

A Study on FWD Deflection Bowl Parameters for Condition Assessment of Flexible Pavement

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Abstract : The application of Falling Weight Deflectometer is to evaluate structural performance of the flexible pavement. The exercise of back calculation is required to know the modulus of elasticity of existing in-service pavement. The process of back calculation needs in-depth field experience for the input of range of modulus of elasticity of bituminous, granular and subgrade layer, and its required number of trial to find such matching moduli with the observed FWD deflection on the field. The study carried out at Barnala-Mansa State Highway Punjab-India using FWD before and after overlay; the deflections obtained at 0 on the load cell, 300, 600, 900, 1200, 1500 and 1800 mm interval from the load cell these seven deflection results used to calculate Surface Curvature Index (SCI), Base damage Index (BDI), Base curvature index (BCI). This SCI, BCI and BDI indices are useful to predict the structural performance of in-service pavement and also useful to identify homogeneous section for condition assessment. The SCI, BCI and BDI range are determined for before and after overlay the range of SCI 520 to 51 BDI 294 to 63 BCI 83 to 0.27 for old pavement and SCI 272 to 23 BDI 228 to 28, BCI 25.85 to 4.60 for new pavement. It also shows good correlation with back calculated modulus of elasticity of all the three layer.

Keywords : back calculation, base damage index, base curvature index, FWD (Falling Weight Deflectometer), surface curvature index

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020