Equation used to predict IRI indirectly

$$\mathbf{IRI = 35.59 - 0.65 \times RQR(C) + 0.015 \times RQR(S) + 0.003 \times (RQR(C))^2 - 0.00029 \times (RQR(S))^2 + 0.0045 \times RQR(S) \times RQR(C)} \qquad R^2 = 0.67$$

Where,

IRI = International Roughness Index in m/km

RQR(C) = Ride Quality Rating (Comfort)

RQR(S) = Ride Quality Rating (Speed)

Equation used to predict CD indirectly

$$\mathbf{CD = 4.53 - 0.00845 \times SN - 0.397 \times CBR - 9.4 \times 10^{-5} \times SN^2 + 0.019 \times CBR^2} \qquad R^2 = 0.86$$

Where,

CD= Characteristic Deflection (mm) measured using BBD test

SN = Structural Number

and $SN = a_1D_1 + a_2D_2M_2 + a_3D_3M_3$

Where,

a_1, a_2, a_3 = structural-layer coefficients of the wearing surface, base, and subbase layers, and are taken as 0.44, 0.14 and 0.11, respectively

D_1, D_2, D_3 = thickness of the wearing surface, base, and subbase layers in mm respectively, (D_1= New surface + Old surface + Binder course, D_2= Base course and D_3 =Sub-base course) and

M_2, M_3 = drainage coefficients for the base and subbase, respectively and assumed as 1.0

CBR = California Bearing Ratio of Soil Subgrade in %