R&H RAIL

PERMANENT WAY INFRASTRUCTURE

Permanent Way

GROOTEGELUK PROJECT – YARD EXPANSION TO CATER FOR 200 WAGON TRAINS

HOLISTIC RAIL SOLUTIONS

As a division within the broader rail system, the permanent way impacts, and is impacted by, the allied disciplines of train operations, Overhead Track Equipment (OHTE) and signalling to produce a rail system design that will meet the broader needs of the logistics solution.

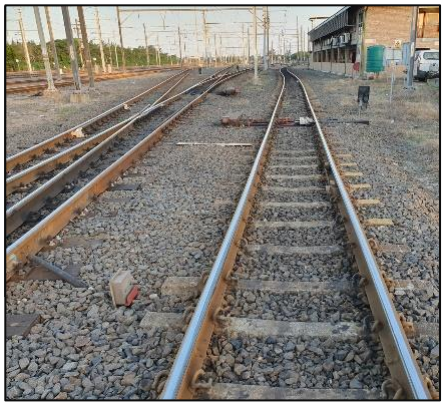
Permanent way design is an integral component of the design process dictating not only the spatial layout of the rail infrastructure, but also accommodating the operational parameters of the railway system.

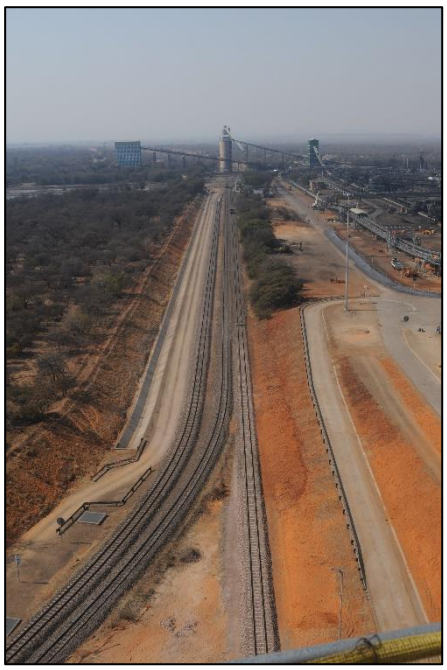
PERWAY SERVICES

The permanent way comprises two sub sections, namely sub-structure and super structure with both being responsible for the support of rail vehicles. As such, the permanent way design solution is an integrated balance between spatial constraints, operational requirements, routing, alignment and structural design.

R&H Rail (Pty) Ltd
Established 1950
www.rhrailway.co.za

Permanent Way





TRACK STRUCTURE DESIGN

As with the alignment design, the track structure is designed to match the relevant traffic model and / or train service design applicable to the logistic requirements. This typically includes:

- Track superstructure design including ballasted and ballastless track forms
- Track substructure design
- Lineside drainage

Civil works are limited to those directly affecting the railway line and primarily involve mass earthworks and bridging or large culvert structures. Loading structures are also included within the civil works undertaken.

ALIGNMENT DESIGN

An alignment defines the path of the permanent way that will support the corresponding train operations paradigm. The design activities typically involve:

- Determining the geometric parameters that define the alignment
- Assessing the spatial and topographical conditions within the project area
- Developing a base model that incorporates all available inputs
- Developing and designing the mainline track layouts to stated geometric constraints
- Developing and designing the yard and / or shunting facilities
- Remodelling existing rail facilities to account for revised operational conditions
- Integrating designs with allied disciplines (OHTE, signals, operations)
- Quantifying and costing of proposed solutions

RESOURCES AND EQUIPMENT

At R&H, we pride ourselves on using contemporary design tools that are compatible across multiple areas and forums. This allows simple transfer and receipt of information with allied work streams on larger projects, and easily integrates multiple data sources into a central repository that forms the basis for the project. We use the following design tools:

- AutoCad and Microstation draughting software
- AutoCad Civil 3D Design Suite
- Bentley Rail Track
- AutoCad Map 3D GIS

RECENT PROJECTS

Our recent projects include:

- Grootegeluk RLOS (2014 – 2019)
  Concept - Execution
  Brownfield Yard expansion at Grootegeluk Mine involving the design and construction of new rail infrastructure to allow the loading of 200 wagon trains
- SAPPI SAICCOR (2018 – 2019)
  Concept - Execution
  Brownfield yard upgrade involving the complete remodelling of the existing yard and revision of the operational design for the SAPPI Umkomaas plant
- KIPUSHI LINK (2017 – 2018)
  Concept – Design
  The design, quantification and construction planning of the refurbishment of the 34km link line from Kipushi Mine to Munama in the Katanga Province of the DRC
- WOLMERTON DEPOT (2014 – 2016)
  Concept – Execution
  The design and construction of yard upgrades at Wolmerton Depot for the PRASA depot modernization project.
- TRAXTION LOCO DEPOT (2018 – 2019)
  Concept – Execution
  The design and construction of rail infrastructure at a locomotive service facility including a traverser and loco service pit

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