



Urban transportation
systems:
delivering turn-key
solutions



Athens subway system - Greece



A86 Duplex, Paris - France



Toulouse subway system - France

Turn-key urban transportation systems

VINCI Construction Grands Projets, a subsidiary of VINCI, the world's leading concession and construction group, designs and builds major civil engineering infrastructure works and buildings throughout the world.

The continued rapid growth of increasingly densely populated urban centres throughout the world has made the development of safe, fast, and reliable transit systems a necessity.

In response to the challenges faced by modern metropolitan centres, VINCI Construction Grands Projets is able to design and deliver high-performance turn-key urban transportation systems combined with effective and reliable control and operation systems.

VINCI Construction Grands Projets' energy-efficient and environmentally friendly solutions allow for the harmonious integration of mass transit systems within urban development – enabling transportation authorities, agencies, and other clients to offer effective transportation services while respecting sustainable development requirements.

Integrated competencies for enhanced effectiveness

Thanks to its extensive involvement in concessions, the energy industry, and road construction, VINCI possesses expertise in a broad range of knowledge and skill sets required for designing and developing effective urban transportation systems:

- ▶ Bridge-building, tunnel excavation, and linear infrastructure development (VINCI Construction Grands Projets and VINCI Construction France).
- ▶ Electrical engineering and distribution, electromechanical technology, signalling, security, and information systems (VINCI Energies).
- ▶ Building and general construction and finishings.
- ▶ Railway construction (ETF-Eurovia Travaux Ferroviaires).
- ▶ Transit system coordination and integration components (VINCI Hellas).
- ▶ Financing, operations, and systems maintenance for urban transportation projects (VINCI Concessions).

VINCI Construction Grands Projets works in partnership with different equipment and rolling-stock manufacturers and always seeks the most appropriate partnerships on a project-by-project basis, thereby creating optimal working conditions in order to lead urban transit system projects and bring them to a successful completion. As a result, clients deal with a single touch-point at VINCI and, at project completion, take delivery of a turn-key solution.

Internal synergies within the Group help keep design and development timeframes to a minimum, particularly with regard to responses to call for tenders containing multiple bids, which are more time-consuming to prepare.

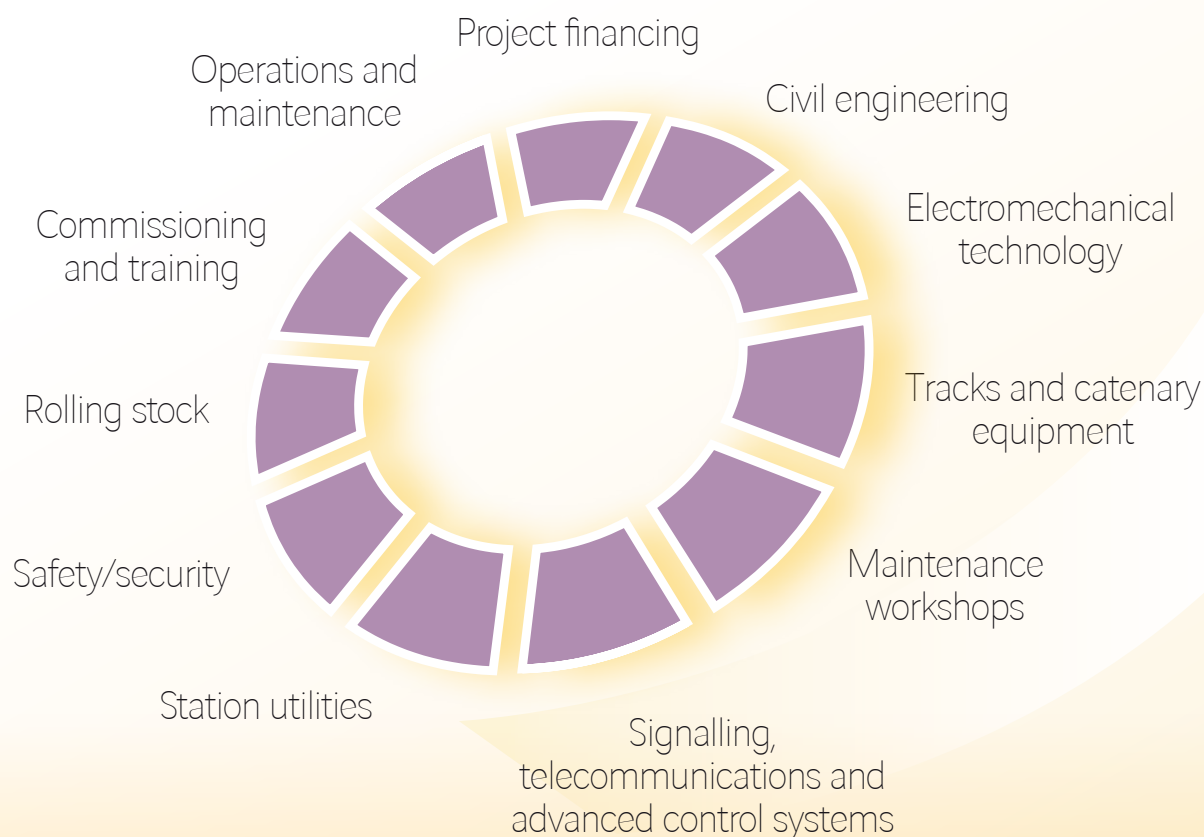
Expert management for complex projects

Thanks to over 100 years of experience and continually enhanced expert know-how, VINCI has become the leader in large-scale project management requiring coordination and dialogue between different disciplines.

VINCI Construction Grands Projets brings together all the competencies required to deliver – on budget and on time – effective urban transportation systems that meet client needs for productivity and performance.

DESIGNING AND INTEGRATING URBAN TRANSPORTATION SYSTEMS

What sets us apart is our project management expertise, our ability to coordinate different disciplines for optimal results, and our capacity to be a one-stop solutions provider for our clients.



Expert project task sequencing

To complete an urban transit project successfully, it is necessary to integrate different system components supplied by different specialized companies in a seamless manner within a work environment built on dialogue and collaboration. Project management planning includes client participation on issues such as the compatibility between different systems and systems interactivity in terms of technical options, costing, and planning. Our goal-oriented approach to task management helps minimize timeframes both for specific tasks and the project as a whole.

► Route optimization

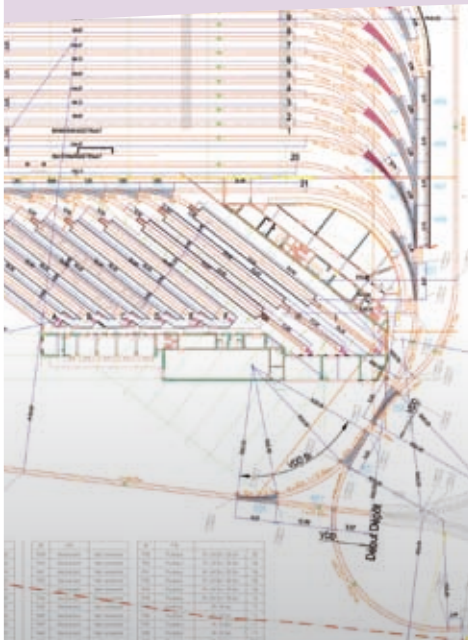
Thanks to its extensive experience in tunnel excavation and linear infrastructure development, VINCI Construction Grands Projets is able to recommend optimal routes that address transportation needs and take into account site constraints (geological characteristics, access issues, construction methods) as well as alternative routes to meet client needs.

► Design

With its 300 design and engineering specialists, VINCI Construction Grands Projets can manage all phases and processes in the design of urban transportation systems.

► Selecting rolling stock

VINCI Construction Grands Projets supports clients in selecting rolling stock based on each project's specific line, network, and performance criteria (frequency, speed, travel time).



Algiers subway system - Algeria



High-speed rail link, Lyon - France



Toulouse subway system - France

► **Archeological excavations**

Many underground projects in urban settings require archeological excavations at the worksite to preserve and showcase artefacts and locations of historical value.

► **Civil engineering**

The civil engineering phase (tunnels, platforms, stations, major infrastructure), which is the most spectacular part of any project, is a true showcase for our expertise at VINCI Construction Grands Projets. In order to limit the impact on urban life, we coordinate worksite planning and workflow to minimize road traffic and disturbances such as noise.

► **Electromechanical technology**

Electromechanical devices and equipment are designed in the initial phase of the project and manufactured concurrently with the civil engineering phase; subsequently, they are integrated in the transportation system as soon as work progress on the infrastructure allows it.



A19 highway - France



Lefortovo tunnel, Moscow - Russia



A86 Duplex, Paris - France

► Integrating rolling stock

Rolling stock must be integrated in the system in coordination with civil engineering activities and electro-mechanical equipment. Thanks to its experience on projects in several countries, VINCI Construction Grands Projets is able to complete this type of operation, which requires high-performance logistics, successfully.

► Testing and commissioning

VINCI Construction Grands Projets teams possess extensive experience in managing project test phases to ascertain that electrical, electromechanical, and control systems are all operating optimally – thereby ensuring the urban transportation system's reliability.

► Operations

With operations in over 90 countries, every day VINCI demonstrates its competence in the operation and upkeep of transportation infrastructure works (bridges, road tunnels, airports) and other major infrastructures (stadiums, office buildings, public buildings) throughout the world.



Algiers subway system - Algeria



El Azhar tunnels, Cairo - Egypt



Cairo subway system - Egypt

VINCI Group: bringing together a complete range of knowledge and skill sets



ARCHITECTURE

With its expertise in major infrastructure projects, including architectural design, structural works, and technical trades, VINCI Construction Grands Projets can successfully complete complex construction projects such as airports, train stations, hospitals, and stadiums anywhere in the world. One of our main objectives in every project we undertake is to ensure the harmonious integration of the structure in its architectural and urban development.



TRACKS AND CATENARY WIRES

VINCI includes specialized teams expert in installing rail tracks and catenary wires – including ETF-Eurovia Travaux Ferroviaires, a recent addition to the Group.



LOW CURRENT, AUTOMATION, SECURITY SYSTEMS

VINCI possesses a complete range of expertise required to operate an urban transportation system in compliance with international security standards: ticketing and access control, telephony, video monitoring, fire detection, audio systems, and supervisory control and data acquisition systems (SCADA).



CIVIL ENGINEERING

VINCI possesses all the expertise required for building civil engineering works, such as large-scale infrastructures, platforms, stations, and tunnels. Every day, the Group uses approximately 10,000 m³ of concrete at various worksites throughout the world. It built its know-how in tunnel boring machine (TBM) technology, particularly the CAP tunnel guidance system, with over 1,000 km of tunnelling in the past 15 years.



ELECTROMECHANICAL TECHNOLOGY

VINCI also provides expert services in electrical engineering and design of energy network (technical and maintenance buildings). The Group defines solutions to meet energy requirements on each project, including use optimization and renewable energy alternatives. Its expertise extends to ventilation, escalators, drainage systems, and fire safety systems.



INTERIOR DESIGN

Working in conjunction with its international network of partners and subcontractors, VINCI Construction Grands Projets also manages interior design for stations and terminals, including finishes and coverings.



MAINTENANCE WORKSHOPS

For VINCI Construction Grands Projets, an urban transportation system includes maintenance workshops, testing technology, wash stations, and overhaul workshops. Maintenance workshops are designed and implemented in coordination with the operator and in accordance with the rolling stock in order to optimize maintenance practices and system operations.

For each of these project components, VINCI Construction Grands Projets works with local skills and resources.

- ① Doha Light Rail Transit, Lusail - Qatar
- ② Rail-laying
- ③ Control and monitoring centre, A86 Duplex - France
- ④ Toulouse subway system - France

- ⑤ A86 Duplex - France
- ⑥ Cairo subway system - Egypt
- ⑦ Maintenance workshops in Cairo - Egypt

Main VINCI Group references in urban transportation systems

INTERNATIONAL

Algiers subway system - Algeria

Development and finishing works for 10 stations and construction of a 16,000-m² building (control and administration centre) and maintenance workshops.

Athens subway system - Greece

Turn-key delivery of Lines 2 and 3 and extension of Line 2; excavation of 2 tunnels and construction of 21 stations.

Budapest subway system - Hungary

Design and construction of Line 4 (10 stations).

Caracas subway system - Venezuela

Turn-key delivery of 4 underground lots (total length of the subway line: 8.6 km).

Cairo subway system - Egypt

Turn-key delivery of Lines 1 and 2 (total rail length: 29.2 km); implementation of Line 3 is under way.

Dubai subway system - United Arab Emirates

Prestressed concrete viaducts (64 km).

Hong-Kong subway system - China

Design and excavation for 5 tunnels of a total length of 7.6 km.

Mexico City subway system - Mexico

Rail track.

Saint-Petersburg subway system - Russia

Technical assistance.

Santiago subway system - Chile

Rail track.

Sao Paulo subway system - Brazil

Construction of 2 elevated stations.

Singapore subway system - Singapore

Construction of 7 km of railway viaducts and 5 stations as well as 2.6 km of tunnel excavation.

Moscow - Russia

Silver Forest road tunnel: technical assistance.

Heathrow Airport - London, United Kingdom

Access tunnels for Terminal 5 (14 km in all).

FRANCE

A86 Duplex

Double-deck motorway tunnel, 10 km in length; design and construction of 3 interchanges (work-site managed by VINCI Group subsidiaries).

Marseille

Road tunnels at Prado-Carénage and Prado Sud.

Charles de Gaulle VAL

Infrastructure for 2 lines serving Paris-Roissy Charles de Gaulle airport: put in operation in 2007.

Lille subway system

Construction of Lines 1 and 2.

Lyons subway system

Extensive participation in the construction of Lines A, B, C, D.

Marseille subway system

Construction of Lines 1 and 2, followed by an extension of Line 1 (first ever TBM worksite in Marseille, in 2007-2008).

Rennes subway system

Tunnel construction for Line 1 (5 km).

Toulouse subway system

Participation in the construction of Line A. Line B: participation on 14 of the 16 km (including 13 km of tunnels).

Paris RER D

Construction of tunnels from Châtelet-les-Halles to Gare de Lyon (1.6 km).

Paris, Eole line

Construction of the Magenta station, 20 m underground; major excavation (190,000 m³) in a densely populated urban setting.

Paris, Meteor line

Construction of a tunnel from the Bastille to the Madeleine station (4.6 km).

Paris subway system, Line 12

Extension of the line towards Aubervilliers (3.8 km of tunnelling with a TBM).

Paris subway system, Line 13

Extension of the line towards Asnières-Gennevilliers.

Paris Trans Val-de-Marne (bus rapid transit)

Infrastructure works for the Thiais-Antony section.

Light-rail transit

20 of the 21 tramways implemented in the last 20 years in the cities of Bordeaux, Grenoble, Lille, Lyon, Marseille, Montpellier, Orléans, Rouen, Saint-Étienne, Strasbourg, and Valenciennes.

High-speed city-airport rail link in Lyon

Turn-key implementation and operation of rail service to Lyon Saint-Exupéry airport; concession attributed to VINCI.

CONTRACTS CURRENTLY UNDER NEGOTIATION

Charles de Gaulle Express - Paris

Turn-key design, construction, and operation of a high-performance rail link (dedicated rail lines, service frequency at 15-minute intervals) between Gare de l'Est and Charles de Gaulle airport (32 km, travel time: 20 minutes).

Doha Light Rail Transit - Qatar

Turn-key delivery of infrastructure and equipment for a 21-km light-rail system (including 6 km underground) serving the new urban zone at Lusail.

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