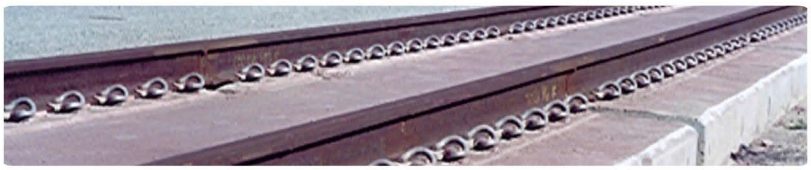

RCE promotes the use of SLABTRACK

Slabtrack, as an alternative to ballasted track, has been in use internationally for some decades. The scale of adoption has varied from extensive in the case of some metro systems such as those in Japan, to intermittent and of limited scale in many countries including South Africa. The scope for the adoption of slabtrack is, however, increasing and RCE have been active in promoting its use in a number of applications.

Whilst the life cycle costs of track slab have been shown by large users of the system to be competitive with ballasted track, high construction costs have detracted from its widespread adoption. Economical construction requires that cost of components, mainly rail chairs, and the cost of labour, mainly associated with the high skills required for the achievement of tight tolerances, need to be addressed.

Some of the typical applications under implementation by RCE include passenger platforms in the PRASA network, runways for heavy duty gantry cranes, and railway viaducts. Projects are typically relatively small scale, intermittent, and geographically widely distributed.

These characteristics dictate that the system adopted must have low establishment costs, be simple to construct, and be scalable to accommodate project size and construction tempo.

The need for PRASA to implement slabtrack at passenger stations is driven mainly by the requirement to always maintain constant clearances between coach and platform cope for safety reasons. As this is not possible in the case of ballasted track owing to track disturbance during track maintenance, the use of a fixed alignment is becoming mandatory.

Secondary considerations include the reduction of maintenance costs and, in particular, the reduction of on-track time and disruption to train schedules. Aesthetics and the ease of keeping station emplacements clean also play a role.

Image 1 shows the achievement of these objectives in a recently completed project.

Crane runways for heavy equipment such as gantry cranes, stacker / reclaimers and container gantries etc. typically comprise rail chairs secured on inverted T-beams. Construction is generally executed in several phases, rendering the system costly and slow to construct.

Because of its effective load spreading ability, slabtrack offers an economical alternative. RCE has very successfully implemented adaptations of slabtrack for a range of applications involving very heavy wheel loading.

The avoidance of rail chairs by directly supporting the rail on the slab using flexible rubber pads allows for the use of standard high-modulus rails which are designed to participate in load spreading.

Significant time and cost savings are achieved by constructing the runway on the surface in a single pass. Images 2 and 3 show a completed installation.

Image 1: Achievement of slabtrack objectives

RCE has successfully implemented adaptations of slabtrack for a range of applications involving very heavy wheel loading.

Image 2: Completed installation

Image 3: Completed installation

Images 4 and 5: Slabtrack installation

In the case of large railway bridges and viaducts, the effects of track structure interaction (TSI) need to be accounted for.

As the applicable design codes place limitations on the length of structure which can be operated with ballasted, continuously welded rail (CWR) before the use of rail splice joints become obligatory, slabtrack offers a safe, economical alternative for meeting code requirements.

The use of rail splice joints in ballasted track creates maintenance problems and safety concerns, particularly in curved track. These issues are most readily addressed by constructing the splice joints on concrete slab.

Apart from the aspect of addressing the maintenance and safety issues surrounding splice joints on rail bridges, the use of slabtrack has a number of positive spinoffs.

These include a substantial reduction in superimposed deadweight loading, the avoidance of the inevitable increase in loading as ballast is added during the successive rounds of more maintenance, and the avoidance of track maintenance on the structure.

The elimination of rail chairs and the installation thereof, which requires a high level of skill, is avoided in the RCE PY slab system whereby track fastenings are cast directly into the slab in a one-pass operation.

The system relies on the correct and appropriate use of a jig system that is designed and supplied by RCE.

We provide the required information and training and high level supervision of specified construction to ensure that the end product can be signed off with ease in terms of technical compliance and defined professional accountability.

RCE
Railway & Civil Engineering

RCE Consultants

RCE Consultants (Pty) Ltd was established more than 10 years ago with the aim of providing railway and civil engineering as well as project management services of the highest standard.

Service offerings expanded over time to include rail and port engineering, feasibility studies, railway buildings design, rolling stock, rail operations and process modelling, including simulation.

RCE endeavours to deliver innovative, value adding and applicable engineering solutions of superior quality, exceeding the expectations of our clients.

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Telephone
+27 12 450 0040

Email
admin@rce-consultants.co.za

Website
www.rce-consultants.co.za

Postal Address
PO Box 102733, Moreleta Plaza,
South Africa, 0167

Physical Address
110 Sovereign Drive, Route 21
Corporate Park, Irene, Pretoria,
Gauteng, South Africa

Office Hours
Weekdays
07h00 – 17h00

GPS Coordinates
25°51’33.33”S
28°15’25.16”E