Prediction factors (Road-quality index):

1. Weather.
2. Road type/ material.
3. Last repair , how many quarters back.
4. Average traffic density since last repair (for each type of vehicle: heavy/ med/ light).
5. Number of complaints since last repair.
6. Feedback of last inspection.
7. Time since last inspection.
8. Inspection details (like number of damages noted)
9. Iri 2000

Prediction factors for road life

1. IRI(m/km)
2. Age(year) bituminous - flexible(subgrade, , wmm), concrete - rigid min 10yr
3. billion standard axle after 5,6
4. Initial IRI(m/km)
5. Equivalent Single Axle Load(number) (msa)
6. Crack(m)
7. Pothole(number)
8. Rut(mm)
9. Long Crack(m)
10. Present serviceability index (PSI)
11. HT_AADT
12. P&L_AADT

PSI = 5.03 - 1.91 log(1+SV) -1.38 RD2 - 0.01 (C+P)0.5
PSI = 5*e-0.0041*IRI - 1.38RD2 - 0.01(C+P)0.5
IRI= international roughness index (in/mile)
RD= rut depth (in)
C= cracking area (ft2/1000ft2)
P= patching area (ft2/1000ft2)

PSI = 5exp(-IRI/5.5)
RSL = 1/b(ln(IRI/a)) - current age
a = The initial IRI value at age equal zero.
b = Measures the curvature of the performance line

Creation of performance line :-

$$Z_x = \sum_{i=1}^{n} (x_i \mathrm{IRI}_i) - \frac{\sum_{i=1}^{n} (x_i \mathrm{IRI}_i)}{L_s} \sum_{i=1}^{n} x_i \qquad (1)$$

where:

x_i = Length of the ith interval along the road section (100 m in this study).

IRI_i = IRI of the ith interval along the road section.

n = Total number of intervals along the road section.

L_s = Total length of the road section being considered.

Z_x = Cumulative difference value for the ith interval along the road.

Prediction for road cost

1. Total cost
2. HT_AADT
3. P&L_AADT
4. Age