

Ground Track Assessment Using Electrical Resistivity Tomography Application

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Abstract : The subgrade formation is an important element of the railway structure which holds overall track stability. Conventional track maintenance involves many substructure component replacements, as well as track re-ballasting on a regular basis is partially contributed to the embankment's long-term settlement problem. For subgrade long-term stability analysis, the geophysical method is commonly being used to diagnose those hidden sources/mechanisms of track deterioration problems that the normal visual method is unable to detect. Electrical resistivity tomography (ERT) is one of the applicable geophysical tools that are helpful in railway subgrade inspection/track monitoring due to its flexibility and reliability of the analysis. The ERT was conducted at KM 23.0 of Pinang Tunggul track to investigate the subgrade of railway track through the characterization/mapping on track formation profiling which was directly generated using 2D analysis of Res2dinv software. The profiles will allow examination of the presence and spatial extent of a significant subgrade layer and screening of any poor contact of soil boundary. Based on the finding, there is a mix/interpretation/intermixing of an interlayer between the sub-ballast and the sand. Although the embankment track considered here is at no immediate risk of settlement effect or any failure, the regular monitoring of track's location will allow early correction maintenance if necessary. The developed data of track formation clearly shows the similarity of the side view with the assessed track. The data visualization in the 2D section of the track embankment agreed well with the initial assumption based on the main element structure general side view.

Keywords : ground track, assessment, resistivity, geophysical railway, method

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