

VINCI IN A NUTSHELL

FEBRUARY 2021

THE GRAND PARIS PROJECT: INVENTING THE CITY OF TOMORROW THIS DOCUMENT CAN ALSO BE DOWNLOADED FROM THE "MEDIA" RUBRIC ON WWW.VINCI.COM

About VINCI

VINCI is a global player in concessions and contracting, employing close to 195,000 people in some 100 countries. We design, finance, build and operate infrastructure and facilities that help improve daily life and mobility for all. Because we believe in all-round performance, above and beyond economic and financial results, we are committed to operating in an environmentally and socially responsible manner. And because our projects are in the public interest, we consider that reaching out to all our stakeholders and engaging in dialogue with them is essential in the conduct of our business activities. VINCI's goal is to create long-term value for its customers, shareholders, employees, and partners and for society at large.



JUNE 2018

VINCI AND THE GRAND PARIS PROJECT: INVENTING THE CITY OF TOMORROW

GRAND PARIS IS A HUGE, AMBITIOUS DEVELOPMENT PROGRAMME FOR THE ÎLE-DE-FRANCE **REGION. LAUNCHED IN 2010 AND SCHEDULED TO CONTINUE UNTIL 2030, ITS MAIN PURPOSE IS THE CONSTRUCTION OF THE GRAND PARIS EXPRESS, AN ULTRA-MODERN TRANSPORT NETWORK WHOSE DESIGN** AND CONSTRUCTION HAVE **BEEN ENTRUSTED TO THE** SOCIÉTÉ DU GRAND PARIS (SGP), A PUBLIC INDUSTRIAL AND COMMERCIAL UNDERTAKING.

• The Grand Paris Express is intended to create new links between the different parts of the conurbation and its inhabitants, thus promoting economic dynamism.

• And as it develops its transport network, Grand Paris is reinventing itself through numerous calls for urban development projects.

The sheer scale of the Grand Paris project makes it unique in Europe, and it offers great opportunities for all VINCI business lines.
 To deliver these huge projects, the Group is mobilising its major areas of expertise: VINCI Construction for buildings and civil engineering works; Eurovia for urban development and railway works; VINCI Energies for information technology, data and electrical engineering, and VINCI Immobilier for real estate development.

 Some VINCI teams have already been selected for tenders relating to the initial phases of the works and stand ready to respond to future calls for tenders.

A PROJECT THAT IS UNIQUE IN EUROPE

A construction site worthy of Haussmann

No project on the scale of Grand Paris has been undertaken in France since Napoleon III decided to modernise Paris in the middle of the 19th century. Baron Haussmann, who was appointed Prefect of the Seine in 1853, will be remembered by the history books as the brains behind these works which, over a 17-year period, radically transformed Paris with a new traffic layout, a sewerage network and a healthy environment. But the scale of the project is also unparalleled in Europe. According to the SGP, Grand Paris is the foremost infrastructure project in Europe, surpassing other major construction sites such as the Crossrail project in London.

A high-tech metro that brings the different districts closer together

With 68 new stations and 200 kilometres of automatic lines, the scope of the Grand Paris Express is on a par with that of the existing Paris metro.

The extension of lines 4, 11, 12 and 14 and the creation of four new lines (15, 16, 17 and 18) will enlarge and unify the metropolis by enabling its residents to travel from one part of Île-de-France to the other without having to go through Paris.
 By facilitating links between airports, business centres, research centres, universities and other areas that are currently somewhat









isolated, the Grand Paris Express will make it easier for everyone to access employment, training, culture and leisure facilities.
Offering a real alternative to the car, it also aims to reduce pollution and traffic congestion in Île-de-France.

The city reinvented

New neighbourhoods will be created around the 68 new stations, providing an opportunity to reinvent the city on an existing urban fabric. Successive consultations such as "Reinventing Paris", "Reinventing the Seine" and "Inventing the Metropolis of Greater Paris" have led to calls for innovative projects to shape the profile of a more open and modern Île-de-France.

• These projects respond to residents' housing and service needs, while ensuring an exemplary energy and environmental performance. They also enhance the social, cultural and artistic influence of the metropolitan area, thanks to the proactive policies put in place by the SGP and the local authorities concerned.

MEETING THE TRANSPORT CHALLENGE

The advantage of an expert in underground construction

VINCI, through its VINCI Construction division, is a logical choice when looking for a key player to extend the Paris region's public transport network. Since most of the work takes place underground, the Group will be able to capitalise on its wealth of expertise in this area. VINCI has also taken part in all the tenders previously published by the Société du Grand Paris. most often through its subsidiaries VINCI Construction France, VINCI Construction Grands Projets, Dodin Campenon Bernard and Botte Fondations, or together with external partners such as Spie Batignolles, as part of the Cap Grand Paris consortium. Pending the creation of lines 15 to 18, VINCI Construction is already working on the northern extension of line 12 of the Paris metro, combining the construction and fit-out works for the Aimé Césaire and Mairie d'Aubervilliers stations. Conducted on behalf of the RATP, this project follows on from an initial stage that included digging out a 3,640 m tunnel and building the Front Populaire station along with five access and rescue shafts. VINCI Construction is also involved in the project to extend line 14, with the construction of the Clichy-Saint-Ouen station, as well as working on line 4.



AN OPPORTUNITY TO REINVENT THE CITY

NEW NEIGHBOURHOODS AND THEIR FACILITIES WILL MEET LOCAL COMMUNITIES' HOUSING AND SERVICES REQUIREMENTS



• Furthermore, in April 2016, SNCF Réseau awarded VINCI Construction the contract for the future CNIT-La Défense station – a forerunner of the Grand Paris project – and adjoining tunnels. The works, with a value of €496 million, are part of the extension of the RER E towards the west of Paris (Eole). This highly technical project involves building an underground "cathedral" while ensuring the existing structures are supported and the site can remain operational. The offices, shops and the CNIT hotel must continue to function normally throughout the duration of the works. This is a huge technical feat in the heart of the La Défense business district.

• For all these projects and for those still to come, the technical and operational resources department of VINCI Construction France is on hand from the tender stage, providing the planning and works teams with technical support for structural calculations and delivery methods (choice of equipment, site installation, gauging electricity demand, etc.). This input, which also takes the geotechnical features of the ground on board, enables an assessment of the cost and deadline proposals that need to be produced.

Combining complementary expertise

Eurovia, a division of VINCI specialising in transport infrastructure works and urban development, will be another important player in the construction of the Grand Paris Express. It is tasked, via its ETF subsidiary which specialises in the construction and maintenance of fixed rail installations, with laying the rails for the network. In July 2017, the first phase of the development of La Défense RER station was delivered for RATP as part of the Eole project. Working to a very tight deadline, ETF teams removed and re-laid the tracks, so that a reinforcement slab could be fitted. Eurovia's Cardem subsidiary, France's leading demolition company, will be working on the major dismantling operations. In addition, Eurovia is able to drill deep wells and dig out traditional utility tunnels using micro-tunnelling techniques.

• These underground operations take place in an environment in which soil remediation is a sensitive issue. Extract Ecoterre is a specialist in this field and intervenes upstream, at the preliminary investigation stage, to determine the Group's strategy for dealing with cuttings and processing. Given that cuttings generally account for 5% to 15% of total contract value, management of this excavated material has a strong impact on the Group's final bid to the SGP. Since unrecoverable waste is taxed (TGAP), it is essential to adopt an optimised strategy in this area. The Extract Ecoterres teams play an active part in defining this strategy, carrying out additional surveys involving physical and chemical analyses in order to 244 TUNNEL BORING MACHINES WILL OPERATE SIMULTANEOUSLY ON THE GRAND PARIS CONSTRUCTION SITE IN 2020.

UP TO



COMPLEMENTARY EXPERTISE

ALL VINCI'S CONTRACTING BUSINESS LINES ARE WORKING ON THIS EXCEPTIONAL PROGRAMME

VINCI ENERGIES INFORMATION TECHNOLOGIES, DATA AND ELECTRICAL ENGINEERING

VINCI IMMOBILIER PROPERTY DEVELOPMENT

EUROVIA URBAN DEVELOPMENT AND RAILWAY WORKS

> VINCI CONSTRUCTION BUILDING AND CIVIL ENGINEERING WORKS

establish the nature of the materials in terms of particle size and chemistry. A flawed assessment of the type of terrain can result in a tenfold increase in treatment costs. This point is particularly sensitive because the gypsum present in the Paris region's subsoil gives it a naturally high sulphate content, and French regulations do not allow this type of non-inert material to be recovered. Eurovia can also supply aggregates, which are the most important components of concrete (accounting for 2/3 of its mass). Disposal of excavated material - one of the major challenges of the Grand Paris construction sites - rounds off the operations carried out by Eurovia, which is able to offer global solutions combining delivery of aggregates for concrete with disposal of excavated material by backhaul, including by river, thus limiting the environmental footprint of the works. Equally, Eurovia, being a major player in materials recycling in Île-de-France, is also able to offer recovery solutions for some types of excavated material, thereby reducing landfill disposal of rubble. Its strong local presence in the inner suburbs of Paris is also a valuable asset • Many other VINCI Group skills will be called on for these

projects. For example, VINCI Energies' infrastructure teams are already preparing to install the electrical systems to power the future lines, with the supply of the traction system, HV/LV electrical distribution, equipment and systems for high voltage applications such as lighting and low voltage applications such as video, roll-out of the fibre-optic system and installation of ventilation and smoke extraction systems.

• Not all the sites generated by the Grand Paris works are underground. Freyssinet and its subsidiaries operate on the surface, pre-stressing and building engineering structures, as well as weather-proofing or sliding them into place. Subcontracted to other companies in the Group, these sliding operations can significantly reduce local disturbances.



MEETING THE HOUSING AND URBAN INFRASTRUCTURE CHALLENGE

Reinventing infrastructure

The new automatic metro lines will provide a boost for housing construction. Previously isolated areas will now be well served for transport. The Chairman of the Société du Grand Paris estimates that 250.000 housing units will be built near the Grand Paris Express by 2030, which opens up a number of opportunities for VINCI Construction, VINCI Energies and VINCI Immobilier. On a daily basis, VINCI's subsidiaries are already working on complex reconstruction operations in the "city within the city". The refurbishment of the Mcdonald warehouses, in the 19th arrondissement of Paris, is a good example of this: some 1,100 housing units have been created while taking on board the constraints of the existing environment, including warehouses with complex foundations and the tram system track. In a completely different urban context, VINCI has built the future headquarters of the regional Criminal Investigation Department in the new Clichy-Batignolles district. Once the civil engineering works are in place, the VINCI Energies teams allocated to the tertiary sector will also be able to work on the new stations, installing electricity, lighting, air conditioning and ventilation systems. These will be followed by the outdoor amenities: the forecourt, new urban facilities, street lighting, charging stations and video protection systems.

Embodying a new way of life in the region

When it comes to real estate development, VINCI Immobilier is already hard at work around the route of the metro lines launched this far. Numerous programmes adapted to the new environments created will spring up around the 68 future stations. VINCI Immobilier teams have rallied enthusiastically to the calls for tenders launched by the SGP and the "Inventing the Greater Paris Metropolis" consultation initiated by the MGP. In order to offer the best match for the needs of the different districts during these consultations, VINCI Immobilier launched a comprehensive discussion involving architects, sociologists, public amenity operators, start-ups and even artists. This made it possible to forge special links with the ecosystem of the different districts that make up Grand Paris. These studies were used to provide innovative responses to the requests of the communities concerned. This new approach to urban renewal has enabled the development teams to develop a level of expertise that can be leveraged in forthcoming consultations in Île-de-France or the regions.

JOINT VENTURES STRUCTURED BY VINCI WERE SHORT LISTED FOR THE FINAL PHASE OF THE INTERNATIONAL "INVENTING THE GREATER PARIS METROPOLIS " CALL FOR PROJECTS.



MEETING THE HUMAN CHALLENGE

The Grand Paris projects will create jobs, open up isolated areas and release energy and dynamism. Consequently, the challenge is not just a technical one; it is also a human one. As part of the Grand Paris initiative, VINCI will need to mobilise and train thousands of employees and recruit local apprentices who are largely unfamiliar with the labour market. The Group firmly believes that training and strong local roots are essential to the success of its projects.

• To meet the challenge, VINCI's subsidiaries will have to quickly mobilise teams of specialists, recruiting, training and integrating employees as well as organising their mobility.

• One of the challenges is assessing workforce requirements upstream. As the schedule is tight, once the contracts have been awarded the Group's subsidiaries need to be responsive and react swiftly to set up efficient teams.

• By way of example, as many as a thousand people are involved in building the 8 km of track required for the T3C section of line 15 South, between the stations of Fort d'Issy Vanves-Clamart and Villejuif Louis-Aragon. No fewer than 200 supervisors and 800 workers are needed to deliver this complex underground project.

An unprecedented recruitment drive

The additional activity prompted by the Grand Paris works will create a number of jobs at a wide range of levels: frontline staff, management, engineers, etc. Needs will be many and varied. To support this recruitment drive, VINCI launched in 2017 an employer brand campaign to attract new staff to the Group.

An unprecedented training drive

The drive to recruit new staff must be accompanied by specific training courses to prepare the workforce for the challenges posed by the construction of the Grand Paris Express. The in-house training centre, Césame, located in Île-de-France, provides the Group with a hugely flexible, highly responsive tool for training its underground workers. At VINCI Construction, for example, the "city under the city, in situ" training course focuses on the geotechnical methods applied to underground work. Alongside this, other courses are run for specific occupations such as tunnel-boring machine pilots, carpenters, miners and topographers, for example. To meet these additional training needs, Eurovia can rely on two already fully operational campuses. The Gevrey-Chambertin centre, in Côte d'Or, provides training in road sector occupations, while the Mérignac centre, in Gironde, focuses more specifically on management.

"EACH NEW CALL FOR PROJECTS REQUIRES US TO LAUNCH A BESPOKE DISCUSSION. THIS ENABLES US TO GO FAR BEYOND OUR TRADITIONAL DEVELOPER ROLE. WE HAVE BECOME FULLY-FLEDGED CITY OPERATIVES."

PATRICK SUPIOT, CEO OF VINCI IMMOBILIER'S BUSINESS REAL ESTATE AND DEVELOPMENT ARM, AND GRAND PARIS POINT OF CONTACT FOR VINCI IMMOBILIER

IN-HOUSE MOBILITY

FEEDBACK FROM THE GRAND PARIS TEAMS WILL BENEFIT VINCI COMPANIES WORKING ON OTHER PROJECTS IN FRANCE AND AROUND THE WORLD



A boost for apprenticeships

As a result of the recruitment drive prompted by the Grand Paris project construction sites, VINCI subsidiaries have also beefed up their apprenticeship policy. With an eye to future requirements for the Grand Paris, VINCI Energies has already launched a robust apprenticeship campaign in Île-de-France, so that it will be able to rely on properly trained employees by 2020.

Smoother internal mobility

The breath of fresh air accompanying the Grand Paris project will also provide opportunities for in-house development and promotion for some employees, and encourage young talent from the regions to relocate to Île-de-France. Employees who have worked on international projects will also be mobilised – some of the employees working on the Grand Paris sites will have previously worked in New Zealand, for example! Similarly, some Group employees who have worked in Rennes, Doha, Cairo or Hong Kong have already signed up for the tunnel-boring machine pilot training course. This feedback from experience gained on similar sites will be extremely valuable when the new teams are set up.

A proactive into-work programme

Although the Société du Grand Paris requires 5% of the hours worked on its construction sites to be set aside for people who have been excluded from the world of work, the VINCI Group has decided to go beyond this contractual commitment.

• On the sites where VINCI Construction's subsidiaries operate, between 7% and 10% of the employees are on into-work schemes. In 2011, the Group launched ViE, VINCI insertion Emploi – its bespoke tool for promoting integration through work. It supports the Group's subsidiaries and partners in their integration and employment policies by promoting lasting employment opportunities. Building on its special relationship with public and local authorities and with private operators, ViE acts as a bridge between the company and the world of the social and inclusive economy by maintaining continuous relations with all the agencies that support people who are excluded from the labour market. This densely concentrated network makes it possible to provide appropriate responses to construction site needs. The model is unique in France.

• This meticulous effort is bearing fruit, with three million intowork hours – equivalent to 1,500 full-time jobs – managed for VINCI in France. In 2016, ViE provided employment opportunities for no fewer than 2,200 people. Over a quarter were hired by VINCI or its subcontractors – the others were seconded by workintegration structures. "CONSTRUCTION INDUSTRY COMPANIES GENERALLY SEE INTO-WORK SCHEMES AS A DRAWBACK. AT VIE, WE STRIVE TO TURN THIS INTO ADDED VALUE FOR ALL STAKEHOLDERS."

ARNAUD HABERT, EXECUTIVE DIRECTOR OF VIE



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THE GRAND PARIS PROJECT, **A** NEW **GENERATION OF** CONSTRUCTION SITES

A PARTICULARLY DEMANDING DESIGN BRIEF

A tight schedule

The Société du Grand Paris has already moved the initial programme forward, a sign of the sustained pace at which the Grand Paris construction project is expected to proceed. The fact that Paris will be host city for the 2024 Olympic Games is likely to speed the project up further. As many public facilities as possible will need to be operational to accommodate the world delegations of athletes as well as spectators and the media.

Risk control

The developments created as part of the Grand Paris project have to be delivered within a very dense urban fabric. Underground works will often have to be carried out beneath residential buildings or under existing stations.

The presence of numerous cavities left behind by old quarries in the sub-soil of the Paris region presents a real challenge for the construction firms.

VINCI Construction teams will therefore need to harness all their expertise to carry out this complex work.

Logistics in an urban environment

Completing works such as those connected with the Grand Paris project, involving the installation of equipment, delivery of materials, comings and goings of workers and removal of excavated material, implies a huge effort in terms of logistics. In dense urban environments, these operations become even more complex, and frontline teams have to deal with challenges of many different kinds.

• Vehicle flow management is a major concern. These flows have to merge into heavy traffic, which makes them harder to accept for local residents. Furthermore, this traffic density is likely to cause supply delays. Construction site teams are under pressure to minimise vehicle turnaround and to arrange daily transport for construction site workers.

• Another challenge is space management. In an urban environment such as this, ground space is limited. It is therefore essential to optimise production processes in order to occupy as little ground space as possible. The problem is particularly acute when several teams are working on complementary assignments on-site at the same time.

SUSTAINABLE AND RESPONSIBLE CONSTRUCTION SITES

Riverside projects

As far as possible, VINCI will endeavour to limit CO₂ emissions on its construction sites, as well as any disturbance to local residents, by using multimodal transport arrangements. River transport is the preferred option, geographical context permitting, thus reducing urban truck turnaround significantly. The Group has already tested this arrangement on the Samaritaine site and with the extension of line 12 of the metro. near the Seine. Excavated materials will therefore be evacuated by river. Furthermore, VINCI Construction France recently inaugurated a waterside treatment plant in Bruyère sur Oise. A 36-hour stint of tunnel boring requires 144 25-tonne trucks to evacuate all the cuttings. Fortunately, the presence of a river enables these trucks to be replaced by two barges. On some sites, as many as 129,000 truck journeys can be avoided. The environmental challenge is therefore considerable given that the construction of the Grand Paris Express is expected to generate 43 million tonnes of excavated materials.

Renewable raw materials

As a supplier of aggregates, several years ago Eurovia launched a process to recover 100% of its resources, from the natural deposits of its quarries to the inert waste materials from its construction sites. Thanks to its excavated materials sorting facilities, the VINCI subsidiary is helping to save natural resources. In 2011, it created Granulat+, a commercial offer to recycle inert waste material from construction sites to produce ready-to-use aggregates.

Here again, the stakes are high. For the Eole site alone, Eurovia is supplying 400,000 tonnes of aggregates for concrete production.

A sustainable city demonstrator in the heart of Greater Paris

VINCI's "Dream of Urban Scenes" project gives it a showcase for ideas to build a sustainable city on the existing urban fabric. Responding to a call for projects for "industrial demonstrators for the sustainable city", launched by the Ministry of Ecology, Sustainable Development and Energy in 2015, the "Dream of Urban Scenes" project is dedicated to the theme of "the city above the city" in the heart of the Plaine Commune urban community (including Aubervilliers, Epinay-sur-Seine, Ile-St-



MILLION TONNES OF MATERIALS, EQUAL TO 200 TRUCKLOADS A DAY, WILL BE EXCAVATED BY THE T3C SECTION, THE LARGEST ON LINE 15; RIVER TRANSPORT WILL BE USED AS MUCH AS POSSIBLE TO REDUCE TRUCK TRAFFIC.



Denis, La Courneuve, Pierrefitte-sur-Seine, Saint-Denis, Saint-Ouen, Stains and Villetaneuse).

• In partnership with other companies, public operators and the Plaine Commune Territorial Public Establishment, the project aims to mobilise expertise for a think tank focusing on new ways of designing and managing cities.

• For every year of the five-year period of State support, the "Dream of Urban Scenes" project will enable Plaine Commune to select some 50 innovative projects proposed by the partners. These projects will then be studied to establish the economic and financial model and sort out any technical and regulatory issues.

• The demonstrator currently hosts around 20 projects and is visited regularly by leaders of foreign countries.

INNOVATIVE CONSTRUCTION SITES

BIM, for more efficient building sites

The Grand Paris Express project involves tough economic constraints and tight deadlines. The metro lines will need to be operational between 2022 and 2030 and be delivered on-budget. Building Information Modelling (BIM) is thus an essential tool for achieving these goals. It is based on a digital model created at the project launch phase and used by all stakeholders. Linked to a database, the BIM platform enables all partners to access the project data from their own computer devices, whether fixed or mobile. The model therefore provides better risk control (whether at the design, implementation or even operation stage), more efficient management of production schedules and a reduction in costs – all of which will help to improve service quality.

Already used successfully on sites such as the Doha Metro (Red Line South), the Atlantic Bridge (Panama) and Crossrail in London, BIM has already been adopted for the Eole station of CNIT-La Défense, as part of the Grand Paris Express project.
 BIM will be a major asset for projects involved in delivering the Grand Paris Express, as well as for future urban infrastructure developments. Examples such as the Louis Vuitton Foundation in Paris and the airports in Phnom Penh, Siem Reap (Cambodia) and Santiago (Chile) show that the BIM tool adapts equally well to building-scale projects.

Indirect jobs should be created by the grand paris programme, thanks to economic growth driven by the new network.

OVER



A high performance hydrofraise

When working on the Grand Paris construction sites, VINCI Construction will be able to turn to mature innovations such as the latest Hydrofraise® model, the Gripper, which allows more efficient drilling. Developed by Soletanche Bachy, a VINCI subsidiary specialising in foundations and soil technologies, the HFG 120T Hydrofraise® makes it possible to dig deeper (up to 70 metres) in harder soils. It also improves execution speed and reliability and significantly reduces vibration and noise emissions. These advances will be particularly useful for the Grand Paris construction sites, which are subject to planning constraints and nuisance limitation orders.

A new shaft drilling technique

Starting with the T3C section of line 15, VINCI Construction France has already been using Vertical Shaft Sinking Machine (VSM) technology, previously seldom used in France. This new technology is similar to a vertical tunnel boring machine that drills the shaft and simultaneously installs the voussoirs forming the walls. One of the advantages of the VSM is that it reduces the surface area taken up by drilling, which is particularly valuable in the context of a dense urban fabric.

Advanced control of tunnel boring machines

The CAP software developed by VINCI Construction enables the tunnel boring machines to be controlled precisely, while compensating for generally incomplete preliminary geotechnical surveys. It constitutes a data centre for real time monitoring of all the parameters (sometimes several hundred) tunnel boring machines have to reckon with. This data input improves digging performance and can provide support for underground construction sites when dealing with tricky sections.

Effective communications in challenging environments

Being often called on to work in challenging environments, VINCI Construction has developed and patented specific telecommunication systems that enable communication between workers in tunnels and also with above-ground teams, replacing mobile phones that are unreliable in these environments. UP TO **75** METRES: DEPTH REACHED BY THE NEW HFG 120T HYDROFRAISE® DESIGNED BY SOLETANCHE BACHY AND ADAPTED TO THE SPECIFIC FEATURES OF THE GRAND PARIS PROGRAMME.



WORKSITE

ORGANISATIONAL AND TECHNOLOGICAL INNOVATIONS



3D concrete printing for the construction sites

VINCI Construction will be using 3D printing to produce some of the complex parts required by the Grand Paris construction sites. In partnership with the XTreeE start-up, which is part of the "Dream of Urban Scenes" sustainable city demonstrator, VINCI Construction is developing a 3D concrete printer that will be able to make some moderate-sized pieces at the Plaine Commune site. This will avoid long trips by some specialized subcontractors and thus speed up construction site schedules accordingly.

An innovative fast sorting system for cuttings

Eurovia and Soletanche Bachy have invented a fast method for dealing with excavated materials. In a context where floor space is limited and storage is very tight at the tunnel entrances/ exits, the Carasol method makes it possible to sort the type of cuttings to be evacuated twice as fast as a conventional system, which requires four to five days. This saves time and enables the cuttings to be sent sooner to the appropriate treatment centres.

A climate control system embedded in the floor

VINCI Construction and VINCI Energies have joined forces to create Green Floor, a highly innovative air conditioningventilation-heating system. It brings air into the concrete slabs and releases it, using both radiation and convection from the ceiling, to produce the optimum temperature for the building's occupants. This technique consumes very little energy and provides substantial space savings in construction phase.

A heat exchanger embedded in the road

Developed by Eurovia in association with public and private partners (IFSTTAR, CEATech, Burgeap), Power Road® is a technological building block for the Smart City. Power Road® can capture solar thermal energy in "summer" mode, store it for several months and release it for local uses such as heating for office buildings and housing, clearing the streets of snow in winter or countering the effects of urban heat islands (UHI).

Fibreglass tie rods

Freyssinet has developed a new technique in which fibreglass tie rods are used to replace metal tie rods. They perform in the same way in the temporary phase but can easily be destroyed later, once construction is complete. "WE ARE WORKING IN PARALLEL ON THREE ISSUES: DIGITALISING OUR BUSINESS; ENERGY EFFICIENCY, WITH THE BUILDING SEEN AS AN ENERGY HUB, AND LASTLY, THE CITY UNDER THE CITY."

MAXIME TROCMÉ, R&D MANAGER AT VINCI CONSTRUCTION



POWER ROAD®

Road that captures solar energy in "summer" mode, stores it and releases it several months later for local use.

Smart energy-producing windows

VINCI Construction has developed the Horizon smart window, in partnership with Sunpartner Technology – a French specialist in solar innovation with whom VINCI set up a joint venture in December 2016. The smart window's electrochromic clear-toopaque glazing blocks the sun's rays, reducing a building's air conditioning energy consumption by almost 30%. In addition, Horizon windows are covered with a transparent or invisible photovoltaic solar panel, which means the surface can produce energy and re-introduce it into the building. They can be controlled via smartphone, remote control or through the building's technology management system. This technology has been adapted for larger areas with Horizon Energy – photovoltaic curtain walls that can be fitted to the facades of a building.

Technology that serves the needs of biodiversity

Mindful of the Group's social responsibility obligations, VINCI has set up an eco-design Chair in partnership with three ParisTech colleges. The partnership with AgroParitech has led to the development of Biodi(V)strict, a programme that can calculate the impact on biodiversity upstream of the design of a city or a district, as well as their potential to regenerate plant and animal biodiversity.

• Biodi(V)strict recently led to the creation of a joint startup and the approach was used in the construction of the Condorcet campus in Aubervilliers. It is included in several bids submitted by Group subsidiaries in response to calls for tenders for the Grand Paris project.

INCLUSIVE CONSTRUCTION SITES

An endowment fund for local associations and start-ups

As part of its socially responsible approach towards the districts concerned, VINCI recently launched an endowment fund for the Grand Paris sites. This "Chantiers et territoires solidaires" fund is designed to support associations and start-ups located near the construction sites. It is intended to encourage employment and social ties and help create a dynamic that will endure once the site is completed.

• The fund focuses mainly on encouraging local employment and developing social ties in the districts concerned. More specifically, "Chantiers et territoires solidaires" will provide support for job-seekers and innovative training modules, in



addition to other projects. The assistance provided will involve financial donations as well as skills-transfers from Group employees.

In 2017, a first call for projects was launched to support 11 associations located near the T3C site on line 15 South.

Promoting access to art and culture

Keen to promote young artists, the Société du Grand Paris wishes to attract talented young people to take part in projects combining all the arts, ranging from dance to video and illustration. A large number of artistic and cultural projects will emerge as the Grand Paris Express takes shape.

• VINCI Construction is involved in this process and has provided considerable scope for artistic expression on its construction sites. Several initiatives are already underway, such as on line 12 of the metro, where artists' associations can come and retrieve scrap metal for their work.

• VINCI Construction has also entered into a partnership with Bellastock, an association of young architects working on the reuse of building materials and the circular economy. The experience of the Marly-Le-Roy viaduct site (where residents were given free rein to decorate the site hoardings) proves that artistic expression is an appropriate way of creating a link with residents around the construction sites. Furthermore, in order to create the right conditions for dialogue with the artists, they are given training sessions to give them a basic grounding in safety standards.



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FEBRUARY 2021

TENDERS AWARDED TO VINCI



APRIL 2016 VINCI WINS THE CONTRACT **TO BUILD THE ICONIC CNIT-LA DÉFENSE STATION**

SNCF Réseau awarded the consortium led by VINCI Construction the contract to build the new La Défense station and the adiacent tunnels. The works entrusted to the consortium are part of the extension of line E of the RER towards the west of Paris (Eole). The site was launched in the summer of 2016 and the works will take place over a 61 month-period. This operation will involve 700 workers at peak activity and represents four million workhours, of which more than 300,000 will be performed as part of back-to-work and into-work schemes. This highly technical project involves building an underground "cathedral" while ensuring the existing structures are supported and the site can remain operational.



FEBRUARY 2017 A MAJOR CONTRACT ON LINE 15 SOUTH OF THE GRAND PARIS EXPRESS

The Société du Grand Paris selected the bid submitted by the consortium led by VINCI Construction to build the T3C section of the future line 15 South, linking Fort d'Issy-Vanves-Clamart with Villejuif Louis-Aragon. The contract involves the construction of a tunnel over eight kilometres long, plus eight shafts and five new stations (Chatillon Montrouge, Bagneux, Arcueil-Cachan, Villejuif Institut Gustave Roussy, Villejuif Louis-Aragon).

Expected total duration 61 months

Contract value €496 million

Members of the consortium VINCI

- VINCI Construction France
- VINCI Construction
- **Grands Projets**
- Dodin Campenon
- Bernard
- Soletanche Bachy
- France
- Botte Fondations

Partners

- Spie Batignolles TPCI
- Spie Fondations

Expected total duration 70 months

Contract value €926 million

Members of the consortium VINCI

- VINCI Construction France
- VINCI Construction
- Grands Projets
- Dodin Campenon Bernard
- Botte Fondations

Partners

- Spie Batignolles TPCI
- Spie Fondations



VINCI TO BUILD NOISY CHAMPS STATION (LINE 15 SOUTH)

The consortium led by VINCI Construction won a major civil engineering contract for the Grand Paris Express project: the construction of **the new iconic station of Noisy Champs**, as well as a train storage area and a bridge over the RER A tracks. This new station will eventually connect line 16, line 11 and the RER A regional express line. Work was scheduled to get under way in late summer 2017. Contract value €156 million

Members of the consortium

VINCI

- VINCI Construction France
- VINCI Construction
- Grands Projets
- Dodin Campenon Bernard
- Botte Fondations

Partners

- Spie Batignolles TPCI
- Spie Fondations

Expected total duration 72 months

Contract value €400 million

Members of the consortium VINCI

Dodin Campenon
Bernard
VINCI Construction
France
VINCI Construction
Grands Projets
Botte Fondations

Partners

- Spie Batignolles Génie civil
- Spie Batignolles Fondations



FEBRUARY 2018 VINCI WINS A CONTRACT ON LINE 14 SOUTH

The RATP chose the consortium led by VINCI Construction to execute the GCO2 works package on the future line 14 south, linking the Olympiades station (13th arrondissement) to Orly Airport. The contract involves constrution of a 4.6km tunnel between the future Maison Blanche station and the TBM access shaft at Jean Prouvé. It also includes construction of the new Kremlin-Bicêtre Hôpital station and five ventilation and emergency shafts.



FEBRUARY 2020 CONSTRUCTION OF ELECTRICAL INFRASTRUCTURE ON LINES 16 AND 17

The Aline consortium is building **electrical infrastructure** for sections of line 16 between the Saint Denis Pleyel and Clichy Montfermeil stations and line 17 between the Le Bourget RER and Triangle de Gonesse stations. The two lines consist of 30km of track, 10 stations and 32 ancillary structures. The project involves building a high voltage network and distributing electricity in tunnels, stations and other structures, as well as rolling out fibre optic network infrastructure for data transmission. The consortium is also building fibre optic equipment to ensure passenger safety and surveillance of the tunnel structure. 20% of the revenue generated is going to SMEs and 10,000 hours of work will be carried out by people in back to work programmes.

Expected total duration

87 months, including partial commissioning of lines for the Olympic Games in 2024

Contract value €68 million

Members of the consortium

VINCI Energies via its SDEL Transport Grands Projets subsidiary and Eiffage via GIE Eiffage Énergie Systèmes Ferroviaires.



MAY 2020 VINCI WINS THE CONTRACT FOR EQUIPMENT AND RAILWAY WORKS FOR THE LINE 15 SOUTH

The grouping led by ETF, a subsidiary of Eurovia, was chosen by Société du Grand Paris to **provide and install railway track**, **overhead catenary and line equipment** (footbridges, cable trays, dry risers and sump pumps) for a 16.5km section of tunnel for the western sector of the line 15 South. The section is located between the future Pont de Sèvres and Les Ardoines stations east of Vitry sur Seine. Contract value €64 million

Contract value €120 million

Members of the consortium

Eurovia via its ETF
 subsidiary
 VINCI Energies via its
 Mobility subsidiary



MAY 2020 VINCI TO BUILD THE LINE 18 FROM ORLY AIRPORT TO MASSY-PALAISEAU

The consortium led by VINCI Construction Grands Projets began the works on **the first section of metro line 18**, which will connect Orly airport and Massy-Palaiseau. The contract covers digging 11.8 km of tunnels, building three railway stations (Antonypôle, Massy Opéra and Massy-Palaiseau), 13 ancillary structures and 10 branches connecting to the tunnel, as well as 850 m of linear cut and cover section. The project will employ up to 700 people, 20% of revenue will go to SMEs and 166,000 hours of work will be carried out by people in back to work programmes.



Contract value €799 million

Members of the consortium VINCI

VINCI ConstructionGrands ProjetsVINCI Construction

France

- Dodin Campenon Bernard
- Botte Fondations

Partners

- Spie Batignolles Génie civil

- Spie Batignolles
- Fondations

Expected total duration 30 months

Contract value €193 million

Members of the consortium VINCI

- VINCI Construction
- Grands Projets
- Dodin Campenon Bernard
- Chantiers Modernes
- Freyssinet

Partners

- Razel Bec



VINCI TO BUILD THE VIADUCT FOR LINE 18

The consortium led by VINCI Construction Grands Projets will build **a 6.7 km viaduct for line 18** between Massy-Palaiseau and the future overhead CEA Saint-Aubin station. The project will employ up to 400 people, 20% of revenue will go to SMEs and 43,000 hours of work will be carried out by people in back to work programmes.



FEBRUARY 2021 CONSTRUCTION OF SERVICE STRUCTURES ALONG LINE 15 SOUTH

VINCI's companies are building 17 service structures between the stations of Noisy-Champs and Créteil l'Échat, which will help ensure the safety and security of passengers and maintain the future Grand Paris Express line. The work involves realising the structural work, metalwork, locksmithery, electrical systems, plumbing and heating, ventilation and air conditioning of the structures. The project will employ up to 200 people.

Expected total duration 59 months

Contract value €65 million

Members of the consortium

 VINCI Construction
 via its Chantiers
 Modernes and CBI
 subsidiaries
 VINCI Energies via its
 Cegelec and SDEL Infi subsidiaries

The list of the contracts awarded to VINCI is expected to be added to in the coming months. Please consult the VINCI Group website (www.vinci.com) for updates.



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