

# TURNOUTS & TRACK DEVICES

**RAHEE**  
Quality First, Speed Always





# 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/mm<sup>2</sup> to 1080 kg/mm<sup>2</sup>

# 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:

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





## RAHEE INFRA TECH LIMITED

### **Registered Office and Works :**

Rail Track Fittings: 107, Lakhinarayan Talla Road,  
Shalimar, Howrah-711103, West Bengal, India  
Phone: +91-33-2668 3533/34 Fax: +91-33-2668 3737  
Email: info@rahee.com

### **Kolkata Works :**

Bridge Fabrication: NH-6, P.O. Argori, Jangalpur,  
Howrah-711302, West Bengal, India  
Rail Fastenings and Pads: Radhadasi Village-Panchpara,  
Andul Road, Howrah-711317, West Bengal, India

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## RAHEE TRACK TECHNOLOGIES PVT. LTD.

### **Registered Office and Kolkata Works :**

Turnouts and Special Track Devices: NH-6, P.O. Argori,  
Jangalpur, Howrah 711302, West Bengal, India.  
Phone: +91-98308 63111  
Email: infortt@rahee.com

### **Hyderabad Works :**

Turnouts and Special Track Devices:  
173/B/1A, IDA Bollaram Village, Jinnaram (M),  
Sangareddy Dist. 502325, Telengana, India

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## PANDROL RAHEE TECHNOLOGIES PVT. LTD.

### **Registered Office :**

Kenwell Manor, 5th Floor, 10/D/2, Ho Chi Minh Sarani,  
Kolkata-700071, West Bengal, India  
Phone: +91-33-2283 4042  
Email: info@pandrolrahee.com

### **Hyderabad Works :**

Modern Rail Fastenings: 173/A3/B1, IDA Bollaram Village,  
Jinnaram (M), Sangareddy Dist. 502325, Telengana, India  
Phone: +91-83369 63718

**[www.rahee.com](http://www.rahee.com)**