

# ECIA Road Committee General Meeting 2020-09-02

- INTERGOVERNMENTAL CAPITAL IMPROVEMENT PROGRAM (ICIP)
- ASSESSMENT PROCESS
- METHODS OF COST ESTIMATION

# Intergovernmental Capital Improvement Program (ICIP)

Discussion lead: Amelia Adair

# Intergovernmental Capital Improvement Program (ICIP)

- General process
- Critical dates
- Cost estimates for proposed projects
- RC submits proposals to ECIA Board for consensus and their submittal to State representatives
- Wait for results from State Sessions

# Cost estimates for proposed projects. Rating by the PASER Method

- PASER Method (PM) is a subjective “observational method”
- PM has been used by the SFCDPW and the ECIA/RC for a long time.
- Inspections are conducted by individuals for particular roads.

# PASER Asphalt Roads Manual



## Evaluation

- Surface defects
- Surface deformation
- Cracking
- Patches and potholes

## Rating pavement surface condition

Rating system

Rating 10 & 9 – Excellent

Rating 8 – Very Good

Rating 7 – Good

Rating 6 – Good

Rating 5 – Fair

Rating 4 – Fair

Rating 3 – Poor

Rating 2 – Very Poor

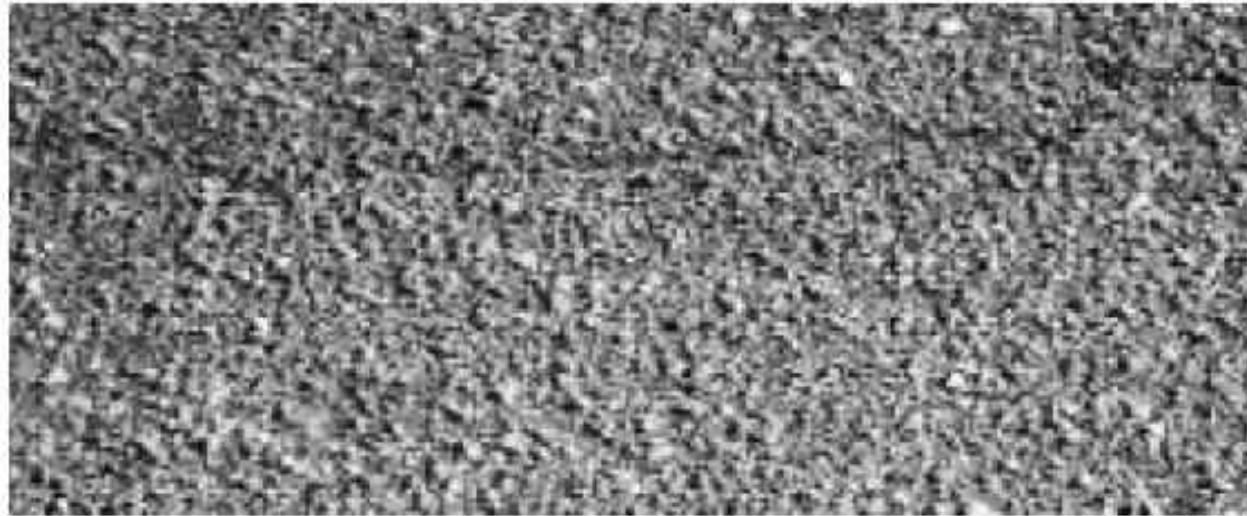
Rating 1 – Failed



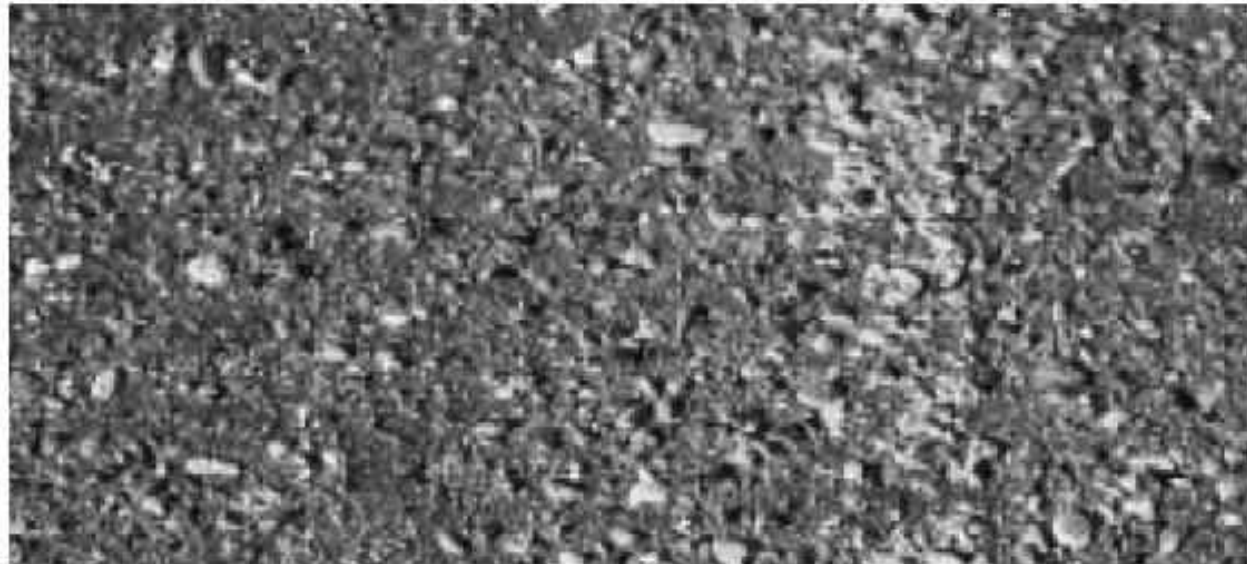
## SURFACE DEFECTS

### *Raveling*

Raveling is progressive loss of pavement material from the surface downward, caused by: stripping of the bituminous film from the aggregate, asphalt hardening due to aging, poor compaction especially in cold weather construction, or insufficient asphalt content. Slight to moderate raveling has loss of fines. Severe raveling has loss of coarse aggregate. Raveling in the wheelpaths can be accelerated by traffic. Protect pavement surfaces from the environment with a sealcoat or a thin overlay if additional strength is required.



◀ Slight raveling. Small aggregate particles have worn away exposing tops of large aggregate.



◀ Moderate to severe raveling. Erosion further exposes large aggregate.



## SURFACE DEFORMATION

### *Rutting*

Rutting is displacement of material, creating channels in wheelpaths. It is caused by traffic compaction or displacement of unstable material. Severe rutting (over 2") may be caused by base or subgrade consolidation. Repair minor rutting with overlays. Severe rutting requires milling the old surface or reconstructing the roadbed before resurfacing.



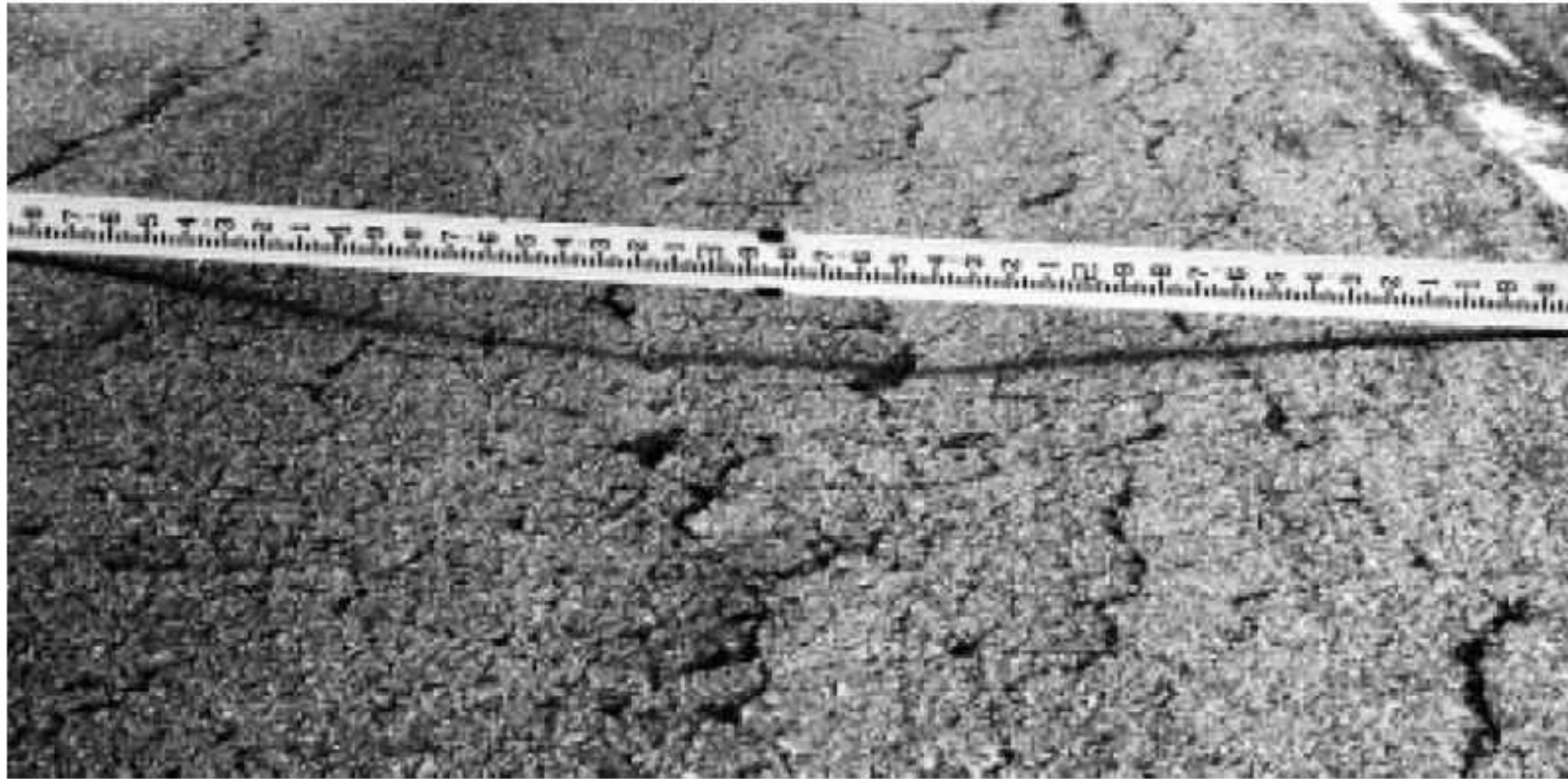
**Even slight rutting is evident after a rain.**





◀ Severe rutting over 2" caused by poor mix design.





◀ Severe rutting caused by poor base or subgrade.

►  
Severe settling  
from utility  
trench





►  
Frost heave  
damage from  
spring break-up.





When it is not properly sealed and maintained, secondary or multiple cracks develop parallel to the initial crack. The crack edges can further deteriorate by raveling and eroding the adjacent pavement.

Prevent water intrusion and damage by sealing cracks which are more than 1/4" wide.

◀  
Sealed cracks,  
a few feet  
apart.



▲ Tight cracks less than 1/4" in width.



▲ Open crack – 1/2" or more in width.



▲ Water enters unsealed cracks softening pavement and causing secondary cracks.



▲ Pavement ravel and erodes along open cracks causing deterioration.



►  
First stage  
of wheelpath  
cracking caused by  
heavy traffic loads.



▼  
Load-related cracks  
in wheel path plus  
centerline cracking.



Multiple open  
cracks at center  
line, wheelpaths  
and lane center. ▼





## *Alligator cracks*

Interconnected cracks forming small pieces ranging in size from about 1" to 6". This is caused by failure of the surfacing due to traffic loading (fatigue) and very often also due to inadequate base or subgrade support. Repair by excavating localized areas and replacing base and surface. Large areas require reconstruction. Improvements in drainage may often be required.



**Alligator crack pattern. Tight cracks and one patch.**



◀ Multiple potholes show pavement failure, probably due to poor subgrade soils, frost heave, and bad drainage.



◀ Large, isolated pothole, extends through base. Note adjacent alligator cracks which commonly deteriorate into potholes.





In addition to indicating the surface condition of a road, a given rating also includes a recommendation for needed maintenance or repair. This feature of the rating system facilitates its use and enhances its value as a tool in ongoing road maintenance.

#### **RATINGS ARE RELATED TO NEEDED MAINTENANCE OR REPAIR**

<b>Rating 9 &amp; 10</b>	No maintenance required
<b>Rating 8</b>	Little or no maintenance
<b>Rating 7</b>	Routine maintenance, cracksealing and minor patching
<b>Rating 5 &amp; 6</b>	Preservative treatments (sealcoating)
<b>Rating 3 &amp; 4</b>	Structural improvement and leveling (overlay or recycling)
<b>Rating 1 &amp; 2</b>	Reconstruction



## Rating system

<i>Surface rating</i>	<i>Visible distress*</i>	<i>General condition/ treatment measures</i>
<b>10</b> Excellent	None.	New construction.
<b>9</b> Excellent	None.	Recent overlay. Like new.
<b>8</b> 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 new cold mix. Little or no maintenance required.
<b>7</b> 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.
<b>6</b> Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open 1/4" – 1/2"), some spaced less than 10'. First sign of block cracking. Slight 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  $\frac{1}{2}$ " ) 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 ( $\frac{1}{2}$ " 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 (1" or 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.

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



## Averaging and comparing sections

For evaluation, divide the local road system into individual segments which are similar in construction and condition. Rural segments may vary from

1/2 mile to a mile long, while sections in urban areas will likely be 1-4 blocks long or more. If you are starting with the WISLR Inventory, the segments have already been established. You may want to review them for consistent road conditions.

Obviously, no roadway segment is entirely consistent. Also, surfaces in one section will not have all of the types of distress listed for any particular rating. They may have only one or two types. Therefore, some averaging is necessary.

The objective is to rate the condition that represents the majority of the roadway. Small or isolated conditions should not influence the rating. It is useful to note these special conditions on the inventory form so this information can be used in planning specific improvement projects. For example, some spot repairs may be required.

Occasionally surface conditions vary significantly within a segment. For example, short sections of good condition may be followed by sections of poor surface conditions. In these cases, it is best to rate the segment according to the worst conditions and note the variation on the form.

The overall purpose of condition rating is to be able to compare each

segment relative to all the other segments in your roadway system. On completion you should be able to look at any two pavement segments and find that the better surface has a higher rating.

Within a given rating, say 6, not all pavements will be exactly the same. However, they should all be considered to be in better condition than those with lower ratings, say 5. Sometimes it is helpful in rating a difficult segment to compare it to other previously rated segments. For example, if it is better than one you rated 5 and worse than a typical 7, then a rating of 6 is appropriate. Having all pavement segments rated in the proper relative order is most important and useful.

Good rural ditch  
and driveway  
culvert. Culvert  
end needs  
cleaning.

**RATING: Good**

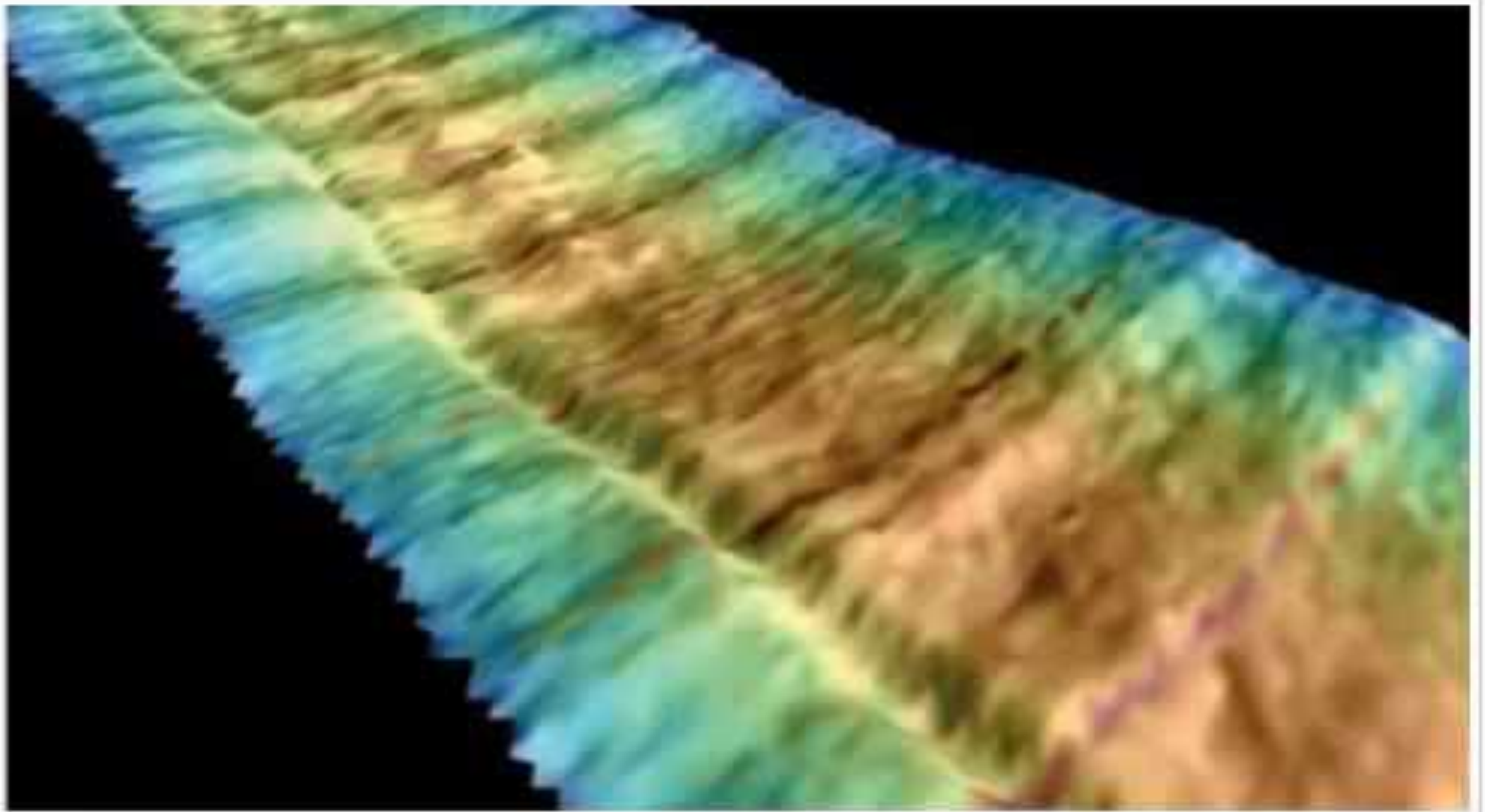


Consider both pavement surface drainage and lateral drainage (ditches or storm sewers). Pavement should be able to quickly shed water off the surface into the lateral ditches. Ditches should be large and deep enough to drain the pavement and remove the surface water efficiently into adjacent waterways.

Look at the roadway crown and check for low surface areas that permit ponding. Paved surfaces should have approximately a 2% cross slope or crown across the roadway. This will provide approximately 3" of fall on a 12' traffic lane. Shoulders should have a greater slope to improve surface drainage.







# Laser Scanning on Road Pavements: A New Approach for Characterizing Surface Texture

Gabriele Bitelli \*, Andrea Simone, Fabrizio Girardi and Claudio Lantieri

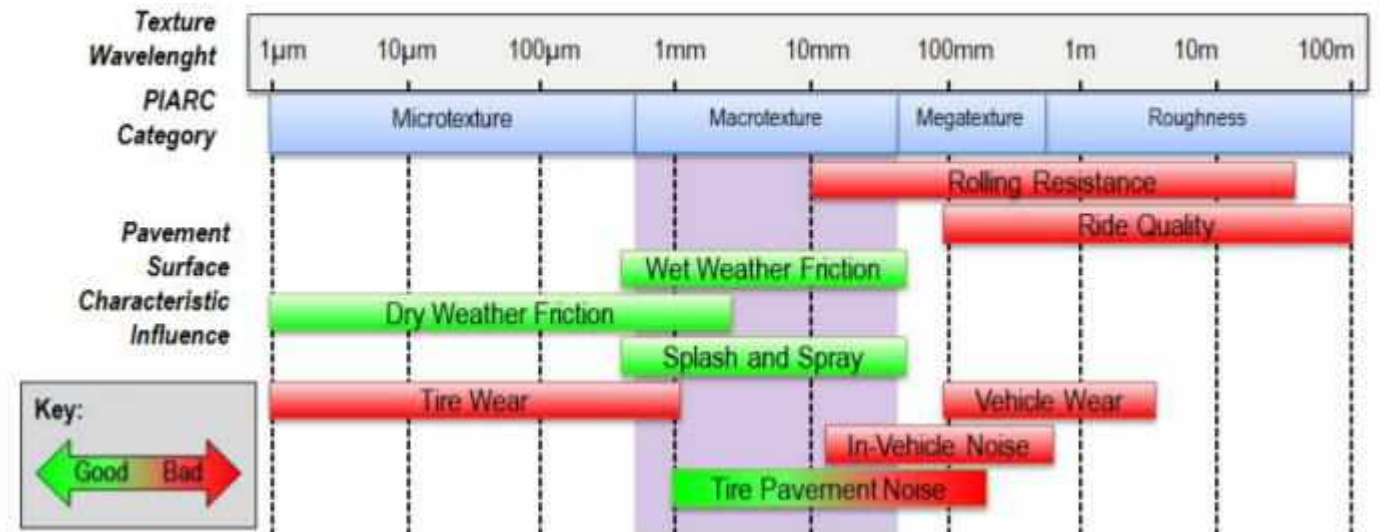
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**Figure 2.** Relationship between texture and characteristics of the pavement surface [1,2].



# Methods of Cost Estimation

- Governmental agencies: Negotiated rates and materials
- Typical non-governmental method: RSMeans / Spreadsheets