an average rating of 6.88, which is an increase from the 2024 rating of 6.74.

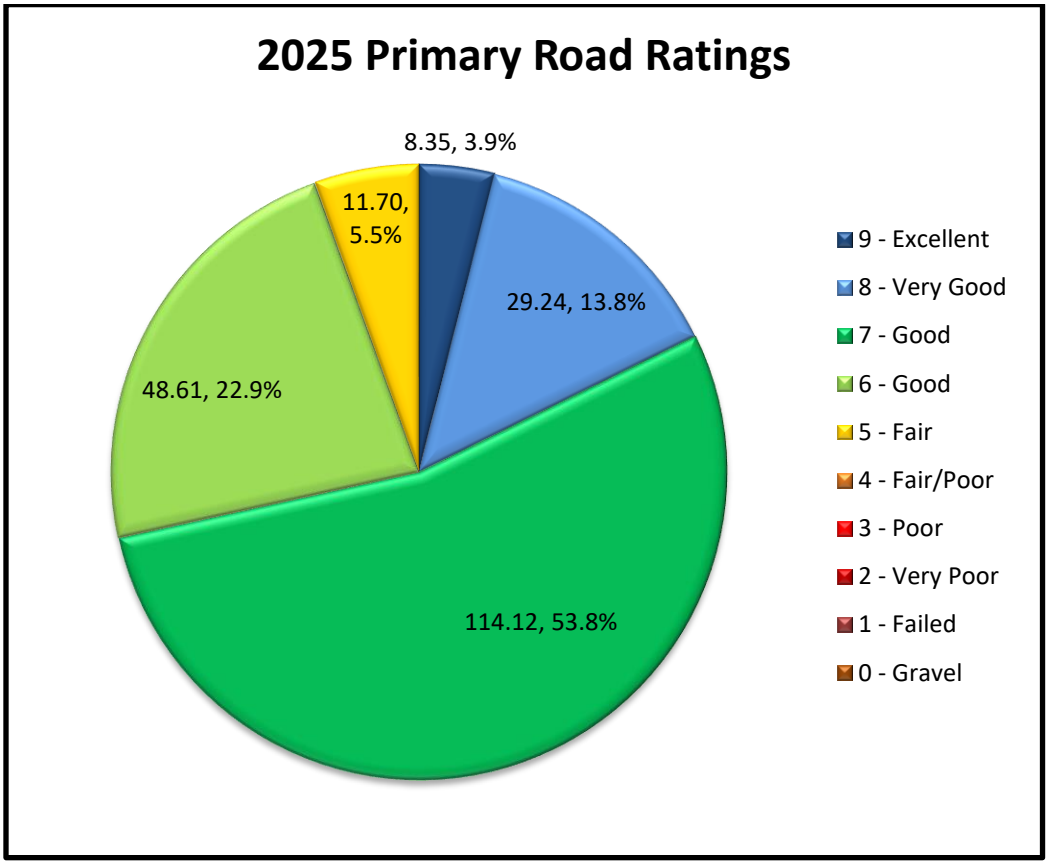

Figure 5 - 2025 Primary Road Ratings

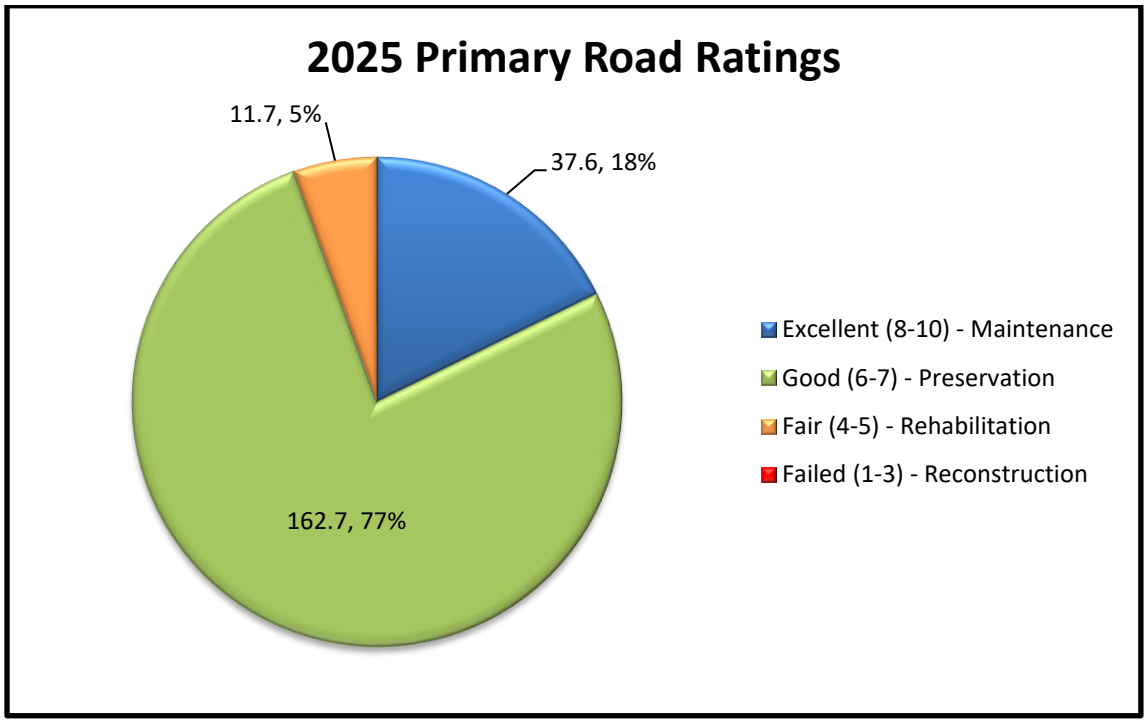

Figure 6 - 2025 Primary Road Condition

Residential

A separate analysis was conducted for Residential Roads (Town/Subdivision/Lake Roads.) *Figure 7 - 2025 Residential Road Ratings*, *Figure 8 - 2015 Primary Road Repairs* and *Table 3 - 2025 Residential Road Ratings* shows the results of these ratings.

2025 Residential Road Rating			
Rating	Mileage	Percentage	Weight Rating
9 - Excellent	0.28	0.4%	0.04
8 - Very Good	5.43	7.5%	0.65
7 - Good	43.98	60.6%	4.63
6 - Good	13.81	19.0%	1.25
5 - Fair	2.95	4.1%	0.22
4 - Fair/Poor	0.00	0.0%	0.00
3 - Poor	0.00	0.0%	0.00
2 - Very Poor	0.00	0.0%	0.00
1 - Failed	0.00	0.0%	0.00
0 - Gravel	6.14	8.5%	N/A
Total:	72.58	100.0%	6.79

Table 3 - 2025 Residential Road Ratings

Approximately 8% of the residential road network is in excellent to very good condition (Ratings 8, 9, and 10), 80% are in good condition (Ratings 6 and 7), 4% are in fair condition (Ratings 4 and 5) and 0% are in poor condition (Ratings 1, 2 and 3.) There are 6 miles of gravel roads within the residential road network, which is 8.5% of the residential network. This correlates to an average rating of 6.79, which is a decrease from the 2024 rating of 6.92.

In 2016, the residential network was rated significantly lower than the overall network and a 5-year plan was developed to have road improvements completed on all subdivisions by 2021. With the five-year plan fully implemented, we achieved the goal of an average rating of 7 or higher in 2020, with no subdivisions in poor condition. Going forward the goal will be to continue to maintain an average rating of 7 or higher.

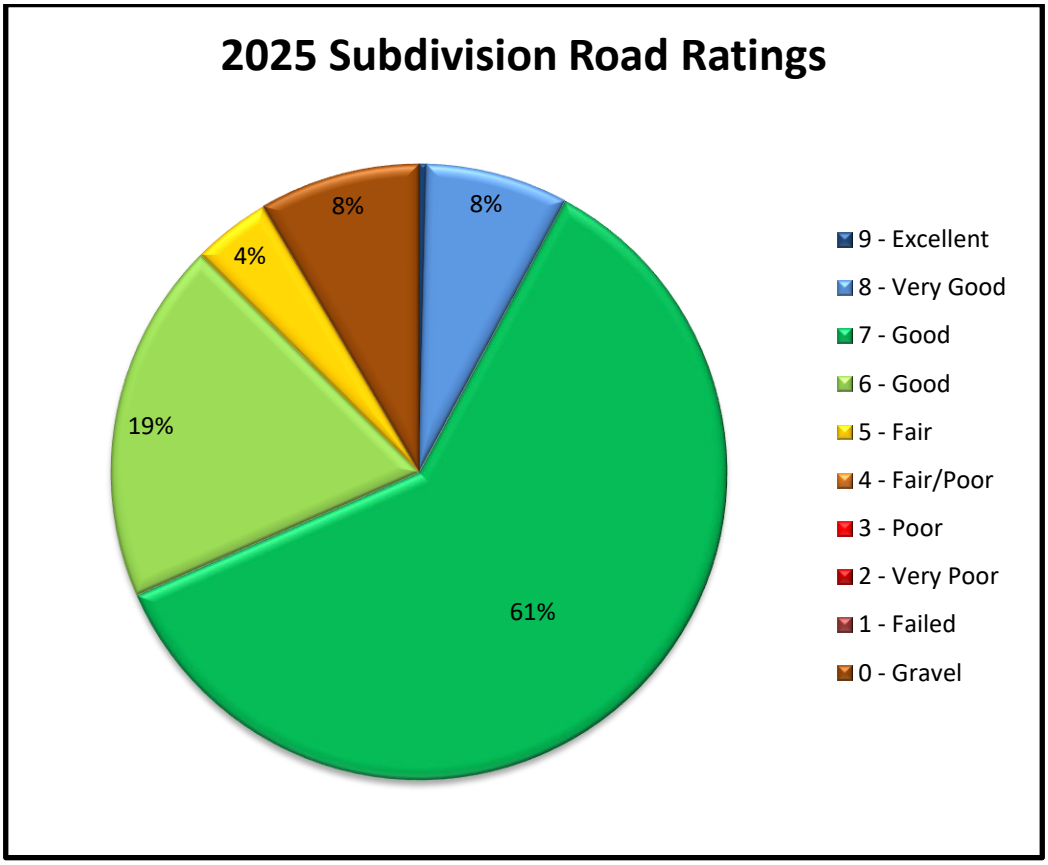

Figure 7 - 2025 Residential Road Ratings

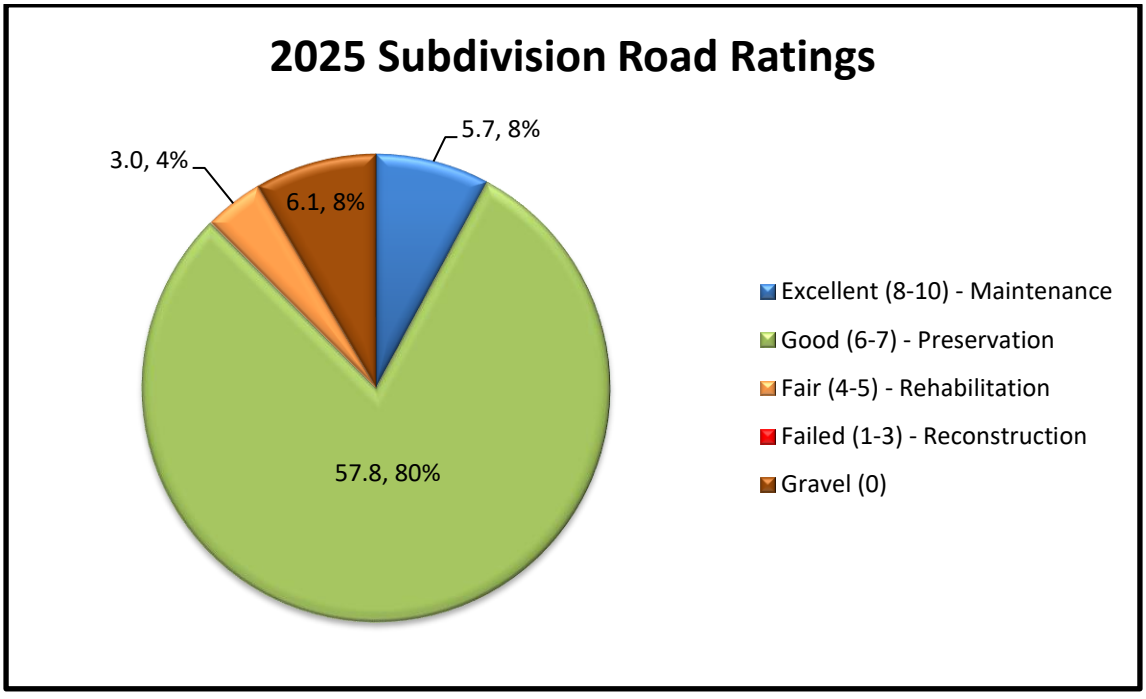

Figure 8 - 2025 Primary Road Condition

Estimated Service Life (ESL) Approach

Estimated Service Life (ESL) is a conceptual metric used in long-term planning. An engineered ESL value is assigned to each roadway segment based on its road condition rating. The service life of a road is defined as the time (in years) from new construction to when the road has deteriorated to a condition that no longer meets acceptable standards. The service life of a pavement depends on, 1) pavement type (concrete, hot asphalt, or chip-seal), 2) the type of traffic and, 3) environmental factors (hot, cold, wet weather). Typical service lives are:

- Concrete Pavements – ESL = 25 - 50 years
- Hot Asphalt Mat pavements – ESL = 15 - 30 years
- Chip Seal pavements – ESL = 10 - 20 years

Estimated Remaining Service Life

Rating	RSL
10	20
9	17
8	14
7	11
6	9
5	6
4	4
3	2
2	1
1	0

Figure 9 - Remaining ESL

Using the PASER rating, the Remaining Service Life (RSL) was estimated for each road segment in years of remaining service life per mile. *Figure 7 - Estimated Remaining Service Life* shows the relationship between PASER rating and pavement remaining service life. Estimating RSL is not an exact science; however, updating RSL information on an annual basis is a good tool for long-term planning and for evaluating the effectiveness of the pavement program. The current Highway network is rated at 7,942 RSL, which is a decrease of 165 RSL from 2024 of 8,107 RSL. To increase the average road rating from the current 6.80 to 7.00 would require an additional 522 ESL.

Cost Estimates

The service life of a pavement can be extended through preservation treatments, rehabilitation or reconstruction. An example of Road Repairs Costs is listed in *Table 4 - Road Repair Cost.* A comparison of condition ratings, repair cost and cost per additional ESL is listed in *Figure 9 - Average Road Repair Cost per Condition Rating.* This data clearly illustrates that the worse the condition rating, the more expensive the repair and the effective return in ESL. Using this data, the following scenarios were analyzed:

- To increase the Road Ratings from 6.80 to 7.0 or better would require $7,020,000.
- To repair all roads rated 5 or less would require $1,160,000.
- To increase the Primary Road from 6.88 to 7.0 or better would require $1,960,000.
- To repair all Primary Roads rated 5 or less would require $460,000.
- To increase all Residential Roads from 6.79 to 7.0 or better would require $620,000.
- To repair all Residential Roads rated 5 or less would require $116,000.

Average Road Repair Cost (2018)	
Preservation	**Cost (per mile)**
Crack Sealing	$5,500.00
Single Chip Seal	$10,000.00
Fog Seal	$3,600.00
Asphalt Sealant	$11,500.00
Rejuvenator	$13,000.00
Slurryseal	$26,500.00
Microseal	$35,000.00
Rehabilitation	
Minor Patching / Wedging	$10,000.00
Major Patching / Wedging	$20,000.00
Double Microseal	$45,000.00
Double Chip Seal	$19,500.00
Triple Chip Seal	$33,500.00
HMA Overlay (1.5")	$54,500.00
Reconstruction	
Major HMA Overlay (4.0+")	$130,000.00
Partial Depth Recon. (6" Base only)	$21,000.00
Full Depth Recon. (12" Base only)	$42,000.00
Traditional Reconstruction	$250,000.00

Table 4 - Road Repair Cost

Average Road Repair Cost per Rating (2018 Comparison)						
Rating	**Repair**	**Cost (per mile)**	**ESL (yrs)**	**Avg**	**Avg. Cost**	**Cost / ESL**
7 - Good	Crack Sealing (In-house)	$1,832.00	1	1	$6,276.00	$1,860.22
	Crack Sealing (Contract)	$5,496.00	2 - 4	3		
	Asphalt Sealant	$11,500.00	5 - 7	6		
6 - Good	Single Chip Seal	$10,000.00	4 - 6	5	$16,500.00	$2,436.03
	Rejuvenator	$13,000.00	4 - 7	5.5		
	Slurryseal	$26,500.00	8 - 10	9		
5 - Fair	Double Seal + Minor Patching	$36,033.00	6 - 10	8	$38,677.67	$4,459.71
	Microseal	$35,000.00	6 - 10	8		
	Double Microseal	$45,000.00	8 - 12	10		
4 - Fair	Double Seal + Major Patching	$39,500.00	6 - 10	8	$49,666.67	$5,295.83
	HMA Overlay (1.5")	$54,500.00	8 - 12	10		
	Double Micro + Minor Patching	$55,000.00	8 - 12	10		
3 - Poor	PDR + Triple Seal + Fog	$58,100.00	8 - 15	11	$94,050.00	$7,640.91
	Major HMA Overlay (4.0+")	$130,000.00	10 - 16	13		
2 - Very Poor	PDR + HMA (2")	$93,666.67	12 - 14	13	$132,833.33	$8,661.39
	FDR + Major Overlay	$172,000.00	16 - 18	17		
1 - Failed	Traditional Reconstruction	$250,000.00	20 - 25	22.5	$278,208.00	$12,364.80

Table 5 - Average Road Repair Cost per Condition Rating

Summary

In summary, the overall Noble County highway network continues to improve from year to year as seen in *Figure 9 - Road Ratings 2014 - 2025*. The focus of the current program is to meet or exceed the Noble County Highway Department's five main goals:

- Maintain the primary road network at a rating of 7.0 or higher.
- **Have a focus on cost effective preservation.**
- Prioritize reconstruction of poor, failed or gravel roadways.
- Prioritize improvements on residential roadways rated 5 or less.
- Maintain a long-term road improvement plan that is sustainable.

2025 Road Rating Map, 2025 Primary Road Rating Map, 2025 Residential Road Rating Map and 2024-2025 Rating Delta Map are attached. Appendix A - 2025 Road Ratings by Township contains a breakdown of road ratings by township. Appendix B - 2025 Pavement Asset Inventory contains the tabular ratings for all Noble County road segments in the Highway Network.

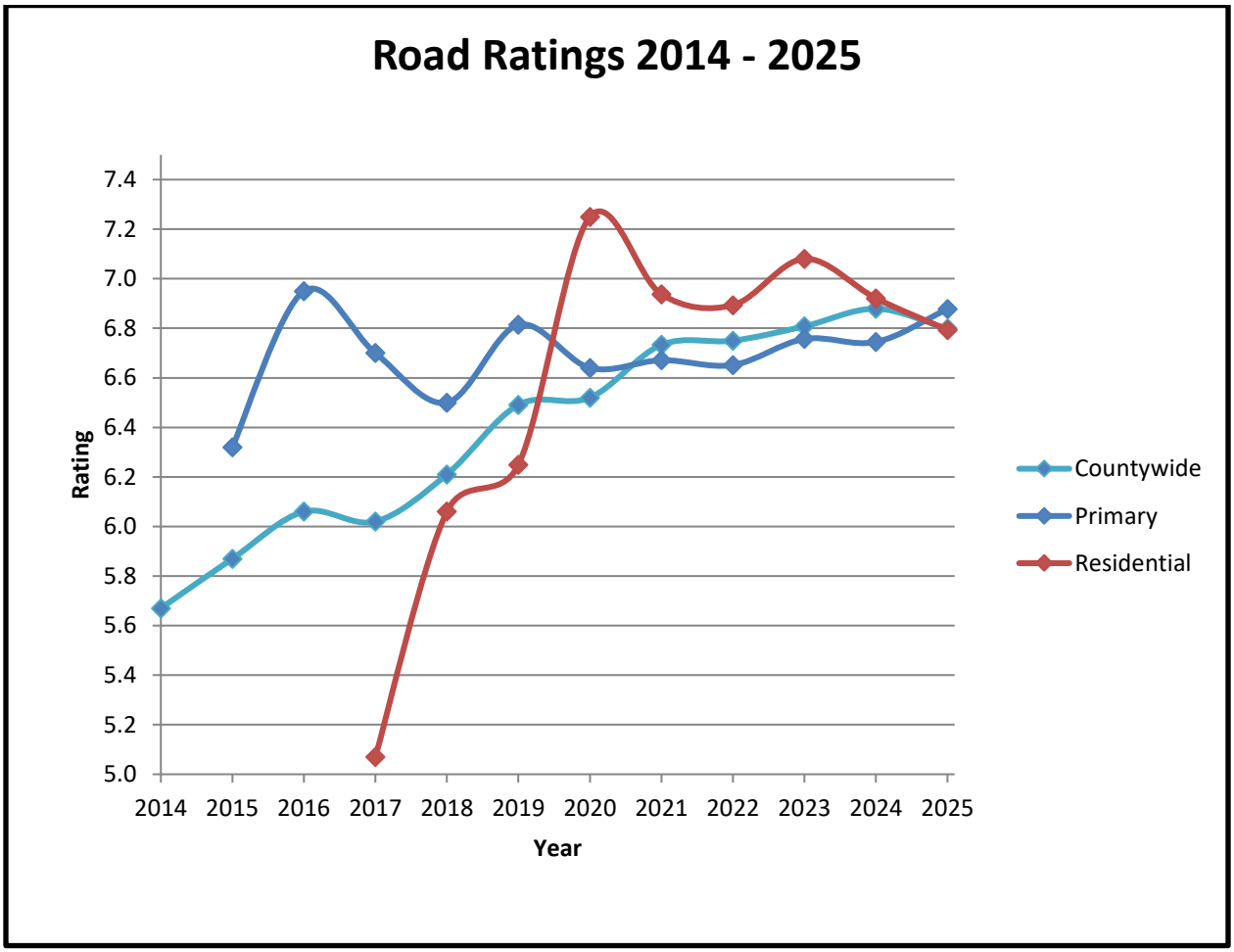

Figure 10 - Road Rating 2014 - 2025

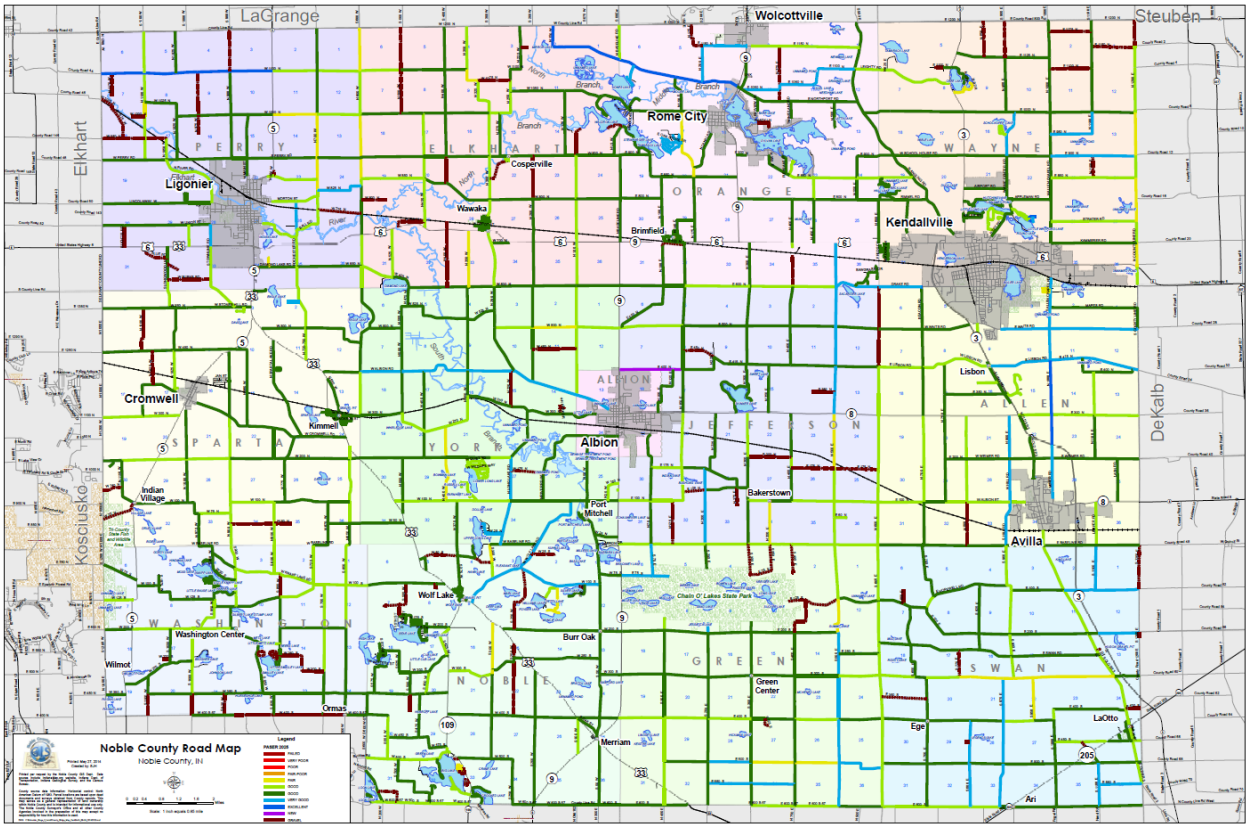

Figure 11 - Road Rating 2025

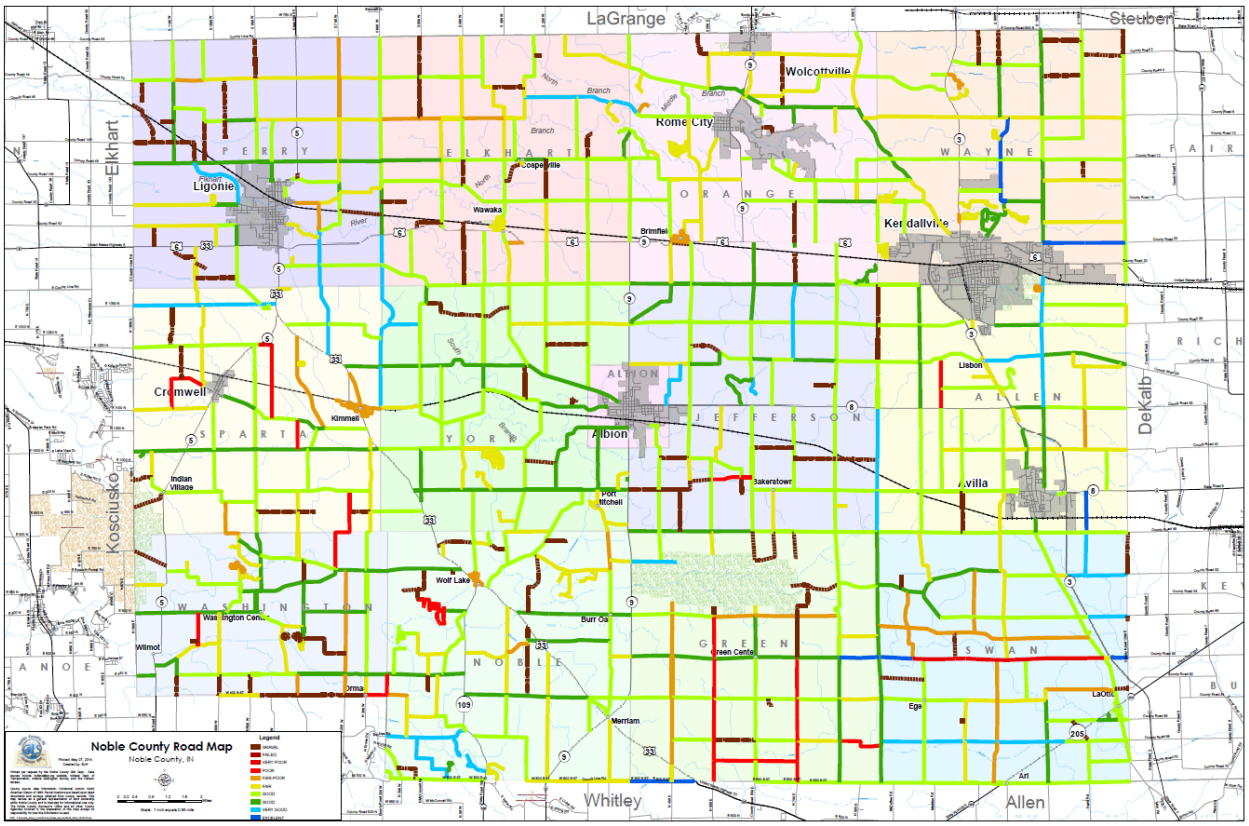

Figure 12 - Road Rating 2015