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Program Overview

The Asset Management Program in the Western Upper Peninsula Planning and Development Region (WUPPDR) region is a continuous effort to monitor the surface conditions of federal-aid eligible roadways in Baraga, Gogebic, Houghton, Iron, Keweenaw, and Ontonagon Counties. The Program is administered by WUPPDR, with guidance from Michigan’s Transportation Asset Management Council and in collaboration with the Michigan Department of Transportation (MDOT), the six county road commissions. MDOT funds the Program.

The Asset Management Program involves a comprehensive and strategic approach that looks at the entire road network, rather than individual projects, and provides road agencies with a tool to:

- Manage road infrastructure in the short term, and
- Plan for future improvements in the long term.

The data compiled for the Asset Management Program is gathered in the field and analyzed using a software program known as RoadSoft. Much of the data pertains to road surface conditions that can be utilized by road agencies to:

- Monitor the physical condition of the federal-aid roadway network (excluding bridges), and
- Optimize the preservation, improvement, and timely replacement of federal-aid roadways.

Instead of simply accounting for existing infrastructure, the Asset Management Program can be utilized to ensure the proper use and performance of the federal-aid roadway network, a process that involves the continuous assessment of conditions and evaluation of trade-offs between different actions (i.e., a “mix of fixes”).

The data collection effort was originally scheduled to take place over a three-year period, beginning in 2006. However, the program was extended and all of the federal-aid roads in each county have been rated over a two-year period (i.e., one-half of the roadways each year) since 2008.

Asset Management strives to gather road ratings that are accurate and consistent. For this reason, it is preferred that the same personnel are used to provide ratings from year-to-year. Also to help ensure consistency, raters are required to attend annual training provided by Michigan Technological University’s Center for Technology and sponsored by the Michigan Department of Transportation.
2016-2017 Asset Management Survey Data Collection

The roadway network is comprised of several types of roadways:

- Principal and minor arterials. Highways, roads, and streets designed to carry large amounts of traffic and to provide access to important destinations (e.g., employment centers, retail districts, etc.);

- Major Collectors. Road and streets which function as conduits directing local traffic to arterial roadways and are designed to provide more access to property than arterial; and

- Local roadways. Road and streets designed to provide access to property and to carry small amounts of traffic.

This data collection effort is limited to federal-aid roadways (i.e., arterials and collectors) although various road agencies throughout the region are also rating local roadways. Federal-aid roads are eligible for federal transportation funding to be spent on their construction, repair, and maintenance. There are currently 1,624 miles of federal-aid eligible roadways in the WUPPDR Area:

- Baraga County ........................................................................ 199 miles
- Gogebic County .................................................................... 330 miles
- Houghton County ..................................................................... 372 miles
- Iron County ........................................................................... 269 miles
- Keweenaw County ...................................................................... 125 miles
- Ontonagon County ........................................................................ 329 miles

The highways, roads, and streets which comprise the roadway network are owned and operated by the Michigan Department of Transportation (MDOT), the six road commissions and the various municipalities (i.e., cities and villages) in the WUPPDR region. Consequently, data at a minimum is collected in each county on a biennial basis (i.e., half [½] of the network each year) by teams consisting of officials from MDOT, the county road commission and/or local municipalities, and Region 13:

- Lanes. The number of lanes in each roadway segment, with freeways and boulevards divided into separate segments by direction.

- Surface subtype. The surface subtype (i.e., asphalt, sealcoat, composite, concrete, or gravel) for each roadway segment.

- Surface rating. The condition of those surfaces are rated using the Pavement Surface Evaluation and Rating (PASER) system, according to the scale in Figure 1.
### Figure 1 – Pavement Surface Evaluation and Rating System (PASER)

<table>
<thead>
<tr>
<th>SURFACE RATING</th>
<th>VISIBLE DISTRESS</th>
<th>GENERAL CONDITION/ TREATMENT MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Excellent</td>
<td>None.</td>
<td>New construction.</td>
</tr>
<tr>
<td>9 Excellent</td>
<td>None.</td>
<td>Recent overlay. Like new.</td>
</tr>
<tr>
<td>8 Very Good</td>
<td>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”).</td>
<td>Recent sealcoat or new cold mix. Little or no maintenance required.</td>
</tr>
<tr>
<td>7 Good</td>
<td>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.</td>
<td>First signs of aging. Maintain with routine crack filling.</td>
</tr>
<tr>
<td>6 Good</td>
<td>Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open ¼” to ½”), some spaced less than 10’. First sign of block cracking. Slight to moderate flushing or polishing. Occasional patching in good condition.</td>
<td>Show signs of aging. Sound structural condition. Could extend life with sealcoat.</td>
</tr>
<tr>
<td>5 Fair</td>
<td>Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open ½”) 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.</td>
<td>Surface aging. Sound structural condition. Needs sealcoat or non-structural overlay (less than 2”).</td>
</tr>
<tr>
<td>4 Fair</td>
<td>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 (1/2” to 1” deep).</td>
<td>Significant aging and first signs of need for strengthening. Would benefit from structural overlay (2” or more).</td>
</tr>
<tr>
<td>3 Poor</td>
<td>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” or 2” deep). Occasional potholes.</td>
<td>Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.</td>
</tr>
<tr>
<td>2 Very Poor</td>
<td>Alligator cracking (over 25% of surface), Severe distortions (over 2” deep). Extensive patching in poor condition. Potholes.</td>
<td>Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.</td>
</tr>
<tr>
<td>1 Failed</td>
<td>Severe distress with extensive loss of surface integrity.</td>
<td>Failed. Needs total reconstruction.</td>
</tr>
</tbody>
</table>
Data Collection Results

Baraga County

Data was collected on 199 miles of federal-aid roads in Baraga County during April 2017. 100% of the network was collected in 2017. Staff present for the rating included Doug Mills, Engineer/Manager, Baraga County Road Commission; Jeff Rautiola, Ishpeming Transportation Service Center, MDOT Superior Region; and Steve Rouser, GIS Technician, Western Upper Peninsula Planning and Development Region.

Map 1 displays the surface ratings for Baraga County’s roads. Figure 2 shows the PASER values for Baraga County’s paved roads and how they compared to the average regional PASER values. 16% of the roads rated in Baraga County received a PASER value of 8-10 (Good). 21.27% of Baraga County’s roads were rated 1-4 (Poor). This percentage is lower than the regional median of 37.23%. Additionally, 62.65% of the roads rated were given a rating of 5-7 (Fair), among the six counties in the region this was the highest percentage of roads rated fair. Figure 3 shows a comparison of the last five years of data collected.

Figure 2 – Baraga County Ratings Compared To Region (2017)

Figure 3 – Baraga County Surface Condition Trends (2013-2017)
Map 1 – Baraga County PASER Results (2017)
**Gogebic County**

Data was collected on 166 miles of federal-aid roads in Gogebic County during July 2017. The western 50% of the network was collected in 2017. Staff present for the rating included Tom Leaf, Engineering Technician, Gogebic County Road Commission; Ben Feldhausen, Crystal Falls Transportation Service Center, MDOT Superior Region; and Steve Rouser, GIS Technician, Western Upper Peninsula Planning and Development Region.

Map 2 displays the surface ratings for Gogebic County’s roads. Figure 4 shows the PASER values for Gogebic County’s paved roads and how they compared to the average regional PASER values. 6.08% of the roads rated in Gogebic County received a PASER value of 8-10 (Good). 53.68% of Gogebic County’s roads were rated 1-4 (Poor). This percentage is significantly higher than the regional median of 37.23%. Additionally, 40.24% of the roads rated were given a rating of 5-7 (Fair), among the six counties in the region this was the second lowest percentage of roads rated fair. Figure 5 shows a comparison of the last five years of data collected.

**Figure 4 – Gogebic County Ratings Compared To Region (2016-17)**

![PASER Rating Comparison Graph]

**Figure 5 – Gogebic County Surface Condition Trends (2013-2017)**

![Surface Condition Trend Graph]
Map 2 – Gogebic County PASER Results (2016-17)
**Houghton County**

Data was collected on 334 miles of federal-aid roads in Gogebic County during August and September 2017. 100% of the network was collected in 2017. Staff present for the rating included Dan Reilly, Surveyor, Houghton County Road Commission; Jeff Rautiola, Ishpeming Transportation Service Center, MDOT Superior Region; and Steve Rouser, GIS Technician, Western Upper Peninsula Planning and Development Region.

Map 3 displays the surface ratings for Houghton County’s roads. Figure 6 shows the PASER values for Houghton County’s paved roads and how they compared to the average regional PASER values. 14.1% of the roads rated in Houghton County received a PASER value of 8-10 (Good). 33.97% of Baraga County’s roads were rated 1-4 (Poor). This percentage is almost equal to the regional median of 37.23%. Additionally, 51.93% of the roads rated were given a rating of 5-7 (Fair), among the six counties in the region this was the third highest percentage of roads rated fair. Figure 7 shows a comparison of the last five years of data collected.

**Figure 6 – Houghton County Ratings Compared To Region (2017)**

**Figure 7 – Houghton County Surface Condition Trends (2013-2017)**
Map 3 – Houghton County PASER Results (2017)
Iron County

Data was collected on 129 miles of federal-aid roads in Iron County during June 2017. The eastern 50% of the network was collected in 2017. Staff present for the rating included Doug Tomasoski, Supervisor/Manager, Iron County Road Commission; Ben Feldhausen, Crystal Falls Transportation Service Center, MDOT Superior Region; and Steve Rouser, GIS Technician, Western Upper Peninsula Planning and Development Region.

Map 4 displays the surface ratings for Iron County’s roads. Figure 8 shows the PASER values for Iron County’s paved roads and how they compared to the average regional PASER values. 15.06% of the roads rated in Iron County received a PASER value of 8-10 (Good). 46.65% of Iron County’s roads were rated 1-4 (Poor). This percentage is significantly higher than the regional median of 37.23%. Additionally, 38.29% of the roads rated were given a rating of 5-7 (Fair), among the six counties in the region this was the lowest percentage of roads rated fair. Figure 9 shows a comparison of the last five years of data collected.

Figure 8 – Iron County Ratings Compared To Region (2016-17)

Figure 9 – Iron County Surface Condition Trends (2013-2017)
Map 4 – Iron County PASER Results (2016-17)
Keweenaw County

Data was collected on 125 miles of federal-aid roads in Iron County during June 2017. 100% of the network was collected in 2017. Staff present for the rating included Chris Cronenworth, Maintenance Foreman, Keweenaw County Road Commission; Jeff Rautiola, Ishpeming Transportation Service Center, MDOT Superior Region; and Steve Rouser, GIS Technician, Western Upper Peninsula Planning and Development Region.

Map 5 displays the surface ratings for Keweenaw County’s roads. Figure 10 shows the PASER values for Keweenaw County’s paved roads and how they compared to the average regional PASER values. 23.77% of the roads rated in Keweenaw County received a PASER value of 8-10 (Good). 24.15% of Keweenaw County’s roads were rated 1-4 (Poor). This percentage is significantly lower than the regional median of 37.23%. Additionally, 52.07% of the roads rated were given a rating of 5-7 (Fair), among the six counties in the region this was the second highest percentage of roads rated fair. Figure 11 shows a comparison of the last five years of data collected.

Figure 10 – Keweenaw County Ratings Compared To Region (2017)

![Figure 10](image)

Figure 11 – Keweenaw County Surface Condition Trends (2017)

![Figure 11](image)
Map 5 – Keweenaw County PASER Results (2017)
**Ontonagon County**

Data was collected on 177 miles of federal-aid roads in Iron County during October 2017. The western 50% of the network was collected in 2017. Staff present for the rating included Michael Maloney, Engineer, Ontonagon County Road Commission; Jeff Rautiola, Ishpeming Transportation Service Center, MDOT Superior Region; Steve Rouser, GIS Technician, Dylan Jones, Planning Technician, Western Upper Peninsula Planning and Development Region.

Map 6 displays the surface ratings for Ontonagon County’s roads. Figure 12 shows the PASER values for Keweenaw County’s paved roads and how they compared to the average regional PASER values. 25.8% of the roads rated in Ontonagon County received a PASER value of 8-10 (Good), among the six counties in the region this was the highest percentage of roads rated good. 32.28% of Ontonagon County’s roads were rated 1-4 (Poor). This percentage is slightly lower than the regional median of 37.23%. Additionally, 41.92% of the roads rated were given a rating of 5-7 (Fair). Figure 13 shows a comparison of the last five years of data collected.

Figure 12 – Ontonagon County Ratings Compared To Region (2016-17)

Figure 13 – Ontonagon County Surface Condition Trends (2016-17)