



RAHEE INFRA TECH LIMITED
RAHEE TRACK TECHNOLOGIES PVT. LTD.
PANDROL RAHEE TECHNOLOGIES PVT. LTD.

KOLKATA • HYDERABAD
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*Quality First,
Speed Always*



Rahee group is a leading integrated railroad company in India, operating in the field of Rail Track Components, Track Infrastructure and Bridges for over seventy years. Established in 1948, the group specializes in Construction of Bridges, Ballast less Track Construction, Flash Butt Welding of Rails, Turnout Systems, Fastening Systems, other Permanent Way Products and Bridge Products.

Rahee is proud to be associated with Indian Railways, producing premium products enhancing safe rail journey at every stage. The group has several plants in India, manufacturing various track products for Railways. Rahee plants are spread across Eastern India, Kolkata and Southern India, Hyderabad. In addition, there are several rail infrastructure projects executed and under execution across India creating a pan India presence for the group.

Rahee, has been over the past decade contributing to railway infrastructure in India. The company is committed to deliver projects on time, using its integrated management experience and has maintained uncompromising standards of quality, safety and sustainability.

Featuring quality materials, providing experienced and reliable services; Rahee satisfies the requirements with regards to innovation, cost effectiveness and performance. Quality and on time delivery are the core values and it strives to live by the motto "Quality First, Speed always". These values give Rahee an edge and are a great source of comfort for its clients.

www.rahee.com

INFRASTRUCTURE & SERVICES

RAHEE
Quality First, Speed Always



RAHEE GROUP IS A LEADING INTEGRATED RAILROAD COMPANY

Rahee, over the past decade has been transforming the railway infrastructure in India by augmentation and innovation. Rahee's capabilities span the entire gamut of track substructure and superstructure, including Bridge and Track construction. The company is driven to deliver projects on time, using world-class management techniques and has uncompromising standards of quality, safety and sustainability.

BRIDGES



RAHEE HAS COMPLETED SEVERAL BRIDGE PROJECTS ALL ACROSS INDIA INCLUDING CHALLENGES LIKE INCREMENTAL CANTILEVER LAUNCHING OF TRIANGULATED SPANS UP TO

123m

10 km
of Bridges
commissioned

75000 mt
of Steel Bridges
completed

Erected Bridges over
100 m
Pier height

Rahee undertakes turnkey Bridge construction including super structure as well as substructure work. Super structure works include fabrication, assembly and launching/erection of steel, PSC, RCC and composite super structure of all types. Sub structure works include Pile, Well, Box type and Open foundation.

The company carries out construction of both plate & triangulated truss girder bridges including HT steel bridges for large spans. Rahee is approved by Indian railways for manufacturing and supply of welded steel girders for railway bridges.

At Rahee we believe in speedy execution with quality deliverables. To facilitate production at various project sites, Rahee has established well-equipped and modern fabrication facilities. Our facilities are manned

by well experienced and qualified manpower, and supported by an in-house design and drawing team.

Rahee undertakes concrete, steel as well as composite bridge works. Already the company has completed several bridge projects all across India including challenges such as Incremental cantilever Launching of triangulated spans up to 123m for rail-cum-road bridge.

At any time, Rahee is executing contracts involving fabrication and erection/ launching of about 50000 MT of steel structures at various sites spread across India. The company has constructed Super-structure of bridges as long as 5 Km with individual span weight of 2100MT.





Executed

8

different track form
in single project

40 km

of Ballastless Track
commissioned

Construction of over

140 km

of Ballastless Track in progress

TRACK WORKS

Permanent way is the foundation for all railways. Rahee undertakes supply and installation of tracks for all types of railway infrastructure projects. Our team of experts and associates can provide one stop solution for design, supply & installation of tracks for all formats.

**BALLASTED
TRACK**

**BALLASTLESS
TRACK**

**EMBEDDED
TRACK**

Rahee in collaboration with other internationally reputed organizations provides track work solutions to reduce noise and vibrations as per the client requirements.

Rahee uses the most modern methodology and track equipment for design and construction of railway tracks. Team of well qualified and experienced engineers at Rahee ensure that client is provided with the most reliable service and unprecedented convenience in the field.

**RAHEE USES THE MOST MODERN
METHODOLOGY AND TRACK
EQUIPMENT FOR DESIGN AND
CONSTRUCTION OF RAILWAY
TRACKS.**

Rahee has introduced Precast ballastless Plinth track system and construction methodology. Rahee has installed the first Precast ballastless track in India for Delhi Metro developed by proven international technology providers. Use of pre-cast plinth system enhances reliability and quality of ballastless track. This system substantially increases the speed of construction leading to availability of new infrastructure in minimal time.

LANDMARK PROJECTS



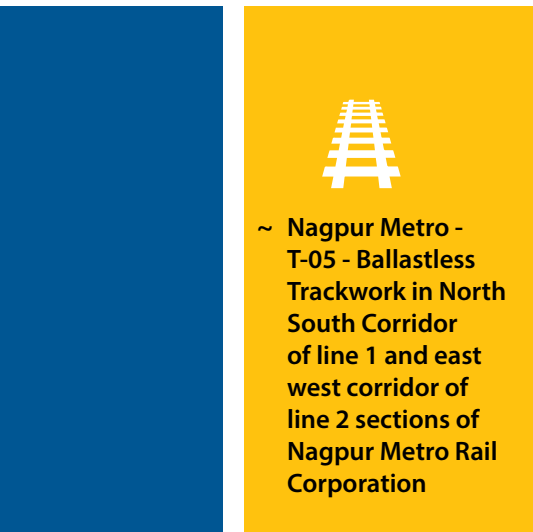
~ Rail cum road Bridge over river Ganga with spans as long as 123 M in length involving 36000 Ton of steel fabrication and erection



~ Kolkata Metro - Design and construction of Saltlake Sector V to Howrah Maidan including Central Park Depot



~ Major Bridges in New BG Line from Jiribam to Imphal with spans as long as 103 m erected at height of over 100 m pier height



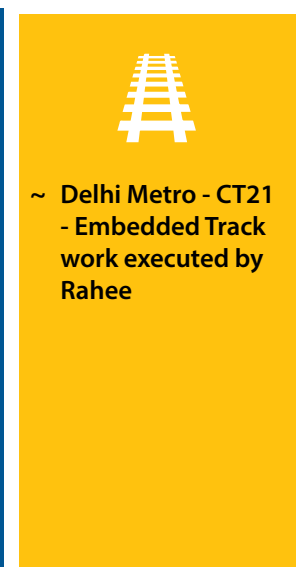
~ Nagpur Metro - T-05 - Ballastless Trackwork in North South Corridor of line 1 and east west corridor of line 2 sections of Nagpur Metro Rail Corporation



~ Major Steel Girder Bridges for Sambalpur – Titlagarh doubling project in State of Orissa



~ Bridge over river Narmada in connection with third line between Bundi – Hoshangabad on Bhopal- Itarsi section in state of Madhya Pradesh



~ Delhi Metro - CT21 - Embedded Track work executed by Rahee



FLASH BUTT WELDING

Rahee with its vision to provide one stop solution from components to commissioning of tracks, set its footprints in the Mobile Flash Butt Welding business in the year 2005 and the company today possesses six state of the art Mobile Flash Butt Welding Plants, serving customers' requirements all over India.

Rahee's machines are capable of welding HH Rails as per the customer requirement. Its team of well-qualified engineers use some of the best welding equipment to deliver high quality welds to the customers. Our available resources can weld over 1500 m of rails per day.

Approved For both

**880 grade &
1080 grade HH**

Rails

Successfully Executed Over

**350000
welds**

Over

2200 km

Of Tracks Welded with
Rahee Machines



RAHEE PROJECTS





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TURNOUTS & TRACK DEVICES



OVERVIEW

Rahee Track Technologies specializes in designing and manufacturing Turnout Systems, Rail Expansion Joints, complete layouts and turnout components like crossing and switch devices for railway tracks, for high-speed, heavy haul, urban and commuting railways, for required rail profiles and gauges as per international standards.

Rahee is one of the leading supplier of Turnouts and special Track devices to the Indian Railways. Rahee's Turnouts and Track devices have been successfully serving the Indian Railways for last 30 years. Rail Expansion Joints developed and patented by Rahee have been adopted for mass usage across the Indian Railway network and is in use for almost 20 years.

Rahee has been exporting Turnouts and special Track devices to various countries for 20 years and has an excellent export track record with overseas customers. Rahee's products are in use in Bangladesh Railways, Malaysian Railways, Srilankan Railways and several other railways around the world.

Through modern engineering, exceptional quality and latest technology, Rahee guarantees efficient and competitive designs for a wide range of railway system, along with a sustainable reduction in the cost incurred for superstructure maintenance and increased turnout availability.

FIRST
private sector Rail End Forging facility in India

FIRST
Rail head hardening plant in India

Machining capability for rails upto

18 m
in length

TURNOUT SYSTEMS

The benefit of RTT's Turnout Systems is based on minimized life cycle costs by

- ~ high lifetime
- ~ low maintenance
- ~ high reliability
- ~ tailor made, specification-confirming to designs

Primary considerations that Engineers at Rahee take into account for designing are:

- ~ non-compensated horizontal acceleration
- ~ cant deficiency variation
- ~ jerk
- ~ lateral load
- ~ axle load
- ~ speed

Points & Crossings suitable for various layouts including Diamond Crossings with or without single or double slips, Symmetrical switches, Turnouts taking off from curve, Dual Gauge turnout, Single Cross-over, Scissors cross-over etc. can be supplied.

SWITCHES

Rahee's state-of-the-art facilities design and manufacture switches as per client's requirements.

THICK WEB SWITCHES

These Switches are made from specific asymmetrical Tongue Rail sections, forged at the end to match standard rail sections. The transition from one section to the other lies mostly in the clamped area at the end of the switch. Thus welding is not required in the flexible area.

The length of the forging can be adjusted to the specific requirement such as welding, insulated fishplating or emergency fishplating. In order to reduce setting forces and to influence the elastic strength of the switch, the base of the switch rail is milled in the flexible area.

CURVED AND TRAP SWITCHES

Rahee produces Curved Switches as per the client needs. Curved switch tongue rails are curved according to the curvature of the turnout from the toe to heel of the switch. Curved tongue rail allows for smooth turning of trains, and are used for the specific curvature for which they are designed.

Trap switch is used to protect main railway lines from unauthorized vehicles moving onto them from sidings or branch lines. A single tongue trap consists of only one tongue rail assembled with one stock rail and one single stock rail.

RAIL END FORGING FACILITY

Rahee's rail end forging facility is one of the most modern facility with capacities to forge over 8000 rails annually. Rahee has the ability to forge rails in various lengths and rail sections including 60E1A1, 54E1A1 and many more as per the client requirement.

HEAD HARDENING FACILITY

Rahee's continuous inductive hardening process hardens rails up to 360 BHN and increases rail strength from 900 kg/mm² to 1080 kg/mm²

CROSSINGS

Rahee designs and manufactures Crossings as per Railway requirement.

HEAT TREATED WELDED CROSSING (HTW)

Rahee's HTW crossing is a monolithic structure, where the Vee is formed from two separate pieces of rails, with a steel plate sandwiched in between. The plate is Electro-slag welded and machined to form a solid nose. The weld metal hardness, at the top of the rail head and in the weld cross section, ranges from 330 to 360 BHN.

The Wing Rails are head hardened through induction hardening method with subsequently controlled cooling, to obtain fine pearlite grain structure. The Wing Rails and the Vee are bolted together by high tensile bolts, to form a complete HTW crossing. These crossings can withstand axle loads as high as 25 tones under varying traffic conditions and can be welded to the adjoining rails.

HTW crossing can be designed and manufactured as per the client's specific requirements. Rahee has supplied various types of HTW crossings such as Acute, Obtuse, Diamond, Curved, Extended Nose Type, and Crossings with clothoidal entry.

CAST MANGANESE STEEL CROSSINGS (CMS)

Rahee can design and supply Turnouts with Cast Manganese Steel Crossings (CMS). CMS Crossing has longer life, higher strength and offers more resistance to wear. They can be supplied with conventional fish plated joints and in weldable joint format, as per client preference.

In Weldable CMS, the crossing is welded with the adjacent rails to run the continuous welded rail (CWR) through Turnouts. Weldable CMS crossings as compared to the conventional crossing, offers higher service life and better riding qualities.



RAIL EXPANSION

JOINTS

Rail Expansion Joints developed by Rahee is a patented product and widely popular in India as Improved Switch Expansion Joint. After years of trials on Indian track the product has successfully been approved by the Indian Railways for mass usage on its network.

Imp SEJ comprises a pair of non-bent Rails (Stock Rail and Tongue Rail) mounted on C.I Chairs with a gap (expansion gap) between the two juxtaposed rail

ends. A third rail (gap avoiding rail) is securely bolted to the Stock Rail by bolts with high tensile strength to form an extension of the Stock Rail. The system also has check rails to reduce wheel hunting, especially for worn out wheels. They are bolted to the C.I Chairs fixed symmetrically opposite to the expansion gap. The check rails also act as angle ties to keep the sleepers in position. All wheel transfer areas are head hardened to increase service life.

Salient features of Imp SEJ:

- ~ Excellent riding comfort
- ~ Low life-cycle cost
- ~ No undue stress on the rails
- ~ Capable of being laid on curved tracks
- ~ Head hardened wheel transfer zone leading to longer service life
- ~ Smooth wheel transfer, increasing the life of rolling stock
- ~ Capable of handling gaps up to 200 mm and more, with minor modifications
- ~ Safe due to presence of check rails which guard against excessive play of worn out wheels
- ~ Continuous support for wheel-set on rail; no jump or change in level of wheel-set while negotiating gaps



GLUED INSULATED JOINTS

Glued insulated joints are used in tracks that meet certain requirements regarding stability, good tamping and sleeper quality. It consists of glass fibre cloth insulated fishplates, a corresponding number of insulated high-tensile bolts and end post made of insulating material.

They can be assembled in-situ or at works. It meets International standards for insulation resistance, pull load, deflection test, wet insulation test etc. Every fabricated/ assembled joint is checked for vertical and lateral alignment. Joints are subjected to insulation resistance test in dry condition. Pull out test is also carried out at works as a prototype test. The prototype test also includes insulation test in dry condition and test in wet condition.

ADVANTAGES

- ~ Reduced wear in wheel overrunning area
- ~ Reduced maintenance costs
- ~ Reduced noise
- ~ Greater riding comfort

TECHNICAL CHARACTERISTICS:

Types of sleepers	: Wood and concrete
Rail sections	: All common rail sections
Heat treatment of joints	: Hardened or preferably made from head hardened rails
Bonding	: With appropriate bonding and hardening agents
Manufacturing locations	: In the factory: Ideal conditions regarding cleanliness, temperature and manufacturing procedure because rail ends and surface of steel parts to be bonded must be spotlessly clean.
	: At site As per client's instructions.



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FASTENINGS & SLEEPERS

RAHEE
Quality First, Speed Always



RAHEE IS WELL EQUIPPED WITH DESIGN FACILITIES AND IS CAPABLE OF SUPPLYING ELASTIC CLIPS AS PER SPECIFIC REQUIREMENT OF CUSTOMERS.

OVERVIEW

Rahee is a leading supplier of Rail fastening systems, with manufacturing experience of over 60 years. Rahee Group's innovative outlook has propelled the company as a leader in this field.

Rahee's range of fastenings covers a wide variety of systems to suite specific project requirement. The range includes Elastic Fastenings, Rigid Fastenings, Track Bolts and Nuts, Fish Plate and Bolts, High Tensile Fasteners, Rail Screws, Rail Pads and Special applications.

Rahee endeavours constantly to develop innovative solutions for better performance. Rahee's

Zero Restraint Fastening System (patented), is a unique & innovative solution developed to improve upon conventional fastening system used by railways on bridges. Rahee's design of ZRF System has been approved and adopted by the Ministry of Railways for use in India.

Rahee in its pursuit to deliver the best and most modern solutions to its customers, has also entered in a Joint Venture with Pandrol UK, world leaders in the field of Resilient Fastening System. The JV company manufactures and supplies one of the most advanced elastic fastening systems in the world.

Manufacturing experience of over **60 YEARS**

Rahee's range of fastenings covers a wide variety of systems to suite specific project requirement.

ELASTIC FASTENINGS



ELASTIC RAIL CLIPS

Rahee manufactures elastic rail clips to customer requirement. It is well equipped with design facilities and capable of supplying customised elastic clips for different rail section and toe load requirement of the customers. All facilities for testing are available at our works. Finite element analysis is carried out to design clips. Special coatings can be applied on the clips as per the customer's request.

TRACK MATERIALS

FISH PLATES

We manufacture and supply fish plates to suit UIC, BS and other standard rail profiles. We have already developed a wide range of rolled fish plate profiles for rail sections such as: UIC 60, UIC 54, U33, BS 80A, BS 90A and IRS 52 KG

STEEL CLIPS

Steel Clips are designed to hold the foot of the rail with the Base Plate or Sleepers and are fastened to the rail and Base Plates with standard or special shaped Bolts & Nuts.

PRODUCTS CAN BE MANUFACTURED AS PER CLIENT SPECIFICATION IN COMPLIANCE WITH INDIAN OR INTERNATIONAL STANDARD

TRACK BOLTS & NUTS

Rahee manufactures and supplies bolts and nuts for Railway use. The products can be manufactured as per the client specification in compliance with Indian or International standard specifications.

HIGH TENSILE BOLTS & NUTS

We use modern bolt forging with continuous atmosphere controlled heat treatment facilities to produce high quality heat-treated threaded high-tensile fasteners. Heat Treated Fastenings are manufactured to Indian standard specification or as per customer's requirement.

SPIKES

Rahee supplies Spikes as per the customer's drawings and specifications in galvanized as well as in non-galvanized condition. We manufacture hot forged and hot thread rolled Screw Spikes / Drive Spikes/ Dog Spikes as per customer's requirements.

RUBBER PADS

Rahee has the capability to design and manufacture pads as per customer specification in line with international standards. We manufacture pads for use on standard track on PSC Sleepers, Steel Sleepers for Bridges, Turnouts and Rail Expansion Joints.

ADVANTAGES OF GRSP ARE

- ~ Resilience for rail vibration.
 - ~ Higher creep resistance.
 - ~ Electrical resistance.
 - ~ Increase in service life of rails, sleepers and other rail fastening.
-

RANGE OF PADS MANUFACTURED BY RAHEE:

~ Composite Rail Pads

10 MM

Thick GRSP

~ Studded Rail Pads

~ Nylon Cord Reinforced GRSP for Turnouts

25 MM

Thick Nylon Cord Reinforced Elastomeric Pads for Bridge Sleepers

~ Steel Embedded Rubber Pad for Fastening System on Bridges.





ZERO LOAD FASTENING

ZERO RESTRAIN FASTENING SYSTEM FOR BRIDGES

ZRF is a unique innovative solution designed by Rahee to overcome the shortcomings of conventional fastening system used by railways on bridges. Rahee's design of ZRF assembly on Steel Channel Sleeper or H-beams meets the requirement of IRPWM (i.e. Rail free fastening). Rahee design uses Elastic Rail Clip Mk-III.

SLEEPERS

H-BEAM STEEL SLEEPER FOR BRIDGES

The H-beam sleeper is made of single rolled H-beam section having adequate bearing area, robust structure and accurate dimensions which are more suitable for the tracks running over Steel bridges.

Canted bearing plates are riveted on the H-beam sleeper to hold the running rails using rail elastic fastening system.

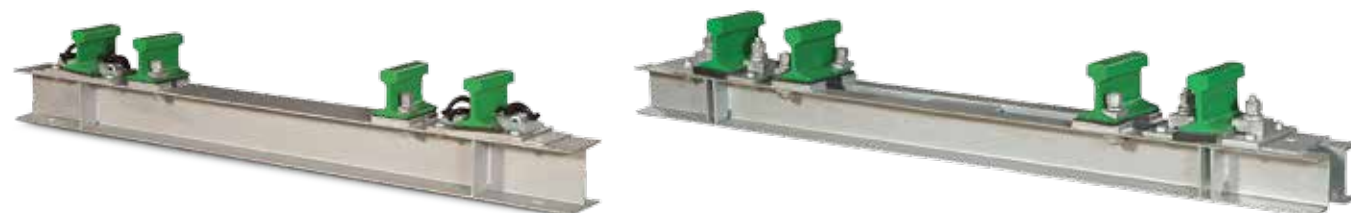
STEEL CHANNEL SLEEPER FOR BRIDGES

Steel channel sleepers are designed for use in the railway tracks running over Steel bridges where a resilient ballast bed cannot be used.

Steel channel sleepers are fabricated from steel channel sections, wherein two channels are welded together to obtain the required strength. Both running and guard rails are accommodated on the channel sleeper.

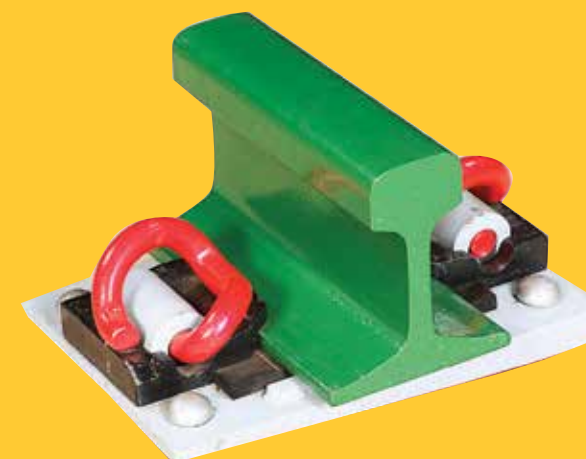
STEEL SLEEPERS FOR STANDARD TRACK

Steel sleepers are used for standard railway tracks and turnouts subjected to medium or heavy axle loads. They are lightweight and dimensionally more accurate than wooden or concrete ones. Their multiple advantages, including lower cost compared to wooden sleepers, make them an effective technical solution for modern rail networks. Rahee offers a wide range of steel sleeper designs, including ones for heavier axle loads and higher speeds.



SALIENT FEATURES

- ~ Provides no restraint to longitudinal movement of Rails
- ~ Provides rigid lateral support to Rail for stability, correct gauge and alignment
- ~ Use of Elastic Fastening provides vertical stability to Rail
- ~ Provides higher degree of resistance to Rail overturning
- ~ Easy to install and inspect in installed condition
- ~ Fit for re-application
- ~ No loose component is involved
- ~ Uses Elastic Rail Clip Mk-III, a stable and proven elastic clip
- ~ Facility for interchangeability of Rail





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