City of Summit

Road Rating System

Primer

Department of Community Services
Division of Engineering

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The Division of Engineering established the Road Rating system by combining components of the Minnesota Department of Transportation (MnDOT) rating system, asphalt standards from the American National Standards Institute (ANSI), Metropolitan Transportation Commission (MTC) and American Public Works Association (APWA). The MTC rating system was created for road surface ratings in the San Francisco Bay metropolitan area and is one of the most detailed systems available. The standards provided by ANSI are updated regularly and subject to comprehensive testing and confirmations. The Asphalt Institute and APWA provide ongoing analysis of asphalt products to determine the properties, failure rates and life spans.

The Summit Road Rating system is based on eight different pavement criteria that can be visually observed by an inspector. The eight criteria are: alligator cracking, block cracking, distortions, longitudinal & transverse cracking, patches and utility cuts, rutting & depressions and weathering & raveling. Each criterion has an assigned numerical deduction value that ranges in weight varying from: minimal, low, medium and high.

All roads are observed and inspected specifically for each of the eight criteria and assigned a value accordingly. Each road is assigned a starting score of 100 points and each value assigned is then deducted from the 100 points. Additional deductions are made for curbing and drainage issues.

	Minimal	Low	Medium	High
Alligator Cracking:	7	15	27	38
Block Cracking:	1	1	4	10
Distortions:	1	3	17	36
Long & Trans Cracking:	2	4	11	22
Patching & Utility Cuts:	2	4	12	23
Rutting & Depressions:	5	10	21	30
Weathering & Raveling:	5	10	21	30

<u>Alligator Cracking</u>

This type of cracking is a series of short length cracks caused by failure of the surface asphalt due to repeated loading of vehicles. The cracks start off as large fractures spanning the asphalt in various directions and then overtime connect forming jagged pieces, many sided and sharp angled pieces of asphalt. The resulting appearance of the asphalt is the skin of an alligator.

<u>Block Cracking</u>

Block cracks create an appearance of large pieces of asphalt. They can range in size from as small as one foot by one foot to 10 feet by 10 feet. The cracks tend to develop over time from over hardening of the asphalt. The cracks can span in various directions and do not only form square pieces. Triangular and multi-sided sections of asphalt can develop as well.

Distortions

Distortions are defined as bumps or depressions in the asphalt that create displacements and shoving of the asphalt. They are generally localized to specific areas along the road and not seen throughout. This asphalt criterion can be difficult to detect within the City of Summit as the majority of our roads have a very well establish stone base.

Longitudinal and Transverse Cracking

These cracks tend to run perpendicular and/or parallel to the road way direction. In most cases, this type of damage is caused by either reflective cracks, cracks of the sub base that cause the surface course to open, or by the expansion joints from a concrete road below the surface course. Additionally, it can be caused by poor joint control during the pavement process.

Patching and Utility Cuts

This criterion is based on utility repairs made below the road surface that are patched with asphalt. In a city like Summit where there are a plethora of underground utilities that are often more than 100 years old, this is a very common occurrence.

Rutting and Depressions

Rutting and depressions are a type of settlement that occurs along the wheel path of a road. These settlements are generally caused by over consolidation of the asphalt layers and/or subbase material. Rutting can produce a lateral shift of the asphalt causing the wheels of a vehicle to remain in the grooved path. Generally rutting will occur on streets where there is a constant traffic flow without many stops. Minor cases may sometimes be detected only during rain storms as water tends to puddle in depressions.

Weathering and Raveling

One of the most common causes of asphalt deterioration is through weathering and raveling of a surface course. It is best described as a type of wearing of the surface course that causes the asphalt binder to break down forcing the small stones in the asphalt to dislodge. This can best be seen as a rough road surface.

Additional points are deducted for curbing per the following:

- Non-existing curb: deduct 5 points
- Some curbing exists (33% or less): deduct 4 points
- Roadway is mostly curbed(66%- 34%): deduct 3 points
- Roadway is adequately curbed (90%-67%): deduct 2 points
- Roadway is completely curbed (100%-91%): deduct 0 points
- Curbing is damaged: deduct 1 point

Additional points are deducted for drainage per the following:

- Non-existing drainage: deduct 5 points
- Drainage is less than adequate: deduct 3 points
- Drainage is adequate: deduct 0 points
- Inlets do not have NJDEP faceplates: deduct 2 points

City of Summit
Division of Engineering
Road Condition Assessment

Road: _____ Inspector: _____ Date: _____

Road Surface Rating:

	Alligator Cracking	Block Cracking	Distortions	Longitudinal and Transverse Cracking	Patching and Utility Cuts	Rutting & Depressions	Weathering and Raveling
Minimal	7	1	1	2	2	5	5
Low	15	1	3	4	4	10	10
Medium	27	4	17	11	12	21	21
High	38	10	36	22	23	30	30

Total Road Surface Deduction_____

Curbing Rating:

- Non-existing curb: -5 points
- Some curbing exists (33% or less): -4 points
- Roadway is mostly curbed(66%- 34%): -3 points
- Roadway is adequately curbed (90%-67%): -2 points
- Roadway is completely curbed (100%-91%): -0 points
- Curbing is damaged: deduct 1 point

Total Curbing Deduction_____

Drainage Deduction:

- Non-existing drainage: -5 points
- Drainage is less than adequate: -3 points
- Drainage is adequate: -0 points
- Inlets do not have NJDEP faceplates: -2 points

Total Drainage Deduction_____

Total Road Rating:

100 - _____ - _____ -_____ _____ = _____

(Road Deduction) (Curb Deduction) (Drainage Deduction) (Road Rating)

References

1. Asphalt Institute, 2696 Research Park Drive, Lexington, KY 40511 www.asphaltinstitute.org
2. Pavement Condition Index, Distress Identification Manual for Asphalt and Surface Treatments, Feb 1986 2nd Edition. Metropolitan Transportation Commission www.mtc.ca.gov
3. Minnesota Department of Transportation (MnDOT) www.dot.state.mn.us
4. American Public Works Association www.apwa.net
5. American National Standards Institute – ANSI www.ansi.org