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# GAME ON: IS INDIA STRUCTURALLY READY FOR GLOBAL STADIUM INFRASTRUCTURE?

## 2036



Bridging ambition with engineering excellence in  
India's sports infrastructure boom.



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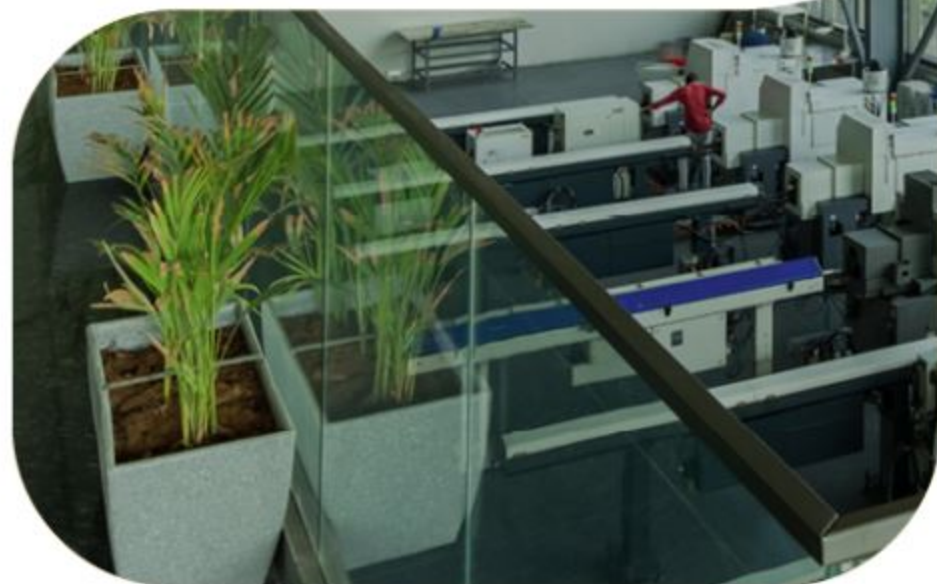
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# ENGINEERING WELLNESS

As the world increasingly leans toward regenerative design and responsible industrial development, India is beginning to see green shoots of possibility, projects that blur the line between performance and purpose, between sustainability and steel. One such standout is the **Miraclus Orthotech Headquarters and Industrial Campus** located in the quiet, rural surrounds of Kheda, Gujarat. Conceived by INI Design Studio, this facility is not just a manufacturing space for orthopaedic implants, but is a case study in what the future of smart, sustainable, steel-integrated industrial campuses could look like.



## FACT FILE

Project: **Miraclus Orthotech Headquarters & Industrial Campus**

Location: **Kheda, Gujarat**

Site Area: **1,93,600 sq ft**

Phase 1 BUA: **56,000 sq ft**

Client: **Miraclus Orthotech Pvt Ltd**

Design Team: **INI Design Studio**

PEB Partner: **Prem Engineering & Infra Projects**

Structure: **Rupesh R. Modi**

Sustainability Target: **IGBC**

**Gold Ratings**

Status: **Completed (Phase-1)**

Spanning a generous site area of over 1.93 lakh sq ft, the Miraclus Campus has been designed as a phased development, with Phase 1 already completed and in operation. The client's brief was clear: they required a facility that could house their core R&D and implant manufacturing operations, reflect their commitment to quality and health, and stay flexible to accommodate growth and technological shifts in the healthcare domain.

But INI's response went well beyond the brief. It was contextual, conscious, and compelling. Nestled in a semi-rural, low-density setting, the masterplan used the site's natural terrain and wind movement to carve out a micro-campus that is both functionally efficient and environmentally intelligent.

## INDUSTRIAL INFRASTRUCTURE, REIMAGINED

At the centre of this design solution lies a bold yet balanced structural strategy, a hybrid construction model using Pre-Engineered Building (PEB) steel for the manufacturing and CNC processing bays, paired with conventional RCC construction for the office, administrative, and ancillary zones. This not only reduced construction time significantly but also allowed the architects to explore long-span structures with minimal columns, an essential requirement for machinery mobility and spatial clarity.

The use of Galvalume steel panels, MS structural members, and pre-coated roofing systems enabled a

lean, durable, and low-maintenance shell, while the visible expression of steel through clean rooflines and slim frames lent the building an aesthetic that felt both modern and honest.



The steel braces on the façade are more than just structural, they are the visual metaphor of orthopaedic resilience.

**Nikul Shah,**  
Director -  
Architecture,  
INI Design Studio



"We weren't just designing a manufacturing facility, we were crafting a place where purpose meets environment, where wellness begins at the workplace."  
**Jayesh Hariyani,**  
CMD & Sr. Principal,  
INI Design Studio

But steel here was not just structural, it was strategic. Prefabricated steel components allowed the project to stay on schedule even amidst COVID-related uncertainties. It ensured tighter quality control, reduced onsite waste, and most importantly, lowered the ecological footprint compared to traditional, concrete-heavy construction.



## DAYLIGHT, DRAINAGE, & DESIGN INTELLIGENCE

One of the strongest sustainability stories emerging from this project is its emphasis on passive environmental design. The buildings have been oriented to maximise north light, minimising glare while optimising daylight access across nearly 90 per cent of occupied spaces. This reduces dependence on artificial lighting during daytime work shifts, an important operational gain for a precision-manufacturing environment.

### Key Elements

- Galvalume sheeting for roofs
- Custom MS steel bracing
- High-performance, low-emissivity glass
- Prefabricated steel frames for fast erection

The high-performance glazing, roof insulation, and shading devices work together to reduce heat ingress, thereby cutting cooling loads and enhancing user comfort without relying heavily on mechanical systems.

Beyond the building envelope, the site's landscape strategy plays a major environmental role. Rainwater is harvested and managed using bioswales and permeable paving, helping recharge groundwater and avoid runoff. Wastewater from washrooms and utility areas is treated and reused for landscaping through an on-site greywater system.

## WELLNESS THROUGH ARCHITECTURE

A project such as this cannot be considered sustainable if it does not account for human sustainability, the wellbeing of the people who occupy and maintain it. In this regard, the Miraculus

Campus makes a subtle but significant statement. The large, shaded breakout zones, open courtyards, and green buffers between production areas not only offer visual relief but support the mental and physical wellbeing of workers. Natural light, clean air, and safe navigation paths are not luxuries here, they are built into the DNA of the architecture.

The inclusion of a future expansion area, along with structural provisions already made in Phase 1, reflects the long-term thinking behind the project. It allows the campus to grow organically, without disrupting the ecology or requiring resource-intensive retrofits.

*For this project, sustainability wasn't an add-on, it was the architectural brief.*

## COLLABORATION AS A CORNERSTONE

Behind this project's success lies an ecosystem of collaboration. INI Design Studio not only led the architecture, landscape, and engineering design, but also coordinated closely with:

- Prem Engineering & Infra Projects (PEB fabrication)
- V&G Facade Technology and FES (façade consultancy)
- Rupesh R. Modi (structure)
- Various MEP, safety, and sustainability consultants

This multi-disciplinary team, under strong project management, ensured that the targeted IGBC Gold rating could be realistically pursued, even under tight time and cost conditions. Moreover, local labours were trained and employed across various phases of execution, supporting regional economies while instilling pride in the final built outcome.

## FINANCIAL AND CONSTRUCTION OUTCOMES

Delivered within a modest budget of ₹15 crore (against the ₹16 crore estimate), the first phase of the campus stands as proof that sustainability and fiscal prudence are not mutually exclusive. The use of steel made timelines predictable, while pre-planning and BIM coordination avoided costly on-site changes.

From a safety standpoint, the project followed strict PPE and site supervision guidelines, including fall protection systems and training programs for workers, a rarity in industrial construction of this scale.

## MODEL FOR SUSTAINABLE MANUFACTURING

The real achievement of the Miraculus Orthotech Campus lies in its ability to redefine what an industrial building can be, not just a shed for machines, but a holistic environment where people work better, energy is used smarter, and the earth is treated more gently. As a manufacturer of medical-grade implants, Miraculus is in the business of restoring movement and healing bones. And fittingly, their headquarters, engineered with steel and shaped by sunlight, stands as a sustainable skeleton that supports innovation, purpose, and environmental balance. ■

**Miraculus**  
implanting LIFE

### Why It Matters?

As India ramps up its Make-in-India ambitions, there is an urgent need for manufacturing spaces that are green, scalable, and human-centric. The Miraculus Campus is a reminder that with the right mix of vision, materials, and collaboration, steel can do more than carry load, it can carry intent. It is not just a building. It is a benchmark.