OVERVIEW

Track sub-structure layers (ballast and sub-grade/formation) can have a significant influence on track performance. Differences in the condition of sub-structure layers can cause variations in the settlement characteristics of the track.

IRT has the ability to conduct controlled experiments in a laboratory environment as well as extensive test programs in the field. This enables the better understanding and cross-correlation between theoretical/laboratory test results and data collected from the actual field, under true operating conditions.

RESEARCH PROGRAMS

Detailed studies have been conducted including:

• Assessment and selection of ballast, sub-ballast, formation and geotextiles
• Effects of higher axle loads on track structure
• Ballast stability at high speed (350 km/h)
• Effects of increased sleeper spacing
• Load transfer characteristics (rail, sleeper, ballast, sub-ballast, formation)
• Assessment of formation bearing capacity
• Track deflection under normal traffic conditions
• Track settlement resulting from tamping
• Ballast cleaning

BENEFITS

• Minimised maintenance cost resulting from selection of appropriate track structure materials
• Accurate measurement of contact pressures and bearing pressures has led to effective use of ballast and sub-ballast material
• Determination of critical limits for ballast fouling
• Ballast grading and material recommendations (including petrographic testing)