



engineering modern transport **infrastructure**



The Indian CONSTRUCTION GIANT

L&T Construction, India's largest construction organization and ranked among the world's top 30 contractors, has been over the past seven decades transforming cityscapes and landscapes with structures of immense size and grandeur. The company's capabilities span the entire gamut of construction - civil, mechanical, electrical and instrumentation engineering - and its services extend to all core sector industries and infrastructure projects.

Several of the country's prized landmarks - edifices, structures, airports, industrial projects, flyovers, viaducts, water and power infrastructure projects carry L&T's signature of excellence in construction. Today, more and more structures beyond India's boundaries are standing tall, thanks to L&T Construction.

L&T Construction straddles seven related businesses:

- Buildings & Factories
- Transportation Infrastructure
- Heavy Civil Infrastructure
- Power Transmission & Distribution
- Water & Effluent Treatment
- Smart World & Communication
- Renewable Energy

Eighty years of UNDISPUTED LEADERSHIP

Larsen & Toubro is a major Indian multinational in technology, engineering, construction, manufacturing and financial services, with global operations. Its products and systems are marketed in over 30 countries worldwide. A strong, customer-focused approach and the constant quest for top-class quality have enabled L&T to attain and sustain leadership in its major lines of business across eighty years.

- Construction
- Heavy Engineering
- Hydrocarbon Engineering
- Power
- Metallurgical & Material Handling
- Ship Building
- Infrastructure Concession
- Realty
- Electrical & Automation
- Construction & Mining Machinery
- Valves
- Infotech
- Technology Services
- Financial Services

Building landmarks, setting benchmarks*

- **11** International Airports
- **400+** High Rise Towers
- **40** Institutions & Public Spaces
- **70000+** Apartment Units
- **85+** Manufacturing Facilities
- **22000+** Hospital Beds
- **5 lakh +** km of Water & Waste Water Networks
- **7200** MLD of Water & Waste Water Treatment Plants
- **7.3 lakh** Hectares of Land Being Irrigated
- **805** Substations
- **36900 ckm** of Transmission Lines
- **1.5 lakh+** km of Distribution Lines
- **156263** Habitations Electrified
- **120** Towns Power Quality Enhanced
- **2.5+** GW Portfolio of Solar Plants
- **344** km of Metro Rail Corridors
- **19.5** km of Monorail Corridors
- **22600** Lane km of Highways
- **12.08 million** Sq. m. of Runways
- **8315** MW of Hydro Power Projects
- **8080** MW of Nuclear Power Projects
- **5075** tkm of Railway Track Laying
- **17906** tkm of Railway Electrification
- **245** Signalling & Telecom Installation in Stations
- India's Largest City Surveillance Project: **6000** cameras at **1500** locations at Mumbai

*The track record information published here is as of September 2019

Turnkey solutions for **TRANSPORTATION INFRASTRUCTURE**

Whether it is the acoustics of the desolate desert or the deafening clamour of city traffic, for L&T Construction's Transportation Infrastructure business, complexity has always sounded as opportunity. Powering the infrastructure segments comprising building and upgrading of roads, runways, elevated corridors and railways, L&T enlivens the lifelines of nations.



Wadi Kabir road, Oman



Delhi Metro



Mumbai Monorail



Railway sidings for Dhamra port

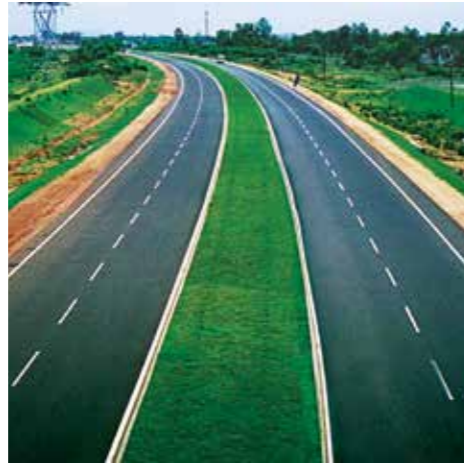


Mumbai - Pune expressway



Apron view of Hyderabad international airport

Kancheepuram - Walajahpet road



Al Ansab road, Muscat



Khandala-Lonavala bypass



Beawar-Pali-Pindwara road



Sheikh Khalifa interchange, connecting Dubai and Abu Dhabi



INFRASTRUCTURE THAT CONNECTS PEOPLE AND PLACES

Roads

Creating high quality transportation infrastructure in India as well as overseas is one of the prime operations for L&T's Transportation Infrastructure vertical. Having designed and constructed the full spectrum of highways, small to large, urban to rural, simple to complex, L&T has to its credit more than 13,500 lane km of road and several bridges which include expressways, National / State highways, toll plazas and complex road interchanges in both India and neighboring countries. Expertise also covers the construction of race tracks / test tracks for high speed motor sport that demands precision and specialized surface treatment.



Athaibah interchange

18850 lane km of highways



Runway at Mumbai

TAKING OFF TO THE ZENITH

Airside Infrastructure

L&T provides end-to-end solutions for the design and construction of airside infrastructure of both greenfield and brownfield airports for civil and defence purposes through its broad spectrum of capabilities. Airside infrastructure includes runways incorporating CAT IIIB instrument landing systems, taxiways, aprons and service roads, drainages, fire and fuel lines, storm water drains, airfield ground lighting and approach lights, high fill embankments and landscaping incorporating green features.

Most of the runways built by L&T at international airports like at Delhi, Mumbai, Bengaluru and Hyderabad are compatible with the landing of new generation wide-bodied aircrafts like the Airbus A-380.

RIDING HIGH THROUGH DEDICATION

Elevated Corridors

L&T's pedigree in innovation, structural design and execution proves its position as a leader in elevated corridors which has translated into the fine delivery of challenging projects. The business segment has expertise in the design and construction of a wide array of elevated civil structures such as elevated corridors, grade separated concrete and steel structures.

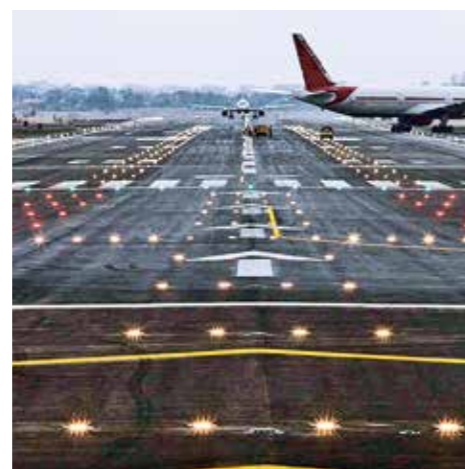
Capability also includes design and construction of super structures using segmental construction, launching girders, prestress precast I / box girders, steel composite girders and balanced cantilever structures.



Elevated corridor and forecourt at Mumbai International Airport



CAT IIIB landing system at Delhi



Illuminated view of runway at Mumbai



Runway at Bengaluru



Sirsi Flyover, Bengaluru



Panipat elevated corridor

7.49 million sq.m of runways

Over 50 km of elevated corridors

ON TRACK TO TRANSFORMATION

Railways

Railways are the lifeline of nations and L&T has established itself as a unique service provider for delivering turnkey solutions for all types of projects in the rail and urban transit sector.

L&T offers Engineering, Procurement and Construction solutions encompassing design, engineering, supply, project planning, quality control and field execution.

At the forefront of building railway infrastructure for mainline and dedicated freight corridors, L&T has been meeting the demands of the country by applying project management competencies, new technologies and mechanized construction methods. With a proven track record and more than three decades of experience, L&T has introduced several pioneering techniques for the execution of projects with innovation, quality and speed.

L&T is the only private organization which is qualified to undertake integrated rail construction projects for the Indian Railways. Its expertise includes Ballastless Tracks, Rigid Overhead Conductor Systems (ROCS) and Gas Insulated Switchgear (GIS). L&T's railway construction business segment has played a lead role in constructing India's first monorail system at Mumbai and also brings in extensive experience of working on large-scale underground rail infrastructure.

4200 tkm of railway track laying



Automatic ticketing system at Delhi Metro



Signaling and telecommunication



Traction substation



OHE for Kayankulam - Thiruvananthapuram section



Operations and command centre of Mumbai Monorail

Capability Spectrum

- Integrated solutions for railway construction
- Railway electrification
- Dedicated rail links and merry-go-round systems
- Complete civil and track works
- Signaling and telecommunication
- Steel / concrete bridges and tunnels



Railway electrification works



Panvel Nadi viaduct

ENERGISING THE CORE SECTOR

Dedicated rail links and merry-go-round systems: End-to-end rail connectivity solutions are on offer for power, steel, aluminium, cement plants including the manufacture of associated bulk material handling equipment.

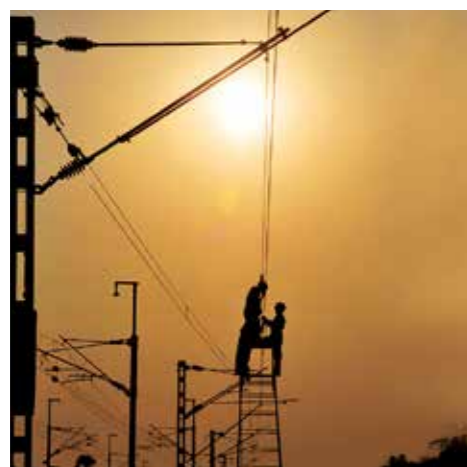
Steel / concrete bridges and tunnels: Having executed over 220 km of bridges and viaducts of various kinds, L&T has pioneered the construction of major steel and concrete bridges for rail infrastructure using innovative construction techniques.

Signaling and telecommunication: L&T has the expertise and experience to handle major turnkey projects for railway signaling and telecommunication services having forged strategic alliances with experts in the field. On offer is state-of-the-art system engineering for train control systems comprising automatic train supervision, protection and operation including electronic interlocking.

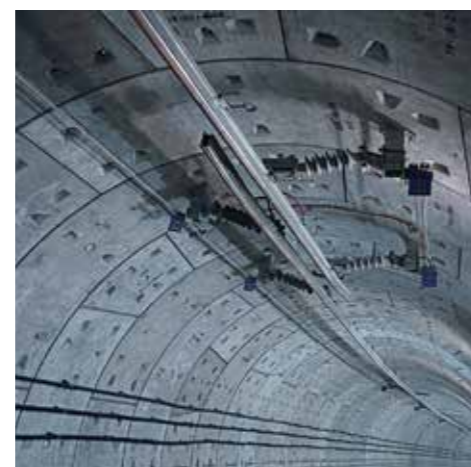
Comprehensive civil and track works: Armed with the expertise to construct rail beds and permanent way works involving embankments, bridges, associated civil works comprising station buildings, passenger amenities and staff quarters, L&T offers total solutions for civil and track works.

POWER OF SPEED Railway Electrification

Right from 1981, L&T holds the unique distinction of energizing major trunk routes of the Indian railway network in record time. The turnkey capabilities in the overhead catenary system include design, supply, erection, testing and commissioning of 25 kV, single phase 50 Hz, traction overhead equipment, traction substations and switching stations.



Electrification of the Tiruvallur - Arakonam section



Rigid Overhead Contact System



Portal corridors at Mumbai CST yard



Railway sidings



Dedicated track for a steel plant

14300 tkm of railway electrification | Signalling and telecommunication in 85 stations

30 traction substations including India's first 2x25 kV | 220 switching stations



Mechanized track laying

DEDICATED FREIGHT CORRIDORS

Having established a mechanized method for track linking resulting in high quality, speedy execution and improved accuracy, L&T, along with a consortium partner, is executing India's largest Design & Build railway project for a section of the Western Dedicated Freight Corridor. The project envisages mechanized track laying using state-of-the-art, fully automated 'New Track Construction Machines' at the rate of 2 km per day, which is considered several times higher than conventional methods. L&T is also building a significant stretch of the Eastern Dedicated Freight Corridor

INDIA'S FIRST MONORAIL CORRIDOR

Mumbai Monorail

India's first monorail transit system was commissioned by L&T on the Jacob Circle-Wadala-Chembur section in Mumbai. The 19.5-km turnkey Design & Build project with 17 stations and two maintenance depots, involves testing and commissioning with operation and maintenance.



Mumbai Monorail - India's first 750 V DC traction based urban transit system



Flash butt welding



Achieving 2 km track construction per day using mechanized track laying equipment



Automatic ticketing system at Mumbai Monorail



Mumbai Monorail station building



Mumbai Monorail depot

2 km track laying per day | Route length of 626 km | 110 major bridges
1188 minor bridges and culverts | Railway electrification package for EDFC

19.5 km | 17 stations | 2 depots

SPECIALIZED TECHNOLOGY AND CONSTRUCTION FEATURES

Ballastless Track: L&T has pioneered the construction of Direct Fixation Resilient Track System (Plinth type) which is a cast in-situ, top down method of construction that offers a clear advantage on elevated corridors owing to lesser dead loads on the viaduct, less material handling and accurate construction.

Precast Technology: For faster completion of projects, L&T adopts state-of-the-art precast technology for various railway and urban transit projects. Concrete elements such as viaducts, full span 'U' girders, tunnel lining rings, armour units, guideway beams, deck elements and even station buildings are prefabricated in state-of-the-art casting yards.

Structural Fabrication Yards: The ISO and OHSAS certified facilities for rolling mill structure fabrication and galvanizing at Puducherry and Pithampur are capable of handling custom-made structures required for railway projects. All such fabrication workshops of L&T are equipped with sophisticated, heavy-duty facilities to take up intricate fabrication for electrification of masts, bridge decks, structural components, conveyor galleries and transfer towers.



Ballastless track at Chennai Metro



Bangalore Metro



Hyderabad Metro



Full span 'U' girder for Delhi Metro

COMRADES IN COMMAND

Engineering Design and Research Centre: Well-equipped design facilities at the Engineering Design and Research Centres (EDRC) in Mumbai, Chennai and Faridabad offer a complete infrastructure package, including consultancy services and construction engineering services for roads, runways, railways and other special infrastructure projects.

The Construction Methods Planning Cell (CMPC) of this business vertical complements site activities with safe and economical construction techniques, erection schemes, method statements and project planning.

Project Management: From the innumerable projects handled, L&T has developed a core team of project managers and dedicated sub-contractors who thoroughly understand every facet of the activity from design and construction to commissioning and has established a fool-proof methodology for speedy construction.

Resources: While people are the company's most valued asset, L&T also has one of the largest fleet of construction equipment that helps in achieving speedy, high quality and cost-effective construction. Fully mechanized stone and metal quarries and crushing plants strengthen the organization's resource base.

Safety & Quality: At L&T, Environment, Health & Safety (EHS) is considered a core value. Systems and procedures have been established for implementing the requisites at all stages of construction and are accredited to the International Standards of ISO 9001, ISO 14001 and OHSAS 18001. L&T continues to maintain its tradition of meeting stringent quality standards and adherence to time schedules across all projects.

Competency Development Centre (CDC): CDC, a first-of-its-kind training centre for rail construction in the country at Kancheepuram near Chennai, helps in augmenting the competency of the construction workforce in rail construction and facilitates training by setting up a modular training school with well-defined infrastructure and curriculum.

Construction Skills Training Institute: Through its Construction Skills Training Institutes, L&T has been providing skill development training to empower and convert rural youth into trained workmen in significant numbers.



Team L&T on Mumbai airport runway



Safe work practices



Students at Competency Development Centre



Traffic management at Sheikh Khalifa interchange, Dubai



Engineering Design and Research Centre



Precast yard



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