

INTERNATIONAL AND INDIAN ACTIVITIES FOR URBAN MOBILITY



METRO NEWSLETTERS
January - April 2019

gathered by Dr. F. A. Wingler

METRO NEWSLETTERS

on

URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 26, January 2019



Oyster and contactless Payment; London, UK

ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

TEX Rail Commuter Line opens; USA

10 Jan. 2019



USA: The 43 km TEX Rail commuter line linking central Fort Worth with Dallas/Fort Worth International Airport opened on January 10, when the first train left North Side station at 03.38.

The line developed by regional transport authority Trinity Metro starts at the Texas & Pacific Station in Fort Worth and follows existing freight railway alignments through northeast Tarrant County, North Richland Hills and Grapevine, then a new alignment to reach Terminal B at the airport.

There are nine stations, including two existing stations in Fort Worth shared with the Trinity Railway Express service and two stations within the boundary of the airport. The terminus at Terminal B was funded by the airport.

The launch of services had been scheduled for January 5, but was postponed the previous evening because a hardware installation problem with a signal required further testing to

be undertaken before the Federal Railroad Administration would approved the use of the entire route.

Trains run hourly with a journey time of 52 min. Travel is free until February when a single fare of \$2.50 will be introduced, with discounts available. Initial ridership is predicted to be 8 000 passengers/day by the end of the first year, growing to nearly 14 000 passengers/day by 2035.

The Fort Worth Transportation Authority (now Trinity Metro) board approved the TEX Rail project in August 2013, and an agreement to go ahead was signed with the Fort Worth & Western Railroad, Dallas Area Rapid Transit, Union Pacific and Amtrak in December 2015. The Federal Transit Administration provided a letter of no prejudice enabling the start of construction procurement activities in June 2016, and groundbreaking ceremonies were held at three locations on August 24 2016.

A joint venture of Parsons and TranSystems was design consultant, and an joint venture of Archer Western and Herzog undertook construction.

In December 2016 the FTA signed a \$499.4m Capital Investment Grant agreement to meet about half the \$1.03bn cost of the project.

Stadler has supplied a fleet of eight Flirt diesel multiple-units under a \$100m contract awarded by in June 2015. This was the first US order for the Flirt family, and the first time Stadler had won a contract which included federal funding and was therefore subject to Buy America regulations requiring 60% of the contract value to be sourced in the USA. The aluminium bodysHELLS and bogies were produced in Switzerland, with final assembly taking place in North Salt Lake, Utah.

The 130 km/h DMUs meet FRA alternative vehicle technology requirements for use on lines shared with freight trains. They have two Deutz 520 kW diesel engines complying with EPA Tier 4 Final emission standards housed in a centre module. There are 224 seats with side tables and USB sockets, as well as an Americans with Disabilities Act compliant toilet.

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- [04 Jan 2019 - Cotton Belt commuter line construction contract awarded](#)
- [18 Oct 2018 - TEX Rail trains tested for radar effects](#)
- [16 Oct 2017 - Stadler breaks ground on Utah factory](#)
- [10 Oct 2017 - Stadler unveils TEX Rail Flirt DMU](#)
- [03 Aug 2017 - Stadler completes first US-assembled Flirt](#)
- [11 Jun 2015 - TEX Rail orders Stadler Flirt DMUs](#)

NS to test contactless Card Payment; Netherlands

09 Jan. 2019



NETHERLANDS: National passenger operator NS is to test the use of contactless bank card payment as an alternative to the OV-chipkaart national multimodal transport smart card.

NS said using a bank or credit card for travel was a 'logical and easy' choice for many people, as they would not need to purchase and top-up a separate smart card or buy a ticket in advance.

Regular users of seven stations on the route between Leiden and Den Haag can express interest in the participating in the trial, which is scheduled to get underway in late January and run for six months.

Participants would be able to check-in and check-out at selected OV-chipkaart card readers using a contactless bank card issued by ABN AMRO, ING, Rabobank, SNS, ASN Bank or RegioBank or a contactless Mastercard or Visa credit card issued by International Card Services. The back-office would process their travel records overnight and bill them through the card issuer.

NS said any future national roll-out of contactless payment would require significant adjustments by all operators as well as OV-chipkaart operator Trans Link Systems, and because of the different operating concessions in place this would need to be done in stages.

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- [05 Dec 2018 - Oyster and contactless payment to be extended further outside London](#)
- [03 Apr 2018 - Rhätische Bahn replaces ticket machines](#)
- [16 Aug 2017 - Elron rolls out Ridango ticket sales system](#)
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- [22 Jul 2014 - Dutch smart ticket roll-out completed](#)
- [16 Jan 2009 - OV-Chipkaart roll-out creeps forward](#)

Oyster and contactless Payment to be extended further outside London; UK

05 Dec. 2018



UK: Acceptance of Oyster and contactless payment is to be extended to Hertford North and Epsom next year, Rail Minister Andrew Jones announced on November 30.

Ticket barriers will be modified to accept Oyster and contactless cards at Epsom, Cuffley, Bayford and Hertford North early next year. Stations up to Welwyn Garden City and Luton Airport Parkway are to be added later in the year.

A public consultation is due to begin early next year on proposals to extend acceptance to more stations outside the Greater London area. Department for Transport says that its longer-term goal is to extend pay-as-you-go travel across other urban areas, which could include mobile technology as well as its preferred ITSO smart card.

‘Extending pay-as-you-go will help us better understand passenger travel patterns and will form the basis of the consultation we are launching early next year’, said Jones. ‘We are committed to its wider expansion and the feedback we get will help both the government and train operators create a network that puts passengers’ needs and demands at its very heart.’

‘We are delighted that, working with the DfT, South Western Railway and GTR, we will be expanding Oyster and contactless to cover services to Epsom and Hertford North from early 2019 and welcome the wider consultation into extending pay as you go across the rail network that surrounds London’, said Transport for London Chief Technology Officer Shashi Verma.

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- [10 Nov 2015 - Oyster and contactless to reach Gatwick Airport in January](#)
- [15 Jul 2015 - Apple Pay arrives on London's transport network](#)
- [19 Sep 2014 - Oyster readers begin accepting National Rail ITSO smart cards](#)

Dutch smart Ticket Roll-out completed; Netherlands

22 Jul. 2014



NETHERLANDS: The much-delayed national roll-out of the OV-chipkaart smart card across the rail network was completed on July 9. All passengers are now required to check in and out at station readers using a ticket with either a smart chip or a printed barcode.

Testing of the multimodal smart card had begun in Rotterdam in 2005, when target date for the roll-out was 2008. However the project became mired in delays and cost over-runs (RG 1.09 p 41).

A disposable single-use chipkaart for single, return and day tickets is available from vending machines and ticket offices, but there is a surcharge of €1 to cover the additional cost of the smart card. Domestic print-at-home tickets with barcodes can be used without the surcharge.

Passengers making international journeys can obtain a free single-use chipkaart, or scan barcodes printed on international tickets.

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- [29 Jan 2009 - Salutory warning on smart card strategy](#)
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Rhätische Bahn replaces Ticket Machines; Switzerland

03 Apr. 2018



SWITZERLAND: Scheidt & Bachmann is supplying Rhätische Bahn with 97 replacement ticket vending machines offering similar functionality to those used by Swiss Federal Railways.

Passengers can select German, French, Italian and English language options. The TVMs can provide bank notes as well as coins in change for cash payments, and have a card reader with RFID function for contactless payment by bank card.

As well as selling a standard range of national tickets, the machines enable passengers to renew monthly and weekly tickets, purchase various offers and prepay for various telecoms and internet services.

SwissPass cards can be scanned using a built-in scanner, and a barcode reader can read all common barcodes and QR codes.

The roll-out of the machines began on March 19, and is scheduled for completion across the metre-gauge operator's network by mid-July.

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- [04 Nov 2018 - Rhätische Bahn opens 'Little Sister' bridge](#)
- [06 Sep 2018 - Rhätische Bahn orders locomotives](#)
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- [16 Jul 2014 - Not just the ticket](#)

Breakthroughs in Flexity LRV Deliveries; Canada

- January 11, 2019
- [Light Rail, News, Passenger](#)

Written by [John Thompson](#), Canadian Contributing Editor



TTC Bombardier Flexity Freedom LRV at Union Station, Toronto. William C. Vantuono photo

The first Bombardier Flexity Freedom LRV for Toronto's new Eglinton Crosstown LRT arrived Tuesday, Jan. 8., on the property. Meanwhile, delivery of the Toronto Transit Commission's much-delayed order of Flexity Outlook LRVs has improved since the opening in 2018 of a second production line at the company's Millhaven, Ont., plant.

Delivery of the first Eglinton Crosstown vehicle was made to the nearly complete yard and maintenance facility in west Toronto after a journey by flatbed trailer from the Bombardier Millhaven plant, some 136 miles eastward. It is the first unit of a 76-car, C\$392 million

order; another five are scheduled to arrive by Feb. 1, 2019. The cars will be assigned to service on the Crosstown LRT, which is scheduled to open in September 2021.

Bombardier was expected to deliver this prototype car in August 2016; when this proved impossible, the date was revised to November 2018. However, an inspection by Metrolinx staff determined that the LRV was not ready at that time. "The vehicle required some corrections and adjustments prior to being released for shipment to Toronto," according to Metrolinx communications officer Jamie Robinson.

Bombardier decided to hold off on shipping the car until early January, due to traffic congestion on the highway and in Toronto during the holiday period.

Metrolinx said the LRV will undergo numerous tests over the coming weeks, including safety and communications testing. It will then be subjected to dynamic testing, and vehicle to infrastructure integration activities.

The Crosstown LRVs are similar to those built by Bombardier for the new Kitchener-Waterloo (Ontario) LRT line. However, they have just one cab, rather than two, as they are planned to operate as married pairs. They are painted, somewhat surprisingly, in a grey and white livery, rather than the Metrolinx colors of green and white.



TTC Order Nearing Completion

Delivery of the TTC's 204-unit Bombardier Flexity Outlook order is moving along. The TTC, as of Jan. 7, has 117 Flexities in service, with an additional four approved for delivery. This was close to Bombardier's target of supplying 121 cars by Dec. 31, 2018.

The TTC is hoping that Bombardier will be able to complete the full order by the end of this year. It has been plagued by numerous delays from various causes, including welding issues at Bombardier's Mexican plant, and supply chain problems.

As a consequence, the TTC has had to keep its aging CLRVs (Canadian Light Rail Vehicles) and ALRVs (Articulated Light Rail Vehicles) in service longer than anticipated. This has involved shopping these cars at the agency's Hillcrest Shops. The TTC has said is planning to recover from Bombardier, as much as possible, the costs of keeping the older vehicles operational.

At press time, the TTC remained noncommittal about the status of its option for an additional 60 Flexities from Bombardier. These cars would be used to provide improved service on existing lines.

Categories: **Light Rail, News, Passenger** Tags: **Bombardier Flexity Freedom, Bombardier Flexity Outlook, Breaking News, Eglinton Crosstown Light Rail, Toronto Transit Commission, TTC**

BART prepares for legacy Train Car Retirement as ‘Fleet of the Future’ draws near; USA

- January 11, 2019
- **Commuter/Regional, News, OFF Track Maintenance, Rapid Transit/Light Rail**

Written by [Kyra Senese, managing editor](#)



Wikipedia/Pi.1415926535

With Bay Area Rapid Transit (BART) preparing to welcome its new **Fleet of the Future** trains in 2019, BART is making plans regarding what to do with its “legacy” train cars, some of which the transit agency said date back to 1972.

The BART **Board of Directors** was set to discuss early plans for the fleet decommissioning at its Jan. 10 meeting, according to a statement.

“The decommissioning is a complex process because BART will operate with a mixed fleet of new and old cars for some time,” a post on BART’s **website** explained. “The new and old cars can’t join together in one train, but there will be full train sets made up of new and old running simultaneously for several years.”

Philip Kamhi, special projects manager for Rolling Stock & Shops, who is leading the decommissioning, said in a statement that the process is a complicated balancing act because the transit agency has an operational need to expand service and lengthen trains.

“We’re depending on the Fleet of the Future delivery schedule; we have to plan for enough storage for all the train cars; and we’re figuring out what to do with the old ones as they are retired,” Kamhi explained in the statement.

In early 2020, BART expects to max out on its capacity to store the agency’s growing fleet for maintenance. Currently, BART estimates that the legacy fleet’s retirement will be completed by late 2023.

As reported on BART’s website, the Federal Transit Administration requires that rolling stock may be sold after the useful life of federally-assisted property is reached.

Depending on the assessed market value of the equipment, officials said the FTA may be entitled to a portion of the proceeds from sales, by the FTA’s percentage of participation in the cost of the original purchase.

BART’s legacy fleet includes 59 A2 cars and 380 B2 cars; 150 C1 cars; and the generally worst-performing cars, 80 C2 cars, according to the transit agency’s website.

The car selection criteria for decommissioning will consider the following:

- **Reliability** – Mean Time Between Incident (MTBI) and MTBI rate/1000 hours over a 12- and 24-month period. Decommission “repeaters” or bad actors that impact service reliability
- **Availability** – Long term holds due to accident damage
- **Exterior and interior condition**
- **Hours** (total number of service hours the car has run)
- **Time remaining on key components**
- **Status of component overhauls**
- **APSE** (Auxiliary Power Supply Equipment) type

Financial Planning stakeholders are expected to ensure that FTA financial commitments have been met. Members of the legal team will ensure legal compliance, and marketing representatives are expected to carry out outreach efforts to provide information and engage the public on what should be done with the old cars, BART said.

As details are finalized, BART said there will be a retirement announcement and ceremony when last of the legacy BART cars are retired.

Categories: [Commuter/Regional](#), [News](#), [OFF Track Maintenance](#), [Rapid Transit/Light Rail](#)
Tags: [BART](#), [Bay Area Rapid Transit](#), [Fleet of the Future](#), [legacy train](#), [train cars](#)

Engineering Contract awarded for Bart Silicon Valley Phase 2 Extension; USA

Jan. 11, 2019

Written by [Keith Barrow](#)

CALIFORNIA's Santa Clara Valley Transportation Authority (VTA) announced on January 10 that it has awarded a joint venture of Mott McDonald and PGH Wong a contract worth up to \$US 125m to provide general engineering services for the Bay Area Rapid Transit (Bart) Silicon Valley Phase 2 Extension.



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The consortium will be responsible for taking the project to the 30% engineering level, supporting cost and scheduling estimates required to demonstrate the integrity of VTA's management, financial and implementation plans. This will feed into VTA's application to participate in the Federal Transit Administration (FTA) Expedited Project Delivery pilot programme.

VTA is seeking a \$US 1.5bn FTA contribution for the \$US 4.7bn project, which is due to be completed in 2026

From the Phase 1 terminus at Berryessa, the extension will run for 9.6km beneath the centre of San Jose before reaching an interchange with Amtrak, Altamont Rail Express, Caltrain and VTA light rail services at Diridon station. The line then continues northwest to a terminus at Santa Clara Caltrain station.

The project involves the construction of an 8 km single-bore double-deck tunnel, which will accommodate the two running lines.

Categories: [MetrosNewsNorth America](#)

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KRC to order new DMUs for Nairobi Commuter Rail Network; Kenya

Jan. 11, 2019

Written by [Keith Barrow](#)

KENYA Railways Corporation (KRC) confirmed in a tweet on January 10 that it will place an order this year for 11 new metre-gauge DMUs as part of the rehabilitation of the Nairobi Commuter Rail (NCR) network.



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[Engineering contract awarded for Bart Silicon Valley Phase 2 extension](#)

Jan 11, 2019 | [Metros](#)

“DMUs are a key part of the NCR revitalisation masterplan and will be important in helping us achieve our goal of moving eight million commuter passengers by 2022,” KRC says.

According to KRC around 30,000 passengers a day currently travel on locomotive-hauled trains on the 160km NCR network.

Last week KRC introduced a new timetable with additional peak services from Embakasi Village and Kahawa to Nairobi.

Categories: [AfricaCommuter RailFleetNews](#)

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METRO Newsletter by Dr. F.A. Wingler
METRO 27, January 2019



Sheffield Supertram, UK

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

Maharashtra approves Nagpur Metro Phase 2; India

15 Jan. 2019



INDIA: Plans for the second phase of the Nagpur metro network were formally adopted by the Maharashtra state government on January 8, and the Detailed Project Report submitted to the national government for endorsement.

Expected to take four years to build, Phase 2 would add a further 48.3 km of elevated route and 35 stations to the initial lines being delivered by Maharashtra Metro Rail Corp. According to the Chief Minister Devendra Fadnavis, the state has also approved a Rs112bn funding package for the second phase.

Phase 2 would see five new sections added to the network. The existing north-south line would be extended north by 13 km from Automotive Square to Kanhan, adding 12 stations, and south for 18.5 km from Mihan to the Butibori industrial estate with 10 stations. The east-west line would be extended east by 3.5 km from Prajapati Nagar to Transport Nagar in the Mahalgaon district, adding three stations. In the west, the line would continue for 6.7 km from Lokmanya Nagar to Hingya, with seven stations, while a 4.5 km branch would diverge northwards from Vasudev Nagar to Datta Wadi, serving three stations.

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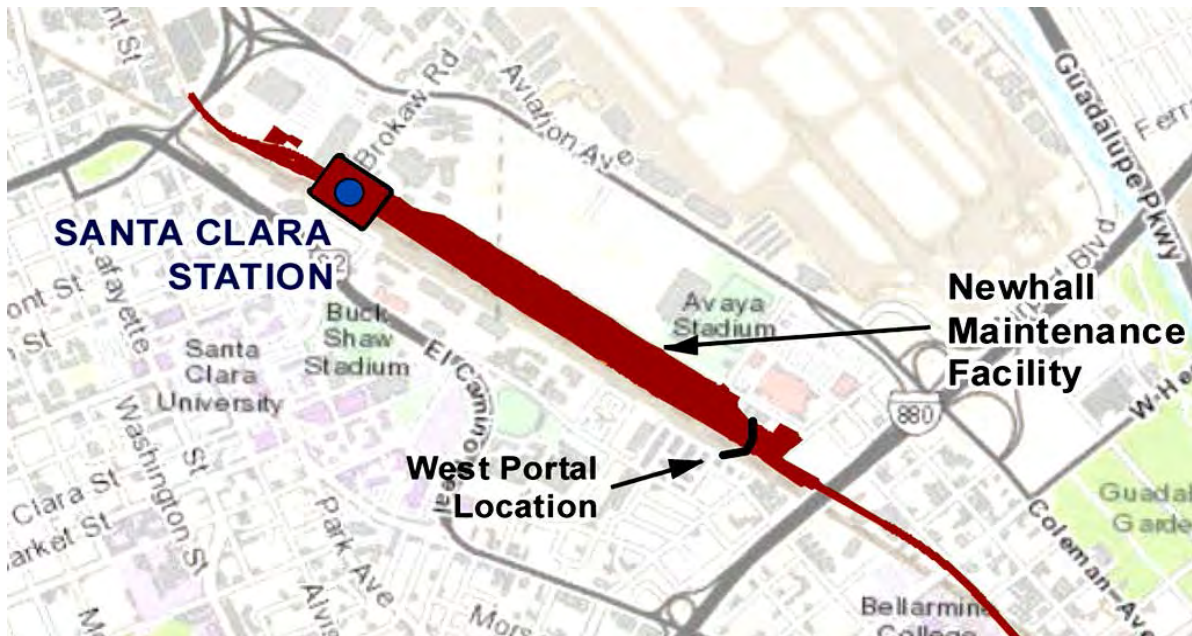
PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Mott MacDonald/PGH Wong Engineering lands BART Silicon Valley Phase II Contract; USA

Written by [Paul Conley](#), Engineering Editor; and Editor-in-Chief, Railway Track & Structures

January 15, 2019

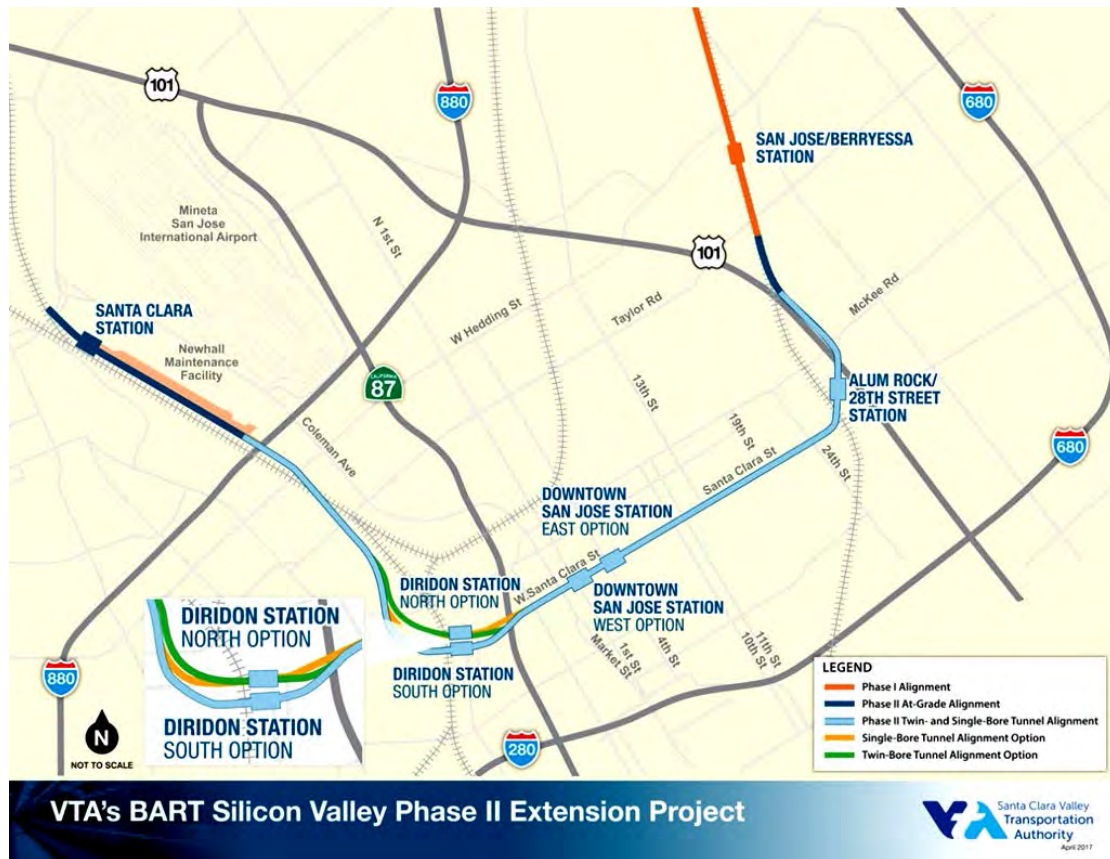
- [M/W, News, Passenger, Rapid Transit](#)



A joint venture of Mott MacDonald and PGH Wong Engineering has won the contract to provide general engineering services for Phase II of the 16-mile, six-station Bay Area Rapid Transit (BART) Silicon Valley Extension, which when completed will connect Fremont (Warm Springs) with San José and Santa Clara.

The **Santa Clara Valley Transportation Authority (SCVTA)** announced the contract winner on Jan. 14. Details of the bid are available on the **IRJ Pro website (subscription required.)**

The \$125 million Phase II contract incorporates six miles of track to expand BART operations from Berryessa/North San José through downtown San Jose to Santa Clara. It includes design and engineering work on a five-mile tunnel (using single-bore tunneling methodology) under San José, two ventilation structures, four stations (three underground and one above), and related work.



Construction is planned to begin by 2021, with passenger service set to launch by 2026. SCVTA expects the service to reach a projected 52,000 weekday riders by 2035. After it is built, the entire extension will be operated by BART and function as part of its regional rapid transit system.

The Phase II project attracted considerable interest in the civil engineering industry. A forum in May 2018 outlining the bidding process for the general engineering contract had 350 interested parties attend.

In 2011, SCVTA awarded a \$770 million contract to a consortium of Skanska, Shimmick and Herzon to build Phase I of the Silicon Valley Extension. Phase I is 10-mile, two-station extension from Fremont (Warm Springs) to Milpitas and Berryessa/North San José. **It is expected to open in 2019, following delays related to communications networking equipment.**

Categories: **M/W, News, Passenger, Rapid Transit** Tags: **BART, Bay Area Rapid Transit, Breaking News, Mott MacDonald, PGH Wong Engineering, Santa Clara Valley Transportation Authority, SCVTA, Silicin Valley Extension Phase I, Silicon Valley Extension Phase II**

UK Tram Operators study automatic Braking Systems; UK

15 Jan 2019



Sheffield Supertram, UK

UK: British tramway operators have told *Metro Report International* they are taking a close interest in Transport for London's deployment of an automatic tram braking system, and are working through light rail industry body UK Tram to assess whether similar technology would be suitable for use on the country's other networks.

On January 14 Transport for London confirmed that it had awarded Engineering Support Group Ltd a contract to supply and install a Physical Prevention of Over-Speeding automatic braking system for the tram network centred on Croydon. Expected to be in place by the end of the year, this would automatically bring a tram to a controlled stop if exceeds the speed limit at designated locations.

'Awarding the contract for a new automatic braking system is a first for trams in the UK', said Mark Davis, TfL's General Manager of London Trams. 'Not only will it improve safety for customers in London, but we hope it will lead the way for other tram operators across the country'.

The feasibility of introducing such a system was investigated after the Sandilands derailment in November 2016, when a tram travelling at 73 km/h into a sharp curve with a 20 km/h speed restriction overturned, killing seven passengers.

PPOS will initially be used at higher-risk locations, but will have the flexibility to be introduced elsewhere on the network.

The Rail Accident Investigation Branch issued 15 recommendations to the UK tram industry following the derailment. TfL said it had now 'progressed on all of the recommendations specific to TfL'. Those completed included a reduction in the network's maximum speed from 80 km/h to 70 km/h, additional speed restrictions and warning signs at four locations, more speed signs, an enhanced customer complaints process, an upgrade of the CCTV to a digital system, and the use since September 2017 of a driver

distraction or fatigue warning device. There has also been a review of risk assessments and evacuation procedures.

An emergency lighting system operating independently of tram batteries is to be installed this year, while the thickness of the safety film on the windows will be increased from 0.1 mm to 0.175 mm to improve containment. Temporary lighting has been installed on the approach to the Sandilands tunnels, where a full lighting upgrade is to be undertaken this year in collaboration with road tunnel lighting experts.

UK Tram studies Options

TfL has shared the feasibility and scoping studies for PPOS with other operators through the UK Tram group, which has been studying speed control and safety systems in use internationally. UK Tram expects to publish a report shortly.

West Midlands Metro told *Metro Report International* that the technology selected for Croydon was specific to local requirements, and as such may not be the most suitable option for its own route. It has reviewed and updated its safety equipment, and would be closely examining the UK Tram research.

Edinburgh Trams said it would consider any recommendations to be made by UK Tram. It has asked its rolling stock supplier CAF what would be required to provide PPOS functionality, and is also 'proactively' monitoring the wellbeing of its drivers.

Transport for Greater Manchester's Head of Metrolink Danny Vaughan said Metrolink would be an active member of the Light Rail Safety & Standards Board to be established by UK Tram, which would 'enable us to share best practice and protocol with industry partners on a range topics, not least safety.' He said TfL was leading the way on installing an automatic braking system, and TfGM would be 'watching closely and assessing the effectiveness of this before considering whether it is something that would work for Metrolink.'

A spokesperson for NET said the Nottingham tram operator was also actively supporting the UK Tram study, which would 'help shape our plans to further enhance safety.'

Sheffield Supertram operator Stagecoach said it would await the UK Tram report.

Blackpool Transport operates the only first-generation tram network to have survived in the UK. It is looking at options with the UK Tram working group, and is also working with Bombardier Transportation to develop an automatic braking system which it hopes to test later this year.

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- [18 Sep 2018 - Automated tram demonstrated in Potsdam](#)
- [07 Dec 2017 - 15 recommendations in Croydon Tramlink derailment report](#)
- [02 Jun 2017 - Tramlink automated tram speed monitoring systems sought](#)
- [16 Nov 2016 - Excessive speed caused Croydon tram derailment](#)

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Shenyang Tram Network expands; China

11 Jan. 2019



CHINA: Trams in Shenyang started serving Shenyang South railway station on January 5 with the opening of two short extensions to the network.

The 800 m extension serving the railway station is used by services on two new routes. Route 4 runs to Century Building via University Science City.

Route 6 runs to Taoxian Airport using a 3.3 km extension linking University Science City with Qianjinhui Hotel.

The Shenyang tram network was inaugurated in 2013 and now carries 150 000 passengers a day.

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Manila Line 3 upgrade Contract awarded; Philippines

10 Jan. 2019



PHILIPPINES: The Department of Transportation has awarded a ¥35.5bn contract for the rehabilitation and maintenance of Manila metro Line 3 to a consortium of Sumitomo Corp and Mitsubishi Heavy Industries Engineering. Sumitomo group company TES Philippines will also work on the project.

Work is due to start this month and last until July 2022, including 26 months of rehabilitation work and 17 months of maintenance. The aim is to return Line 3 to its design capacity and improve safety.

The work will cover repairs to rolling stock, trackwork, overhead catenary and signalling. It is planned to be carried out without interruption to service. A 'safe maintenance' regime is to be implemented after the repairs are finished.

Last year the government signed an agreement with Japan International Cooperation Agency for a 40-year, ¥38.1bn loan, which will finance the work.

The 16.9 km Line 3 operates a fleet of 73 light rail vehicles serving 13 stations.

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- 08 Nov 2018 - [Manila metro Line 3 upgrade financing agreed](#)
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Testing commences on full Length of Sydney Metro Northwest; Australia

15 Jan. 2019



AUSTRALIA: The first test along the full length of the Metro Northwest route in Sydney took place on January 14, when a train travelled the 36 km from Tallawong in the northwest to Chatswood.

The initial phase of the city's first metro line is due to open in the second quarter of the year. Alstom has so far delivered 17 of the 22 driverless trains, and installation of platform screen doors at all 13 stations is complete.

The A\$8.3bn Metro Northwest route runs from Chatswood to Epping over a converted heavy rail line, then continues through a new twin-bore tunnel to emerge onto an elevated alignment terminating at Tallawong.

The City & Southwest extension from Chatswood to Bankstown via the city centre is expected to open in 2024. On January 15 the third of five tunnel boring machines was

launched. TBM *Wendy* is boring the 6.2 km from Chatswood to Blues Point on the north side of Sydney Harbour.

TBMs *Nancy* and *Mum Shirl* were launched last year and are tunnelling north from Marrickville to Barangaroo. Two more TBMs are due to start work this year, including one designed to tunnel under the harbour. Herrenknecht is supplying the 150 m long machines.

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Medellín orders BYD electric Buses; Colombia

09 Jan. 2019



COLOMBIA: BYD has won a contract to supply 64 electric buses to Medellín BRT operator Metroplús, the manufacturer announced on January 7.

The K9G buses are to be delivered in the second half of 2019. The 12.5 m long buses will have capacity for 80 passengers and will require 2 h of daily recharging to remain in service.

Metroplús ordered an 18 m long articulated electric K11 bus from BYD in 2017. Over nine months of testing it was found to be 60% cheaper to operate than an equivalent diesel bus and 75% cheaper to maintain.

The order is part of Mayor Federico Gutiérrez's plan to 'turn Medellín into the capital of electric mobility in Latin America'.

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Škoda to supply more Trolleybuses to Pardubice; Czech Republik

14 Jan. 2019



Škoda had previously supplied 32Tr trolleybuses to Opava.

CZECH REPUBLIC: Sole bidder Škoda Electric signed a contract on January 4 to supply five 32Tr trolleybuses to Pardubice.

The 12 m long low-floor vehicles will be produced jointly with SOR Libchavy using its SOR NS 12 bodysell.

Deliveries are due in 10 months. The KC52·5m order is fully funded by the municipality and includes a three-year manufacturer's warranty.

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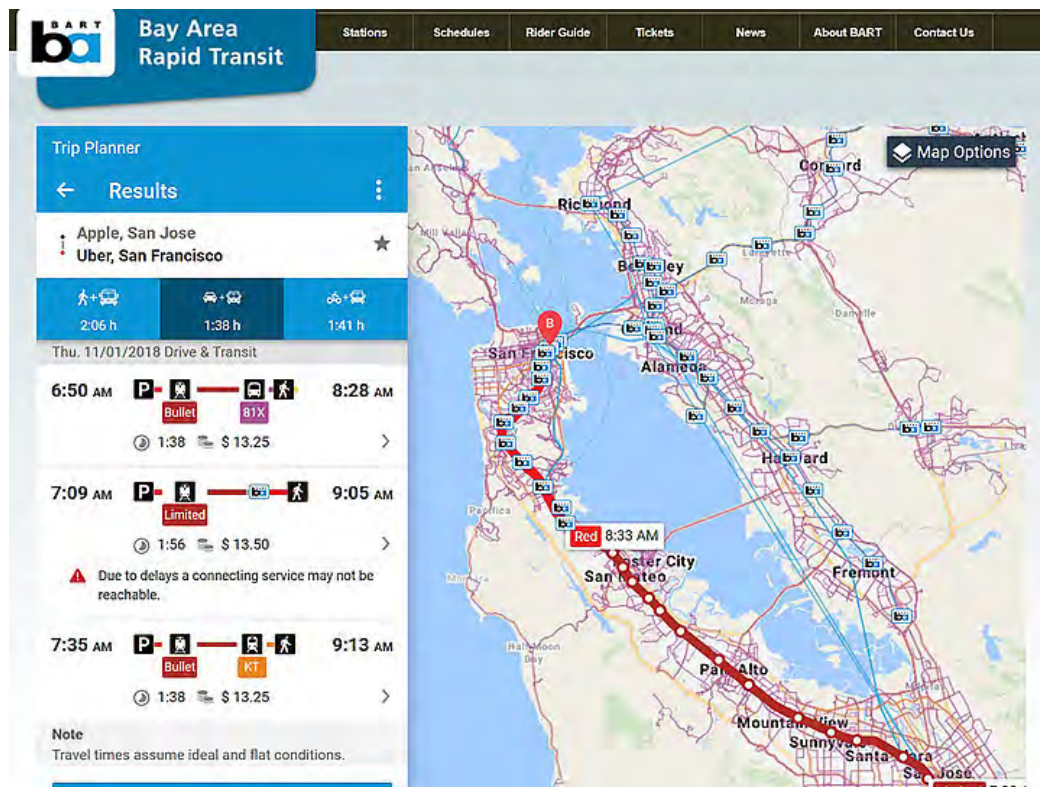
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BART launches End-to-End Journey Planner for the San Francisco Area; USA

09 Jan. 2019



USA: Bay Area Rapid Transit has worked with HaCon to develop BART Trip Planner web, iOS and Android apps for multimodal door-to-door journey planning in the San Francisco Bay Area. Siemens-owned technology company HaCon said it was a 'major upgrade' from the previous system, which was solely based on the scheduled timetable.

The software processes data from more than 30 operators in the nine Bay Area counties, including buses, trains, ferries and the famous cable car trams. It also takes into account walking, cycling and car routes, including current traffic levels. Integrated park & ride and bike & ride data includes information on parking and cycle storage availability at BART stations. Ride-sharing and cycle-sharing options are to be added in the next phases.

HaCon's HIM tool enables BART to respond to disruption more quickly and more accurately than before. Service advisories and alerts such as station closures, bus replacement services, station or trip-related messages are communicated in real time, and the trip planner can re-route passengers in accordance with potential service changes.

A step-by-step navigation feature factors in personal preferences such as favourite modes of transportation, and can route users to BART station entrances and exits. Train loading information gives riders the opportunity to pick less crowded services.

'The new trip planner takes the hassle out of commuting because it provides a complete look at someone's journey and offers a variety of ways to avoid traffic', according to Ravi Misra, BART Chief Information Officer. 'All trips use BART as the lynchpin of the itinerary and then make it easy to get to and from our stations using the various modes of transportation the Bay Area offers.'

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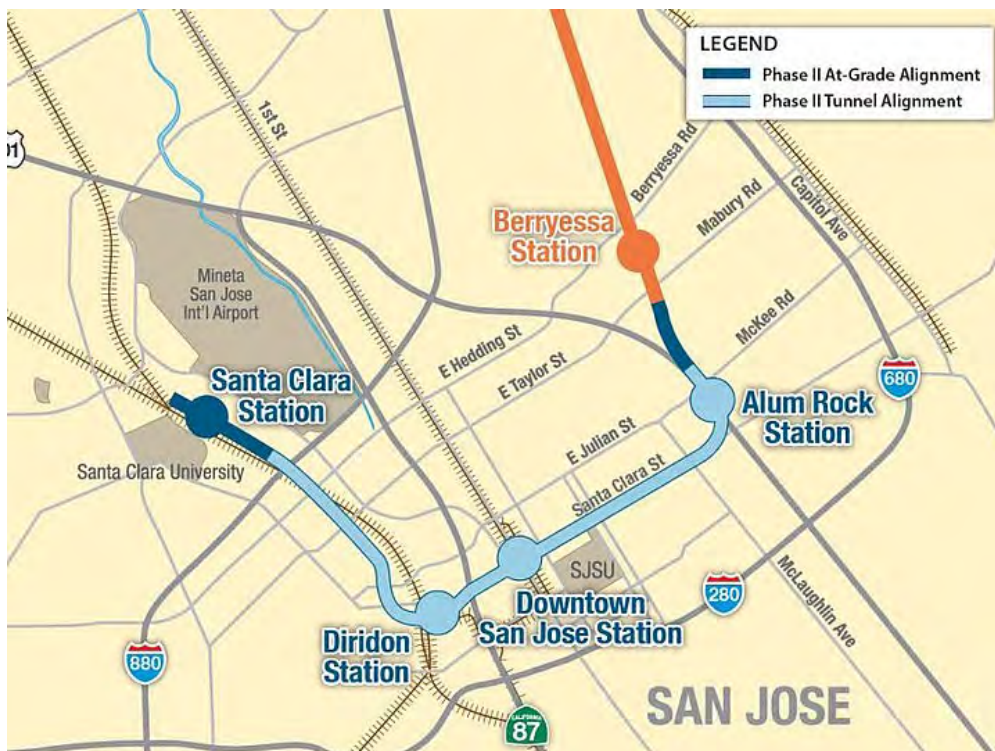
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BART Silicon Valley Phase II Extension Contract awarded; USA

14 Jan. 2019



USA: Project promoter Santa Clara Valley Transportation Authority has awarded an engineering services contract covering Phase II of the BART Silicon Valley extension project. The contract with a joint venture of Mott McDonald and PGH Wong Engineering is worth up to \$125m.

The planned 10 km southern extension from Berryessa to Santa Clara University includes an 8 km tunnel under San Jose, and would serve four stations.

The contract aims to advance the engineering design level of the project to 30% to inform costs and schedule estimates. These are needed for a request that VTA expects to make in early 2020 for funding from the Federal Transit Administration's Expedited Project Delivery Pilot Programme.

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Financing agreed for Cairo interurban light Rail Line; Egypt

Jan. 16, 2019

Written by [Keith Barrow](#)

EGYPT's transport minister Mr Hisham Arafat announced on January 16 that China's Exim Bank has agreed to provide a \$US 1.2bn loan to finance an interurban light rail line linking Cairo with 10th of Ramadan City.



CRRC Sifang will supply Rolling Stock for the 66 km Line.

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The 66km line is being constructed by a consortium of China's Avic International and China Railway Group under a \$US 1.24bn contract [awarded in August 2017](#).

According to the minister, the loan matures in five years and has a 1.8% interest rate. The deal includes \$US 461m for infrastructure and \$US 739m for rolling stock.

Last month the consortium [awarded CRRC Sifang a contract to supply and maintain 22 six-car trains](#) for the new line..

Categories: [AfricaNews](#)

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Stadler to supply additional Narrow-Gauge DMUs to Southern Italy; Switzerland, Italy

Jan. 16, 2019

Written by [David Burroughs](#)

ITALY-APPULO Lucane Commuter Railway (FAL) has awarded Stadler a €22.8m contract to supply four three-car narrow-gauge DMUs, with an option for four additional DMUs.



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The new trains, which will be delivered within 24 months, will increase FAL's fleet of 950 mm-gauge DMUs to 23. The latest contract follows [an order for 17 of Stadler DMUs](#) which FAL took delivery of in 2012.

The vehicles will be used on the 183 km network in Apulia and neighbouring Basilicata on lines including the Bari – Altamura – Matera route.

The car bodies will be made using Stadler's lightweight aluminium composite construction, with an axleload of 12 tonnes. The trains can be coupled into sets of twos or threes to increase capacity.

The 52.5m-long trains are equipped with low-emission engines that comply with EU Stage IIIB emission standards. The trains, which have around 50% low-floor space to facilitate access, have capacity for 306 passengers, including 154 seated, and are equipped with HVAC equipment and toilets for passengers with reduced mobility.



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METRO Newsletter by Dr. F.A. Wingler
METRO 28, January 2019



Bengaluru Metro-Rail, India

ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

State approves Bangalore Suburban Rail Network; India

16 Jan. 2019



INDIA: The Karnataka state cabinet has approved a four-route suburban railway network planned for Bangalore.

Services would use dedicated tracks to serve 81 stations, including 30 elevated. The estimated Rs230.1bn cost would be funded by the central government (20%), the state government (20%) and loans from multilateral or domestic financial institutions.

At 63.4 km, the longest of the four routes would run from Hillagere to Devanahalli. The others would be a 38.9 km route from Nelamangala to Baiyappanahalli, a 35.5 km line from Kengeri to Whitefield and a 24.9 km alignment linking KSR Bengaluru with Rajanakunte.

The cabinet also approved three metro projects, including a line to the airport.

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- [Bangalore electrification commissioned](#) »
- [Singh to lead Delhi regional rail project](#) »
- [Mumbai network switches from DC to AC](#) »
- [ICF rolls out Mumbai suburban EMU](#) »

Singh to lead Delhi regional Rail Project; India



INDIA: The Ministry of Urban Development has appointed **Vinay Kumar Singh** as the first Managing Director of the National Capital Regional Transport Corp, which was established to design, finance, operate and maintain a regional rail network radiating from Delhi.

NCRTC is a joint venture, owned 50% by the Indian government and 50% by the state administrations of the National Capital Territory, Uttar Pradesh, Haryana and Rajasthan.

The NCR Planning Board initially identified eight corridors for the express rail network, where trains with rapid acceleration and braking would operate at a maximum speed of 180 km/h:

- Delhi – Sonipat – Panipat (111 km);
- Delhi – Ghaziabad – Meerut (90 km);
- Delhi – Gurgaon – Rewari – Alwar (180 km);
- Delhi – Hapur (57 km);
- Delhi – Khurja (83 km);
- Delhi – Ballabgarh – Palwal (60 km);
- Delhi – Baghpat (56 km);
- Delhi – Rohtak (70 km).

A task force established by the Planning Commission subsequently prioritised the three routes to Alwar, Panipat and Meerut, which together have an estimated cost of Rs722bn.

A civil engineer from the Indian Railway Service of Engineers, V K Singh initially worked at Indian Railways, where he became Divisional Engineer for the Ahmedabad – Kandla Port line. He later became Deputy Chief Engineer for the first phase of the Delhi Metro network, before moving to Northern Railway as Secretary to the General Manager, and later Executive Director at the Indian Railway Board.

More recently, Singh has served as CEO of India's High Speed Rail Corp, a subsidiary of railway development company Rail Vikas Nigam Ltd. He worked with Japanese consultants on the feasibility study for the Mumbai – Ahmedabad high speed line, leading to the signing of the intergovernmental technical and financial support agreement for this project last year.

Mumbai Network switches from DC to AC; India



The final DC train was decorated to mark the conversion of the Mumbai network to AC electrification (Photo: Central Railway).

INDIA: Central Railway has announced that ‘a historic milestone was achieved’ at 05.37 on June 8, with completion of the conversion of the Chhatrapati Shivaji Terminus – Mumbra slow lines and CST – Thane fast lines from 1.5 kV DC to 25 kV AC electrification.

The Mumbai CST – Kalyan route was electrified at 1.5 kV DC under a programme which saw the first section go live in 1925 (RG 1.25 p107). However, Central Railway said the aging system was not able to meet modern power demands, and there was limited space for additional substations.

The blockade of the lines for conversion had been postponed by 24 h at short notice, but Central Railway said the ‘smooth and major transition has been achieved without any major disruption or inconvenience to the travelling public’. The total cost of the project is Rs13bn, including the future conversion of the Harbour Line from CST to Panvel.

Central Railway expects the use of AC suburban EMUs with regenerative braking will produce energy savings of 33% compared to the old DC units, with the maximum speed raised from 80 km/h to 100 km/h. Long-distance trains are also able to run through to CST on AC.

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Work on Patna Metro Rail to start Soon: Bihar CM Nitish Kumar; India

27 December 2017 in Category(ies): Posted on [27/12/2017](#) Categories [Metro Rail Systems](#), [Patna Metro](#)

PATNA: Bihar CM Nitish Kumar on Tuesday said works on metro rail project in Patna would be taken up soon as the state government will submit a corresponding detailed project report (DPR) to union ministry of housing and urban affairs within next four months. Nitish, while inaugurating the newly- built station road flyover on Tuesday evening, said Union minister of state (independent charge) for housing and urban affairs Hardeep Singh has assured that the DPR for Patna metro rail would be cleared in minimal time. Vehicular movement on the new flyover will commence from Wednesday. "The central government has recently changed its policy for development of metro rail networks in the country. Accordingly, we were required to change the DPR for Patna metro rail.

According to the Newspaper, State urban development department is finalizing the changes in the DPR and we intend to submit within next three to four months. Union urban minister Puri had come to Patna to participate in the Shukrana Samaroh (thanks- giving or concluding ceremony of 350th birth anniversary of tenth Sikh Guru Gobind Singh) and he has assured me that the DPR for Patna metro rail would be approved in minimal time," Nitish said. The preliminary DPR for proposed metro rail in Patna entailing an estimated outlay of Rs. 16960 crs was given an in- principal approval by CM Nitish Kumar on December 22, last year, followed by an approval by the state cabinet on February 9, this year. Meanwhile, the new metro policy of the Centre was given a nod by the central cabinet headed by PM Narendra Modi in its meeting held on August 16.

PM Modi inaugurates India's to-be-first Driver-less Train System on Delhi Metro's Magenta Line; India

26 December 2017 in Category(ies): Posted on [26/12/2017](#) Categories [Delhi Metro \(DMRC\)](#), [Headlines](#), [Metro Rail Systems](#)

The 12.64-kilometre section of Delhi Metro's magenta line inaugurated by PM Narendra Modi today connects Botanical Garden in Noida to Kalkaji in southeast Delhi with seven other stations along the way



NEW DELHI: Prime Minister Narendra Modi on December 25 inaugurated a segment of Delhi Metro newly-built Magenta Line, which will connect Botanical Garden in Noida to Kalkaji Mandir in Delhi. Prime Minister Narendra Modi took an inaugural ride on a short section of the 12.6-kilometer (7.8-mile) Magenta Line, which connects the southern part of New Delhi with Noida. Uttar Pradesh chief minister Yogi Adityanath, Governor Ram Naik and Delhi Metro Rail Corporation (DMRC) managing director Mangu Singh also graced the event. After the inauguration, all the dignitaries, including PM Modi, took a ride on board the Magenta Line metro during its first public run. While Uttar Pradesh Chief Minister Yogi Adityanath accompanied PM Modi as he travelled to the Okhla Bird Sanctuary station in the swanky train.

A section of Delhi Metro's Magenta Line that connects Botanical Garden to Kalkaji. The 12.64-km stretch, part of the Botanical Garden-Janakpuri West corridor, aims to bring Noida closer to south Delhi. Earlier, passengers had to take a train from Noida had to switch Metro at Mandi house to go to south Delhi. Now, the journey that took 52 minutes can now be completed in just 19 minutes. This Metro line will immensely benefit the students of Jamia Milia Islamia and Amity University and officer-goers headed for Noida.

Noida and Faridabad have also come closer and those travelling to Faridabad will be able to change trains at Kalkaji Mandir and go directly to Faridabad, saving them a lot of time.

This line will also have an interchangeable station at Hauz Khas. Once this line opens completely, commuters from Noida to Gurgaon would be able to bypass the crowded Rajiv Chowk station and change trains at Hauz Khas station to reach Gurgaon.

The first-phase of Delhi Metro's Magenta line has a lot in store. Commuters travelling via this route can look forward to every station having Wi-Fi connectivity, trains offering more space for those using wheelchairs, charging points that are USB compatible, LCD screens displaying videos, vibrant coloured seats and a host of other new features.

The Delhi Metro Rail Corp. has said the highly automated train will run initially with a driver but could become driverless in the future. An official said that it would have human operators for 'a year or two'.

One of the new trains crashed through a wall at a depot last week, sparking concern about the automation technology. However, Delhi Metro said human error was the cause, with

workers forgetting to re-engage the brakes after they had been disengaged for maintenance. The train rolled down a ramp and into the wall.

The Magenta Line is the latest addition to the Delhi Metro system, which opened 15 years ago and covers more than 200 kilometers (125 miles).

With the commissioning of the new line, the travel time between south Delhi and Noida will be reduced from 52 minutes to 19 minutes on the Magenta Line.

The entire line, when complete, will run from Botanical Garden to Janakpuri West.

The coaches will have LED information display, power charging capacity and colourful seats. The new stations have been decorated using themes of nature, yoga, and cultural landmarks.

This would be first line on the Delhi Metro network where driverless trains will be introduced along with the Communication Based Train Control (CBTC) signalling technology, which facilitates the movement of trains within a frequency of 90 to 100 seconds.

The platform screen doors (PSDs) are also being used for the first time. PSDs are glass-made screens installed near the edge of platforms that open only when a train arrives and shut after it departs.

Metro rides in Delhi-NCR got costlier this year after the fare structure saw two revisions. Starting at Rs. 10, the fare goes up to Rs. 60. Divided into six fare slabs, the new fare structure, Monday through Saturday, is:

Rs. 10 for up to 2 kms
Rs. 20 for 2 to 5 kms
Rs. 30 for 5 to 12 kms
Rs. 40 from 12 to 21 kms
Rs. 50 from 21 to 32 kms
Rs. 60 for journeys over 32 kms

Those carrying a smart card and travelling during off-peak hours — between 6am to 8am, 12pm to 5pm and 10 pm onwards — can avail a discount of 20 per cent. On Sundays and national holidays (January 26, August 15 and October 2), there is a discount of Rs. 10 across slabs. When the Metro had started operations in 2002, the minimum fare was Rs. 4 and maximum was Rs. 8.

The trains run from 6 am till about 11 pm.

**Nod for UP Metro Rail Corp:
Varanasi/Kanpur/Agra/Moradabad/Allahabad/Meerut/Gorakhpur/Jhansi to get
Metro Rail; India**

5 Jan. 2018 in Category(ies): Posted on [05/01/2018](#) Categories [Agra Metro](#), [Gorakhpur Metro](#), [Kanpur Metro](#), [Lucknow Metro](#), [Metro Rail Systems](#), [Varanasi Metro](#)

Chief Minister Yogi Adityanath has requested E Sreedharan, known as 'Metroman' for his years heading the Delhi Metro, to be the principal advisor to the proposed umbrella body which would explore launching metro services in Varanasi, Kanpur, Agra, Moradabad, Allahabad, Meerut, Gorakhpur, Jhansi and other cities.

LUCKNOW: The Yogi Adityanath government on Tuesday gave its nod for the setting up of the Uttar Pradesh Metro Rail Corporation Limited (UPMRCL).

The decision was taken at a meeting of the state cabinet presided by Chief Minister Yogi Adityanath here, an official spokesperson said.

The UP Metro Rail Corporation Ltd will be set up on the lines of Maharashtra Rail Corporation, the spokesperson said.

As metro projects in different cities in the state of Uttar Pradesh through separate corporations, take a longer time in implementation, the cabinet decided to set up the UP Metro Rail Corporation as a separate PSU under the State sector.

The Lucknow Metro Rail Corporation will be restructured and will be the given shape of a 'single special purpose vehicle (SSPV)', the spokesperson said.

The Chief Minister had announced the decision to set up such a corporation while inaugurating the Lucknow Metro service here on September 5.

Adityanath has requested E Sreedharan, known as 'Metroman' for his years heading the Delhi Metro, to be the principal advisor to the proposed umbrella body which would explore launching metro services in Varanasi, Kanpur, Agra, Moradabad, Allahabad, Meerut, Gorakhpur, Jhansi and other cities.

"In place of separate metro corporations, we will constitute UP Metro Corporation to run metro services in the state," he had said, adding that the corporation will also explore possibilities of mono rail services in some parts of the state.

Andhra makes fresh Plea to Centre on Vijayawada and Vizag Metro Rail; India

16 Jan. 2018 in Category(ies): Posted on [16/01/2018](#) Categories [Amaravati \(Vijayawada\) Metro](#), [Metro Rail Systems](#), [Vizag Metro](#)

Both the projects are being overseen by the Amaravati Metro Rail Corporation (AMRC).



NEW DELHI / VIJAYAWADA: The Andhra Pradesh government has made a fresh plea to the Centre for the construction of metro rail projects in Vijayawada and Visakhapatnam.

The plea was submitted by state Chief Minister N Chandrababu Naidu to Prime Minister Narendra Modi, during their meeting in New Delhi earlier this week.

According to PTI, Naidu told the Prime Minister that “a specific road map and an action plan has to be drawn and implemented” without further loss of time.

Both the projects are being overseen by the Amaravati Metro Rail Corporation (AMRC).

The Vijayawada Metro Rail project took shape in June 2014 when a Special Purpose Vehicle (SPV) was formed.

In October last year, the Memorandum of Understanding (MoU) between the AMRC and Delhi Metro Rail Corporation (DMRC) was reportedly cancelled, after the AMRC proposed a Light Metro Rail (LRT), in line with the Centre’s suggestion, while the DMRC proposed a medium metro rail.

The AMRC had made the proposal after the Union finance ministry refused to approve the Vijayawada Metro Rail in May this year, stating that the Centre did not find it financially viable.

India’s ‘Metro Man’ E Sreedharan, who was working as an advisor to the Andhra Pradesh government on both metro rail projects, had submitted his resignation to Naidu last year, further complicating things.

“We are now getting a DPR prepared for the LRT. A consortium led by French firm Systra has been engaged for this while KfW of Germany is funding it. Once the DPR is ready, we will submit it to the Centre for approval,” AMRC Managing Director N P Ramakrishna Reddy told PTI.

As far as the Vizag Metro Rail is concerned, the project's first phase is projected to cover a distance of 42.54 km from Gajuwaka to Kommadi, under the limits of the Greater Visakhapatnam Municipal Corporation (GVMC).

"As far as the Vizag metro is concerned, it has already been decided to move forward with the PPP model," Reddy had told RailNews earlier.

The filing of bids for the project is expected to close by February-end.

CMRS Team visits Maha Metro Nagpur Project, inspects Facilities and Infrastructure; India

17 Jan. 2018 in Category(ies): Posted on [17/01/2018](#) Categories [Headlines](#), [Metro Rail Systems](#), [Nagpur Metro](#)



NAGPUR: A three-member team of Commissioner of Metro Rail Safety (CMRS) visited Maha Metro Nagpur project between Airport South Station and Khapri Station, including MIHAN Train maintenance Depot and inspected various facilities provided at all levels of the project. The inspection which continued almost the entire day, was followed by presentation and meeting with the senior officials.

The three-member team was led by Arvind Kumar Jain, Commissioner of Rail Safety (CRS), Central Circle, Mumbai and an ex-IRSE officer of Indian Railways. The other members of the team included G P Garg and Uttam Prakash, both holding the post of Deputy CRS. The team, which arrived here today morning first inspected Airport South station to oversee various facilities provided there.

The team also inspected passenger facilities and other operation rooms at the station. Maha Metro MD Dr Brijesh Dixit, led by senior officials, accompanied CMRS team during their inspection. The CMRS team boarded Metro Train from Airport South Station and travelled to MIHAN Car Depot. The team checked the break system, evacuation system and other on board measures related to passenger safety during emergent situations. The team also enquired about various train features and safety provisions in the train.

The team held a meeting at MIHAN Depot and an audio-visual presentation was organized there. The progress of the project and other relevant details were shared with team during the presentation. The team also inspected shunter, hydraulic jack, traction sub-station used for feeding 25 KW traction supply for main line, and other rescue equipments procured by Maha Metro. The team of CMRS officials held another round of meeting with the Maha Metro officials at Metro House, Civil Lines and appreciated details of the project including 5D BIM project monitoring system adopted by Maha Metro Nagpur. Among the senior Maha Metro officials present during the day-long inspection included Director (Project) Mahesh Kumar, Director (Rolling Stocks and System) Sunil Mathur, Director (Finance) S. Sivamathan and General Manager (Administration) Anil Kokate.



Efforts on to get Mono Rail on Track in Hyderabad; India

19 Jan. 2018 in Category(ies): Posted on [19/01/2018](#)[19/01/2018](#)Categories [Headlines](#), [Hyderabad Metro](#), [Metro Rail Systems](#)

While the focus is on having mono rail operations in places that lack Hyderabad Metro Rail connectivity in the city, plans have been drawn up to operate mono rail from Kazipet to Warangal covering a distance of about 15 km.

HYDERABAD: Buoyed by the success of Hyderabad Metro Rail, efforts are now being intensified to get the mono rail on track in the city and in Warangal. Two companies – one from Switzerland and Poland have evinced interest in taking up the mono rail project on different corridors in the city and Warangal.

While the focus is on having mono rail operations in places that lack Hyderabad Metro Rail connectivity in the city, plans have been drawn up to operate mono rail from Kazipet to Warangal covering a distance of about 15 km.

In Hyderabad, the emphasis is on having mono rail connectivity to the airport, Shamshabad. Accordingly, Gachibowli to Airport and Kanchanbagh Junction (Owaisi Hospital) to Airport routes are being identified, sources said.

With the traffic heading to airport increasing every passing year, the need for better connectivity to the airport has become inevitable. Measures are also being taken to extend the elevated P.V.Narasimha Rao Expressway till Shamshabad to ease traffic flow to the airport.

Sharing details, Mayor Bonthu Rammohan said the two companies have evinced interest in taking up the mono rail project under Build Operate and Transfer (BOT) mode. Necessary studies and surveys have been completed for taking up the project and other modalities are being explored, he said.

Following the success of Metro Rail in the city, Municipal Administration and Urban Development Minister KT Rama Rao is touring different countries to explore different possibilities for Metro Phase II in the city. Metro operations were formally launched by Prime Minister Narendra Modi on November 28 and every day nearly one lakh passengers are availing the service.

Unlike the Metro, mono rail is cost-effective and the construction cost will be 30 per cent lesser. More importantly, it's construction will be much faster as the majority of the components are precast.

"Along with a few senior officials, I will be visiting Switzerland in next few days to inspect the mono rail project and their operations," Rammohan added.

Chennai Metro Rail starts Trial Run on 2.5 kilometer stretch between Nehru Park and Chennai Central; India

29 Jan. 2018 in Category(ies): Posted on [29/01/2018](#) Categories [Chennai Metro](#), [Metro Rail Systems](#)

The CMRL has said that the first train in the underground stretch of 2.5 kilometres was undertaken on completion of track and overhead electrification works.

CHENNAI: The Chennai Metro Rail has conducted its first train trial run at a distance of about 2.5 kilometres between Nehru Park and Chennai Central, marking a step ahead to completion of the long duration project. This will add to the Metro rail services, which currently cover about 28 km in various stretches in the city.

The CMRL has said that the first train in the underground stretch of 2.5 km was undertaken on completion of track and overhead electrification works.

"Further, finishing as well as tests and trials are under progress. This will ensure completion of entire Corridor-II (Green Line) of the Chennai Metro Phase – I Project," it added.

The Safety Commissioner has to now conduct an inspection, said sources.

Once operational, the Corridor-II will connect Central Railway Station and Egmore Railway Station, the two major railway stations in the city, to the major bus station Mofussil Bus Terminus in Koyambedu and from there to the International Airport at Meenambakkam.

The Blue Line between Koyambedu and Alandur, connecting the Airport has already been operational.

Ministry of Railways to set up Metro & EMU Coach Manufacturing Plant in Latur, Maharashtra; India

1 Feb. 2018 in Category(ies): Posted on [01/02/2018](#) Categories [Metro Rail Systems](#), [Production Plants/Units](#), [Railway Board/Ministry](#), [Union Minister of Railways](#)
The decision to set up a railway coach factory was taken at a meeting between Railway Minister Piyush Goyal and Maharashtra Chief Minister Devendra Fadnavis

MUMBAI: Indian Railways will set up a metro and rail coach manufacturing facility in Latur in Maharashtra on public-private partnership basis. The project is likely to entail investment of more than Rs 1,500 crore, a top rail ministry official said. The official said the investment and the number of coaches the facility will make is yet to be decided.

Maharashtra Chief Minister Devendra Fadnavis and railway minister Piyush Goyal met on Wednesday and, in-principle, approved setting up a rail coach factory in Latur, the official said. The facility will cater to the demands of metro coaches in cities across India along with the captive demand from coming from Indian Railways.

This plant would manufacture Electric Multiple Units for suburban trains and coaches for metros. Work on this project will be done on high priority with fast track processing of all approvals. Maharashtra government has offered several concessions, including in land and taxes.

“Work on this project will be done on high priority with fast track processing of all approvals. The Maharashtra government has offered several concessions including in land, taxes,” an official said.

In a tweet, Devendra Fadnavis, Chief Minister of Maharashtra said “*Thank you Piyush Goyalji for your commitment for setting up of factory of EMU for Suburban Railways and Metro coaches at Latur. Big boost to economic activities in Marathwada and huge employment opportunities.*”

The new coach plant will create an industrial ecosystem in the drought-prone region and may help shift from agriculture to industry.

Kolkata Metro: Allocation up for 4 other ongoing Projects; India

7 Feb. 2018 in Category(ies): Posted on [07/02/2018](#) Categories [Kolkata Metro](#), [Metro Rail Systems](#), [Railway Budget in India and Ministry of Finance](#)

KOLKATA: Metro Railway officials are certain that an enhanced allocation for the 32-km Kavi Subhash-Airport via Rajarhat link will speed up the project progress.

Of the four Metro projects sanctioned in 2010-11 that are in various stages of completion, this has progressed the most. With land hurdles more or less resolved, officials expect to utilize the entire allotted amount of Rs 250 crore for 2017-18.

“The outlay for 2018-19 is Rs 344 crore and we are hopeful of utilizing the entire sum by March 2019. If things go well, we may ask for more funds after revising the outlay. Till the end of 2017, we have already spent nearly Rs 1,300 crore. This is nearly 30% of the total project cost of Rs 4,259.5 crore. We are sticking to our target of 2020 for the entire stretch. Before that, two phases – up to Ruby crossing and then to Sector-V – will be thrown open,” an official said

In 2017, some of the land hurdles along the 16.72 km Joka-Esplanade project were also resolved and work started for the station at Mominpur. The railways ministry seems to have kept this in mind while allocating Rs 169.4 crore for this project that has been the slowest among the four. Till the end of 2017, barely Rs 560 crore of the total sanctioned cost of Rs 2,913.5 crore could be spent. However, removal of land hurdles and the progress in the last few months seem to have prompted the railways to increase the outlay for this year to more than thrice of the Rs 50 crore allotted for 2017-18.

Metro is also hopeful of completing the Noapara-Dakshineswar and Noapara-Jessore Road stretches by June 2019. The Dakshineswar link was held up due to encroachers along the way. The encroachers were finally rehabilitated by the state government in 2017. Unless new hurdles emerge, the project is on its way towards completion. Till 2017-end, nearly Rs 230 crore has been spent on this project.

Encroachers along the Noapara-Jessore Road stretch have also been removed and this project is also progressing smoothly. The link from Jessore Road to airport can, however, only take place once Airports Authority of India shifts some vital installations.

“Once links to Dakshineswar and airport are completed, we will start considering extension towards Barrackpore and Barasat. The state has already indicated that it wants these extensions and will help in acquiring land,” another official said.

This would enable the commuters to travel across the city to reach other modes of transport comparatively in a lesser timeframe. It is expected to take another four to six months to complete work in the stretch where the trial run has been conducted, before opening it up for full-fledged operation, said the officials.

Governor Banwarilal Purohit in his first address in the Tamil Nadu Assembly earlier this month said that the remaining part of the underground sections of the 45 kilometer Phase-I stretch of the Chennai Metro Rail Project will be operational in stages by the end of 2018.

The Phase-I extension, covering a length of nine kilometre from Washermenpet to Thiruvotriyur / Wimco Nagar, is also under implementation.

Three more metro rail corridors covering a total distance of 107.5 kilometres under Phase-II of the Chennai Metro Rail Project at an estimate of Rs 799.62 billion (Rs.79,962 crore) have been approved and recommended by the State Government to the Government of India for obtaining external aid, he said.

According to sources, work on the Chennai Metro Rail started in 2009 and original the estimated cost was around Rs146 billion (Rs 14,600 crore) for the Phase-I, but it was increased to Rs.200 billion due to delay owing to various reasons.

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER
TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 29, January 2019



Battery-Electric Hybrid Trolley-Bus in Saint Etienne, France

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

Masabi and Chalo target Indian Transport Ticketing Market; UK, India

19 Apr. 2018

INDIA: A partnership to offer mobile fare collection and journey planning technology in the Indian market was announced by Masabi and Chalo on April 18.

Indian journey planning and ticketing company Chalo (previously called Zophop) is to integrate UK-based mobile ticketing and software-as-a-service supplier Masabi's Justride Mobile Ticketing SDK into its app, allowing passengers to purchase and display tickets. Chalo will also license Masabi's validation software.

Transport operators using the system would gain access to passenger and real-time vehicle information, helping them optimise services across their networks.

Masabi said Indians spend US\$73bn/year on bus, metro, train and taxi fares, with 91% of this spent on local transport.

'Developed markets have moved to smart cards, but 95% of India's public transport tickets are still bought with cash', said Chalo CEO Mohit Dubey. 'With this partnership we can leapfrog to mobile ticketing, bringing us ahead of many developed markets, and saving the entire investment required for smart cards.'

Chalo currently operates across 13 500 buses in eight cities, supporting 130 million transactions per month.

'In a country with one billion mobile phones, mobile ticketing is an obvious and compelling offering, and will make transportation one of the leading categories in our Digital India and cashless payments initiatives', said Dubey.

Related news

- [17 Jan 2019 - Masabi to bring mobile ticketing to Japan](#)
- [27 Jun 2018 - Metro standards committee formed](#)
- [12 Apr 2018 - Uber app to offer public transport tickets](#)
- [06 Jul 2017 - Den Haag introduces tram and bus mobile ticketing](#)
- [19 Jan 2017 - Masabi launches mid-market m-ticketing app](#)
- [06 Jul 2016 - Mobile ticketing comes to New York commuter rail](#)
- [10 Dec 2015 - Keolis takes share in Masabi](#)
- [06 May 2014 - New York commuter railways introduce mobile ticketing](#)
- [09 Sep 2013 - Smartphone ticketing targets special events](#)

State approves Bangalore suburban Rail Network; India

16 Jan. 2019



INDIA: The Karnataka state cabinet has approved a four-route suburban railway network planned for Bangalore.

Services would use dedicated tracks to serve 81 stations, including 30 elevated. The estimated Rs230·1bn cost would be funded by the central government (20%), the state government (20%) and loans from multilateral or domestic financial institutions.

At 63·4 km, the longest of the four routes would run from Hillagere to Devanahalli. The others would be a 38·9 km route from Nelamangala to Baiyappanahalli, a 35·5 km line from Kengeri to Whitefield and a 24·9 km alignment linking KSR Bengaluru with Rajanakunte.

The cabinet also approved three metro projects, including a line to the airport.

Related news

- [06 Oct 2017 - Loan signed for Bangalore metro Reach 6](#)
- [19 Jun 2017 - Bangalore metro Phase 1 completed](#)
- [31 Jan 2014 - Bangalore metro Phase 2 approved](#)

Lucknow Metro begins using automatic Train Operation; India

22 Jan 2019



INDIA: Lucknow Metro trains began running in attended automatic train operation mode on January 21. Trains have been running under manual driving with automatic train protection since the initial 8.5 km Transport Nagar – Charbagh section of the north–south line opened in September 2017.

The train operators now give a manual instruction to close the doors, after which the Alstom Metropolis trains run to the next station in GoA2 and open their doors without further intervention.

The line is equipped with **Alstom's Urbalis 400 CBTC**. The control system provides automatic train supervision, route setting and automatic train regulation to optimise train movements and recover from any disruption.

Lucknow Metro Rail Corp expects to commission extensions of the line north to Munshipulia and south to Charan Singh International Airport in the near future, completing the 22.8 km priority corridor for the initial network.

Related news

- 05 Sep 2017 - [Lucknow metro opens](#)
- 05 Dec 2016 - [Test running begins on Lucknow metro](#)
- 07 Nov 2016 - [Lucknow metro test running to start on December 1](#)
- 10 May 2016 - [Lucknow metro train design revealed](#)
- 05 Oct 2015 - [Lucknow metro chooses Alstom trains and signalling](#)
- 10 Aug 2015 - [Lucknow metro approved](#)

Dakshineswar Metro by 2019 Pujas: Says Chairman/Railway Board; India

6 March 2018 in Category(ies): Posted on [06/03/2018](#) Categories [CRB](#), [Inspections, Checks, Station/Section Visits and Speed Trial Runs in the Railway Systems](#), [Kolkata Metro](#), [Metro Rail Systems](#), [Rail Vikas Nigam Limited \(RVNL\)](#)

KOLKATA: On Monday evening, Ashwani Lohani, chairman, Railway Board (CRB), boarded the Howrah-New Delhi Rajdhani Express as a common First AC passenger after promising Kolkata residents Metro rides to and from Dakshineswar by the 2019 Pujas.

During the day, Lohani inspected several ongoing Metro project sites, including the stretch between Noapara and Dakshineswar. In fact, he started his inspection tour from Dakshineswar and went up to Ruby crossing which is part of the Kavi Subhash-Airport (via Rajarhat) stretch.

“Now that the last hurdle regarding encroachments has been cleared by the Kamarhati Municipality and work is progressing at a fast pace, the link up to Dakshineswar should be commissioned by September, 2019. This will enable people of Kolkata to use the services during the Pujas next year,” Lohani, who is keen on adding 50 more km to the Metro Railway’s existing network in the next three years, said.

After reviewing the progress of the Kavi Subhash-Airport link extensively, Lohani moved to Joka to check out progress of the construction of a car shed there for the Joka-BBD Bag project. Till date, Metro has only got about 70% of the land for the carshed but construction could not be started as the plots are disjointed. Officials of the Rail Vikas Nigam Ltd informed the CRB that work for the carshed, a vital component of the project, will start soon after the Kolkata Municipal Corporation hands over the remaining land there to the Metro. Officials told Lohani that the stretch between Joka and Majerhat could be completed in two years.

“The CRB held several meetings and also urged us to speak our minds and make suggestions for better services. He was also keen to know if we have any problems that can be solved through his intervention. He also assured all assistance in meeting targets and completion of projects,” an officer said.

Lohani, known for his austerity measures, insisted on travelling by train rather than fly. While in Kolkata, he also sought comments from officials on measures such as abolishing of the ‘bouquet culture’ in the railways. Lohani has also forbidden junior officers from ceremoniously waiting on their seniors and the pomp and show that used to be part of railway events in the past.

Chennai to get Cantilever-based Metro Stations for future Extensions; India

7 March 2018 in Category(ies): Posted on [07/03/2018](#) Categories [Chennai Metro](#), [L&T Group in Rail and Metro Rail business](#), [Metro Rail Systems](#)

CHENNAI: In order to minimise land requirements for Metro stations, the Chennai Metro Rail Limited (CMRL) has decided that it will build future stations using a cantilever-based design along Old Mahabalipuram Road (OMR), also known as Rajiv Gandhi Salai or the IT Expressway.

The cantilever design, pioneered by Larsen and Toubro (L&T) Hyderabad Metro Rail Limited (HMRL), features a station that is built on a single pillar in the centre and suspended. The entire station structure is built atop the same pillars as the tracks and only the entrances and exits require land acquisition at the side of the road.

CMRL has planned 27 stations along its OMR line in the second phase of the project with all of them featuring the new design. It also plans to use this design to build six stations as part of the first phase's extension from Washermenpet to Wimco Nagar in North Chennai.

Metro Rail Network in the Country likely to cross 700 km in few Years: Minister; India

7 March 2018 in Category(ies): Posted on [07/03/2018](#) Categories [Metro Rail Systems](#), [Ministry of Urban Development \(including NBCC\)](#)

NEW DELHI: Union minister Hardeep Singh Puri said today that the metro rail network in the country was expected to cross 700 km in the next few years.

Addressing an event here, the housing and urban affairs minister said from just 8 km in 2002, as many as 425 km of metro lines are operational as of now in 10 different cities across the country.

He also called for the need to devise technologies that would help in constructing and operating metro systems in sustainable manner in the country.

"With many cities planning for metro rail and in next few years, the network length of the Metro in India is expected to cross 700 km," said an official release, quoting the minister.

In addition to this, regional rail transit systems are also being planned to unclog the cities, the minister said.

He said Delhi Metro, with an operational network of 231 km, was carrying three million people every day and expressed confidence that within a year the network length in the National Capital Region will cross the 350 km.

First imported Metro Rake from CRRC Dalian expected in June: Kolkata Metro; India

3 April 2018 in Category(ies): Posted on [03/04/2018](#) Categories [Commissioner, Railway Safety](#), [CRRC Corp. \(CSR and CNR Corp. after merger\)](#), [Kolkata](#)

[Metro](#), [Metro Rail Systems](#), [Research Design and Standards Organisation \(RDSO\)](#), [Lucknow](#), [Safety](#), [Toshiba](#)

KOLKATA: If all goes well, Metro Railway will get its first rake from abroad in the next three months. The advanced rake from CRRC Dalian of China, the first of 14 being built by the company, is likely to reach Kolkata port in June, provided all the electrical components clear their requisite tests. Once in Kolkata, the rakes will undergo inspection by the Commissioner of Railway Safety (CRS) before being pressed into service in the existing north-south corridor.

“The first rake of the series is nearly ready to be shipped. However, the electrical components supplied by Japan’s Toshiba will have to undergo trials. The trials will be conducted in Japan, although the rake will remain in China. Experts from the Research Designs and Standards Organisation (RDSO) will travel to Japan to be present during the trials. Once the components are cleared, we expect the first rake to arrive in Kolkata in June,” said Metro Railway CPRO Indrani Banerjee.

Metro officials believe that necessary alterations to the two ICF rakes which reached Kolkata nearly six months ago from Chennai — and have been undergoing trials since then — will be made by the time the Chinese rake arrives. If all trials are cleared and the CRS gives the go-ahead, all three are likely to enter commercial services by the Pujas this year.

For several years now, Metro Railway’s north-south corridor — the oldest underground mass rapid transit system in the country — has operated 27 rakes. Of these, 13 are air-conditioned. Apart from the two ICF rakes and the 14 from Dalian, orders have also been placed for eight rakes from Chinese firm CSR Zhuzhou. This will be followed up by 14 more from ICF. Finally, CSR Zhuzhou will supply two more rakes. After their experience with the two from ICF, officials are now keen to ensure that all advanced rakes are compatible with the Metro’s system. Metro general manager Ajay Vijayvargiya has made it clear that there will be no compromise on passenger safety.

All eight coaches of the Dalian rake will have CCTV cameras. These cameras will also send real-time footage to the motormen’s cabins to allow them to take necessary action in case of an emergency. The rakes will also have better cooling for more comfortable rides, particularly during the summer. Every coach will also be equipped with eight talk-back units and buzzers that passengers in distress can use to communicate with the motormen.

Central Railway clears MMRDA’s Rs.155.70 Crore Mumbai East-West elevated Corridor Project; India

4 April 2018 in Category(ies): Posted on [04/04/2018](#)[04/04/2018](#)Categories [Central Railway](#), [CR-Mumbai Division](#), [Mumbai Metropolitan Region Development Authority \(MMRDA\)](#)

MUMBAI: With the decks cleared, MMRDA plans to open bridge to public by December-end. The MMRDA’s Rs 155.70-crore elevated corridor project connecting the western suburbs with the east just cleared a major hurdle: the Central Railway has granted permission to construction over its harbour and central corridor.

MMRDA commissioner UPS Madan said, “We recently received a clearance from the Railways to construct on the railway lines. We will complete this (the work) soon. The target is to throw the bridge open by December-end.”

The Railways had sat on the clearance for long, prompting Chief Minister Devendra Fadnavis to take the issue up with Railway Minister Piyush Goyal.

MMRDA officers said they will have to work out blocks to install girders on the railway line. Around six years ago, the MMRDA had done similar work on the Central Railway while constructing the Santacruz-Chembur Link Road.

The 1.6-km-long elevated corridor project was cleared by the MMRDA’s executive committee in 2014 and was expected to be completed in three years.

It aims at providing seamless connectivity to the eastern suburbs, and cut travel time from the east to Bandra-Kurla Complex (BKC) by 30 minutes and the distance by 3 km. This connector will go a long way in decongesting traffic in Sion and Dharavi.

The proposed corridor will start from G-Block in BKC, cross Mithi river, LBS Marg, the Central Railway track and VN Mankikar Road leading to the Chunabhatti railway station, the Harbour line tracks and the Somaiyya Trust ground, and join the Eastern Express Highway.

The link will include a 260-m-long bridge across Mithi, rail over bridges (ROBs) near Sion station and near Chunabhatti station.

The scope of the work also includes construction of an ROB at the level crossing near Chunabhatti on VN Purav Marg.

RInfra makes Foray into Railway Biz Space; wins Rs.774 Crore EPC Contract from RVNL; India

24 April 2018 in Category(ies): Posted on [24/04/2018](#)[24/04/2018](#)Categories [Rail Enterprise](#), [Industry](#), [OEMs](#), [EPCs](#), [PFT & SME Sectors \(incl. non-Railway PSEs under other Ministries\)](#) in [Rail Business](#), [Rail Vikas Nigam Limited \(RVNL\)](#), [Reliance Infra \(RInfra\)](#), [Tenders](#), [Bids](#), [RFPs](#), [EOIs](#), [NITs](#), [eProcurements](#), [eAuctions](#), [Reverse Auctions](#), [Contracts & Order Wins](#), in [Rail Industry](#)

The company said it has received “the Letter of Award (LOA) from Rail Vikas Nigam Limited (RVNL) for its maiden railway project worth Rs 774 crore for the construction of third rail line between Jimidipeta and Gotlam on East Coast Railway on Engineering, Procurement and Construction (EPC) basis”



MUMBAI: Reliance Infrastructure Ltd (RInfra) said it has entered the railways' EPC segment by winning a project worth Rs 774 crore from RVNL.

The company said it has received "the Letter of Award (LOA) from Rail Vikas Nigam Limited (RVNL) for its maiden railway project worth Rs 774 crore for the construction of third rail line between Jimidipeta and Gotlam on East Coast Railway on Engineering, Procurement and Construction (EPC) basis". Jimidipeta-Gotlam Railway route falls on the Waltair Division of East Coast Railway.

The 105 km-long line will run in Andhra Pradesh and Odisha, it said, adding that the scope of work includes civil, track, electrification, signalling and telecom works. It also includes construction of 13 railway stations and staff quarters.

The other bidders in the fray were L&T and NCC, the company said.

The Railway line between Jimidipeta to Gotlam is part of Titlagarh-Vizianagaram section. At present, Titlagarh-Vizianagaram is a double line (electrified) track section of Jharsuguda- Visakhapatnam line.

It is an important rail link between Jharsuguda and Visakhapatnam, and serves as a bypass Rail link to Howrah-Mumbai trunk route and Howrah-Chennai main line of East Coast region.

It also caters to the goods and passenger traffic from Bhubaneswar, Sambalpur and Raygada with Koraput on the Kottavalsa-Kirandaul line. The line traverses through Western Odisha and Andhra Pradesh. This line will lead to development around the entire area, the company said.

Nagpur Metro might run on Broad Gauge Indian Railways Tracks to connect nearby Towns with Orange City; India

28 April 2018 in Category(ies): Posted on [28/04/2018](#) Categories [Metro Rail Systems](#), [Nagpur Metro](#)

Union Minister for Road Transport and Highways Nitin Gadkari today (27 April) said that there are plans to run the Nagpur Metro's coaches on the Indian Railways' broad gauge railway tracks, reports *PTI*. The plan, mooted by Gadkari who represents Nagpur in the Lok Sabha is to connect the winter capital of Maharashtra to nearby towns like Kotal, Bhandara, Ramtek and Wardha.

Nagpur Metro, like most other metro rail systems in India will have 1,435 mm-wide standard gauge coaches manufactured by China's CRCC while Indian Railways uses the 1,676 mm-wide broad gauge track.

Gadkari said that the idea was originally proposed by him and accepted by the railways. A memorandum of understanding (MoU) will likely be signed between the Maharashtra Metro Rail Corporation Limited (Maha Metro) which is implementing the Nagpur Metro Project and the Indian Railways after the Karnataka state assembly elections scheduled for mid-May.

The entire train will be air-conditioned with four coaches and operate at a speed of 100 km/hr. The speed of the passenger train is 60 (km per hour). Its speed comes down to 30 (km per hour) before the halt at station and time is needed to increase speed.

This air-conditioned metro will have four bogies and its average speed will be 100 km per hour.

Reliance Infrastructure EPC CEO, Arun Gupta, said: "This order marks our foray into Railway EPC segment... The company is well positioned in the emerging railway market and poised to capture a sizable share.

Surat Metro Rail Project: Revised DPR to be approved this Month-end soon!; India

10 May 2018 in Category(ies): Posted on [10/05/2018](#) Categories [Metro Rail Systems](#), [Surat Metro](#)

SURAT: The revised detailed project report (DPR) of Surat metro rail is likely to be approved by the local authorities by this month-end.

The revised DPR proposes setting up of four elevated stations of the total 38 rail stations on public private partnership (PPP) mode at a cost of Rs 111.88 crore. Dream City company would construct other stations at a cost of Rs 31.20 crore each. The 40 km metro corridor in Surat will have two corridors and 38 stations. Corridor one begins from Sarthana up to Dream City and corridor number 2 from Saroli up to Bhesan. Surat metro rail is Rs 12,600 crore project and is expected to become operational in 2023.

The four elevated stations that the Surat Municipal Corporation would build with private partners will be at Rupali canal, Althan tenement, aquarium and Athwa chowpaty. SMC would give nearby commercial plots to developers for fulfilling the obligations under the PPP agreement.

Under central government's transit oriented policy (TOP), empty spaces on both sides of the metro rail would be utilized for development projects. Sixty per cent of income generated from additional or paid FSI would be used in the maintenance of metro rail. This amount would be around Rs 1,138 crore at the rate of 3 per cent per year growth by 2038.

SMC adviser and former city engineer Jatin Shah said, “SMC is ready to embrace metro rail. We are in the stage of finalization of the mega project that would change the mass transport scenario of Surat.”

Municipal commissioner M Thennarasan said, “We are in the process of sorting out private partners for the project. The metro rail project could be launched in the beginning of 2019.”

Chennai Metro Rail testing Smart Cards on MTC handheld Devices; India

11 May 2018 in Category(ies): Posted on [11/05/201811/05/2018](#) Categories [Chennai Metro](#), [Metro Rail Systems](#)

CHENNAI: After years of talking about it, the Chennai Metro Rail has started carrying out trials with its smart cards in the handheld electronic ticketing machines of the Metropolitan Transport Corporation (MTC) buses. This means, in the near future, when the common ticketing system is implemented, commuters can use the Chennai Metro Rail’s smart cards in MTC buses too.

According to officials in the Chennai Metro Rail Limited (CMRL), they have been testing the smart cards in the handheld devices for several months now.

“It has been working quite well and whatever minor issues that have cropped up have been resolved. We will discuss further on how common ticketing system can be implemented soon,” an official said.

The Chennai Metro Rail’s smart card has 30 slots, which means apart from the one slot that will be used for MTC buses, it can be used at various places such as retail stores or parking lots.

The idea is to make sure that commuters need to carry just one card that can be used anywhere, officials said.

Delayed for years

But it is not clear why common ticketing system has been delayed for years now. The first service of the Chennai Metro Rail started three years ago, but this system has till now not taken off. In two weeks, the fourth and fifth stretch of the Chennai Metro Rail from Nehru Park to Chennai Central and Saidapet to AG-DMS too will begin.

And when operations start in these stretches, officials said, the number of people travelling will go up, but it is crucial that CMRL executes common ticketing system at the earliest to make it easier for commuters.

High-Speed Train Stations at Vadodara, Ahmedabad & Sabarmati will be over existing Railway Platforms; India

14 May 2018 in Category(ies): Posted on [14/05/2018](#) Categories [Ahmedabad Metro](#), [Highspeed](#), [Hyperloop](#), [Bullet Trains](#) and [National High Speed Rail Corporation Ltd \(NHSRCL\)](#), [Metro Rail Systems](#), [Role of Universities/IIMs/IITs in Railways Development](#) and, [National Rail & Transport University](#)

This is being done to provide integrated High-Speed Train connectivity to passengers travelling by the Indian Railways and the Metro Rail in Ahmedabad.

AHMEDABAD: The bullet train stations at Vadodara, Ahmedabad and Sabarmati will be built over the existing railway platforms belonging to the Indian Railways, said Achal Khare, Managing Director of National High Speed Rail Corporation Limited (NHSRCL) that is building the ambitious high-speed train project between Mumbai and Ahmedabad. This is being done to provide integrated high-speed train connectivity to passengers travelling by the Indian Railways and the metrorail in Ahmedabad.

“We wanted to give connectivity to the people travelling on the existing network of Indian Railways. So at Vadodara, Ahmedabad and Sabarmati we will be building the platforms over the existing Indian Railways platforms,” Khare said while delivering the second Dr AN Khosla Lecture at the Indian Institute of Technology-Gandhinagar (IIT-Gn) on Saturday.

“We have to build (the platforms) without closing the existing railway stations in these places. This is a big challenge,” he said adding the platform number 7 at the Vadodara station will be used to assemble and erect the bullet train structures. The high-speed rail alignment between Ahmedabad and Vadodara passes close to the existing rail network and it crosses the major stations of Vadodara, Ahmedabad and Sabarmati.

Special bridges are planned to span over existing railway tracks in these places. “Vadodara will have the longest bridge, that crosses the entire railway yard. Steel bridges with 240 meter span is planned over the existing railway tracks. There are multi-storeyed buildings on both sides and so we do not have space to do free work. It is one of the biggest challenge for the project,” he told a gathering largely full of engineers and members of Ahmedabad chapter of IIT-Roorkee Alumni Association. Ahmedabad will also have a special bridge with a 120 meter span near the railway station. He said the Japanese will be helping NHSRCL to construct these structures without closing down or stopping the busy network of Indian railways operating below.

Khare said that Sabarmati will not only have a “very big high speed terminal” at the very spot where Prime Minister Narendra Modi and his Japanese counterpart Shinzo Abe had laid the foundation for the project, it will also have a parking for 1500 cars and will have a connecting link to the Ahmedabad metro station which is coming up in the immediate vicinity.

Though NHSRCL will initially run bullet train with 10 coaches, the platforms are being designed to accommodate 16 coaches. Apart from these three stations in Gujarat, most of the alignment of the 508 kilometer long bullet train between Ahmedabad- Mumbai is being built about eight kilometers away from the existing Indian Railways rail network.

Khare said that NHSRCL will be operating two services one with limited stops which will take just 2.07 hours to reach Mumbai and the other with 12 stops which will take 2:58 hours.

Delhi HC seeks DMRC's Reply on Safety of Rails by Oct. 9; India

29 May 2018 in Category(ies): Posted on [29/05/2018](#) Categories [Delhi Metro \(DMRC\)](#), [Law, Court & Judicial Systems and Enforcement of Legal aspects and Judgements in the Operations & Functioning of Railway Industry](#), [Metro Rail Systems](#)

Plea seeks inquiry into safety of rails procured through Swiss company!

NEW DELHI: The Delhi High Court on Monday sought response from the Delhi Metro Rail Corporation (DMRC) to a petition seeking in-depth inquiry into the safety of rails procured through a Swiss company for Metro tracks.

The petition, which came up for hearing before a Bench of Acting Chief Justice Gita Mittal and Justice C. Hari Shankar, alleged that the rails supplied by the Swiss company East Metal AG may have high content of hydrogen making them more susceptible to breaks or fractures which could lead to a major disaster.

The court issued notice to the DMRC and the Swiss company, which won the contract for supplying the rails, and sought their response by October 9, the next date of hearing.

The petition has urged that the rails should not be used till their procurement and safety is inquired into, as lives of millions of commuters will be at stake.

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Chilean President inaugurates Santiago Metro Line 3; Chile

Jan 22, 2019

Written by [Keith Barrow](#)

THE Chilean capital Santiago celebrated the opening of its sixth metro line on January 22 when the country's president Mr Sebastian Piñera attended the inauguration ceremony for the 21.7km Line 3.



Related Posts

[Japan and Philippines sign loan agreement for north-south commuter railway](#)

Japan and Philippines sign Loan agreement for North-South Commuter Railway; Philippines

Jan. 22, 2019

Written by [David Burroughs](#)

MANILA's north-south commuter railway (NSCR) extension project is set to proceed after the governments of the Philippines and Japan, through the Department of Finance (DOF) and the Japan International Cooperation Agency (Jica), signed the first tranche of a loan agreement during a ceremony held on January 21.



DOF secretary, Mr Carlos Dominguez, and Jica Southeast Asia and Pacific department director general, Mr Shigenori Ogawa, signed the loan agreement witnessed by Department of Transportation (DOTr) undersecretary for railways, Mr Timothy John Batan, Philippine National Railways (PNR) general manager, Mr Junn Magno, minister Atsushi Kuwabara of the Japanese Embassy, and Jica director, Mr Sachiko Takeda.

The 147km NSCR project includes three sections, which will be operated as one integrated line when completed:

- PNR Clark Phase 1, a 38km line from Tutuban, Manila, to Malolos, Bulacan
- PNR Clark Phase 2, a 53km line from Malolos to Clark, Pampanga, and
- PNR Calamba, a 56km line from Manila to Calamba, Laguna.

The NSCR will improve connectivity and mobility between Central Luzon in the north, Metro Manila in the centre, and Calabarzon in the south.

The project will be implemented using Japanese technology, including energy-efficient trains, platform screen doors, signalling, flood resilience and anti-seismic designs.

DOTr says construction of the NSCR aims to significantly reduce travel time through a safe, reliable, and convenient means of transport.

PNR Clark will halve the travel time from central Manila to Clark International Airport to less than one hour, compared with two hours by car.

PNR Calamba will reduce travel time from Manila to Calamba from three hours to one hour. The entire NSCR is expected to benefit up to 350,000 passengers per day when partial operation begins in 2022, and 550,000 passengers daily when full operation commences in 2023.

Construction is scheduled to begin with PNR Clark Phase 1 in February.

DOTr says the NSCR is the biggest project to be undertaken so far under Philippine president Mr Rodrigo Duterte's "Build, Build, Build" programme, with a total cost of Pesos 628.42bn (\$US 11.9bn).

It is also one of the key railway projects supported by Japan, in addition to the [Metro Manila Subway](#) and the [Metro Rail Transit \(MRT\) Line 3 Rehabilitation](#) projects.

The loan agreement, which represented the first tranche of Japan's total commitment for the NSCR project, will finance initial works including consulting services, rolling stock, and electro-mechanical portions of the project.

It carries an annual interest rate of 0.1% for non-consulting services and 0.01% for consulting services. The loan is payable within 40 years, inclusive of a 12-year grace period.

The Asian Development Bank (ADB) will co-finance the civil works portion of the NSCR project.

For detailed information on rail projects around the world, [subscribe to IRJ Pro](#).

Categories: [AsiaCommuter RailInfrastructureNews](#)

Tags: [JICA](#)[Manila](#)[Manila North South Commuter Railway](#)[Philippines](#)

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[Heathrow Express trains to be fitted with ETCS](#)

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[Luxembourg GSM-R rollout completed](#)

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[Baden-Württemberg backs Stuttgart S-Bahn ATO pilot](#)

Jan 22, 2019 |

The line runs from Los Libertadores in the northern district of Huechuraba to the centre of Santiago, following Avienda Mattam and passing beneath Irarrazával, before terminating at Fernando Castillo Velasco in La Reina.

Line 3 serves 18 new stations, including interchanges with all other metro lines.

Baden-Württemberg backs Stuttgart S-Bahn ATO Pilot; Germany

Jan. 22, 2019

Written by [David Burroughs](#)

BADEN-Württemberg Ministry of Transport announced on January 22 that it will participate in a pilot project to install ETCS, digital interlockings (DSTW) and automatic train operation (ATO) Grade of Automation 2 (GoA2) on the Stuttgart S-Bahn network.



DB AG/Andreas Varnhorn

German Rail (DB) inaugurated its first DSTW at Annaberg-Buchholz, [on the Chemnitz – Crazahl line in southeastern Germany in March 2018.](#)

The pilot project was drawn up by DB Network, Stuttgart Regional Government and Baden-Württemberg Ministry of Transport in May 2018. In December, the German federal government outlined the basic budgetary requirements for a nationwide rollout of ETCS/DSTW, including a pilot project in Stuttgart. The ministry said that due to time constraints with the construction of the Stuttgart 21 project, a decision on whether to support the project needed to be made in January to secure the funding.

“For this purpose, the Ministry of Transport and the Stuttgart Region are in close contact with the responsible Federal Ministry for Transport and Digital Infrastructure (BMVI),” says Baden-Württemberg minister of transport, Mr Winfried Hermann. “A breakthrough is now

possible and necessary. A fundamental confirmation by the federal government is a necessary prerequisite for our commitment.”

While the region’s transport policy requires a significant increase in S-Bahn capacity, the ability to expand rail infrastructure in the city centre is currently limited due to space constraints. However, the ministry says the instillation of ETCS and ATO GoA2 is expected to increase capacity on the current network by up to 20%.

The ministry has allocated €330m to the project up to 2031. The launch of the pilot is expected to be implemented alongside the Stuttgart 21 project by 2025. The project is due to be completed by 2030, by which time the entire S-Bahn network, including mixed-traffic routes, is expected to be equipped with ETCS, DSTW and ATO.

The ministry says regional and mainline services would also benefit from the project.

Categories: [Europe](#)[Metros](#)[News](#)[Signalling](#)[Technology](#)

Tags: [ATO](#)[BadenWürttemberg](#)[ETCS](#)[Germany](#)[Stuttgart](#)

Heathrow Express Trains to be fitted with ETCS; UK

Jan. 22, 2019

Written by [David Briginshaw](#)

BRITISH rolling stock leasing company Porterbrook has awarded a contract to Bombardier to install ETCS Level 2 on 12 class 387 Bombardier Electrostar EMUs being converted for operation on Heathrow Express services between London Paddington and Heathrow Airport.



Bombardier will install ETCS on 12 class 387 GWR EMUs for Heathrow Express services.

The trains are leased to [Great Western Railway](#), which will take over the operation of Heathrow Express from Heathrow Airport when the £11m refurbishment project is completed in December.

The upgraded trains will replace the fleet of CAF/Siemens class 332 EMUs, which have operated Heathrow Express services since the rail link opened in 1998.

The conversion of the 12 EMUs from suburban to airport configuration includes installing better-quality seats, power sockets, TV screens and Wi-Fi, and providing additional luggage space.

[Porterbrook](#) says this is the first existing British train fleet to be fitted with ETCS.

Categories: [EuropeFleetNewsTelecomsUncategorized](#)

Tags: [BombardierBritainETCSGreat Western RailwayHeathrow ExpressPorterbrook](#)

Luxembourg Minister sets out free public Transport Details; Luxembourg

22 Jan. 2019



Photo: Henri Goergen

LUXEMBOURG: Transport Minister François Bausch announced details on January 21 of plans to offer free nationwide public transport.

Free public transport is to be offered to all passengers, whether or not they are resident in Luxembourg, from March 1 2020 on all modes financed by the state and operating within the country's boundaries. Funding would come from tax revenue, with no new taxes being introduced specifically for this purpose.

Transport provided by local authorities would not be automatically included in the scheme, with the decision on whether to participate left to the individual authority. The Mayor of Luxembourg City Lydie Polfer has already confirmed that the capital will participate.

A transition phase would provide time to develop new regulations and prepare for the smooth introduction of the proposition. One measure will be changes to the role of onboard staff.

First class travel still available

Rail passengers will continue to have the option of travelling in one of two classes, with first class still available for fare payers. In lieu of a ticket, passengers travelling in second class will have to show identification. This would be done to reasons of security, and to identify anyone who does not have a legitimate reason for travelling between two places.

The mKaart smart card will remain in use for services such as park-and-ride, electric vehicle charging stations and mBox cycle parking.

Rail investment and bus restructuring

The government envisages rail investment in 2018-23 of €2.2bn and in the Luxembourg City tramway of €390m. The national RGTR bus network will undergo a 'comprehensive' restructuring with the aim of 'optimising' regional services. Planned improvements include better connections in the evenings and on Sundays. A target has been set to have only emission-free buses in service by 2030.

The price of RGTR RegioZone cross-border tickets will be lowered, and national railway CFL intends to lower prices for cross-border rail services in agreement with operators in neighbouring countries SNCB, DB and SNCF.

'The social icing on the cake'

'The introduction of free public transport is an important social measure', said Bausch. 'One can see it as the social icing on the cake of the global strategy for a multimodal offensive.' Bausch sees the offering, punctuality and quality of public transport as decisive to change people's habits and shift them from private cars to public transport.

The Ministry of Mobility & Public Works intends to maintain close contact with all operators involved in the project.

Related news

- [30 Jul 2018 - Next phase of Luxembourg tramway inaugurated](#)

Smart Panda Bus demonstrates 'intelligent' Technologies; China

21 Jan. 2019



CHINA: DeepBlue Technology unveiled its Smart Panda Bus autonomous vehicle at the New Generation Artificial Intelligence Future Development Summit in Shanghai on January 18.

Smart Panda Bus incorporates Shanghai-based DeepBlue Technology's autopilot, finger vein recognition, voice interaction and advertising systems, as well as vehicle monitoring, intelligent unmanned retail, abnormal behaviour monitoring and an intelligent emergency systems.

Passengers can swipe their hands through a biometric identification system, while on-board tools monitor and record any suspicious behaviour in real-time and can initiate an emergency response.

DeepBlue Technology said the concept had 'received enthusiastic support' from visitors. It intends to offer the bus in Europe this year, and said interest had been expressed by potential customers in Germany, Luxembourg, Italy and Greece

Trials of the company's autonomous driving technology are to be undertaken in Bangkok this year.

Previous news story

[Masabi to bring mobile ticketing to Japan](#)

Next news story

[Lucknow Metro begins using automatic train operation](#)

Revised Colombo light Rail Plan approved; Sri Lanka

22 Jan 2019



SRI LANKA: The government has approved a revised plan for a light rail line to be built in Colombo, and plans to sign a loan agreement with Japan International Cooperation Agency.

The 17 km line with 16 stops would link Colombo Fort Multimodal Transport Hub with Malabe. Work is planned to begin this year, with completion expected in 2025.

JICA would provide ¥200.4bn over 40 years with a 12-year grace period and an interest rate of 0.1%. This would cover most of the forecast project cost of ¥246.6bn.

In 2016 the Japanese government agreed to provide a loan for the construction of a 25 km elevated light rail line, envisaged as the first phase of a 75 km seven-route network.

Related news

- [01 Aug 2016 - Japanese loan to fund Colombo light rail project](#)

Japanese loan to fund Colombo light Rail Project; Sri Lanka

01 Aug. 2016



SRI LANKA: The Japanese government is to provide a soft loan for the construction of a light rail network in Colombo. The announcement by Western Region Megapolis Project Chairman Ajita de Costa followed the visit of a Japanese delegation led by Vice Minister for Economy, Trade & Industry Hirofumi Katase on July 26-27.

The loan would be used towards the initial 25 km of elevated alignment. Longer-term plans envisage a mix of elevated and at-grade sections covering 75 route-km. There would be three routes in the central business district of Colombo, and a further four lines extending to the suburbs of Kollupitiya, Bambalapitiya, Borella, Maradana, Rajagiriya, Battaramulla and Malabe. Hitachi and Taisei have reportedly expressed interest in the project.

The lines are to be built to support the development of the urban agglomeration centred on Colombo and taking in the Gampaha and Kalutara districts. This is envisaged to have 9.1 million inhabitants by 2035.

Related news

- [22 Jan 2019 - Revised Colombo light rail plan approved](#)

Chilean President inaugurates Santiago Metro Line 3; Chile

Jan. 22, 2019

Written by [Keith Barrow](#)

THE Chilean Capital Santiago celebrated the opening of its sixth metro line on January 22 when the country's president Mr Sebastian Piñera attended the inauguration ceremony for the 21.7km Line 3.



The line runs from Los Libertadores in the northern district of Huechuraba to the centre of Santiago, following Avenida Mattam and passing beneath Irarrázaval, before terminating at Fernando Castillo Velasco in La Reina.

Line 3 serves 18 new stations, including interchanges with all other metro lines.



A consortium of CAF and Thales was awarded a \$US 451.9m contract in November 2013 to supply rolling stock and CBTC for the lines 3 and 6. As part of the contract, CAF will maintain the fleet for 20 years in a deal worth \$US 19.1m.



CAF has supplied 22 [AS-2014 trains](#) for Line 3. Each 120m-long five-car train accommodates 1299 passengers at 6p/m².

In June 2018 Piñera announced [plans to build two more metro lines](#) in Santiago.

For detailed data on metro projects around the globe, subscribe to [IRJ Pro](#).

Categories: [Central/South AmericaNews](#)

Tags: [CAFChileSantiagoThales](#)

Masabi to bring mobile Ticketing to Japan;

Japan

17 Jan 2019



JAPAN: Journey planning company Jorudan has signed a partnership agreement with Masabi to integrate mobile ticketing into its product offering.

The agreement announced on January 16 will see Jorudan integrate Masabi's Justride mobile ticketing software development kit, including Justride Inspect ticket validation, into its apps.

The Japanese company will also use the Justride External Orders API to send tickets to a passenger's smartphone if these are purchased through Jorudan's Norikae An-nai or Japan Transit Planner websites.

Related news

- [19 Apr 2018 - Masabi and Chalo target Indian transport ticketing market](#)

Battery Trolleybuses ordered for Saint-Etienne; Franc

22 Jan. 2019



FRANCE: Solaris Bus & Coach is to supply 22 battery trolleybuses to Saint-Etienne, the manufacturer announced on January 17. The €17m order includes options for two more vehicles, and is Solaris' first trolleybus order for the French market.

Škoda will supply the drive system for the 12 m long Solaris Trollino 12 vehicles, which will be fitted with 40 kWh batteries to allow off-wire operation. They will be equipped with air-conditioning, monitoring and lighting mounted in the handrails.

The first five vehicles are scheduled to be delivered this year. Five more are to follow in 2020, with the remaining 12 coming in 2021-22.

- [04 May 2017 - CAF tram enters revenue service in Saint-Etienne](#)

Solaris to supply electric Buses to Włocławek; Poland

16 Jan. 2019



POLAND: Solaris Bus & Coach has signed an 8.5m złoty contract to supply three electric buses to Włocławek.

Solaris will also supply four plug-in charging stations for depots. These will be used to charge the Solaris High Energy batteries with a capacity of 200 kWh that will power each bus. The buses will have provision for roof-mounted pantographs to be retrofitted.

Each air-conditioned Urbino 12 vehicle will be powered by two 125 kW motors. The buses are scheduled to enter service in October.

Related news

- [02 Jan 2018 - Ostrów Wielkopolski receives first battery buses](#)
- [30 Oct 2017 - Solaris to supply electric buses to Rzeszów](#)
- [28 Sep 2017 - Electric buses ordered for Stalowa Wola](#)
- [14 Aug 2017 - Latest electric buses presented in Kraków](#)
- [05 Jul 2017 - Solaris to supply more electric buses to Warszawa](#)

San Diego adopts Account-based Fare Collection; USA

22 Jan. 2019



USA: San Diego Metropolitan Transit System has awarded a contract to Init for the supply of an account-based fare collection system, with an option to operate and maintain it.

Due to be rolled out in 2021, the system will use Init's MOBILEvario back-office software. Init will supply 100 cash and 70 cashless VENDstation ticket vending machines, as well as mobile sales units and 900 PROXmobil fare validators for use on buses and at light rail stops. The validators will accept MTS-branded smartcards as well as open payments such as bank cards and mobile wallets using Google Pay, Apple Pay and Samsung Pay.

'Fare collection is at the core of our business and purchasing options are more diverse than ever', said MTS CEO Paul Jablonski. 'It's incumbent that we keep pace with the technology our customers demand.'

Related news

- 05 Nov 2018 - [Battery buses ordered for San Diego](#)
- 26 Sep 2018 - [Cubic wins Los Angeles fare collection upgrade contract](#)
- 12 Sep 2018 - [San Francisco fare collection to be modernised](#)
- 20 Oct 2017 - [San Diego MTS keeps playing the naming rights game](#)
- 25 Sep 2017 - [Siemens awarded San Diego light rail contract](#)
- 25 Jul 2017 - [Portland welcomes contactless ticketing](#)
- 01 Nov 2016 - [San Diego orders Siemens LRVs](#)
- 03 Oct 2016 - [San Diego light rail extension contract awarded](#)

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 30, January 2019



Bengaluru Metro-Rail, India

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

BMRCL planning to take up 14-km Stretch between Dairy Circle and Nagawara in two Phases; India

25 May 2018 in Category(ies): Posted on [25/05/201825/05/2018](#)Categories [Bangalore Metro](#), [Metro Rail Systems](#) *7-km stretch likely to be taken up first*

BENGALURU: The Bangalore Metro Rail Corporation Limited (BMRCL) is planning to take up the 14-km stretch between Dairy Circle and Nagawara in two phases. The BMRCL had proposed to take up the construction of this line through four packages with a view to speed up the work but gave up the idea as the bids quoted by contractors were steep.

A half of the stretch is expected to be underground and the BMRCL will take a call on the rest of the stretch, depending on the cost of tunnelling and land acquisition.

The 7-km stretch, where the metro is expected to go underground, runs between Vellara Junction (Richmond town) and Venkateshpura (Arabic College main road). “No decision, that is either going underground or overhead, is taken on the remaining stretches, which are basically extensions of the same line from Vellara Junction to Dairy Circle (3.5 km) and Venkateshpura to Nagawara (3.5 km),” sources in the BMRCL said.

The entire 14-km project is part of Reach 6 (Namma Metro Phase 2) network and the BMRCL had floated tenders for its construction in July 2017. The initial plan was to build underground line between Dairy Circle and Nagawara in view of the population density, railway lines and buildings.

The BMRCL, however, had to rethink its plan after construction firms quoted around 70% (or Rs 3,500 crore) more than what the corporation had initially estimated, even as the tender process alone had consumed about a year’s time. In the tender document, the BMRCL had split the entire 14-km project into four packages. Each package consisted of around 3.5-km of tunnelling and construction of three metro stations.

“We have sent a revised proposal to the European Investment Bank (EIB). We will float the tender once EIB completes evaluating our documents,” BMRCL managing director Mahendra Jain told ET. The approval of EIB is critical as a multinational lender grants long-term loans after vetting the project for which the loan is sought in terms of design, alignment and similar parameters. Any deviation from the original plan would require lender’s consent. The EIB is supporting BMRCL with Rs.3,500 crore for the metro project.

The revised proposal, BMRCL official said, includes the construction of an underground stretch between Vellara Junction and Venkateshpura, which is part of department’s initial plan. The BMRCL has, however, held back the remaining 7-km stretch as taking up entire project again would be a repetition of its past mistake.

“We will decide how to go about with the remaining stretch based on the response we get from construction firms. If the firms continue to quote high for tunnelling, we may consider going overground for the remaining 7-km stretch,” the official added.

He maintained that there could be several changes, which depends on variety of factors such as cost of tunnelling, land acquisition and project’s environmental and social impacts.

NO DECISION YET

No decision, that is either going underground or overhead, is taken on the remaining stretches, which are basically extensions of the same line from Vellara Junction to Dairy Circle (3.5 km) and Venkateshpura to Nagawara (3.5 km).

Bangalore Metro’s 6-Coach BEML-make Train-Cars to be inaugurated today; Full-fledged commercial Operations from Saturday; India

22 Jun 2018 in Category(ies): Posted on [22/06/2018](#) Categories [Bangalore Metro](#), [Bharat Earth Movers Limited \(BEML\)](#), [Metro Rail Systems](#), [Rail Enterprise, Industry, OEMs, EPCs, PFT & SME Sectors \(incl. non-Railway PSEs under other Ministries\) in Rail Business](#)



Six-car Metro Train inside BEML Factory at Bangalore

BANGALORE: The lakhs of commuters who are eagerly waiting for the six-coach Namma Metro train will now be able to use it from Saturday. Bharat Earth Movers Limited (BEML), which assembled the first six-car Metro train for the City, which will run from Friday evening, on Thursday said it would deliver its second six-coach set to Bangalore Metro by August.

The six-coach train will make its inaugural trip on Friday at 5.30 p.m. from Baiyappanahalli to Kempegowda station, Majestic. This trip, however, will be reserved for the VIPs, invitees, and the media. Bangalore Metro Rail Corporation Ltd. (BMRCL) has maintained that the new train will primarily be operated during the peak hours, and on the Purple Line to begin with. "Once the VIPs disembark at the Majestic station, other passengers can take the train. But the peak hour may be over by then. But they will be able to use the six-coach train from 7 a.m. on Saturday," said Mahendra Jain, Managing Director, BMRCL.

Top BEML officials spoke to RailNews on Thursday on the challenges faced in readying the first such set for the Bangalore Metro Rail Corporation Limited (BMRCL). Deepak Kumar Hota, Chairman and Managing Director, BEML, assured the concern was on course to meet the revised target of June 2019 it had announced for itself for handing over the remaining 147 coaches. "I can assure you we will be well within the deadline," he said.

Hota pointed out that the delivery of the first six-car has been made by them in record time. "We were given the order in March 2016 and an 18-month period is generally given for such contracts. Due to the urgent requirement for it, we delivered it by February 2017. Round-the-clock effort by BEML staffers and excellent co-ordination at every stage by BMRCL helped us achieve it," he said.

BEML had prior expertise as it had manufactured both six-car and eight-car sets for Delhi Metro Rail Corporation Limited. Explaining the difference, Hota said. "More powering is required in the case of Bangalore Metro trains due to the gradient in the tracks. In some stretches, it is like steering the train uphill."

The unique aspect about Bangalore Metro was that all its trains are run using power from Third Rail, which runs along the Metro train tracks and supplies 750V DC for operations, a top official said. In the case of the Delhi Metro, overhead lines (overhead cantenary) sends the current to an inbuilt transformer that redistributes power inside the train.

Upgradation of software from the three-car to the six-car, particularly for the braking systems, was a major challenge, another official added. While it was earlier understood that 1,950 passengers, which is double the present passenger capacity, can be accommodated in the longish train, BEML says that up to 2,068 passengers can hop on board. "In the present three-car, one segment of the first and third coaches are taken up by the loco-pilot's cabin. The three new cars supplied can be used by passengers fully. So, the ridership will be more than double," another senior official said.

Commercial Run on Saturday

On Saturday, the six-coach train is expected to make a full first trip from Baiyappanahalli to Mysuru Road and back. From its second trip from Baiyappanahalli, the train would stop at the Vijayanagar station and turn back, in time to cater to the large number of government employees travelling towards the Vidhana Soudha and Cubbon Park stations, which means it will be a short-loop train, said Mr. Jain.

Though the train would make at least three round trips each in the morning and evening peak hours, Mr. Jain said the operation timings would be "dynamic" to cater to changes in passenger numbers.

Women's Coach

An entire coach reserved for women will become a reality with the debut of the six-coach train. Men will not be allowed to enter or use the first coach. This, however, will be

applicable only on the six-coach train. The present arrangement on three-coach trains, where the first two entrances of the first coach are reserved for women, will continue.

‘No impact on frequency’

Allaying anxiety of commuters over any impact on the frequency of the trains owing to the operation of the six-coach train, Mr. Jain said the new train would permanently be a six-coach train. “It will not be broken up as its alignment changes. When it is not operational, it will be idling,” he said.

Next set in August

Commuters will have to wait till August for more six-coach trains. “The fabrication has started for whatever modifications have been suggested. So they (BEML) have started full-fledged production. From September onwards, they will be giving us six to nine coaches and from October, they will even be able to give us around 12 coaches,” he said.

Bihar Chief Secretary approves revised DPR of Patna Metro Rail; India

5 Jul. 2018 in Category(ies): Posted on [05/07/2018](#)[05/07/2018](#)Categories [Metro Rail Systems](#), [Patna Metro](#)

PATNA: State chief secretary Deepak Kumar on Tuesday approved the proposed Patna Metro Rail’s revised detailed project report (DPR) for putting it up before the state cabinet.

Urban development and housing department (UDHD)’s principal secretary Chaitanya Prasad said the revised estimated cost of the project would be Rs 19,500 crore, including land acquisition cost.

The revised DPR was prepared by the Rail India Technical and Economic Services (RITES) as per the Centre’s new Metro Rail policy. The National Institute of Technology-Patna prepared the comprehensive mobility plan as well as the alternative analysis report for the project.

UDHD minister Suresh Kumar Sharma said once the DPR got the state cabinet nod, it would be submitted to the central government for approval. He hoped the work on the project would commence in 2018-19.

As per the revised DPR, the work will begin on the 14km north-south corridor in the first phase, covering the stretch from Patna Junction to Ramachak inter-state bus terminus via Gandhi Maidan and Rajendra Nagar.

The work on the east-west corridor will begin in the second phase soon after the foundation for the first phase will be laid. The 17 km east-west corridor covers the stretch from Mithapur bus stand to Danapur via Bailey Road and Patna Junction.

UDHD special secretary Sanjay Dayal said the north-south corridor line would run on an elevated stretch, while the plan was to make it partly underground from Rajendra Nagar to PMCH. The east-west corridor will be elevated from Danapur to RPS Mor and an underground line will be developed from Saguna Mor to Patna Junction, he said.

Nagpur Metro, Central Railway to ink MoU for Trains to four Towns on July 16; India

12 July 2018 in Category(ies): Posted on [12/07/201812/07/2018](#)Categories [CR-Nagpur Division](#), [Metro Rail Systems](#), [Nagpur Metro](#)

NAGPUR: City MP and Union minister Nitin Gadkari's plan to start high speed local trains between Nagpur and four nearby towns — Bhandara, Wardha, Katol and Ramtek — is set to be a reality soon.

For planning and execution of the project, a memorandum of understanding (MoU) will be executed between Indian Railways, Maharashtra government and MahaMetro on July 16.

Gadkari, railway minister Piyush Goyal, minister of state (independent charge) for urban development Hardeep Singh Puri, chief minister Devendra Fadnavis and other dignitaries will be present at the MoU signing ceremony organized at Nagpur Municipal Corporation's (NMC) Suresh Bhat Hall.

MahaMetro managing director Brijesh Dixit told that the project would be first-of-its-kind in the nation. "High speed fully air-conditioned coaches will run under the project. All formalities like timings, number of trips, revenue sharing pattern, special stations etc will be decided after the MoU," he said.

The plan is to run three-coach electric multiple units (EMUs) to these towns with four on each route. The average speed of city to Ramtek passenger train is 27km per hour, while that of Gondia passenger train is 50km per hour. The plan is to run EMUs at 120km per hour. MahaMetro will use existing tracks, signalling, platform etc of railways for the services.

Refuting allegations by former BJP MP and current MPCC vice-president Nana Patole and activist Prashant Pawar, Dixit said MahaMetro will also have to start Pune Metro Rail's priority section with rental coaches.

Patole had alleged that MahaMetro's joyrides are benefiting only L&T Metro Rail Hyderabad Limited (LTMRHL). He added that MahaMetro is paying Rs45 crore as hiring charges for six coaches to LTMRHL for three years.

"Coaches, signalling system etc are not made in the country, hence, we so depended on foreign countries. We have to place orders only after getting loans. We are likely to get three coaches in September. It will take 6-7 months more for certification etc. Till then, we cannot wait and render the entire infrastructure unutilized," he said.

Dixit added that payment of Rs15 crore has been made to LTMRHL. "We could not take coaches from Chennai as our platform's design is for three coaches, while Chennai has a set of four coaches," he said.

Dixit said one of two sets of three coaches each will be moved to Hingna-Subhash Nagar T-point corridor once the works are completed.

He said Metro Rail will begin operation from Munje Square in Sitabuldi to Khapri in March 2019.

On Wednesday, MahaMetro operated electrical shunting vehicle 'Buland' on the elevated stretch between Airport and Airport South stations. It is the first of the elevated stretches where works have been completed and ready for trial run.

In April, MahaMetro started Metro Rail joyrides between Airport South and Khapri stations, that is at grade stretch.

Mumbai Trans Harbour Link to be ready by 2022: Japanese Diplomat; India

12 July 2018 in Category(ies): Posted on [12/07/2018](#) Categories [Japanese International Cooperation Agency \(JICA\)](#), [Mumbai Trans Harbour Link \(MTHL\)](#), [Rail Pacts, Deals, MOUs, Joint Ventures/SPVs, Bilateral, Diplomacy, Collaborative, Cooperative and Framework Agreements in Railway Industry](#)

The Japanese diplomat also said India has already received Rs 22,000 crore assistance under Japan's Overseas Development Assistance.

MUMBAI: The ambitious Mumbai Trans Harbour Link (MTHL) work on which started in April, will be completed by 2022, said Japanese Consul-General in Mumbai Ryoji Noda on Wednesday.

For the 22-km six-lane bridge along the Mumbai harbour to the mainland providing direct access to the upcoming new international airport and the Mumbai-Pune Expressway, Japan is a partner with a commitment of Rs 9,000 crore or nearly 80 percent of the estimated project cost of Rs 14,260 crore, through the Japan International Cooperation Agency (JICA).

Besides the MTHL, Japan has committed Rs 4,500 crore for the 33.5-km-long Mumbai-Metro 3 project running from Colaba-Bandra-SEEPZ, for which 5.1 kms of underground tunneling work has just been completed, as per an announcement by the Mumbai Metro Rail Corporation. The line, with 27 stations en route, is expected to be completed by December 2021.

Referring to the Bullet Train project being constructed with Japanese assistance, Noda said the "high speed rail project between Mumbai-Ahmedabad is important for us (Japan)".

Speaking at a convention organized by the Confederation of Indian Industry (CII) here, he said the project would ensure trust and safety of the users, responsible and timely disbursement in construction and safety net around the same.

Estimated to cost Rs 1.1 lakh crore (\$16 billion), the work on the Bullet Train project has already been initiated in Maharashtra and Gujarat, creating a huge controversy with strong resistance from various quarters including the villagers, tribals and opposition parties.

The Japanese diplomat also said India has already received Rs 22,000 crore assistance under Japan's Overseas Development Assistance, making it the largest beneficiary, with Mumbai as one of the focus areas, adding that his country would support Indian in various

fields including investments, technology transfer and handling air, water, sea pollution besides managing urban waste.

“There are estimates that Mumbai is expected to be the highest populated city in the world in the highly populated country in 2032,” Noda said.

He pointed out that if Mumbai creates 7,000 tonnes of urban waste daily, it amounts to 210,000 tonnes every month and Japan, which recycles 85 percent of its pet bottles, can help India to better handle the urban waste.

Other prominent speakers at the conclave included industrialist and Godrej Group Chairman Jamshyd Godrej and JICA India Chief Representative Katsuo Matsumoto.

Delhi Metro to get green Power from Rewa Ultra Mega Solar Ltd. in two Months; India

16 Jul. 2018 in Category(ies): Posted on [16/07/2018](#) Categories [Delhi Metro \(DMRC\)](#), [Metro Rail Systems](#), [Railway Electrification/Traction/Solarization/Renewable](#), [LNG & Alternative Energy projects and efficient Green Energy Systems including the role of CORE/Allahabad AND SECI in power-trading licence](#)



FILE PHOTO: MOU signing Ceremony between Delhi Metro and Rewa Solar Power Plant Officials during April 2017.

NEW DELHI: The Delhi Metro Rail Corporation (DMRC) will start getting green power from the Madhya Pradesh-based Rewa Ultra Mega Solar Ltd (RUMSL) in the next two months, the first project in the country to supply power to an inter-state open access customer.

The 750MW project in Rewa district, spread over an area of 1,590 acres, is among the largest single-site solar power plants in the world.

The DMRC had signed a power purchase agreement (PPA) with the RUMSL to get green power from the latter to run its trains in the national capital.

Madhya Pradesh Renewable Energy Principal Secretary Manu Srivastava told that the DMRC would get around 25 per cent of the total power generated by the RUMSL, which would meet around 90 per cent power demand of the DMRC.

“The Delhi Metro Rail Corporation (DMRC) will get green power from the Rewa Ultra Mega Solar Ltd (RUMS) within the next two months,” Srivastava said.

He said the RUMSL has started generating 10 MW power from July 6 this year.

“The project is estimated to meet 90 per cent of the daily electricity demand of the DMRC. Besides, it would save Rs 1,400 crore of Delhi Metro in the next 25 years,” Srivastava added.

He said the DMRC would pay around Rs 3.67 for per unit of solar power, including the transmission charge.

The DMRC is currently buying power at Rs 7 per unit.

Presently, the Delhi Metro has network of about 288 Km with 208 stations which has now crossed the boundaries of Delhi to reach Noida and Ghaziabad in Uttar Pradesh, Gurgaon and Faridabad in Haryana.

Thales Cyber Security is Key Element in the Signalling Systems of Railway & Metro Rail Systems: EVP-Cyber Security of Thales; India

18 July 2018 in Category(ies): Posted on [18/07/2018](#)[19/07/2018](#)Categories [Indian Railways \(IR\)](#), [Interviews](#), [Columns](#), [Reviews](#), [Opinions in Rail industry](#), [IT](#), [ICT](#), [IOT](#), [Cloud](#), [Digital](#), [Mobile Apps](#), [FinTech](#), [Artificial Intelligence](#), [Machine Learning](#), [Blockchain](#), [Analytics](#), [Telecom](#), [Wireless](#), [Cyber Security](#), [Social Networking in Rail Sector](#), [Metro Rail Systems](#), [Rail Enterprise](#), [Industry](#), [OEMs](#), [EPCs](#), [PFT & SME Sectors \(incl. non-Railway PSEs under other Ministries\)](#) in Rail Business, [Thales](#)

“We have no plans to sell standalone Cyber Security solutions in India, and our Cyber Security is key element of our Signalling Systems commissioned on Indian Railways & various Metro Rail systems” said Marc Darmon, Executive Vice-President of Secure Communications and Information Systems at Thales.



Marc Darmon, EVP-Secure Communications & Information Systems

KOLKATA: A cyber attack may happen within 20 days of detection of a breach in security or in hardware and it often takes nearly 200 days to upgrade the systems in the traditional set-up.

This could have been done on the first day itself. And, this is where French company Thales with its specialised expertise in cyber security can come in. Identify the loopholes and take corrective action, says ***Marc Darmon, Executive Vice-President of Secure Communications and Information Systems at Thales.***

Thales that caters to Defence, Civil and Railway sectors is looking to grow its presence in India.

Apart from these sectors, the four other verticals the company operates include Space, Aeronautics, Ground Transportation (Railways, Roads and Highways, Seaways), Security (including Cyber Security).

In an interview, Darmon talks about the company's India strategy with regard to cyber security and privacy issues. Edited excerpts:

Q: What's your strategy on India in general and Indian Railways and Metro Rail sectors in particular, when it comes to Digital Security?

Darmon: We have a very strong base. And with the 150-odd people from Guavus (a real-time big data processing company that Thales acquired), we have a data analytics platform. And, as you know data analytics forms the basis of cyber security as it allows detection of abnormal behaviour or threats. As a business, we limit our cyber security offerings to wares we sell in India. By that I mean when we sell signalling systems to an Indian mainline Railway segment or Metro Rail sector, we use cyber security in it a key element of our offer. But, so far, we do not address Indian companies directly to sell cyber security solutions to them. We sell only through Thales' systems.

Q: Can you briefly explain about your Signalling Solutions for the Railways and Urban Mobility sectors in India business?

Darmon: Our trusted, proven urban signalling solutions will boost the performance of your existing network without disrupting operations or help you start your new network right.

Communications-Based Train Control (CBTC) – Thales literally invented CBTC in the 1980s and today our fully automated, integrated and upgradeable **Seltrac™ CBTC** continues to lead the industry. Freed from the limitations of conventional fixed-block designs, you can move more people, more quickly, without compromising safety. **SelTrac™** also has a green configuration that consumes 15% less energy. Built to be flexible, **SelTrac™** addresses all of your requirements and with optimised maintenance and life cycle costs.

Street-level signalling provides tailored solutions for your tram and light rail networks, including signalling for lines and depots, priority management at road crossings, automatic vehicle localisation and tram regulation.

Route Control Systems – Thales LockTrac electronic interlocking systems ensure smooth and safe movements by managing point machines, signals, crossings and other network elements.

Traffic Management Systems – Put more trains on existing tracks with the help of our NetTrac ARAMIS (Advanced Railway Automation Management & Information System), which automatically detects conflicts and proposes operational solutions so that any incidents can be quickly managed.

Rail Field Equipment – Our FieldTrac family of trackside equipment includes axle counters, point machines, LED signals, automatic warning devices and more.

Q: Why have you stayed away from direct selling of cyber security solutions to Indian companies?

Darmon: India is huge market, but there are a lot of Indian companies already present in this segment.

Our cyber security business is two-fold. One is to corporations and that is only €1.5 billion; and there is also key technology that is a part of what Thales' is doing, a part of its air traffic management systems and so on. In the case of India, we didn't feel the need to address Indian corporations directly. It could be a partnership with Indian companies. However, if you see (verticals like) air traffic management, defence and so on, then our cyber security solutions are already present.

Q: So do you intend to sell standalone cyber security solutions any time soon?

Darmon: Not in the very short term.

Q: Today's discussion on cyber security also covers third party applications that gain access to user data or breach of privacy issues. What is your take and can Thales work in preventing that?

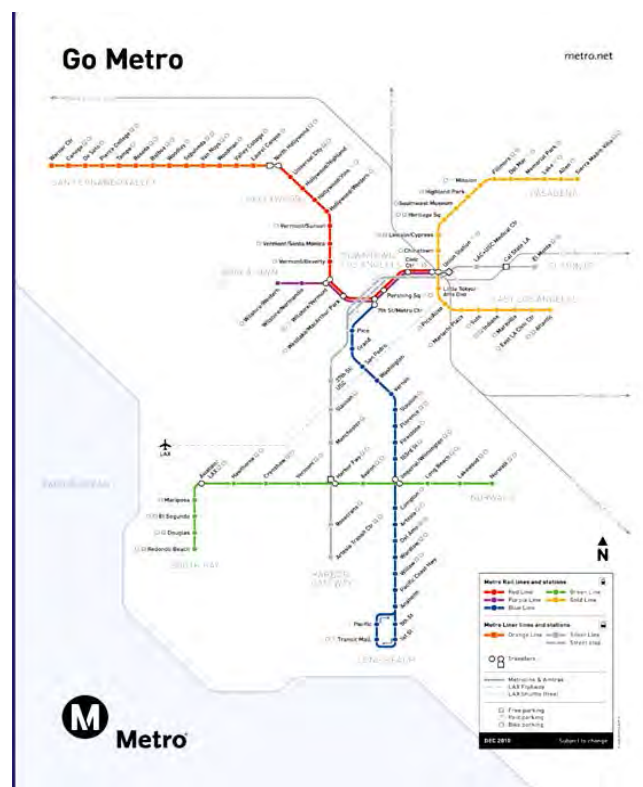
Darmon: Where data is compromised, we have a team of people who are like ghostbusters. They probe the causes of the leak and try and take preventive action. They also determine how safe the systems are, part by part. But, this is in case of a general attack. When there is a compromise or a set of leakages, our approach is different. There is nothing to correct. Everything is working well. So what we do is redefine the security policy. In these cases we try and determine what is the data that needs to be protected, who has access to what and what type of protections are needed. This then becomes a business of expertise and we can look at selling solutions related to encryption, diodes, software and hardware.

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

- January 23, 2019
- [Light Rail, News, Passenger](#)

LA Blue Line Modernization under Way; USA

Written by [William C. Vantuono](#), Editor-in-Chief



LA Metro System Map.

The Los Angeles County Metropolitan Transportation Authority (Metro) Blue Line will undergo a comprehensive \$350 million modernization beginning Jan. 26, 2019. The line, which opened in 1990 and is Metro's oldest rail transit line, has been undergoing safety and operational improvements since 2014.

The “New Blue Improvement Project” will include improvements to the signaling, tracks and catenary. Four new crossover tracks will be built to reduce service interruptions. There will also be numerous station improvements, including new interactive digital map displays for all stations, which will display train arrival and departure times, service alerts, and maps of the system and nearby area. Other visible amenities will include new signage and landscaping.

The upcoming improvement project will require two extended four-month closures. Work on the southern segment of the line begins Jan. 26. In addition, Blue Line service to Willowbrook/Rosa Parks Station will be closed for eight months while the station is rebuilt with more capacity, a new customer service center and community plaza, easier connections to local buses and surrounding communities, and upgrades to safety and security systems. During the closure, Green Line service will operate normally at Willowbrook/Rosa Parks Station.

In addition, the Metro Board of Directors recently approved the naming of rail lines with letters and colors “to accommodate a growing system and make our rail and bus rapid transit network easier to understand and more customer-friendly,” the agency said. Upon completion of the entire New Blue Improvement Project, the new name for the Blue Line will be the “A” Line with the color blue.

Metro is launching an outreach campaign to customers, cities, communities, stakeholders and the public about the New Blue. The New Blue website at

<http://www.metro.net/newblue> includes a fact sheet and map with bus shuttle services.

Categories: **Light Rail, News, Passenger** Tags: **Breaking News, Los Angeles County Metropolitan Transportation Authority, Metro, New Blue Improvement Project**

Chicago Suburb pays up to fight Amtrak Hiawatha Project; USA

- January 23, 2019
 - **Intercity, OFF Track Maintenance, Passenger, Regulatory, Safety/Training**
- Written by [Kyra Senese, Managing Editor](#)



Photo Credit: Amtrak / Jason Berg

Glenview, Ill., a village about 15 miles from Chicago, has reportedly approved spending a significant chunk of funding to continue its opposition efforts in regards to the proposed Amtrak Hiawatha project.

The Glenview Board of Trustees **approved the allocation** of \$105,000 from the village's 2019 budget at a recent meeting. Glenview now plans to spend a total of more than \$500,000 to oppose the project.

In October of 2016, the Chicago Tribune reports that the Federal Railroad Administration and the Wisconsin and Illinois departments of transportation proposed boosting service on the Amtrak Hiawatha line, which travels from Chicago to Milwaukee with a stop in Glenview along the way, from seven to 10 round trips, according to the project's **draft environmental assessment**.

Officials and local residents have raised concerns regarding two proposed options: building a 10,000-foot freight train holding track on the east side of the two existing Metra tracks or constructing an 11,000-foot freight train holding track on the west side of the existing tracks that span from Glenview to Northbrook.

Building the freight train holding track would require that a retaining wall with a 10-foot or 20-foot height would need to be built to hold the rail bed, according to the Chicago Tribune. However, building the retaining wall would also cut down on the amount of green space available to offer a buffer between residential areas and existing tracks.

The proposed work would also require that two new single-track bridges be built. The agencies involved also suggest installing a universal crossover switch on the Metra tracks, but village staff is concerned that trains traveling over the switches will be loud and there will be an increased possibility of derailments, the report said.

Officials suggest that expanding Hiawatha service will help mitigate near-capacity and over-capacity conditions for peak time service, allowing passengers more flexibility with train time options and addressing "inadequate service reliability" as a result of conflicts with freight and passenger traffic along the corridor, according to the article

In May of 2018, the village board **approved a \$400,000 fund** to oppose the project, stating that the project would not sufficiently address the community's transportation needs and citing a lack of data regarding the project's environmental impact, the Tribune reported.

Of the approved \$400,000 fund, the board gave the green light to a contract for \$160,000 with Transportation Economics & Management Systems Inc. to study the line's capacity. The village spent about \$380,000 of the funds in 2018, the report states.

In a unanimous vote of approval, Glenview approved further spending last week by allotting \$105,000 to continue its opposition efforts regarding the project. Of the \$105,000, the village will use \$10,000 to continue its contract with Jasculca Terman Strategic Communications, according to a staff report.

Another \$20,000 will keep intact a contract with Transportation Economics & Management Systems Inc. for engineering and modeling, the report states.

The village is also expected to allocate \$71,000 toward state and federal lobbying initiatives regarding the project, according to the report. Glenview staff and rail officials plan to meet and study and model alternatives to the holding track in late January, the Tribune reports.

Categories: [Intercity](#), [OFF Track Maintenance](#), [Passenger](#), [Regulatory](#), [Safety/Training](#)
Tags: [Amtrak](#), [Glenview](#), [Hiawatha project](#)

Relief for Toronto in the Works; Canada

- January 23, 2019
- News, Passenger, Rapid Transit

Written by [John Thompson](#), Canadian Contributing Editor



The Toronto Transit Commission (TTC) and the City of Toronto recently announced that commencement of construction of the Downtown Relief Subway would be

moved up by two years, perhaps to 2020. The plan would require the city committing C\$325 million for design and engineering work, property acquisition, utilities relocation, etc., as well as equipment procurement and contracts tendering. Given this priority, the Relief Subway could be carrying its first passengers by 2029.

Design work is currently at about the 10% point. The C\$325 million would be added to the TTC's Capital Budget over the next two years, with C\$162 million allocated for 2019.

The route, some four miles long, extends eastward from Queen Station on the Yonge Subway (Line 1), then north to Pape Station on the Bloor-Danforth Subway (Line 2). The project, as the name signifies, will divert passengers from the seriously overcrowded Yonge Subway. This problem has been aggravated in recent decades by the continuing construction of high-rise residential towers along the line, particularly in the Yonge-Eglinton, and Yonge-Bloor areas.

The city expects that the Ontario Provincial and Canadian Federal governments will provide significant financial contributions, supplementing Toronto's. The estimated preliminary cost of the Relief Subway is C\$6.8 billion. The majority, if not all, of the alignment would be underground. Neither government so far has committed specific funding to the project. However, Toronto Mayor John Tory is optimistic, noting that these governments have already committed, in general terms, some C\$9 billion for Toronto area transit projects.

The elephant in the room, however, is Ontario's announced intention to assume ownership, possibly via Metrolinx, of the existing subway system and future projects from the TTC, a City of Toronto agency. The city, legally, apparently lacks the power to prevent this, although the takeover is certain to be controversial. The TTC, presumably, would continue to operate the subways, as will be the case with the Eglinton Crosstown LRT. The Provincial Minister of Transportation said that appropriate legislation will be introduced this spring.

The Province's stated reason for the takeover is the opinion that it can build subways more quickly and efficiently than the TTC and the city. That said, the proposal is likely to be controversial with many Torontonians.

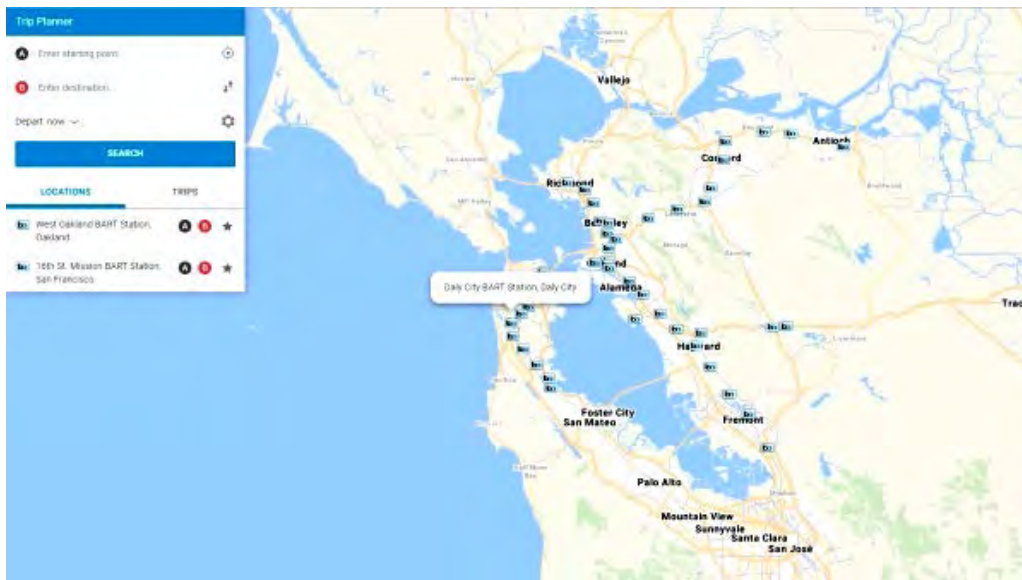
Categories: **News, Passenger, Rapid Transit** Tags: **Breaking News, Toronto Relief Subway, Toronto Transit Commission, TTC**

Bart Trip Planner launched with real-Time multi-modal Information; USA

Jan 24., 2019

Written by [David Burroughs](#)

BAY Area Rapid Transit (Bart) has launched a new multi-modal travel planner which allows passengers to travel anywhere within the San Francisco Bay Area using various modes of transport.



Related Posts

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Jan 24, 2019 | [Fleet](#)

Bart Trip Planner is [available both online](#) and on iOS and Android, and includes real-time information as opposed to the legacy system which relied on the scheduled timetable.

As well as Bart's services, HaCon's software processes transit data from more than 30 operators, including buses, trains, ferries, and cable cars. The planner also takes into account walking, cycling and car routes, including the current traffic situation in order to give users a realistic comparison for their commute. HaCon has also integrated park and ride and bike and ride options, including information regarding car parking and bike storage availability at the Bart stations.

Over the next phases of the project, HaCon and Bart plan to begin to offer even more transport modes, such as ride and bike sharing.

HaCon has integrated its HIM tool for disruption management into the service, which Bart says will allow it to respond to disruptions more quickly and more accurately. Service advisories and alerts such as station closures, bus replacement services, station or trip-related messages will be communicated in real time, allowing the planner to re-route passengers in accordance with potential service changes.

The step-by-step navigation feature factors in personal preferences like favourite modes of transport, and also displays train load information giving passengers the opportunity to pick less crowded trains.

"The new Trip Planner takes the hassle out of commuting because it provides a complete look at someone's journey and offers a variety of ways to avoid traffic," says Bart chief information officer, Mr Ravi Misra. "All trips use Bart as the lynchpin of the itinerary and then make it easy to get to and from our stations using the various modes of transport the Bay Area offers."

“With its forward-thinking approach to offering multimodal travel chains, Bart is one of the first United States transit agencies to provide complete end-to-end itineraries,” says HaCon CEO, Mr Michael Frankenberg. “The new Bart Trip Planner is one of the first big steps into Mobility as a Service (MaaS) in the United States.”

In September last year, [HaCon and online trip planner Rejseplanen](#) unveiled a new multimodal MaaS app for Denmark which allows passengers to book tickets for various travel options including rail, metro, a self-driving shuttle bus, ferries and ride-sharing services.

For an in-depth look at how Smart Cities could change the way we travel, [see the February issue of IRJ](#).

Categories: [Commuter Rail](#)[Metros](#)[News](#)[North America](#)[Technology](#)

Tags: [Bart](#)[HaCon](#)[San Francisco](#)[ticketing](#)[trip planner](#)

First Istanbul Line M7 driverless Train delivered; Turkey

Jan. 24, 2019

Written by [Keith Barrow](#)

A milestone was reached in the construction of the first driverless metro line on the European side of Istanbul this week with the delivery of the first vehicles for Line M7 to Tekstil Kent depot in the north of the city.



Related Posts

[Royal inauguration for Casablanca's second light rail line](#)

Jan 24, 2019 | [Africa](#)

[EBA authorises three-country Flirt EMUs for use in Germany](#)

Jan 24, 2019 | [Fleet](#)

Istanbul Metropolitan Municipality awarded Hyundai Rotem a contract in April 2016 to supply [75 four-car trains](#) for the initial 24.5km phase of Line M7 from Mahmutbey to Kabataş.

The 1.5 kV dc overhead trains are being assembled at the Eurotem facility in Adapazari in northwest Turkey and the contract calls for 50% local content.

Eurotem is expected to deliver eight vehicles a month in the run-up to the opening of the 19-station Line M7 in the fourth quarter of this year.

In December 2017, a [further 20 four-car trains](#) were ordered for the 18.5km extension to Esenyurt.

Categories: [FleetMetrosNews](#)

Royal Inauguration for Casablanca's second light Rail Line; Morocco

Jan. 24, 2019

Written by [Keith Barrow](#)

KING Mohammed VI of Morocco visited Casablanca on January 23 to officially inaugurate the city's second light rail line.



MAP

Passenger services began the following day on Line T2, which runs for 15km from Ain Diab in the west to Sidi Bernoussi in the east via Casablanca city centre.

The line uses the 7.5km former Line T1 branch from Ain Diab Plage to Abdelmoumen before continuing to Sidi Bernoussi on a new alignment via Avenue 2 Mars, Boulevard Grand Ceinture, Place de la Préfecture de Ain Sebaa and Boulevard Abi Der El Ghifari.

Line T2 serves 33 stations, including interchanges with Line T1 at Abdelmoumen-Anoual and Ibn Tachfine-Mdarka.

Services are operated by a [fleet of 50 32m-long Alstom Citadis LRVs](#) running in pairs. Sixteen pairs are available for the initial phase of operations, with services operating at 6-9 minute headways in the peak.

The Dirhams 3.78bn (\$US 390m) project included the construction of a new LRV maintenance depot at Sidi Bernoussi.

RATP Dev operates both lines T1 and T2 under a [12-year contract awarded by Casa Transport in 2017](#).

Two further lines are planned: Line T3 will run for 14km from Salmia to Casa-Port, while the 12km Line T4 will link Attacharouk with Mers Sultan. All four lines will be fed by two new bus rapid transit lines totalling 22 km.

The completion of these lines will take the Casablanca light rail network to 73 km by 2022.

For detailed data on rail projects in Africa, subscribe to [IRJ Pro](#).



Bangkok - Padang Besar

Country: Thailand
Type: High-speed
Construction Start: 2019

Completion: 2029
Length: 983km
Cost: \$US 9.9bn

The high-speed line will connect Bangkok and Padang Besar at the Malay border. State Railway of Thailand (SRT) and the Ministry of Transport (MoT) of Malaysia are jointly undertaking the construction of the line. Trains will operate at up to 250km/h on the 982km. However, the project is still in its early stages of development and is expected to be completed by 2029. Thailand plans to build up to 2506km of high-speed railways between the capital and the northern and southern regions by 2036. The plan is set to cost over Baht 1.5 trillion (\$US 47bn). High-speed services will run into Bangkok's new main station at Bang Sue (pictured), which is currently under construction.

regions, including Meerut. Construction was expected to begin in 2017 but due to delays in gaining approvals from Delhi's government the project was pushed back and work will now begin in 2019.

Mengxi - Huazhong

Country: China
Type: Heavy haul
Construction Start: 2013
Completion: 2019
Length: 1817km
Cost: \$US 27bn

The world's longest coal line will connect the 'golden triangle' region with central China, offering a transport capacity of more than 200 million tonnes per year. The line passes through seven provinces from Inner Mongolia to Jiangxi province, almost spanning the entire length of the country. The project includes construction of a 22.8km tunnel in Henan.

Type: Metro
Construction Start: 2012
Completion: 2019
Length: 9.3km
Cost: \$US 17.7bn

Macau's fully-automated light metro will run on rubber tyres and has been under construction since 2012. Once completed it will serve Taipa, Macao Peninsula and Cotai. The opening date is still unclear although it is likely to be commissioned in 2019. A second phase is planned and

Macau-Taipa metro

Country: China

Riyadh Metro

Country: Saudi Arabia
Type: Metro
Construction Start: 2014

Completion: 2021
Length: 176km
Cost: \$US 22.5bn

The Saudi capital's metro system will consist of six fully automated lines totalling 176km and serving 85 stations. The system has been built in anticipation of Riyadh's population growth, which is expected to pass 8 million in the next 10 years, and will become the foundation of the city's transport system, while integrating with an 85km BRT network. Dynamic testing began in April 2018, when an Alstom metropolis train (pictured) ran under its own power on a short section of the Purple Line. The first sections are due to open this year and the network will be fully operational by 2021. A contract to extend the Yellow Line to King Khalid International Airport was awarded in October 2018.



Dhaka awards Metro Rail E&M Contract to Japanese-Indian; Bangladesh

10 Jul. 2018 in Category(ies): Posted on [10/07/201810/07/2018](#)Categories [Metro Rail Systems](#), [Railways in Indian Subcontinent](#), [World RailNews](#)

DHAKA, Bangladesh: DHAKA Mass Transit Company (DMTCL) has awarded a \$US 500m lump-sum contract to a joint venture of Marubeni, Japan, and Larsen & Toubro, India for the electro-mechanical contract for Line 6, which is the first metro line to be built in the Bangladesh capital.

The contract covers design, procurement, installation, testing, commissioning and maintenance for six years for track, electrification, signalling, communications, platform screen doors, automatic fare collection equipment, escalators and lifts for the 20km north-south elevated line with 16 stations connecting Uttara North to Motijheel. The joint venture will also be responsible for overall system integration.

Larsen & Toubro will be responsible for the track which will comprise 43 track-km of ballastless track on the line and 19 track-km of ballasted track in the depot.

The line will be electrified at 1.5kV dc overhead. Larsen & Toubro's Power Transmission & Distribution division will install 132kV GIS-based receiving substations, associated EHV cables to connect with grid substations, auxiliary substations at the stations and the depot, a 33kV cable network along the line, and a power supply Scada system.

Marubeni will be responsible for the signalling which will include a communications-based train control (CBTC) system with an LTE-based telecommunications and radio system.

Kawasaki Heavy Industries (KHI) and Mitsubishi were awarded a Yen 40bn (\$US 360m) contract in 2017 for 24 six-car metro trains, together with depot equipment.

Construction of Line 6 began in August 2017 and is expected to take three years to complete.

The metro project is being funded by the Japan International Cooperation Agency (Jica) through aid from Japan to Bangladesh.

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
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**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 31, JANUARY 2019



Lille's light rail and VAL Metro Networks link the City with surrounding Towns in the Conurbation including Roubaix and Tourcoing; France

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

Test Running begins on Noida Metro; India

16 Jan. 2018



INDIA: Noida Metro Rail Corp Managing Director Alok Tandon and Delhi Metro Rail Corp Managing Director Dr Mangu Singh officially inaugurated the start of test running on the Noida metro on January 2.

The first of 19 four-car trains that CRRC is supplying to operate the line arrived at the depot on December 14, after being unloaded at Mundra Port in Gujarat on November 23.

The trainsets have a capacity of 1 000 passengers including 186 seated and a maximum speed of 80 km/h. They are equipped with interior and exterior LED lighting, as well as dynamic route maps.

Civil works were completed in November on the 29.7 km route with 21 stations. Delhi Metro Rail Corp is acting as project management consultant, and a consortium of Ansaldo STS and ZTE is supplying signalling, train control and telecoms.

Related news

- [25 Jan 2019 - Noida opens Aqua metro line](#)

- 02 Sep 2016 - [Noida metro signalling contract](#)
- 03 Aug 2016 - [Noida Metro signs operational assistance agreement](#)
- 18 Mar 2016 - [CRRC to supply Noida metro trains](#)

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

January 28, 2019

- [Light Rail, News, Passenger](#)

Big Year ahead for North American LRT; USA

Written by [Oscar Sinclair](#), Market Analyst, International Railway Journal



CATS (Charlotte Area Transit System) LYNX Blue Line.

The North American light rail transit (LRT) renaissance began in the late 1970s and early 1980s, starting with Edmonton in 1978 and followed by Calgary and San Diego. More than 40 years later, LRT remains the most appealing mode of new public transportation for many North American cities.

Billions of dollars of local, state and federal funding has been spent, and development continues today with 129 miles of lines under construction in cities across North America representing an investment of more than \$28 billion. A further 126.5 route-miles is anticipated to enter construction over the next year at a cost of more than \$15 billion, according to data from **IRJ Pro**.

Growth has partly been driven by a desire to revive streetcars, which largely disappeared by the 1950s, having been replaced by diesel buses. LRT, a relatively affordable way to bring rail transit to many cities, can fill the niche between buses and rapid transit (subway) systems, which are highly expensive and complex to implement. LRT has received significant federal funding and has successfully driven investment in transit-oriented development in many cities.

Many projects in Canada have struggled to attract federal funding, meaning cities have been forced to recover a much higher share of their capital costs through revenue. The capital-intensive nature of LRT in Canada may go some way in explaining why there are aren't that many systems currently in operation, while in the U.S. there are currently 51 operational LRTs as of November 2018, with a much broader spectrum of systems across mid- to large-sized cities.

The North American LRT market is expanding, as displayed in Figure 1. While other markets such as Europe and Asia have seen a contraction in the number of projects planned in 2019, the number of projects in North America has more than doubled.

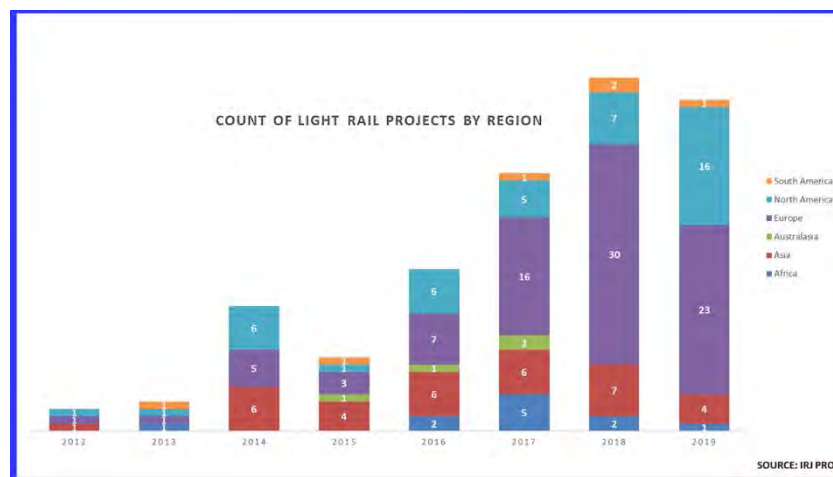


Figure 1

The past year has seen the completion of four projects in the U.S. The Charlotte Area Transit System (CATS, North Carolina) LYNX Blue Line Northeast Corridor, a 9.3-mile, 11-station extension that cost \$1.16 billion to implement, opened in March last year, and is expected to double the system's ridership. In May 2018, northern California's East Contra Costa BART Extension Project (eBART), a 10-mile line between Pittsburg and Antioch, was commissioned. In Texas, El Paso's 27-stop, 5-mile heritage streetcar line, serving the city center, entered service in March. Services on the line are operated by a fleet of six vintage PCC cars that were fully restored and modernized by Brookville Equipment. Milwaukee Streetcar, also known as "The Hop," opened to passengers in November.



El Paso (Tex.) Streetcar with rebuilt and modernized PCC Cars from Brookville Equipment

Currently, 18 projects are under construction across the U.S. and Canada. Toronto's \$C5.3 billion Eglinton Crosstown LRT is one of the most prominent. The 11.8-mile line will run east-west along Eglinton Avenue, with a 6.2-mile underground section serving 25 stations. GTHA (Greater Toronto-Hamilton Area) public transport authority Metrolinx and Infrastructure Ontario have signed a \$C9.1 billion, 30-year alternative financing and procurement (AFP) contract with Crosslinx Transit Solutions, a consortium of ACS Dragados, AECON, EllisDon and SNC-Lavalin, to finance, build and maintain the line. Financing for the project is being provided by National Bank Financial and Scotia Capital as underwriters, together with Alberta Treasury Branches.



Seattle's Eastlink LRT is another substantial project; it's due for completion within the next four years. The 14.5-mile, 10-station line will branch off the existing north-south line. The \$3.68 billion project has been granted a \$1.3 billion loan from Federal Transit Administration. Once completed in 2023, the line is forecast to carry up to 50,000 passengers per day.

Washington D.C.'s Silver Line Stage 2 is due for completion in 2020. The 11.4-mile, six-station extension is due to cost \$2.7 billion. The 16-mile Maryland Purple line is expected to be operational by 2022, serving 21 stations. Meridiam is a 70% equity partner in the project; CAF will be supplying rolling stock.

Project Title	City	Country	Status	Start	Completion	Length (miles)	Cost USD (m)	Stations
Edmonton LRT NAIT - 153 Ave Extension	Edmonton	Canada	Planned	2019		6.8		9
Hamilton LRT Line B (McMaster - Eastgate)	Hamilton	Canada	Tendering	2019	2024	8.7	758.2	17
Las Vegas Light Rail (McCarran Airport - University Medical Center)	Las Vegas	USA	Feasibility Study	2019	2023	8.7	705.0	
Minneapolis Blue Line North Extension (Bottineau Line)	Minneapolis	USA	Detailed Design	2019	2022	13.0	1536.2	11
Minneapolis Southwest LRT	Minneapolis	USA	Tendering	2019	2023	15.8	1858.0	15
Ottawa LRT Stage 2 Confederation Line East Extension	Ottawa	Canada	Planned	2019	2022	7.5	2274.5	5
Ottawa LRT Stage 2 Confederation Line West Extension	Ottawa	Canada	Planned	2019	2023	9.3		11
Ottawa LRT Stage 2 Trillium Line South Extension	Ottawa	Canada	Contract Awarded	2019	2021	5.0		5
Ottawa LRT Stage 2 Trillium Line Airport Branch	Ottawa	Canada	Contract Awarded	2019	2021	2.9	117.5	2
Phoenix Capitol/110 West Extension Phase 1	Phoenix	USA	Planned	2019	2023	11.0	1200.0	11
South Central Light Rail Extension	Phoenix	USA	Detailed Design	2019	2023	4.9	704.0	9
Sacramento Downtown/Riverfront Streetcar	Sacramento	USA	Feasibility Study	2019	2021	4.2	200.0	22
Capitol Expressway Light Rail Project	San Jose	USA	Feasibility Study	2019	2023		377.0	
Seattle Lynnwood Link	Seattle	USA	Detailed Design	2019	2024	12.6	2900.0	4
Seattle Federal Way Link Extension	Seattle	USA	Contract Awarded	2019	2024	7.6	1770.0	4
Seattle Lynnwood Link LRT Extension	Seattle	USA	Planned	2019	2024	8.5	2900.0	4

Source: IRI Pro

Figure 2

2019 looks to be a big year for light rail construction in the U.S. and Canada, with projects scheduled to begin work across nine cities (Figure 2). The \$C3 billion second phase of Ottawa's LRT expansion program will add 22.4 miles of new lines and 22 stations to the capital's urban rail network by 2023. Stage 2 includes an 8-mile western extension of the Confederation Line with 10 new stations, while also extending eastward 6.2 miles, adding four stations to the network.

The third project included in Ottawa LRT Stage 2 is a 5-mile southern extension of the diesel-operated Trillium Line, which includes a 2-mile branch to Macdonald-Cartier International Airport. The extension will include seven new stations, as well as 3,500 park-and-ride spots. The government of Ontario has devoted \$C1 billion toward the second stage, which will more than double the length of Stage 1, the 7.8-mile east-west Confederation Line.

Stage 1 of the Ottawa LRT was due to open in 4Q 2018, but due to a six-month contract extension has been pushed back to mid-2019. The extension was due to the construction consortium Rideau Transit Group (ACS Infrastructure, SNC-Lavalin and EllisDon) missing two handover deadlines. Stage 1 will serve 13 stations and involves the excavation of a 1.6-mile tunnel that will run underneath Queen Street in the downtown area. Construction began in 2013 and is expected to cost \$C2.1 billion. Alstom was awarded a \$1.5 billion contract to supply 34 Citadis Spirit LRVs for the line in early 2015.



Seattle Sound Transit Lynnwood Link Extension.

Sound Transit's (Seattle) 8.5-mile Lynnwood Link Extension is expected to enter construction this year. The project is intended to alleviate congestion in some of the most heavily used highway corridors in Washington State. The line will serve four stations and provide 2,650 parking spaces. The project is estimated to cost \$2.9 billion, including rolling stock. The project secured local funding through the voter-approved Sound Transit 2 Plan, and the FTA is expected to contribute \$1.2 billion in funding through its New Starts program. The line is forecast to carry up to 74,000 passengers per day by 2035 and offer a 28-minute ride from Lynnwood to Downtown Seattle. Sound Transit a \$650 million low-interest federal loan, in addition to the FTA New Starts grant. The line is scheduled to open in 2024.

In Ontario, Hamilton Street Railway's B Line is expected to enter construction this year. The 8.7-mile LRT will serve 17 stations, including interchanges with the city's bus network. Stations have been designed to accommodate two-car trains as ridership grows. The project is expected to be completed by 2024.

The Los Angeles County Metropolitan Transportation Authority (LACMTA) Crenshaw/LAX Line is nearing completion and due for commissioning later this year. The 8.5-mile line from LAX to Crenshaw will serve the districts of Leimert, Hyde Park and Inglewood. The eight-station line was granted FTA approval in early 2012, and construction began on the \$1.7 billion project in 2014. The line has come under scrutiny for not directly serving LAX, with the two closest stations around 2 miles from the airport. However, LACMTA last year began construction of a 2.2-mile people-mover to link the airport with the light rail line. It will be completed by 2023.



Kitchener-Waterloo ION LRT Bombardier Flexity Test Vehicle.

Stage 1 of the 11.8-mile Kitchener-Waterloo ION LRT in Ontario is expected to open in the spring, following delays of Bombardier Flexity light rail vehicles. The line will run from Conestoga Mall to Fairview Park Mall. It will have 16 stations, with park-and-ride facilities at two of them. The first stage also includes a 10.6-mile BRT system, which will later be replaced by LRT.

Denver RTD is to complete its southeastern extension this year. The project, which will extend lines E and F by 2.3 miles, is estimated to cost \$233 million.

The \$1 trillion federal infrastructure bill hyped by Donald Trump on his Presidential campaign trail two years ago appears to have faded into the background. The FTA has been sitting on \$1.4 billion in funds earmarked for new projects; the agency has been

reluctant to distribute funding, with only a fraction being allocated for transit projects in 2018. However, in November, the FTA announced it allocated \$281 million in Capital Investment Grants to five projects in Arizona, California, Minnesota and Texas.

At present, six LRT projects are awaiting grants promised in the federal appropriations bill signed in March 2018. Among them is Seattle's Lynnwood Link Extension, which last year was scaled back due to rising construction costs. The FTA may be entering legally shady territory if the funds are not distributed by the end of this fiscal year. Under congressional mandate, 85% of the transit capital grant budget (\$2.25 billion) must be allocated by the end of 2019. The remaining funds (\$350 million) will go back to the U.S. Treasury if unspent after four years.

If the transit grants are uncommitted by the end of 2019, it is possible that local transit agencies go as far as filing a lawsuit under the 1974 Congressional Budget and Impoundment Control Act. The slowdown in FTA spending can be seen as a symptom of the Trump Administration's enmity toward urban centers and mass transit. However, the Administration's anti-transit stance may be softened somewhat, now that the U.S. House of Representatives is controlled by Democrats.

All data cited in this article is available on the IRJ Pro data platform. To gain subscription-based access to comprehensive data for more than 2,200 global projects and 1,400 fleet orders, visit www.IRJpro.com.

Categories: **Light Rail, News, Passenger** Tags: **Breaking News, Federal Transit Administration, FTA**

- January 11, 2019
- [Light Rail, News, Passenger](#)

Breakthroughs in Flexity LRV Deliveries; Canada

Written by [John Thompson](#), Canadian Contributing Editor



TTC Bombardier Flexity Freedom LRV at Union Station, Toronto. William C. Vantuono photo.

The first Bombardier Flexity Freedom LRV for Toronto's new Eglinton Crosstown LRT arrived Tuesday, Jan. 8., on the property. Meanwhile, delivery of the Toronto Transit Commission's much-delayed order of Flexity Outlook LRVs has improved

since the opening in 2018 of a second production line at the company's Millhaven, Ont., plant.

Delivery of the first Eglinton Crosstown vehicle was made to the nearly complete yard and maintenance facility in west Toronto after a journey by flatbed trailer from the Bombardier Millhaven plant, some 136 miles eastward. It is the first unit of a 76-car, C\$392 million order; another five are scheduled to arrive by Feb. 1, 2019. The cars will be assigned to service on the Crosstown LRT, which is scheduled to open in September 2021.

Bombardier was expected to deliver this prototype car in August 2016; when this proved impossible, the date was revised to November 2018. However, an inspection by Metrolinx staff determined that the LRV was not ready at that time. "The vehicle required some corrections and adjustments prior to being released for shipment to Toronto," according to Metrolinx communications officer Jamie Robinson.

Bombardier decided to hold off on shipping the car until early January, due to traffic congestion on the highway and in Toronto during the holiday period.

Metrolinx said the LRV will undergo numerous tests over the coming weeks, including safety and communications testing. It will then be subjected to dynamic testing, and vehicle to infrastructure integration activities.

The Crosstown LRVs are similar to those built by Bombardier for the new Kitchener-Waterloo (Ontario) LRT line. However, they have just one cab, rather than two, as they are planned to operate as married pairs. They are painted, somewhat surprisingly, in a grey and white livery, rather than the Metrolinx colors of green and white.



TTC Order Nearing Completion

Delivery of the TTC's 204-unit Bombardier Flexity Outlook order is moving along. The TTC, as of Jan. 7, has 117 Flexities in service, with an additional four approved for delivery. This was close to Bombardier's target of supplying 121 cars by Dec. 31, 2018.

The TTC is hoping that Bombardier will be able to complete the full order by the end of this year. It has been plagued by numerous delays from various causes, including welding issues at Bombardier's Mexican plant, and supply chain problems.

As a consequence, the TTC has had to keep its aging CLRVs (Canadian Light Rail Vehicles) and ALRVs (Articulated Light Rail Vehicles) in service longer than anticipated. This has involved shopping these cars at the agency's Hillcrest Shops. The TTC has said is planning to recover from Bombardier, as much as possible, the costs of keeping the older vehicles operational.

At press time, the TTC remained noncommittal about the status of its option for an additional 60 Flexities from Bombardier. These cars would be used to provide improved service on existing lines.

Categories: **Light Rail, News, Passenger** Tags: **Bombardier Flexity Freedom, Bombardier Flexity Outlook, Breaking News, Eglinton Crosstown Light Rail, Toronto Transit Commission, TTC**

- January 26, 2019
- **Commuter/Regional, Locomotives, M/W, Mechanical, News, Passenger**

Metrolink readies for O&M Contract; USA

Written by [William C. Vantuono](#), Editor-in-Chief



Metrolink, Southern California's regional/commuter rail service, is preparing to release a request for proposals (RFP) for its first-ever combined O&M (operations and maintenance) contract, and will hold an event on Feb. 15 and 16 in Pomona, Calif., for interested contractors, subcontractors, vendors and suppliers who have expertise and/or offer services or products to the rail industry. "This will be an opportunity for the industry to preview a draft RFP, provide feedback, obtain more information about Metrolink operations and tour Metrolink facilities," the agency announced Jan. 25.

Metrolink has approved the scope of work to combine its operations and maintenance contracts. The anticipated term of the resulting contract, which the agency says will be the largest in its 26-year history, will be for a base period of seven years with two optional

renewal periods of four years each. The expected contract will involve a wide array of primary operational functions, as well as related ancillary services required to support all aspects of the rail system. Those operational functions will include:

- Train operations and crew services.
 - Rolling stock (locomotive and cab car/coach car) maintenance.
 - Signal, communication and train control systems maintenance.
 - Track, structure and right-of-way maintenance.
 - Railroad facilities (yards, buildings) maintenance.
 - Rubber tire non-revenue fleet and specialized equipment maintenance.
 - Rehabilitation/capital maintenance associated with the above.
-
- Materials acquisition and management to support the infrastructure, systems and equipment.

Maintenance activities will include inspection and repair of tracks, bridges, structures, wayside signals, communications, rights-of-way, grade crossings and Level 1 train control systems for the entire system. Responsibilities will also include maintenance of SCRRA (Southern California Regional Rail Authority) facilities and all equipment, locomotives, railcars and railcar components, along with mechanisms such as brake systems, motors, seats and passenger communication equipment. Passenger stations are generally owned by the various agencies and will not be included in the procurement.

“We are excited about this procurement in order to make our railroad more efficient and effective,” Metrolink CEO Stephanie Wiggins said. “Our Board of Directors sees this policy shift as an imperative step in continuing Metrolink’s path toward being the preferred transportation option over driving in Southern California.” The February event “is optional, [but] all parties interested in the upcoming procurement are encouraged to attend. It will be a time for companies of all sizes to meet and greet the Metrolink team, as well as an opportunity for them to network for the purpose of creating teaming arrangements. The event will cover issues related to the involvement of small businesses, including Disadvantaged Business Enterprise (DBE) requirements. The DBE goal has yet to be established, but Metrolink is working with consultants, and the goal will be included in the RFP upon release.”

The final RFP is expected to be released in Spring 2019, with mandatory pre-proposal meetings and tours following the issuance of the RFP. To sign up for updates and get more information about this procurement, visit www.metrolinktrains.com/bigRFP. This webpage will be updated regularly.

Metrolink, in its 26th year of operation, is governed by SCRRA, a joint powers authority made up of an 11-member board representing the transportation commissions of Los Angeles, Orange, Riverside, San Bernardino and Ventura counties. Metrolink operates seven routes on a 538-route-mile network.



Categories: **Commuter/Regional, Locomotives, M/W, Mechanical, News, Passenger** Tags: **Breaking News, Metrolink, SCRRA, Southern California Regional Rail Authority**

King opens second Casablanca Tram Line; Morocco

25 Jan. 2019

MOROCCO: King Mohammed VI officially opened Casablanca's second tram line on January 23, with revenue services starting the following day.

Line T2 runs between Sidi Bernoussi and Aïn Diab. It has a total length of 22.5 km, including 15 km of new alignment and 7.5 km of existing line between Anoual and Aïn Diab which was previously operated as a branch of T1. There are 33 stops, including interchanges with T1 at Abdelmoumen-Anoual and Ibn Tachfine-Mdarka.

Construction began in January 2016 and cost €3.8bn dirhams, including the planting of more than 2 500 trees and the depot at Sidi Bernoussi. Engie Group supplied signalling, communications, CCTV, fire detection and passenger information systems.

The network is operated and maintained by RATP Dev Services under a contract running for 12 years from December 2017. T2 services run every 6 min in the peaks and 9 min off-peak, with an end-to-end journey time of just over an hour. The line's initial fleet of 32 Alstom Citadis 302 trams operating in semi-permanently coupled pairs is to be gradually increased to a total of 50 trams in 25 pairs.

T1 has also been extended 1.8 km from Facultés to Lissasfa at cost of €504m dirhams, taking it to 23.5 km.

Two further lines are planned to open in 2022. T3 would run 14 km from the Salmia district to the Casa-Port zone, and T4 would run 12 km from Attacharouk to Mers Sultan.

Two bus rapid transit feeder routes are also proposed, with L1 to run 12 km from Salmia to Lissasfa and L2 10 km from Errahma to Boulevard Ghandi.

First suburban Line opens in Wenzhou; China

24 Jan. 2019



CHINA: The first phase of suburban Line S1 in Wenzhou opened on January 23. The 34·8 km route runs from Tongling to Olympic Centre, serving 12 stations; three more stations are still to open.

The National Development & Reform Commission approved the line in September 2012, and construction was partly privately financed. Test running started in October 2018.

Most of the line is elevated, with Tongling station at-grade and Olympic Centre station underground. The end-to-end journey time is 50 min.

Services operate with a fleet of 32 four-car Type D electric multiple-units supplied by CRRC Qingdao Sifang under a contract awarded in 2014. The 120 km/h EMUs are 3 300 mm wide with capacity for 1 328 passengers including 192 seated. They are stabled at a depot near Tongling.

An 18·7 km eastern extension is under construction. This would add six stations between Olympic Centre and Shuang'ou Avenue via Wenzhou Longwan International Airport. In the longer term, a third phase will bring Line S1 to 77 km with 28 stations.

A second suburban line is also under construction. Line S2 will eventually be 71·7 km long.

Related news

- [11 Jan 2019 - Shenyang tram network expands](#)
- [04 Jan 2019 - Wuhan extends driverless metro line](#)
- [04 Jan 2019 - Chongqing metro adds two lines](#)

- 03 Jan 2019 - [Guangzhou adds suburban metro lines](#)
 - 03 Jan 2019 - [Beijing metro lines 6 and 8 extended](#)
 - 03 Jan 2019 - [First metro line opens in Jinan](#)
 - 02 Jan 2019 - [Chengdu tramway in service](#)
 - 02 Jan 2019 - [Songjiang tramway opens in Shanghai](#)
 - 28 Dec 2018 - [Xi'an opens second north-south metro line](#)
-
- 27 Dec 2018 - [Qingdao opens coastal metro Line 13](#)
 - 24 Dec 2018 - [Chongqing opens Line 5 extension](#)
 - 05 Apr 2017 - [CRRC rolls out Wenzhou commuter EMU](#)
 - 26 Feb 2014 - [Wenzhou suburban EMU contract awarded](#)

Santiago opens second driverless Metro Line; Chile

23 Jan 2019



CHILE: President Sebastián Piñera officially opened the second driverless line of the Santiago metro with a ceremony at Los Libertadores station on January 22.

Line 3 links Los Libertadores with Fernando Castillo Velasco on a 21.7 km underground alignment with 18 stations. The end-to-end journey time is 30 min and ridership is forecast at 245 000 passengers per day.

Services are operated using a fleet of 22 five-car trainsets supplied CAF under a contract awarded in 2013 that also covered 15 trainsets for Line 6, which opened in 2017. The 120 m long sets have capacity for 1 285 passengers and a maximum speed of 80 km/h.

CAF will maintain the sets for 20 years. Consortium partner **Thales** has supplied **CBTC signalling designed for headways of 90 sec.**

A three-station extension from Los Libertadores to Plaza de Quilicura is due to open in 2022.

| In the longer term, three more lines are at the planning stage.

Related news

- 14 Nov 2018 - [Santiago metro extension electrification contract awarded](#)
- 03 Nov 2017 - [First driverless metro line in Santiago inaugurated](#)

Singapore Cross Island Line Alignment confirmed; Singapore

28 Jan. 2019



SINGAPORE: The Land Transport Authority announced the alignment for Phase 1 of the Cross Island Line on January 25.

To be built in three phases, the Cross Island Line would be the longest fully underground metro line in Singapore. When complete, initial ridership is forecast at 600 000 passengers a day, eventually increasing to 1 million passengers.

The initial 29 km phase would serve 12 stations from Aviation Park in the east to Bright Hill in the west. Interchanges would be provided with the East-West Line at Pasir Ris, the

North East Line at Hougang, the North-South Line at Ang Mo Kio and the Thomson-East Coast Line at Bright Hill.

Construction is expected to commence in 2020 and be completed by 2029. The project includes building a 57 ha depot at Changi East with stabling and maintenance facilities for 80 trains.

The second and third phases are still at the engineering studies stage.

Rail Fare Integration and Ride-sharing at Heart of Lille Transport relaunched; France

23 Jan. 2019



Lille's light rail and VAL Metro Networks link the City with surrounding Towns in the Conurbation including Roubaix and Tourcoing.

FRANCE: Suburban rail fare integration is among the measures being introduced under a comprehensive reorganisation of the public transport network around Lille to be implemented on January 28.

According to the municipality, seven TER suburban rail routes operated by SNCF Mobilités will be integrated into the fare structure already used for metro, bus and light rail services around the city. The fare integration will see the same zonal fares applied and season passes accepted on local trains, which the municipality says will see the cost of many rail

journeys substantially reduced. The measure affects 39 stations and covers 367 daily rail services. This is claimed to be the first such fare integration initiative in France.

Currently branded Transpole, the local transport network will from January 28 be known as Llevia. This rebranding will be accompanied by a number of new initiatives, particularly aimed at improving 'personalised transport options' and better linking the city's VAL metro with other modes.

The Llevia app promises easy booking of demand-responsive shared minibus services running from metro stations to complement existing bus routes, while a ride-sharing service will also be offered. Users will be offered loyalty points for discounted transport access when they use the ride-sharing option, while the operating hours of metro Line 1 are to be extended.

Innsbruck Tram Extension inaugurated; Austria

28 Jan. 2019



AUSTRIA: Trams began serving the Olympisches Dorf area of Innsbruck on January 26, following a ceremonial opening of an extension the previous day.

The 4.3 km branch between Leipziger Platz and Josef-Kerschbaum-Strasse has 12 stops and is operated by routes 2 and 5. It includes a new bridge over the River Inn, and has increased capacity by 40% compared with the bus route that previously served Olympisches Dorf.

The €290m project cost was financed jointly by the city and the *Land* of Tirol. It forms part of the Regionalbahn project to expand the tram network. Further phases include a 1.2 km

branch from Schützenstraße on the new line to Rum, and a 2·2 km extension at the other end of the city from Technik West to Völs. Both of these are scheduled to open in 2021.

First Klang Valley Line 2 Car Bodies arrive in Malaysia; Malaysia

24 Jan. 2019

MALAYSIA: Car bodies for the first two trainsets that will operate Klang Valley Line 2 arrived at Westport in Port Klang on January 23. The bodies have arrived from Hyundai Rotem's Changwon plant in South Korea and will now be transported to a factory in Rasa for final assembly.

In 2016 the HAP consortium won a 1·62bn ringgit contract to supply rolling stock and depot equipment for Line 2, also known as the SSP Line. The consortium comprises South Korean companies Hyundai Rotem and POSCO Engineering, along with local partner Apex Communications. Each of the 58 driverless trainsets will be made up of two motor and two trailer cars.

A groundbreaking ceremony for Line 2 was held on September 15 2017. The first phase, between Sungai Buloh and Kampung Batu, is due to open in July 2021. When the second phase between Kampung Batu and Putrajaya opens a year later, the route will be 52·2 km long with 37 stations.

A joint venture of MMC and Gamuda is lead contractor, and a consortium of Bombardier and Global Rail is supplying signalling and train control.

Related news

- [13 Mar 2017 - Further Klang Valley metro contracts awarded](#)
- [15 Sep 2016 - Klang Valley MRT2 groundbreaking](#)

First Gospel Oak – Barking Services to go electric on January 28; UK

25 Jan. 2019

UK: Some London Overground services on the Gospel Oak – Barking line in north London will be operated using an electric multiple-unit from January 28, Transport for London announced on January 25. Free travel is to be offered at a later date as compensation for the late arrival of the new fleet for the route.

Electrification of the orbital inner-suburban line at 25 kV 50 Hz has been completed, but the launch of electric services has been delayed by problems with the Class 710 EMUs ordered from Bombardier Transportation. These were due to be ready for service last year, but the manufacturer is still carrying out software development and mileage testing before they can be released for driver training.

The leases on the route's current fleet of two-car Bombardier Class 172 DMUs have been extended twice, but operator London Overground is required to relinquish the diesel fleet by mid-March for use in the West Midlands.

As an interim measure, three existing Bombardier Class 378 EMUs used on other London Overground routes are being reduced from five to four cars to enable them to be used temporarily on the Gospel Oak – Barking route. One will be deployed from January 28, with two more following by March. This will ensure the line can remain open, even if the new Class 710s are still unavailable when the Class 172 are transferred. While the frequency of services would have to be reduced, the longer trains mean overall capacity would be the same or slightly increased.

'We are very sorry for the continuing delay to the introduction of the new fleet of electric trains', said Jon Fox, TfL's Director of Rail & Sponsored Services. 'We share our customers' frustration and continue to push Bombardier to do everything they can to allow us to bring the new trains into service as soon as possible. We had expected the new trains to be in service well before now and are doing all we can to minimise impact on our customers who have been waiting for way too long for the trains they have been promised.'

The Mayor of London has 'spoken directly with Bombardier' which has agreed to fund a month of free travel for passengers once the new trains are fully introduced. Details will be announced closer to the time.

Related news

- [27 Dec 2018 - Contractor appointed to build London Overground extension to Barking Riverside](#)
- [20 Jun 2018 - New-generation London Overground train unveiled](#)

Porto Alegre Metro Tetra Network Contract signed; Brazil

28 Jan. 2019



BRAZIL: Teltronic is to supply Tetra communications to Porto Alegre metro operator Trensurb, the Spanish company announced on January 28.

Based on Teltronic's Nebula System, the network will comprise one main and one redundant controller, six base stations, 80 onboard radios, and control centre equipment.

Both voice and data will be transmitted on the network, which will also offer GPS and constant recording.

The Tetra network will replace the legacy analogue communications network in use on the 43.8 km north-south metro line with 22 stations, which operates using a fleet of 40 trainsets.

Related news

- [30 May 2017 - Buenos Aires suburban network gets Tetra radio](#)

MPK Kraków exercises Tramino Option; Poland

29 Jan. 2019



POLAND: MPK Kraków has exercised an option for 15 low-floor trams from a consortium of Stadler Poland and Solaris Bus & Coach. The purchase price is 109.1m złoty excluding VAT.

In January 2018 MPK Kraków signed a framework contract for the supply of up to 50 trams, with the base order covering 35 trams for 314m złoty.

Deliveries of the Tramino Kraków vehicles are due to commence at the start of 2020. The trams will be 33.4 m long and 2 400 mm wide with 80 seats and capacity for 147 standing passengers at 5/m².

- 17 Jan 2018 - [Solaris-Stadler consortium signs Kraków tram contract](#)

Revised cost Estimate for Helsinki – Espoo light Rail Line; Finland

25 Jan. 2019



FINLAND: A revised cost estimate for the planned Raide-Jokeri orbital light rail line that would link Helsinki with Espoo has been announced. If this is approved by the two city governments, construction can begin in June.

The 25 km route is now expected to cost €566m, including €110m for a fleet of 29 trams and €69.5m for the construction of a depot. According to the cities' transport authorities, this is higher than the initial estimate because of increasing land prices.

Helsinki and Espoo councils formally approved the project in November 2018, and opening could take place in mid-2024.

The 25 km route linking Itäkeskus in eastern Helsinki to Keilaniemi in eastern Espoo is intended to replace bus route 550, which currently carries 40 000 passengers a day. Ridership on the light rail line is forecast to be 90 000 passengers a day by 2025, rising to 102 000 by 2040. The project is premised on a forecast increase in the population of Greater Helsinki to 2 million in 2050.

The alignment, including 16 km in Helsinki and 9 km in Espoo, would be mostly segregated from other traffic. Škoda subsidiary Transtech has been selected to supply a fleet of Artic XL trams.

Related news

- 10 Nov 2017 - [Helsinki orbital light rail contractor chosen](#)

€425m Rome Metro Investment Deal signed; Italy

Jan. 29, 2019

Written by [Marco Chiandoni](#)

THE Mayor of Rome, Ms Virginia Raggi, and Italy's minister of infrastructure and transport, Mr Danilo Toninelli, signed an agreement on January 22 to invest €425m in the refurbishment of Rome metro lines A and B, which together total 46km, as well as to upgrade rolling stock.



Danilo Toninelli and Virginia Raggi sign €425m Rome metro investment Deal

Related Posts

[**Metrolink to launch O&M tender**](#)

Jan 29, 2019 | [Commuter Rail](#)

[**Teltronic to upgrade Porto Alegre metro telecoms system**](#)

Jan 29, 2019 | [News](#)

The agreement includes approximately €184m for improvements to stations, the tunnel fire safety system and electricity power supply, and around €5m to upgrade train control systems and passenger information displays. Rolling stock spending will comprise for €134m for 14 new trains, €66m for extraordinary train maintenance, and €36m for the renewal of rolling stock on Line A.

Raggi says the condition of Rome metro's two oldest lines, and particularly Line A, has deteriorated impacting train service reliability. "This is unacceptable," Raggi says. "Problems have been aggravated by years of neglect and the abandonment of maintenance." She says the additional resources will translate into "on-time trains, new tracks, upgrading of electrical systems, tunnels and platforms of the renovated stations."

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 32, February 2019



Last Mile autonomous Commuter Shuttle in Denver, USA

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

French Development Agency to extend 245 Million Euro Loan for Pune Metro Project, India

[29 January, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 29 Jan.,

The Department of Economic Affairs (DEA) and the French Development Agency, AFD on Monday signed a Credit Facility Framework agreement for extending bilateral funding to the tune of 245 million Euros to fund Pune Metro Project. Maharashtra Metro Rail Corporation Ltd (MAHA-METRO) an equal partnership joint venture of GoI and Maharashtra Government is presently executing the Pune Metro Project.

More Information:

- The total estimated cost of the project is Rs. 11,420 crores of which the loan component is Rs.5831.5 crores.
- The loan component is to be funded by European Investment Bank EIB and AFD.
- The current credit facility signed between DEA and AFD France would be to extend bilateral funding to the tune of approx. 245 million Euros to fund the Pune Metro Project.
- Pune Metro is the 2nd Metro project after Nagpur Metro to be financed by AFD under the Indo French partnership for clean, socially inclusive and climate-friendly mobility for people in cities.
- The funds to be received from AFD will be used primarily to fund system packages e.g. OHE, Power supply, Signalling, Telecom and some civil packages.
- The physical progress of the project is in excess of 27 percent.
- The agreements were signed by C.S.Mohapatra, Additional Secretary Department of Economic Affairs, and Clemence Vidal de la Blache, Deputy Director for AFD in India, in the presence of the Ambassador of France to India, H.E. Mr Alexandre Ziegler.
- The signing ceremony was also attended by Joint Secretary, Ministry of Housing and Urban Affairs, Mukund Kumar Sinha, S. Sivamathan, Director Finance, MAHA-METRO, Brijesh Dixit, Managing Director, MAHA-METRO and Ramnath Subramaniam, Executive Director (Strategic Planning), MAHA-METRO.
- Prime Minister Narendra Modi had laid the foundation stone for the phase-3 of the Pune Metro, on December 18 last year.

To know more about recent developments of Pune Metro –

22 Jan, 2018: [MahaMetro set up War Room for monitoring Pune Metro Rail project](#)

19 Dec, 2018: [Foundation stone laid for Mumbai Metro-5, Metro-9 and Pune Metro's 3rd line between Hinjewadi and Shivajinagar](#)

19 Nov, 2018: [Pune Metro Update: Tender invited for EIA & SIA Study for preparation of DPR for Metro Corridor from Civil Court to](#)

Bangalore Metro Update: First 6-Car Metro Train on Green Line flagged off, India

[29 January, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of post: 29 Jan,

Chief Minister HD Kumaraswamy on Monday flagged off the first 6-car Metro Train on the Green Line of the Namma Metro running between Nagasandra in the north and Yelachenahalli in the south of a Bengaluru. On the same day, two more 6-car trains were added to the Purple Line which connects Mysore Road and Byappanahalli.

More Information:

- Before Monday, three existing 6-car trains were running on the Purple Line.
- The 6-car trains have a capacity of 2,000 passengers, while the capacity of 3-car trains is 975 passengers.
- The new 6-car trains, when compared to the existing trains, are energy efficient by 15% and can automatically regulate temperature by sensing the ambient temperature, officials said.
- The new trains will also have remote isolation features for VVVF (Variable Voltage & Variable Frequency) Inverter through Train Management System along with Pendant Control Operation (Hostler mode) to move individual 3 units of 6-car train set on self-power (unique feature) in case of emergency.
- Other features of trains include split screen in LCD panel in continuous advertisement display without disturbing the passenger information, remote downloading of train data for maintenance purpose.
- With these additions of 6-car trains, the BMRCL (Bangalore Metro Rail Corporation Ltd) expects the ridership to increase to 5 lakh from an average ridership of daily average ridership of 4 lakh passengers along its total 42-km network.
- The first coach is reserved for women in 6-car trains.

To know more about recent developments of Bangalore Metro –

06 Dec, 2018: [Upcoming underground stations of Bangalore Metro Rail to have Platform Screen Doors](#)

28 Nov, 2018: [Bangalore Metro Update: BMRCL seeks loan of worth 500 million USD for Airport Metro project](#)

23 Nov, 2018: [Bangalore Metro Update: Karnataka CM Flags Off Third 6-coach Train](#)

Noida-Greater Noida Metro ‘Aqua Line’ open for Public; India

[28 January, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 28 Jan,

Noida: The much-awaited metro line linking the twin-cities of Noida and Greater Noida in Gautam Buddha Nagar was inaugurated on 25.01.2019 by Uttar Pradesh Chief Minister Yogi Adityanath. The metro services opened for the public on next day.



More Information:

- The metro corridor, also known as the Aqua Line, would run between Sector 71 station in Noida and the Depot Station in Greater Noida.
- There are a total of 21 stations on the corridor – 15 of them in Noida and 6 in Greater Noida — spread over a distance of 29.7-km.
- The Chief Minister said, "The Aqua Line, which has been completed in record time, will provide better connectivity to the region and prove to a milestone in development of the region."
- The final and mandatory safety inspection of the corridor was done in December last year by the Commissioner of Metro Rail Safety (CMRS) which gave its approval to the Noida Metro Rail Corporation (NMRC) for launching commercial operations.
- The DMRC (Delhi Metro Rail Corporation), will assist the NMRC over the next one year in operating the Aqua Line.

Metro Trains-

- The Aqua line, which will have 19 rakes with 4 cars each, will halt on the Sector 76, 101, 81, NSEZ, Noida Sector 83, 137, 142, 143, 144, 145, 146, 147, 148, and Greater Noida's Knowledge Park II, Pari Chowk, Alpha 1, Delta 1, GNIDA Office and Depot metro stations.

- The trains are designed to run at a maximum speed of 80 kmph, clocking an average speed of 37.5 kmph.
- Seat reservation through different colours has been done in the coaches for ladies, senior citizens and differently-abled persons.
- According to officials, a dedicated space has been provided for wheelchair in driving trailer cars at both the ends of the trains.



Fare-

- Last year in December, the NMRC had announced fares for the Aqua Line, with the minimum being Rs 9 and the maximum Rs 50.
- Commuters can buy QR-coded paper tickets or use the smart cards to get 10 per cent discount on fares, the officials said.

Security-

- The 49th battalion of the UP PAC has been entrusted with the responsibility of security on the Aqua Line, while some private security personnel will also be deployed.
- The NMRC had said, "The security personnel are being trained by the Central Industrial Security Force (CISF), which guards the Delhi Metro."

To know more about recent developments of Delhi Metro –

24 Jan, 2019: [Noida-Greater Noida Metro line to be inaugurated Tomorrow](#)

18 Jan, 2019: [Chief Minister Yogi Adityanath likely to inaugurate Noida-Greater Noida Metro line on January 25](#)

12 Dec, 2018: [Noida-Greater Noida Metro corridor to open for public on Christmas](#)

MCF floats Rs 150 Crore Tender to buy Technology to produce Coaches for Metro Trains; India

[28 January, 2019](#) [28 January, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 28 Jan,

The Modern Coach Factory (MCF), Rae Bareilly has floated a Rs 150 crore tender to buy technology and expertise to produce railways' first 'Make in India' international standard coaches for metro trains by 2021, according to sources. Sources said, the MCF, last week, floated tender for transfer of technology for design, development, manufacturing, testing and maintenance of aluminium body passenger coaches for metro trains.

More Information:

- The source said, "We want to be part of the market to produce such coaches as we will be able to cater to our own cities which are increasingly expanding their travel options. At the moment these coaches are being largely imported. We can make them at a much cheaper cost."
- "The tender will open on 28 February, 2019 and by 2021 we should be able to come out with the first such coach," said the source.
- While metro coaches for the Kolkata Metro are being manufactured at the Integral Coach Factory (ICF), Chennai, currently, those produced at MCF will be the first which will have international technology and design, thus making them far superior.
- Currently, the coaches procured from other countries cost between Approx. Rs 8-9 crores, while the indigenously made coaches will cost around Rs 7-8 crore, but will come down to around Rs 4-6 crore if ordered in volumes, a senior railways official said.
- The sources said that the coaches at MCF will be manufactured by robots and will be on par with those being manufactured by international manufacturers.
- They will be 40% cheaper than those procured from China and other countries.
- In addition, the coaches will also boast of safety features including communication based signalling, door control and train management systems along with modern surveillance gadgets on board.
- Railways, which has already pitched for standardisation of metro coaches across the country, has also issued a set of parameters for metro corporations to follow when they procure them.
- There are around 22 ongoing and under-construction Metro rail projects in Delhi, Bangalore, Mumbai, Lucknow, Chennai, Nagpur, Pune, Kochi, Ahmedabad, Noida-Greater Noida, Hyderabad, Jaipur, Kolkata and Gurugram among others, according to data available with the Housing and Urban Affairs ministry.

To know more about recent developments of Railways –

19 January, 2019: [‘Make in India’ Boost: Many countries express interest to import ‘Train 18’ set](#)

19 January, 2019: [Railways considering to allow private players for passenger and freight operations](#)

19 January, 2019: [Chairman Railway Board Vinod Kumar Yadav Inspects Tirupati Railway Station](#)

Last Tunnel Boring Machine of DMRC's under Construction Corridors starts Work at Najafgarh; India

25 January, 2019 by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 25 Jan, 2019

The last Tunnel Boring Machine (TBM) of DMRC's current phase of construction started work on 24 January between Najafgarh and Dhansa Stand on the Dwarka – Najafgarh – Dhansa Stand corridor on 24 January .

The TBM will bore a 700 metre long tunnel between Najafgarh and Dhansa Stand on the up line and the same machine will be subsequently used for tunnelling on the down line between the same stations. The entire tunnelling work on both the up and down lines will be completed by September later this year.



The total distance between Najafgarh and Dhansa Stand is 1.2 kilometres. The entire stretch is underground. While 700 metres will be constructed using TBM, the rest will be done by the Cut and Cover technology in which excavation is done for underground construction and then the area is covered again.

This section is an extension of the 4.295 kilometre long Dwarka – Najafgarh Metro corridor. The work for this section was formally awarded in late 2017 and the target date for completion is December, 2020. On the Dwarka – Najafgarh section, over 90 percent of construction work is complete and passenger services are expected to start by September this year.



As part of its third phase of expansion, DMRC has constructed close to 54 kilometres of underground sections, which is more than the under underground corridors constructed in its first and second phases. About 30 TBMs were put into use for carrying out such massive underground tunnelling work. It was a tremendous engineering challenge since Delhi is an extremely crowded city and tunnelling had to be done beneath centuries old buildings and congested localities.

TBMs were introduced for the first time by DMRC during the first phase of Metro construction. In Phase 2 of the Delhi Metro, 14 TBMs were used while the Phase 3, the number of TBMs used was 30.

Delhi Metro currently operates on a network of 327 kilometres with 236 Metro stations. This network includes over a hundred kilometres of underground lines spread across the national capital.

Delhi Metro Update: Passenger Services on Dwarka-Najafgarh Section likely to begin by September; India

[25 January, 2019](#) [30 January, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 25 Jan, 2019

Passenger services on the 4.29-km Dwarka-Najafgarh section of the Delhi Metro are expected to begin by September, officials said. Over 90% of construction work on the stretch has been completed. The work on the Najafgarh-Dhansa Stand section using a Tunnel Boring Machine (TBM) also started on Thursday.

More Information:

- The TBM will bore a 700 m-long tunnel in the 1.2 km-segment.

- The Najafgarh-Dhansa Stand section is an extension of the Dwarka-Najafgarh segment.
- The DMRC said in a statement, "The work for the Dwarka-Najafgarh section was formally awarded in late 2017 and the target date for completion is December 2020. On this section, over 90% of the construction work has been completed and passenger services are expected to start by September."
- The TBM first used on the up line will be subsequently used for tunnelling on the down line between the same stations, a DMRC spokesperson said.
- He said that the entire tunnelling work on both the up and down lines will be completed by September this year.
- The Najafgarh-Dhansa Stand stretch is entirely underground.
- The DMRC said, while 700 m of it will be constructed using the TBM, the rest will be done using 'cut and cover' technology in which excavation is done for underground construction and then the area is covered again.
- As part of its phase-3 of expansion, the DMRC said it has constructed close to 54 km of underground sections, which is more than the span of such sections constructed in its first and second phases.
- The statement said, "About 30 TBMs were put into use for carrying out such massive underground tunnelling work. It was a tremendous engineering challenge since Delhi is an extremely crowded city and tunnelling had to be done beneath centuries-old buildings and congested localities."
- TBMs were introduced for the first time by the DMRC during the phase-1 of metro construction work.
- 14 TBMs were used in Phase-2, while in Phase-3, the number of such machines used was 30, it added.
- Currently, the Delhi Metro operates a network of 327 km with 236 metro stations.
- It said, this network includes over a 100 km of underground lines spread across the national capital.

To know more about recent developments of Delhi Metro –

24 Jan, 2019: [Centre approves Delhi Metro's extension from Dilshad Garden to New Bus Adda in Ghaziabad](#)

14 Jan, 2019: [Delhi Metro to Install Signal Boosters to Improve Mobile Connectivity in Underground Stations](#)

10 Jan, 2019: [Delhi Metro Rail Corporation Finalized Alignment Design for Phase IV Expansion Project](#).

MMRDA to install Solar Panels at Stations of Metro-2A and Metro-7; India

[24 January, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 24 Jan, 2019

Mumbai: The Mumbai Metropolitan Region Development Authority (MMRDA) is planning to install Roof Top solar panels at the stations of the Metro-2A (Dahisar to DN Nagar) and

Metro-7 (Dahisar East to Andheri East) lines. The authority has issued a tender for 7.63 MW of rooftop solar PV projects at the site of Metro line 2A and 7.

More Information:

- The project will be developed under RESCO (Renewable Energy Service Companies) model.
- The brief scope of work includes the supply, design, engineering, manufacturing, storage, civil work, erection of suitable structure, testing and commissioning of the project.
- The successful bidder will also have to provide operations and maintenance (O&M) for 25 years.
- This two metro lines may meet 35% of their total power requirement through solar energy.
- The Additional Metropolitan Commissioner Pravin Darade has issued directions to complete all civil work on the Metro-2A and Metro-7 corridors before monsoon.
- This will facilitate removal of the barricades to ease traffic movement.
- According to MMRDA, 85% of foundation work, 69% of pier construction work and 50% of girder launching has successfully been completed on both the Metro corridors.

To know more about recent developments of Mumbai Metro –

04 Jan, 2018: [MMRC Awards Contract for Automatic Fare Collection \(AFC\) System for Mumbai Metro Line-3](#)

19 Dec, 2018: [Mumbai Metro Update : Kasarvadavali-Gaikmukh Metro-4A route expected to be completed by 2022](#)

18 Dec, 2018: [Second TBM breakthrough for Mumbai Metro-3 corridor at SEEPZ station.](#)

- Jan. 30, 2019
- [News](#), [Passenger](#), [Rapid Transit/Light Rail](#), [Regulatory](#), [Safety/Training](#)

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

January 29, 2019

- [Light Rail](#), [News](#), [Passenger](#), [Rapid Transit](#)

LA Metro launches low-Cost Ride-Share Pilot; USA

Written by [William C. Vantuono](#), [Editor-in-Chief](#)



The Los Angeles County Metropolitan Transportation Authority (Metro) and a private-sector partner have launched a yearlong pilot project to offer shared, on-demand rides serving three Metro rail stations. The ride-hailing service “has been designed for those who have been excluded from using existing services,” Metro said. “A goal of the partnership is to extend the benefits of on-demand services to a wider audience and to make it easier for riders to connect with a growing Metro system.”

Metro’s private-sector partner is **Via**, a 2012 start-up, with U.S. operations in New York City, Chicago and Washington D.C., established to compete with companies like Uber and Lyft. The pilot project allows Metro riders to hail shared rides to or from three stations: Artesia, El Monte and North Hollywood Stations. Riders can summon rides with Via’s smartphone app or by calling Via, which will provide a nearby intersection where riders can meet their rides. Each ride begins or ends at one of the three stations within a defined service area around each station. Via takes multiple passengers heading in the same direction and books them into a shared vehicle.

“This new service will be more affordable than typical ride-hailing services, thanks to Metro subsidizing the cost of each ride,” Metro said. “Riders who are registered with Metro’s low-income fare program, LIFE, can ride for free. Riders who input TAP cards during account creation will ride for \$1.75, and riders without TAP cards can ride for \$3.75.”

Riders can create an account and hail a ride either through Via’s app or by calling Via’s call center. Via will accept payment by credit, debit or pre-paid card. These features allow passengers without smartphones or bank accounts to use the service. The call center has translation services available.

Via’s service will also be fully wheelchair accessible, with special vehicles “able to accommodate those who are non-ambulatory, allowing many to finally use an on-demand, ride-hailing service,” Metro said.

The \$2.5 million pilot is funded in part by a \$1.35 million Federal Transit Administration **“Mobility on Demand (MOD) Sandbox Demonstration Program”** grant. “The shared rides are a key distinction from other ride-hailing services and are in line Metro’s **Vision 2028 Strategic Plan** to reduce single-occupancy car trips,” Mtro noted. “This partnership with Via will also provide Metro with data on how riders use the service. That will help Metro measure the success of this partnership and help [support] future innovations at Metro.”

“Our goal at Metro, as part of our Vision 2028 Strategic Plan, is to provide high-quality mobility options for all riders, regardless of socioeconomic status or disability,” said Metro CEO Phillip A. Washington. “This is an exciting partnership, and we believe this service will offer a truly innovative, affordable and accessible service to L.A. County to better serve Metro riders’ first/last-mile needs.”

“Via’s technology is redefining mobility across the globe, and we are thrilled to partner with LA Metro, an innovation-forward agency, to provide residents with a convenient and affordable transportation alternative,” said Daniel Ramot, CEO and co-founder of Via. “Via’s powerful passenger-matching and vehicle-routing algorithm is the solution to solving first/last mile [problems] and seamlessly connects customers with these three transit hubs in their communities.”

Categories: **Light Rail, News, Passenger, Rapid Transit**

LTA announces Cross Island Line Phase 1 Alignment; Singapore

Jan. 29, 2019

Written by [Kevin Smith](#)

SINGAPORE’s Land Transport Authority (LTA) has released details of the alignment and station locations for the 29km phase 1 of the Cross Island Line (CIL), which is scheduled to open in 2029.



The Cross Island Line first Phase will have 12 Stations

Related Posts

[Beijing New Airport metro train unveiled](#)

Jan 30, 2019 | [Metros](#)

Construction on phase 1 will begin next year. The line will have 12 stations, running from Aviation Park to Bright Hill. CIL will serve residential and industrial areas including Loyang, Tampines, Pasir Ris, Defu, Hougang, Serangoon North, and Ang Mo Kio.

More than 100,000 households are expected to benefit from the line, which will improve the accessibility of locations such as Changi Beach Park and Bishan-Ang Mo Kio Park. It will also significantly reduce journey times for passengers travelling between central, northeastern and eastern parts of the city state.

The CIL will be Singapore's eighth metro line and the longest to run entirely in tunnel. The approximately 50km-long line is expected to serve 600,000 people initially, and increase to more than 1 million in the longer term.

Engineering studies are underway for the remaining two phases of the project and LTA says it will announce details in due course. This includes [two alignment options](#) in the vicinity of the Central Catchment Natural Reserve. The proposal to potentially tunnel beneath the area was criticised when the project was announced in 2013. However, LTA says it is consulting with various stakeholders and will take all views into consideration before making a final decision.

A new 57-hectare at-grade depot at Changi East will provide stabling and maintenance facilities for up to 80 CRL trains.

Beijing New Airport Metro Train unveiled; China

Jan. 30, 2019

Written by [Keith Barrow](#)

THE first train for the express metro link to Beijing's second international airport was unveiled on January 29.



The 41.4 km New Airport Line is, running from an interchange with metro lines 10 and 19 at Caoqiao with Beijing Daxing International Airport North Terminal, serving just one intermediate station at Cigezhuang, which will eventually become an interchange with Line S6. Both Caoqiao and Cigezhuang will have check-in facilities for passengers' baggage.

The Yuan 41bn (\$US 6.1bn) New Airport Line will be China's first 160km/h urban rail line, offering a journey time of just 19 minutes between Caoqiao and Daxing North Terminal.

CRRC Qindao Sifang is supplying a fleet of trains based on its CRH6 main line EMU and equipped for Automatic Train Operation (ATO).

According to the manufacturer, each eight-car type D train can accommodate 1538 passengers (at 9p/m²). The trains feature 3.3m-wide aluminium-alloy bodysells, 2+1 seating in business class, a baggage car for checked-in luggage, at-seat USB chargers, and LED lighting, which adjusts automatically depending on the ambient light conditions.

The trains are also equipped with a fault prediction and health management system to support fleet maintenance.

The line is due to open in September, coinciding with the inauguration of the airport.

In addition to the metro line, the new airport will also be served by the 78.2km [Beijing – Bazhou high-speed line](#).

FIME Enhances Smart Ticketing Services for Transport; France, USA, Canada

28 Jan. 2019 | Railway News

[FIME](#) has strengthened its transport offering to deliver end-to-end support for smart ticketing projects. It is now accredited by Parisian transport authority [Île-de-France](#)

[Mobilités](#) to deliver testing and certification services in accordance with RCTIF 5.0, and [Smart Ticketing Alliance](#) in line with ISO CEN 16794.

Transport players like local and national governments, vendors and ticketing service providers can now work with FIME from the start of their projects to overcome key challenges related to new standards and technology adoption, integration and compliance.



Lionel Grosclaude, CEO at FIME, comments:

“Ticketing services are rapidly digitizing, and travellers are demanding quicker, slicker and more convenient travel experiences”

“To keep up, public transport authorities face unprecedented interoperability, security and compliance challenges. Our full stack of testing and certification services, including EMV®, ISO, RCTIF and NFC Forum, is empowering the transport ecosystem to succeed, whatever their smart ticketing project.”

For more information on how FIME can help to launch mobile ticketing, migrate to open-loop or account-based solutions and upgrade legacy AFC systems, visit the website or visit FIME at Transport Ticketing Global (stand C35) in London, 29-30 January.

** EMV is a registered trademark in the U.S. and other countries, and is an unregistered trademark in other countries, owned by EMVCo.*

About FIME

[FIME](#) is a leader in secure transaction testing, with more than 20 years of experience in managing risk, accelerating time to market and ensuring the quality and security of its customers’ payment and transport products and services.

FIME's global reach combines with expert teams to give customers the tailored consultancy, solution engineering, automated test platforms and certification services they need throughout every stage of digital transformation projects.

Its experts collaborate with the entire ecosystem – from the payment networks and industry bodies, right through to vendors – enabling its customers to understand and overcome their technical and commercial challenges.

Sound Transit completes PTC Implementation Milestone; USA

Written by [Kyra Senese, managing editor](#)



File photo

Earlier this week, Sound Transit announced the agency's completion of Positive Train Control (PTC) implementation and certification on all of its Sounder commuter rail vehicles operating between Lakewood and Everett.

"Safety is our most important priority at Sound Transit," said Peter Rogoff, the public **transit agency's** CEO. "Each and every one of our riders must get home or to work safely every time. Adding Positive Train Control on all our Sounder trains will help us maintain our impeccable track record."

Sound Transit said it implemented PTC in coordination with BNSF, the operator of Sounder service under contract. Officials explained that Sound Transit's PTC equipment is fully interoperable with BNSF's systems.

Sound Transit executed its contract for installing PTC equipment in 2013, in advance of **many freight railroads and passenger rail agencies.**

The public transit agency also completed the related installation work and commissioning last year, well in advance of the federal government's deadline.

Sounder trains from Everett to Seattle began testing PTC in June of 2017, representatives said, while Sounder trains from Tacoma to Seattle began testing the technology in August of 2017.

Currently, the agency's trains serve more than 17,000 passengers each weekday, and officials in the region expect rising congestion to push demand higher, Sound Transit said.

Categories: [News](#), [Passenger](#), [Rapid Transit/Light Rail](#), [Regulatory](#), [Safety/Training](#)
Tags: [commuter rail](#), [Positive Train Control](#), [PTC](#), [Sound Transit](#), [Sounder](#)

Denver's first driverless Commuter last Mile Shuttle begins Operation, USA



By [James Billington](#) on February 1, 2019 [ADAS](#), [Mobility solutions](#)

Commuters in Denver will be offered the chance of an alternative form of transportation to work after the state's first autonomous shuttle was unveiled.

For the next six months, a fully electric, driverless shuttle will be taking passengers on a loop from the 61st and Peña commuter rail station, to the Panasonic and EasyMile offices, and to the 61st and Peña Park-n-Ride lot, via four stops.

The shuttle, developed by French autonomous company EasyMile and operated by Transdev, will run on a predetermined route from Monday to Friday, 10:00am to 6:00pm, making the loop every 15 minutes.

It will be capable of carrying up to 12 passengers at a speed between 12-15mph (19-24km/h) and will operate free of charge. While it will have no driver, there will be an 'ambassador' on board at all times. The purpose of the shuttle trial is to assess the viability of autonomous services in providing first- and **last-mile connections to and from transits**.

“We’re excited to see how driverless technology will work in Denver and to embrace new, innovative and better mobility options to move more people and improve travel for residents and visitors alike,” said Mayor Michael Hancock.

Data collected on usage and operability will be shared between project partners to improve future deployments and bring autonomous services into wider usage.

METRO NEWSLETTERS on URBAN MOBILITY

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METRO Newsletter by Dr. F.A. Wingler
METRO 33, February 2019



Metro Tram in Cuenca; Equador

ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Consultancy Contract awarded for Bogota RegioTram Project; Columbia

Feb. 4, 2019

Written by [Keith Barrow](#)

A Spanish consortium of Ardanuy Ingeniería and FGC has been awarded a contract to provide project consultancy and supervision services for Columbia's 41km RegioTram tram-train line, which will connect Bogota with the municipalities of Mosquera, Madrid, Funza, Sector El Corzo and Facatativá in the department of Cundinamarca.



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Under the 13-month contract, the Ardanuy-led consortium will develop a technical, legal and financial framework for the PPP project, encompassing the construction of infrastructure, maintenance and operation, and the acquisition of rolling stock.

The consortium will also prepare tenders and contractual documents and supervise the promotion of the project to international investors, suppliers, financiers, insurers and other interested parties.

The 17-station line is forecast to carry around 211,000 passengers per day with a journey time of 48 minutes.

Categories: [Central/South America](#)[Light Rail](#)[News](#)

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Metrowagonmash to supply 30 Metro Cars to Baku; Azerbaijan

Feb. 4, 2019

Written by [David Burroughs](#)

TRANSMASHHOLDING subsidiary Metrowagonmash has signed a contract with Baku Metro to supply six five-car metro trains to the capital of Azerbaijan, with delivery by the end of 2019.



Related Posts

The trains, which will have wider doors and full-width gangways, will be formed of two powered driving cars and three powered intermediate cars.

The contract was signed on January 31 by Metrowagonmash general director, Mr Boris Bogatyrev, and Baku Metro chairman, Mr Zaur Guseinov.

The 81-765.B and 81-766.B-type cars are equipped with a new system to alert passengers to the doors opening and closing, as well as HVAC and power outlets. The cars are also designed with advanced noise and heat insulation, while the end cars have areas for

wheelchairs and bicycles. The cars will be painted in a custom livery and fitted with a localised passenger information system.

Metrowagonmash and Baku Metro have a history of cooperation stretching back to 1967. Transmashholding shipped three five-car type 81-765.B/766.B metro trains to Baku in 2015, and [two type 81-765/766 trains in 2018](#).

Categories: [Asia Metros News](#)

Amtrak approves Plan for Metro North to Penn Station; USA

Feb. 4, 2019

Written by [Keith Barrow](#)

THE Board of Amtrak has approved an agreement with New York Metropolitan Transportation Authority (MTA) which will pave the way for the introduction of Metro North commuter rail services to New York Penn station and the extension of Amtrak inter-city services to Long Island.



Artist's impression of a Metro North Train crossing the Hell Gate Bridge.

Amtrak says the agreement will enable MTA to move ahead with the design and construction of enhancements relating the Penn Station Access project, which give passengers on the Metro North New Haven Line direct trains to the Bronx and the west side of Manhattan. Trains will branch off the New Haven Line at New Rochelle, travelling via the eastern Bronx, Queens, and Amtrak's Hell's Gate Line.

Metro North trains will then continue through the existing East River Tunnels, joining Long Island Rail Road Trains heading into the [modernised Penn Station](#). The project includes the construction of four new stations in the eastern Bronx.

The project includes track, signalling and telecommunications upgrades to accommodate commuter rail services. MTA will fund all necessary infrastructure works and has agreed to share the future costs of operation, maintenance and recapitalisation of the line.

Amtrak and MTA will also begin planning for the “eventual operation” of direct Amtrak inter-city services from Penn to stations in Long Island. Amtrak says this will allow “through and connecting service” from Long Island to stations on the Northeast Corridor and beyond.

King opens second Casablanca Tram Line; Morocco

25 Jan. 2019



MOROCCO: King Mohammed VI officially opened Casablanca’s second tram line on January 23, with revenue services starting the following day.

Line T2 runs between Sidi Bernoussi and Aïn Diab. It has a total length of 22·5 km, including 15 km of new alignment and 7·5 km of existing line between Anoual and Aïn Diab which was previously operated as a branch of T1. There are 33 stops, including interchanges with T1 at Abdelmoumen-Anoual and Ibn Tachfine-Mdarka.

Construction began in January 2016 and cost €3·8bn dirhams, including the planting of more than 2 500 trees and the depot at Sidi Bernoussi. Engie Group supplied signalling, communications, CCTV, fire detection and passenger information systems.

The network is operated and maintained by RATP Dev Services under a contract running for 12 years from December 2017. T2 services run every 6 min in the peaks and 9 min off-peak, with an end-to-end journey time of just over an hour. The line’s initial fleet of 32 Alstom Citadis 302 trams operating in semi-permanently coupled pairs is to be gradually increased to a total of 50 trams in 25 pairs.

T1 has also been extended 1·8 km from Facultés to Lissasfa at cost of €504m dirhams, taking it to 23·5 km.

Two further lines are planned to open in 2022. T3 would run 14 km from the Salmia district to the Casa-Port zone, and T4 would run 12 km from Attacharouk to Mers Sultan.

Two bus rapid transit feeder routes are also proposed, with L1 to run 12 km from Salmia to Lissasfa and L2 10 km from Errahma to Boulevard Ghandi.

Related news

- 20 Sep 2017 - [RATP Dev retains Casablanca tram operating contract](#)
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- 13 Oct 2015 - [Casablanca orders 50 more Citadis trams](#)
- 14 Dec 2012 - [Royal opening launches Casablanca trams](#)
- 16 Jul 2012 - [Casablanca tram operating contract awarded](#)
- 15 Nov 2010 - [Casablanca tram contracts awarded](#)
- 17 Nov 2009 - [Casablanca chooses Citadis trams](#)
- 08 Jun 2009 - [Casablanca tram project manager appointed](#)

Driverless 160 kmph Metro Train on Test; China

01 Feb. 2019



CHINA: Rolling stock to be used on the New Airport Line in Beijing has commenced testing. The 160 km/h Type D trainset is reported to be the fastest metro train in China.

CRRC Qingdao Sifang is supplying a fleet of 12 driverless trainsets to operate on the line that will serve Beijing Daxing International Airport, which is due to open to the south of the city in September.

The aluminium-bodied trainsets comprise four motor and four trailer cars, including one car designated as business class. The trains are 180 m long and 3 300 mm wide with capacity for 1 538 passengers. They are equipped with wheelchair spaces and USB sockets, and draw power at 25 kV 50 Hz.

The start of trial operation on the New Airport Line is due to coincide with the opening of the new airport. The 41·4 km route linking the airport's north terminal with Caoqiao station on metro Line 10 would offer a journey time of 19 min. Construction started in November 2014 at a cost of 41bn yuan.

Extensions are planned at both ends: a southern extension to the south terminal and a 3·5 km northern extension to Lize Business District.

In longer term, the airport will be served by metro Line 20, which is currently in the planning phase.

Related news

- 03 Jan 2019 - [Beijing metro lines 6 and 8 extended](#)
- 04 Jan 2018 - [Driverless metro, maglev and tram line open in Beijing](#)
- 09 Aug 2017 - [Beijing maglev carries passengers](#)
- 26 Aug 2016 - [Beijing welcomes first Line 16 train](#)

Cuenca Tramway to open next Month; Ecuador

05 Feb. 2019



ECUADOR: The Cuenca tramway is currently in the final acceptance phase and is scheduled to begin revenue service in the first half of March.

Test running has been underway since 2015, but completion has been delayed by a series of funding and contractual problems. In 2017 the ACTN consortium of Alstom, Compagnie Internationale de Maintenance and the NGE Group joint venture of TSO and NGE

Contracting was selected to complete the civil and fit-out works. TSO was already responsible for the supply and installation of track and maintenance equipment as part of the CITA consortium with CIM, Ineo and Alstom.

Tenerife tramway operator Metrotenerife is providing pre-operation technical assistance, and will provide support for the first three years of commercial operation.

The 10.2 km route from Parque Industrial to Control Sur serving 27 stops features floating slab track in the UNESCO-listed historic city centre as a vibration-protection measure, as well as sections without catenary. Alstom has supplied a fleet of 14 Citadis trams. Ridership is predicted at up to 120 000 passengers a day.

Related news

- [28 Nov 2018 - Metrotenerife supports Cuenca tram project](#)
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- [20 Oct 2015 - Cuenca tram starts dynamic testing](#)

Extra Stuttgart S-Bahn EMUs will support ATO Project; Germany

04 Feb. 2019



Stuttgart is to receive 58 more Class 430 EMUs (Photo: DB/Wolfgang Klee).

GERMANY: The Stuttgart regional government has approved the purchase of 58 four-car Class 430 electric multiple-units and the installation of ETCS Level 2 and automatic train operation on the entire S-Bahn fleet.

Trains from the €421.8m order are to be delivered by 2022. The *Land* of Baden-Württemberg is providing €106m, with the remainder coming from the region and operator DB Regio; the latter is covering the cost of two trains.

The rolling stock forms part of a capacity enhancement project that also includes the installation of ETCS Level 2 and digital interlockings for GoA2 automatic operation. DB Regio will equip the entire S-Bahn fleet of 215 EMUs with ETCS onboard equipment.

ATO over ETCS Level 2 is not currently in operation in Germany, and the pilot is being conducted as part of the nationwide Digitale Schiene Deutschland project. It is expected to become operational on regular services in 2025.

The capacity enhancements are being carried out in response to an expected growth in passenger numbers across the S-Bahn network. Major civil works such as building a second cross-city route or installing extra platforms at existing stations are not realistic, according to the regional government, so improvements must focus on implementing new technology on existing infrastructure.

ATO would enable shorter headways and faster speeds; together with extra rolling stock, these could increase capacity on the network by up to 20%.

Once the 58 extra EMUs are in service, all peak services would be formed of eight-car sets. There would be four more trains in the peak hour between Schwabstraße and Vaihingen, with two of these continuing to Böblingen; Line S6 services between Weil der Stadt and Feuerbach would gain an extra two trains/h. Services between Plochingen and Kirchheim/Teck and Nürtingen, and between Vaihingen and Neuhausen would become more frequent, running every 15 min.

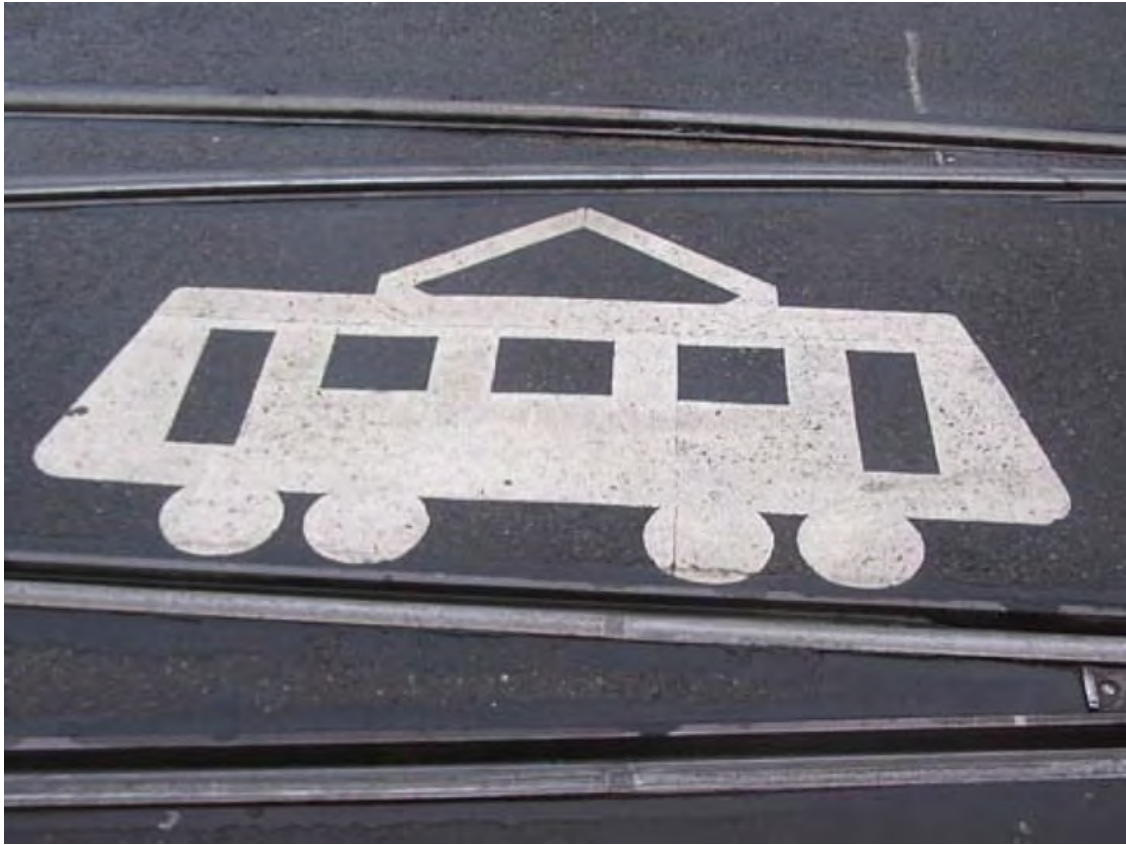
Because of the extensive work needed for the pilot project, the region has agreed to extend DB Regio's operating contract for four years until June 2032, by when it would cover 1 million train-km a year. The operating contract that would take effect after that is now to be awarded in 2028.

Related news

- 12 Jul 2018 - [Digital S-Bahn Hamburg automation agreement signed](#)
- 18 Dec 2017 - [Light rail tunnel opens in Stuttgart](#)
- 28 Sep 2017 - [Stuttgart to order more light rail and rack railway vehicles](#)
- 10 May 2017 - [ATO goes live on Paris RER Line A](#)
- 16 May 2016 - [Light rail extension opens in Stuttgart](#)
- 10 Feb 2016 - [Siemens CBTC for Paris RER Line E](#)

Sanya Tram Line opens to Passengers; China

04 Feb. 2019



CHINA: The initial phase of the first tram line in Sanya on Hainan Island opened for revenue service on January 1.

Services are operating on the northern section of the line from Sanya Railway Station to Jiefang Lu, serving six stops. When complete, the line will be 8.4 km long, serving 15 stops between the railway station and Jiangang Lu.

Construction started in July 2016 and cost 1.4bn yuan. CRRC Changchun has supplied a fleet of trams capable of catenary-free operation. The vehicles have a maximum speed of 70 km/h but are limited to 50 km/h in the urban area. The five-section trams have a capacity of 362 passengers including 60 seated.

A network of four tram lines is planned for Sanya, which would total 60 route-km.

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- [24 Jan 2019 - First suburban line opens in Wenzhou](#)
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- [03 Jan 2019 - Beijing metro lines 6 and 8 extended](#)
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- [02 Jan 2019 - Songjiang tramway opens in Shanghai](#)
- [28 Dec 2018 - Xi'an opens second north-south metro line](#)
- [27 Dec 2018 - Qingdao opens coastal metro Line 13](#)
- [24 Dec 2018 - Chongqing opens Line 5 extension](#)

First suburban Line opens in Wenzhou; China

24 Jan. 2019



CHINA: The first phase of suburban Line S1 in Wenzhou opened on January 23. The 34·8 km route runs from Tongling to Olympic Centre, serving 12 stations; three more stations are still to open.

The National Development & Reform Commission approved the line in September 2012, and construction was partly privately financed. Test running started in October 2018.

Most of the line is elevated, with Tongling station at-grade and Olympic Centre station underground. The end-to-end journey time is 50 min.

Services operate with a fleet of 32 four-car Type D electric multiple-units supplied by CRRC Qingdao Sifang under a contract awarded in 2014. The 120 km/h EMUs are 3 300 mm wide with capacity for 1 328 passengers including 192 seated. They are stabled at a depot near Tongling.

An 18·7 km eastern extension is under construction. This would add six stations between Olympic Centre and Shuang'ou Avenue via Wenzhou Longwan International Airport. In the longer term, a third phase will bring Line S1 to 77 km with 28 stations.

A second suburban line is also under construction. Line S2 will eventually be 71·7 km long.

Related news

- 04 Feb 2019 - [Sanya tram line opens to passengers](#)
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- 27 Dec 2018 - [Qingdao opens coastal metro Line 13](#)
- 24 Dec 2018 - [Chongqing opens Line 5 extension](#)
- 05 Apr 2017 - [CRRC rolls out Wenzhou commuter EMU](#)
- 26 Feb 2014 - [Wenzhou suburban EMU contract awarded](#)

Liège Tram Loan agreed; Belgium

04 Feb. 2019



BELGIUM: The Tram'Ardent consortium, which is developing the Liège tram project, signed a €200m loan agreement with the European Investment Bank on January 31.

The 30-year loan covers just under half of the total project cost and is guaranteed under the European Fund for Strategic Investments.

'I am pleased to announce that the EIB has mobilised the resources of the Juncker Plan for the financing of this project', said EIB Director General Jean-Christophe Laloux at the signing ceremony in Namur. 'This co-operation between the European Commission and the EU bank will help to improve the lives of the people of Liège.'

Last year Opérateur de Transport en Wallonie selected Tram'Ardent as preferred bidder to design, build, finance and maintain the project under a 30-year PPP concession. The consortium comprises Colas Projects, Colas Belgium, Colas Rail and Colas Nord-Est plus CAF and the EIB-backed DIF Infrastructure II fund.

Construction of the 11.7 km line with 21 stops is due to begin in May, with testing expected to start in August 2022 ahead of entry into passenger service in October that year. CAF is supplying 20 trams that are to run without overhead catenary on part of the route. All 20 are due to be delivered by April 2022.

Services are planned to operate every 4½ min in the peaks and every 7½ min off-peak. The design capacity is 4 000 passengers/h per direction.

'This project, which promotes clean urban mobility, contributes directly to our EU "net zero emissions by 2050" target and I hope that it will inspire other European cities', said EU Transport Commissioner Violeta Bulc.

Related news

- 24 Sep 2018 - [Replacement Liège tram PPP concession awarded](#)

Metrowagonmash signs Baku Metro Train Contract; Azerbaijan

04 Feb. 2019



AZERBAIJAN: Baku Metroliten has signed a contract with Transmashholding subsidiary Metrowagonmash for the supply of six five-car metro trainsets, the manufacturer announced on January 31.

The first train is scheduled to be delivered in the second quarter of the year, with all six due to arrive in Baku by the end of December.

The 81-765.B/766.B sets will consist of two motor cars and three intermediate trailers. The motor cars will have spaces for wheelchairs and bicycles, and the trains will also be equipped with air-conditioning and power sockets.

Metrowagonmash had previously delivered three five-car metro trains to Baku in 2015, followed by two more in 2018.

Related news

- 23 Mar 2018 - [Baku takes delivery of Moskva metro train](#)
- 19 Feb 2018 - [Metrowagonmash metro trains ordered for Baku](#)
- 19 Apr 2016 - [Baku inaugurates third metro line](#)
- 21 Apr 2015 - [Metro cars arrive in Baku](#)

Electric double-Decker Buses enter Service in Xi'an; China

05 Feb. 2019



CHINA: Xi'an put into service 100 electric double-decker buses supplied by BYD on January 30, ahead of the Chinese New Year festival.

The K8S vehicles have entered service on routes 284, 608 and 609. A further 100 are due to enter service on routes 19, 25 and 603 at a later date.

The lower deck is 1.9 m high, and features a wheelchair area and entrance ramps. The upper deck is 1.7 m high. The buses are equipped with BYD batteries.

The order for 200 buses follows previous deliveries from the same manufacturer. In 2016 Xi'an put 1 100 BYD electric buses into service, followed by a further 1 900 in 2018. BYD has also supplied the K8S model to Shenzhen, Guilin, Huai'an, Jingdezhen and Pingtan.

Related news

- 28 Dec 2018 - [Xi'an opens second north-south metro line](#)
- 22 Nov 2018 - [London bus depot goes electric](#)
- 25 Oct 2018 - [Singapore orders 60 electric buses](#)

Singapore orders 60 electric Buses; Singapore

25 Oct. 2018



SINGAPORE: Land Transport Authority has awarded three contracts for the supply of battery electric buses, it announced on October 24.

BYD and ST Engineering Land Systems are each to supply 20 single-deck buses under contracts worth S\$17m and S\$15m, respectively. A consortium of Yutong and NARI is to supply 10 single-deck and 10 double-deck buses for S\$18m.

All 60 buses will be equipped with an audio-visual passenger information system. Deliveries are due to begin next year, for entry into service in 2020.

Related news

- 05 Feb 2019 - [Electric double-decker buses enter service in Xi'an](#)

- 24 Oct 2018 - [Air taxi trials to take place in Singapore](#)
- 31 Aug 2018 - [Consultation starts on Singapore transport master plan](#)
- 26 Jul 2018 - [Bombardier to supply 396 metro cars to Singapore](#)
- 30 Apr 2018 - [Alstom to supply more metro trains to Singapore](#)
- 16 Apr 2018 - [NTU Singapore to test GRT autonomous vehicles](#)
- 07 Mar 2018 - [Bombardier wins Bukit Panjang upgrade contract](#)

Air Taxi Trials to take place in Singapore; Singapore

24 Oct. 2018



SINGAPORE: Aerial vehicle developer Volocopter is to test its 'multicopter' taxis in Singapore next year.

A series of tests in the second half of 2019 would validate and verify the ability of the company's eVTOL vehicles to operate in the city's urban environment. The tests would include passenger-carrying flights.

Volocopter will work with the Civil Aviation Authority of Singapore to establish the scope of the trials and ensure that the necessary requirements are met. Volocopter would also establish a product design and engineering team in Singapore.

The electric eVTOL, which flies using technology based on drones, can take off and land vertically. It has capacity for two passengers and a range of just under 30 km.

‘There is potential for air taxis, or eVTOLs, to transform mobility and logistics in urban cities’, said Ho Yuen Sang, Director, Aviation Industry, at Civil Aviation Authority of Singapore.

Related news

- [25 Oct 2018 - Singapore orders 60 electric buses](#)
- [02 Mar 2017 - Singapore seeks drone inspection partners](#)

NTU Singapore to test GRT autonomous last Mile Vehicles; Singapore

16 Apr. 2018



SINGAPORE: Dutch autonomous vehicle technology company 2getthere has signed a memorandum of understanding to deploy its Group Rapid Transit autonomous vehicles at the Nanyang Technological University campus in partnership with SMRT Services.

The bidirectional GRT vehicles use ‘magnetic pellets’ on the road for navigation and have a maximum speed of 40 km/h. A 6 m long and 2 100 mm wide vehicle weighs 3 500 kg and can carry eight seated and 16 standing passengers.

Preliminary GRT tests have been undertaken on a 350 m route between two NTU halls of residence since November last year. More widespread testing on the campus is now expected to begin in the last quarter of this year, with the vehicles connecting halls of residence with the main academic areas. Initial ridership is expected to be 200 to 300 passengers per day.

It is envisaged that the trial would gradually be expanded campus-wide, operating alongside other autonomous vehicles that have been on test since 2012.

The collaboration agreement includes research to improve autonomous vehicle technologies by making more use of use of artificial intelligence, developing sensors and algorithms and improving fleet management.

The trials form part of a mobility-as-a-service collaboration between NTU, SMRT and government industrial agency JTC which got underway in September. Multiple modes of transport on NTU's campus and the CleanTech Park area, including shuttle buses, bicycle sharing, electric scooters and autonomous GRT, can be accessed using a single app called Jalan-jalan ('going for a walk') which was developed by MobilityX.

'NTU has ample experience with autonomous vehicles and knows exactly what it wants and what it doesn't want, in terms of availability, reliability, quality, safety and AV features such as comfort and user experience', said Sjoerd van der Zwaan, Chief Technology Officer of 2gettherem when the MoU was announced on April 16. 'In combination with SMRT's operations expertise, all key ingredients are present to ensure a successful implementation of our AVs at NTU.'

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- 22 Nov 2018 - [Autonomous bus trial planned for Edinburgh](#)
- 16 Nov 2018 - [Autonomous vehicle research centre to be set up in Singapore](#)
- 25 Oct 2018 - [Singapore orders 60 electric buses](#)
- 03 Sep 2018 - [Autonomous tram to be demonstrated during InnoTrans](#)
- 20 Apr 2018 - [Brussels Airport to test self-driving bus in mixed traffic](#)
- 29 Mar 2018 - [Driverless shuttle enters passenger service in mixed traffic](#)
- 16 Jan 2018 - [Driverless buses to be tested in Singapore](#)
- 09 Oct 2017 - [Navya plans US production of autonomous shuttles](#)
- 05 Jul 2017 - [Driverless shuttles on test in La Défense](#)
- 08 Jun 2017 - [Automated mobility-on-demand to be trialled in France](#)
- 05 Apr 2017 - [Driverless shuttle on test in London](#)
- 30 Mar 2017 - [Arlington to trial driverless shuttles](#)

UBER to offer public Transport Options in Denver; USA

01 Feb. 2019



USA: Uber is to offer public transport options in its app to users in Denver. The partnership with Regional Transportation District announced on January 31 will also offer the ability for Uber app users to purchase mobile tickets through the app.

Talking about Uber's first in-app integration with public transport, Head of Transit David Reich said that 'Uber shares many of the same goals' as the cities in which it operates. These include 'reducing individual car ownership, expanding transportation access with more options and working with transit agencies to innovate'.

'Our customers want their trips to be as seamless as possible, and a collaboration like this one allows them to plan for travel from end to end, including additional first mile and last mile options', said RTD CEO Dave Genova. He noted that the partnership 'enables the transit agency to best meet the needs, demands and expectations of a growing population, at a time when the industry is in a state of change'.

The 'transit' section of the Uber app includes real-time information. The mobile ticketing capability will be provided by Masabi's Justride software.

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- 18 Jul 2018 - [Nice transport operator partners with Uber](#)
- 12 Apr 2018 - [Uber app to offer public transport tickets](#)
- 15 Mar 2018 - [Uber opens up its London data](#)
- 04 Dec 2017 - [Uber and Citymapper become UITP members](#)

ITSO on Mobile launched; UK

05 Feb. 2019



UK: ITSO on mobile has gone live for public use on the West Midlands Metro tram line, bringing the UK's transport smart card standard to mobile devices using Google Pay for the first time.

Android smartphone users can now use Google Pay to buy tickets on the Swift on Mobile app without needing a separate Swift smart card. Tickets are inspected by tapping the phone on a tram conductor's ticket machine.

Deployment has been managed by the Transport for West Midlands authority, working with Google Pay and the ITSO Transit Hub delivery arm of standards organisation ITSO.

Swift on Mobile is to be expanded to bus and heavy rail operators, and an Apple version is also envisaged. 'Working with Google is great, they understand customers', ITSO's Business Development Manager Nigel Cullum told *Metro Report International*.

Further ITSO on Mobile deployments are planned, although at the moment deployment in the large London market is held back by the limitations of ticket gates equipped for Transport for London's proprietary Oyster system.

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- 21 Nov 2018 - [Mobile ITSO-compatible ticketing on test in Birmingham](#)
- 19 May 2017 - [Samsung Pay accepted for pay-as-you-go travel in London](#)
- 05 May 2017 - [Mobile ticketing technology framework published](#)
- 18 May 2016 - [Android Pay for pay-as-you-go travel in London](#)

Pesa to supply more Trams to Sofia; Bulgaria

30 Jan. 2019



BULGARIA: Sofia tram operator Stolichen Elektrotransport EAD signed a €22.8m contract with Pesa for the supply of 13 low-floor trams on January 29.

Deliveries are due to be completed by the end of the year, and the vehicles will operate on Route 5 serving the southwest of the city. The contract includes spare parts, diagnostic equipment and driver training.

The 1 009 mm gauge trams from Pesa's Swing family will be 30 m long and 2 300 mm wide with capacity for 201 passengers including 40 seated. They will have an entrance height of 330 mm and be equipped with retractable platforms for gap-free boarding. The air-conditioned trams will be powered with four 105 kW asynchronous traction motors.

The Polish supplier previously supplied 25 Swing trams to Sofia: 20 were ordered in 2013 for €50m, and a further five were ordered in 2016.

Pesa had also bid in the previous tram tender, but Škoda Transportation won the contract in 2017 and is supplying 13 For City Classic trams.

Related news

- 16 Oct 2017 - [Škoda to supply trams to Sofia](#)
- 30 Sep 2015 - [Sofia orders Inspiro metro trainsets](#)
- 26 Mar 2013 - [Sofia to get Pesa trams](#)

All the Network's a Stage with Ticketing App; Netherlands

05 Feb. 2019



NETHERLANDS: Adding the ability to buy theatre and event tickets along with paying for travel is envisaged now that Rotterdam public transport operator RET has deployed an app-based mobile ticketing, payment and validation system developed by ByteToken, Bytemark and Thales Nederland.

Thales has rolled out ticket gate hardware and software upgrades to support the smartphone app, which uses Bytemark's visually-validated ticketing and the Dutch 2D barcode ticketing standard.

The app is designed to encourage transport use by minimising the number of 'touch points' where passengers need to interact with transport operators and the ticketing system.

'The greatly improved convenience that mobile ticketing offers can play a major role in making public transport the preferred choice for more commuters, increasing ridership and taking more cars off the road', according to Bytemark CEO Marcus Welz.

Related news

- 30 Jan 2018 - [Indra wins Amsterdam ticketing contract](#)
- 27 Oct 2017 - [Multimodal journey planning and ticketing app launched in Utrecht](#)
- 18 Jul 2016 - [OV-chipkaart to be converted from smart card to ID-based system](#)
- 12 Jul 2016 - [Rotterdam and Den Haag operating contracts renewed](#)

Houston orders 14 Siemens LRVs; USA

Feb. 5, 2019

Written by [Keith Barrow](#)

METROPOLITAN Transit Authority of Harrison County (Metro) has awarded Siemens a contract to supply 14 S70 LRVs for the Houston MetroRail light rail network.



Wikipedia/Tim Adams CC by SA 3.0

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The order will take the total number of S70s in service in Houston to 51. Siemens supplied an initial batch of 18 series H1 vehicles in 2003 and this was followed by a further tranche of 19 series H2 LRVs in 2012.

MetroRail also operates 30 series H3 vehicles supplied by CAF USA in 2015.

Siemens says the latest batch of S70s will feature an improved design with a centralised low-floor offering full low-floor access between all doors along the length of the vehicle.

Houston was the first city to opt for the S70, which entered service with the opening of the first phase of the MetroRail network in 2004. Siemens has since supplied more than 600 S70s to 11 US cities.

Categories: [Fleet](#)[Light Rail](#)[News](#)[North America](#)[Rolling stock](#)

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China: CRRC Subsidiary Tests New Maglev Generation; China

30 Jan. 2019 | Railway News

- [Rolling Stock](#)

Electric locomotive manufacturer CRRC Zhuzhou, a subsidiary of CRRC, tested a new generation of maglev trains with an operating speed of 160km/h last week. This is a speed increase of around sixty percent the model currently in service in Changsha, the capital of Hunan province.



Interior of CRRC's Maglev in Changsha © Baycrest under Licence

New Maglev Improvements

The traction efficiency of this new maglev model is 30 percent higher. It can also transport six more tons compared to the older generation. The previous generation is capable of transporting up to 500 passengers over three cars.

The maglev in Changsha, which began operating in May 2016, is China's first medium/low-speed maglev. CRRC says that this new model will lay the technical foundation for medium-speed maglevs in China. In addition, the company is working on an even more advanced maglev featuring a maximum speed of 200 kmph.

METRO NEWSLETTERS

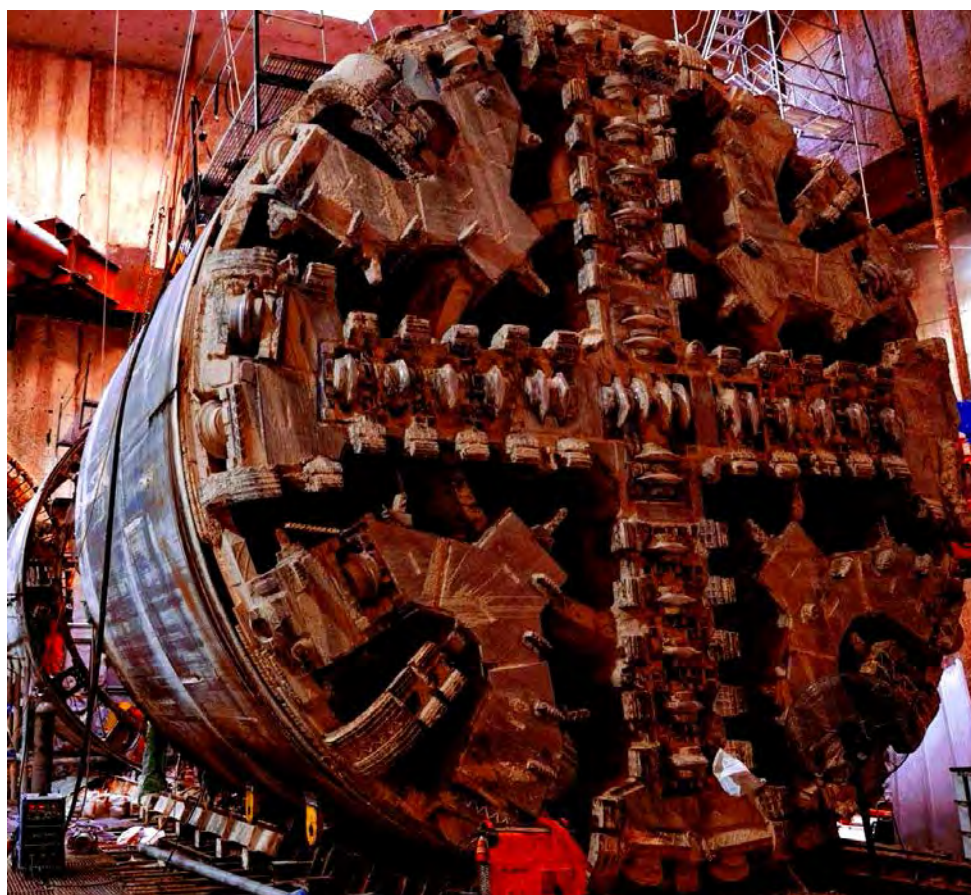
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METRO Newsletter by Dr. F.A. Wingler
METRO 34, February 2019



Bore Head of Bore-Machine for Underground Metro

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

|| News | transit



Delhi Metro opens Pink Line extension

DELHI Metro Rail Corporation opened the final major section of the automated Pink Line on December 31, a 9.7km stretch from Lajpat Nagar to Mayur Vihar Pocket 1.

The new section takes the total length of the line to

57.2km following the opening of the 17.8km eastern section on October 31, the 8.1km Durgabai Deshmukh South Campus - Lajpat Nagar section in August 2018, and the 21.6km Durgabai Deshmukh South Campus - Lajpat Nagar stretch in March 2018.

A final 1.4km section between Mayur Vihar Pocket 1 and Trilokpur Sanjay Lake, which has been held up due to land acquisition issues, will open later this year. This will complete the Pink Line loop with the line following the route of Delhi's inner ring road.

\$US 1bn Fort Worth Tex Rail project inaugurated

DIRECT passenger rail services began operating between Dallas/Fort Worth International Airport, Grapevine and central Fort Worth on January 10 with the inauguration of the 43.5km Tex Rail line.

Tex Rail begins at DFW

Airport Terminal B and serves seven intermediate stations before terminating at an interchange with the Dallas - Fort Worth Trinity Rail Express commuter rail line at T&P station in Fort Worth.

Trinity Metro is initially operating an hourly service

seven days a week with a journey time of 52 minutes.

Construction began in August 2016 and the \$US 996m project was funded with the aid of a \$US 44.9m Full Funding Grant Agreement from the Federal Transit Administration (FTA).

Bengaluru suburban project approved

THE cabinet of the Indian state of Karnataka has approved a feasibility study for a 161km suburban rail network in the state capital Bengaluru.

Karnataka and the Indian government will each meet 20% of the Rs 320.9bn (\$US 3.3bn) project cost, with an external loan financing the remaining 60%.

Largely utilising existing alignments, the four-line network will serve 81 stations, with extra platforms and track doubling or quadrupling to provide additional capacity.

The four corridors include:

- Kengeri - Bengaluru Cantonment - Whitefield (35.5km)
- Bengaluru City - Yelahanka - Rajankunti (23.9km including 9.5km elevated)
- Nelamangala - Mathikere - Baiyyappanahalli (39.9km including 18km elevated), and
- Heelalige - Yelahanka - Devanahalli (61.4km including 14.6km elevated).

The network is due to be completed by 2025.

The state cabinet has also approved a revised alignment for the Bengaluru metro line from Nagawara to Kempegowda International Airport, which will now run via Hebbal and Jakkur. The change will increase the length of the line from 30 to 39km

Construction underway on first 83.1km GTX line in Seoul

KOREA's minister of land transport and tourism, Mr Kim Hyun-mi, officially launched construction of Line A of the planned three-line GTX high-speed regional rail network at a ceremony at Kintex in Seoul on December 27.

Line A will be 83.1km long and the 43.6km northern section will run from Unjeong northwest of Seoul via Kintex, Yeonsinnae and Seoul Station to Samseong. A 6km section is already under construction by Korea Rail Network Authority from Samseong to Suseo where it connects with the existing high-speed line serving Seongnam, Yongin and Dongtan, which will also be used by GTX services.

A consortium led by Shinhan Bank, and including high-speed operator Supreme Railways, was selected in April as preferred bidder to build the Won 3.64 trillion (\$US 3.25bn) northern section. Line A will open in 2023.

Two more GTX lines are planned: Line B from Songdo to Cheongnyangni, and Line C from Uijeongbu to Geumjeong



Hyundai Rotem nets Cairo metro contract

EGYPT's National Authority for Tunnels has awarded Hyundai Rotem a Won 150.8bn (\$US 130m) contract to supply 48 metro trains for Cairo Line 2.

Delivery is scheduled to be completed by 2021 while maintenance will be provided

until 2031. The 80km/h air-conditioned trains will use a 750V dc third rail power supply.

The Korean manufacturer has supplied rolling stock for Line 1 and also won a contract in 2017 to deliver 256 cars for Line 3 by 2025.



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PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

VHB lands Contract for environmental Review of proposed Brooklyn Queens Connector; USA

Written by [Paul Conley, Editor-in-Chief](#)



A proposal to build the Brooklyn Queens Connector, a streetcar line linking the New York City boroughs of Brooklyn and Queens, took a step toward reality today as the city's Economic Development Corporation approved a key contract.

VHB Engineering, Surveying, Landscape Architecture and Geology, P.C., an architecture, engineering, and environmental consulting firm, won a contract of up to \$7.2 million to conduct an environmental review that is required before construction can begin.

The Brooklyn Queens Connector, or BQX, would run for 11 miles along the East River waterfront, an area of the city that is underserved by other forms of public transit. The route, which has been revised since the original 2016 study, will link Astoria in the north with Gowanus in the south via Queensbridge, Long Island City, Greenpoint, Williamsburg, Brooklyn Heights and Red Hook. An LRV facility would need to be constructed with capacity for 40 vehicles. **An overhead catenary with a 750V DC supply will be installed along the entire route.**

"The BQX will link long-disconnected neighborhoods and shorten commutes for over half a million New Yorkers who live and work along the Brooklyn and Queens waterfront. It is a

21st century solution to our city's transit challenges and we're excited to move the project forward," a spokesperson for the Economic Development Corporation said in a written statement.

Plans for the BQX were announced long before Amazon announced it would build its second headquarters in Long Island City, one of the neighborhoods that the streetcar would serve. Even prior to that news, the city estimated some 50,000 riders would use the line daily.

Under the terms of the contract, VHB will "prepare a comprehensive compliant environmental review" as well as helping to prepare and file applications required under the city's Uniform Land Use Review Procedure (ULURP) rules. An environmental review that adheres to standards set by the federal National Environmental Policy Act would preserve the city's ability to use federal funds for the construction of BQX and ensure that work meets permitting standards set by the United States Army Corps of Engineers or U.S. Coast Guard related to construction in navigable waters.

Construction of the Brooklyn Queens Connector is expected to begin in early 2024 with the line opening in mid-2029.

Adam Giambrone, the former Toronto Transit Commission chairman whom New York City Mayor Bill de Blasio had hired to develop the BQX, **quit late last year to accept a job in Saudi Arabia.**

Categories: [Ballast, Ties, Rail](#), [Passenger](#), [Rapid Transit/Light Rail](#)

Tags: [Brooklyn Queens Connector](#), [Uniform Land Use Review Procedure \(ULURP\)](#), [VHB](#)

Seven Chinese cities open urban rail lines

CHINA marked the end of 2018 with a flurry of urban rail project openings in cities across the country.

In Beijing, metro Line 6 was extended by 10.6km from Haidian Wuluju to Jin'anqiao on December 30. The city also opened the southern section of Line 8 which runs 16.4km with 13 stations from Zhuzhikou to Yingahi, and a 1.5km extension of the northern section south from Nanluoguxiang to National Art Museum.

Shanghai's Line 5 was extended by 16.1km and eight stations from Dongchuan Road south to Fengxian Xincheng, while Line 13 was extended by 16.3km and 12 stations from Shibo Avenue to Zhangjiang Road.

The 13.9km Songjiang Tramway (pictured) opened on December 26 with the start of operation on the section of Line T2 from Canghua Road to Zhongchen Road. The 13.9km line serves 20 stations, including an interchange with Shanghai metro Line 9 at Songjiang University Town. Trams are initially operating at 10-15 minutes headways.

Guangzhou opened a 5.5km eastern extension of the

Guangfo Line, which includes three stations, on December 28. The city also opened a 53.9km extension of Line 14 and the first 25.2km section of Line 21.

Chongqing opened two new metro lines on December 28. Trial operation of the 34.3km northern section of the 51km Loop Line, which connects Chongqing Library with Haixialu via North Railway Station, are underway, while Line 4 runs from North Station to Tangjiatuo with nine stations. In addition, the city extended Line 5 by 2.5km from Dalongshan to Dashiba on December 24.

Chengdu opened the 13.5km light rail Line T2, while two separate extensions of metro Line 3 also entered service.

Xi'an celebrated the opening of Line 4, which runs for 35.2km from Xi'an North Railway Station to Hangtian Xincheng, with 27 intermediate stations, on December 26.

Qingdao opened the 66.8km-long suburban Line 13, which has 21 stations, on December 26. Finally, in Wuhan, the city extended Line 7 by 17km and seven stations from Yezhi Lake south to Qinglongshan Ditiexiaozhen on December 28.



Milan metro extension secures funding

THE Italian government has agreed to contribute €900m towards the cost of building an extension to Line 5 of the Milan metro, while Lombardy region will provide the remaining €350m.

The national government will fund its share in tranches starting with €15m this year,

€10m in 2020, €25m in 2021 with further amounts allocated in the following years up to 2027.

The project will double the length of Line M5 by adding a 12.8km northern extension from Bignami to Monza FS station. There will be four stations in Cinisello Balsamo and seven in Monza.

In brief

Ahmedabad

The first of 32 three-car trains, which Hyundai Rotem is building for the new two-line Ahmedabad metro, arrived in the Indian port of Mundra on December 29. The second train should arrive in late March or early April.

Boston

Massachusetts Bay Transportation Authority (MBTA) introduced the first of 24 LRVs into passenger service on the 36.4km Green Line in Boston on December 21. CAF is supplying the vehicles under a \$US 118m contract.

Cairo

Egypt's transport minister Mr Hisham Arafat announced on January 16 that China's Exim Bank has agreed to provide a \$US 1.2bn loan to finance an interurban light rail line linking Cairo with 10th of Ramadan City.

Hohhot

The first train for the inaugural metro line in the Inner Mongolian capital was officially presented to local government and transit officials at a ceremony at the CRRC Changke Railway Vehicles plant on January 13.

Hong Kong

MTR received the first two of 40 LRVs on order from CRRC Nanjing Puzhen at its Tuen Mun depot on December 28. The new LRVs will serve the 36.2km Tuen Mun - Yuen Long network in the northwest of Hong Kong.

London

Transport for London (TfL) has selected a joint venture of Morgan Sindall and VolkerFitzpatrick to construct a 4.5km extension of the London Overground Gospel Oak - Barking line to a new station at Barking Riverside.

Manila

The Philippines Department of Transport has selected a joint venture of Sumitomo Corporation and Mitsubishi Heavy Industries (MHI) for a maintenance and rehabilitation project on Manila metro Line MRT-3.

Nairobi

Kenya Railways Corporation (KRC) confirmed in a tweet on January 10 that it will place an order this year for 11 new metre-gauge DMUs as part of the rehabilitation of the Nairobi Commuter Rail (NCR) network.

Nuremberg

Nuremberg Transport (VAG) has issued a call for tender for 12 LRVs with options for up to 75 more vehicles. The closing date for bids was January 28. The LRVs must have a low-floor area occupying at least 70% of the floor area.

Paris

Paris Transport Authority (RATP) has awarded CAF a €121.3m contract to refurbish its fleet of 43 five-car M12N Altéo (class Z 1500) double-deck EMUs. The dual-voltage (1.5kV dc/25kV 50Hz ac) trains were built by GEC Alsthom and ANF between 1995 and 2005 and are employed on the east-west RER Line A.

Silicon Valley

California's Santa Clara Valley Transportation Authority (VTA) announced on January 10 that it has awarded a joint venture of Mott McDonald and PGH Wong a contract worth up to \$US 125m to provide general engineering services for the Bay Area Rapid Transit (Bart) Silicon Valley Phase 2 Extension.

Singapore

Singapore's Land Transport Authority (LTA) and SBS Transit have awarded CRRC Nanjing Puzhen a \$S 116.7m (\$US 84.8m) contract to upgrade the fleet of 25 Alstom C751A trains which operate on the North East Line (NEL).

Taipei

Trial passenger operation began on the 7.3km Green Mountain Line December 24. The 11-station line connects Hongshulin station on the Taipei Metro Red Line with Danhai New Township. Services are operated by a fleet of 15 Warrior trams built by Taiwan Rolling Stock Company. **IRJ**

Riyadh metro sprints for the finish line

2018 was another year of milestones for the Riyadh metro project, with infrastructure taking shape, the awarding of operating contracts and the start of test running. With the first sections set to open later this year, **Keith Barrow** rounds up recent progress on one of the world's largest urban rail projects.

THE towering concrete columns and gleaming stations rising above the boulevards of Riyadh serve as a daily reminder to motorists on the city's increasingly-congested roads that the way this city moves is about to be fundamentally transformed.


The opening of the first sections of the 176.7km Riyadh metro network later this year will enable many commuters to leave the car at home and

soar above the traffic into the city.

The metro is part of the King Abdulaziz Project for Riyadh Public Transport, which also includes a \$US 4bn investment in the creation of a 24-line bus network with a fleet of 842 buses. Together, the new rail and bus networks are expected to generate a tenfold increase in public transport trips in the Saudi capital, transforming mobility in a city whose population is

forecast to grow by 2.9 million between 2010 and 2030 to 8.3 million.

In July 2013 Riyadh Development Authority (RDA) awarded three turnkey design-and-build contracts for the construction of a six-line automated metro network to three international consortia (IRJ May 2017 p32). Five-and-a-half years on, the \$US 23bn project is entering the home straight. Construction of viaducts and tunnels



Western Station is one of four 'iconic' stations on the Riyadh metro network. The 110,000m² structure includes a bus station, underground car park, a market, a mosque and a public square.
Photo: RDA

has been completed and tracklaying was 91%-complete at the end of October with 342km of the 376 track-km network in place. Work is now underway on the installation of 954 escalators and more than 600 elevators as well as air-conditioning and fire suppression systems at the network's 85 stations.

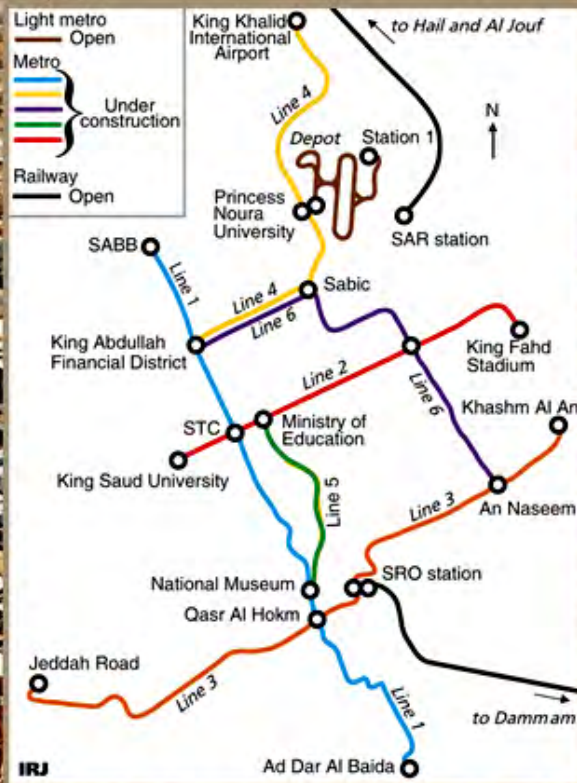
Three manufacturers are making progress with the delivery of Riyadh Metro's fleet of 190 driverless trains. Siemens is supplying 45 four-car Inspiro trains for Line 1 and 29 two-car trains for Line 2, while Bombardier is producing 47 two-car Innovia trains for Line 3. Alstom is supplying 69 two-car Metropolis sets for lines 4, 5 and 6. Each 36m-long two-car train will

accommodate up to 260 passengers in three classes: first, family and singles. The 75.7m-long four-car trains will accommodate up to 522 passengers.

Trains began moving under their own power with an inaugural test run at the depot on Line 6 (Purple Line) in April. This was soon followed by the first test run on Line 3 (Orange Line), while dynamic testing commenced on Line 2 (Red Line) in December.

In September, Prince Faisal bin Bandar, governor of Riyadh and chairman of RDA, announced the metro project was 75% complete and confirmed that winning bidders had been chosen for operations and maintenance (O&M) contracts for all six lines.

Riyadh



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Middle East | Riyadh

Capital Metro Company (Camco), a joint venture of RATP Dev and Saudi Public Transport Company (Sapco), has been awarded the contract for the 39km Line 1 (Blue Line) and the 25km Line 2 (Red Line).

The contract for lines 3, 4, 5, and 6 (Orange, Yellow, Green and Purple lines) is worth Riyals 10.9bn (\$US 2.9bn) and was awarded to the Flow consortium, which comprises Alstom, Ansaldo STS, and Italian State Railways (FS). Alstom's share of the contract is worth €730m and includes maintenance of rolling stock, infrastructure and power supplies for all four lines.

KPIs in the contracts are based on global best practice in urban rail operation and maintenance and the agreements set a minimum Saudization target of 45%, with at least 55% local content for supplies and services relating to system operation. The contractors will introduce new job roles for Saudis in civil, mechanical and electrical engineering as well as vocational posts in customer service, sales, safety and security, and administration.

The contracts include security, passenger assistance, facilities management, maintenance of buildings and the complete transit system including infrastructure, rolling stock, telecommunications, electrification and passenger information.

Both contracts run for 12 years including the mobilisation period.

In October RDA awarded the FCC-led Fast consortium a contract to build a 1.5km extension of Line 4 to serve King Khalid International Airport. The two-station extension will provide a direct link between the airport and King Abdullah Financial District.

On November 15 RDA announced the results of the naming rights auction for eight metro stations. The sponsorship deals will generate Riyals 1.05bn over of the 10-year duration of the contracts, and in addition to naming rights, give sponsors advertising, signage and retail space at their chosen stations. Revenues generated by the initiative will be reinvested back into the network, helping to reduce operating costs.

The first sections of the metro are expected to open later this year, with all six lines due to be fully operational by 2021.

The network is forecast to carry 1.16 million passengers a day in the initial phase of operation and the system has been designed to accommodate 3.6 million passengers, providing capacity for projected growth. **IRJ**



King Abdullah Financial District station photographed in January. Photo: RDA



Line 3 West Depot, Photo: RDA



Park and ride facilities take shape at the northern end of Line 1 Photo: RDA

Tel Aviv breaks new ground with first transit project

Tel Aviv is on course to open its inaugural light rail line in October 2021. **Kevin Smith** gets an update on progress with the Red Line, the backbone of the system, and further projects as the Israeli city attempts to improve mobility for citizens.

CLOCKS hanging on the walls of Tel Aviv Metropolitan Mass Transit System's (NTA) offices in Tel Aviv are all counting down to what will be a monumental event for the Israeli city: the opening of the 25km light rail Red Line, the city's inaugural mass transit service, in October 2021.

The long-awaited project is the first of a three-line light rail network, which promises to transform transport in the city which, while well-served by buses, suffers from chronic traffic congestion.

Thankfully for the clock watchers, the Red Line is very much on time.

Mr Anthony Burchell, Red Line project director at the project management consultant, WSP, which was appointed to manage the project and system for 10 years under a \$US 233m contract in 2014, told IRJ in mid-January that just 1km of the 10km twin-bore tunnel section remains under construction. Concrete and foundation work are also well underway on the at-grade sections.

The tunnels run from a branch to the line's depot at Kiryat Arye and from Geha Interchange, west of Shenkar station in the northwest to Manshiyya/Neve Tzedek east of Ben Zvi station where the line continues at-grade for 10km, serving 13 stations before reaching the terminus at Bat Yam. An additional 5km at-grade section with six

stations runs east from Shenkar to Petrach Tikva Central Bus Station.

Burchell reports that the outer box is complete at all 10 stations on the underground section with work underway on the inner box at four stations. The most advanced is Allenby where fitting out is expected to begin by the middle of the year. Burchell anticipates that structural work at each station except Carlibach, a future interchange with the Green Line, will be completed by the end of 2019.

The underground stations will double up as civil defence structures with thick concrete walls and blast-proof doors, reflecting the heightened security in Tel Aviv's public areas. A further 800m cut-and-cover tunnelled section will run at the southern end of the underground section making use of an existing Railway to Jaffa Port. Burchell says the city wants to preserve the old stone walls from the railway and will introduce a cycle path and park above the tunnel, providing a pedestrianised boulevard from central Tel Aviv to Jaffa and the beach. "The walls are finished and the roof slab is virtually complete," Burchell says. "That tunnel will be ready by the end of this year."

On the surface sections, 5km of concrete work is already complete and Burchell says the systems contractor, the



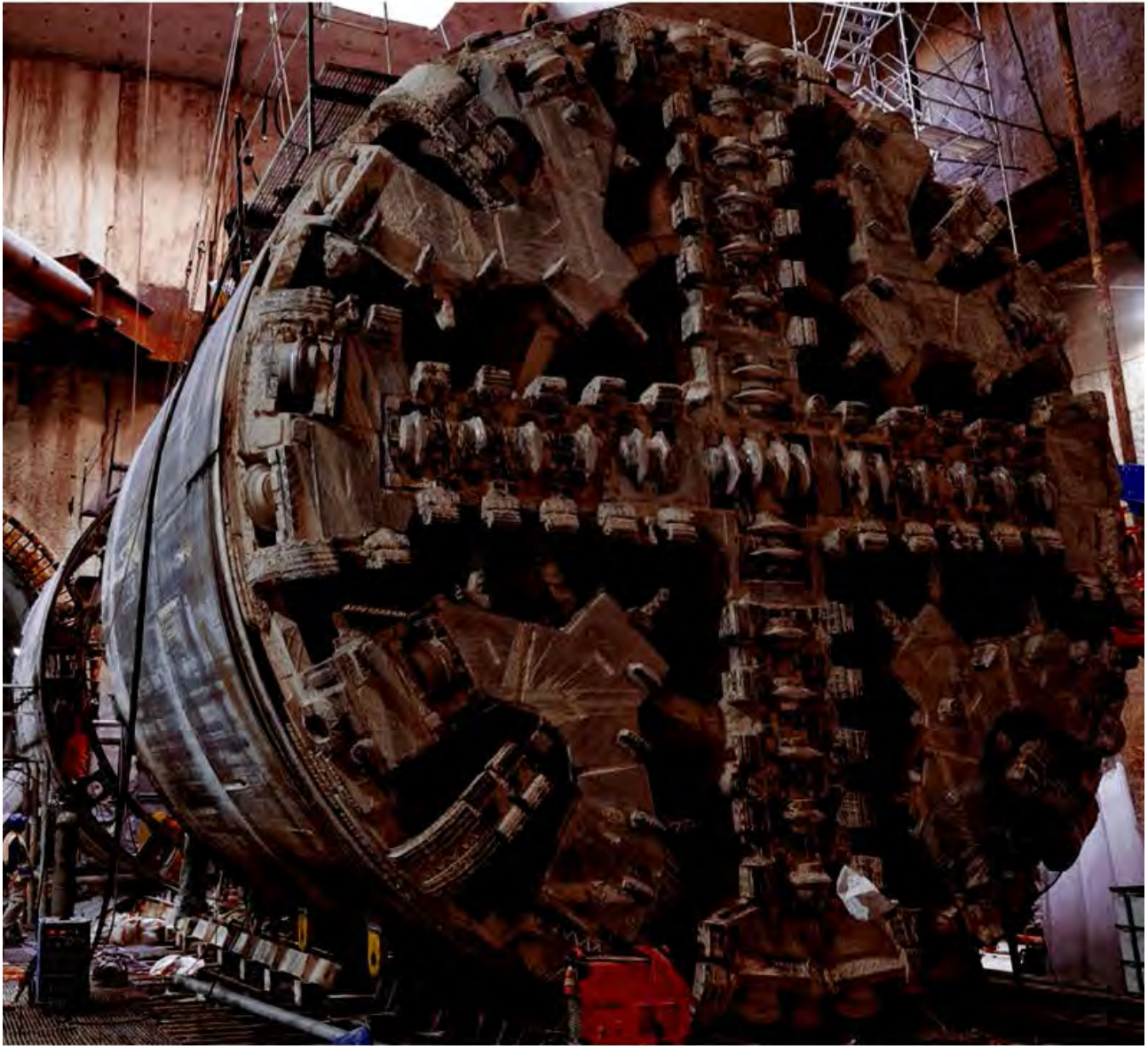
Excavation of the 10km dual bore tunnels for the Red

Chinese consortium of China Railway Tunnel Group (CRTGB) and China Railway Electrification Bureau (EEB), is set to begin installing 1.5kV dc overhead line electrification in the next few months. Voestalpine has delivered more than 50% of the rail required for the project. These rails are in storage at the depot site where civil works are complete. The contractor is preparing to begin laying track here and on the at-grade sections next month. German Rail (DB) is managing integration of all systems for the project.

Delivery of the first two pre-series



Delivery of the first two pre-series LRVs by CRRC Changchun Railway Vehicles is set to take place in autumn 2019.



Line is nearing completion in central Tel Aviv. The line is on course to open in October 2021.

LRVs by CRRC Changchun Railway Vehicles is set to take place in autumn 2019. Fabrication of one vehicle is already complete and Alstom technicians are currently in China installing onboard signalling equipment ahead of testing on the manufacturers' test track. Full series production of the remaining 88 vehicles is set to commence following delivery of the first two LRVs.

Alstom is also installing its Urbalis 400 CBTC signalling equipment on the underground section where the trains will operate in ATO at Grade of

Automation (GoA2). Depot operation will be fully automated while line-of-sight driving will be used on the at-grade sections with Alstom installing a speed supervision system, which will automatically deploy the brakes if a specified speed is exceeded. The line will also utilise an LTE digital radio solution rather than Tetra following a request by the Israeli Ministry of Communications. Burchell says that design of this system by CRTG and local subcontractors is underway.

The Red Line is Tel Aviv's first major tunnelling project, which inevitably

presents challenges. The presence of soft sandy cemented ground conditions with a high water level raised concerns about the stability of the tunnel face. However, tunnelling contractor, CRTG, delivered sophisticated earth balancing tunnelling machines, as specified by WSP, and Burchell reports that the work has gone very well with settlements of just 5mm and a production rate of 20-30m per day, which is more than expected.

"One thing that we did which was very interesting is because the tunnelling shafts were already built as



an advanced contract by the client [NTA], we were able to order the tunnelling machines very quickly from the contractors," Burchell says. "We made use of that by driving the tunnels through the station boxes, with just the perimeter wall of the station struttred. This is enabling us to complete the tunnelling a year earlier than our original programme.

"There were concerns about how we would manage excavating and breaking

out the tunnels, but we have done that now at each of the 10 stations and that has gone very well," Burchell continues. "It is a method of construction not widely used - I know they did it at London Paddington station on Crossrail and on Chennai metro - and I would encourage people to look at it."

Further tunnelling challenges were encountered on the section under the Israel Railways' main line, a six-lane highway, and the Ayalon River close to

Arlosoroff station. Here Burchell says CRTG faced tunnelling through redundant reinforced concrete piles from a retaining wall for the river which was rebuilt around 30 years ago. He says that CRTG spent a lot of time and effort in laboratories in China to develop a 1:4 model of the TBM in order to modify the design of the cutters so they are able to cut through the piles. Usually workers would have to remove such obstructions by hand.

"IR was very nervous to start with and they shut the main line for one weekend while we tunnelled underneath," Burchell says. "We demonstrated that it was very well controlled and increased the face pressure and the grouting pressure while maintaining less than 5mm movement. During our subsequent crossings, they proceeded with only supervision and reduced speeds on the line."

Cultural challenges

As well as physical difficulties, the project has faced cultural challenges. The Shabbat, the Jewish holy day, is strictly observed by certain sectors of the population, particularly orthodox Jews. No vigorous work is permitted from a few minutes before sunset on Friday evening until Saturday evening. However, Burchell says this is not practical with tunnelling, where for safety reasons the work often has to continue uninterrupted. Fortunately, an agreement was eventually reached with leaders in the area and work was allowed to proceed, although it is avoided when possible on the Shabbat.

This agreement reflects the close cooperation between NTA and the contractors and the general public throughout the project. "The new municipalities want to have their say in what we are doing and what it looks like, and getting permits from them has its challenges," Burchell says. "This is something NTA has managed extremely well. They also engaged extensively with the public. They have events, and show them what is happening. When the rolling stock mock-up arrived, they put it on display in Rothschild Boulevard in central Tel Aviv. They have also involved the public in organised lectures. It is about really engaging with the people and letting them have a say. They showed various layouts of the different stations and put it out to public consultation. It is very much a people's metro."

The desire on both sides to engage reflects the anticipated impact on the

public of the complete light rail network. Once open, 35% of the population will live within walking distance of a station while the network will provide connections for 45% to within walking distance of their workplace. The network will be operated by a consortium of Egged Group (51%), Shenzhen Metro (30%) and China Civil Engineering Consortium (19%) under a 10-year contract signed in August 2017 and is expected to serve 70 million passengers per annum.

NTA is keen to maintain its close relationship with the public as it proceeds with subsequent phases. The 39km Green Line will link Aba Even in Herzeliya and Neve Shareit in the north with Bat Yam, Holon and Rishon LeZion in the south with a 4.5km underground section beneath the city centre. The line will have 62 stations, four of which will be underground. A fleet of around 120 LRVs will be required and annual ridership is forecast at around 65 million.

The 29km Purple Line will connect Yehud and Givat Shmuel in the east with Tel Aviv city centre in the west.

The line will have 45 stations, including two interchanges with the Green Line and one with the Red Line, and is forecast to carry 60 million passengers a year. A fleet of around 100 LRVs will be required to operate the line.

In contrast with the \$US 3.5bn Red Line, which is entirely government funded, the Green and Purple lines are

contracts will encompass all electrical and mechanical systems, including track, electrification, signalling, rolling stock, and depots.

Israeli company Dana Engineers was appointed to manage design, construction and maintenance of the Green Line, while another local company, Spivak Engineers, was

“

There were concerns about how we would manage excavating and breaking out the tunnels, but we have done that now at each of the 10 stations and that has gone very well. Anthony Burchell

set to employ a public-private partnership funding under a design-build-finance-maintain procurement structure.

NTA will be responsible for major civil engineering works including tunnels and bridges, utilities diversions and urban development work. The PPP

selected for a similar contract for the Purple Line. NTA is currently tendering for construction of twin bore tunnels for the Green Line and prequalifying bidders for later tenders. Tendering for PPP partners for the project will open later this year.



Tel Aviv's light rail network is set to transform mobility and life for citizens in a city which suffers from chronic traffic congestion.

With momentum for these projects building, Israel's Ministry of Transport and NTA upped the ante in December, announcing plans for a three-line metro network for Tel Aviv. This Shekels 100-150bn (\$US 26.5-39.7bn) project will deliver over 130km of underground lines and more than 100 stations.



NTA says it is currently focusing on finalising the preliminary design of the metro project and hopes to complete statutory design within two years.

Systra conducted feasibility studies for the network and the first 73km north-south line will serve the cities of Ra'anana, Herzliya, Ramat Hasharon, Kfar Saba, Hod Hasharon, Tel Aviv, Bat Yam, Holon, Rishon LeZion, Ness Ziona, Rehovot, Beer Yacov, Ramle and Lod, as well as future development areas, including IMI, Sharon Junction, Glilot Junction, and Tzrifin.

The second 25km east-west line will serve the cities of Rosh Ha'ayin, Petah Tikva, Ramat Gan, Givatayim and Tel Aviv, as well as future development areas including the Sirkin area.

The third 32km semi-circular line will connect the network, serving the cities of Bat Yam, Holon, Azor, Or Yehuda,

Givat Shmuel, Petah Tikva, Tel Aviv, Ramat Hasharon and Herzliya, as well as future development areas including Galil Yam and West Ramat Hasharon, and Tel Hashomer.

In total, the metro is expected to serve 1.5 million passengers per day and 450 million per year. Trains will operate at 3-4-minute headways.

NTA says it is currently focusing on

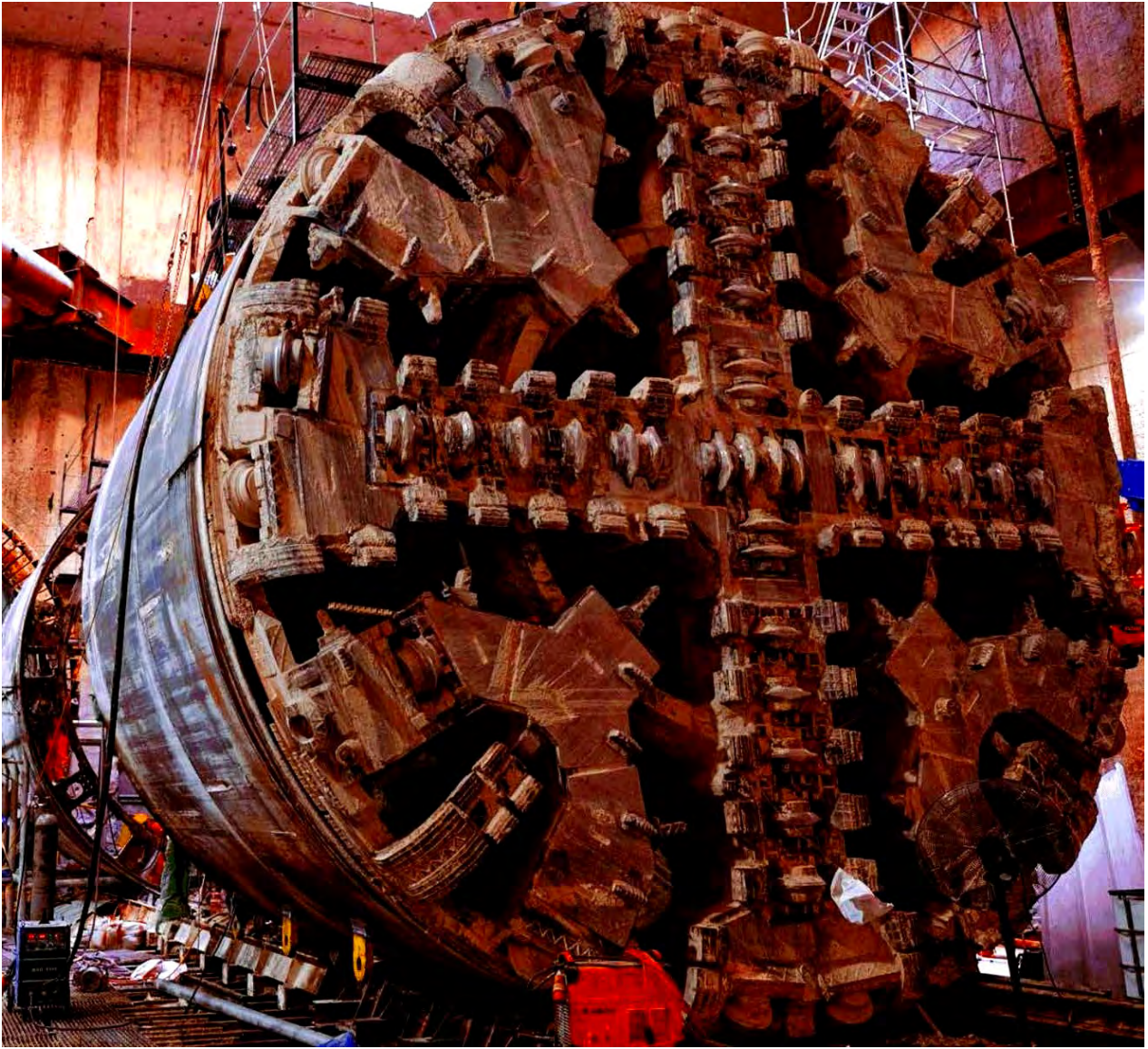
finalising the preliminary design of the metro project and hopes to complete statutory design within two years. A firm decision on how to proceed with the metro at the government level is expected after national elections in April.

Such ambitious plans for mass transit reflect a desire to develop infrastructure to serve Tel Aviv's expanding population. The appearance of high-rise buildings across the city emphasises the situation with more than five million people expected to live in the Greater Tel Aviv area by 2040 compared with just over three million today.

After numerous false starts, the Red Line still seemed like a pipe dream for many city residents just a few years ago. However, this has changed. Burchell, who began working in Israel in 2014, says that when he passes through immigration and is asked what he does for a living, the response from the agent has changed from "that will never happen" to "when is it going to open? Why can't it be earlier?"

Fortunately, they now only have 20 months to wait. **IRJ**

IRJ February 2019



Metro Tunnel Boring Machine

Smart Cities

Making the connection

The Internet of Things, sensor networks and artificial intelligence are offering new insights into how cities function and how services can be optimised to meet the everyday needs of urban dwellers. **Keith Barrow** explores the concept of smart cities and what it means for urban mobility.

TODAY 55% of the global population lives in cities and by 2050 68% of us will be urban dwellers. According to the UN, the world's urban population grew from 751 million in 1950 to 4.2 billion in 2018 and is set to reach 6.7 billion by the middle of the century. As they grow, cities are coming under increasing pressure to reduce their environmental impact, both for the health of their citizens and the planet.

Alongside rapid population growth, the Fourth Industrial Revolution is set to change the face of cities and how they function. The concept of smart cities is gaining traction as a means of solving economic, social and environmental challenges in urban centres.

Defining what a smart city is depends on who you ask, and the term can have

different connotations depending on an individual city's social and development goals as well as the availability of resources. Digital security firm Gemalto defines the term as, "a framework, predominantly composed of information and communications technologies, to develop, deploy and promote sustainable development practices to address growing urbanisation challenges."

According to the McKinsey Global Institute's (MGI) June 2018 report *Smart Cities: Digital Solutions for More Liveable Future*, smart cities "add digital intelligence to existing urban systems, making it possible to do more with less. With connected applications, users have access to transparent real-time information, enabling them to make better choices." This makes cities more

efficient, more liveable, and more productive places to do business.

According to the Smart Cities Council's Readiness Guide, the transition to smart cities is being driven by a number of factors. These include: growing urbanisation; increasing stress on urban areas caused by population growth, declining tax bases and reduced budgets; inadequate or life-expired infrastructure; increasing economic competition between cities; growing environmental challenges and the need to significantly reduce CO₂ emissions; and rapidly-improving technology.

Research indicates that smart cities technology could have a profound impact on how cities function and indeed could be critical to sustaining the megacities that will be home to



much of the global population by the middle of the century. The first benefit is efficiency. With huge pressure on public and household budgets, new approaches to managing urban infrastructure, environments and services could have profound financial impacts. According to a 2017 white paper by ABI Research, smart cities technologies could generate global annual savings of more than \$US 5 trillion for governments, companies and citizens by 2022.

Smart city technologies can significantly reduce the environmental impact of urban living. Embedded sensor networks continually monitor pressure, flow and quality in water mains, enabling preventative maintenance before leaks happen. Smart street lighting automatically adjusts lighting levels according to activity in the street, reducing energy consumption at night. Waste bins equipped with sensors enable waste collection services to be optimised. Sensor networks monitor air and water quality, triggering alerts if pollution exceeds safe levels.

In the field of mobility, smart cities provide an opportunity to optimise the capacity and flexibility of infrastructure while aligning services more closely with the needs of individual users. Dynamic pricing can reward passengers for travelling on less-busy routes. Mobility as a Service (MaaS) overcomes the traditional barriers between modes, connecting public transport with on-demand car services, bike hire and

walking to provide a seamless alternative to driving from A to B. Intelligent infrastructure enables predictive maintenance, reducing system downtime and enhancing reliability.

With such potentially-transformative benefits, an increasing number of cities are making a business case for significant investments in smart cities. According to BCC Research, investment in smart city technology in North America is set to increase from \$US 118.5m in 2016 to \$US 244m in 2021.

This revolution begins with the individual. As technology plays an ever-greater role in the daily lives of city dwellers it unlocks new opportunities to interact with the urban environment and on a macro-scale helps to reshape how the city functions. "Smartphones have become the keys to the city, putting instant information about transit, traffic, health services, safety alerts, and community news into millions of hands," the MGI report states. "After a decade of trial-and-error, municipal leaders are realising that smart city strategies start with people, not technology. 'Smartness' is not just

installing digital interfaces in traditional infrastructure or streamlining city operations. It is about using technology and data purposefully to make better decisions and deliver a better quality of life."

In 2012 urban strategist Mr Boyd Cohen devised the Smart City Wheel, which ranks smart cities according to six criteria:

- **Smart economy:** a city seeking to position itself as a capital of the new economy and innovation as well as a centre that attracts people
- **Smart governance:** a city whose public services have entered the digital era with efficient online services, open data, and data-driven services
- **Smart environment:** a city which reconciles its roles as a living space, for mobility, an economic centre while reducing its footprint on the planet (reduced consumption of energy and natural resources and reduced polluting emissions)
- **Smart mobility:** the city which organises itself to offer an alternative to car congestion and pollution by promoting the effectiveness of means of



'Smartness' is not just installing digital interfaces in traditional infrastructure or streamlining city operations. It is about using technology and data purposefully to make better decisions and deliver a better quality of life.

McKinsey Global Institute

collective and sustainable travel

- **Smart people:** a city which fosters the development of its citizens by levelling out inequalities and encouraging them to acquire skills
- **Smart living:** a city which considers the culture and wellbeing of its citizens while ensuring high levels of public safety and strong healthcare provision.

Each of the six components of the Smart Cities Wheel are assigned a set of indicators in order to assess a city's progress in each area. In the case of mobility, indicators include clean-energy transport (cycling infrastructure, bicycles per capita, electric vehicle charging points), public transport (annual number of public transport trips per capita, presence of an integrated fare system), smartcards (percentage of public transport trips using a public transport smartcard), and access to real-time information (including demand-based pricing and multi-modal transit apps).

According to the MGI report, a smart city is constructed on three layers: the technology base, applications and public usage. The technology base includes a critical mass of smartphones, sensor networks and open data portals. The applications layer comprises raw applications translating raw data into alerts and insight. At the top, the public usage level represents the

adoption of applications.

The technological foundations for smart cities are rapidly taking shape, and the Internet of Things (IoT) is central to this process. The IT research and advisory firm Gartner forecasts that 14.2 billion connected things will be in use this year, increasing to 25 billion in 2021. Sensor networks will harvest huge volumes of data, generating insights into system status and performance.

Siemens Mobility CEO, Mr Michael Peter, says the automation of rail networks supports many typical goals for smart cities. "There needs to be a three-fold strategy for new railway infrastructure," he told IRJ last month. "Firstly, you have IoT with everything connected and full availability of all data for predictive maintenance. Secondly, driverless operation gives the ability to be demand responsive. Thirdly, you connect all of these things into one smart system to optimise the operation. If you can achieve a 3-4 second reduction in station dwell time on a metro line you can increase capacity by 10%."

In Singapore, a world leader in the field of smart cities, sensor network data has been successfully harnessed to optimise transport planning. Under the Smart Nation Singapore initiative, Singapore Land Transport Authority (LTA) used anonymised user data from

contactless fare cards and identified commuter hotspots to manage bus fleets with the aim of improving the travel experience for passengers. Arrival times of buses are tracked using sensors installed on more than 5000 vehicles and real-time location data is used to help planners align services more closely with demand.

LTA says the insights it has gained from the data can also help it to anticipate and address the needs of different types of commuters through improved policy planning. The project resulted in a 92% reduction in the number of overcrowded buses, despite a year-on-year increase in average daily ridership, and cut average waiting times on the busiest routes by 3-7 minutes.

"Smart technologies change the nature and economics of infrastructure," the MGI report states. "They reduce the cost of gathering information on usage patterns - and with an unprecedented volume of data points in hand, city governments, employers, and residents can find new ways to optimise existing systems. Some smart solutions both respond to demand and involve the public in shaping it. They encourage people to use transit during off-hours, to change routes, to use less energy and water and to do so at different times of day, and to reduce strains on the healthcare system through preventive

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IRJ February 2019

self-care. The result is not only a more liveable city but also a more productive place for businesses to operate."

MGI forecasts that cities deploying smart mobility applications could reduce journey times by an average of 15-20% by 2025, although the potential of individual applications varies according to the city's density, public transport infrastructure and travel patterns. In New York, MGI predicts a 15-minute daily reduction in average commuting time, but this figure could be as high as 20-30 minutes for cities with more challenging commutes.

Barriers

Implementing a smart cities strategy is not without challenges and Mr Jesse Berst, chairman of the Smart Cities Council, says there are a number of consistent barriers that have confronted local governments around the globe. Short-term financial constraints mean cities often tackle issues in a piecemeal manner and city functions have long been divided into separate "siloed" departments with little interaction. This is at odds with one of the core



Many smart cities projects are led by one department working on its own, and the result is a siloed application. So you need to develop a multi-stakeholder consensus.

Jesse Berst

requirements of planning a smart city: an integrated, cross-departmental approach to development. According to the Smart Cities Council, failure to reach across those departmental boundaries means projects are often designed to solve a single problem in a single department, creating "islands of automation," duplicating public expenditure and making it difficult to share systems or data.

To overcome these constraints, the Smart Cities Council Readiness Journey advocates a three-step approach to project development: Envision, Plan and Implement. "Envision is often where cities get it wrong," Berst says. "Many smart city projects are led by one department working on its own, and the result is a siloed application.

So you need to develop a multi-stakeholder consensus, bringing in other departments, perhaps neighbouring jurisdictions, transit operators and so on. Holistic thinking and collaborative working is hard and it takes time upfront, but it saves a lot of time down the line because everyone has agreed what they want and there are fewer objections."

By adopting a collaborative approach, cities can reuse data and software modules already created by other departments, significantly reducing the development time for a new application.

Customer expectations are another challenge. The explosion in smartphone ownership over the last 10 years has given city dwellers instant personalised access to information and services. Citizens increasingly expect the same

level of convenience from municipal services, putting local governments under pressure to step up digitalisation.

Berst says a lack of clarity about what a smart city is and how it benefits the urban population has held back the smart cities movement, with many stakeholders lacking awareness of successful smart city initiatives. Visionary leadership capable of communicating the benefits of smart technologies to a wide audience is therefore essential in securing public backing for smart cities projects.

Many cities are also facing budgetary pressures and a dearth of investment capital. New financing models could help local governments to pursue smart cities initiatives and ensure they remain competitive with their peers. This inevitably leads on to the question of ownership. The MGI report found that the public sector would be the “natural owner” of 70% of the applications examined, but 60% of the initial investment required to implement the overall range of application could come from private sources.

Some public transport authorities are building the capability to develop applications in-house. In 2016, Vienna public transport operator Wiener Linien and its parent company Wiener Stadtwerke established tech startup Upstream Mobility to expand and manage its own digital infrastructure, grow its digital services and strengthen its position as a central integrator for mobility services.

“We’re convinced this new role is better serviced by a public operator embodying public values,” senior strategist, Dr Michael Lichtenegger, said at the LTA-UITP SITCE congress and exhibition in Singapore last July. “Big IT companies will be great suppliers, but public transport should have the knowhow and functions in its own hands, including a central mobility service platform. Digitalised mobility means big data, and the mobility platform is the well for collecting never-ending mobility data. This is a public treasure - why should we give it to Google or Microsoft, then pay to use it with public money?”

Peter argues public transport authorities still have a central role to play in mobility in the smart city. “Transport authorities are going to be more relevant than ever because of the need to think of transport holistically as a system,” he says. “We see road traffic is still increasing in cities despite the arrival of ride sharing services like



Regulation of transport data has created the conditions for MaaS to thrive in Helsinki.

Uber. In the future the transport authority may need to take control of the overall system and restrict road movements for private vehicles in inner cities. Many cities already understand there’s no way around this.”

Governance

A central principle of integrated mobility is the need for collaboration between modes instead of competition. Technology can only support seamless intermodal journeys if the barriers to integration are removed. Like many aspects of smart cities, this is a matter of public policy and not something that can be left to the market to regulate.

In recent years, Finland has emerged as a country at the cutting edge of smart mobility policy. In January 2018 the Finnish government introduced the Transport Services Act, which requires public transport operators to open up their data and passenger information systems and ensure they are interoperable with those of other operators. Following the introduction of the new law, Uber returned to Helsinki but in common with all other public transport providers, the ride-hailing firm is legally obliged to open its Application Programming Interface (API) and allow third party providers to buy and resell Uber rides through their own applications.

“The Transport Services Act is, to a very large extent, about preparing for the future,” Mrs Anne Berner, Finland’s transport and communications minister, said in May 2017. “Our legislation has to be flexible so that all parts of the

transport system will work together. This act will give us a genuine opportunity to make mobility a comprehensive service for customers. Finland is a pioneer in this work, which gives us a competitive edge.”

This regulatory intervention supports the development of MaaS, integrating end-to-end trip planning, booking, ticketing and payment across all public and private transport services via a smartphone app. Helsinki was the first city to provide a full-scale MaaS offering and today there are more than 45,000 users of the city’s Whim app, 5100 of whom pay a monthly fee for the service.

Helsinki is an example of governance and technology working in unison in public transport, and Berst says it will be crucial for cities to carefully maintain this careful balance in the digital age. “Governance is every bit as essential and empowering as the technological assets but you have to have the technology to stay relevant. It’s clear that we are going to see a complete transformation in the transport sector, probably within the next 10 years and definitely within the next 20 years.”

While the term smart cities might infer notions of hidden forces controlling even the minutest aspects of our daily lives, the concept is less like a science fiction movie and more about finding a balance between technology, governance and the needs of people and businesses. The ability of local governments and other stakeholders to develop robust smart cities strategies will be crucial in addressing the future challenges facing the world’s urban population. **IRJ**

METRO NEWSLETTERS on URBAN MOBILITY

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METRO Newsletter by Dr. F.A. Wingler
METRO 35, February 2019



Bengaluru Metro-Rail, India

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

Chennai Blue Line Extension opens; India

Feb. 11, 2019

Written by [David Burroughs](#)

A 10km section of the Chennai Blue Line from AG-DMS to Washermenpet was completed on January 10, providing a second connection to the Green Line at Chennai Central Metro Station.



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[Warsaw to order up to 213 trams from Hyundai Rotem](#)

Feb. 13, 2019 | [Light Rail](#)

The opening adds seven new underground stations to the line, including the interchange, and extends it to 32.1km-long.

The network is operated [with a fleet of 42 four-car Metropolis trains](#) supplied by Alstom under a €243m contract awarded in 2010.

The line was inaugurated by the prime minister of India, Mr Narendra Modi, and the chief minister of Tamil Nadu, Mr Edappadi K Palaniswami, via video conferencing from Thiruppur, Tamil Nadu. The governor of Tamil Nadu, Mr Banwarilal Purohit and deputy chief minister of Tamil Nadu, Mr O Panneerselvam, were also present.



At Chennai Central Metro Station, union minister, Mr Hardeep Singh Puri, minister for Fisheries, Mr D Jayakumar, minister for social welfare, Dr V Saroja, and minister for industries, Mr M C Sampath, took part in the video conference before taking a ride on the metro to AG-DMS via Washermenpet.

The opening [follows the completion of the 4.8km stretch](#) of the Blue Line from Little Mount to AG-DMS and the 2.6km Nehru Park – Central Station section of the Green Line in May 2018.

In addition, work began in 2016 to extend the line by a further 9km and eight stations to the Blue Line terminus at Wimco Nagar. The line will continue in tunnels until Korukkupet and then continue on an elevated alignment for its remaining length. The extension is expected to open in 2022.

Categories: [Asia Metros News](#)

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Pay Tax at Metro Ticket Machines; India

12 Feb. 2019



INDIA: Lucknow residents can now use their GoSmart Card tickets to pay house and property taxes at the metro's ticket machines, and the system is to be extended to cover other bills.

Receipts are issued providing details of the tax payments made, and payments appear in the user's account within three days.

'This initiative of facilitating cashless house tax payment through GoSmart Metro Cards by Lucknow Metro is a commendable move in line with the Prime Minister's vision of Digital India and cashless transactions', said Mayor Sanyukta Bhatia when the system was inaugurated last month.

Related news

- [22 Jan 2019 - Lucknow Metro begins using automatic train operation](#)
- [05 Sep 2017 - Lucknow metro opens](#)
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Lucknow Metro begins using automatic Train Operation with ALSTOM Ubalis CBTC; India



22 Jan 2019

INDIA: Lucknow Metro trains began running in attended automatic train operation mode on January 21. Trains have been running under manual driving with automatic train protection since the initial 8.5 km Transport Nagar – Charbagh section of the north–south line opened in September 2017.

The train operators now give a manual instruction to close the doors, after which the Alstom Metropolis trains run to the next station in GoA2 and open their doors without further intervention.

The line is equipped with **Alstom's Urbalis 400 COMMUNICATION BASED TRAIN CONTROL, CBTC**. The control system provides automatic train supervision, route setting and automatic train regulation to optimise train movements and recover from any disruption.

Lucknow Metro Rail Corp expects to commission extensions of the line north to Munshipulia and south to Charan Singh International Airport in the near future, completing the 22.8 km priority corridor for the initial network.

Related news

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PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Autonomous Tram to be tested in Moscow; Russia

Feb. 12, 2019

Written by [David Burroughs](#)

PC Transport Systems, Russia, and European-based Cognitive Technologies announced a joint project on February 12 to develop a fully-autonomous tram for Russian and foreign markets by 2021-22.



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Over the next two months, the two companies will test the autonomous train in closed facilities with a driver in the cab, before conducting tests on one of Moscow's tram lines.

Cognitive Technologies says the autonomous driving system reliably detects vehicles and other trams, traffic lights, pedestrians, tram and bus stops, railway switches and various obstacles. The tram is also able to stop in front of the obstacles, maintain a safe distance from cars ahead, accelerate and stop without driver intervention.

“The combination of sensors such as cameras and radars ensures the accurate and reliable detection of road scene objects in any weather conditions including at night and in rain, fog, snow, and blinding light,” says Cognitive Technologies president, Mr Olga Uskova.



“The ‘cognitive low level data fusion technology’ that has been developed by our engineers allows the computer vision model to efficiently use all the combined ‘raw’ data coming from cameras and radars. This integration of data from different devices makes it possible to fill the missing information to better understand the current road scene.

“Cameras, for example, correctly recognise objects in 80% of cases, while additional data from radar raises the detection accuracy to 99% and higher. This approach is unique in many ways and sets us apart from many of our competitors.”

As well as an AI-based computer vision system, the tram is also equipped with between 10 and 20 video cameras located around the perimeter of the tram and up to 10 radars. The tram will also use GPS sensors while high-precision cartography will be used along the route.



Cognitive Technologies says the intelligent control system will act as a driving assistant in dangerous situations in the first stage of operation, but an operator will remain in the cab during the second phase as “back-up” until legislation around the use of autonomous vehicles is changed.

“The presence of an operator in the cabin in the coming years is also necessary from a psychological point of view,” the company says. “Many passengers are not yet ready to adequately respond to the complete absence of the driver in the tram.”



Categories: [AsiaEuropeLight RailNews](#)

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INTELLIGENCE Urban Rail

DENMARK

Keolis to operate Odense trams

Odense Letbane has selected Keolis as preferred bidder to operate and maintain the light rail line due to open in the city in 2020.

The 15-year contract to be signed by the Keolis Odense Letbane subsidiary is expected to generate cumulative revenue of €230m.

The 14.5 km north-south route will serve 26 stops between Tarup and Hjallesø, offering an end-to-end journey time of 42 min. Services will be operated with a fleet of 16 Stadler trams and ridership is forecast at 12 million passengers a year. ■

INDIA

Mumbai orders 378 metro cars

BEML has been selected to supply 63 six-car driverless trainsets to operate on Mumbai metro lines 2A, 2B and 7. The state-owned company's bid of Rs30.15bn was the lowest of seven. BEML is to subcontract some design work to Hitachi.

BEML is to supply the stainless steel bodied rolling stock from its Bangalore factory between October 2020 and December 2022. The 25 kV 50 Hz trains will be equipped with air-conditioning, regenerative braking, CCTV and real-time track monitoring equipment. They will have four sets of doors per car and capacity for 1,800 passengers. ■

GERMANY

Second Ulm tram line inaugurated

The second tram line in Ulm was officially inaugurated on December 8. Line 2 links Science City in the northwest to Kuhberg in the southwest via a shared section with Line 1 between Theater and Ehinger Tor. A total of 9 km of new line has been built, along with 17 stops.

The project cost was €270m, including €31.5m for rolling stock. Siemens Mobility has supplied 12 Avenio M trams under a contract with

options for six more. The first of these has been operating on Line 1 since mid-2018, and all 12 are now in service on both routes.

★ A one-station southern extension of Hamburg metro Line U4 to Elbbrücken opened on December 7, and two days later a short tram extension linking Gadamersplatz and Montpelierbrücke in the centre of Heidelberg was inaugurated. ■



Ulm's tram lines are operated with 12 Avenio M vehicles from Siemens.

UK

Further Crossrail delay likely

Transport for London has confirmed that the Crossrail tunnels under central London are now unlikely to open in autumn 2019, and that a new financing package has been agreed to meet the additional costs incurred through the delay.

To meet the estimated additional cost, the Greater London Authority is to borrow up to £1.3bn from the Department for Transport, to be repaid using local tax revenue. The GLA is to provide a further £100m from its own sources. The DfT has also agreed a £750m contingency loan.

The newly confirmed financing package replaces the £350m of short-term repayable financing provided by the DfT as an interim measure, which had been announced in October.

The initial findings of an ongoing review by independent auditor KPMG into Crossrail Ltd's finances indicate that the delay to the project opening would add between £1.6bn and £2bn to the total cost. The previous cost estimate was £14.8bn for infrastructure works, with an additional £1.1bn for the rolling stock fleet and depot. ■

FRANCE

Keolis wins operating contracts

Keolis has been awarded three French public transport operating contracts that run from January 1 2019.

The six-year contract covering the Star network in Nancy is expected to generate a cumulative turnover of €346.8m. The contract period covers the replacement of the city's guided trolleybuses with steel-wheeled trams. Keolis will provide replacement bus services during construction works, then operate the new tramway from 2023.

Tours Métropole Val de Loire renewed its contract for Keolis to operate and maintain the Fil Bleu network. The seven-year contract is expected

to generate revenue of €427m. Keolis intends to increase the number of passenger-journeys by 26% across the network by 2025, from 37.5 million to 47.6 million. This is expected to increase revenue by €3.5m. The contract period spans the construction of a second tram line, which is expected to run from October 2021 to June 2024, before the start of passenger services in 2025.

Keolis has also renewed its contract with Orléans Métropole to operate and maintain the Tao public transport network for six years. This is expected to generate revenue of €395m. ■

SAUDI ARABIA

Naming rights partners chosen

Riyadh Development Authority has selected partners for the naming rights to eight of the 85 stations on the city's future metro network.

The 10-year contracts are worth a total of 1.05bn riyals, which is to be reinvested into metro operations. The sponsors are: The Saudi British Bank, Dr Sulaiman Al Habib Medical Group, Saudi Telecom Co, Alinma Bank, Bank Abilad, Majid Al Futtaim Shopping Malls Co, Granada Investment Center and SABIC.

In addition to station names, sponsors are entitled to retail space, advertising and signage within their respective stations. RDA intends to tender further non-fare revenue opportunities such as retail, advertising and telecoms. ■

NETHERLANDS

Amsterdam fleet renewal

Amsterdam city transport operator GVB has signed a contract for CAF to supply 30 three-car metro trainsets, with options for 30 more. Entry into service is planned from mid-2021, with the new trainsets replacing the S2 and S3/M4 fleets from 2024 and 2027 respectively.

Branded Inneo by the manufacturer and Type M7 by the operator, the new trains are intended to look similar to existing stock. Each aluminium bodied set will be 59.6 m long and 3,005 mm wide, with a maximum speed of 80 km/h and the ability to operate in multiple at peak times.

Each three-car set will be able to carry 480 passengers at 4/m² including 78 seated on mostly longitudinal seats, plus two spaces for passengers with reduced mobility. The climate control system will include underfloor heating to maintain a 'pleasant' temperature throughout the year.

The trains will operate on 750 V DC third rail power in service, but will have an auxiliary pantograph for use in the depot. They will be equipped for GoA2 attended semi-automatic operation, with provision for GoA4 unattended operation in the future when the cabs would be removed. ■

USA

CBTC goes live on 7-Flushing Subway line

CBTC has been activated along the length of the 7-Flushing Subway line in New York. The 16 km line carries both local and express services at peak times on an alignment which is partly triple tracked. The alignment is not shared with other Subway routes.

Installation of CBTC has been underway since 2010 when initial trials were carried out. In June 2010 MTA awarded Thales a \$343m contract

covering core CBTC technology and non-proprietary, free-space wireless radio communication between the train and wayside equipment.

★ The Federal Railroad Administration has certified that PATH's system-wide signal upgrade has met the federal regulatory requirements for Positive Train Control. PTC forms part of the CBTC that Siemens Mobility and DA Builders are installing on the line. ■

USA

Light rail groundbreakings

Groundbreaking ceremonies for two US light rail projects took place on November 30.

Orange County Transportation Authority's OC Streetcar line is estimated to cost \$408m and is being funded through federal and state sources, as well as a local 0.5% sales tax. A \$149m Full Funding Grant Agreement with the Federal Transit Administration was signed on the same day.

Walsh Construction Co is building the 6.7 km route between Santa Ana Regional Transportation Center and Harbor Boulevard under a \$220.5m contract, and Siemens is supplying eight streetcars. Opening is planned for late 2021.

Main work on the Minneapolis Southwest Light Rail project is expected to take place in 2019-22, ahead of testing in 2022-23. Passenger services are due to begin in 2023. The SWLRT would operate as an extension of the existing Green Line. The 23.3 km route between Minneapolis and Eden Prairie will serve 16 stops. A joint venture of Lunda and C S McCrossan was awarded a \$799.5m civil works contract earlier in November.

Twin Cities Metropolitan Council expects to receive a \$929m Full Funding Grant Agreement from the FTA that would cover nearly half of the \$2bn project cost. ■



A groundbreaking ceremony for the OC Streetcar line, which is estimated to cost \$408m, took place on November 30.

NEWS IN BRIEF

CRRC Dalian has rolled out the first of 23 three-car trainsets that it is building for the **Nagpur Metro**.

Škoda Transportation has officially presented the first of 14 trams that it is supplying to **Chemnitz** transport operator CVAG.

The southeastern part of the Delmar Loop Trolley heritage-style tramway in **St Louis** was inaugurated on November 16. The 2 km route runs from Missouri History Museum/Forest Park to Delmar Loop, serving six stops. The western 1.5 km section with four stops from Delmar Loop to University City Library has not yet opened.

The branch of the **Strasbourg** tram network which crosses the River Rhine from France to Kehl in Germany was extended by 1.1 km on November 23.

The European Investment Bank is providing a 376m zloty loan to MPK **Kraków** for the purchase of up to 90 trams and the refurbishment of existing vehicles.

Hong Kong MTR Corp is trialling a speed and position supervision system on three light rail routes in **Tin Shui Wai**. MTR intends to roll it out to the rest of the network from the second quarter of 2019.

The open payment ticketing trial in **Sydney** was expanded on November 27 to include the Sydney Trains network and NSW Train Link services that accept Opal cards.

A 10 km extension of the elevated Sukhumvit Line in **Bangkok** was inaugurated on December 6. The southern metro extension runs from Samrong to Kheha, adding eight stations. A depot has been built 1.5 km southwest of Kheha.

A 1 km, one-station extension of **Guadalajara** light rail Line 1 from Periférico Norte to Auditorio opened on November 23.

A 3.2 km southern extension of the **Delhi** metro Violet Line was inaugurated on November 19. The extension adds two stations at Sant Surdas (Sihi) and Raja Nahar Singh in the Ballabgarh district of Faridabad, serving the part of the National Capital Region that lies in the state of Haryana.

The Land of Hessen has agreed to provide **Darmstadt** transport operator HEAG Mobilo with €12.3m towards the €19.6m cost of extending the tramway to Technische Universität Darmstadt's Lichtwiese campus.

A 4.3 km westward extension of **Paris** tram Line T3b from Porte de la Chapelle to Porte d'Asnières opened on November 24.

INTELLIGENCE Urban Rail

ITALY

Four lines approved

Palermo city council has approved changes to its public works plan to include the construction of four tram extensions.

- A: an extension of the existing Line 1 from Palermo Centrale station to the stadium;
- B: an extension from the Notarbartolo terminus of lines 2, 3 and 4 to Via Duca della Verdura;
- C: an extension of Line 4 from Calatafimi to Centrale station.
- E1: a connection from Piazza De Gasperi on Line A to Francia station, providing an interchange with the Passante suburban railway.

The total cost is put at €426m, to be financed with €200m of government funding allocated for projects in southern Italy and €50m from the Sicily region. The remaining money is expected to come from existing sources and private sector co-financing.

A further three proposed extensions were not approved, but could be supported at a later stage if funding can be identified. ■

KAZAKHSTAN

Nine bids for Almaty light rail PPP

Almaty municipality has received nine bids for the 26-year PPP contract to design, build and operate a light rail line:

- CMC China National Machinery Import & Export Corp and CRCC16 China Railway 16th Bureau Group Co;
- China Machinery Engineering Corp, China High Speed Railway Technology Co and China Railway 22th Bureau Group Co;
- China Railway Beijing Engineering Group Co and China Railway Liuyuan Group Co;
- Norinco;
- China International Trust Investment Corp, China Civil Engineering Con-

- struction Corp and Temirjol Zondeu;
- Marubeni, Alstom Kazakhstan, Gülermak and Meridiam;
- CAF, Itochu and Makyol;
- PK Transportnye Systemy and Renaissance Construction;
- ENKA.

The PPP deal allocates three years for financing, design, construction and commissioning, followed by 23 years of operations and maintenance before the line would be transferred to the city's transport authority.

Due to open in the third quarter of 2022, the proposed 22.7 km light rail line would have 37 stops and be operated with a fleet of 36 low-floor vehicles. ■

CHINA

Six metro projects launched

A ceremony on November 19 marked the launch of six metro projects in Guangzhou cumulatively worth 100bn yuan.

The eastern extension of Line 3 would add 9.6 km and four stations. The partly underground route from Panyu Square to Haishu is due to open in 2022.

A 9.8 km eastern extension of Line 5 will run from Wenchong to Huangpu Ferry Terminal, adding six stations.

The northeastern extension of Line 7 from Higher Education Mega Center South to Shuibei is 21.9 km and will add 11 stations.

Due to open in 2022, Line 10 would take over the existing 6 km Line 3 branch from Tianhe Coach Terminal to Tiyu Xilu, from where a new 20.9 km with 13 stations would run to Xilang.

The underground Line 12 is being built



between Higher Education Mega Center South and Xunfenggang on a 37.6 km alignment serving 25 stations; it is due to open in 2023.

The second phase of Line 14 would add 11.9 km of underground alignment with eight stations between Guangzhou Railway Station and Jiahewanggang. ■

CHINA

Metro extensions open

An extension of Guiyang's only metro line opened on December 1. The 20.2 km extension from Guiyangbei Railway Station to Xiaomeng Industrial Park serves 14 stations.

The extension brings the total length of Line 1 to 33.1 km. A 2 km northwestern extension is planned. The 8 min headways are to be shortened to 2 min in the future.

A second line has been under

construction since October 2014. Line 2 is due to open in 2019 and will serve 21 stations on a 26.8 km route.

A 1.5 km extension of Tianjin metro Line 1 to Lilou was inaugurated on December 3. Shuanglin, the previous terminus, has reopened after nearly two years of closure during which it was rebuilt from an elevated to an underground station. ■

SOUTH KOREA

Seoul Line 9 extended

The third phase of Seoul metro Line 9 opened on December 1. The 8.9 km eastern extension from Sports Complex to VHS Medical Centre serves eight stations including two interchanges: Seokchon with Line 8 and Olympic Park with Line 5. Samjeon and Songpanaru stations have overtaking loops to allow express trains to pass through.

The 45 four-car Series 9000 trainsets in use on Line 9 are being lengthened to six cars. All sets used on express services have already been lengthened, and work on the remaining trains is due to take place in 2019. ■

Consultation on expanding pay-as-you-go Ticketing in Southeast England, UK

08 Feb. 2019



UK: The Department for Transport has begun [public consultation on the possible roll out of 'pay-as-you-go' smart ticketing](#) in the region surrounding Greater London. It is envisaged that this would be more convenient for passengers, and reduce differences in fares paid by people by people with different working and travel patterns.

The consultation is looking at the expansion of PAYG to medium-distance commuter routes in a radius of around 60 km, including Luton, Reading, Maidstone and East Grinstead.

Questions include stakeholders' attitudes towards the changes in fare structures which would be needed to make this technically viable while being cost-neutral for taxpayers, which would involve fare increases as well as reductions.

The ticketing technology to be used is left open, but Transport for London's current Oyster smart card would not be capable of supporting an increased range of stations.

The consultation is also seeking opinions on including destinations further from London such as Oxford, Milton Keynes, Cambridge and Brighton, although this increase in scope would have a more significant impact on fare structures; for example the difficulty of offering different fares for fast inter-city and slower stopping trains on the West Coast Main Line.

'We want to make rail journeys simpler and easier for passengers', said Rail Minister Andrew Jones. 'Smart ticketing is the modern answer, offering simpler fares, fairer deals and less confusion for passengers. This consultation is about finding out what works for people, and we want to know how pay-as-you-go could make life easier for passengers who make hundreds of millions of journeys each year.'

The consultation runs for 12 weeks from February 7 to May 1.

DfT said feedback would not only inform any roll-out of the technology in the southeast region, but would also be used when considering how to implement PAYG more widely

across other urban and commuter areas; the government has allocated £150m for a multi-modal PAYG programme which is now being undertaken by Transport for the North.

Related news

- [09 Jan 2019 - NS to test contactless card payment](#)
- [05 Dec 2018 - Oyster and contactless payment to be extended further outside London](#)
- [10 Nov 2015 - Oyster and contactless to reach Gatwick Airport in January](#)
- [03 Nov 2014 - c2c expands ITSO smart card ticketing](#)
- [19 Sep 2014 - Oyster readers begin accepting National Rail ITSO smart cards](#)
- [22 Jul 2014 - Dutch smart ticket roll-out completed](#)
- [01 Jan 2007 - Britain grapples with main line smart ticketing](#)

Digital Payment launched on Guangzhou – Shenzhen Line; China

08 Feb. 2019



CHINA: Guangshen Railway Co says it is the first inter-city operator in China to introduce digital payment for travel on its services, which link Guangzhou and Shenzhen.

The system uses Alipay's e-wallet payment technology. Users register on the Alipay app, and generate a QR code which is scanned on entering and leaving the stations. Passengers have 3 h to complete the journey, and are billed the appropriate fare on leaving the destination station. The system supports standard class travel, but users can pay on the train to upgrade to first class.

The operator said ticket verification on entry takes about 3 sec, compared with up to 15 min to order and collect tickets and verify ID cards in the past.

Foreigners and residents of Hong Kong and Macau who do not have Chinese ID cards need to register at station ticket machines using passports or travel permits. Facial recognition ticket barriers went live at Shenyang North station on January 16.

Related news

- [12 Feb 2019 - Chaoma inter-city railway agreed](#)
- [12 Jan 2017 - PayPal and Apple Wallet speed Stansted Express booking](#)
- [21 Sep 2016 - JR East offers Suica on Apple Pay](#)

București Airport Rail Link Tendering underway; Romania

13 Feb. 2019



ROMANIA: Infrastructure manager CFR has called tenders for the design and construction of a 2.95 km rail connection to Terminal 1 at Henri Coandă International Airport, which would allow the operation of a direct rail service from the airport to București Nord station. The alignment would include a 1.5 km viaduct.

The project is to be financed from the EU's Large Infrastructure Operational Programme 2014-20, with completion planned in time for the UEFA Euro 2020 football competition.

Bids are to be submitted by March 25 and will be judged on price (65%) and technical aspects (35%). The estimated value of the contract is 420m lei, with two months allocated for design and 12 months for construction. The winner would then provide 60 months of warranty support.

A separate tender has been called for the appointment of a consultant to supervise the project.

Bacons Impex has previously undertaken a feasibility study for the line under a 2.5m lei contract. PORR Construct was the sole bidder for a related 51m lei contract covering the double-tracking of the 8 km of existing line between Mogoșoaia and Balotești.

Related news

- [03 Dec 2018 - Poroshenko inaugurates airport link in Kyiv](#)
- [20 Nov 2018 - Operator selected for CDG Express airport rail link](#)
- [18 Oct 2018 - TEX Rail trains tested for radar effects](#)
- [13 Sep 2018 - Melbourne Airport Rail Link market engagement begins](#)
- [18 May 2018 - Volgograd airport rail link opens](#)

- [10 May 2018 - Tirane airport rail link tendering](#)
- [04 May 2018 - Second airport rail link opens in Kuala Lumpur](#)

RTA Eyes 9 Chicago Projects, Metra Ticket Office to close; USA

Written by [Kyra Senese, managing editor](#)



File photo/CTA

The Regional Transportation Authority (RTA), the agency that oversees the Chicago Transit Authority (CTA), Metra and Pace Suburban Bus and Pace ADA-Paratransit, is requesting public feedback regarding nine Chicago-area projects being proposed through its 2019 community planning program.

The RTA said in a news release that the agency plans to accept public comments until March 8.

The community planning program is intended to provide technical assistance to local governments as well as intergovernmental organizations to mitigate local planning needs that encompass public transportation and land use.

“The RTA encourages municipalities in the region to develop walkable and more sustainable communities near transit stations and along transit corridors,” the agency stated in a press release.

The [RTA](#) announced a Call for Projects in September and October 2018 for eligible projects, which it said would include transit-oriented development (TOD), a transit corridor plan or transit neighborhood mobility improvement program. The agency issues a Call for Projects once per year, according to its website.

The agency said in a statement that it had reviewed 14 applications and recommended nine projects.

Among the recommended projects were the following:

- The facilitation of a TOD plan for an area located near a [Metra](#) station in Cary;
- The creation of a TOD plan for the areas surrounding Metra's Crystal Lake and Pingree Road stations;
- An examination of nine Metra stations throughout the region to evaluate the causes for low ridership;
- The development of an implementation strategy for the Elevated Chicago Work Plan, emphasizing accessibility improvements to seven [CTA](#) stations.

The RTA plans to announce the final program of projects on March 21.

Throughout the RTA's 20-year history of the community planning program, [the RTA](#) states that it has invested more than \$20 million in nearly 200 projects. RTA said it partners with roughly half of local governments that have transit service operating in the northeast Illinois region, in addition to working closely with the CTA, Metra and [Pace](#).

Metra has also recently explained that it plans to close the Winnetka Station's ticket office as of Feb. 22 due to declining on-site ticket sales. The station is located on the Union Pacific North Line, and officials said in a statement that the station sold an average of 610 tickets per month in 2018, including 432 in December.

After Feb. 22, customers boarding their Metra train at the Winnetka Station can pay with cash to purchase a One-Way ticket on board the train from a conductor at no extra cost, a news release stated.

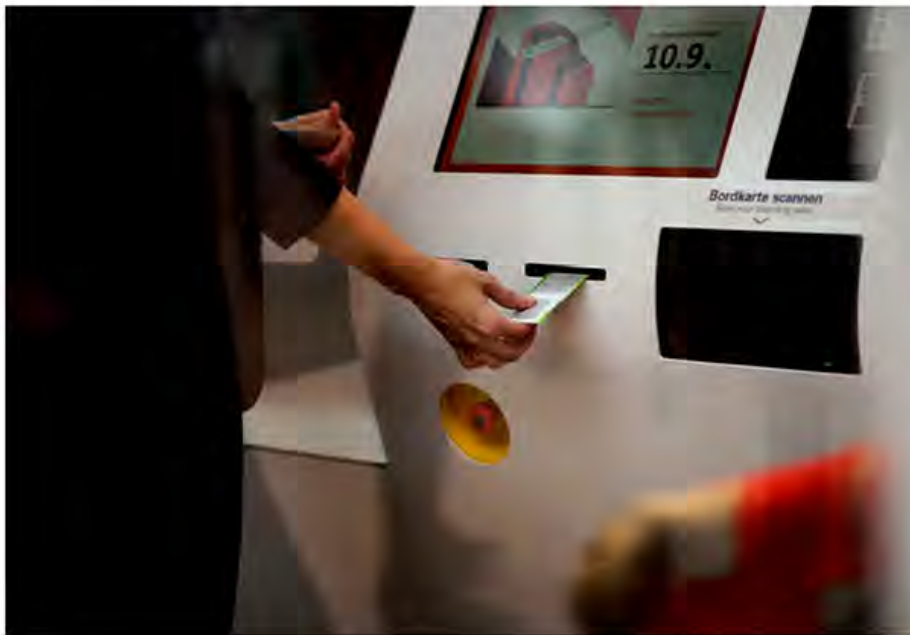
The Metra station serves about 740 customers during each weekday, selling the fewest tickets of all Metra's ticket agent-staffed locations, according to a statement from officials in a press release.

As the ability to purchase individual tickets and ticket passes online or through the mobile app has grown momentum, officials said on-site ticket sales have declined at the majority of Metra stations. Currently, Metra said about 43 percent of riders have been reportedly purchasing tickets using the [Ventra App](#).

Categories: [Commuter/Regional](#), [News](#), [Passenger](#), [Rapid Transit/Light Rail](#)
 Tags: [Chicago Transit Authority](#), [community planning](#), [CTA](#), [Metra](#), [Pace](#), [Paratransit](#), [Regional Transportation Authority](#), [RTA](#)

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The trend towards self-service will be strongly in evidence at this year's Passenger Terminal EXPO, where more than 300 exhibitors will display their latest products and innovations across 20,000m² at the London Excel, in six weeks' time. From check-in to bag drop, multiple vendors are planning to demonstrate their latest self-service solutions to help speed passengers through the terminal with as few queues as possible. "Depending on the specific solution and whether a one- or two-step process is offered, process times for self-service bag drop have been reduced to a minimum of seconds," says Jana Eull, senior marketing manager at Materna, which will be exhibiting its latest self-bag drop stations (pictured, above) at this year's show.

[CLICK HERE TO READ THE FULL STORY](#)

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Speaker Interview: Aude Ferrand, chief retail officer, Groupe ADP



Aude Ferrand, chief retail officer, Groupe ADP, France, reveals how retail operations at Paris airports are moving from a duty-free to a department store model.

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Information sharing and safer ATC

At this year's Passenger Terminal EXPO, **Leidos** will showcase a new tool to enable interoperability and information sharing through open standards.

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Hyundai Rotem selected for Warszawa Tram Contract; Poland

11 Feb. 2019



A little over half of the tram fleet in Warszawa is currently low-floor (Photo: Ryszard Piech)

POLAND: Tramwaje Warszawskie has selected Hyundai Rotem as preferred bidder to supply up to 213 low-floor trams, the operator announced on February 8.

Rotem's bid of 1.852bn złoty excluding VAT beat those of Pesa, which offered a price exceeding TW's budget, and that by a consortium of Stadler and Solaris, which did not meet all the tender specifications. The order is being financed partly by EU funds.

The base order is for 85 bidirectional and 18 unidirectional trams 33 m long, as well as 20 unidirectional trams 24 m long. There are options for a further 45 bidirectional and 45 unidirectional 33 m trams. Deliveries are scheduled to begin 22 months after contract signature, with deliveries of the 123 trams from the base order due to be completed by the end of October 2022. If the options are exercised, they would be delivered a year later.

The air-conditioned trams would be used on the existing network as well as on planned extensions. At present 59% of the TW fleet comprises low-floor vehicles.

Related news

- [21 Jun 2018 - Škoda to supply Warszawa metro trains](#)
- [22 May 2018 - SKM Warszawa signs Pesa Elf2 order](#)
- [05 Jul 2017 - Solaris to supply more electric buses to Warszawa](#)
- [06 Feb 2017 - Tenders called for up to 213 trams in Warszawa](#)
- [08 Jun 2016 - Warszawa tram extension contract signed](#)

Stadler lowest Bidder for Milano Tram Renewal; Italy

06 Feb. 2019



ITALY: Stadler Rail Valencia has been announced as low bidder for a contract to supply a new generation of 1 445 mm gauge trams to Milano public transport operator ATM. Formal contract award is expected to follow legal scrutiny of the tenders.

Bids were opened on February 5 for a six-year framework agreement covering the supply of up to 80 vehicles at an estimated cost of €213m. The package covers 50 cars for the

urban network and 30 to work the two interurban routes to Desio and Limbiate which are currently being refurbished. An initial build of 30 trams is expected to be called off immediately, with deliveries starting two years after contract signing.

Designated Tramlink S3 Leo, the three-section vehicles would be around 25 m long, with a low-floor centre section, providing 22 fixed and 44 folding seats. There would be six sets of doors and wide gangways to facilitate rapid boarding and alighting. Unlike the majority of ATM's existing trams, the new vehicles would be bidirectional, avoiding the need to provide turning loops at the terminus of every route.

Pointing out that many of the existing trams were now obsolete and it was no longer cost-effective to keep life-extending them, ATM President Luca Bianchi said the new trams would be more efficient to operate, thanks to modern controls and energy recovery technology. He added that the Tramlink S3 Leo would also have comprehensive safety and security features, including anti-collision systems and on-board CCTV cameras, as well as a comprehensive passenger information system.

Related news

- [13 Sep 2018 - Milano tram network reaches Rozzano](#)
- [16 Aug 2018 - Italian urban transport funding allocated](#)
- [09 Feb 2017 - Final Leonardo option exercised in Milano](#)
- [15 Jan 2014 - Milano interurban tram line to reopen](#)

Four shortlisted for Almaty light Rail PPP; Kazakhstan

07 Feb. 2019



KAZAKHSTAN: Almaty municipality has shortlisted four bidders for the 26-year PPP contract to design, build and operate a light rail line in the city.

The shortlisted bidders are:

- Itochu, Makyol and CAF;
- China Machinery Engineering Corp, China High Speed Railway Technology Co and China Railway 22th Bureau Group Co;
- Alstom, Marubeni, Gülermak and Meridiam;
- ENKA.

Five of the bids received were not shortlisted, including four from Chinese bidders and one from a Russian consortium.

The concession period includes three years for financing, design, construction and commissioning, and 23 years of operations and maintenance following the planned opening in 2022. When the concession period ends, the line would be transferred to the city's transport authority.

Construction of the 22.7 km route with 37 stops is planned to start this year. Ridership is estimated at 76 000 to 112 000 passengers per day, and services are to be operated with a fleet of 36 low-floor light rail vehicles.

The city would be responsible for the public element of financing, which would include 50% of the capital cost. It would also retain ridership risk, and would receive all fare revenue.

The private contractor would be paid an availability and quality fee to cover its investment and ongoing costs. It would also receive advertising and ancillary retail revenue.

Related news

- [03 Dec 2018 - Nine bids for Almaty light rail project](#)
- [01 Oct 2018 - Interest invited in Almaty Light Rail Transit PPP](#)

UK Government seeks Views on developing light Rail Technology; UK

07 Feb. 2019



UK: The government issued a call for evidence to inform the future development of light rail and related transport on February 7.

Light Rail Minister Jesse Norman said that the 'wide-ranging call for evidence seeks new ideas and new support for the next generation of light rail'. In addition to established tram technology, the call considers options including 'very light rail, ultra light rail and automated guided transit'.

'We want this call for evidence to act as a trigger, as a stimulus for new ideas, and as a means to gather input from a wide range of stakeholders, including those overseas, on the scale of the opportunity for light rail', said Norman. 'This will form an important part of our work on the Future of Mobility Grand Challenge established in the Industrial Strategy and on "smart places", which is considering the use, value and deployment of emerging transport technologies and services.'

The government has also announced £1.5m in funding to establish a light rail safety standards board. This would develop the safety working group of light rail industry body UK Tram, which aims to recruit two full-time staff with expertise in risk modelling. It also intends to appoint a permanent Chief Executive this year to replace Interim Chief Executive Peter Cushing.

'We're looking forward to seeing the next step in the evolution of the LRSSB and further improving what's already one of the safest modes of transport', commented UK Tram Managing Director James Hammett.

Related news

- [15 Jan 2019 - UK tram operators study automatic braking systems](#)
- [16 Oct 2018 - Virtual view of Birmingham tram extension](#)
- [15 Jun 2018 - Very light rail vehicle prototype contract awarded](#)
- [28 Nov 2017 - Dudley extension receives government funding](#)

Firenze Tram Route T2 inaugurated; Italy

12 Feb. 2019

ITALY: Firenze tram Route T2 was inaugurated at noon on February 11, ahead of the entry into passenger service at 14.30. Travel on the route is free for two weeks.

The opening ceremony was attended by President Sergio Mattarella, Minister of Transport & Infrastructure Danilo Toninelli, Mayor Dario Nardella, Toscana region President Enrico Rossi and European Commissioner Corina Crețu.

T2 runs from Piazza dell'Unità d'Italia in the city centre to Peretola Airport in the northwest, sharing a stop with the existing east-west Route T1. The 13 stops on the 5.3 km route include a stop serving Belfiore high speed railway station, which is under construction and due to open in 2022.

Construction started in November 2011 but was delayed by the liquidation of some companies in the Tram di Firenze consortium that developed the project. The line was originally planned to open in June 2014.

Hitachi Rail Italy supplied 22 five-section bidirectional 100% low-floor trams in November 2016 to operate the route. Regular services require 13 vehicles, and peak frequencies are 4 min 20 sec.

Crețu announced that the EU will provide a further €40m for the development of more tram routes in the city. Work on three extensions is due to begin in the second half of 2019.

T2 is to be extended at both ends: from Piazza dell'Unità d'Italia to Piazza San Marco via Piazza della Libertà in the south, and from Peretola Airport to Sesto Fiorentino-Polo Scientifico via Castello railway station in the north.

The initial section of Route T4 would link Porta al Prato railway station to Le Piagge, using an existing railway alignment. In the longer term, T4 would be extended to Campi Bisenzio in the west.

Related news

- [17 Aug 2018 - Next Firenze tram route to open in November](#)
- [16 Jul 2018 - Next phase of Firenze tram network inaugurated](#)
- [13 Feb 2018 - Testing begins on Firenze tram line T3](#)

Tatra-Yug delivers Tram to Alexandria; Egypt

12 Feb. 2019

EGYPT: The first of 15 high-floor trams that Tatra-Yug is supplying to Alexandria Passenger Transportation Authority began test running on February 10, having arrived in Alexandria four days earlier.

The tram is expected to enter revenue service on the 32 route-km standard gauge network in late February. It is stabled at the Moharem Bey depot.

The Ukrainian factory signed the contract in February 2017 and rolled out the first tram from its Dnipro factory in mid-2018. All 15 trams are to be delivered this year.

The air-conditioned two-section tram is 22 m long. It is equipped with a pantograph and a trolley pole so that it can operate on sections not compatible with a pantograph.

Related news

- [26 Jun 2018 - Alexandria tram rolled out](#)
- [26 Jan 2018 - Alexandria electric bus contract signed](#)
- [10 Feb 2017 - Tatra-Yug to supply trams to Alexandria](#)

Testing starts on next Antalya light Rail Line; Turkey

06 Feb. 2019



TURKEY: Testing on the next light rail line in Antalya began on January 25, after the completion of the route's first stage four days earlier.

The 11 km first phase has been built in 1½ years at a cost of TL700m. It will run from Varsak in the north to Otogar in the west, where interchange will be provided with the existing east-west Antray light rail line.

Work is underway on the second phase. This would take the route further south from Otogar to Müze, which is currently the western terminus of the heritage tramway. This route is to be upgraded to light rail standards and double-tracked to become part of the new light rail line, with through running between Varsak and Zerdalilik in the city centre. This would create a 23 km route serving 39 stops.

Antalya Municipality plans to purchase a total of 47 light rail vehicles to operate the route. Of these, 20 would be required for the first phase. The rapid depreciation of the lira caused

the initial tender to be cancelled, and the rolling stock for the first phase has since been retendered.

As a result of this delay, testing on the line is taking place using four LRVs borrowed from the east-west route. These were supplied by the Eurotem joint venture of Hyundai Rotem and Tüvasaş in 2016 as part of an order of 18 for the opening of the eastern extension to Expo 2016 and the airport.

Related news

- [22 Sep 2017 - Next Antalya light rail line approved](#)
- [18 Jul 2016 - Antalya tram extension enters regular service](#)
- [07 Apr 2016 - Eurotem rolls out Antalya tram](#)

Siemens to supply more light Rail Vehicles to Houston; USA

06 Feb. 2019



USA: Houston Metro has awarded Siemens Mobility a contract to supply 14 S70 low-floor light rail vehicles.

The LRVs will be built to an updated design with wider gangways for better passenger flow. To meet Buy America requirements, they will be assembled at Siemens Mobility's plant in Sacramento, California.

This is the third order for Siemens LRVs for Houston, and will bring the total number of Siemens vehicles in service in the city to 51.

'With a growing population, it's important to constantly improve availability and passenger experience and we're confident that our light rail vehicles will support the city's expansion and sustainability goals', said Siemens Mobility CEO Sabrina Soussan when the order was announced on February 5.

| Related news

- [11 Jan 2017 - Green Line completed in Houston](#)
- [26 May 2015 - Houston opens two light rail lines](#)
- [24 Dec 2013 - Houston opens second light rail line](#)
- [04 Mar 2011 - Houston buys Siemens Avantos](#)

A more intelligent Journey Planner; USA

06 Feb. 2019



PLANNING: Siemens' timetabling and journey planning software business HaCon is developing a module for its travel planning software suite which uses artificial intelligence to learn about a user's preferences.

This could learn a passenger's preferred transport modes and how far they are willing to walk, and then suggest personalised journey options. This could include or exclude cycle hire options depending on the weather forecast. The app could also learn what type of ticket someone usually buys and then offer that as the first choice when a particular journey is planned.

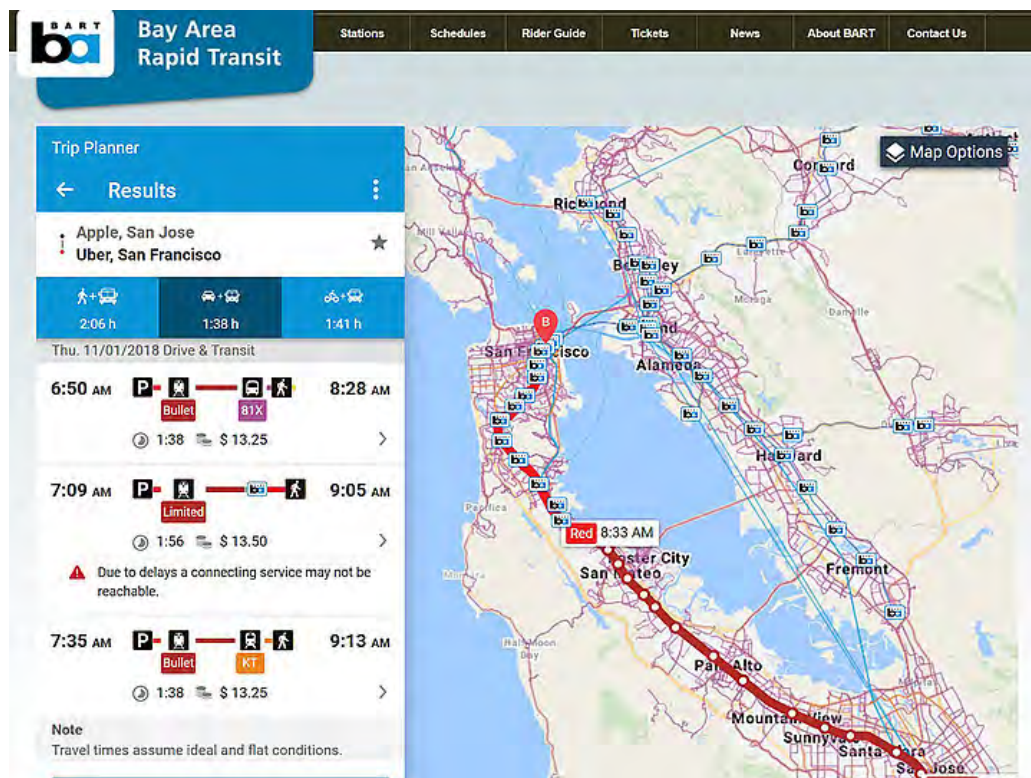
Data can be processed on the user's phone rather than in the back office system, addressing growing public concern about the information that technology companies might be collecting and what they are doing with it.

Related news

- [09 Jan 2019 - BART launches end-to-end journey planner for the San Francisco area](#)
- [13 Jun 2018 - Child-friendly journey planner launched](#)
- [15 Nov 2017 - HaCon takes majority stake in Bytemark](#)

BART launches End-to-End Journey Planner for the San Francisco Area; USA

09 Jan. 2019



USA: Bay Area Rapid Transit has worked with HaCon to develop BART Trip Planner web, iOS and Android apps for multimodal door-to-door journey planning in the San Francisco Bay Area. Siemens-owned technology company HaCon said it was a 'major upgrade' from the previous system, which was solely based on the scheduled timetable.

The software processes data from more than 30 operators in the nine Bay Area counties, including buses, trains, ferries and the famous cable car trams. It also takes into account walking, cycling and car routes, including current traffic levels. Integrated park & ride and bike & ride data includes information on parking and cycle storage availability at BART stations. Ride-sharing and cycle-sharing options are to be added in the next phases.

HaCon's HIM tool enables BART to respond to disruption more quickly and more accurately than before. Service advisories and alerts such as station closures, bus replacement services, station or trip-related messages are communicated in real time, and the trip planner can re-route passengers in accordance with potential service changes.

A step-by-step navigation feature factors in personal preferences such as favourite modes of transportation, and can route users to BART station entrances and exits. Train loading information gives riders the opportunity to pick less crowded services.

‘The new trip planner takes the hassle out of commuting because it provides a complete look at someone’s journey and offers a variety of ways to avoid traffic’, according to Ravi Misra, BART Chief Information Officer. ‘All trips use BART as the lynchpin of the itinerary and then make it easy to get to and from our stations using the various modes of transportation the Bay Area offers.’

Related news

- [06 Feb 2019 - A more intelligent journey planner](#)
- [13 Jun 2018 - Child-friendly journey planner launched](#)
- [30 May 2018 - BART launches diesel services to Antioch](#)
- [24 Jan 2018 - BART Fleet of the Future train carries passengers in San Francisco](#)
- [15 Nov 2017 - HaCon takes majority stake in Bytemark](#)
- [14 Jun 2017 - BART makes crime data publicly available](#)
- [13 Mar 2017 - BART analyses results of crowd-reduction trial](#)
- [03 Nov 2016 - BART aims for 'gold standard' in open data](#)
- [07 Sep 2016 - BART pays passengers in order to reduce overcrowding](#)
- [22 Sep 2015 - Cubic to modernise BART fare collection equipment](#)

Emission-free Bus funding announced; UK

11 Feb. 2019



UK: The government’s Office for Low Emission Vehicles is providing a total of £48m for emission-free buses and associated infrastructure in various cities, Buses Minister Nusrat Ghani announced on February 6.

The 19 successful bidders that took part in the ultra-low emission bus scheme competition last year are to receive funding for the purchase of a combined 263 buses and supporting infrastructure. The largest grant is going to Transport for London, which is to receive £3.5m for the purchase of 63 electric buses plus another £3.5m for associated infrastructure.

A £4.4m package for Brighton & Hove Buses covers the purchase of 20 hydrogen buses and associated infrastructure, while local operator The Big Lemon has £560 167 to spend on five electric buses.

Nottingham City Transport is receiving £1.1m for infrastructure to be used with biomethane buses. Trent Barton's £1.9m grant covers eight electric buses plus associated infrastructure and Nottinghamshire County Council gets £908 000 for four electric buses and infrastructure.

Electric bus grants are also going to operators and local authorities in Greater Manchester, South Wales, the North East, the West Midlands and West Yorkshire.

Related news

- [22 Nov 2018 - London bus depot goes electric](#)
- [29 Aug 2018 - Stagecoach pledges Manchester electric bus investment](#)
- [21 Jun 2017 - London transport strategy targets zero emissions by 2050](#)
- [15 Jun 2017 - BYD ADL to supply more short electric buses to London](#)
- [27 Apr 2017 - ABB to supply electric bus 'opportunity charging' stations to Harrogate](#)
- [09 Mar 2017 - London creates its first low-emission bus zone](#)

External links

- [Ultra-low emission bus scheme: successful bidders](#)

Maintenance Vehicle delivered to Philadelphia; USA

11 Feb. 2019



USA: Southeastern Pennsylvania Transportation Authority has taken delivery of a maintenance vehicle and a flat wagon with driving cab for use on the Norristown High Speed Line rapid transit route.

The Plasser American PMC50 vehicle is fitted with a National Crane 400B crane, a hydraulic tool power circuit and a stand-alone diesel generator set.

In addition to snow ploughs at both ends, the vehicle will use compressed air to clear snow from the third rail. A standalone air compressor supplies up to 2.8 m³/min to airline reels at both ends of the vehicle that can be used to clear turnouts of obstructions.

SEPTA says that the Norristown High Speed Line is especially susceptible to drifting snow owing to its third rail power supply and uncovered tracks which run along higher ground than most of the network.

The vehicle will also be used for moving maintenance materials, towing rolling stock, replacement and repair of track, and powering tools.

Related news

- [05 Sep 2018 - Sofia metro takes delivery of maintenance machines](#)
- [13 Feb 2017 - Prototype snow-clearing tram on test in Moscow](#)

Expanding Range of onboard Sales Technology; UK

06 Feb. 2019



ECR Chief Executive Simon Pont explains how the company is expanding from the onboard catering sales sector into ticketing technology.

RETAILING: Electronic point of sale company ECR is expanding from the onboard catering sales sector into ticketing technology, offering machines with a range of communication and ticket reading options, including 4G and wi-fi, 1D and 2D barcodes and chip & PIN payment.

The Go2 TicketPoS machine has been certified as meeting the UK's ITSO standards, and Rail Delivery Group certification is expected shortly with a contract to supply handheld ticket machines to a London commuter operator lined up.

ECR has recently won its first contract in the light rail sector, covering the supply of handheld ticket readers for use by conductors on Sheffield's Stagecoach Supertram network from June. According to ECR Chief Executive Simon Pont, this was a relatively complex project, as Supertram has many different fare types.

Pont sees the tram market as a good opportunity for growth, as 'there are a lot of tram companies across Europe that we could do business with'.

ECR already has extensive rail experience from supplying on-train catering providers, where 'we have pretty much got all the business in the UK', said Pont. Recent projects include developing an EPOS unit for Austrian Federal Railways which can cope with the different countries where ÖBB services operate, and it is now deploying an upgrade to enable passengers to use a mobile device to order food to be brought to their seat. A similar system is to be supplied to LNER in the UK.

Related news

- [07 Feb 2019 - Rambus and Worldline join up the journey](#)

Rambus and Worldline join up the Journey; UK

07 Feb. 2019



Rambus Ticketing Managing Director Russell McCullagh says that ticketing in the UK bus and metro sectors has been ‘revolutionised’ by technology.

TICKETING: Smart ticketing offers a ‘real opportunity to join up the journey’, according to Russell McCullagh, Managing Director of Rambus Ticketing. Ticketing in the UK bus and metro sectors has been ‘revolutionised’ by technology in recent years, and the national rail network is now a key sector for development.

A ticketing service needs to offer ‘a good customer experience’ to be ‘secure and trusted’, McCullagh emphasises, ‘but it’s difficult to find one solution that fits all; I prefer mobile, but some people like to go to a station and buy a ticket.’

European payment services company Worldline is now using Rambus’s remote ticket download software to enable its @Station and Mobile Ticket Issuing Service hardware to provide smart ticketing products complying with ITSO standards. This will allow passengers to collect pre-booked tickets using smart cards, and paves the way for the use of contactless bank cards. The first deployment is at Southeastern, with Govia Thameslink Railway to follow.

Worldline’s Global Director of Transport James Bain said the payment company’s focus is on ‘reducing friction’ for consumers paying for goods and services, and it sees transport as ‘the next big merchant market.’

The government has been talking about wanting to see the replacement of paper rail tickets for a number of years, and it is now providing the support needed for this to make progress, according to McCullagh. He explains that while train operators ‘will always look for innovation’, this requires investment.

Related news

- [06 Feb 2019 - Expanding range of onboard sales technology](#)
- [20 Dec 2018 - TravelMaster selects Rambus to supply South Yorkshire ticketing system](#)
- [02 Feb 2017 - Replacing paper tickets with mobile is 'only the start'](#)

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 36, February 2019



Bengaluru Metro-Rail, India

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

State Government allocates Rs 175 Crore for Metro Rail Project in Agra; India

11 February, 2019 by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 11 Feb, 2019

Agra: Decks are now clear for introduction of metro-rail in Agra with the state government allocating Rs 175 crore for the project last week, officials said. The state government has allocated Rs 175 crore for the Metro project in Agra, following clearance from the Public Investment Board (PIB) last week.

More Information:

- The city has grown in size and population, district officials said.
- Secretary of Agra Development Foundation, KC Jain, said that the demand for an efficient transport system has now been met, though the project will take at least 5 years.
- The proposed Metro network will be around 30 km and will run on two routes.
- The Agra metro project cost was estimated to Rs 13,781 crores.
- Now it has been made Rs 8,262 crores.

To know more about recent developments of Agra Metro—

08 Jun, 2018: [Agra Metro Update: LMRC Invites Tender To Engage Detailed Design Consultant For Works From Sikandra to Taj East Gate Corridor-1 of Agra Metro Project](#)

05 Oct, 2017: [Agra Metro Update: Detailed Project Report Of Metro Rail Project In Agra To Be Ready By December-End](#)

13 July, 2017: [Groundwork for Agra Metro Rail Project May finally begin](#)

Public Investment Board approves Metro Rail Projects in Patna, Agra, Kanpur, and Ahmedabad Metro Phase-2; India

12 February, 2019 by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 12 Feb, 2019

New Delhi: The Public Investment Board (PIB) on 06.02.2019 approved metro rail projects in Patna, Agra, Kanpur, and Ahmedabad Metro phase-2.

Patna Metro-

- The Patna Metro rail project will cost Rs 13,400 crore.
- According to the DPR, in the phase-1, a 33.1 kilometer long track will be set up in Patna having 2 corridors:
 - East-west corridor
 - North-south corridor
- The east-west corridor would run between Danapur and Patna railway station via Dakbungalow Square.
- The North-south corridor would run between the Inter-State Bus Terminal and Gandhi Maidan via Rajendra Nagar and Ashok Rajpath.
- The project is expected to be completed in 5 years from the date of its commencement.

Agra Metro-

- The proposed Metro network will be around 30 km.
- Metro rail will run on two routes in the city.
- Last week, the state government has allocated Rs 175 crore for the Metro project in Agra.

Kanpur Metro-

- A total of 32.385 km of metro rail network will be built in Kanpur.
- Two corridors will be built under the Kanpur Metro project, according to the revised DPR.
- The proposed metro rail will cover IIT, Rawatpur, Bada Chauraha, Motimahal, Kanpur Central, ISBT Jhakarkatti and Naubasta.

Ahmedabad Metro phase-2

- The Metro rail phase-2 project will cost Rs 7500 crore.
- The route length has been shortened to 28.26 km, according to the revised DPR.
- It will have two corridors-
 - Motera to Mahatma Mandir (22.84 km)
 - GNLU linking PDPU and GIFT City (5.42 km)

Karnataka Government examining viability of Metro Rail Projects in Mysuru, Mangaluru and Hubballi-Dharwad; India

[9 February, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 9 Feb, 2019

Karnataka government was examining the viability of establishing Metro Rail projects in Mysuru, Mangaluru and Hubballi-Dharwad, said Chief Minister H D Kumaraswamy presenting his government's second budget in the legislative assembly, on Friday.

More Information:

- By adopting certain modifications in the Suburban Rail Policy-2018, suburban rail services in Bengaluru would be implemented at a total estimated cost of Rs 23,093 crore, by establishing a SPV called Bengaluru Rail Infrastructure Development Entity (B-RIDE) under State and Central Government partnership, he also announced.
- The CM said, "Generally, across the world, the Metro Rail System can be found in cities having more than 20 lakh population. This is economically useful also. However, certain demands have been received from Mysuru, Mangaluru and Hubballi-Dharwad to establish the Metro Rail System in these cities."
- Presenting his government's second budget in the legislative assembly, he said that in this background, they were examining the viability and pros and cons of establishing Metro Rail Project in these cities.
- The existing operationalised Bengaluru Metro has 42.3 KM network, carrying an average of 3.75 lakh passengers every day.
- He said, to reduce traffic congestion in Bengaluru, a design and action plan report would be prepared for Multi Modal Transport Hub at Hebbal, Byappannahalli, K.R.Puram, Kadugodi, Challaghatta and Peenya areas.
- There were plans to develop necessary infrastructure to provide seamless integration between Metro, Rail and TTMC at its strategically located transit infrastructure sites to facilitate Inter-Modal Integration design in Bengaluru, Kumaraswamy said.
- The CM also said that he intended to launch a comprehensive scheme for the mobility of Bengaluru.
- An important aspect of it was to decrease movement of private vehicles by concentrating on well established public transport, he added.

Coimbatore Metro Project Update: State Government invite Tenders to study Feasibility of Metro Rail Project in Coimbatore; India

[4 December, 2017](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 04 Dec, 2017

Coimbatore: The State government has invited tenders to study the feasibility of multi-crore metro rail project in the city, CM Edappadi K Palaniswami said. "This is going to be one of the biggest infrastructure projects in Coimbatore. Once the project is completed, all the traffic woes of the city will end," he said.

More Information:

- The CMRL (Chennai Metro Rail Ltd), a Special Purpose Vehicle (SPV) formed to implement the Chennai metro rail project, has been entrusted with the project.
- In Coimbatore, mass rapid transit system will be constructed for a total distance of 118 km, officials said.
- While the metro rail project will cover only a distance of 50-60km, the remaining distance will see covered under the bus rapid transit system

Metro Phase-1

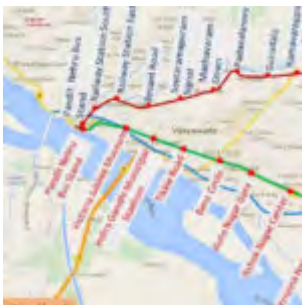
- In the first phase, the metro rail project will cover distance of 45 km.
- A senior official said,"The tender has been called so that interested consultancy firms can send in their project qualification proposals regarding the preparation of feasibility study and detailed project report. Based on the feasibility, the project will be implemented."
- The companies need to send in their proposals to the general manager of the Chennai Metro Rail Ltd within 3 weeks.
- The first phase of the project is likely to be commenced on Avinashi Road, according to sources.

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20 July, 2017 [Coimbatore to get it's own Metro Rail](#)



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18 August, 2017 [UMTC to Draw Detailed Project Report of Vijayawada Metro](#)



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- 11 August, 2017 [CM talks with Union Minister for urban Development about Indore & Bhopal Metro Projects](#)



- 20 October, 2017 [State Government will sign Agreement with JICA for second Phase of Chennai Metro Rail Project by March 2018](#)



- 2 September, 2017 [Delhi-Ghaziabad-Meerut RRTS \(Rapid Rail Transit System \) Corridor work fo start in March next Year, check Details here](#)



- 6 September, 2018 [State Government sends DPR for starting Metro Rail in Kanpur, Agra and Meerut to Centre](#)



- 11 September, 2017 [Visakhapatnam Metro Update : AMRC invites Expression of Interest \(Eol\)/Request for Qualification \(RFQ\) for Implementation of Visakhapatnam Metro Project](#)



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- 9 January, 2019 [Lucknow Metro Update: Entire North-South Corridor likely to become operational by February](#)



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- 1 September, 2017 [Center asks Patna to make new Proposal For Metro Rail Project](#)
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- 7 September, 2017 [State Cabinet gives Green Light for Implementation of ambitious Metro Rail Project in Guwahati](#)

Coimbatore to get it's own Metro Rail; India

[20 July, 2017](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 20 July, 2017

Chennai: On Wednesday, CM Edappadi K. Palaniswami announced in the State Assembly Coimbatore will get Metro Rail.

The CM also announced that the project proposal for Chennai Metro's Phase II has been given an in-principle approval & sent to the Centre for approval & disbursement of funds.

More Information:

- The budget for Phase II has been set at Rs 85,047 crore (approx US\$ 13,288.59 Million).
- Phase II of the project comprises 3 corridors running to 107.55 km
 - Madhavaram Milk Colony to SIPCOT for 45.77 km (via Padi, Valasaravakkam & Medavakkam)
 - CMBT to Light House for 17.12 km
 - Madhavaram Milk Colony to Sholinganallur for 44.66km (via Perambur, Luz, Adyar and ECR)
- A statement from the government said, however, keeping in mind the traffic congestion that would arise in the Virugambakkam, Valasaravakkam areas on Arcot Road, the metro line from CMBT to Lighthouse has been extended to Poonamallee through Vadapalani & Porur.
- Chennai Metro Rail will get a detailed plan report for this extension ready.
- The statement said that this would cost an additional Rs 3,850 crore (approx US\$ 601.56 Million).

Datamatics Consortium bags Automated Fare Collection (AFC) Contract for Mumbai Metro Line 2A, 2B and 7; India

[9 February, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 9 Feb, 2019

Mumbai: The Consortium led by Datamatics Global Services Limited (DGSL) and AEP Ticketing solutions S.R.L, Italy (AEP), have been issued the Letter of Acceptance (LoA) for implementing Automatic Fare Collection (AFC) system for 52 stations of Mumbai Metro Line 2A (Dahisar to DN Nagar Metro), 2B (DN Nagar to Mankhurd Metro) and 7 (Andheri (E) to Dahisar).

More Information:

- The LOA was issued by MMRDA (Mumbai Metropolitan Region Development Authority) to the Consortium for approx Rs. 160 crores.
- The LOA between the Consortium and MMRDA was signed in the presence of Shri. R. A. Rajeev, IAS, Metropolitan Commissioner, MMRDA; Shri. Sanjay Waghmare Director(Systems), Metro PIU, MMRDA, Mr. O. P. Nebhnani, Officer on Special Duty(S&T), Metro PIU MMRDA, Dr. Lalit Kanodia, Chairman, DGSL, Shri Rahul Kanodia, Vice Chairman & CEO – DGSL; Shri Sanjeev Subhedar, EVP and Global Head Engineering Services and other top officials from MMRDA and DGSL.
- "The ticketing system for the Mumbai Metro should be implemented taking into consideration ease of use for the commuters of the city of Mumbai. At the same

time it should be state of art supporting future of the growing metro network and supporting upcoming fare media technologies,” Rajeev said on the occasion.

- “Over the years, Datamatics has invested and built expertise in Automated Fare Collection technology and has been a part of large global AFC mandates. We are headquartered in Mumbai and therefore winning Mumbai Metro project is special and a very proud moment for us,” commenting on the occasion, Dr. Lalit S. Kanodia, Chairman, Datamatics, said.
- AFC has been a focus area for Datamatics and over the last 25 years, the company has been instrumental in successfully executing over 25 marquee projects in the tier 1 metropolitan cities across the globe including Sydney, Hong Kong, London, Chicago, Melbourne, etc.
- “Datamatics is the only Indian company to have AFC solution. We have put in our best efforts for making the Lucknow Metro a successful project and we are delighted to be a part of prestigious Mumbai Metro Line 2 and 7 projects,” Rahul L. Kanodia, Vice Chairman & Chief Executive Officer, Datamatics, said.
- “Datamatics is committed to Indian customers to provide most advanced AFC solution suitable for Indian conditions within project timelines. Datamatics assures its customer of continued upgrades and long term support to protect the investment made by our customers,” Sanjeev Subhedar, EVP & Head – Engineering Solutions, Datamatics, said.

To know more about recent developments of Mumbai Metro –

08 Feb, 2019: [Tunnelling begins below Mithi river for Mumbai Metro Line-3 project](#)

05 Feb, 2019: [MMRC awards Heavy Duty Escalator Works contracts for 13 Stations for Mumbai Metro Line-3](#)

01 Feb, 2019: [TATA Projects Announces Completion of 2.47 km of TBM Tunnelling for Mumbai Metro Line-3](#)

(Please reach us at editor@railanalysis.com for more information.)

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16 January, 2019 [MMRC awards Contract for Automatic Fare Collection \(AFC\) System for Mumbai Metro Line-3](#)



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- 27 July, 2017 [MMOPL launches India's first mobile Ticketing System 'OnGo'](#)



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- 11 January, 2018 [Simplex Infrastructures bags Order Worth Rs 1,080 Crore from MMRDA for Construction of 11 elevated Metro Stations](#)



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- 17 October, 2017 [Mumbai Metro Update: MMRDA receives Eight Bids for Civil Work of Metro 2B Corridor from DN Nagar to Bandra-Kurla Complex](#)



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- 18 October, 2018 [MMRDA to finalise Contract for 378 Coaches for Metro 2A, Metro 2B and Metro 7 by October-End](#)
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- 14 November, 2017 [Mumbai Metro-2B Update: Simplex Infrastructure Bags Contract worth Rs 1080 Crore from MMRDA for the Construction of 11 Elevated Stations of Metro-2B Corridor](#)
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- 16 June, 2017 [10 Companies placed Bids for Civil Construction of Metro-2B & Metro-4](#)
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- 23 March, 2018 [Mumbai Metro Update: MMRDA makes Budgetary Provision of Rs 4,700 Crore for 7 Metro Projects in Mumbai](#)

Budget Provision for Regional Rapid Transit System (RRTS) by UP Govt.; India

[7 February, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

The Uttar Pradesh budget presented today by state Finance Minister Rajesh Agarwal gave Regional Rail project a major boost with the allocation of 400 crores to National Capital Regional Transport Corporation (NCRTC) for RRTS project. Earlier in the Union Budget, Central Government has allocated a sum of Rs. 1000 crores to this project.

Delhi – Ghaziabad – Meerut RRTS Corridor is 82 km long and will have 22 stations. The DPR of the project has already been approved by UP Government, while In-principal approval of Delhi Government has been received recently. Pre-construction activities such as Geotechnical Survey, Road widening work, Utility diversion work, Initial Pile Load Testing etc are in full swing for construction of this corridor.

The high-speed rail will cover the distance from Meerut to New Delhi in less than 60 minutes. It is a new, dedicated, high speed, high capacity, comfortable commuter service connecting regional nodes of NCR to Delhi.

The NCRTC has already established its field offices in Ghaziabad, Meerut, and Delhi and posted officers and mobilized resources. This corridor is expected to be completed by the year 2025.

NCRTC is a joint venture of the Union government, Haryana, Delhi, Uttar Pradesh, and Rajasthan and is executing three prioritized RRTS corridors — Delhi-Alwar, Delhi-Meerut, and Delhi-Panipat in the first phase. Eight such corridors have been identified under the Integrated Transportation Plan 2032 prepared by the National Capital Region Planning Board (NCRPB).

Source: NCRTC

RRTS Update: Bids invited for Conducting initial Pile Load Test from Gurugram (IDPL Complex) to Dharuhera for Delhi-SNB RRTS Corridor; India

[5 January, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 05 Jan, 2019

NCRTC (National Capital Region Transport Corporation Ltd.), a joint venture Company of Government of India and participating States, invites Open e-bids (Manual bid are not permitted) on Local Competitive Bidding under single stage two packet system for “Conducting Initial Pile Load Test from Gurugram (IDPL Complex) to Dharuhera for Delhi – SNB RRTS Corridor”.

Tender Description:

- **Name of Work:** Contract : DA/CE/COR-OF/003: Conducting Initial Pile Load Test from Gurugram (IDPL Complex) to Dharuhera for Delhi – SNB RRTS Corridor.

- **Estimated Cost of Work** : INR 3,50,14,369
- **Completion period of work** : 6 months
- **Pre-bid Meeting** : 03.01.2019 at 1200 Hrs.
- **Bid submission start date** : 12.01.2019 from 1100 Hrs
- **Bid submission end date** : 17.01.2019 up to 1500 Hrs
- **Date & Time of opening of Bid (Technical Bid only)** : 18.01.2019 at 1500 Hrs.

Authority and place for submission of Bid Security, Cost of bid documents, Details of MSEs/ Startup business, seeking clarifications on bid documents and address for pre bid meeting:

Group General Manager (Civil)

National Capital Region Transport Corporation Ltd. (NCRTC)

7/6, Siri Fort Institutional Area, August Kranti Marg, New Delhi-110049

Phone: 011-41066943, Fax: 011-4106 6953

E-mail: vikas.jain@ncrtc.in

For More Details: [Click Here](#)

To know more about recent developments of RRTS –

08Dec, 2018: [NCRTC approves DPR of Delhi-Gurgaon-SNB RRTS corridor](#)

05 Dec, 2018: [Bids invited for Widening of road for Delhi-Ghaziabad-Meerut RRTS Corridor](#)

13 Nov, 2018: [RRTS Project Along Haryana-Rajasthan to Get Major Boost Next Year](#)



Author:

Narinder Sharma is a part of the content team of Rail Analysis India as a writer and marketing executive.

His interest is in the Railways, Metro and Transportation Sector of India . Please reach us at editor@railanalysis.com for more information .

Budget 2019: Allocation for Railways' Rolling Stock increased by 64%, India

[2 February, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 2 Feb, 2019

Rail passengers are in for some faster, fancier and state-of-the-art coaches and trains in the coming fiscal with Union Minister Piyush Goyal in his first Budget increased the allocation for railways' rolling stock by 64%. The railways' plan of exporting its coaches and be a part of the USD 200 billion rolling stock market worldwide will get a huge impetus by allocation of Rs 6,114.82 crore in the Budget.

More Information:

- In 2018-19, budgetary allocation in this regard was Rs 3,724.93 crore.
- Buoyed by the success of the indigenous Train-18 (named recently Vande Bharat Express) which has hit a maximum speed of 180 kmph during trials, the new air-conditioned rakes, rakes for the metros and other such coaches and train sets, the railways has already drawn a blueprint till 2021 to increase production in its factories.
- If the target set by the railways for its factories – the Modern Coach Factory in Rae Bareilly, the Integral Coach Factory in Chennai and its factories in Kapurthala and Haldia – is met, then they would have together manufactured almost 15,000 coaches of different kinds in 2019-21, according to officials.
- **These will include-**
 - 200 Humsafar coaches
 - 290 Deen Dayalu coaches
 - 40 Antyodya coaches
 - Other coaches for Metros, EMUs and MEMUs
- Also, the Railways is planning to produce 6 more Train-18s at a cost of Rs 97 crore each.
- The railways in the next 3 years will manufacture 884 Deen Dayalu – general category coaches, these will have padded seats, water dispensers and bio toilets.
- It will also manufacture 600 MEMUs, which will replace passenger trains in major cities in the coming years.
- Goyal, who was given the charge of the finance ministry temporarily recently, presented the Budget 2019-20 in absence of Jaitley, who is away in New York for medical treatment.

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Delhi Metro Update: CMRS approves 9.4 km Dilshad Garden-New Bus Adda Section of Red Line; India

7 February, 2019 by [Team - Rail Analysis India](#)

Team - Rail Analysis India

New Delhi: The 9.4 km-long Dilshad Garden-New Bus Adda section of Delhi Metro's Red Line has got the approval from the Commissioner for Metro Rail Safety (CMRS), paving way for its opening, officials said on Wednesday. The new corridor is likely to be inaugurated soon, sources said.

More Information:

- The elevated section comprises 8 stations-
 - Shahid Nagar
 - Raj Bagh
 - Rajendra Nagar
 - Shyam Park
 - Mohan Nagar
 - Arthala
 - Hindon River Station
 - New Bus Adda
- A senior official said, "Commissioner for Metro Rail Safety S K Pathak inspected the Dilshad Garden-New Bus Adda section of metro on February 5 and has granted the approval."
- The section will immensely benefit the people of Ghaziabad and connect the satellite city with the national capital.
- He said, passenger services on this section will be started soon after meeting all necessary compliances and formalities.
- This section will be an extension of the 25.09-km Rithala-Dilshad Garden corridor or Red Line, which has 21 stations.
- After the opening of this section, the Delhi Metro network will span 336.5 km with 244 metro stations.
- Currently, the Delhi Metro's operational span is 327 km with 236 stations.

To know more about recent developments of Railways –

2 Feb, 2019: [Delhi Metro Update: Safety Inspection of Dilshad Garden to New Bus Adda Section of Red Line on 5 February](#)

02 Feb, 2019: [Delhi Metro gets Rs 414.70 Crore in Union Budget 2019-20](#)

25 Jan, 2019: [Delhi Metro Update: Passenger Services on Dwarka-Najafgarh Section likely to begin by September](#)

(Please reach us at editor@railanalysis.com for more information.)

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- 2 February, 2018 [Detailed Project Reports submitted for two Metro Extensions – Noida Sector 62 to Sahibabad & Vaishali to Mohan Nagar](#)
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- 10 March, 2018 [20 km Majlis Park-South Campus Section of Delhi Metro's Pink Line to be opened for Public On March 14](#)
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- 10 April, 2018 [Delhi Metro Update: Remaining Portion of Magenta Line of Delhi Metro to Be open for Public soon](#)



- 9 January, 2017 [Phase IV line to bring West Delhi closer](#)

L&TMRHL awarded outstanding Public-Private Partnership (PPP) Project in the Metro Rail Sector in India; India

[30 January, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

L&T Metro Rail (Hyderabad) Limited (L&TMRHL) has been awarded “Outstanding Public-Private Partnership (PPP) Project in the Metro Sector in India –The World’s Largest PPP Metro Project” by Rail Analysis India in Rail & Metro Awards Ceremony 2019 in New Delhi recently. Mr. M. P. Naidu, Project Director, L&TMRHL received the award from Mr. Ashok Goyal, Chairman, Rail Analysis India. This award is a celebration of excellence in Rail & Metro Systems.



MR. M. P. NAIDU, PROJECT DIRECTOR, L&TMRHL RECEIVING THE AWARD FROM MR. ASHOK GOYAL, CHAIRMAN, RAIL ANALYSIS INDIA

Mr. KVB. Reddy, MD & CEO, L&TMRHL stated, “It is indeed an honour to be recognized as an outstanding metro project in PPP sector and truly we are a model for all other PPP projects in the country to be emulated. I appreciate the efforts of Rail Analysis India for their ongoing research, highlighting the concerns of the sector and recognizing the best

practices followed. This award is to the hard work of each and every individual involved in this mammoth project.”

Other dignitaries present during the award ceremony:

Mr. Parag Verma, Chief General Manager, Business Development, IRCON
Mr. Alain SPOHR, Managing Director, India & South Asia, Alstom
Mr. Sudhir Rao, MD, India, Bombardier Transportation
Mr. Tilak Raj Seth, Executive VP, Siemens Mobility Division
Mr. J.S Mundrey, President, Rail Consult India

About L&T Metro Rail (Hyderabad) Limited:

L&T Metro Rail (Hyderabad) Limited is a subsidiary of Larsen & Toubro, an Indian multinational engaged in technology, engineering, construction, manufacturing and financial services with over USD 18 billion in revenue. It operates 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 for eight decades.

Year End Review 2018 – Metro Projects, India

[29 December, 2018](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

The Ministry of Housing & Urban Affairs has embarked upon one of the most ambitious programmes undertaken in the world for **Urban renaissance for rejuvenating and transforming Indian cities** through a number of initiatives including **infusion of more than Rs. 6,85,758 crore for ensuring** citizen friendly urban areas. The transformation has been undertaken by way of implementing key urban reforms, projects for urban rejuvenation including augmenting the **urban transport by way of new metro lines**.

URBAN TRANSPORT

Metro Lines Commissioned/Operational-

At present, about 536 kms of Metro Rail lines are operational in 10 cities i.e. Delhi & NCR, Bangalore, Hyderabad, Kolkata, Chennai, Jaipur, Kochi, Lucknow, Mumbai and Gurugram. Since May, 2014 to till date, about 287 Kms of metro rail lines have been commissioned in Delhi & NCR, Bangalore, Chennai, Kochi, Lucknow, Mumbai, Jaipur, Hyderabad and Gurugram. In 2018 (from January, 2018 to till date), about 110 km of **metro rail** lines have been commissioned in Delhi & NCR, Hyderabad and Chennai.

Metro Projects approved-

Since May, 2014, 13 new metro projects with a total length of about 248 Kms at a total cost of Rs. 68,021 crore have been approved for Nagpur, Ahmedabad, Gurugram, Lucknow, Chennai Extension, Pune, Delhi Metro Extensions, Noida – Greater Noida, Bhopal and Indore. In 2018 itself, 3 new projects with a length of about 66 Kms at a total cost of Rs. 16,408 crore have been approved for Bhopal, Indore and Delhi Metro Extn from Noida City Centre to Noida Sector 62.

Metro Inauguration-

Foundation of 6 metro projects has been laid since May, 2014, for Nagpur, Pune, and 4 lines in Mumbai. Several new metro lines have been inaugurated since May, 2014 in Delhi, Hyderabad and Kochi. Delhi Metro extension from Mundka to Brigadier Hoshiyar Singh (11.18 Km) and Delhi Metro extension from Escort Mujesar to Raja Nahar Singh Ballabgarh (3.205 km) was inaugurated during 2018. Around **650 kms of metro rail projects are at various stages of implementation** in Delhi & NCR, Kolkata, Bangalore, Chennai, Kochi, Jaipur, Mumbai (including State initiatives by MMRDA), Hyderabad, Nagpur, Ahmedabad, Lucknow, Pune, Noida, Bhopal and Indore. **About 750 kms of Metro Rail Systems and 373 km of Rapid Rail Transit Systems (RRTS) are under planning in various cities.**

In order to promote “Make in India” and indigenization of various metro rail system, standard specification of rolling stock, signalling system, electrical & electromechanical metro rail components and civil engineering structures have been issued. Further, eligibility criteria for procurement of rolling stocks has also been issued. **I-Metros (Indian Metro Rail Organisations’ Society) – a platform to exchange ideas, pooling of knowledge and sharing of experience, best practices, innovations etc. among the Indian metro rail companies to nurture excellence in performance was launched in March 2018.**

Progress of Pune Metro; India

[5 December, 2017](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Work has started in two stretches

1) Bhosari (NashikPhata – Kharalwadi)

2) CME to Megamart

No. of foundations done so far in both stretches is 48

No. of piers (up to 1st lift = 11) no of piers up to pier cap 4.

The work of Harris bridge will be started by 7th December and substructure will be completed by 30th June 2018 before monsoon.

Total of 41 segments have been casted 1st span of viaduct likely to be launched by 26th December.

Station

Work of stations is awarded and 1st station to be taken is SantTukaram Nagar. The trenching work for identified utilities has been already commenced on 28th November & geo-technical investigation is in progress for station work.

FOB

New FOB will be constructed at SantTukaram Nagar metro station which will connect concourse metro station with state bus transport stand at VallabhNagar with the IT

industries at other end. The Foot over bridge will be of 65 m span and 6m wide, it has been kept sufficiently wide to cater passenger traffic of metro as well as pedestrians crossing the road.

The architectural view of FOB has been kept as latest state of art and it will be integrated with metro station.

Old FOB will be dismantled only when new FOB is constructed.

Tree Transplantation

MAHA Metro to undertake tree transplantation by world techniques. The trial run of tree transplantation with of 10 trees will be done at Sahyog Kendra. This method is effective and proven to give good survival rate.

PCMC Standing Committee Chairman has requested MAHA Metro to take up the work of preparing a new DPR for extension of PCMC – Swargate till Nigdi.

METRO NEWSLETTERS

on

URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 37, February 2019



Proposed Monorail in Salvador, Brazil

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
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METRO 38, February 2019



Bengaluru Metro-Rail, India

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

Indian Prime Minister launches Train 18 Inter-City EMU; India

Feb. 15, 2019

Written by [Keith Barrow](#)

INDIAN Prime Minister Mr. Narendra Modi marked the entry into commercial service of the domestically-developed Train 18 inter-city EMU on February 15, when he flagged off the prototype train in a ceremony at New Delhi station.



Related Posts

[JR East plans new rail link to Tokyo Haneda Airport](#)

Feb 20, 2019 | [Asia](#)

The 160 kmph Train 18 set is being used on Delhi – Varanasi **Vande Bahrat Express** services, which operate daily, except on Mondays and Thursdays with intermediate stops at Kanpur – Allahabad.

The [16-car air-conditioned train](#) will seat 1128 passengers and features passenger Wi-Fi, a GPS-based passenger information system, bio-vacuum toilets, and personal reading lights at every seat. Each coach is equipped with a galley serving hot meals.

Chair car fares are 40% higher than those of *Shatabdi Express* services with a 30% premium on executive car tickets.

The *Vande Bahrat Express* will cover the 776km between New Delhi and Varanasi in eight hours, compared with 11.5 at present.

The train encountered issues on its inaugural journey on February 16 when brakes in a carriage reportedly jammed. Soon after the brakes failed, the drivers noticed smoke in the

last four coaches and power was lost in all compartments, and the train had to be brought to Delhi to fix the fault.

However, the train was fixed in time for the first commercial run on February 17, which was sold out.

Train 18 was developed and built by the Integral Coach Factory (ICF) in Chennai in less than 20 months using 80% domestic content.

Categories: [Asia Fleet News](#)

Tags: [ICF](#) [India](#) [Indian Railways](#)

Printed from **THE TIMES OF INDIA**

Metro: Government sets June 2020 Deadline; India

TNN | Jan. 22, 2019, 04.56 AM IST



AHMEDABAD: The state government has given a deadline of June 2020 to the Gujarat Metro Rail Corporation Limited (GMRC) to complete the Metro rail network in Ahmedabad city. The GMRC has plans to roll out metro rail in the 6 km stretch from Vastral to Apparel Park by end of February.

A senior officer said that recently during a meeting the government has asked the metro rail authorities to ensure that the entire project was completed by given deadline. The officials said that they were ready to complete the entire project before June 2020.

The officials further said that the elevated corridor is likely to be completed by October this year. At present four tunnel-boring machines are working on the 6km underground stretch of metro between Apparel Park and Shahpur, and two tunnels for the up and down lines respectively are being built. Metro officials said that around 50% of the underground network had been completed. The managing director of GMRC, I P Gautam said, "The underground tunnel from Apparel Park to Kalupur has already reached Saraspur and

about 60% of the work on this stretch is completed, while on the Kalupur to Shahpur stretch work has been completed on nearly 1.5 km. Work for the three stations at Kalupur, Gheekantha and Shahpur are going on in full swing.

Metro officials said that two tunnel-boring machines are moving parallel to each other. The second machine is just 400 meter behind the first machine.

A team of officials from the Research Designs and Standards Organisation under the ministry of railways has confirmed that they will be arriving in the state on February 18 and the metro's first trial run on tracks will be carried out in the presence of the RDSO team. The RDSO officials will be camping in Ahmedabad before they certify that the train is fit for commercial use.

Metro officials said that the second metro train will arrive by February 7. The second train will be ready for its run by February 22 and hence there will be two trains moving on the 6km stretch which is ready for use.

Urban Rail Transit Systems in India



[Bengaluru Metro](#)
[Chennai Metro](#)
[Chennai Suburban Railway](#)
[Chennai MRTS](#)
[Delhi Metro](#)
[Delhi Suburban Railway](#)
[Gurugram Metro](#)
[Pune Suburban Railway](#)
[Hyderabad Metro](#)
[Hyderabad Suburban Railway](#)

[Jaipur Metro](#)
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[Kolkata Metro](#)
[Kolkata Suburban Railway](#)
[Kolkata Tram](#)
[Lucknow Metro](#)
[Mumbai Metro](#)
[Mumbai Suburban Railway](#)
[Mumbai Monorail](#)

Operational urban Rail Transit Systems in India

Urban Rail Transit in [India](#) consists of [suburban rail](#), [rapid transit](#), [monorail](#), [light rail](#), and [tram](#) systems.



Contents

- [1 Rapid transit \(Metro\)](#)
- [2 Suburban rail](#)
- [3 Monorail](#)
- [4 Light rail](#)
- [5 Tram](#)
- [6 Rolling stock manufacturers](#)
- [7 Legislation](#)
- [8 See also](#)
- [9 References](#)
- [10 Notes](#)

Rapid Transit (Metro)

There are currently 11 operational rapid transit (also called 'metro') systems in ten cities in India.^[1] As of September 2018, India has 515 [kilometres](#) (320 [miles](#)) of operational metro lines and 381 stations. A further 500+ km of lines are under construction. Metro rail lines in India are composed of mainly [standard gauge](#). Projects like the Kolkata Metro and Delhi Metro used broad gauge for their earliest lines but all new projects in India are on standard gauge as rolling stock imported is of standard gauge.

The first [rapid transit](#) system in India is [Kolkata Metro](#), which started operations in 1984. The [Delhi Metro](#) has the largest network in the entire country. The newest metro opened is [Noida-Greater Noida Metro](#) on 25 January 2019.

In 2006, the National Urban Transport Policy proposed the construction of a metro rail system in every city with a population of 20 lakh (2 million).¹ On 11 August 2014, [Union Government](#) announced that it would provide financial assistance, for the implementation of a metro rail system, to all Indian cities having a population of more than 1 million. In May 2015, the [Union Government](#) approved the Union Urban Development Ministry's proposal to implement metro rail systems in 50 cities. The majority of the planned projects will be implemented through special purpose vehicles, which will be established as 50:50 joint ventures between the Union and respective State Government. The [Union Government](#) will invest an estimated ₹5 lakh crore (US\$70 billion). In a new draft policy unveiled in March 2017, the Central Government stated that it wanted state governments to consider metro rail as the "last option" and implement it only after considering all other possible

mass rapid transit systems. The decision was taken due to the high cost of constructing metro rail systems. In August 2017, the [Union Government](#) announced that it would not provide financial assistance to new metro rail project, unless some sort of private partnership is involved.

- White background In service
- Green background Under construction
- Blue background In planning
- Yellow background Proposed but not planned
- Pink background Defunct
- Red background Scrapped

City	System	State	Opening	System Length (km)			No of Lines ^[bl]	No of Stations ^[bl]	Gauge	Traction	Notes
				IO ^[cl]	UC ^[dl]	Planned ^[el]					
Kolkata	Kolkata Metro	West Bengal	24 October 1984	27.2	113.42		1	24	1,676 mm (5 ft 6 in) broad gauge 1,435 mm (4 ft 8 ½ in) standard gauge	750 V DC Third rail	It's First in India to have the Third rail for power supply and the first to use fully Made in India metro coaches by ICF & BEML.
Delhi NCR	Delhi Metro	Delhi, Haryana, Uttar Pradesh	24 December 2002	32.7 ^[fl]	18.11 ^[gl]	103.9	8	236	1,676 mm (5 ft 6 in) broad gauge 1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC OHE	India's largest rapid transit/metro system.
	Rapid Metro Gurgaon	Haryana	14 November 2013	11.7			1	12	1,435 mm (4 ft 8 ½ in) standard gauge	750 V DC Third rail	India's first fully privately financed metro. Currently undertaken by Delhi Metro

City	System	State	Opening	System Length (km)			No of Lines ^[a]	No of Stations ^[b]	Gauge	Traction	Notes
				IO ^[c]	UC ^[d]	Planned ^[e]					
	Noida Metro	Uttar Pradesh	25 January 2019	29.7		15	1	22	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC OH E	
Bengaluru	Namma Metro	Karnataka	20 October 2011	42.30	34.37	57.07	2	41	1,435 mm (4 ft 8 ½ in) standard gauge	750 V DC Third rail	First metro in southern India , the first to have the third rail for power supply in southern India, and the first to introduce Wi-Fi onboard trains. ^[13]
Mumbai	Mumbai Metro	Maharashtra	8 June 2014	11.4	163	200	1	12	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC OH E	India's first public private partnership (PPP) metro system with Reliance group. 14 lines and line extensions are at different stages of planning.
Jaipur	Jaipur Metro	Rajasthan	3 June 2015	9.63	2.4	23.01	1	9	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC OH E	Double-story elevated road and Metro track project

City	System	State	Opening	System Length (km)			No of Lines ^[la]	No of Stations ^[bl]	Gauge	Traction	Notes
				IO ^[cl]	UC ^[dl]	Planned ^[e]					
Chennai	Chennai Metro	Tamil Nadu	29 June 2015	45	8.52	104.4	2	32	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC OH E	for the first time in the country. First metro rail in the country to connect two lines (blue & green) through loop line to run direct service from the airport to central even though had interchange station at Alandur. First metro in India for underground stations with sliding doors.
Kochi	Kochi Metro	Kerala	17 June 2017 ^[4]	18.4	25.6	56.7	1	16	1,435 mm (4 ft 8 ½ in) standard gauge	750 V DC Third rail	First Indian metro to go live with CBTC signalling ^[15] .
Lucknow	Lucknow Metro	Uttar Pradesh	5 Sept	8.5	33	140	1	8	1,435 mm (4 ft 8 ½ in)	25 kV	The fastest

City	System	State	Opening	System Length (km)			No of Lines ^[la]	No of Stations ^[bl]	Gauge	Traction	Notes
				IO ^[cl]	UC ^[dl]	Planned ^[e]					
		sh	embe r 2017						n) standard gauge	AC OH E	built and commissioned metro system in the world. ^{[16][17][18]} Opened to the public on 5 September 2017. ^{[19][20][21]} India's first metro to have CBTC and integrated telecommunications and supervision systems, i.e. driver less metro.
Hyderabad	Hyderabad Metro	Telangana	29 November 2017 ^[22]	46.5	25.7	168	2	41	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC OH E	Fastest built metro in India to reach at triastage, Trail run conducted on 30 September 2017 ^[24]
Nagpur	Nagpur Metro	Maharashtra	March 2019 ^[23]		43	93	2	42	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC OH E	
Navi Mumbai	Navi Mumbai Metro	Maharashtra	May 2020 ^[25]		11.10	12.30 ^[26]	1	20	1,435 mm (4 ft 8 ½ in)	25 kV AC	

City	System	State	Opening	System Length (km)		No of Lines ^[la]	No of Stations ^[bl]	Gauge	Traction	Notes	
				IO ^[cl]	UC ^[dl]						Planned ^[le] ₁
								standard gauge	OH E		
Ahmedabad Gandhinagar	Ahmedabad Metro	Gujarat	June 2020 ^[27]	40.03 ^[28]	28.26 ^{[29][30]}	2	32	1,435 mm (4 ft 8 ½ in) standard gauge	750 V DC Third rail	Construction began on 15 March 2015. ^[31]	
Pune	Pune Metro	Maharashtra	June 2022 ^[32]	31.5	54			1,435 mm (4 ft 8 ½ in) standard gauge		Construction began in May. 30% work completed as of June 2018. ^[33]	
Indore	Indore Metro	Madhya Pradesh			31.55	1	30	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC	DPR approved by Union Cabinet. ^[34]	
Bhopal	Bhopal Metro	Madhya Pradesh			27.87	2	30	1,435 mm (4 ft 8 ½ in) standard gauge	25 kV AC	DPR approved by Union Cabinet. ^[34]	
Kanpur	Kanpur Metro	Uttar Pradesh			24	38	2	24	1,435 mm (4 ft 8 ½ in) standard gauge	25 kv AC OH E	Union cabinet approval is awaited.
Visakhapatnam	Visakhapatnam Metro	Andhra Pradesh			39			1,435 mm (4 ft 8 ½ in) standard gauge	N/A	Govt. to take up the Project under PPP model, RFP invited and Tender may be	

City	System	State	Opening	System Length (km)		Planned ^[e] ₁	No of Lines ^[a]	No of Stations ^[b]	Gauge	Traction	Notes
				IO ^[c]	UC ^[d]						
											awarded before June - 2018. ^[35] DPR prepared and to be submitted ^{[36][37][38][39]} .
Surat	Surat Metro	Gujarat							1,435 mm (4 ft 8 ½ in) standard gauge	N/A	Construction expected to begin in mid-2019. ^[40]
Patna	Patna Metro	Bihar				31	2	24	1,435 mm (4 ft 8 ½ in)	25 kV AC OHE	PM Narendra Modi laid the foundation stone for this project on 17 Feb 2019. ^[41]
Agra	Agra Metro	Uttar Pradesh				27 ^[42]			1,435 mm (4 ft 8 ½ in) standard gauge	N/A	DPR approval by Union govt is awaited
Meerut	Meerut Metro	Uttar Pradesh				30			1,435 mm (4 ft 8 ½ in) standard gauge	N/A	DPR approved by the state cabinet on 17 January 2018. ^[43]
Varanasi	Varanasi Metro	Uttar Pradesh				25 ^[44]	^[45]		1,435 mm (4 ft 8 ½ in) standard gauge	N/A	DPR approved by the state cabinet. ^{[46][47][48]}

City	System	State	Opening	System Length (km)			No of Lines ^[bl]	No of Stations ^[bl]	Gauge	Traction	Notes
				IO ^[cl]	UC ^[dl]	Planned ^[e]					
Coimbatore	Coimbatore Metro	Tamil Nadu					3	24	1,435 mm (4 ft 8 ½ in) standard gauge	25 kv AC OH E	DPR being prepared. ^[49]
Doon Valley	Dehradun Metro	Uttarakhand				73	2		TBD	N/A	DPR being prepared. ^{[50][51]}
Guwahati	Guwahati Metro	Assam				61.4			TBD	N/A	DPR approved by the state cabinet. ^[52]
Nashik	Greater Nashik Metro	Maharashtra							N/A	N/A	DPR being prepared by MahaMetro. Proposed metro line which will connect Igatpuri , Deolali , Nashik Road , Nasik Central and Ozar Airport .
Gwalior	Greater Gwalior Metro	Madhya Pradesh				105			N/A	N/A	Subject to a feasibility study. ^[53]
Jabalpur	Jabalpur Metro	Madhya Pradesh							N/A	N/A	Subject to a feasibility study. ^[53]
Srinagar	Srinagar Metro	Jammu &							N/A	N/A	

City	System	State	Opening	System Length (km)			No of Lines ^[a]	No of Stations ^[b]	Gauge	Traction	Notes
				IO ^[c]	UC ^[d]	Planned ^[e]					
		Kashmir									
Bareilly	Bareilly Metro	Uttar Pradesh									Proposed
Ludhiana	Ludhiana Metro	Punjab									Proposed
Prayagraj	Prayagraj Metro	Uttar Pradesh									Proposed
Gorakhpur	Gorakhpur Metro	Uttar Pradesh				30					Proposed
Ranchi	Ranchi Metro	Jharkhand									Proposed
Chandigarh Tricity	Chandigarh Metro	Punjab				37.5					Rejected because of commercial viability. ^[54]
Kozhikode	Kozhikode Light Metro	Kerala				22					^[55]
Thiruvananthapuram	Thiruvananthapuram Light Metro	Kerala				22					^[56]
Mumbai	Western railway elevated corridor	Maharashtra				63.27					Rejected because of infeasibility.

Suburban Rail

Suburban rail plays a major role in the [public transport](#) system of many major [Indian](#) cities. Suburban rail is a rail service between a central business district and the suburbs, a [conurbation](#) or other locations that draw large numbers of people on a daily basis. The trains are called suburban trains. These trains are also referred to as "local trains" or "locals". The suburban rail systems in Hyderabad, Pune, Barabanki–Lucknow, Lucknow–

Kanpur and Bengaluru do not have dedicated suburban tracks but share tracks with long distance trains. The suburban rail system of Chennai and Mumbai have both dedicated tracks and tracks shared with long distance trains

The first [suburban rail](#) system in India is [Mumbai Suburban Railway](#) which started operations in 1853. The [Kolkata Suburban Railway](#) has the largest network in the entire country.

[Suburban trains](#) that handle commuter traffic are all [electric multiple units](#) (EMUs). They usually have nine or twelve coaches, sometimes even fifteen to handle rush hour traffic. One unit of an EMU train consists of one power car and two general coaches. Thus a nine coach EMU is made up of three units having one power car at each end and one at the middle. The rakes in the suburban rails run on [25 kV AC](#).^[57] Ridership on India's suburban railways has risen from 1.2 million in 1970–71 to 4.4 million in 2012–13. The suburban railways of Mumbai, Kolkata and Chennai account for about 7.1% of the merge|last=Chaturvedi|first=Sumit|date=7 September 2015|website=Newslaundry|access-date=14 September 2017}}</ref> In some cities of India, the opening of [rapid transit systems](#) have led to a decline in the use of the suburban rail system.

- White background In service
- Green background Under construction
- Blue background In planning
- Yellow background Proposed but not planned
- Pink background Proposed to be scrapped

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Gauge	Tracti on	Notes
Mumbai Suburban Railway	Mumbai	Maharashtra	16 April 1853	427.5	6	140	1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	First suburban railway
Kolkata Suburban Railway	Kolkata	West Bengal	15 August 1854	1243	25	365+	1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	Largest suburban railway
Lucknow–Kanpur Suburban Railway	Lucknow	Uttar Pradesh	23 April 1867	72	2		1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Chennai Suburban Railway	Chennai	Tamil Nadu	2 April 1931	509	4	150+	1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	Largest Suburban

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Gauge	Traction	Notes
							n) broad gauge		Railway in South India
Delhi Suburban Railway (excluding NCR)	Delhi	Delhi	1 October 1975	85-100			1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Pune Suburban Railway	Pune	Maharashtra	16 April 1978	63	2		1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Hyderabad Multi-Modal Transport System	Hyderabad	Telangana	9 August 2003	43	3	36	1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Barabanki–Lucknow Suburban Railway	Barabanki Lucknow	Uttar Pradesh	9 August 2013	36	2		1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Pernem–Karwar Suburban Railway	Goa Karwar	Goa, Karnataka	1 April 2015	100	1		1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Bengaluru Commuter Rail	Bengaluru	Karnataka	Planning	200	2		1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Ahmedabad Suburban Railway	Ahmedabad	Gujarat	Planning	52.96	2		1,676 mm (5 ft 6 in)	25 kV AC OHE	

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Gauge	Traction	Notes
							n) broad gauge		
Coimbatore Suburban Railway	Coimbatore	Tamil Nadu	Proposed		2		1,676 mm (5 ft 6 in) broad gauge	25 kV AC OHE	
Delhi–Alwar Regional Rapid Transit System	Delhi Alwar	Delhi, Rajasthan	Proposed						
Delhi–Meerut Regional Rapid Transit System	Delhi Meerut	Delhi, Uttar Pradesh	Proposed						
Delhi–Panipat Regional Rapid Transit System	Delhi Panipat	Delhi, Haryana	Proposed						

Monorail

The [Mumbai Monorail](#), which opened on 2 February 2014 is the first operational monorail system used for rapid transit in independent India. Many other Indian cities have monorail projects, as a feeder system to the metro, in different phases of planning.

- White background In service
- Green background Under construction
- Blue background In planning
- Yellow background Proposed but not planned
- Pink background Defunct

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Traction	Notes
Mumbai Monorail	Mumbai	Maharashtra	2 February 2014	8.26	1	7	750 V DC Third rail	

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Traction	Notes
Chennai Monorail	Chennai	Tamil Nadu		57	3	37		Centre approved Chennai monorail project, to be implemented under DBFOT model. [59] [60] [61] [62] [63]
Kolkata Monorail	Kolkata	West Bengal		72	2			
Allahabad monorail	Allahabad	Uttar Pradesh		70.4	2			
Bengaluru Monorail	Bengaluru	Karnataka		60				
Indore Monorail	Indore	Madhya Pradesh						
Kanpur Monorail	Kanpur	Uttar Pradesh		63	3			
Patna Monorail	Patna	Bihar		32	4			
Pune Monorail	Pune	Maharashtra		52	2			
Aizawl Monorail	Aizawl	Mizoram						
Bhubaneswar Monorail	Bhubaneswar	Odisha						
Jodhpur Monorail	Jodhpur	Rajasthan						[64] [65] [66] [67] [68]
Kota Monorail	Kota	Rajasthan						[64] [65] [66] [67] [68]
Nagpur Monorail	Nagpur	Maharashtra		50				DPR is being prepared. [69]
Nashik Monorail	Nashik	Maharashtra		130				DPR is being prepared.
Hyderabad Monorail	Hyderabad	Telangana		15				Proposed.
Tiruchirapp	Tiruchirapp	Tamil						Proposed.

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Traction	Notes
Chennai Monorail	Chennai	Tamil Nadu						
Coimbatore Monorail	Coimbatore	Tamil Nadu						Proposed.
Warangal Monorail	Warangal	Telangana						Proposed.
Chandigarh Monorail	Chandigarh Tricity	Punjab						Proposed.
Noida Agra Monorail	Noida & Agra	Uttar Pradesh						Proposed.

Light Rail

Like monorail, light rail is also considered as a feeder system for the Metro systems. Two light rail projects have been proposed respectively in Delhi and Kolkata. There would be a total number of 68 stations of light rail in India.

- White background In service
- Green background Under construction
- Blue background In planning
- Yellow background Proposed but not planned
- Pink background Defunct

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Gauge	Traction	Notes
Vijayawada Metro	Vijayawada	Andhra Pradesh	2020				1,435 mm (4 ft 8 ½ in) standard gauge		[70]
Kolkata Light Rail Transit	Kolkata	West Bengal			2	12	1,435 mm (4 ft 8 ½ in) standard gauge	750 V DC Third rail	
Delhi Light Rail Transit	Delhi	Delhi		45	3				

Tram

Main article: [Trams in India](#)

In addition to trains, trams were introduced in many cities in late 19th century, though almost all of these were phased out. The [Trams in Kolkata](#) is currently the only tram system in the country. The [Calcutta Tramways Company](#) (Now under WBTC) is in the process of upgrading the existing tramway network at a cost of ₹240 million (US\$3.3 million).

- White background In service
- Green background Under construction
- Blue background In planning
- Yellow background Proposed but not planned
- Pink background Defunct

System	City	State	Opening Year	System Length (km)	No of Lines	No of Stations	Gauge	Traction	Notes
Kolkata Tram	Kolkata	West Bengal	1873	57.17	25	NA	1,435 mm (4 ft 8 ½ in) standard gauge	550 V DC OHE	The only operational tram system in India
Kanpur Tram	Kanpur	Uttar Pradesh	1907	6.04					Discontinued on 16 May 1933

Rolling Stock Manufacturers

There are three metro rolling stock manufacturers in India. [Bharat Earth Movers](#) is the only Indian rolling stock manufacturer. The other manufacturers are the Indian subsidiaries of Canadian firm [Bombardier](#) and French company [Alstom](#). Under the [Union Government's Make in India](#) program, 75% of the rolling stock procured for use on Indian metro systems are required to be manufactured in India.^[72]

Bharat Earth Movers Limited (BEML)

[Bharat Earth Movers](#) manufactures of Rolling Stock consortium with [Hyundai](#), [Mitsubishi](#), [Rotem](#).

- Delhi Metro – 200 coaches
- Hyderabad Metro – 171 coaches
- Namma Metro – 150 coaches
- Kolkata Metro – 84 coaches
- Jaipur Metro – 40 coaches
- Mumbai Metro – 378 coaches^[73]

Bombardier

[Bombardier](#) built a £26m factory in [Savli, Gujarat](#) after it won a contract to supply 614 cars to the Delhi Metro.^[74] Production at Savli began in June 2009.^[75] In June 2012, the plant won an order to supply semi-finished bogies to [Australia](#).^[75]

- Delhi Metro – 614 coaches

Alstom

In 2013, [Alstom](#) built a factory in Sri City, [Andhra Pradesh](#) after it won a €243 million contract to supply 168 cars to the [Chennai Metro](#). The 156-acre plant will be used to supply trains to cities in India and abroad.

- Chennai Metro – 168 coaches
- Lucknow Metro – 80 coaches
- Kochi Metro – 75 coaches
- Mumbai Metro – 248 coaches^[78]

Integral Coach Factory

[Integral Coach Factory](#) manufactures Rolling Stock, ICF has manufactured "Medha Rakes" and is in the process of supplying them to various metro systems.

Others

- Chinese firm [CRRC](#) is planning to setup its manufacturing plant in [Nagpur, Maharashtra](#)
- [Modern Coach Factory](#) Raebareli floats Rs 150 cr tender for technology to produce first [Make In India](#) international standard metro coach by 2021
- Medha Servo Drive Pvt Ltd. plans to invest Rs 800 crore for metro rail coach factory in [Telangana](#)

Legislation

Main articles: [The Metro Railways Act, 1978](#) and [Metro Railway Act, 2002](#)

The subject of Railways is in the Union List of the Seventh Schedule of the Constitution, giving Parliament the exclusive power to enact legislation concerning it. According to former [Minister of Urban Development Kamal Nath](#), "Since the Metro rail is a central subject, it has been decided that all such projects in the country, whether within one municipal area or beyond, shall be taken up under the Central Metro Acts."

Construction of metros in India is governed by the centrally enacted *The Metro Railways (Construction of Works) Act, 1978* which defines itself as an act to provide for the construction of works relating to metro railways in the metropolitan cities and for matters connected therewith. Operation and maintenance of metros are governed by *The Delhi Metro Railway (Operation and Maintenance) Act, 2002*. Both laws were amended in 2009 with the passing of *The Metro Railways (Amendment) Act, 2009*. The amendment expanded the coverage of both the acts to all metropolitan areas of India.

Initially, state governments attempted to implement metro rail projects through various Tramways Act. However, the Commissioner of Railways Safety (CRS), who operates under the [Ministry of Civil Aviation](#), is tasked with providing safety certification for metro rail projects. The CRS refused safety certification unless the projects were implemented under

a Metro Act enacted by the state government and published in [The Gazette of India](#).^[84] [Research Design and Standards Organization](#) (RDSO), another railway entity, also refused certification to projects not implemented under the criteria. Subsequently, several state governments have enacted their own Metro Acts.

See also

- [Trams in India](#)
- [Rail transport in India](#)
- [Skybus Metro](#)
- [Urban rail transit](#)
- [List of suburban and commuter rail systems](#)
- [List of metro systems](#)
- [List of monorail systems](#)
- [List of tram and light rail transit systems](#)

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Notes

1. [^] Indicates lines that are in operation for operational systems, lines that are under construction for under construction systems and proposed lines for proposed systems.
2. [^] Indicates stations that are in operation for operational systems, stations that are under construction for under construction systems and proposed stations for proposed systems.
3. [^] **In Operation** - The length of the system currently in operation.
4. [^] **Under construction** - The length of the system currently under construction.
5. [^] **Planned** - The length of the system currently planned to be built, but construction has not yet started.

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Urban Rail Transit in India

	Operational	<ul style="list-style-type: none"> • Chennai Suburban Railway • Delhi Suburban Railway • Hyderabad Multi-Modal Transport System • Kolkata Suburban Railway • Lucknow <ul style="list-style-type: none"> ◦ Barabanki–Lucknow Suburban Railway ◦ Lucknow–Kanpur Suburban Railway • Mumbai Suburban Railway • Pune Suburban Railway
	Planned	<ul style="list-style-type: none"> • Ahmedabad Suburban Railway • Bengaluru Commuter Rail
	Proposed	<ul style="list-style-type: none"> • Delhi–Alwar Regional Rapid Transit System • Delhi–Meerut Regional Rapid Transit System • Delhi–Panipat Regional Rapid Transit System
	Operational	<ul style="list-style-type: none"> • Chennai Metro • Delhi Metro • Rapid Metro Gurgaon • Hyderabad Metro • Jaipur Metro • Kochi Metro • Kolkata Metro • Lucknow Metro • Mumbai Metro • Namma Metro • Noida Metro
	Under construction	<ul style="list-style-type: none"> • Bhopal Metro • Gujarat Metro • Indore Metro • Nagpur Metro

		<ul style="list-style-type: none"> • Navi Mumbai Metro • Pune Metro
	Planned	<ul style="list-style-type: none"> • Agra Metro • Chandigarh Metro • Guwahati Metro • Jabalpur Metro • Kanpur Metro • Ludhiana Metro • Meerut Metro • Patna Metro • Surat Metro • Varanasi Metro • Vijayawada Metro • Visakhapatnam Metro
	Proposed	<ul style="list-style-type: none"> • Allahabad Metro • Bareilly Metro • Coimbatore Metro • Greater Gwalior Metro • Greater Nasik Metro • Ranchi Metro • Srinagar Metro • Western railway elevated corridor
	Operational	<ul style="list-style-type: none"> • Mumbai Monorail
	Planned	<ul style="list-style-type: none"> • Chennai Monorail • Coimbatore Monorail
	Proposed	<ul style="list-style-type: none"> • Aizawl Monorail • Bengaluru Monorail • Bhubaneswar Monorail • Indore Monorail • Kanpur Monorail • Kolkata Monorail • Patna Monorail • Pune Monorail

		<ul style="list-style-type: none"> • Tiruchirappalli Monorail
	Proposed	<ul style="list-style-type: none"> • Delhi Light Rail Transit • Kolkata Light Rail Transit • Kozhikode Light Metro • Thiruvananthapuram Light Metro
	Operational	<ul style="list-style-type: none"> • Trams in Kolkata

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Hyderabad Multi-Modal Transport System; India

From Wikipedia, the free Encyclopaedia

Hyderabad Multi-Modal Transport System



Overview

Locale	Hyderabad , Telangana , India
Transit type	Suburban Rail
Number of lines	3
Number of stations	36
Daily ridership	200,000 (Feb 2018)

Operation

Began operation	9 August 2003
Operator(s)	South Central Railway

Technical

System length	44 kilometers (27 mi)
Track gauge	1,676 mm (5 ft 6 in) (broad gauge)
Electrification	25 kV, 50 Hz AC through overhead catenary

The **Hyderabad Multi-Modal Transport System**, also known as **MMTS**, is a [suburban rail](#) system in [Hyderabad, India](#). It is a joint partnership of the [Government of Telangana](#) and the [South Central Railway](#), and is operated by the latter. The first phase was opened to the public on 9th August 2003 with three lines between Falaknuma and Secunderabad, Hyderabad and Secunderabad and Lingampally and Secunderabad with a total of 44 km of track. In May 2010, Indian Railways decided to take up the 107-km Phase-II project of the MMTS at an estimated cost of Rs. 641 crore. The Railway Board cleared the second

phase after the state government agreed to fund two-thirds of the cost. The second phase, which is currently under construction, is scheduled to open in 2018.

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- [2 MMTS Hyderabad Trains and MMTS stations](#)
 - [2.1 Routes and services](#)
- [3 MMTS Stations & Enquiry numbers](#)
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- [7 External links](#)

Phase I

The first phase was completed at a cost of ₹1.78 billion (US\$25 million) and started its operations on 9 August 2003 by then [Deputy Prime Minister of India, L. K. Advani](#). It is said that the inauguration of the MMTS was the realisation of dream of having a mass transit system in Hyderabad. This project is expected to complement the fast growth of the city in the areas of information technology, biotechnology, health, aviation and tourism.

It spans a distance of 44 km, covering 27 stations and connects [Secunderabad](#), [Nampally](#), [Dabirpura](#), [Malakpet](#), [Falaknuma](#), [Hitech city](#) and [Lingampally](#) along few other routes like [Bolaram](#) (up to [Manoharabad](#)) and [Umdanagar](#).



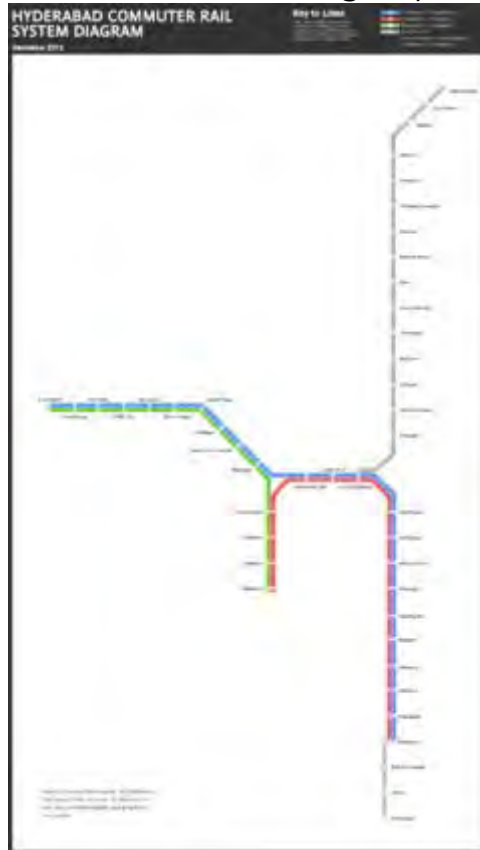
MMTS at [Necklace Road](#)



MMTS Local at Secunderabad



MMTS Local at Begumpet



Hyderabad Commuter Rail Network

MMTS Hyderabad Trains and MMTS Stations

- MMTS trains from [Lingampally](#) to [Falaknuma](#) and from Falaknuma to Lingampally
- MMTS trains from Lingampally to [Hyderabad](#) and from Hyderabad to Lingampally
- MMTS trains from Falaknuma to Hyderabad and from Hyderabad to Falaknuma
- MMTS trains from [Secunderabad](#) to Lingampally and from Secunderabad to Hyderabad
- MMTS trains from Secunderabad to Falaknuma and from Secunderabad to Falaknuma

Routes and Services

These routes are operational (including local trains) and the number of services in that particular route is mentioned below:^[1]

"MMTS" Route	Route Name	Services
Hyderabad - Lingampalli	HL	26

Lingampalli - Hyderabad	LH	23
Falaknuma - Lingampalli	FL	28
Lingampalli - Falaknuma	LF	30
Falaknuma - Hyderabad	FH	5
Hyderabad - Falaknuma	HF	3
Secunderabad - Falaknuma	SF, SU	3, 3
Falaknuma - Secunderabad	FS, US	3, 3
Lingampalli - Secunderabad	LS	2

"Suburban" Route	Route Name	Services
Bolaram - Secunderabad	BS	6
Secunderabad - Bolaram	SB	6
Falaknuma - Umdanagar	FU	6
Umdanagar - Falaknuma	UF	5
Manoharabad - Secunderabad	MBS	6
Secunderabad - Manoharabad	SMB	4
Malkajgiri - Bolaram	MJB	1
Medchal - Secunderabad	MS	6
Secunderabad - Medchal	SM	6
Secunderabad - Hyderabad	SH	2
Secunderabad - Malkajgiri	SMJ	1
Moula Ali - Kacheguda/Falaknuma		1, 2
Falaknuma - Bhongir	FB	1, 1
Falaknuma - Jangaon	FL-ZN	1, 1

MMTS Stations & Enquiry Numbers

MMTS Hyderabad Enquiry, MMTS Complaints and MMTS suggestions. MMTS Hyderabad Passengers can write down their valuable suggestions and complaints to [South Central Railway](#).

Catchment areas

Station	Station Code	Nearby Suburbs catered
Secunderabad Railway Station	SC	Marredpally , Patny , Karkhana
James Street	JET	M.G.Road , Paradise , Rani Gunj , Minister Road , Hussain sagar
Sanjeevaiah Park	SJVP	Necklace road , Minister road , Mahatma Gandhi Road , Pattigadda
Begumpet	BMT	Ameerpet , Greenlands , Somajiguda , Panjagutta , Banjara Hills , Brahmanwadi
Nature Cure Hospital	NCHS	Balkampet , Ameerpet , Sanjeeva Reddy Nagar
Fateh Nagar	FNB	Balanagar , Sanathnagar , Yellamma Gudi
Bharat Nagar	BTNR	Moosapet , Kukatpally , Nizampet , Sanathnagar , Erragadda , Mothinagar , E S I
Borabanda	BRBD	Allapur , Gayatrinagar , Tulasinagar , Mothi Nagar , Rajeev Nagar , Erragadda
Hi-Tec City	HTCY	Kukatpally Housing Board (KPHB) colony, Izzat Nagar ,

Hafeezpet	HFZ	Madhapur , JNTU
Chandanagar	CDNR	Madhapur , Kondapur , Miyapur
Lingampalli	LPI	Chandanagar , Madinaguda
Sitaphalmandi	STPD	BHEL township , HCU , Gachibowli
Arts College Railway Station	ATC	EFLU , Tarnaka
Jamia Osmania	JOO	Osmania University , Warasiguda , Adikmet , Manikeswari Nagar
Vidyanagar	VAR	Barkatpura , Ramnagar
Kachiguda	KCG	Shanker Mutt , RTC X Roads , Chikkadpally , Shivam Road , Tilaknagar , Amberpet
Malakpet	MXT	Barkatpura , Chaderghat , Narayanguda , Koti , Abids
Dabirpura	DQB	Chaderghat , Nalgonda 'X' Roads , Dilsukhnagar , Kothapet , Charminar
Yakutpura	YKA	Chanchalguda , Saidabad, Printing Press, Purani Haveli , Mir Alam Mandi, Salar Jung Museum
Huppuguda	HPG	Saidabad , Santosh Nagar , Madannapet , Pisal Banda , Rein Bazar , Edi Bazar , Brahman Vaadi , Bada Bazaar
Falaknuma	FM	Lal darwaza , Aliabad , Shalibanda , Darushifa , Jahanuma, Charminar
Umdanagar	UN	Udden Gadda , Chandrayan Gutta , Barkas
Hyderabad Deccan	HYB	Shamshabad
Lakdi-ka-pul	LKPL	Nampally , Salar Jung Museum , Charminar , Hyderguda , Abids , Moazzam Jahi Market , Devi Bagh , Criminal Courts
Khairtabad	KQD	Saifabad , Red Hills , Public gardens , Masab Tank , Niloufer Hospital
Necklace Road	NLRD	Banjara hills , Raj Bhavan Road , Panjagutta , Chintal Basti
Lalaguda Gate	LGDH	Raj Bhavan Road , Somajiguda , Panjagutta , M S Makhta
Malkajgiri	MJF	Lallaguda , Malkajgiri , shantinagar, Tukaram Gate
Dayanandnagar	DYE	Malkajgiri , Anandbagh, Hanumanpet, Mirzalguda
Safilguda	SFX	Vaninagar, Mallikarjunnagar, RK Nagar
Ramakrishnapuram	RKO	Safilguda , Vinayaknagar, Sainadapuram
Ammuguda	AMQ	Neredmet
Cavalry Barracks	CVB	Sainikpuri
Alwal	ALW	Lothkunta
Bolarum Bazar	BOZ	old alwal
Bolarum	BMO	Kompally
		Risala Bazar , Hakimpet

Phase II



Falaknuma - Jangaon Suburban Train

HMDA planned for future phases for developing and expansion of MMTS to all routes of railways line in Hyderabad in Master Plan 2041^[2]. In May 2010, Indian Railways decided to take up the 107-km Phase-II project of the MMTS at an estimated cost of Rs. 641 crore. The Railway Board cleared the Phase-II after the state government agreed to fund two-thirds of the cost. It is expected to complete by 2018 and will handle 3 lakh passengers a day. A 6 km stretch from [Lingampally](#) to RC Puram and Bolaram to Medchal stretch of 12.5 km is likely to begin in March 2018 and the Moula Ali to Ghatkesar stretch covering 12 km is scheduled to open in July 2018.

Phase II has six segments:

- Secunderabad - Bolarum - Medchal (28 km)
- Falaknuma - Umdanagar - Shamshabad Airport (20 km)
- Secunderabad - Moulali - Ghatkesar (19 km)
- Moulali - Sanathnagar chord line (21 km)
- Kacheguda - Sitaphalmandi - Malkajgiri - Moulali chord line (10 km)

New stations under construction^[3]:

- [Moula Ali HB Colony](#)
- [Neredmet](#)
- [Bhudevi Nagar \(Alwal\)](#)
- [Suchitra Center](#)
- [Ferozguda](#)

Future Expansion:

Line	Terminal	Length (km)	Year
MT 08 Ghatkesar	Raigir	33 kilometres (21 mi)	2021
MT 09 Umdanagar	Shadnagar	31 kilometres (19 mi)	2021-2031
MT 10 Medchal	Topran	34 kilometres (21 mi)	2021-2031
MT 11 Tellapur	Ravullapalli	21 kilometres (13 mi)	2021-2031
MT 12 Topran	Ramayanpet	21 kilometres (13 mi)	2031-2041
MT 13 Raigir	Jangaon	32 kilometres (20 mi)	2031-2041
MT 14 Shadnagar	Jedcherla	24 kilometres (15 mi)	2031-2041
MT 15 Ravullapalli	vikarabad	24 kilometres (15 mi)	2031-2041
MT 16 Bibinagar	Nalgonda	72 kilometres (45 mi)	2041

Milestones

On [International Women's Day](#) 2012, S Satyavati became the first female driver of the [South Central Railway](#) when she independently drove an MMTS train. She piloted the 'Matrubhumi Ladies Special Train' from Falaknuma to Lingampally suburban station.^[4]

References

1.

- ["MMTS Route Map"](#). *Mmtstraintimings.in*. Retrieved 27 February 2016.
 - • ["MMTS future phase up to 2041"](#).
 - • <http://www.newindianexpress.com/cities/hyderabad/2017/jan/25/mmts-2nd-phase-first-stretch-likely-by-dec-2017-1563331.html>
4. • ["Woman drives local train in Hyderabad, first for South Central Railways - The Times of India"](#). *The Times Of India*.

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Work starts on Manila North-South Commuter Railway; Philippines

Feb. 18, 2019

Written by [David Briginshaw](#)

A groundbreaking ceremony was held in the Philippines capital Manila on February 15 to mark the start of construction on phase one of the North-South Commuter Railway project.



Groundbreaking Ceremony for PNR Clark Phase 1 Project in Manila, Philippines

This follows the signing of a loan agreement in [January](#) between the Philippines Department of Finance (DOF) and the Japan International Cooperation Agency ([Jica](#)).

Sumitomo-Mitsui Construction will implement PNR Clark Phase 1. This comprises a 37.6km elevated electrified line with 10 stations running from the existing Philippines National Railway (PNR) station at Tutuban in northern Manila north to Malolos. The line will be operated by a fleet of 13 eight-car EMUs with a maximum speed of 120 kmph.

When the line opens in the last quarter of 2021 it will cut the travel time between Manila and Malolos from around 1h 45min to 35 minutes. The line is expected to carry more than 300,000 passengers per day.

Around 91% of the alignment for phase one has already been cleared under advance works.

“This is testament to the effectiveness of the strategy that secretary [Mr Arthur] Tugade launched on January 5 2018, which is to pursue as much advance works as we can, as early as we can, so that by the time that contracts are signed with our contractors, construction works can immediately begin,” says the Department of Transportation’s under-secretary for railways, Mr Timothy John Batan.

PNR Clark Phase 2 will extend the line by 53km from Malolos to Clark, Pampanga. The third phase, PNR Calamba, will involve building a 56km line from Manila to Calamba, Laguna. When completed, the full network will be 146.6km long with 37 stations and a fleet of 58 EMUs.

Metro Manila Subway

A groundbreaking ceremony is planned on February 26 to launch construction of the first phase of the Metro Manila Subway project, the city’s first metro, which is also being funded through a Jica loan. The 30 km line will have 14 stations and will run from Mindanao Avenue in Quezon City to Ninoy Aquino International Airport.

Newcastle Light Rail Services start; Australia

Feb. 18, 2019

Written by [Mark Carter](#)

REVENUE services on the 2.7 km light rail line in the New South Wales city of Newcastle, Australia, commenced operation on February 18 following a free community event held the previous day.



The line links Newcastle city centre and the public transport interchange at Wickham, replacing through heavy rail services from Sydney, which were controversially withdrawn in 2014.

Newcastle Light Rail is operated by Keolis Downer as part of the company's broader 10-year contract with Transport for **NSW to operate light rail, buses and ferries under the Newcastle Transport banner.**

[The light rail line is 2.7 km long with six stops.](#) Services are provided by six battery-equipped low-floor CAF Urbos LRVs. In a first for Australia, [the system is catenary-free](#), with the onboard energy storage system recharged in 23-second cycles.

"From Monday February 18, light rail taking passengers through the heart of Newcastle will be the new normal, marking a key moment in the city's revitalisation," says minister for transport and infrastructure, Mr. Andrew Constance. "With 4000 new homes and almost 8000 more jobs expected in the city centre by 2036, Newcastle Light Rail will play an important role in keeping this growing city moving, and reducing congestion well into the future."

Riyadh Metro sprints for the finish Line; Saudia Arabia

Feb. 20, 2019

Written by [Keith Barrow](#)

2018 was another year of milestones for the Riyadh metro project, with infrastructure taking shape, the awarding of operating contracts and the start of test running. With the first sections set to open later this year, Keith Barrow rounds up recent progress on one of the world's largest urban rail projects.



Western Station is one of four 'iconic' stations on the Riyadh metro network. The 110,000 m² structure includes a bus station, underground car park, a market, a mosque and a public square.

Related Posts

[First tranche of MRT Phase 2 loan transferred to Jakarta administration](#)

Feb 18, 2019 | [Metros](#)

[Alstom begins MP 14 tests on Paris Line 1](#)

Feb 14, 2019 | [Metros](#)

[Balfour Beatty awarded £220m TfL renewals contract](#)

Feb 14, 2019 | [Infrastructure](#)

THE towering concrete columns and gleaming stations rising above the boulevards of Riyadh serve as a daily reminder to motorists on the city's increasingly-congested roads that the way this city moves is about to be fundamentally transformed.

The opening of the first sections of the 176.7km Riyadh metro network later this year will enable many commuters to leave the car at home and soar above the traffic into the city.



King Abdullah Financial District station photographed in January.

Photo: RDA

The metro is part of the King Abdulaziz Project for Riyadh Public Transport, which also includes a \$US 4bn investment in the creation of a 24-line bus network with a fleet of 842 buses. Together, the new rail and bus networks are expected to generate a tenfold increase in public transport trips in the Saudi capital, transforming mobility in a city whose population is forecast to grow by 2.9 million between 2010 and 2030 to 8.3 million.

In July 2013 Riyadh Development Authority (RDA) awarded three turnkey design-and-build contracts for the construction of a six-line automated metro network to three international consortia (IRJ May 2017 p32). Five-and-a-half years on, the \$US 23bn project is entering the home straight. Construction of viaducts and tunnels has been completed and tracklaying was 91%-complete at the end of October with 342km of the 376 track-km network in place. Work is now underway on the installation of 954 escalators and more than 600 elevators as well as air-conditioning and fire suppression systems at the network's 85 stations.

Three manufacturers are making progress with the delivery of Riyadh Metro's fleet of 190 driverless trains. Siemens is supplying 45 four-car Inspiro trains for Line 1 and 29 two-car trains for Line 2, while Bombardier is producing 47 two-car Innovia trains for Line 3. Alstom is supplying 69 two-car Metropolis sets for lines 4, 5 and 6. Each 36m-long two-car train will accommodate up to 260 passengers in three classes: first, family and singles. The 75.7m-long four-car trains will accommodate up to 522 passengers.



Line 3 West Depot. Photo: RDA

[Trains began moving under their own power with an](#) inaugural test run at the depot on Line 6 (Purple Line) in April. This was soon followed by the first test run on Line 3 (Orange Line), while dynamic testing commenced on Line 2 (Red Line) in December.

In September, Prince Faisal bin Bandar, governor of Riyadh and chairman of RDA, announced the metro project was 75% complete and confirmed that winning bidders had been chosen for operations and maintenance (O&M) contracts for all six lines.

Capital Metro Company (Camco), a joint venture of RATP Dev and Saudi Public Transport Company (Saptco), has been awarded the contract for the 39km Line 1 (Blue Line) and the 25km Line 2 (Red Line).

The contract for lines 3, 4, 5, and 6 (Orange, Yellow, Green and Purple lines) is worth Riyals 10.9bn (\$US 2.9bn) and was awarded to the Flow consortium, which comprises Alstom, Ansaldo STS, and Italian State Railways (FS). Alstom's share of the contract is

worth € 730m and includes maintenance of rolling stock, infrastructure and power supplies for all four lines.

KPIs in the contracts are based on global best practice in urban rail operation and maintenance and the agreements set a minimum Saudization target of 45%, with at least 55% local content for supplies and services relating to system operation. The contractors will introduce new job roles for Saudis in civil, mechanical and electrical engineering as well as vocational posts in customer service, sales, safety and security, and administration.

The contracts include security, passenger assistance, facilities management, maintenance of buildings and the complete transit system including infrastructure, rolling stock, telecommunications, electrification and passenger information.



Park and ride facilities take shape at the northern end of Line 1

Photo: RDA

Both contracts run for 12 years including the mobilisation period.

In October RDA awarded the FCC-led Fast consortium a contract to build a 1.5km extension of Line 4 to serve King Khalid International Airport. The two-station extension will provide a direct link between the airport and King Abdullah Financial District.

On November 15 RDA announced the results of the naming rights auction for eight metro stations. The sponsorship deals will generate Riyals 1.05bn over the 10-year duration of the contracts, and in addition to naming rights, give sponsors advertising, signage and retail space at their chosen stations. Revenues generated by the initiative will be reinvested back into the network, helping to reduce operating costs.

The first sections of the metro are expected to open later this year, with all six lines due to be fully operational by 2021.

The network is forecast to carry 1.16 million passengers a day in the initial phase of operation and the system has been designed to accommodate 3.6 million passengers, providing capacity for projected growth.

Categories: [Metros Middle East](#)

Tags: [infrastructure](#) [Riyadh](#) [Riyadh Development Authority \(RDA\)](#) [Saudi Arabia](#)

Honolulu Councilwoman seeks Metro Project Audit; Hawaii

Feb. 14, 2019

Written by [Paul Conley](#)

HONOLULU city council newcomer Ms Heidi Tsuneyoshi is demanding a forensic audit of contracts tied to a plan to build a metro line for the Hawaiian city amidst suggestions that fraud might be the cause of cost overruns.



Delivery of Metro Trains for Honolulu began in May 2016.

The audit is needed “to determine whether an employee or other person has exploited internal control weaknesses to misappropriate assets or commit other illegal actions,” [Tsuneyoshi wrote in a Honolulu city council resolution](#) she filed on February 12.

Honolulu Authority for Rapid Transportation (Hart) is building a 32km driverless elevated metro line with 21 stations, running from East Kapolei to Aloha Stadium and Ala Moana Centre. While construction commenced in 2014, the project [has faced funding issues](#) with costs ballooning to \$US 8.3bn last year from \$US 5.16bn in 2012.

Among the consultants, vendors and suppliers singled out in the resolution are:

- InfraConsult, programme management support, (\$US 11.9m contract awarded on April 20, 2007)
- PB Americas, engineering consultant (\$US 168m contract awarded on August 24, 2007; and \$US 300m awarded on June 30 2011)
- GEOLABS (\$US 1.2m for drill shaft load testing, awarded on June 30, 2009)
- Kiewit Infrastructure West Co. (\$US 486m contract awarded on October 21 2009; and \$US 372m awarded on March 21 2011)

- HDR Engineering, architectural/engineering services (\$US 5.5m contract awarded on January 12 2011)
- Ansaldo Honolulu JV, a [metro car manufacturing](#) joint venture of Ansaldo STS and Hitachi Rail Italy (\$US 1.4bn contract awarded on March 21 2011), and
- Aecom Technical Services (\$US 3m for design review, awarded on June 7 2011).

The resolution comes just a month after the [state's auditor suggested that inadequate oversight of HDR Engineering](#) (HDR) may have contributed to cost overruns in the project. Employees of HDR were given key roles within the transit organisation, including top positions overseeing project budget and cost management, in addition to design and construction. Hart paid \$US 9.6m last year for the services of the HDR employees.

Categories: [Financial](#) [Metros](#) [News](#) [North America](#)

Tags: [Honolulu](#) [USA](#)

Feds Subpoena Honolulu Rail Agency; Hawaii

Written by [Paul Conley, Editor-in-Chief](#)



Musashi1600 [CC BY 3.0 us
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Wikimedia Commons

Federal authorities have issued a subpoena seeking documents related to the ongoing construction of a light-rail line in Honolulu, after a local politician implied that fraud has taken place.

The Honolulu Authority for Rapid Transportation (HART) said it received a subpoena Thursday seeking copies of consultant contracts, archaeological studies, and correspondence between the transit agency and the Federal Transit Administration. HART declined to say which federal agency issued the subpoena, [according to local news reports](#). It's unclear if any of the contractors involved in the project or any local politicians were also subpoenaed.

Delays and cost overruns have plagued the project. Estimated costs for the rail project rose to \$9.2 billion last year from \$5.1 billion in 2012. The project is six years behind schedule.

News of the subpoena comes just days after Honolulu councilwoman Heidi Tsuneyoshi filed a resolution with the city council implying that fraud was present on the project and [seeking a forensic audit](#). In January, the [state's auditor suggested that inadequate oversight of HDR Engineering](#), Inc. (HDR) may have contributed to cost overruns in the project. Employees of HDR were given key roles within the transit organization, including top positions overseeing project budget and cost management, in addition to design and construction. HART paid \$9.6 million last year for the services of the HDR employees.

Messages left by *Railway Track & Structures* with HDR seeking comment have not been returned.

Categories: [News](#), [Passenger](#), [Rapid Transit/Light Rail](#)

Tags: [Federal Transit Administration \(FTA\)](#), [Honolulu Authority for Rapid Transportation \(HART\)](#)

ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Urban Transport News in Brief; International

19 Feb. 2019

- A one-station 2 km extension of **Tianjin** metro Line 5 opened on January 31, serving Beichenkejiyuanbei.
- **Moscow** city authorities have approved a 3·1 km northern extension of metro Line 10 from Lianozovo to Fiztekh.
- **Bordeaux** tram Route C was extended by 1·4 km from Lycée Vaclav Havel to Villenave Pyrénées on February 2, adding two stops.
- The European Investment Bank is providing a €20m loan to **Odesa** tram operator Odesmiskelektrotrans. The loan will be put towards a project to upgrade part of the city's network and purchase new rolling stock.
- Services on the 2·2 km western extension of the **Izmit** tramway from Sekapark to Playjolu started on February 9.
- Agence Française de Développement is providing a €245m loan towards the **Pune** metro project.
- Tracklaying on the Westside Extension of the Midland Metro tram network in **Birmingham** started on February 7.
- Sole bidder KamAZ has won a 6·57 bn rouble contract to supply 100 battery electric buses to **Moscow**, along with 36 fast charging stations.

Work starts on Manila North-South Commuter Railway; Philippine

Feb. 18, 2019

Written by [David Briginshaw](#)

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[Railcare develops battery infrastructure maintenance vehicle](#)

Feb 19, 2019 | [Infrastructure](#)

[NSB awards Stadler train maintenance contract](#)

Feb 18, 2019 | [Rolling stock](#)

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Categories: [AsiaCommuter RailNews](#)

Tags: [Japan](#) [JICA](#) [Manilanew Line construction](#) [Philippines](#)

Zillertalbahn Hydrogen Train Design revealed; Austria

Feb. 18, 2019

Written by [Erwin Reidinger](#)

AUSTRIA's narrow-gauge Zillertalbahn (ZB) presented details of its new Mobility Plan and fleet of hydrogen trains at an event in Mayhofen on February 15.



Related Posts

[Paris – Troyes electrification to begin in April](#)

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[Siemens awarded Medellín metro resignalling contract](#)

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[Railcare develops battery infrastructure maintenance vehicle](#)

Feb 19, 2019 | [Infrastructure](#)

[NSB awards Stadler train maintenance contract](#)

Zillertalbahn [awarded Stadler a contract in May 2018](#) to supply five trains to replace diesel traction on its 760mm-gauge line from Jenbach to Mayrhofen in the western province of Tyrol. Each 75m-long four-car set will accommodate up to 452 passengers.

The delivery of new rolling stock as well as some infrastructure improvements will cut journey times from 55 to 45 minutes. Two additional fast trains will complete the 31.7km trip in 36 minutes.

The increased capacity will enable the introduction of a new mobility concept.

At present the main road through the Ziller valley is heavily congested during weekends as many tourists use their cars to travel to and from their destinations as well as from their hotels to the various tourist attractions.

Free travel on the Zillertalbahn will be offered to tourists staying in the area with the aim moving up to 25% of tourist traffic in the valley by rail.

The new fleet will enter commercial service from December 11 2022.

The project represents an €88m investment in new trains and €58m in infrastructure enhancements, including the complete reconstruction of Mayrhofen station.

Categories: [FleetNewsRolling stock](#)

Tags: [AustriaHydrogenhydrogen fuel](#) [Stadler sustainability](#)

Siemens awarded Medellín Metro Resignalling Contract; Columbia

Feb. 19, 2019

Written by [David Burroughs](#)

THE Colombian city of Medellín has awarded Siemens a €42m contract to modernise signalling and automation systems on Line 1 of the city's two-line metro, along with the Patio de Bello depot.



The contract includes the system design, implementation and certification of the wayside system, which will optimise the interaction between the existing onboard systems and wayside infrastructure.

Siemens will install Westrace MK2 interlockings, modernise the LZB automated train control system, replace signals with LED lights and upgrade the communications and energy installations. The new Patio de Bello Westrace MK2 interlocking will control a total of 111 track circuits, 58 point machines and 72 signals, and will be fitted with a specific local control system.

Installation will take place at night to ensure normal operation of the line throughout the day, and the project will improve line capacity when completed in 2021.

Line 1 is 25.8km long, with 21 stations, and together with Line 2 carries around one million passengers a day.

Categories: [Central/South America](#)[Metros](#)[News](#)[Signalling](#)

Tags: [Columbia](#)[Medellin](#)[Siemens](#)

Autonomous Tram under Development in Russia; Russia

13 Feb. 2019

RUSSIA: Tram builder PK Transportnye Systemy is working with Cognitive Technologies to develop a prototype autonomous tram.

A Vityaz-M vehicle is being fitted with 10 to 20 video cameras and up to 10 radar sensors, in addition to Cognitive's Low Level Data Fusion technology, which processes the raw data. The AI-based computer vision model would allow the tram to detect vehicles, pedestrians and obstacles and maintain a safe distance from them.

The combination of cameras and radar makes for more accurate detection, according to Cognitive Technologies President Olga Uskova. Cameras correctly recognise objects in 80% of cases, but additional data from radar raises the accuracy to 99%. The tram will also make use of GPS sensors and high-precision cartography.

The project partners plan to test the tram with an onboard attendant in the next two months in an enclosed environment, before testing on the Moscow network. Initial deployment as an 'active driving assistant' is planned for 2021-22. Further stages of the project would see attended driverless operation.

Cognitive says that the technology is intended for the domestic and export markets. In addition to Russia, the leading markets for autonomous trams are China and Germany, according to the company.

Related news

- [15 Jan 2019 - UK tram operators study automatic braking systems](#)
- [18 Sep 2018 - Automated tram demonstrated in Potsdam](#)
- [27 Apr 2017 - Autonomous tram stabling experiment completed](#)

Newcastle Light Rail Line opens; Australia

18 Feb. 2019



AUSTRALIA: Regular passenger services on the Newcastle light rail line began at 05.05 on February 18, marking the first tram service in the city since the first-generation network closed in 1950.

The 2.7 km route serves six stops between Pacific Park in the east and Wickham in the west, replacing the final section of the railway from Sydney to Newcastle, where services were suspended at the end of 2014.

CAF has supplied a fleet of six five-section low-floor Urbos LRVs. The 33 m long vehicles have capacity for 270 passengers and are equipped with surfboard racks. The vehicles are also equipped with onboard energy storage to permit catenary-free operation, with charging taking place at stops. They have undergone 10 000 km of testing since October, and 14 drivers have been trained.

The line was built by Downer EDI, which is also operating services as part of a consortium with Keolis. The consortium took over the operation of bus and ferry services on July 1 2017. The contract, which also covers light rail services, runs for 10 years.

‘Integrated transport is the most effective way to deliver public transport across multiple modes’, said Keolis Downer CEO David Franks, explain that the operator has ‘redesigned the bus and ferry network around the introduction of light rail to ensure optimal interchange’.

Keolis International CEO Bernard Tabary told *Metro Report International* that Keolis Downer ‘took over a network designed for a traditional service with typical ridership, and we want to improve the network and encourage public transport’. Among the changes the new operator has made is the introduction of an on-demand service that is bookable through an app.

Tabary says that Keolis Downer is drawing ‘extensively’ on its experience of operating trams in other Australian cities. These include the Yarra Trams network in Melbourne, as well as the G:Link line in Gold Coast.

Related news

- [23 Oct 2018 - Newcastle tram testing begins](#)
- [10 Jul 2017 - Keolis Downer takes over operation of Newcastle transport network](#)
- [09 Aug 2016 - Downer EDI selected for Newcastle light rail](#)

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Douala Tram Project poised to launch; Cameroon

15 Feb. 2019



The tram line would serve the city's railway station at Bassengué. (Photo: Mboupda Talla Roger, CC BY-SA 3.0)

CAMEROON: Construction work on a 'pilot' 18 km tram route in the rapidly expanding port city of Douala is expected to start during the first half of this year. This follows signature of an agreement announced on January 30 between the government and a consortium led by Iristone Consulting of Belgium and Turkish company Ilci Holding. Iristone Consulting's Engineering Director Christian Dochy told *Metro Report International* that the project is now awaiting approval from Prime Minister Joseph Dion Ngute.

Reports in local media in early February suggested that the start of negotiations for a formal contract between the government and the consortium was 'imminent', and it appears that the scheme has now advanced to the point where the contractor is ready to take the project forward. If all goes ahead as planned, the first section of line could be up and running in 2021-22. Around 1 000 jobs would be created.

The line would link Bonabéri to the west of the River Wouri with the centre of Doula on the east bank, serving Bessengué, where the railway station is located, and terminating at a site envisaged as a bus interchange hub. The line would cross the River Wouri on a bridge that was replaced last year by a new structure carrying a six-lane road and two rail tracks; the old bridge would be rebuilt to carry trams.

According to Dochy, the line is the first part of a much larger scheme that could see construction of a five-line tram network totalling 85 km to 100 km, depending on the final choice of routes. These could serve the airport and a new administrative zone. All lines would be built to 1 000 mm gauge to ensure compatibility with the main line railway — part of the network could be built as a tram-train project. Plans call for the various lines to be constructed and opened in rapid succession following completion of the first line. Electricity for traction and other services would be provided from the project's own power station that would be built in Bonabéri.

Finance for the pilot line has already been arranged, Dochy said. Bombardier Transportation has confirmed that it is 'interested in the project', but 'still in the discussion stage'.

In January the Ministry of Housing & Urban Development confirmed that feasibility studies had been completed for tram routes in Douala and in the capital city of Yaoundé, together with studies for bus rapid transit. The government appears to be concerned about the level of road traffic congestion and the ministry's statement referred to the Mobilise Your City initiative launched in Cameroon in January 2018 following the COP 21 Paris climate change conference.

Related news

- [19 Jul 2018 - Abuja metro starts operation with diesel-hauled trains](#)
- [06 Jul 2018 - Lagos Blue Line metro agreement](#)
- [13 Dec 2017 - Macron joins Abidjan metro groundbreaking](#)

Abuja Metro starts Operation with Diesel-hauled Trains; Nigeria

19 Jul. 2018



NIGERIA: President Muhammadu Buhari inaugurated the initial section of the Abuja metro on July 12.

China Civil Engineering & Construction Corp acted as main contractor, and construction started in 2007.

The 27.3 km Yellow Line runs from Abuja station to Nnamdi Azikiwe International Airport and the 18 km Blue Line connects from Idu to Gbazango. There are 12 stations.

The US\$824m project cost was 60% funded by loans from Export-Import Bank of China. The bank also provided US\$194m for a fleet of 16 three-car trainsets, which CRRC Dalian has supplied. These are currently being hauled by diesel locomotives, as electrification is not yet complete.

A 78 km metro network is planned for the capital. The next stage would add 32.5 km and 13 stations at a cost of US\$1.3bn by building a line from Nnamdi Azikve Expressway to Gwagwa and extending the Blue Line from Gbazango to Kubwa.

Related news

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- [21 Jul 2016 - Lagos metro train unveiled](#)
- [12 Nov 2015 - Addis Ababa opens second light rail line](#)

Addis Ababa opens second light Rail Line; Ethiopia

12 Nov. 2015



ETHIOPIA: The second light rail line in Addis Ababa opened on November 9. The 17·4 km Green Line has 22 stops. It runs east from Ayat to Tor Hailoch, sharing tracks with the north-south Blue Line on a 2·7 km, five-stop stretch between Lideta and Meskel Square.

The north-south Blue Line began revenue service on September 20, after a period of test running that started on February 1. The 16·9 km route links Menelik Square with Kaliti, serving 23 stops.

Both lines were built by China Railway Engineering Corp at a cost of US\$475m, 85% funded by loans from Export-Import Bank of China.

Services are operated by a fleet of 41 three-section 70% low-floor trams supplied by CNR Changchun. Of these, up to 21 are to operate on the Green Line.

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- [02 Feb 2015 - Addis Ababa light rail test running begins](#)
- [27 Aug 2014 - First Addis Abeba tram rolls out](#)
- [06 Jul 2014 - Huawei awarded Addis Abeba light rail telecoms contract](#)

Nairobi moves ahead with Transport Plans; Kenya

22 Feb. 2017



KENYA: President Uhuru Kenyatta issued an executive order on February 9 creating the Nairobi Metropolitan Area Transport Authority.

Covering the counties of Nairobi City, Kiambu, Kajiado, Machakos and Murang'a, NMATA aims to formulate a 'sustainable integrated public transport strategy' based on bus rapid transit and commuter rail routes. It is envisaged to be the precursor to an authority with expanded powers and a broader mandate that would be established by statute at a later date.

To be developed in three phases, the Nairobi Commuter Rail Service project would modernise currently underused routes and build extensions. The first phase would upgrade track and signalling on four routes totalling around 100 km between central Nairobi, Ruiru, Syokimau, Kikuyu and Embakasi Village. A 6.5 km branch would be built to serve Jomo Kenyatta International Airport, and new stations would be opened on existing routes. Phase 1 also envisages the purchase of new rolling stock.

Against a background where 85% of Nairobi's population do not own a car, the project aims to increase capacity on the routes from 5 million passengers per year to 15 million initially and eventually 60 million.

Phase 2 would extend services to Thika, Limuru and Lukenya; Phase 3 would link Nairobi with satellite towns such as Ongata Rongai, Kiserian, Ngong, Kiambu, Ruai and Kangemi.

To be developed under a PPP concession, the commuter rail and BRT projects could be partly funded with €20m from KfW, currently under appraisal. The German Federal Enterprise for International Co-operation would provide technical support.

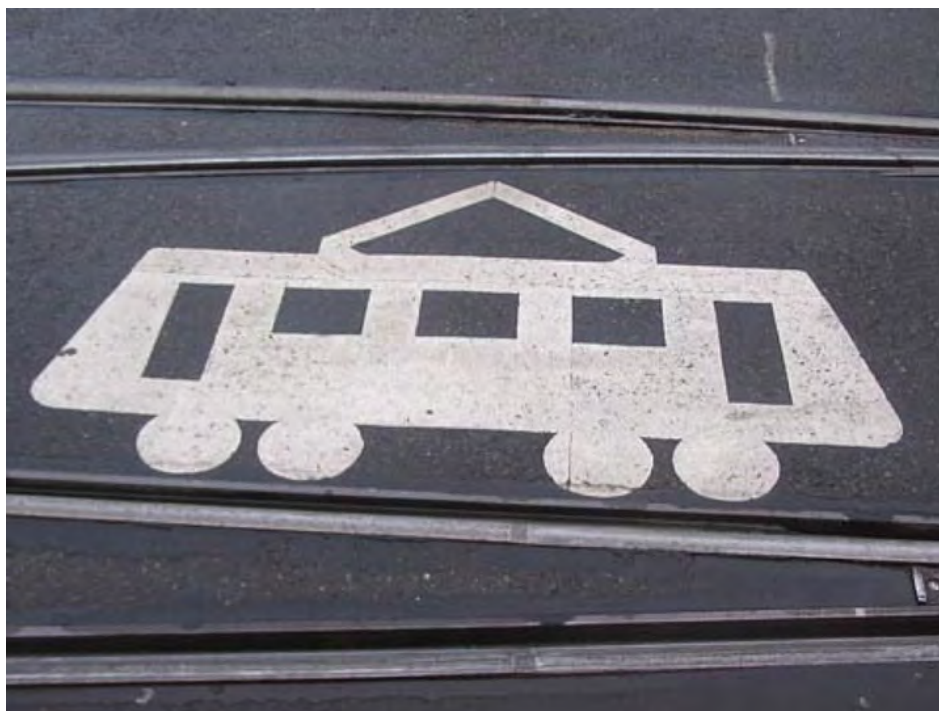
A year ago Kenyatta announced that work on a light rail network in the capital would begin later that year, with financial support from Hungary. Local media reports suggest that work did not start as planned.

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- [22 Feb 2016 - Nairobi plans light rail network](#)
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- [12 Nov 2015 - Addis Ababa opens second light rail line](#)
- [03 Nov 2015 - Hungarian company builds tram for Africa](#)

Kampala light Rail Agreement signed; Uganda

17 Dec. 2015



UGANDA: The government has signed a memorandum of understanding with the Chinese government for the construction of a light rail network in Kampala.

To be built by China Civil Engineering Construction Corp, the first phase would cost US\$440m to build and would extend for 35 km on an elevated alignment. Four routes are expected to be operational by 2020.

Being prompted in conjunction with the 1 435 mm gauge rail network on which work is due to start this year, the network could eventually total 240 km, connecting the capital with the surrounding towns of Entebbe, Nsangi and Wakiso.

Related news

- [22 Feb 2017 - Nairobi moves ahead with transport plans](#)
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- [03 Nov 2015 - Hungarian company builds tram for Africa](#)
- [21 Sep 2015 - Addis Ababa light rail opens](#)

Lagos Blue Line Metro Agreement; Nigeria

06 Jul. 2018

NIGERIA: Alstom has signed a letter of intent to work with Lagos Metropolitan Area Transport Authority on the Blue Line metro project. The 'head of agreement' was signed when France's President Macron visited the France-Nigeria Business Forum in the city on July 4, and a definitive contract is expected to be finalised shortly.

Under the agreement, Alstom would support the provision of third rail electrification and substations for Phase 1 of the Blue Line, as well as other engineering works for the Marina – Mile 2 section of the line.

Alstom and the state government then intend to work jointly to structure export credit agency financing for the provision of a control centre, passenger information and ticketing systems for Phase 2 of the line, along with the supply of CBTC for the trainsets which LAMATA is procuring separately.

The 27 km Blue Line is planned to run from Okokomaiko to Marina with 13 stations. Design and build infrastructure contractor China Civil Engineering Construction Co has nearly completed civil works for the 12 km, five-station initial section.

The project is intended to address mobility challenges in the city of 22 million people, stimulate economic growth and job creation while improving the environment and air quality. Ridership is estimated at 400 000 passengers/day, with a capacity of 700 000 passengers/day on completion.

In January 2015 LAMATA ordered 15 trainsets from CRRC Dalian, with an option for 14 more. This replaced an earlier plan to use second hand Toronto metro cars.

'The Blue Line project is of strategic importance for the city of Lagos as it allows our people to travel safe and fast across longer distances', said LAMATA Managing Director Abiodun Dabiri. 'Integration with existing transport systems like our bus or boat lines and future metro lines will largely contribute to our global transport plan for Lagos to reduce traffic congestion and make Lagos a smart city.'

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- [15 Feb 2019 - Douala tram project poised to launch](#)
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Africa's Megacity needs an urban Rail Backbone; Lagos

14 Nov. 2008



LAGOS: After many years of talk and aborted proposals, plans for a diesel light rail network are finally taking shape in Nigeria's largest city.

Dr Dayo Mobereola

Managing Director & CEO, Lagos Metropolitan Area Transport Authority

Tender documents are due to be issued in the final quarter of this year for the design, supply, operation and maintenance of new rolling stock to work the first two lines of the proposed Lagos Rail Mass Transit network. Forming part of an integrated public transport system including light rail, quality bus and ferry services, the rail network is aimed at meeting the transport needs of the region's population, which is expected to soar to around 25 million by 2015.

Lagos is already the world's sixth largest city with a population of 17 million inhabitants, bigger than London or New York. It seems amazing that it still does not have an urban rail system, although this is not for want of trying. Feasibility studies have been carried out at intervals since 1978 but despite the preparation of a mass transit plan, the scheme has repeatedly failed to get off the ground due to lack of political will and funding.

A major industrial centre with a seaport and airport, Lagos is now a sprawling city which has expanded beyond its borders into the neighbouring Ogun state and is home to 45% of Nigeria's skilled manpower. Rapid urbanisation has given rise to many transport problems, which have been exacerbated by a reduction in infrastructure investment since the transfer of the federal capital to Abuja. This in turn led to declining productivity levels and increased social deprivation.

As a result, an ad-hoc transport system emerged to cope with the daily influx of 6 million commuters, based on private car, buses and around 75 000 private minibuses known as danfos and molues. With 5 000 km of road, but only 640 km of designated main roads, Lagos already has more than 220 vehicles per route-km, against a national average of 11, and 200 000 extra cars a year are being registered in Lagos state alone.

The current transport network is severely congested and already unable to cope with demand. If nothing is done, the situation is bound to worsen in the light of population growth which is currently running at 6% per annum.

Urban Transport Plan

World Bank approval for the Lagos Urban Transport Plan in April 2001 enabled preparatory work to start in 2002. Technical advice and financial assistance was obtained from the bank, in the form of an initial US\$100m credit. The plan includes improvements to the road network, enhancement of bus services and water-borne transport and, most importantly, the development of a light rail network. An additional US\$50m credit was approved in April 2007 to cover the rising cost of the projects.

As part of this initiative, the Lagos Metropolitan Area Transport Authority was set up in December 2003 as a semi-autonomous agency, tasked with framing strategic transport plans and co-ordinating their implementation and operation in partnership with federal and other agencies. Its long-term goal is to develop and implement a transport system that meets world standards of technical excellence, harnesses the energy and efficiency of the private sector and has broad social and political acceptance.

Seven-Line Network

To meet the city's long-term requirements, Lamata has developed plans for a seven-line rail network totalling no less than 246 km, which is due to be completed by 2025. The first stage comprises two lines which are to be built by 2011.

Both routes will run from Marina in the city centre, with the 27 km Blue Line serving Okokomaiko in the west and the 37 km Red Line heading north to Agbado. The two lines will each have 13 stations. Initial ridership estimates put the number of passengers at 320 000 per day on the Blue Line and 1.3 million a day on the Red Line.

The LRMT project is intended to be implemented as a public-private partnership, with the infrastructure provided by the Lagos State Government under a design-and-build contract and the operations funded and managed by the private sector under a concession agreement.

An MoU between Lamata and Nigerian Railways Corp was signed in 2006, granting access to a 30 m strip of NRC right-of-way required to build the light rail lines.

The light rail network will be 1 435 mm gauge, with track designed for simplicity, very limited maintenance and long-term sustainability. The Red Line would be double-track from Iddo as far as Ebute Metta, and single-track on the northern section. A four-track layout is envisaged at Iddo where the two lines will join.

A major cable-stayed bridge is needed to carry the line over the Lagos River from Iddo to reach the old city on Lagos Island, where the line will follow the quayside to Marina. Typical stations will have centre island platforms between the two tracks. Interchange stations will be established at key locations, with pedestrian bridges to provide safe access. Full signalling and automatic train protection are envisaged to reflect the anticipated high volume of train movements.

Tenders are to be issued inviting contractors to design and build the infrastructure, as well as bidders for the supply, operation and maintenance of the rolling stock. In the longer term an electrified network is envisaged but, in view of the unreliable electricity supply in

Lagos, the preferred choice for the initial fleet is diesel-powered LRVs, operating in trains of four to 10 cars.

The successful tenderer will be required to enter into a concession contract with Lamata, under which it would operate the rolling stock and undertake all maintenance on the vehicles. Tenderers will be required to propose maintenance packages to ensure that the vehicles will be maintained in accordance with OEM recommendations over the concession period, preventing their value and performance being impaired by deferred maintenance. The successful bidder will also be required to train and certify designated Lamata personnel, or contractors, to conduct routine inspections.

Looking ahead

With the plans for the Red and Blue lines well underway, longer-term proposals are taking shape for a further five lines to complete the 246 km network by 2025.

The Green Line would run east from Marina to Lekki airport, paralleling the coast, while the Yellow Line would diverge from the Blue Line at National Theatre near Iddo and head northwest to Otta in Ogun state. A short branch off the Red Line at Oshodi would serve the international and domestic terminals at Murtala Mohammed International Airport.

The Brown and Orange lines would serve the northeast, sharing the Red Line tracks from Marina to Jibowu and then running to another junction at Ojota. The Brown Line would finish at Mile 12, whilst the Orange Line would continue north through Long Bridge to Redeem in the satellite township of Mowe/Ibafo.

Finally, the Purple Line would provide an orbital route running from Ojo in the west to Toll Gate in the northeast, where it would join the Orange Line tracks to Redeem. Interchanges would also be provided with the Yellow and Red lines in the northern suburbs. In addition, a monorail ring around Lagos Island is envisaged to serve the city centre.

If the urban rail network is completed as planned, it would reduce traffic congestion and improve road safety, increasing travel efficiency and productivity across the whole region. It offers the potential to improve the quality of the environment as well as raising living standards. Investment in the rail network would promote the spread of economic activity throughout the city and ultimately contribute to the creation of an integrated multi-modal passenger transport network.

'We have a Vision of an urban Rail Network at the Heart of an integrated Transport System'.

Macron joins Abidjan Metro Groundbreaking; CÔTE D'IVOIRE

13 Dec. 2017



Photos: Philippe Wojazer-Pool/SIPA/REX/Shutterstock

CÔTE D'IVOIRE: Construction work on the Abidjan metro project was formally inaugurated on November 30 by President Alassane Ouattara and his French counterpart Emmanuel Macron with a ceremony at the site of the future Treichville station.

Visiting the region for an Africa-Europe summit, Macron said the urban rail service would 'change the life' of the city's residents, as well as encouraging economic development. Reducing the use of private cars would also contribute to the wider climate change agenda, he believed.

The French government is providing €1.4bn to support development of the north-south line as part of a €2.1bn package agreed in July. The 37.9 km route connecting Port-Bouët and Anyama will have 20 stations and is expected to carry 500 000 passengers per day.

Due to be completed by the end of 2019 for revenue operations to start the following year, the route will largely share the alignment of the existing metre-gauge Sitarail main line from Abidjan to Ouagadougou, which is to be extensively rehabilitated. A short southern extension will be built from the existing terminus to the Félix Houphouët-Boigny international airport at Port-Bouët.

Infrastructure work is to be undertaken by Bouygues and Thales, while Alstom is to supply the rolling stock; Keolis will be responsible for operations.

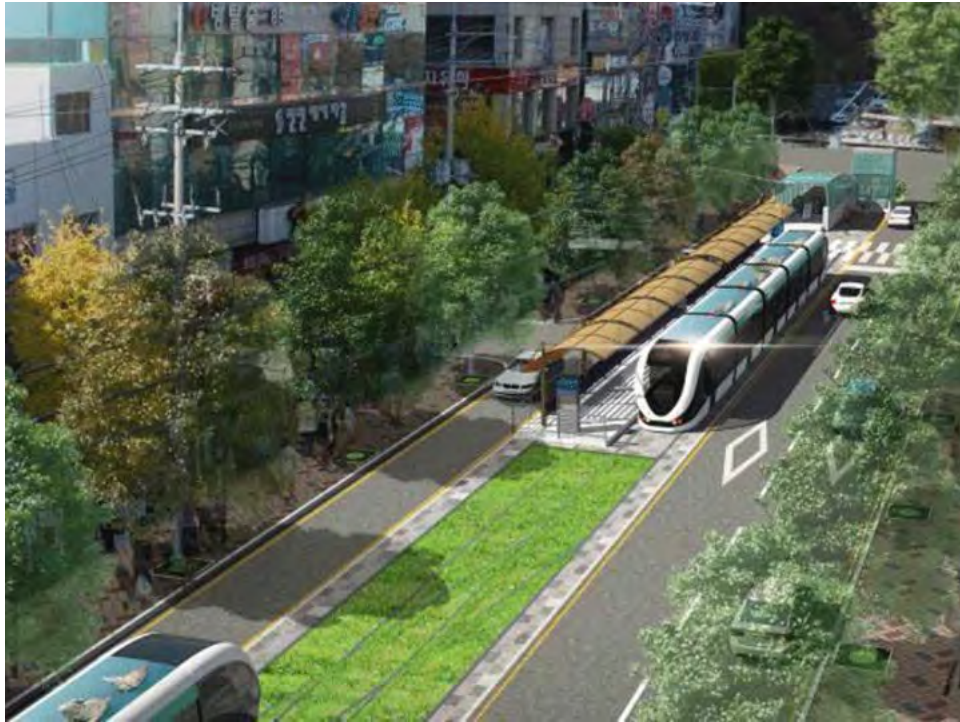
The line had initially been awarded to Dongsan Engineering and Hyundai-Rotem under a contract agreed in 2015, but after agreeing the French financing package the government bought out the South Koreans' 42% stake in project company STAR (Société des Transports Abidjanais par Rails) in October.

Related news

- [15 Feb 2019 - Douala tram project poised to launch](#)
- [18 Dec 2018 - CNG buses delivered to Abidjan](#)
- [19 Jul 2018 - Abuja metro starts operation with diesel-hauled trains](#)
- [08 Jul 2015 - Abidjan metro concession signed](#)
- [16 Apr 2014 - Abidjan urban line contractor selected](#)

Busan to gain Tram Line; South Korea

18 Feb. 2019



SOUTH KOREA: A street-running catenary-free light rail line is to be built in Busan, which the government has selected ahead of four other cities for the demonstration project.

The Oryukdo Line would run on a north-south route in the city's southeastern Yongho-dong district. The first section would cover 1.9 km from Kyungsung University station on metro Line 2 to Igidae, serving five stops. Services would be operated with battery trams.

The initial section is expected to be completed by 2022 at a cost of 47bn won. The government is to provide financing, with support from the Korea Railroad Research Institute.

In the longer term the route would be extended south by 3.3 km to Oryukdo Skywalk, adding four stops.

Related news

- [12 Sep 2018 - Busan metro train contract awarded](#)
- [03 May 2017 - Busan metro Line 1 extends](#)
- [13 Sep 2011 - Busan-Gimhae Light Rail Transit opens](#)

Trams on Test in Piraeus; Greece



GREECE: Testing on an extension of the Athens tram network to Piraeus began on February 7.

The 5.4 km single-track loop runs through the centre of Piraeus to the port. Starting at Neo Faliro station on metro Line 1, it runs to Akti Posidonos, before returning to terminate at Peace & Friendship Stadium. The 12-stop extension is expected to carry 35 000 passengers a day.

Themeli has built the extension under a €61.5m contract signed with Attiko Metro in January 2013. Edilon Sedra has supplied its Corkelast embedded track and floating slab track to reduce noise and vibration. Alstom is supplying 25 trams under a €54m contract signed in July 2018.

A further extensions to Kallipoli, with 10 stops, is planned, followed in the longer term by a 3.8 km, six-stop extension to Keratsini. Extensions of other parts of the tram network are planned from Elliniko to Argyroupoli (1.1 km) and Syntagma to Aigyptou (2.2 km).

Related news

- [02 Aug 2018 - Alstom signs Athens tram contract](#)
- [16 Jan 2013 - Piraeus tram extension contract signed](#)

Manila cross-City Rail Link gets underway; Philippines



PHILIPPINES: Ceremonies were held in Manila on February 15 to mark the start of work on the first phase of the North South Commuter Railway serving the capital's northern suburbs.

Broadly following the alignment of PNR's moribund Main Line North, the 37.6 km line will run north from the national railway's main terminus at Tutuban to Malolos in the Bulacan district. The line is to be built by Sumitomo Mitsui Construction under a contract signed by the Department of Transportation on January 23. The 149bn peso project is being supported by Japan International Cooperation Agency, and Japanese ambassador Koji Haneda said during the groundbreaking ceremony that it solidified the 'strong bilateral relations' between the two countries.

Transportation Secretary Arthur Tugade said the line would be completed by 2021. It will initially serve 10 stations at Tutuban, Solis, Caloocan, Valenzuela, Meycauayan, Marilao, Bocaue, Balagtas, Guiguinto, and Malolos, although earlier proposals envisaged up to 15. The contract includes construction of a new rolling stock depot at Valenzuela to accommodate the planned fleet of 13 eight-car trains.

With trains running at up to 120 km/h, the journey time between Manila and Bulacan is expected to be around 35 min, compared with almost 2 h on the congested road network. DOTr anticipates that the line will be carrying more than 300 000 passengers per day on opening, rising to 500 000 by 2023.

The NSCR is seen as the first stage of a planned 147 km north-south corridor with 37 stations, running across the conurbation from Clark International Airport to the north with the town of Calamba in Laguna province, southwest of the capital. Provisionally costed at around 780bn pesos, this 'seamless' commuter railway would be worked by a fleet of 58 eight-car trains, according to Under-Secretary of Transport Timothy Batan.

On the same day, DOTr invited tenders by May 10 for three civil works packages on the long-planned rail link between Malolos and Clark International Airport, which would form the northern section of the corridor. Running for 50.5 km with three stations, this phase is now to be elevated throughout. The three packages cover 17 km, 16 km and 12 km sections of viaduct with two, one and two stations respectively.

According to DOTr, the airport line would be completed by 2023. A future extension could add a further 18.2 km north of the airport to the Capas district.

At the southern end of the corridor, PNR is responsible for reconstructing and upgrading its Main Line South between Tutuban and Calamba as a separate project.

The government says interchange will be provided between the NSCR and other urban rail lines in the Manila area, including LRT1 and 2, MRT 3 and metro Line 7. It would also connect with the 25 km Metro Manila Subway (Line 9) linking Mindanao Avenue in Quezon City to Ninoy Aquino International Airport, on which construction is expected to start by the end of February.

Related news

- [10 Jan 2019 - Manila Line 3 upgrade contract awarded](#)
- [19 Dec 2018 - Mayor attends Makati Subway groundbreaking ceremony](#)
- [04 May 2017 - Work begins on Manila metro extension to Cavite](#)

Mitsubishi to adds to the Ina Line's 'Rainbow' of Trains; Japan

13 Feb. 2019



JAPAN: Mitsubishi Heavy Industries Engineering is to supply one more six-car Model 2020 Automated Guideway Transit rubber-tyred light metro trainset for use on Saitama New Urban Transit Co's Ina Line in Greater Tokyo.

MHI delivered three Model 2020 sets in 2015, with the first entering service in November that year. Each has a different colour scheme. Eventually there will be seven sets, which MHI says will create 'a rainbow' to represent the Ina Line's 'radiant future'. The latest train will have a golden topaz colour scheme, to go with the green crystal, bright amber and pure ruby sets already in service.

Several changes are being made from the previous build of three trainsets, which would result in lower vibrations. The trains have a double-skin aluminium body and T-smover bogies, as well as a hexagonal cross-section that maximises interior space and enables the backs of the longitudinal seats to be slanted at a comfortable angle.

Saitama New Urban Transit Co is partly owned by Saitama Prefecture and East Japan Railway. Its 13 km Ina Line connects Omiya with Uchijuku and carries 50 000 passengers a day.

Related news

- [30 Oct 2015 - MHI delivers Ina Line trainsets](#)

BYD signs Salvador Monorail Contract; Brazil

19 Feb. 2019



BRAZIL: Governor of Bahia Rui Costa has signed a PPP concession with a consortium of BYD Brazil and Metrogreen, which is to build and operate a straddle monorail line in Salvador.

The BYD-led consortium had signed an initial agreement in May 2018. With the contract signing, work can now begin in around six months, with the first phase due to open in 2021.

The 20 km route linking the city centre with São João Island is expected to carry 150 000 passengers per day. It will provide interchange with the city's existing metro network.

The R\$2.5bn project will use BYD's SkyRail automated monorail, which is already operational in the Chinese city of Yinchuan. BYD says that this would be able to climb gradients of up to 20%. Parks are to be developed under the elevated line, and stations will include 'community facilities' such as police stations.

Related news

- [13 Jun 2018 - BYD to build monorail line in Salvador](#)
- [05 Sep 2017 - BYD-built monorail opens in Yinchuan](#)
- [14 Oct 2016 - BYD enters urban rail market](#)

BYD to build Monorail Line in Salvador; Brazil

13 Jun. 2018



BRAZIL: BYD has signed an agreement to build a monorail line in Salvador. The R\$2.5bn project is to be built in two phases, with work due to begin in the fourth quarter of 2018.

The 20 km coastal route will include a section that crosses the sea en route to an offshore island. The first phase is due to open in 2021.

Shenzhen-based BYD unveiled its SkyRail straddle monorail in October 2016. Aimed at small and medium sized cities, as well as tourist attractions and central business districts, it offers a capacity of up to 30 000 passengers/h per direction and a maximum speed of 80 km/h.

Related news

- [19 Feb 2019 - BYD signs Salvador monorail contract](#)
- [30 Apr 2018 - Salvador metro reaches airport](#)
- [05 Sep 2017 - BYD-built monorail opens in Yinchuan](#)
- [14 Oct 2016 - BYD enters urban rail market](#)

BYD-built Monorail opens in Yinchuan; China

05 Sep. 2017



CHINA: The first domestically developed straddle monorail to enter revenue service in China opened on September 1 at the China Flower Expo Park in Yinchuan.

The 5.7 km route with eight stations uses a fleet of seven three-car trainsets travelling at up to 80 km/h. Each trainset has capacity for 170 passengers.

Construction started in April and cost 600m yuan. The project was developed by BYD. The bus, car and battery manufacturer unveiled a prototype of its SkyRail monorail at a test track at its Shenzhen headquarters in October last year, marketing it as suitable for small and medium sized cities, as well as tourist attractions and central business districts.

Yinchuan plans to build a 300 km monorail network.

Related news

- [19 Feb 2019 - BYD signs Salvador monorail contract](#)
- [13 Jun 2018 - BYD to build monorail line in Salvador](#)
- [13 Feb 2018 - CRRC unveils new-generation monorail train](#)
- [18 Dec 2017 - Wuhu monorail contract awarded](#)
- [30 Nov 2017 - Chinese urban rail vehicle supplier set up](#)
- [14 Oct 2016 - BYD enters urban rail market](#)

CRRC unveils new-Generation Monorail Train; China

13 Feb. 2018

CHINA: CRRC Changchun Railway Vehicles Co presented its 'new generation' straddle monorail vehicle for low- and medium-capacity routes on February 1.

CRRC Changchun has drawn on its experience of supplying 770 monorail sets since 2004. The manufacturer says that the use of carbon fibre composite for some components makes the vehicle 25% lighter compared with earlier generations, leading to a 22.7% reduction in energy consumption. The vehicle is equipped with permanent magnet motors and emergency traction batteries, and is winterised to operate at temperatures down to -40°C. Three sizes are offered, having a capacity of a four-car set 962, 792 or 552 passengers.

Related news

- [04 Jul 2018 - CRRC rolls out Delingha tram](#)
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- [05 Sep 2017 - BYD-built monorail opens in Yinchuan](#)
- [25 Jul 2017 - CRRC Sifang rolls out suspension monorail prototype](#)

CRRC Sifang rolls out Suspension Monorail Prototype; China

25 Jul. 2017



CHINA: CRRC Sifang has rolled out a prototype trainset for a suspension monorail that it is building in Hancheng. In November construction began on a 55 km north-south line linking the city centre and the airport.

The supplier is offering the trainset in a three- or five-car version, with capacity for 300 or 510 passengers. Permanent magnet motors give a maximum speed of 70 km/h and the ability to climb inclines of up to 10%.

CRRC Sifang says that suspension monorails are especially suitable for scenic or hilly areas, as well as cities with heavy road traffic.

Related news

- [13 Feb 2018 - CRRC unveils new-generation monorail train](#)
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- [08 Aug 2017 - CRRC rolls out tram equipped with automatic train control](#)
- [04 Oct 2016 - Sky Train on test in Chengdu](#)

Siemens to upgrade Medellín Metro Signalling; Colombia

19 Feb. 2019



COLOMBIA: Siemens Mobility has won a €42m contract to modernise signalling on Line A of the Medellín metro, the company announced on February 19.

Siemens is to install the wayside equipment outside operating hours, with the work on Line A and in the Patio de Bello depot due to be completed in 2021.

Siemens is to replace the existing signals with LED signals, modernise the LZB automated train control, and upgrade the communications network and power supply. It will also install Westrace MkII interlocking, which will control 111 track circuits, 58 point machines and 72 signals.

The 25.8 km north-south Line A is one of two metro lines in Medellín. It serves 21 stations and carries 1 million passengers a day.

Related news

- [09 Jan 2019 - Medellín orders BYD electric buses](#)
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METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 39, February 2019



The Shonan suspended Monorail in Kamakura System SAFEGE, Japan

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

Mumbai: First Trial Runs for Metro in Dec., regular Commute from May 2020: Cidco; India

On Thursday, the town planning department announced that the project was progressing as intended.

Mumbai Updated: Jan. 04, 2019 00:00 IST
Pranab Jyoti Bhuyan
Hindustan Times



An under-Construction Metro Station at Kharghar (Bachchan Kumar/HT)

The City and Industrial Development Corporation (Cidco) had announced in May 2018 that it will not be able to complete the first phase of Navi Mumbai Metro Project by May 2019. The deadline was set by Cidco itself.

Later, Cidco officials announced a new deadline in July 2018 and said the phase 1 would be ready in May 2020.

This left the residents exasperated as they had hoped the metro would bring in the much-needed relief from the growing traffic chaos in Navi Mumbai.

On Thursday, the town planning department announced that the project was progressing as intended and trial runs are likely to begin by December. It also said Cidco is confident of meeting the May 2020 deadline.

“There are 11 metro stations in the first phase and they will be ready by October. We will take another few weeks to finish the work on tracks and signalling system. This will allow us to start trial runs by November-end or early December,” said an executive engineer from Cidco.

He added it will take another five months after the trials to secure a safety certificate.

“It will take a while to start services even after receiving the certificate. So it is likely the commuters can avail metro service from May 2020,” he said.

The Navi Mumbai Metro Project is divided into four phases. The first phase (which is underway) starts from Belapur railway station and ends to Pendhar near Taloja. The corridor is 11.10 km long.

Besides constructing 11 stations, this route will have a depot-cum-workshop, which is being built at Taloja. The first phase is worth ₹3,063.63 crore.

Cidco engineer said, “We would have failed to meet the May 2019 deadline because the contractors were taking a lot of time to build the stations. So we hired new contractors in mid-2018. Now, everything is back on track.”

The first phase of the project will benefit lakhs of residents of Taloja, Kharghar and CBD Belapur. Presently, it takes around 45 minutes to reach Belapur from Taloja owing to low frequency of trains and congested roads. Once the metro becomes operational, the travel time will be reduced to 18 minutes.

In the first phase, Cidco plans to operate eight trains with three coaches each. Around 8,500 commuters are expected to use metro service every hour. The gap between two services will be eight minutes.

First Published: Jan 04, 2019 00:00 IST

5 October 2018

News

Tata-Siemens Consortium to develop Pune Metro; India



A consortium of Tata Group unit, TRIL Urban Transport and Siemens Project Ventures, has secured the contract to develop Pune Metro line in Maharashtra, India.

Awarded by the Pune Metropolitan Region Development Authority, the Pune Metro Line 3 contract involves construction of a metro corridor from Hinjewadi to Shivajinagar.

Tata Sons Infrastructure, Defence and Aerospace president Banmali Agrawala said: "This project is a true representation of our expertise and capabilities of delivering on long-term and large infrastructure projects.

"With the support of our partners, we are confident of meeting the expectations and requirements of the project as per the scheduled timelines.

"The Pune Metro will significantly transform the way people of Pune will commute in the future and will also bring in economic benefits and employment along the route."

The 23.3km-long elevated metro corridor will run from Hinjewadi Rajiv Gandhi Infotech Park to Shivajinagar passing through Balewadi. It will feature 23 stations.

"Pune Metro will significantly transform the way people of Pune will commute in future and also bring economic benefits and employment along the route."

The metro project will be the first of its kind to be developed under a Public-Private-Partnership (PPP) model.

Tata Projects will support the consortium as the engineering, procurement and construction (EPC) partner of the Pune Metro Line 3 project.

Construction works are set to begin in June next year and expected to be completed in three years.

Siemens managing director and CEO Sunil Mathur said: "We are delighted to be a consortium partner with Tata Group in implementing this project, which will positively impact the quality of life for the people of Pune."

The first two lines of Pune Metro are already under construction. They are expected to become operational in 2021.

The 16.59 km long Pune Metro Line 1 will run from PCMC to Swargate, while the Line 2 will operate between Vanaz and Ramwadi.

Railways to produce Metro-Rail Coaches at MCF/Rae Bareilly Factory; India

20 Oct 2018 in Category(ies): Posted on [20/10/2018](#)20/10/2018Categories [Indian Railways \(IR\)](#), [Metro Rail Systems](#), [Modern Coach Factory, Raebareli \(including Coach Factory for Forged Wheels and High Speed Train Rail Wheel and Axle Research & Development Centre\)](#)

In a 1st, railways to use robots to manufacture Metro Rail Coaches under "*Make in India*" at its Rae Bareilly based factory. It will also be the first factory in the country where coaches will be produced by robots.

NEW DELHI / RAE BARELI: For the first time, Indian Railways will manufacture metro rail coaches at its Rae Bareilly based factory under the Make In India scheme, an official said Thursday. The coaches will be manufactured by robots and will be on par with those being manufactured by Canadian firm Bombardier, currently being used by metro trains in the country.



Multi-Robot Multi-Gauge Coach Shell Fabrication commissioned as 1st in India for high Quality flexible Fabrication of Broad/Standard/Metre/Cape Gauge Coaches!

They will be 40 per cent cheaper than those procured from China and other countries and will be equipped with Wi-Fi, CCTV cameras, mobile charging outlets among other facilities, the official said. In addition, they will also boast of safety features including signalling, door control and train management systems along with modern surveillance gadgets on board.

“We already have had two meetings with the government on producing metro coaches. The Maharashtra government has given it’s approval for coaches for two metro trains,” said Rajesh Agarwal, member (rolling stock), Railway Board. “We are making a total of six metro coaches as of now,” Agarwal said further adding, that the cost of each coach would be Rs 8 crore, while those procured from China or other countries cost around Rs 12 crores. The board has decided to go for standardised coaches and has asked the Research Designs & Standards Organisation (RDSO) and the Modern Coach Factory (MCF) to invest in making it a reality, the official said.

Agarwal said the expansion of the MCF at a cost of Rs 480 crore– including recruitment of experts and technicians on a large scale– will be completed by December 2018. “It will also be the first factory in the country where coaches will be produced by robots,” he said.

The \$65m expansion of MCF is in the states of completion by December this year.

Automated Material Handling at MCF, Rae Bareli

MCF’s automated railway wheel set maintenance facility will utilize a variety of modern automation systems at the Rae Bareli plant. This technology primarily moves wheel set components such as bearings, wheels, or axles and assemblies such as wheel sets, pairs of wheels, and bearing pallets between machine tools and throughout the wheel shop. Their use decreases direct human contact with wheel set components and machines, increasing personnel safety and reducing opportunities for error. It also decreases the need for forklifts and manual overhead cranes to move the work pieces. The shop floor of

an automated facility does not rely on in-floor rails or raised rails to convey wheel sets, allowing easier access to key machines and measuring systems. This also permits adding machines to a particular cell or area without having to rework material handling systems. The automation systems at Rae Bareli include:

- Programmable Robots
- Overhead Gantry Cranes
- Escapements
- Turntables

These automation systems communicate with the wheel shop's Production Control System and the machines' integrated measurement capabilities to route the wheel set components to the relevant machine or machine cell for assembly, disassembly, machining, and measurement. They can be reprogrammed to avoid machines that are temporarily down for maintenance, allowing the shop to remain productive and limiting overall downtime.

Modern Coach Factory at Rae Bareli customizes all automation systems to meet the wheel shop's current and future production capabilities, with overhead gantry crane robots for easiest reprogram to accommodate additional machines and operations with technology for successful design, manufacturing, installation, and total integration of all machines and automation systems.

The plant specializes in custom welding robot systems for tasks such as the production of bogies and their components. For the sub-assemblies, floor tracks with rotary arms will be used; during assembly, the robots are placed on 2- or 3- axis slide systems. L-shaped manipulators used to permit high-quality welding in the flat position.

In the complete fabrication of passenger cars for Metro Rail, different processes such as MIG/MAG, plasma, contact points and resistance welding are combined on fabrication lines with corresponding clamping and transport systems. Bogies, roof sections, and window frames are fabricated using standard robot systems or with custom portal solutions using MIG/MAG single-wire and tandem, plasma, and spot welding processes.

Metro train sets require aluminum bodies. Equipped with a push-pull wire feed on the "Torch-Drive" wrist joint and the laser camera, these robots can also handle this application.

Goa to pitch for Metro Rail Line from North to South Goa; India

29 Aug. 2018 in Category(ies): Posted on [29/08/201829/08/2018](#) Categories [Goa Metro](#), [Metro Rail Systems](#)

PANAJI: The state government may pitch for metro rail in Goa to connect north and south Goa under the state's mobility plan. The exercise is being undertaken as part of NITI Aayog's proposal for the transportation sector, carried out with state governments to attain electric mobility and wider renewable energy use.

A senior official said that while the two rivers — Mandovi and Zuari — are hurdles, a seamless metro line can still be a possibility. He also said that the government could take

a relook at the failed skybus project. Konkan railway corporation (KRC) scrapped its over-Rs 100 crore project after it figured out that it would not be financially viable.

“The idea will be put before chief minister Manohar Parrikar,” the officer said, adding that the draft is being finalised by the department of transport.

The official said that the government is looking at a multi-model connectivity under the mobility plan. Unless there is a complete North-South connect — from Mopa to Karwar — without a break, the metro plan won’t work, he said. “It would be ridiculous to expect people to board a metro that stops at Cortalim or Panaji, and compel them to change their mode of transport for their onward journey.”

The officer, however, admitted that Goa is yet to make any headway in using energy-efficient modes of transport when some other states have been experimenting with **battery-operated or electric vehicles** and have made much progress. “Goa still has a long way to go,” he said.

All states have been asked to submit a detailed mobility plan, which will be presented at the global mobility summit in New Delhi on September 7-8, which will be inaugurated by PM Narendra Modi. Goa is expected to submit its final draft next week.

Alstom to deliver third-Rail Electrification for Phase 2 of Bangalore Metro; India

25 Feb. 2019 | Josephine Cordero Sapién

Bangalore Metro Rail Corporation Ltd (BMRCL), a joint venture between India’s federal government and the state government of Karnataka, has selected Alstom to deliver the power supply and traction electrification for Phase 2 of the Bangalore Metro extension project. The metro is also known as the Namma Metro and the Bengaluru Metro – Bengaluru being the official name of Karnataka’s state capital.



Alstom wins third-Rail Electrification Contract for [Namma Metro](#) © Arjun Shekar under [licence](#)

Namma Metro Overview

The Namma Metro first opened in 2011. It consists of two lines (Green and Purple) with an average daily ridership of 400,000. It is the fourth-longest operational metro in India. Phase 1 of the metro system opened in October 2011. June 2017 saw the completion of both lines of Phase 1.

Phase 2 is 72 km in total, of which almost 14 km will be underground and almost 58 km will be elevated. Phase 2 involves extending both Phase 1 lines and constructing two new lines. This phase has an estimated completion date of 2023.

Alstom's Third-Rail Electrification Contract for Phase 2

Phase 2 includes a 33km extension to the rapid transit system. It is to be electrified via a third rail. The contract is worth 71 million euro (81 million USD). Alstom says this is its largest third-rail electrification contract in India.

The contract lists the following elements for the 750 V DC third-rail traction electrification:

- engineering
- supply
- installation
- testing
- commissioning

It also includes:

- the construction of 30-33 kV/415 V auxiliary substations

- 26-33 kV/750 V DC traction substations
- a 33 kV cable distribution network along the viaduct

Alstom will integrate its works into the existing Phase 1 infrastructure. Alstom will perform the works in five phases. The first, a 6.5km stretch, has an estimated commissioning date of late 2019.

Alain Spohr, Alstom Managing Director, India & South Asia, said:

“Our significance of our relationship with BMRCL, going back to 2009, is underlined by the fact that Bangalore hosts one of Alstom’s most significant sites. Alstom’s footprint in systems and infrastructure is growing rapidly, and this project will give us an opportunity to extend our cutting-edge capabilities and solutions to our customer.”

Ajay Seth, Managing Director of BMRCL, said:

“The new line, once commissioned, will bring in much needed flexibility in the network while significantly reducing vehicular traffic in the city. It will enable Bangaloreans to traverse the length and breadth of the city hassle-free and also add positively to the environmental needs.”

Alstom in Bangalore

In 2009 Alstom won the contract to supply its U200 signalling and telecommunications solution for 42 km of Phase 1 of the Namma Metro. That makes this current contract Alstom’s second in the city.

Siemens to electrify Ahmedabad Metro; India

09 Jan. 2018



INDIA: Ahmedabad metro project promoter MEGA has awarded Siemens a €76m contract to electrify of the first phase of the city’s metro network.

Siemens will electrify two metro lines with a combined length of 39.2 km, as well as providing SCADA equipment.

In November, Hyundai Rotem was awarded a contract to supply 32 three-car trainsets to operate on Phase I. Larsen & Toubro is supplying ballastless track, and signalling is coming from Nippon Signalling.

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Stockholm to begin Trials of Driver-less Buses; Sweden



By [James Billington](#) on February 22, 2019 [ADAS](#), [Testing](#)

Scania and Nobina have announced a collaboration to commence trials of self-driving buses in Stockholm, Sweden, by 2020.

Details of the trial reveal that two Scania Citywide LF electric buses will run autonomously along a dedicated 5km route from the residential area of Barkarby with four stops.

The trial will be carried out in two stages: firstly operating without passengers, before welcoming on board approximately 300 passengers on the route.

Traffic and control systems for the autonomous buses will be jointly managed by Scania and Nobina, the largest public transportation operator in the Nordic countries.

The technology is now sufficiently mature to initiate trials in actual bus operations on public roads, making the project one of the first of its kind in Europe with buses this size,” said Karin Rådström, head of buses and coaches at Scania.

“The project will provide a wealth of information in the further development of large autonomous buses before a full-scale introduction.”

Throughout the trials, data will be collected on, for example, average speeds, uptime, on-time performance and deviation response and passenger satisfaction.

Several innovative public transportation projects are already under way in Barkarby, which has been described as the world’s most modern city traffic system. **Projects include Europe’s first self-driving electric buses in regular scheduled traffic.**

The Amberg Group is a unique knowledge, engineering and technology provider of logistics and infrastructures for smart cities, hubs and networks through innovative combinations of above and underground space usage.



Together with a network of strong, competent and dedicated partners the Amberg Group develops new products and services. These products and services cover in a digitalized manner the entire life cycle of the infrastructures and all engineering and technology aspects.

Through unique and outstanding solutions in these segments the Amberg Group has established itself as a leading partner in this network. In-house developments, start-ups and JV are the preferred methods for implementing new business models.

Tutor Perini wins L.A. and NYC Transit Contracts; USA

- February 22, 2019
- [Ballast, Ties, Rail, C&S, News, Rapid Transit/Light Rail, Track Structure](#)

Written by [Paul Conley, Editor-in-Chief](#)



Rendering of Westwood/VA Hospital station.

Los Angeles County Metropolitan Transportation Authority

Tutor Perini has won contracts for high-profile transit projects in Los Angeles and New York City.

The general contracting giant will team with O&G Industries to [design and build 2.6 miles of rail and two stations for the Los Angeles Purple Line Extension Section 3 project](#). The contract with the Los Angeles County Metropolitan Transportation Authority (LACMTA) is valued at \$1.4 billion. The contract follows one that Tutor Perini and partner Frontier-Kemper won last year to [design and build twin bored tunnels for the Purple Line](#).

The Purple Line Extension will allow commuters to travel between downtown Los Angeles, the Miracle Mile, Beverly Hills and Westwood. Tutor Perini said it will construct the new Westwood/UCLA station and the Westwood/VA Hospital station.

And on the other side of the country, [Tutor Perini](#) secured a [\\$253 million contract with MTA New York City Transit \(NYCT\) to install Communications-Based Train Control \(CBTC\)](#) on the Culver Line between West 8th Street and Church Avenue in Brooklyn. The work, much of which will be performed by Tutor Perini's Five Star Electric subsidiary, calls for modernizing the signal system for the Avenue X and Ditmas Avenue interlockings, as well as trackwork and construction of three relay room buildings.

Categories: [Ballast, Ties, Rail, C&S, News, Rapid Transit/Light Rail, Track Structure](#)
Tags: [communications-based train control \(CBTC\)](#), [Frontier-Kemper/Tutor Perini Joint Venture](#), [Los Angeles County Metropolitan Transportation Authority \(LACMTA\)](#), [O&G Industries](#), [Purple Line Extension Section 3 Tunnels Project](#), [Tutor Perini](#)

Tokyo Metro launches new Marunouchi Line Trains; Japan

Feb. 25, 2019

Written by [Keith Barrow](#)

TOKYO Metro's new fleet of 2000 series trains entered commercial service on the Marunouchi Line on February 23.



Related Posts

[Argentina approves \\$US 278m Roca Line fleet upgrade](#)

Feb 26, 2019 | [Commuter Rail](#)

[Copenhagen S-Train CBTC extended](#)

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[CRRC Tangshan reveals flexible-formation high-speed EMU](#)

Feb 26, 2019 | [Rolling stock](#)

[Bahia governor signs Salvador monorail contract](#)

Feb 26, 2019 | [News](#)

The 600V dc third rail trains are equipped with permanent magnet synchronous motors, reducing energy consumption by 27% compared with the 02 series trains, which will be replaced by the 2000 series sets. Tokyo Metro says the air-conditioned trains also offer improvements in passenger comfort, accessibility and safety.

The trains are being built at Nippon Sharyo's Toyokawa plant using electrical equipment supplied by Toshiba.



All 53 six-car sets are due to enter service on the 27.4km line from Ogikubo to Ikebukuro by the 2023 financial year.



In addition to the introduction of new trains, Tokyo Metro is currently trialling [Communications-Based Train Control \(CBTC\)](#) on the Nakano-sakaue – Honancho branch with a view to rolling the technology out over the remainder of the Marunouchi Line.

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Categories: [Asia](#) [Metros](#) [News](#)

Tags: [Japan](#) [Nippon](#) [Sharyo](#) [Tokyo](#) [Toshiba](#)

SAFEGE Type Suspension Monorail

From Wikipedia, the free encyclopedia

SAFEGE is an acronym for the French consortium *Société Anonyme Française d' Etude de Gestion et d' Entreprises* (English: French Limited Company for the Study of Management and Business) and is pronounced SAY-fij in English.

The consortium, consisting of 25 companies, including the tire-maker Michelin and the Renault automotive company, is a consulting and engineering bureau. It was formed in 1919 as *Société Auxiliaire Française d'Électricité, Gaz et Eau*, a holding company with interests in private water, gas, and electricity production and distribution. When in 1947, these public utilities were nationalised, the company became the engineering and consulting office which it is today, taking the name *Société Anonyme Française d'Études, de Gestion et d'Entreprises*.

Today the company is a subsidiary of Suez Environnement and specialises as a consultancy in water and environmental engineering, but not only (bought IDC, etc.) Its main market is France, with 60% of the turnover. It also is a leader in several consortias beneficiaries of lots from the EC FWCs.



The SAFEGE Test Track at Châteauneuf-sur-Loire, France

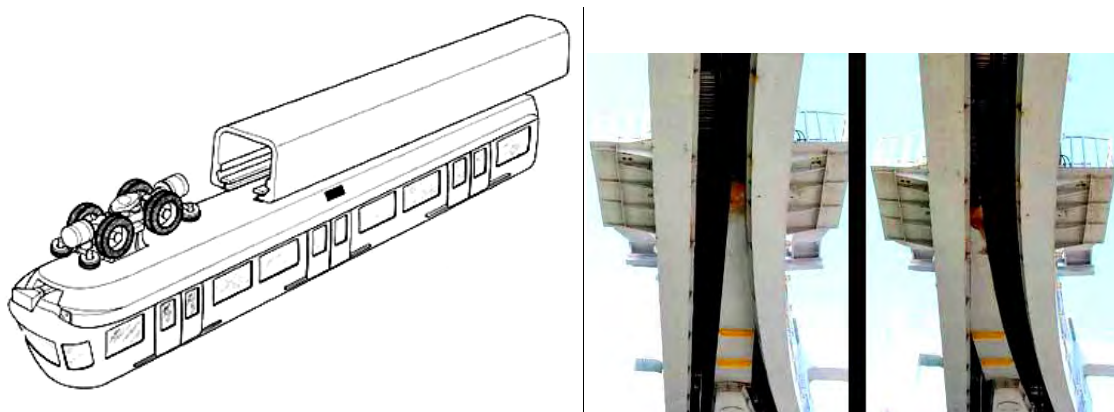


The Shonan Monorail in Kamakura System SAFEGE, Japan

SAFEGE gained international recognition for its design of a suspended monorail in the 1960s. The design team was headed by Lucien Chadenson.

Design Concept

The design of the system entails suspending passenger cars beneath rubber-tired wheel carriages of the type used more conventionally in the Paris Metro. The carriages are enclosed and supported by a box-like track or beam, with an opening in the bottom. The rubber wheels of the train run inside the track, supported by flanges on the bottom of the beam:



Working Features of suspended SAFEGE Monorail Sky Train

Unlike previous suspended monorails like the Schwebebahn in Wuppertal, Germany, the tracks are not exposed to inclement weather, and do not need any cleaning or ice-removal systems. This advantage enables them to run in cities where ice and other conditions would impair the reliability of the system.

Test Installation

The test track built in France by SAFEGE in 1959, was a 1.4 kilometre monorail line that featured prominently in the 1966 movie adaptation of [Fahrenheit 451](#), directed by [François Truffaut](#).¹ Although the track was dismantled not long thereafter, the original car survived longer.

Market Position

SAFEGE systems are the leading type of suspended railway currently in [transit](#) use, though this consists of just four installations of two different systems. Its chief and more numerous competitor in modern monorail applications are variations of the German-designed [ALWEG](#) system, in which the vehicles run on top of, and straddle, a solid beam.

SAFEGE-Type Monorails in the World

[Mitsubishi Heavy Industries](#) of Japan has developed a working system of SAFEGE-type suspended railways, and have made three such installations, two of which remain in operation today.

- From early 1964 to December 1974, [a 0.5-kilometre \(0.31 mi\) single-line](#) ran between [Higashiyama Zoo and the nearby Botanical Gardens](#) in [Nagoya, Japan](#).^[6] While initially popular, it also suffered from mechanical problems and after the first two years of operation, the novelty wore off and it began making a loss. Plans to expand the zoo and gardens hastened its demise, although the car and a section of track is preserved at one of the stations. While it was initially marketed as a ride, rather than a means of transport, a fare was charged, making it the first revenue-earning SAFAGE/Mitsubishi-type monorail.
- In 1970 the [Shonan Monorail](#) opened. It runs from [Ōfuna Station](#) in [Kamakura](#) to [Shōnan-Enoshima Station](#) in [Fujisawa](#).
- In 1988 the first stage of the [Chiba Urban Monorail](#) system opened, in [Chiba](#). With a 15.2-kilometre (9.4 mi) route length, it is currently the longest suspended monorail in the world.
- Two Siemens [SIPEM](#) lines exist in Germany, one on the [Dortmund University](#) campus, the other at the [Düsseldorf Airport](#). Siemens no longer actively markets this system, but does still deliver the software for the automatic operation of a SIPEM network and vehicles.



CHIBA urban suspended Sky Mono-Railway, Japan



Siemens Düsseldorf Airport Sky Train, Germany

Unfulfilled Proposals

In 1966, a proposal was considered to construct a SAFEGE-type monorail in the City of [Manchester](#). The 16-mile (26 km) line was planned to link [Manchester Airport](#) with the city and suburbs, with an underground tunnel under the city centre, but the scheme, along with the later [Picc-Vic tunnel](#) (which would be a conventional [rapid transit](#) line) was abandoned due to cost.^[8] The city eventually developed its own [light rail](#) network, [Manchester Metrolink](#),^[9] of which [one of its lines](#), opened in 2014, now links Manchester Airport to the city centre.

In November 1967, General Electric proposed to construct a SAFEGE monorail from downtown [San Francisco](#) to [San Francisco International Airport](#).^[10] The City of San Francisco studied the proposal, along with an extension of the [Southern Pacific Railroad's Peninsula Commute commuter rail](#) line and an extension of the [BART rapid transit](#) system. The proposal's incompatibility with other rail transit lines, the urban design concerns of an elevated guideway, and potential competitive impact on parallel rapid transit lines, led to its dismissal in favor of a BART extension. Ultimately, SFO was connected to downtown San Francisco via [BART](#).

CRRC Qingdao Sifang introduces Prototype Monorail Train; China

July 26, 2017



Hancheng City suspended overhead Mono-Railway, China

CRRC Qingdao Sifang announced that it had produced a prototype mounted monorail train with a maximum operational speed of 70 km per hour, the fastest of its kind in China. Driven by a permanent magnet motor, the experimental train runs along an overhead monorail.

The train can be composed of three or five train cars, with a passenger transport capacity of 300 and 510 people, respectively. The train has a strong climbing ability with a

maximum inclining in an altitude up to 100 meters over a length of 1,000 meters. The mounted monorail system is suitable for passenger transport in mountainous regions and urban areas where road traffic is heavy.

CRRC Qingdao Sifang, based in Qingdao City (Shandong Province, east China), is undertaking China's first overhead monorail project in Hancheng City (Shaanxi Province). The line will have 55 km and runs from the south to the north through the city, providing a link with the airport. The construction of the line began in November last year.

Class 2000 enters Service on Tokyo's Marunouchi Line; Japan

26 Feb. 2019



Photo: Kazumiki Miura

JAPAN: The first of 53 six-car Class 2000 trainsets entered revenue service on the Marunouchi Line of the Tokyo metro on February 23.

Nippon Sharyo is supplying the 600 V DC trainsets from its Toyokawa factory. They are equipped with permanent magnet synchronous motors supplied by Toshiba. Deliveries are scheduled to be completed in 2022, and the new fleet will replace the Class 02 trainsets.

Mitsubishi Electric is supplying a condition-based maintenance system incorporating its Train Information Monitoring & Analysis technology, which is based on Internet of Things concepts.

The 1 435 mm gauge Marunouchi Line runs from Ogikubo to Ikebukuro with a branch from Nakano-sakaue to Honancho, giving a total length of 27.4 km and 28 stations. It carried 1.6 million passengers a day in 2017.

Wuhan Metro Line 2 extended; China

21 Feb. 2019



CHINA: A southern extension of Wuhan metro Line 2 opened for revenue service on February 19 following three months of test running.

The 13.2 km underground extension runs from Optics Valley Square to Fozuling, adding 10 stations. These are all designed for eight-car trains, although Line 2 currently uses six-car sets.

The extension brings Line 2 to 60.8 km, making it the longest metro line in Wuhan and the sixth-longest in China.

Third Rail route to Tokyo Haneda Airport finalized; Japan

25 Feb. 2019



JAPAN: East Japan Railway expects to start work in May on its Haneda Airport Access Line, which would provide a third rail link to Tokyo's largest airport. This is currently served by the Tokyo Monorail from Hamamatsucho and the independent Keikyu Airport Line.

Announcing the project on February 15, JR East President Yuji Fukasawa explained that 'creating various access routes to Haneda is socially important, as the number of users of the airport is expected to continue increasing'. He said construction is expected to start in 2022 at an estimated cost of ¥300bn, with the line opening for revenue service in 2029.

The railway will start from an underground station beneath the airport's domestic terminal, and run northwards in a 5 km tunnel as far as the Tokyo Freight Terminal, in the eastern part of Shinagawa. Here the airport services would join an existing elevated and at-grade alignment that is currently only used by freight trains. Broadly paralleling the monorail, the freight line connects with JR East's Yamanote Loop and Keihin-Tohoku lines at Tamachi.

Making use of new and existing connections across its extensive suburban network, JR East plans to run direct services from the airport to Tokyo, Shinjuku and Shin-Kiba stations, serving different parts of the capital. Anticipated journey time between Tokyo station and the airport would be 18 min, compared to around 30 min via the existing routes.

A tunnelled southward extension to the airport's international terminal is envisaged in the longer term.

More Trains ordered for Poznań regional Network; Poland

26 Feb. 2019



POLAND: Wielkopolskie voivodship signed a contract with Pesa for the supply of five five-car Elf2 electric multiple-units on February 14.

Pesa beat bids from Newag and Stadler, and will work with its subsidiary ZNTK Mińsk Mazowiecki to supply the EMUs between June and December 2020. The EU is providing 48.8m złoty towards the 127.5m złoty contract, which includes options for two more sets.

The 160 km/h trains will be fitted with ETCS onboard equipment, as well as two toilets, air-conditioning, wi-fi, a passenger information system and five ticket vending machines. There would be 240 seats, in addition to multifunction spaces.

Pesa had previously supplied 15 DMUs and 22 first-generation Elf EMUs to Koleje Wielkopolskie, and is currently in the process of delivering 10 Elf2 EMUs. The five trains from the latest order would operate on Poznańska Kolej Metropolitalna services on the PKM 2 route. PKM services along this route would terminate at Kostrzyn in the second half of 2019; they currently terminate at Swarzędz, with services further east operated by KW.

- A cost-benefit analysis of reopening the 20 km Śrem – Czempin line south of Poznań was completed in January. This would cost 160m to 200m złoty, and the project is eligible for central government financing. Preparatory works could be completed in 2021, with the route expected to carry 6 000 to 7 000 passengers a day once it reopens as part of the PKM network.

Redlands Ronstruction Contract awarded, USA; California

26 Feb. 2019



USA: Construction work for the 14.5 km Redlands Passenger Rail Project in southern California is on course to start later this year, following the selection of Flatiron Construction Corp as preferred bidder for the \$154m main works contract.

The \$312m Redlands project is being promoted by San Bernadino County Transit Authority. The line will run from San Bernadino to the University of Redlands campus, serving intermediate stations at Tippecanoe Ave, New York St and Downtown Redlands. Trains would connect at San Bernadino with southern California's Metrolink commuter rail network.

The Redlands project makes use of a former Santa Fe freight railway alignment, and Flatiron has committed to ensuring that freight trains can continue to operate during the construction period. It also says much of the materials used will be recycled where possible.

SBCTA ordered a build of three twin-section Flirt DMUs last year to operate the all-day Arrow shuttle service, which is expected to start running in late 2021. Trains would run hourly, or half-hourly during the morning and evening peaks. In addition, Metrolink Express loco-hauled through trains will link Los Angeles and Downtown Redlands at peak times.

Tutor Perini lands LACMTA, NYCT Contracts; USA

- February 24, 2019
- [C&S](#), [Light Rail](#), [M/W](#), [News](#), [Passenger](#), [Rapid Transit](#)



Rendering of LACMTA Purple Line Extension Westwood/VA Hospital Station; Los Angeles County Metropolitan Transportation Authority Illustration.

Tutor Perini has won contracts for high-profile transit projects in Los Angeles and New York City.

The general contracting giant will team with O&G Industries to [design and build 2.6 miles of line and two stations for the Los Angeles Purple Line Extension Section 3 project](#). The contract with the Los Angeles County Metropolitan Transportation Authority (LACMTA) is valued at \$1.4 billion. The contract follows one that Tutor Perini and partner Frontier-Kemper won last year to [design and build twin-bore tunnels for the Purple Line](#).

The Purple Line Extension will allow commuters to travel between downtown Los Angeles, the Miracle Mile, Beverly Hills and Westwood. Tutor Perini said it will construct the new Westwood/UCLA station and the Westwood/VA Hospital station.

And on the other side of the country, [Tutor Perini](#) secured a [\\$253 million contract with MTA New York City Transit \(NYCT\) to install Communications-Based Train Control \(CBTC\)](#) on the Culver Line between West 8th Street and Church Avenue in Brooklyn. The work, much of which will be performed by Tutor Perini's Five Star Electric subsidiary, calls for modernizing the signal system for the Avenue X and Ditmas Avenue interlockings, as well as trackwork and construction of three relay room buildings.

Categories: [C&S](#), [Light Rail](#), [M/W](#), [News](#), [Passenger](#), [Rapid Transit](#) Tags: [Breaking News](#), [LACMTA](#), [Los Angeles County Metropolitan Transportation Authority](#), [MTA New York City Transit](#), [NYCT](#), [Tutor Perini](#), [Tutor Perini/OandG Joint Venture](#)

Construction begins on Metro Manila Subway; Philippines

Feb. 27, 2019

Written by [Keith Barrow](#)

THE Philippines broke ground on its first underground urban rail line on February 27, when a ceremony was held at Barangay Ugong in Valenzuela City to officially launch construction of the Metro Manila Subway.



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[Barcelona to replace oldest metro trains](#)

Feb 26, 2019 | [Metros](#)

The ceremony was attended by Japan's ambassador to the Philippines Mr Koji Haneda and Department of Transportation (DOTr) secretary Mr Arthur Tugade.

The 36km first phase of the north-south line will run from Quirino Highway in Quezon City to Taguig and Ninoy Aquino International Airport Terminal 3, serving three of Manila's business districts.

Last week the DOTr signed a design-build contract with joint venture of Shimizu Corporation, Fujita Corporation, Takenaka Civil Engineering and EEI Corporation for the initial three-station section from Quirino Highway to North Avenue, which is due to open in 2022. The remainder of the line will be completed in 2025.

The line is forecast to carry 370,000 passengers a day in the first year of full operations, with a design capacity of 1.5 million passengers a day.



DOTr says the project will draw on Japanese expertise to safeguard infrastructure from natural disasters such as earthquakes and typhoons.

The project is being financed by the Japanese government through a Pesos 365bn (\$US 7bn) Official Development Assistance (ODA) loan from the Japan International Cooperation Agency (Jica).

The groundbreaking ceremony came less than two weeks after the [official launch of construction on the first phase of Manila's North-South Commuter Railway project](#).

Categories: [AsiaMetrosNews](#)

Tags: [JICAManilaPhilippines](#)

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC URBAN, SUBURBAN AND INTERURBAN
PASSENGER TRANSIT SYSTEMS WITH METRO-
BUSE, LIGHT-RAIL, METRO-RAIL, COMMUTER-
RAIL, REGIONAL RAPID TRANSIT, ROPE-
WAY/TRAIN, WATER-METRO, AUTOMATED
PEOPLE MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 40, March 2019



Rapid National Capital Region Transport Delhi-Ghaziabad-Meerut, India

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

Indian Cabinet approves Ahmedabad Metro Phase 2; India

Feb. 25, 2019

Written by [Keith Barrow](#)

INDIA's Union Cabinet gave the go-ahead on February 19 for the second phase of the metro network in Ahmedabad, the largest city in the western state of Gujarat.



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Phase 2 comprises the 22.84km section of the North-South Corridor from Motera Stadium to Mahatma Mandir and the 5.6km stretch of the East-West Corridor between Gujarat National Law University and Gujarat International Finance Tec-City (Gift City).

The total cost of the two extensions is Rs 53.84bn (\$US 760m).

The first phase of the network comprises the initial 20.7km section of the East-West Corridor from Vastral Gaam to Thaltej Gaam, and the 18.5km North-South Corridor from Motera to APMC. Construction began in 2015 and Phase 1 is due to be completed by 2023.

The first Hyundai Rotem train for Phase 1 was [delivered in January](#).

Categories: [Asia Metros News](#)

Tags: [Ahmedabad](#) [India](#)

Alstom wins Bangalore Metro Electrification Contract; India

21 Feb. 2019



INDIA: Bangalore Metro Rail Corp has awarded Alstom a €71m contract to provide power supplies and electrification for the extension to the city's two metro lines being built as part of Phase 2 of BMRC's network development plan.

Alstom is to install 750 V DC third-rail electrification, along with 26 traction substations and 30 auxiliary substations. It will also supply a 33 kV cable distribution network and integration of SCADA systems with the existing lines.

Alstom expects that the first of five work phases, covering 6.5 km, will be completed by the end of the year.

The existing lines are being extended at both ends as part of Phase 2, under which two new lines are also being built. The east-west Purple Line is being extended east by 15.3 km from Baiyyappanahalli to Whitefield and by 8.8 km from Mysore Road to Kengeri. The north-south Green Line is being extended south from Yelachenahalli to Anjanapura by 6.3 km and north from Nagasandra to BIEC by 3 km.

Phase 2 is being developed by BMRC, a joint venture between the governments of India and the state of Karnataka.

Siemens to electrify Ahmedabad Metro; India

09 Jan. 2018



INDIA: Ahmedabad metro project promoter MEGA has awarded Siemens a €76m contract to electrify of the first phase of the city's metro network.

Siemens will electrify two metro lines with a combined length of 39.2 km, as well as providing SCADA equipment.

In November, Hyundai Rotem was awarded a contract to supply 32 three-car trainsets to operate on Phase I. Larsen & Toubro is supplying ballastless track, and signalling is coming from Nippon Signalling.

An Exclusive Interview with Mr. E. Sreedharan and his Insights on New Metro Projects in India; India

[1 March, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India



Mr. E. Sreedharan

Elattuvalapil Sreedharan is an Indian civil engineer and a retired IES (IRSE) officer popularly known as the “Metro Man”. He is credited for changing the face of public transport in India with his leadership in building the Konkan Railway and the Delhi Metro while he served as the managing director of Delhi Metro between 1995 and 2012.

INTERVIEW with Mr. E. Sreedharan

Rail Analysis India : Please tell us more about your journey with the Metro rail so far. How did you get started in this industry ?

Mr. E. Sreedharan : First phase of Delhi Metro project was sanctioned in August 2005 and a company was registered under the name Delhi Metro Rail Corporation shortly thereafter. An agreement was also signed with Japanese Government for financing 66% of the project cost.

The Government could not find a suitable person to head DMRC even after a search committee was set up, consisting of Secretary, Urban Development, Chief Secretary, Delhi and myself. In Feb 1997, Japanese Government gave an ultimatum to Govt. of India threatening to withdraw from the loan commitment, if a suitable MD was not selected and posted to DMRC. The Govt. therefore hurriedly decided to post me as CMD of DMRC, I was then Chairman-cum- Managing Director of Konkan Railway Corporation. That was how I landed in DMRC as its CMD on 4th Nov, 1997. After successfully completing phase-I of Delhi Metro almost 2 years and 9 months ahead of the schedule, DMRC had the courage and vision to start Metros in other major cities of the country.

“As a result a metro revolution started in the country and today there are 15 cities in India constructing/operating Metro systems.”

Unfortunately, the pace of metro construction in the country is painfully slow. While a country like China is constructing metros at the rate of 300 Kms every year, India is not able to achieve even 25 km a year.

In regard to metro construction, the country is almost self sufficient in all areas. Indigenisation has taken place except in the area of signalling. The construction industry therefore has very exciting and wide opportunities in India.



Rail Analysis India : What type of challenges were faced in the construction of the first phase of the Delhi Metro project ? Any interesting stories or anecdotes whilst getting the Mega project up and running ?

Mr. E. Sreedharan : When Delhi Metro was taken up, the country did not have any experienced persons for planning, designing and executing a world class Metro. The expertise was just not available and we had to therefore engage international expertise to assist us. Apart from this, there was no major hurdle.

An interesting turn of event took place when Japanese Govt. stopped funding the project following the Nuclear Bomb testing at Pokhran. Only after a threat that we would go for other sources of foreign funding, Japanese aid was restarted.



**Rail Analysis India : How do you view the progress of Metro projects in India now ?
What are the new opportunities Indian companies have in this sector ?**

Mr. E. Sreedharan : India is urbanising fast. There are already 18 cities in India with more than 3 million population and further 30 cities with more than 2 million. The traffic problems in these cities can be solved only by introducing rail based metro systems which are very safe, reliable, fast and comfortable.

Unfortunately, the pace of metro construction in the country is painfully slow. While a country like China is constructing metros at the rate of 300 Kms every year, India is not able to achieve even 25 Kms a year.

In regard to metro construction, the country is almost self sufficient in all areas. Indigenisation has taken place except in the area of signalling. The construction industry therefore has very exciting and wide opportunities in India.



Rail Analysis India : What are your views about Standardization and Indigenization in Metro Rail Systems and what is the impact of the same on the manufacturing and supply chain of India ?

Mr. E. Sreedharan : Right from the start, I have always stood for standardisation and indigenisation. Unfortunately, this process was very slow.

“The Prime Minister’s call for “Make in India” has certainly given a boost to indigenisation.”

There are now 3 factories manufacturing metro coaches in the country. All civil works (which constitute 55% by value of a metro) all electrical works, track linking etc. all can be now handled by Indian contractors.



Rail Analysis India : Do you think RRTS corridors is another solution after Metro rail for reducing road traffic in Indian cities? What else can the cities do for smoother management of traffic ?

Mr. E. Sreedharan : The roles of RRTs and Metros are different. While metros are urban transport systems, RRTs are high speed rail connectivity to suburbs and neighbouring urban centres. Both will no doubt reduce road congestion since they have capacity of a 9 lane motor way.

For metros to become successful last mile connectivity is important and metro fares have to be kept low so as to attract riders from personalised vehicles. Unfortunately, the current metro policy of Govt. of India does not encourage more metros to come nor make them affordable to the common man. For smooth management of traffic, every city should have an empowered, unified urban transport authority who can coordinate and integrate different modus of traffic.



Rail Analysis India : What are your opinions about this year budget as the MoHUA has been allocated Rs 17,713.93 crore for executing metro projects across the country, which was Rs 14,264.60 crore in the previous Budget ?

Mr. E. Sreedharan : The budget allocation of MoHUA is too meagre to encourage fast expansion of metro systems in the country. Further, these allocations are misleading as most of them are in the form of “Pass Through Assistance” to facilitate availing external loans. This PTA eventually comes back to the Govt. and so the net outflow is only half of the budgeted amount.

Rail Analysis India : Any Suggestions or thoughts you would like to share concerning new metro projects in India and their approach towards it ?

Mr. E. Sreedharan : The country should have a sound, practical and affordable metro policy. The present policy only ring-fencing the interest of the Central Govt. If all our large metro cities are to have suitable metro net work, in the next 15 years, we have to build metros at the rate of at least 200 Kms a year. How this is to be achieved, how they are to

be funded and how they are to be owned and operated, all need a comprehensive and deep study.



I had suggested to MoHUA about 2 years back that a high level technical committee should be set up for this purpose which will also go into the area of standardisation and indigenisation. The aim should be not to make the metro a profitable organisation but implement them fast, on time, within the estimated cost, with a fare structure easily affordable to the common man so that people switch over to the metro from roads.

Rs 500 Crore allocated for Delhi Metro Phase IV in Delhi Budget 2019-20; India

[27 February, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 27 Feb 2019

In the budget presented on Tuesday, Delhi Metro's Phase IV was allocated Rs 500 crore. Deputy Chief Minister Manish Sisodia presented a Rs 60,000 crore budget for 2019-20 in Delhi Assembly laying emphasis on the education, health and transport sectors. The 104-km-long Metro Phase-IV project was estimated to be completed by 2021 after Delhi government's in-principle approval to it in February 2016.

More Information:

- The Delhi's Finance Minister, said, "The government has approved the proposal of Phase-IV of Delhi Metro Project comprising 6 corridors with the length of 103.93 km. With the completion of the Phase-IV project, the total length of the Delhi Metro network will become 453.93 km,"
- Among the projects chosen under the Phase-IV are :
- Rithala-Narela (21.73 km),

- Janakpuri West-R K Ashram (28.92 km),
- Mukundpur-Maujpur (12.54 km),
- Inderlok-Indraprastha (12.58 km),
- Tughlakabad-Aerocity (20.20 km),
- Lajpat Nagar-Saket G-Block (7.96 km).

Recent Developments :

- The Delhi Metro had been given a grant of Rs 414.70 crore in the Union Budget 2019-20 as against Rs 50 crore in the last fiscal.
- The Arvind Kejriwal government had cleared the Phase-IV project in December last year and sent it to the Ministry of Housing and Urban Affairs.
- After the approval of Phase-IV project, Mr Sisodia had said the city government would give its share of Rs 9,707 crore towards the construction work under the project, which is estimated to cost around Rs 45,000 crore

To know more about recent developments of Metro –

23 Feb, 2019: [Land acquisition for Kochi Metro extension gets boost](#)

22 Feb, 2019: [SAC approves Mass Rapid Transit Corporations for Jammu and Srinagar](#)

20 Feb, 2019: [Cabinet approves Ahmedabad Metro Rail Project Phase-2](#)

SAC approves Mass Rapid Transit Corporations for Jammu and Srinagar; India

[22 February, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 22 Feb, 2019

Under the chairmanship of Governor Satya Pal Malik, the SAC (State Administrative Council) approved the proposal for incorporation of two Corporations by the name 'Jammu Mass Rapid Transit Corporation Pvt Ltd' and 'Srinagar Mass Rapid Transit Corporation Pvt Ltd' along with the Memorandum of Association (MOA) and Articles of Association (AOA) of these Corporations.

More information:

- These Corporations which will be headed by the Administrative Secretary Housing and Urban Development Department will have on its Board, Administrative Secretaries of Finance and Transport; Transport Commissioner; CEOs of Economic Reconstruction Agencies and Metropolitan Authorities; and other experts besides nominee of Ministry of Housing and Urban Affairs.
- To provide requisite leadership, the Corporation will have Chief Executive Officers (CEO).

- These Corporations will be extended arms of the Metropolitan Authorities (MRDAs), recently constituted by the Governors Administration, and will supplement these authorities especially in areas related to **MMTS (Multi-Modal Transport System) and MRTS (Mass Rapid Transit System)**.
 - The two Corporations which will be fully owned by the Government of Jammu and Kashmir, will be “Body Corporates” with distinct seals and private limited.
 - The Corporations will have the initial authorized share capital of Rs 10 Crore divided into 1 crore shares of Rs 10 per each which will be subscribed fully by the State Government.
 - At any later stage, the authorized capital can be increased or decreased, depending on needs of the two Corporations.
 - These Corporations will be mandated to address the issues of urban mobility in the State in a holistic manner by providing safe, affordable, reliable and sustainable access for the city inhabitants to jobs, education, and recreation etc.
 - It will ensure an efficient **well integrated and intelligent multi-modal public transport system for enhanced and hassle-free mobility in the Cities.**
 - It is expected that the setting of the Corporations to be a milestone in addressing the traffic issues in the State & Urban Mobility.
-

Land Acquisition for Kochi Metro Extension gets Boost; India

[23 February, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 23 Feb., 2019

Kochi: The land acquisition for the Metro construction works in the 1.2 km stretch between Pettah and SN Junction started on Friday with 14 land owners handed over the plots as advance possession. A total of 14 plots have been acquired as advance possession so that the construction works in the reach can be started as early as possible.

More Information:

- A senior official said, this includes a 30-cent plot where the proposed SN Junction metro station is coming up.
- The authorities are expecting an in-principle approval from the state government to hasten land acquisition and target completion of the process by March end.
- A Kochi Metro official said, land acquisition process in first Phase extension reach is in final stage.
- The road widening and station construction works will be started soon.
- A meet was held with land owners and various residents associations as part of speeding up the process, the official said.
- The Tripunithura extension, at an estimated cost of Rs 356 crore includes construction of two additional lane on the Panamkuttu Bridge at Pettah, viaduct construction and two stations namely Vadakkekotta and S N Junction

To know more about recent developments of Kochi Metro-

29 Jan, 2018 : [Kochi Metro to launch 'Data Innovation Challenge' Tomorrow](#)

21 Dec, 2018 : [Kochi Metro Update: Construction of iconic cantilever bridge at Ernakulam South completed](#)

01 Dec, 2018 : [Petta-SN Junction stretch of Kochi Metro to be commissioned by December 2021](#)

BEML bags Contract for 7 Metro Train Sets of 6 Cars each worth Rs 400 Cr for Bengaluru Metro; India

[27 February, 2019](#) by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 27 Feb,, 2019

To increase the capacity of the Bengaluru Metro , BEML has bagged an order worth Rs 400 crore to augment the metro services in Bengaluru.

More Details :

- BEML has received a contract for seven metro train sets of six cars configuration to augment the metro services in Bengaluru valued around Rs 400 crore .
- Bangalore Metro has been looking to increase its capacity and is slowly building on the same .
- BEML manufactures rail coaches and spare parts and mining equipment at its Bengaluru complex.
- The company operates under three major business verticals — mining and construction, defence and rail and metro

To know more about recent developments of Metro –

26 Feb, 2019: [Names changed of Two metro stations : New Bus Adda station & Rajendra Nagar station](#)

25 Feb, 2019: [MahaMetro Nagpur Bags RDSO Certificate, Awaits CMRS Nod Now](#)

23 Feb,2019: [Nagpur Metro Update: MahaMetro Announces Inaugural Fare Structure](#)

Ahmedabad Metro Update : Metro Tunnel from Apparel Park to Kalupur ready; India

Date of Post: 26 Feb, 2019

Huge celebration and waving of the tricolour marked the completion of work of two tunnel-boring machines (TBMs) on a stretch of the metro project . The 1.72km tunnel has been constructed for tracks for both ways of the journey. The tracks will be operational by the end of this year.

More Information:

- On Monday, at a ceremony held at the Kalupur metre gauge railway station, the Gujarat Metro Rail Corporation announced the completion of the tunnel.
- At about 4 pm, the managing director of the GMRC, Shri I P Gautam ji pressed a button which made the two TBMs emerge into view from the ground.
- The tunnel connects Apparel Park to Kalupur .



- Shri Gautam ji said that the work on the tunnel was completed in record time (11 months) .
- He said that tenders were issued for the project on March 2017, and the first machine was lowered in April, 2018, and the second in June 2018.
- He said the second machine could complete the work in time as it had data collected by the first machine, which was moving 100 metres ahead.
- He said that since the area from Apparel Park to the Kalupur station is an unplanned zone, no historic data was available.
- Shri Gautam ji said that the work to install signalling systems, tracks, and power lines will take about 12 months. He said that authorities are trying to connect the Vastral APMC route with the Kalupur station as soon as possible.
- Multimodal station: The multimodal station at the Kalupur station will be 18 metre below the surface to nearly 10 metres above the ground level.



- The station will connect, Metro, Bullet and the other trains. Station for the Bullet train will be nearly two storeys above the ground level.
- The managing director of GMRC said, “About 80% of the work for the first underground level is complete and about 60% work of the level is over.
- The floor from where the Metro train will operate is 10% complete.”



- Officials said that the work on the second stretch from Kalupur to Saraspur has already touched the Gheetkanta station and has crossed about five to six heritage monuments of the World Heritage City.

Second stretch: The second stretch to be inaugurated will be the APMC to Jivraj Park Station. The track is likely to see movement of trains before Diwali.

To know more about recent developments of Ahmedabad Metro –

20 Feb, 2019: [PM Modi to inaugurate first phase of Ahmedabad Metro on March 4](#)

12 Feb, 2019: [Public Investment Board approves Metro rail projects in Patna, Agra, Kanpur, and Ahmedabad Metro phase-2](#)

01 Feb, 2019: [First trial run of Ahmedabad Metro rail conducted](#)

DPR of Metro Extension from Greater Noida to upcoming International Airport at Jewar ready; India

[23 February, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 23 Feb, 2019

The board has prepared DPR (Detailed Project Report) of the extension of Metro rail from Greater Noida to upcoming International Airport at Jewar, which is just left for the approval in the upcoming board meeting of YEIDA (Yamuna Expressway Industrial Development Authority).

More Information:

- The newly built metro track will connect Pari Chowk in Greater Noida to Airport terminal in Jewar.
- The track will have a total of 25 stations out of which 8 stations will fall under the Greater Noida Authority, while the 17 will fall under the Yamuna Expressway authority.
- The project cost is estimated to be Rs 5708 crore, said YEIDA officials.
- It will cover a stretch of around 35.64 km from Pari Chowk in Greater Noida.
- A senior YEIDA official said, "DMRC (Delhi Metro Rail Corporation) has prepared the DPR for the project. Soon, we will present it in the board meeting. Once the project gets approved, the DPR will be sent to the UPMRC (Uttar Pradesh Metro Rail Corporation) to explore the possibility of funding the metro project.
- The official said, we will make sure that the construction work on the metro corridor will be started with the same pace as was carried out on the Noida-Greater Noida (Aqua line) Metro corridor.
- Most of the stations on the Metro corridor will be elevated, while couple of stations in the vicinity of airport will be underground, as per the sources.
- The metro track will be about 2.7 km at Jewar Airport area.
- The operations at Jewar airport are expected to be started by 2022-23, while the work at metro corridor will start from 2020 and is expected to open to commuters by 2025

To know more about recent developments of Noida Metro –

30 Jan, 2019: [Over 37,000 passengers avail rides on Noida-Greater Noida Metro in first 3 days](#)

30 Jan, 2019: [Aurionpro implement Automated Fare Collection \(AFC\) system for Noida Metro project](#)

28 Jan, 2019: [Noida-Greater Noida Metro 'Aqua Line' open for public](#)

Nagpur Metro Update: MahaMetro Announces Inaugural Fare Structure; India

[23 February, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 23 Feb, 2019

Nagpur: While countdown has begun for the much-awaited operational launch of Nagpur Metro Project, Maha Metro has proposed major discounted inaugural fares for the commuters of city.

In fact, a citizen wanting to travel from Sitabuldi Interchange to Khapri metro Station would have a pay a meagre amount of Rs 20 as Metro Fare!!

For all those who availed of this Ride, the experience of travelling by Metro Train has been extremely fascinating. So, taking this association with citizens to a new level, Maha Metro has planned this special discounted fare structure for initial days, after its formal launch.

Khapri to Airport Metro Station – Rs 10/-

Airport to Sitabuldi Interchange :Rs 10/-

Khapri to Sitabuldi Interchange : Rs. 20/-

Lokmanya nagar to Subhash Nagar Metro : Rs. 10/-

Cabinet approves Ahmedabad Metro Rail Project Phase-2; India

[20 February, 2019](#) by [Team - Rail Analysis India](#)

Team - Rail Analysis India

Date of Post: 20 Feb, 2019

The Union Cabinet chaired by Prime Minister Narendra Modi has approved the following proposals:

- Implementation of Ahmedabad Metro Rail Project Phase-II, which comprises two corridors of total length 28.254 i.e. Corridor 1 from Motera Stadium to Mahatma mandir for a length of 22.838 km. and Corridor 2 from GNLU to GIFT City for a length of 5.416 km at a total completion cost of Rs. 5384.17 crores.
- The institutional arrangement and legal framework for the project.
- Conditions of sanction of the project.

Benefits:

Implementation of the project will provided the much-needed additional public transport infrastructure to Ahmedabad and Gandhinagar.

Salient features:

To streamline the urban transportation system in Ahmedabad and Gandhinagar, which is stressed due to intensive developments, increase in the number of private vehicles and heavy construction in the city, putting stress on travel infrastructure and industrial activities, and by providing the people a safe, secure, reliable and comfortable public transport. The Metro Rail project itself is an innovation over the conventional system of urban transport. The project involves integration with other urban transport systems in an efficient and effective manner which is possible only by adopting innovative methods of designing, technology and institutional management.

Source: Pib

To know more about recent developments of Ahmedabad Metro –

20 Feb, 2019: [PM Modi to inaugurate first phase of Ahmedabad Metro on March 4](#)

12 Feb, 2019: [Public Investment Board approves Metro rail projects in Patna, Agra, Kanpur, and Ahmedabad Metro phase-2](#)

01 Feb, 2019: [First trial run of Ahmedabad Metro rail conducted](#)

Government approves Rs 30,274 Crore Delhi-Ghaziabad-Meerut RRTS Corridor; India



Animation of Rapid National Capital Regional Transport Delhi Ghaziabad-Meerut

20 February, 2019 by [Team - Rail Analysis India](#)
Team - Rail Analysis India

Date of Post: 20 Feb, 2019

The Government on Tuesday approved construction of a worth Rs 30,274 crore Regional Rapid Transport System (RRTS) to connect the national capital with Meerut through Ghaziabad. The 82 km-stretch will be covered in less than 60 minutes by high-speed and green public transit, according to the government.

More Information:

- The RRTS is a first-of-its-kind, rail-based, high-speed regional transit system to be implemented in India.
- Once operational, it will be the fastest, most comfortable and safest mode of commuter transport in the National Capital Region (NCR).
- Finance Minister Arun Jaitley said after the meeting that the Cabinet has approved construction of (RRTS) covering a distance of 82.15 kilometres.
- He also said, of the 82.15 kms, 68.03 kms would be elevated and 14.12 kms would be underground, and the project cost would be Rs 30,274 crore.
- The RRTS trains will reduce pollution and road congestion taking more than 1 lakh private vehicles off-road.
- Metro services with 12 stations on 18 kms stretch between Modipuram and Meerut South stations on the RRTS infrastructure will meet the local mobility needs of citizens of Meerut, besides providing efficient regional connectivity.
- This project is proposed to be undertaken by a SPV (Special Purpose Vehicle) namely the NCRTC (National Capital Region Transport Corporation) as a joint ownership of the Centre and State Governments with equal contribution.
- The NCRTC stated in a statement, "RRTS stations will be seamlessly integrated with other transport modes like Airport, Railway, Metro, ISBTs and will be inter-

operable ensuring that change of train is not required for moving from one Rapid System corridor to another.”

- The Delhi-Ghaziabad-Meerut RRTS corridor is the first of the 3 priority corridors planned for implementation in Phase-1, It stated.
- The other two are Delhi-Gurugram-Alwar and Delhi-Panipat Corridors.

To know more about recent developments of RRTS –

15 Feb, 2019: [Haryana Cabinet approves Delhi-Gurugram-SNB RRTS corridor](#)

12 Feb, 2019: [Pre-construction activity started with Geotechnical investigation on Delhi-Gurugram-SNB RRTS corridor](#)

07 Feb, 2019: [Budget provision for Regional Rapid Transit System \(RRTS\) by UP Govt.](#)

Delhi to Meerut in Just 62 Minutes: More Details on the Regional Rapid Transit System RRTS System; India



[12 August, 2017](#) by [Rail Analysis India](#)
Rail Analysis India

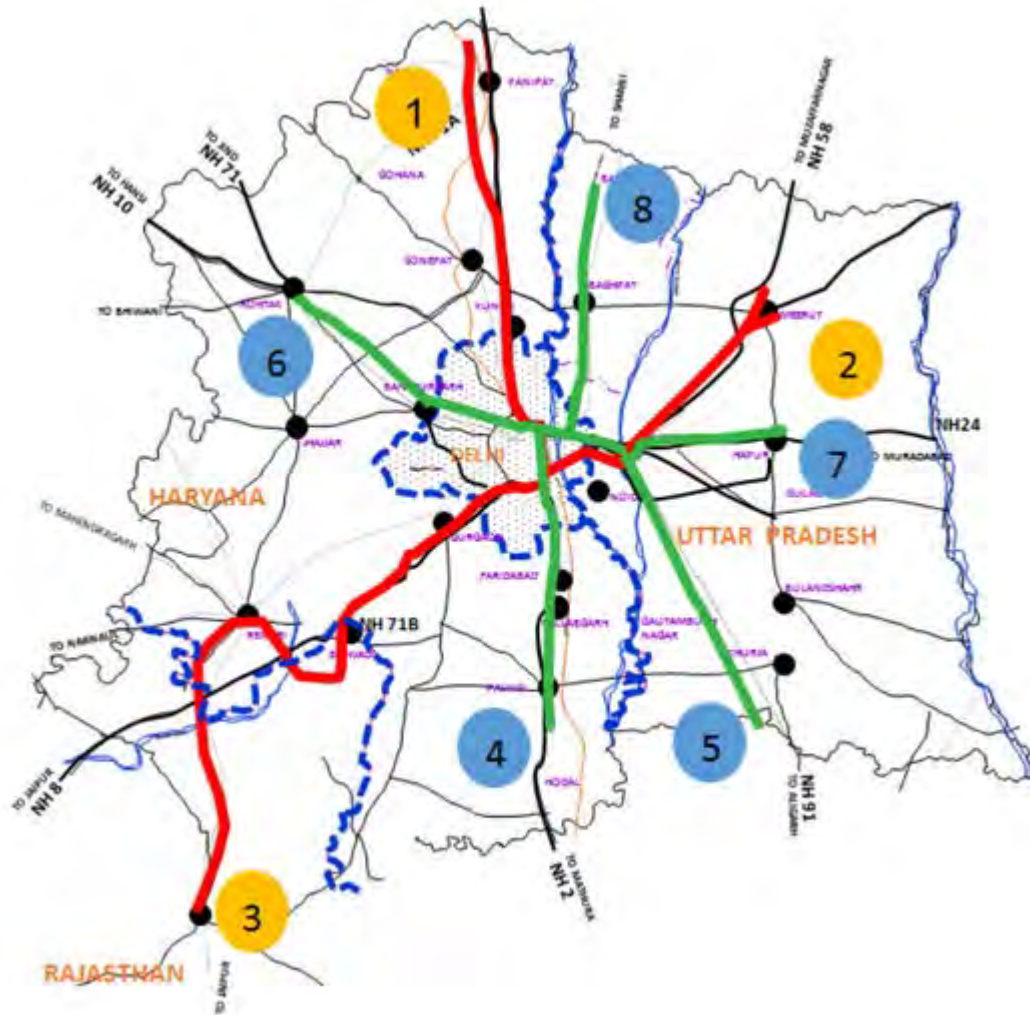
Recently , A presentation was made by the team of National Capital Region Transport Corporation Limited (NCRTC) to Delhi transport minister Kailash Gahlot and received a positive response regarding the Delhi Meerut Corridor .

Meerut , the other Metropolitan city of India has a population of around 2.076 Million and is around 72 kms away from Delhi which is a very positive aspect to connect it with Delhi via a High Speed Rail Corridor.

The city has so many startups and established companies which makes it a good investment destination. Since Delhi is already having a lot of population and there are so many existing IT companies, connecting Meerut with Delhi via a High Speed Rail Corridor will prove to be a big boon by every fold.

About the High Speed Rail Corridor

- Corridor Length : 90.2 Km
- Total No. of Stations : 17
- Out of the total number of stations 2 are proposed in Delhi and the rest in Uttar Pradesh,
- The UP government has already approved the project.



[Map Source](#)

Commuting from Delhi to Meerut and vice versa, will get smoother with the Delhi government considering giving the green signal to the first line of the Regional Rapid Transit System (RRTS) between Delhi and Meerut.

What is Regional Rapid RRTS ?

It is a new, dedicated, high speed, high capacity, comfortable commuter service connecting regional nodes in NCR. RRTS provides reliable, high frequency, point to point regional travel at high speed along dedicated path way.

RRTS is different from metro as it caters to passengers looking to travel relatively longer distance with fewer stops and at higher speed. RRTS is 3 times faster than Metro.

RRTS is different from metro as it caters to passengers looking to travel relatively longer distance with fewer stops and at higher speed. RRTS is 3 times faster than Metro.

RRTS	Design 180 Km/hr	Ops Speed 160 Km/hr	Average Speed 100 Km/hr 150 Km/hr for Non Stop	Time To Travel 100 Km – Hour
Metro	Speed 90 Km/hr	Ops Speed 80 Km/hr	Average Speed 32 Km/hr	Time To Travel 100 Km/hr

RRTS Corridors in India :

S.no	RRTS Corridors
Prioritised Corridors Identified for execution	
1.	Delhi- Sonipat- Panipat: 111 km
2.	Delhi - Ghaziabad -Meerut: 90 km
3.	Delhi- Gurgaon - Rewari- Alwar : 180 km
For Second Phase	
4.	Delhi- Faridabad -Ballabgarh -Palwa
5.	Ghaziabad- Khurja
6.	Delhi - Bahadurgarh - Rohtak
7.	Ghaziabad - Hapur
8.	Delhi-Shahadra - Baraut

Further Information About the Proposal:

- An NCRTC official, “Once we get the approval from the Delhi government, the file will be sent to the Centre. After final approval from the Centre, construction will start. It will take five years to complete it and construction is likely to start by July 2018.”
- Tenders for geo-technical investigation and detailed design consultant are being finalised for the project.
- This project will change the way India commute as the people will use to travel through the High Speed Rail and will leave their personal vehicles because saving the time is the priority of every commuter.

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

FUTURE OF URBAN MOBILITY: SKYPORTS; International

Speaker interview: John Badalamenti, head of design, aviation programmes, Uber



John Badalamenti, head of design, aviation programmes, Uber, on the transportation network's plans to connect communities through aerial ridesharing, ushering in a new era of skyports

Describe your presentation?

While once a spectacle of science fiction, flying cars are finally here. At the Uber Elevate Summit 2018, Uber shared concepts of how the future of aerial ridesharing includes plans to reduce congestion and restore convenience by taking riders to the sky by 2023. In partnership with Uber, leading architecture and design firm Corgan has developed an innovative 'skyport' concept designed to connect major urban transit destinations through on-demand electric flying vehicles. Strategic location of the skyports will transform under-utilised areas of our cities and connect neighbourhoods and communities with a new type of amenity, becoming a destination that reclaims more than just time.

Are you serious... aerial ridesharing by 2023?!?

Yes – very serious! Since the release of the now infamous Uber Elevate Whitepaper in 2016, we've been collaborating with five OEM vehicle partners, several real estate partners, electric charging infrastructure partners, NASA, FAA, local regulators, and many more stakeholders – together creating the Uber Elevate Network. We're targeting eVTOL flight demonstrators beginning in 2020, and fully flight-certified aircraft by 2023.



What lessons do you think Skyports could take from today's Airports?

There are a few obvious parallels we can reference in traditional commercial aviation, however, the use case is considerably different. Uber is an on-demand (as opposed to pre-scheduled) transportation service, and that will continue with 'Uber Air'. We anticipate riders will spend less than five minutes at the skyport, encouraging highly efficient screening and check-in processes, followed by pre-flight quick-queuing areas rather than leisurely lounges. Another key difference is we expect nearly every trip to begin/end with riders being dropped off/picked up via Uber ground transit, eBike, eScooter, or public transit – placing an emphasis on these skyports to really serve as a central mobility hub for their corner of the market.

Where do you conceive the first such Skyport might open?

We've publicly announced launch markets in Dallas and Los Angeles, and will be announcing an international launch market later this year. Zooming in a bit more, it's quite easy to imagine retrofitting roof decks of the traditional (and depreciating) parking garage structures as top candidate sites for the very first eVTOL skyports, given (in many cases) their elevation, relatively expansive footprint, and most importantly – structural integrity. Beyond that, promisingly, we're already seeing interest from many new construction projects in markets across the world asking for structural dynamic load requirements at their rooftops to anticipate the nascent aerial ridesharing future.



What was the brief provided to Corgan?

In short, the brief asked for scalable infrastructure solutions to support eVTOL operations at a massive scale; up to 1,000 landings in less than two acres of allowable footprint. Successful designs would include thoughtful integration into the community, integration with major transportation methods, a modular vision that can scale with the market demand, and applicability to different site locations. Corgan was one of six finalists to present at the Uber Elevate Summit 2018, out of 16 respondents to our competition. We have another Uber Skyport competition currently underway and are expecting another benchmark performance from last year's finalists!

John Badalamenti, head of design, aviation programmes, Uber will present 'Connecting communities through aerial ridesharing' at this year's Passenger Terminal CONFERENCE, which takes place during Passenger Terminal EXPO, 26, 27 and 28 March 2019, in London.





The Top 10 Best Public Transit Systems in the World; International

Many Asian cities as well as a few European cities and one North America city make our list of the best public transportation systems.



The public Transportation of Berlin is extremely User-friendly.

10. Hong Kong



Editorial Credit: Catwalk Photos / Shutterstock.com.

Almost 90% Hong Kong's population uses the public transit system. Road transport has also been developed to serve the growing population. The public transit system here, which mostly consists of double checker buses and an extensive metro system, is clean, safe, fast, and efficient. The Octopus card system makes it easier for riders to manage the payment of rides.

9. Tokyo



Tokyo Metro; Editorial Credit: Sean Pavone / Shutterstock.com.

Tokyo is home to an extensive railway system. An astonishing 8.66 million passengers use the rail transport on a daily basis. The Tokyo metro system is known for its efficiency and ability to run on time.

8. Singapore



Public transport in Singapore is among the world's most cost-efficient systems. The public transit systems range from rail, bus, and taxis, among many other modes of transport. Initially, bus transport was widely used in Singapore until the year 1987 when the Mass Rapid Transit was introduced. The ratio between the two systems is almost the same with passengers using buses being 3.9 million as compared to 3.1 million who used the MRT in the year 2016. The railway line extends over 198.6 kilometres with a total of stations being 119. The MRT is served by the Light Rail Transit (LRT).

7. New York



Rail transport is the dominant means of public transport in New York City. The New York City Subway is the largest subway system in the world by number of stations, with a grand total of 472. New York's subway is extremely iconic and features in many TV shows and movies.

6. Seoul



Seoul Metro; Editorial Credit: Maxim Tupikov / Shutterstock.com.

Seoul's well-developed transport system has made it Asia's transportation hub. The subway system here serves approximately 8 million passengers per day. Furthermore, taxis are used in transporting passengers especially to the airport or from airports and the railway stations.

5. Paris



Editorial credit: Dade72 / Shutterstock.com.

The Paris metro covers a vast distance of about 214 kilometres long. Most of this system is underground and consists of 303 stations. The Paris Metro is Europe's second busiest subway after the Moscow Metro. Furthermore, Paris public transit is served by buses and rams. These modes help in linking the various suburban cities close to Paris.

4. Madrid



Editorial Credit: EQRoy / Shutterstock.com.

Public transportation in Madrid is highly developed and easy to navigate. Even though Madrid is not amongst the world's [most populous cities](#), their metro system is in fact the seventh [longest](#) by total length. Madrid's metro also has the distinction of being home to more escalators than any other system in the world.

3. London



Editorial Credit: JuliusKielaitis / Shutterstock.com.

The London Underground, or the "tube" is one of the world's most famous transit systems. Of course, London is also home to their famous double decker busses, which are equally if not more iconic. On the typical weekday, over 50,000 people use Waterloo Station, the system's busiest. The London Underground features a total of 270 stations.

2. Shanghai



Shanghai is home to an impressive rapid-transport system which consists of 15 lines. One of the newer systems on our list, the Shanghai metro was inaugurated in 1993 and has grown substantially since then. The system has a daily ridership of over 9 million people. On its busiest day, the system served 12 million customers! That's more people than all of the world's smallest countries [combined](#)!

1. Berlin



Berlin has an extensive public transit system that is known for its reliability and coverage. From the U-Bahn, which is mainly underground, and the S-Bahn, which serves the city center as well as its environs, getting around the German capital without a car is extremely easy. During peak hours, trains run no more than five minutes apart. The system has a daily ridership of around 1.5 million.

This page was last updated on June 12, 2018.

By Rotich Kiptoo Victor

Bahia Governor signs Salvador Monorail Contract; Brazil

Feb. 26, 2019

Written by [Renata Passos](#)

THE Governor of the Brazilian State of Bahia, Mr Rui Costa, signed a contract on February 13 to launch an elevated monorail project that will link the Commerce district in Salvador with São João, Simões Filho.



Related Posts

[Construction begins on Metro Manila Subway](#)

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[Follo Line tunnelling completed](#)

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[Construction begins on Aalborg Airport line](#)

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Work on [the Reais 1.53bn](#) (\$US 407m) project is due to begin in six months.

The 20km, 22 station line will have capacity for 150,000 passengers a day. The monorail will replace the current suburban line from Calçada to Paripe, benefiting the region's more than 600,000 residents according to the government. The 10 suburban rail stations will be deactivated and reused to provide other services to the community, such as military police stations and service centres.

The project also includes a possible four-station extension through São Joaquim, integrating with the Salvador metro.

Skyrail Bahia, a consortium of Build Your Dreams and Metrorail, was selected to construct and operate the line in May 2018 under a public-private partnership (PPP)..



Categories: [Central/South America](#)[MetrosNews](#)

Tags: [Bahia](#)[Brazil](#)[monorail](#)[Salvador](#)

More trains ordered for Poznań regional Network; Poland

26 Feb. 2019



POLAND: Wielkopolskie voivodship signed a contract with Pesa for the supply of five five-car Elf2 electric multiple-units on February 14.

Pesa beat bids from Newag and Stadler, and will work with its subsidiary ZNTK Mińsk Mazowiecki to supply the EMUs between June and December 2020. The EU is providing 48·8m złoty towards the 127·5m złoty contract, which includes options for two more sets.

The 160 km/h trains will be fitted with ETCS onboard equipment, as well as two toilets, air-conditioning, wi-fi, a passenger information system and five ticket vending machines. There would be 240 seats, in addition to multifunction spaces.

Pesa had previously supplied 15 DMUs and 22 first-generation Elf EMUs to Koleje Wielkopolskie, and is currently in the process of delivering 10 Elf2 EMUs. The five trains from the latest order would operate on Poznańska Kolej Metropolitalna services on the PKM 2 route. PKM services along this route would terminate at Kostrzyn in the second half of 2019; they currently terminate at Swarzędz, with services further east operated by KW.

- A cost-benefit analysis of reopening the 20 km Śrem – Czempin line south of Poznań was completed in January. This would cost 160m to 200m złoty, and the project is eligible for central government financing. Preparatory works could be completed in 2021, with the route expected to carry 6 000 to 7 000 passengers a day once it reopens as part of the PKM network.

Redlands Ronstruction Contract awarded; USA, California

26 Feb. 2019



USA: Construction work for the 14.5 km Redlands Passenger Rail Project in southern California is on course to start later this year, following the selection of Flatiron Construction Corp as preferred bidder for the \$154m main works contract.

The \$312m Redlands project is being promoted by San Bernadino County Transit Authority. The line will run from San Bernadino to the University of Redlands campus, serving intermediate stations at Tippecanoe Ave, New York St and Downtown Redlands. Trains would connect at San Bernadino with southern California's Metrolink commuter rail network.

The Redlands project makes use of a former Santa Fe freight railway alignment, and Flatiron has committed to ensuring that freight trains can continue to operate during the construction period. It also says much of the materials used will be recycled where possible.

SBCTA ordered a build of three twin-section Flirt DMUs last year to operate the all-day Arrow shuttle service, which is expected to start running in late 2021. Trains would run hourly, or half-hourly during the morning and evening peaks. In addition, Metrolink Express loco-hauled through trains will link Los Angeles and Downtown Redlands at peak times.

- February 24, 2019
- [C&S](#), [Light Rail](#), [M/W](#), [News](#), [Passenger](#), [Rapid Transit](#)

Tutor Perini lands LACMTA, NYCT Contracts; USA

Written by [Paul Conley](#), Engineering Editor; and Editor-in-Chief, Railway Track & Structures



Rendering of LACMTA Purple Line Extension Westwood/VA Hospital Station; Los Angeles County Metropolitan Transportation Authority Illustration.

Tutor Perini has won contracts for high-profile transit projects in Los Angeles and New York City.

The general contracting giant will team with O&G Industries to [design and build 2.6 miles of line and two stations for the Los Angeles Purple Line Extension Section 3 project](#). The contract with the Los Angeles County Metropolitan Transportation Authority (LACMTA) is valued at \$1.4 billion. The contract follows one that Tutor Perini and partner Frontier-Kemper won last year to [design and build twin-bore tunnels for the Purple Line](#).

The Purple Line Extension will allow commuters to travel between downtown Los Angeles, the Miracle Mile, Beverly Hills and Westwood. Tutor Perini said it will construct the new Westwood/UCLA station and the Westwood/VA Hospital station.

And on the other side of the country, [Tutor Perini](#) secured a [\\$253 million contract with MTA New York City Transit \(NYCT\) to install Communications-Based Train Control \(CBTC\)](#) on the Culver Line between West 8th Street and Church Avenue in Brooklyn. The work, much of which will be performed by Tutor Perini's Five Star Electric subsidiary, calls for modernizing the signal system for the Avenue X and Ditmas Avenue interlockings, as well as trackwork and construction of three relay room buildings.

Categories: [C&S](#), [Light Rail](#), [M/W](#), [News](#), [Passenger](#), [Rapid Transit](#) Tags: [Breaking News](#), [LACMTA](#), [Los Angeles County Metropolitan Transportation Authority](#), [MTA New York City Transit](#), [NYCT](#), [Tutor Perini](#), [Tutor Perini/OandG Joint Venture](#)

Construction begins on Metro Manila Subway; Philippines

Feb. 27, 2019

Written by [Keith Barrow](#)

THE Philippines broke ground on its first underground urban rail line on February 27, when a ceremony was held at Barangay Ugong in Valenzuela City to officially launch construction of the Metro Manila Subway.



Related Posts

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Feb 27, 2019 | [Main line](#)

[Barcelona to replace oldest metro trains](#)

Feb 26, 2019 | [Metros](#)

The ceremony was attended by Japan's ambassador to the Philippines Mr Koji Haneda and Department of Transportation (DOTr) secretary Mr Arthur Tugade.

The 36km first phase of the north-south line will run from Quirino Highway in Quezon City to Taguig and Ninoy Aquino International Airport Terminal 3, serving three of Manila's business districts.

Last week the DOTr signed a design-build contract with joint venture of Shimizu Corporation, Fujita Corporation, Takenaka Civil Engineering and EEI Corporation for the initial three-station section from Quirino Highway to North Avenue, which is due to open in 2022. The remainder of the line will be completed in 2025.

The line is forecast to carry 370,000 passengers a day in the first year of full operations, with a design capacity of 1.5 million passengers a day.



DOTr says the project will draw on Japanese expertise to safeguard infrastructure from natural disasters such as earthquakes and typhoons.

The project is being financed by the Japanese government through a Pesos 365bn (\$US 7bn) Official Development Assistance (ODA) loan from the Japan International Cooperation Agency (Jica).

The groundbreaking ceremony came less than two weeks after the [official launch of construction on the first phase of Manila's North-South Commuter Railway project](#).

Categories: [AsiaMetrosNews](#)

Tags: [JICAManilaPhilippines](#)

Philippines launches Tenders for Malolos – Clark line; Philippines

Feb.. 21, 2019

Written by [David Briginshaw](#)

THE Philippines Department of Transportation has issued a call for tender for a civil works contract for PNR Clark Phase 2 of the North-South Commuter Railway project, which will extend the line by 53km from Malolos to Clark.



Bids are invited for civil works on Phase 2 of the Manila North-South Commuter Railway project.

The civil works contract for viaducts, structures, bridges and five stations is divided into three works packages, which need to be bid for separately, comprising sections which are around 17km, 16km and 12km long.

A pre-bid conference will be held on March 7 and the closing date for bids is May 10.

The Philippines Department of Finance has applied to the [Asian Development Bank](#) for a loan for Phase 2.

Work officially started on [February 15](#) on PNR Clark Phase 1, a 37.6km elevated electrified line with 10 stations running from Tutuban in northern Manila north to Malolos. A third phase, PNR Calamba, will involve building a 56km line from Manila to Calamba, Laguna. When completed, the full network will be 146.6km long with 37 stations served by a fleet of 58 EMUs.

Categories: [Asia Commuter RailInfrastructure News](#)

Tags: [Asian Development Bank](#) [new line construction](#) [PhilippinesPNR](#)

CAF to refurbish Paris RER double-Deck EMUs; France

Jan. 14, 2019

Written by [Keith Barrow](#)

PARIS Transport Authority (RATP) has awarded CAF a €121.3m contract to refurbish its fleet of 43 five-car M12N Altéo (class Z 1500) double-deck EMUs.



Akiry/Wikipedia CC by SA 4.0

The dual-voltage (1.5kV dc/25kV 50Hz ac) trains were built by GEC Alsthom and ANF between 1995 and 2005 and are employed on the east-west RER Line A. The 108km Line A links Saint-Germain-en-Laye, Cergy Le Haut, and Poissy in the west with Boissy-Saint-Léger and Marne-la-Vallée – Chessy in the east and carries around 1.2 million passengers per day.

The MI2N modernisation project includes the replacement of seating, floor coverings and lighting, installation of CCTV and new passenger information systems, and improved access for passengers with reduced mobility.

The first refurbished train is due to enter service in 2020.

Île-de-France Mobility is financing the order as part of the [broader modernisation of the Paris RER fleet](#).

Categories: [Commuter RailFleetNewsRolling stock](#)

Tags: [CAFIledeFranceParisRATPRER](#)

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN
AND INTERURBAN PASSENGER TRANSIT
SYSTEMS WITH METRO-BUS, LIGHT-RAIL,
METRO-RAIL, REGIONAL RAPID TRANSIT,
COMMUTER-RAIL, ROPE-WAY/TRAIN,
WATER-METRO, AUTOMATED PEOPLE-
MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

Special Edition of METRO Newsletter by Dr. F.A. Wingler
METRO 41, March 2019



Mexico City Metro, Flange Guide-Way System with Rubber-Tire Wheels
running on flat Steel Roll-Way, Mexico

Subways/Metros with Rubber Tires; International

Written by Alexander Lew Gear

[Subways with Rubber Tires | WIRED](#)

<https://www.wired.com/2008/03/subways-with-ru/>

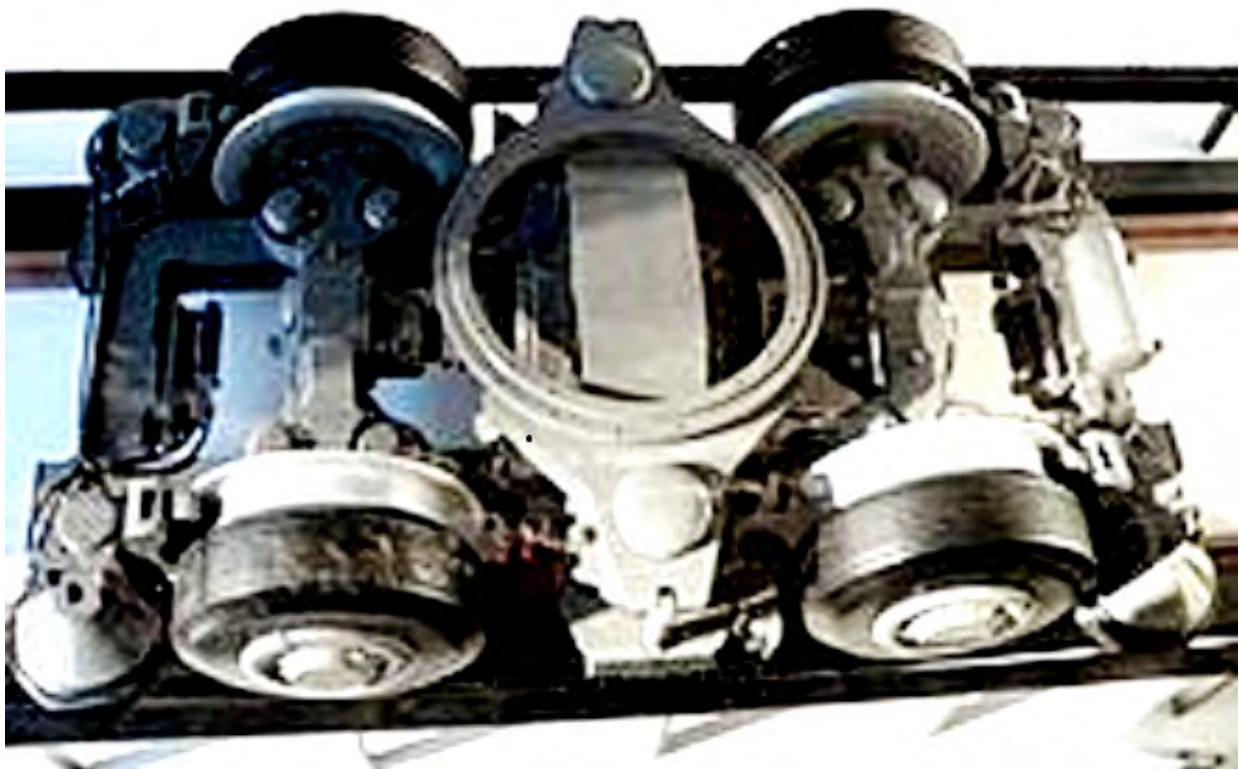


A unique aspect of a few of **Paris' Métro** lines is the use of rubber tires instead of steel wheels. Metro trains travel along a fixed guideway track, but are still electric with power supplied by one of the guiderails. A comprehensive diagram of how a rubber tired metro train receives and returns electricity can be found [here](#). Steel back-up tracks exist adjacent to the tire's rollways. In case of a flat tire, the conventional rail tracks can be used. When Paris first implemented the tires, the system was focusing on expanding capacity. Rubber tires allow the trains to quickly accelerate and to brake, allowing trains to run closer to each other. Tires also eliminated the squeal on curves, a relief to those living near elevated sections (line 6). Other cities have adopted the rubber tired metro, such as Montréal, Quebec (Canada) Lille (France), Santiago de Chile, Mexico City (Mexico), Lausanne (Switzerland), Kobe and Sapporo (Japan), Busan (South Korea) and Taipei (Taiwan)..

Rubber-tyred Metro



The Bogie of an Paris Metro MP 05, showing the flanged Steel Wheel inside the Rubber tyred one, as well as the vertical Contact Shoe on Top of the Steel Rail



Bogie from an MP 89 Paris Métro Rolling Stock



Lausanne Metro Line M2 based on MP 89, Paris Métro



NS93 (based on the MP 89 of the Paris Métro) in the line 5 of the Santiago de Chile Metro with Rubber Tire Traction combines Underground with elevated Right-of-Way



NS93 (based on the MP 89 of the Paris Métro) in the line 5 of the Santiago de Chile Metro with Tire Traction combines Underground with elevated Right-of-Way

A **rubber-tyred metro** or **rubber-tired metro** is a form of rapid transit system that uses a mix of road and rail technology. The vehicles have wheels with rubber tires that run on rolling pads inside guide bars for traction, as well as traditional railway steel wheels with deep flanges on steel tracks for guidance through conventional switches as well as guidance in case a tyre fails. Most rubber-tyred trains are purpose-built and designed for the system on which they operate. Guided buses are sometimes referred to as 'trams on tyres', and compared to rubber-tired metros.

History



Guide Bars and running Pads (roll ways) between Pont de Neuilly and Esplanade de la Défense



Rubber tyred MP 73 Paris Métro Rolling Stock

The first idea for rubber-tyred railway vehicles was the work of Scotsman Robert William Thomson, the original inventor of the pneumatic tyre. In his patent of 1846 he describes his 'Aerial Wheels' as being equally suitable for, "the ground or rail or track on which they run". The patent also included a drawing of such a railway, with the weight carried by pneumatic main wheels running on a flat board track and guidance provided by small horizontal steel wheels running on the sides of a central vertical guide rail.

During the World War II German occupation of Paris, the Metro system was used to capacity, with relatively little maintenance performed. At the end of the war, the system was so worn that thought was given as to how to renovate it. Rubber-tyred metro technology was first applied to the Paris Métro, developed by Michelin, who provided the tyres and guidance system, in collaboration with Renault, who provided the vehicles. Starting in 1951, an experimental vehicle, the MP 51, operated on a test track between Porte des Lilas and Pré Saint Gervais, a section of line not open to the public.

Line 11 Châtelet - Mairie des Lilas was the first line to be converted, in 1956, chosen because of its steep grades. This was followed by Line 1 Château de Vincennes - Pont de Neuilly in 1964, and Line 4 Porte d'Orléans - Porte de Clignancourt in 1967, converted because they had the heaviest traffic load of all Paris Métro lines. Finally, Line 6 Charles de Gaulle - Étoile - Nation was converted in 1974 to reduce train noise on its many elevated sections. Because of the high cost of converting existing rail-based lines, this is no longer done in Paris, or elsewhere. Now, rubber-tyred metros are used in new systems or lines only, including the new Paris Métro Line 14.

The first completely rubber-tyred metro system was built in Montreal, Quebec, Canada, in 1966. Santiago Metro and Mexico City Metro are based on Paris Métro rubber-tyred trains.

A few more recent rubber-tyred systems have used automated, driverless trains; one of the first such systems, developed by Matra, opened in 1983 in Lille, and others have since been built in Toulouse and Rennes. Paris Metro Line 14 was automated from its beginning (1998), and Line 1 was converted to automatic in 2007–2011. The first automated rubber-tyred system opened in Kobe, Japan, in February 1981. It is the Portliner linking Sanomiya railway station with Port Island.

Technology Overview



Sapporo Subway, central Guide Rail System running with Rubber-Tire
Wheels on flat Steel Roll Way



5000 Series central Rail-guided Rubber-tyred Rolling Stock operated by Sapporo City Transportation Bureau, Japan, and built by Kawasaki Heavy Industries Rolling Stock Company

Trains are usually in the form of electric multiple units. Just as on a conventional railway, the driver does not have to steer, with the system relying on some sort of guideway to direct the train. The type of guideway varies between networks. Most use two parallel roll ways, each the width of a tyre, which are made of various materials. The Montreal Metro, Lille Metro, Toulouse Metro, and most parts of Santiago Metro, use concrete. The Busan Subway Line 4 employs a concrete slab. The Paris Métro, Mexico City Metro, and the non-underground section of Santiago Metro, use H-Shaped hot rolled steel, and the Sapporo Municipal Subway uses flat steel. The Sapporo system is unique because it uses a single central guide rail only

On some systems, such as those in Paris, Montreal, and Mexico City, there is a conventional 1,435 mm (4 ft 8 ½ in) standard gauge railway track between the roll ways. The bogies of the train include railway wheels with longer flanges than normal. These conventional wheels are normally just above the rails, but come into use in the case of a flat tyre, or at switches (points) and crossings. In Paris these rails were also used to enable mixed traffic, with rubber-tyred and steel-wheeled trains using the same track, particularly during conversion from normal railway track. The VAL system, used in Lille and Toulouse, has other sorts of flat-tyre compensation and switching methods.

On most systems, the electric power is supplied from one of the guide bars, which serves as a third rail. The current is picked up by a separate lateral pickup shoe. The return current passes via a return shoe to one or both of the conventional railway tracks, which are part of most systems, or to the other guide bar.

Rubber tyres have higher rolling resistance than traditional steel railway wheels. There are some advantages and disadvantages to increased rolling resistance, causing them to not be used in certain countries.

Advantages



Flange Guide-Way MPL-85 Rolling Stock in Lyon Métro



Flange Guide-Way System of NM-73 Mexico City Metro running with Rubber-Tire Wheels on flat Steel Roll-Way

Compared to steel wheel on steel rail, the advantages of rubber-tyred metro systems are:

- Smoother rides (with little jostling around).
- Faster acceleration and, along with the ability to climb or descend steeper slopes (~gradient 13%) than would be feasible with conventional rail tracks, which would likely need a rack instead.
 - For example, the rubber-tyred Line 2 of the Lausanne Metro has grades of up to 12%.
- Shorter braking distances, allowing trains to be signalled closer together.
- Quieter rides in open air (both inside and outside the train).



Busan, South Korea, Central Rail guided Subway/elevated Right-Of-Way
Rubber tyred Metro Train



Busan, South Korea, Subway/elevated Right-of-Way Line 4

Disadvantages

The higher friction and increased rolling resistance cause disadvantages (compared to steel wheel on steel rail):

- Higher energy consumption.
- Possibility of tyre blow-outs - not possible in railway wheels.
- Hotter operation.
- Weather variance. (*Applicable only to above-ground installations*)
 - Loss of the traction-advantage in inclement weather (snow and ice).^[2]
- Same expense of steel rails for switching purposes, to provide electricity or grounding to the trains and as a safety backup.
- Tyres that frequently need to be replaced; contrary to rails using steel wheels, which need to be replaced less often.
- Creation of air pollution; tyres break down during use and turn into particulate matter (dust), which can be hazardous.

Notes

1. ^ Rubber-tyred wheels have better adhesion than traditional rail wheels. Nonetheless, modern steel-on-steel rolling stock using distributed-traction with a high-proportion of powered axles have narrowed the gap to the performance found in rubber-tyred rolling stock.
2. ^ In order to reduce weather disruption, the Montreal Metro runs completely underground. On Paris Métro Line 6, upgrades of tyres (as used with cars) and special ribbed tracks have been tried out. The southernmost section of the Sapporo Municipal Subway Namboku Line is also elevated, but is covered by an aluminum shelter to reduce weather disruption.
3. ^ In effect, there are two systems running in parallel so it is more expensive to build, install and maintain.
4. ^ Since rubber tyres have higher wear rates, they need more frequent replacement, which makes them more expensive in the long run than steel wheel-sets with higher first cost (that may be needed anyway as backup). Rubber tyres for guidance are needed.

Although it is a more complex technology, most rubber-tyred metro systems use quite simple techniques, in contrast to guided buses. Heat dissipation is an issue as eventually all traction energy consumed by the train — except the electric energy regenerated back into the substation during electrodynamic braking — will end up in losses (mostly heat). In frequently operated tunnels (typical metro operation) the extra heat from rubber tyres is a widespread problem, necessitating ventilation of the tunnels.

Guided Metro-Bus

From Wikipedia, the free encyclopedia

Guided Buses are buses capable of being steered by external means, usually on a dedicated track or roll way that excludes other traffic, permitting the maintenance of schedules even during rush hours. Unlike trolleybuses or rubber-tired trams, for part of their routes guided buses are able to share road space with general traffic along conventional roads, or with conventional buses on standard bus lanes.



Kerb Guide Wheel of a guided Bus in Mannheim, Germany

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Guidance systems can be physical, such as kerbs or guide bars, or remote, such as optical or radio guidance.

Guided buses may be articulated, allowing more passengers, but not as many as light rail or trams that do not also freely navigate public roads.



Guided Bus-Lane of Manchester Bus Rapid Transit

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Guided Bus on dedicated Bus-Lane in Cambridgeshire, UK

History

Precursor to Guided Bus-Ways

The kerb-guided bus (KGB) guidance mechanism is a development of the early flangeways, pre-dating railways. The Gloucester and Cheltenham Tramroad of 1809 therefore has a claim to be the earliest guided busway. Earlier flangeways existed, but were not for passenger carrying.

Modern guided Bus-Ways

There are a few examples of guided buses around the world constructed between 1980 and recent times.

The first modern guided busway system was opened in 1980 in Essen, Germany. This was initially a demonstration track, but it was periodically expanded and is still in operation today.

The first guided busway in the United Kingdom was in Birmingham, the Tracline 65, 1,968 feet (600 m) long, experimentally in 1984. It has since been removed.^[5] Several guided busways have been planned or built in the United Kingdom.

Based on the experience in Essen, in 1986 the South Australian Government opened the Adelaide O-Bahn Busway. This is a 12-kilometer guided busway and is still in operation today.



Guidance System of Adelaide O-Bahn Bu-Way, South Australia



Metro-Bus on the guided O-Bahn Busway Route in Adelaide, Australia

In Mannheim, Germany, from May 1992 to September 2005 a guided busway shared the tram alignment for a few hundred metres, which allowed buses to avoid a congested stretch of road where there was no space for an extra traffic lane. It was discontinued, as the majority of buses fitted with guide wheels were withdrawn for age reasons. There are no plans to convert newer buses.^[citation needed]

The Nagoya Guideway Bus in Nagoya, opened in March 2001 and is the only guided bus line in Japan.

The Cambridgeshire Guided Busway between Cambridge and St Ives, at 25 kilometres (16 miles), is the world's longest guided busway.^[6]

Rubber-tyred Trams (Trolleybuses)

Guided buses are to be distinguished from rubber-tyred systems that cannot run other than along a dedicated trackway, or under fixed overhead power lines.

Guidance Systems

Optical Guidance



An optically guided TEOR bus in Rouen

Optical Guidance relies on the principles of image processing. A camera in the front of the vehicle scans the bands of paint on the ground representing the reference path. The signals obtained by the camera are sent to an onboard computer, which combines them with dynamic parameters of the vehicle (speed, yaw rate, wheel angle). The calculator transmits commands to the guidance motor located on the steering column of the vehicle to control its path in line with that of the reference.

Optical guidance is a means of approaching light rail performance with a fast and economical set-up. It enables buses to have precision-docking capabilities as efficient as those of light rail and reduces dwell times, making it possible to drive the vehicle to a precise point on a platform according to an accurate and reliable trajectory. The distance between the door steps and the platform is optimized not to exceed 5 centimetres (2 in). Level boarding is then possible, and there is no need to use a mobile ramp for people with mobility impairments.

The **Optiguide** System, an optical guidance device developed by Siemens Transportation Systems SAS, has been in revenue service since 2001 in Rouen and Nîmes (only at stations), France, and has been fitted to trolleybuses in Castellon (Spain) since June 2008.

Magnetic Guidance

Other experimental systems have non-mechanical guidance, such as sensors or magnets buried in the roadway. In 2004, Stagecoach Group signed a deal with Siemens AG to develop an optical guidance system for use in the UK.



Magnetic guided Phileas Bus Eindhoven, Netherlands

Two bus lines in Eindhoven, Netherlands, are used by Phileas vehicles. Line 401 from Eindhoven station to Eindhoven Airport is 9 km (5.6 mi) long, consists largely of concrete bus lanes and has about 30 Phileas stop platforms. Line 402 from Eindhoven station to Veldhoven branches off from line 401 and adds another 6 km (3.7 mi) of bus lanes and about 13 stops.

Some years ago the regional authority for urban transport in the Eindhoven region (SRE) decided to discontinue use of the magnetic guidance system. In 2014 the manufacturer, APTS, was declared bankrupt.

The Douai region in France is developing a public transport network with dedicated infrastructure. The length of the lines will be 34 km (21 mi). The first stage is a line of 12 km (7.5 mi) from Douai via Guesnain to Lewarde, passing close to Waziers, Sin-le-Noble, Dechy and Lambres-lez-Douai. 39 stop platforms will be provided with an average distance between the stops of 400 m (440 yd). A number of stops will be placed on the right-hand side of each lane. Central stops between both lanes will be placed at locations with limited space at the right side. This requires vehicle to have doors on both sides.

On 3 November 2005, a licence and technology transfer agreement was signed between Advanced Public Transport Systems (APTS) and the Korea Railroad Research Institute (KRRRI). KRRRI was to develop the Korean version of Phileas vehicle by May 2011.

Since June 2013, 3 miles (1.5 miles each way) of the Emerald Express (EmX) BRT in Eugene, Oregon has used magnetic guidance in revenue service on an especially curvy section of the route that also entails small radius S-curves required for docking. The driver controls braking and acceleration.

Kerb Guidance



Kerb-guided track and adjacent multi-user path along a disused rail line, on the Leigh-Salford-Manchester Bus Rapid Transit

On Kerb-guided Buses (KGB) small guide wheels attached to the bus engage vertical kerbs on either side of the guideway. These guide wheels push the steering mechanism of the bus, keeping it centralised on the track. Away from the guideway, the bus is steered in the normal way. The start of the guideway is funnelled from a wide track to guideway width. This system permits high-speed operation on a narrow guideway and precise positioning at boarding platforms, facilitating access for the elderly and disabled. As guide wheels can be inexpensively attached to, and removed from, almost any standard model of bus, kerb guided busway systems are not tied to particular specialised vehicles or equipment suppliers. Characteristically, operators contracted to run services on kerb-guided busways will purchase or lease the vehicles, as second-hand vehicles (with guide wheels removed) have a ready resale market.

The kerb-guided system maintains a narrow track while still enabling buses to pass one another at speed. Consequently, kerb-guided track can be fitted into former double-track rail alignments without the requirement for additional land-take that might have been necessary were a disused railway to be converted into a public highway. Examples include the Cambridgeshire Guided Busway and Leigh-Salford-Manchester Bus Rapid Transit; in both schemes, it has proved possible to provide space for a wide multi-user path for leisure use alongside the kerb-guided double track, all within the boundaries of the disused railway route. Both the Cambridgeshire and Leigh-Salford-Manchester schemes have reported greatly increased levels of patronage (both on the buses themselves and the adjacent paths), high levels of modal transfer of travellers from private car use, and high levels of passenger satisfaction.

METRO NEWSLETTERS

on

URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN,
SUBURBAN AND INTERURBAN
PASSENGER TRANSIT SYSTEMS WITH
METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT,
COMMUTER-RAIL, ROPE-WAY/TRAIN,
WATER-METRO, AUTOMATED PEOPLE-
MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 42, March 2019

Special Metro Newsletter Edition

on

MONO RAIL



Straddle Concrete-Beam Type Daegu Monorail, South Korea, Hitachi build

MONORAIL TECHNOLOGIES;

A Study on Mono-Rail for Malta by Luke Lapira and Justin Zarb
www.maltarail.org; amended by F.A. Wingler

Monorails are becoming an increasingly popular mode of urban transit, as can be seen by the amount of new projects being undertaken in cities across the world. The technologies involved are well established and have a proven and successful track record.

For calculation purposes, data from a readily available monorail technology, which would fit the criteria of Malta's requirements was necessary. The data, such as turning radii and hill gradients for monorail trains, passenger carrying capacity, speed and acceleration, etc. helped inform logistical decisions concerning route planning and overall feasibility. Following an analysis and cross-examination of available monorail technologies, the Hitachi Small-type monorail was found to be most suitable. This does not exclude the fact that further research and design could result in a bespoke system better suited to the local scenario, resulting in a more cost-beneficial package.

Straddle-Type Concrete Beam Monorails have proven themselves as the industry standard technology, being implemented in a plethora of projects worldwide. The ideal model would be able to handle tight bends and steep gradients, as is typical of both the Maltese road network and the country's general topography. Monorail trains need to be adequately sized in order to have a reasonable critical ridership rate for feasibility, while being able to transport mass amounts of people with the required efficiency. It is for these reasons, and others, that the Hitachi Small-type monorail was selected. As outlined in [New Solution for Urban Traffic: Small-type Monorail System](#); see page 17.

This reduced-size monorail not only produces lighter systems, but also smaller structural supports, which implies that the visual impact will also be reduced. This further increases the attractiveness of an elevated infrastructure

MONORAIL TECHNOLOGIES

ALWEG



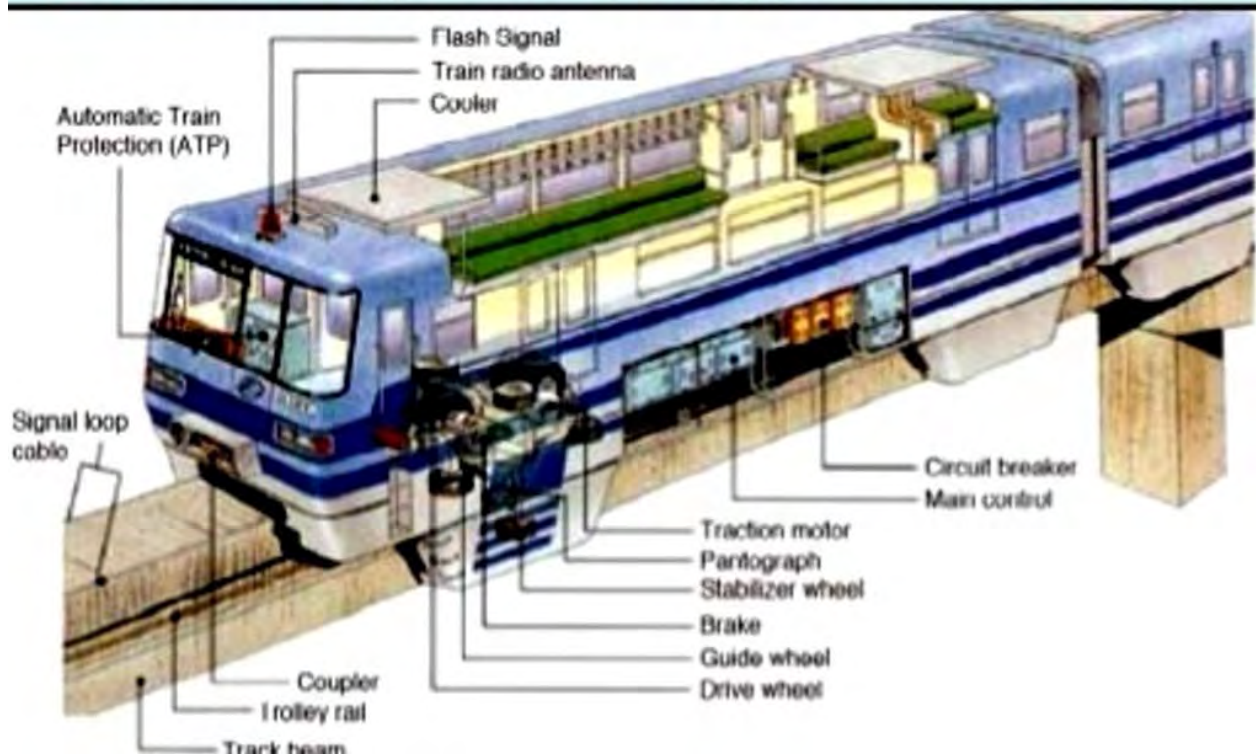
The World's first experimental Straddle Beam Monorail, System ALWEG/Hoffmann Linke Bush, Cologne, Germany, in the 1960-ties

ALWEG was founded by Swedish industrial magnate Dr. Axel Lennart Wenner-Gren in January 1953 as **Alweg-Forschung, GmbH** (Alweg Research Corporation), based in a suburb of Cologne, Germany. The company was an outgrowth of the **Verkehrsbahn-Studiengesellschaft** (Transit Railway Study Group), which had already presented its first monorail designs and prototypes in the previous year. The ALWEG name is an acronym of Dr. Wenner-Gren's name: **A**xel **L**ennart **W**enner-**G**ren.



Wheel Arrangement of ALWEG Monorail

► Straddle-type Monorail System



Working Features of Straddle-Beam Type Monorail System



Traction Bogie of Naha Monorail, Okinawa, Japan



Turnout System of Straddle-Beam Monorail, Okinawa, Japan



Sao Paulo Straddle Beam Monorail Project, Depot, Brazil



ALWEG Monorail proposed for the local Scenario of Malta

STEEL-BOX BEAM MONORAIL



Von Roll, Habegger, Steel-Box Beam Monorail, Montreal, Canada; see also Alton, UK, Monorail, Page 29



Moscow Steel-Box Monorail running with Rubber Tires on flat Steel Roll-Way, Russia



Steel-Box flat Steel Roll--Way of Moscow Monorail, Russia

The Steel-Box Beam Monorail has its beginnings in the early 1960's in Thun, Switzerland. There the Maschinenfabrik Habegger Company developed small "mini-rails" for fairs and expositions. In conjunction with Von Roll, the first installations were in Lausanne in 1964 and Munich in 1965. The "Habegger-type" monorail, as it is sometimes still referred to, got the most attention at Expo 67 in Montreal, Canada. Von Roll later modified the technology into using a steel-box beam. Several other companies now offer this type of monorail for people-mover class systems.

MAGLEV



Maglev is a relatively modern system which uses an advanced technology in which magnetic forces lift, propel, and guide a vehicle over a guide-way. Therefore, in this system there are no wheels touching the track surface, the train "floats" instead of rolling on the guide-ways.

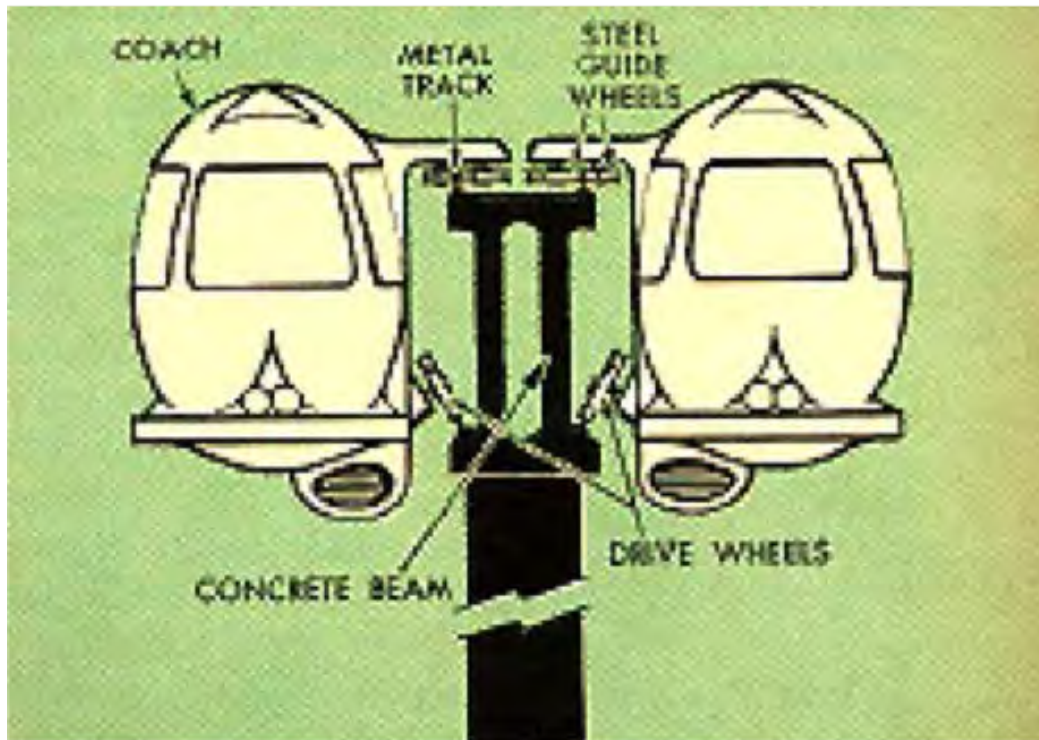
INVERTED T-SYSTEM

During the 1960's, a new design for monorail was in prevalent use for small amusement parks and zoos. Developed and sold by Universal Design Limited (UDL), the guide way resembles an inverted T when viewed in a cross section diagram. The vertical element of the guide way are only used for guide wheels, while the lips at the bottom of the track carry the load bearing wheels. While many UDL monorails were installed, no large scale systems made it off the drawing board. One was proposed for the Seattle Monorail, but the Alweg system was selected there. Today several companies are promoting various versions of the inverted T monorail for transit.



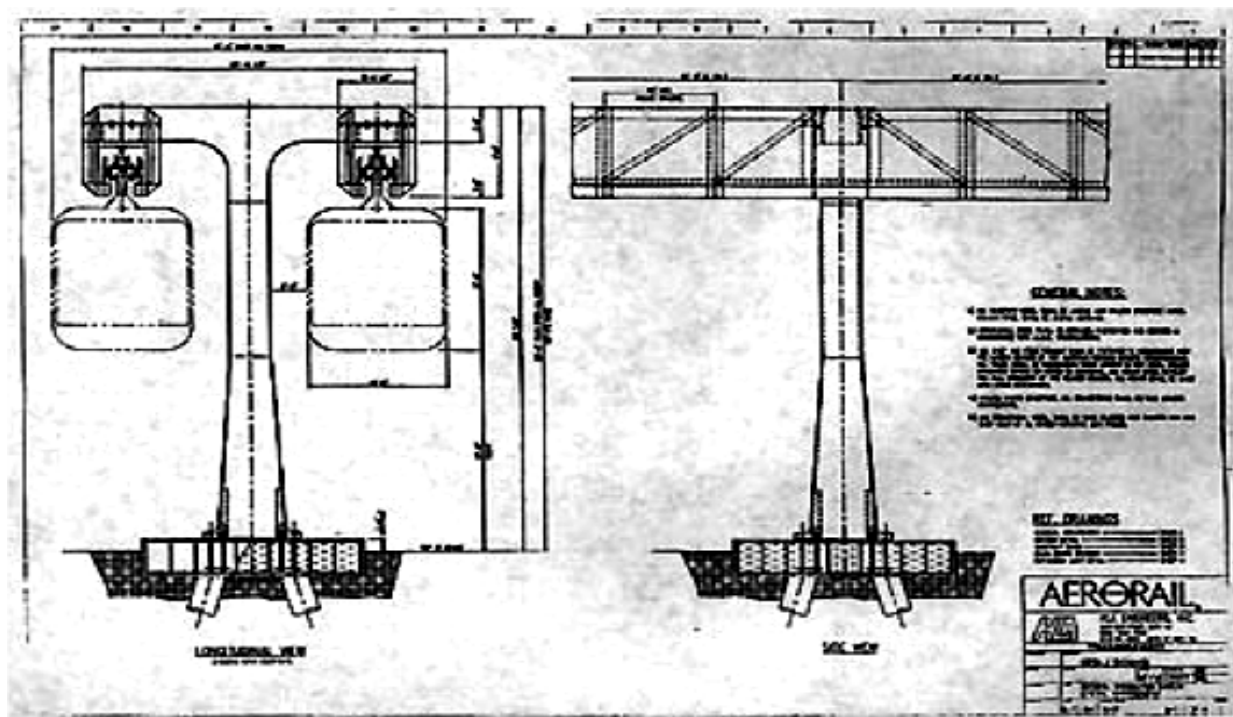
SUSPENDED DOUBLE-FLANGE SYSTEM

This system was derived from the system used in factories to transport material from one side of the factory to the other, having small lifting hoists running on rails which were basically I section beams. The system is widely used for everything from butcher shops to commercial laundries to move various items efficiently. The same principle was also applied for public transport monorails. Transit I-Beam monorails would seem to be a logical extension of the industrial monorail. However, the history of this type of monorail has been relegated to amusement centers and fairs. The most famous I-Beam monorail operated for only two years at the New York World's Fair of 1964-65. Today we know of only one company still active in the promotion of the I-Beam monorail, Titan Global Systems. Their design for a LIM-powered I-Beam monorail has been around for many years, but unfortunately there are no transit I-Beam systems in existence currently.



CANTILEVERED SYSTEMS

Monorails are advertised for many reasons, but narrow guide way is one item at the top of the list. That said there are companies proposing to do better than monorail. Imagine bi-directional travel of transit vehicles on one beam, not two. That is the chief characteristic feature of the mono-beam system. While mono-beam may seem to be a new idea, it has been around for some time. The Scherer Mono-beam was promoted without success in the 1960's. Still, the concept remains today.



SUSPENDED CANTILEVERED SYSTEM *SAFEGE*; see F.A. Wingler METRO 39 and Page 57.



Shonan suspended Cantilevered Monorail in Kamakura, Japan



Autonomous suspended People Mover, Düsseldorf Airport, Germany;
System Siemens/SAFEGE



Proposed Al Mashaaer Al Mugaddassah, Mecca, suspended Monorail
Metro Project, Saudi Arabia; System MonoMetro, UK

The essence of the system was the conversion of the rubber-tired bogie developed for the Paris Metro into a bogie from which the coaches could be suspended to make an aerial railway. The bogie ran inside a hollow box girder on the lower face of which was a slot through which the suspension gear passed. The system enjoyed the same type of quiet, rapid acceleration and braking as did the Metro and the SAFEGE's ALWEG cousins. The cars were hung on a pendulum type suspension with pneumatic springs, giving stability and comfort even at high speeds. The complete enclosure of the bogies inside the box protected them from the weather, so the system was unaffected by rain, frost or snow. Eurotren Monoviga - <http://www.monorails.org/webpix/TPEM5.jpg>

SUSPENDED DOUBLE WHEEL-FLANGE SYSTEM



120 Years old suspended Double Wheel-Flange Wuppertal Schwebebahn, Germany



Double-Flange Traction-Wheels of Wuppertal Schwebebahn

The first successful use of monorail technology in urban transportation was the **Schwebebahn** (suspended or floating railway) of Wuppertal, Germany. It has been in operation since 1901. There are two dual-wheeled bogies per car. The double flanged steel wheels run on a single steel rail laid on a girder. Bogies on the original cars had a single motor using a chain to drive both wheels. Current cars use a single motor driving both wheels with worm gears. Reversing at each end of the line is by loop, and a turntable has been installed for short turns. In 1993, between 45,000 and 50,000 people used the Schwebebahn every day. Not bad for a system that's been around for nearly 120 years.

GUIDED MONO-RAIL SYSTEMS RUNNING ON CARRIAGE WAYS

Mono-Rail guided Systems had their beginning in India. From 1907 until 1927, there had been two Mono-Rail guided Carriage Railways running on carriage-way, the Patiala State Monorail (PTMS):

The total distance covered by PSMT was 50 miles (80 km). PSMT was run on two unconnected lines. One ran 15 miles (24 km) from [Sirhind](#) to [Morinda](#). It was proposed to extend this line to [Ropar](#) but since Ropar was connected by a railway line, this idea was abandoned:



PSMT Monorail guided Carriage-Way Train at Delhi Railway Museum



Centre Monorail guided Rubber tyred electric Bus; Impressions of the light Rail Route by the City Authority of Caen, France



Monorail guided Trambus by Bombardier, Caen, France



Autonomous Skyline People Mover guided with a Mono-Rail and running with inflated Rubber-Tire Wheels on elevated Guide-Way (flat Steel Roll-Way), Frankfurt Airport, Germany



Centre Monorail guided Rubber tyred People Mover running on Roll-Way,
Atlanta Airport, USA



Autonomous Underground People Mover running with guided inflated Rubber-Tire Wheels on Guide-Way (Roll-Way), Dubai Airport, Emirates



Guided Roll-Way of Charles de Gaulle Paris Airport Shuttle running, guided from both Track-Flanges, with inflated Rubber-Tire Wheels similar to Paris Rubber-Tire Metro



5000 Series central Rail-guided Rubber-tyred Rolling Stock operated by Sapporo City Transportation Bureau, Japan, and built by Kawasaki Heavy Industries Rolling Stock Company



Busan, South Korea, Central Rail guided Subway/elevated Right-Of-Way Rubber tyred Metro Train



Busan, South Korea, Subway/elevated Right-of-Way Line 4

TECHNOLOGY GAP

Monorails are becoming an increasingly popular mode of urban transit, as can be seen by the amount of new projects being undertaken in cities across the world. The technologies involved are well established and have a proven and successful track record.

The type of monorail system was selected as the authors deemed that its technical specifications satisfy the primary requirements for a monorail system in Malta. This does not exclude the fact that further research and design could result in a bespoke system better suited to the local scenario, resulting in a more cost-beneficial package.

New Solution for Urban Traffic: Small-Type Monorail System

Takeo Kuwabara
Motomi Hiraishi
Kenjiro Goda
Seiichi Okamoto
Akira Ito
Yoichi Sugita

OVERVIEW: In Japan, the first urban straddle type monorail system, Tokyo Monorail, was put into operation in 1964. Since then, three more monorail systems have been constructed with the active participation of Hitachi in Kitakyushu, Osaka, and Tama. A monorail system is now being constructed in Okinawa; it is scheduled to start operation in 2003. The straddle type monorail can be constructed using the space above public roads without disturbing everyday traffic. Monorail trains with rubber tires are environmentally friendly and produce little noise and vibration. The straddle type monorail has become an important part of the urban public transportation system, chiefly because of its many advantages over other transportation means including the subway. These advantages include (1) improved environment, (2) a shorter construction period, and (3) lower costs. Thus, the monorail system in Japan is an effective solution to environmental problems and traffic congestion in urban cities, which also stimulates local economy. The demand for urban monorail systems has recently begun to come from smaller local cities where the daily ridership is much lower than that in Tokyo, Osaka, Kitakyushu, and other major cities in Japan. To enhance the financial viability of monorail construction in smaller cities and to construct smaller monorails, the Japan Monorail Association (JMA) set up a research committee to investigate the development of a small monorail. This committee, mainly headed by Hitachi, carried out comprehensive research of the market demand for monorail systems and initiated the development of a compact monorail. Hitachi developed a number of new design elements including an articulated bogie to enable trains to negotiate sharp curves. We also worked to design a compact and light monorail that makes use of next-generation signal systems. These basic elements can also be used for other people-mover systems in amusement parks, airports, and business complexes.

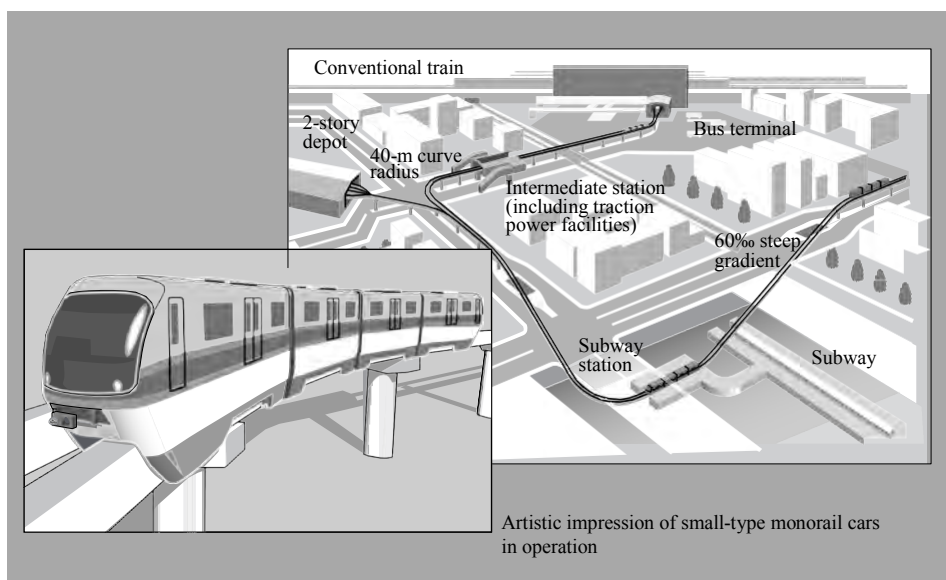


Fig. 1— Concept of New, Small-type Monorail System in Harmony with the Urban Amenity.

Based on monorail know-how obtained from past construction projects, we developed a straddle type small monorail system with compact, standard, and low-cost configuration that meets the transportation needs of medium- and small-size cities. This small-type monorail system has a number of features that make it flexible toward the requirements of various transportation agencies.

INTRODUCTION

HITACHI has already completed the development of a small-type monorail system that meets the needs for economical construction and smaller monorails in regional cities. This paper describes the main features of our small-type monorail system.

TECHNICAL FEATURES

A reduced axle load is one of the main features of the guideway structure of our monorail train. In our train, the load on axles is 8 tons per axle instead of 10 to 11 tons per axle as in large conventional monorail trains. The main features of the small-type monorail system are these:

(1) Small and light vehicles.

- We have improved our vehicle design technologies to produce an economical vehicle.
- The train models have been standardized (two models are currently available).
- The exterior of the trains can be decorated with colored films.
- Seats in the trains can be arranged based on customers' specifications.

(2) Greater passenger carrying capacity (see Fig. 2).

- The passenger carrying capacity of a 4-car vehicle is 200 passengers (based on 0.3-m²/passenger standard occupancy) and passenger loading capacity in terms of pphpd (passenger per hour per direction) is 3,000 pphpd (for an operating headway of 4 min).

• The daily passenger volume is 25,000 to 30,000 passengers.

(3) The cost of our system is 50% that of large-type monorail system.

- The total construction cost has been reduced to half that of large-type monorail system.

(4) Right-of-way for small-type monorail systems

- The guideway structure and station building can be constructed above narrow streets.

- Routes can be flexibly designed along existing roads and streets with a 40-m curve radius and a 6% gradient.

(5) Smooth and seamless connection to other means of transportation

- We improved platform design to make transfers easier.
- The monorail can be built underground.

COST CONSIDERATIONS

(1) Optimization of technical specifications

- Our system features small and light vehicles, reduced train length, reduced number of passenger doors, which in turn reduces the guideway structure, station platform length, and the number of platform screen doors.

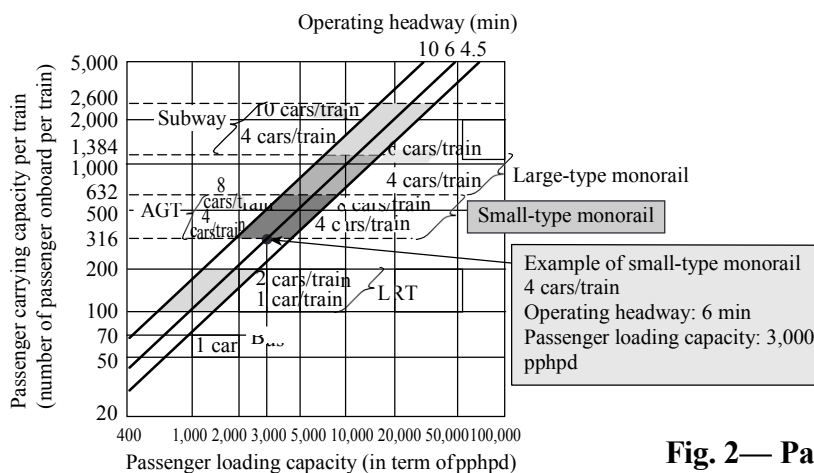
- Due to the use of traction power substations operating at 2,000 kW, we can use commercial incoming power lines at substations, which reduces the amount of space for substations.

- The signaling system is equipped with an electronic interlocking device, which eliminates unnecessary cables and wiring. New regenerative power absorbing facilities have been installed to replace the regenerative power facilities on the wayside of the tracks.

- To reduce the amount of required space for depots and train storage yards, train lines can be constructed on the 2nd floor and the operation control and maintenance center will be located on the ground floor.

(2) Compact station buildings

- Side-platform arrangement for intermediate



Note: Passenger carrying capacity per car (standee occupancy rate: 0.14 m²/passenger)

Small-type monorail	79 passengers/car
Large-type monorail	173 passengers/car
Subway	260 passengers/car
Bus	70 passengers/car
AGT	80 passengers/car
LRT	100 passengers/car

AGT: automated guideway transit
LRT: light rail transit

Fig. 2— Passenger Carrying Capacity of Different Transportation Systems.

The passenger carrying capacity of small-type monorail is about the same as that of AGT.

stations eliminates the need for concourse floors and makes station buildings 2-story structures rather than 3-story structures.

- There are no escalators at intermediate stations, only elevators and stairs.

(2) Standardized design

- Train components have been standardized, except for passenger seating arrangement and vehicle exterior for which there are two standard models.

- Making the intermediate station a side-platform type, instead of an island-platform type, keeps the tracks straight and simplifies station structure.

(3) Other features

- Using commercial incoming lines to power station equipment eliminates the need for low-voltage distribution networks and additional cables.

- The prestressed concrete (PC) tracks and steel track girders were made rectangular to reduce the cost of constructing the guideway structure.

- The signal, operation control, and communication systems were integrated into one system to reduce costs.

- The trolley wire design of power feeder lines has

been simplified.

SYSTEM CONFIGURATION

Comparing Our System with Conventional Large-type Monorails

Fig. 3 compares our small-type monorail with a conventional large-type monorail.

Monorail Trains

The goals in designing the small-type monorail were (1) to reduce the number of cars in a train and (2) to make train cars lighter and more compact. This reduction in size has a remarkable cost-saving effect since the loading impact on the guideway structure becomes smaller.

(1) Because there is not much space under the frame of a monorail car to install equipment, we used an articulated bogie for our train.

(2) To enable the train to negotiate sharp curves to follow narrow roads in local cities, the minimum curve radius was set at 40 m.

After we completed the design of the new bogie, we carried out a series of tests on a prototype bogie by

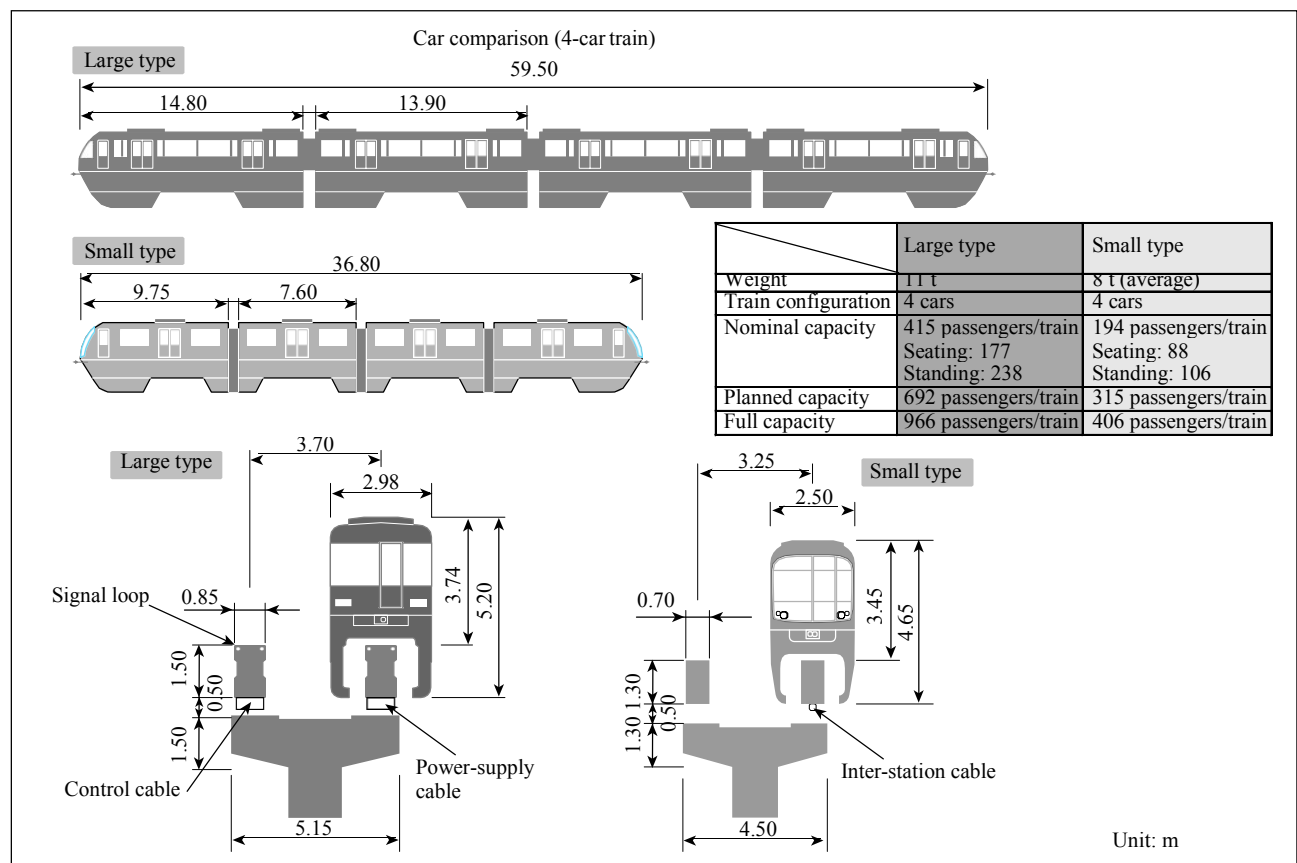


Fig. 3— Large-Type and small-Type Monorails.

Small-type monorail system reduces the cross section of guideway structure and stations, and simplifies cable laying between stations.

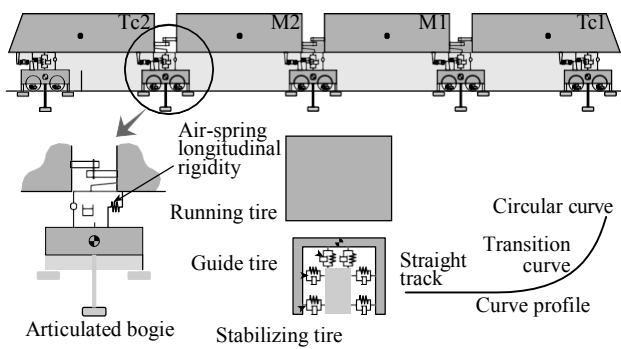


Fig. 4— Dynamic Simulation Model.

A design verification model was developed to examine the articulated-bogie system of the small-type monorail, and the riding comfort of passengers was evaluated when the train was passing a small curve with a 40-m radius.

simulating actual operating conditions.

- (1) To reduce the increased load on the axles due to a smaller number of axles supporting the overall weight of the train, the average axle load is controlled at 8 tons per axle.
- (2) To increase passenger comfort, the wheel springs and damper systems of the bogies have been carefully re-designed based on dynamic simulation results (see Fig. 4).
- (3) A finite element method (FEM) was used to design a light bogie frame that is 15% lighter than that of a conventional bogie.

Experiments were performed to ensure that the tire slip angle takes into account the guiding tire force that can become excessive when the train passes a small curve. The results showed (see Fig. 5) that due to reduced air-spring longitudinal rigidity, the lifetime of the tires was the same as that in conventional systems while our small-type train could also negotiate sharp curves.

Power Supply, Signal, Operation Control, and Communication Systems

- (1) To make the train compatible with other small transportation means, we used DC 750 V as an incoming line voltage. Although AC 600V would be effective in terms of reducing the weight of train, it would not be cost-effective on the whole due to an increase in number of traction power facilities on the wayside of the tracks.
- (2) Instead of the conventional low-voltage distribution network system in which relevant cabling work is provided by the system supplier, we used a commercial network from a utility company to power facilities allocated to each station.

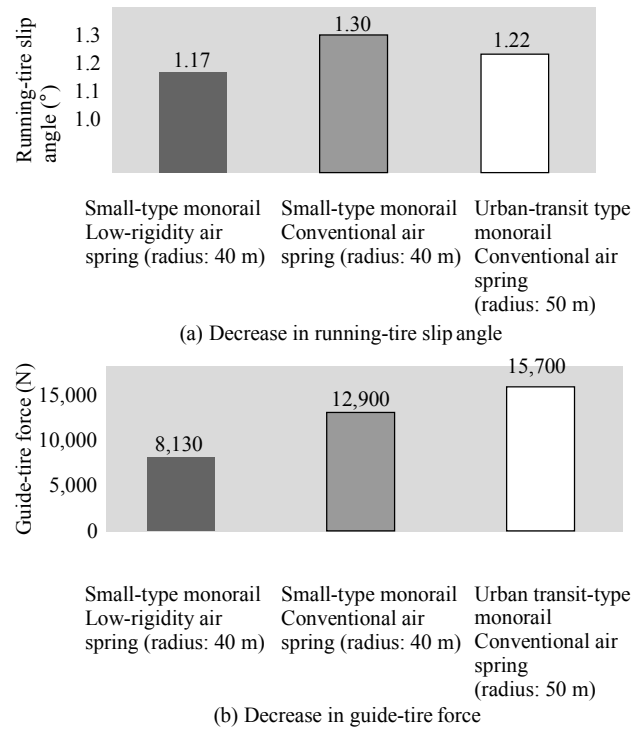


Fig. 5— Results of Dynamic Simulation.

Design elements affecting the lifetime of various tires in relation to the train's ability to pass small curves were analyzed, and an air-spring constant that can ensure the riding comfort equivalent to that of conventional systems was determined.

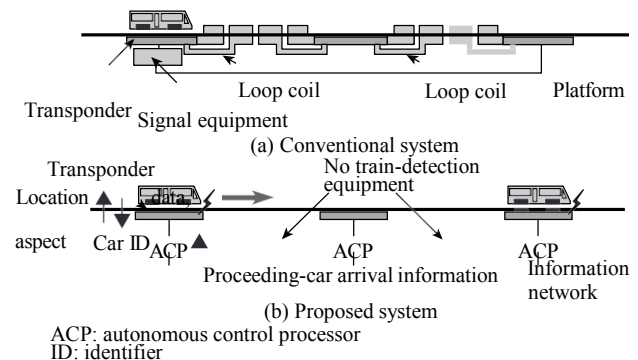


Fig. 6— Signal and Communication Systems.

The proposed system does not require the continuous loop and relevant cabling.

- (3) The conventional method of installing trolley wires was replaced by the use of a saw tooth blade pattern to simplify installation to enable the power collecting shoe to be worn out evenly and to prevent tear.
- (4) The conventional system employs fixed block signaling system in which multiple train-detection equipment are installed between any two stations allowing only one train to exist in one loop-coil interval. Our small-type monorail system has a simple train detection system based on the optimal allocation of transponder devices according to the train running performance, which enables cable-less work among stations (see Fig. 6).

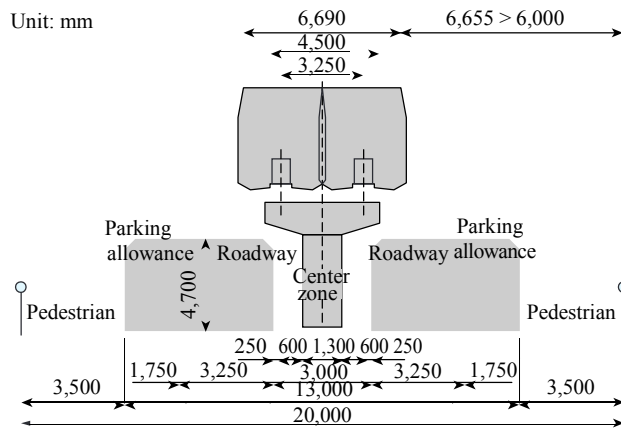


Fig. 7— Cross Section Layout of Guideway Structure in Small-type Monorail System.

Small-type monorail system can be used on 20-m-wide roads.

(5) The signal, operation control (including traffic control, power control, passenger information/fault/facilities management) and communication systems have been integrated into a single system by using IT-related technologies including the Internet protocol (IP) and data transmission by optical fiber. This results

in reduced capital, maintenance, and operating costs. (6) Right-of-way requirements for construction: Based on the results of these achievements described above, we are able to demonstrate the reduction in size and weight satisfying the structural requirements to construct above narrow streets and space (see Fig. 7).

CONCLUSIONS

This paper describes the development and features of small, straddle type monorail system. We at Hitachi are committed to developing straddle type monorails to meet our customers' requirements and objectives.

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List of Global Monorail Systems

From Wikipedia, the free encyclopedia



















The Shanghai Maglev High-Speed Train in China

A Monorail is a railway system in which the track consists of a single rail, typically elevated and with the trains suspended from it. The term is also used to describe the beam of the system, or the vehicles traveling on such a beam or track. Many monorail systems run on elevated tracks through crowded areas that would otherwise require the construction of expensive underground lines or have the disadvantages of surface lines.












Operational Monorails

Location	Country	Name	Year opened	Stations	System length	Type	Notes
Gold Coast	 Australia	Sea World Monorail System	1986	3	2 km (1.2 mi)	Amusement Park	
Lichtaart	 Belgium	Bobbejaanland Monorail ^[1]	1961	3	1.85 km (1.15 mi)	Theme Park	
São Paulo	 Brazil	Line 15 (São Paulo Metro)	2014	6	7.8 km (4.8 mi) ^[2]		
Montreal	 Canada	La Ronde (amusement park) Minirail	1967	2	2.1 km (1.3 mi)	Amusement Park	

Location	Country	Name	Year opened	Stations	System length	Type	Notes
Chongqing	 China	Chongqing Monorail Line 2 & 3	2005	64	98 km (61 mi) ^[3]		
Shanghai	 China	Shanghai maglev train	2004	2	30.5 km (19.0 mi)		
Shenzhen	 China	Happy Line	1998	7	3.88 km (2.41 mi)		
Shenzhen	 China	Window of the World Theme Park Monorail	1993	3	1.7 km (1.1 mi)		
Xi'an	 China	Xi'an Monorail	2015	11	9.6 km (6.0 mi)		
Fenggang, Dongguan, Guangdong	 China	Castfast Hotel Monorail ^[4]				Hotel	
Helsinki	 Finland	Linnanmäki Monorail (Maisemajuna)	1979	1	0.5 km (0.31 mi)	Amusement Park	
Saint-Pourçain-sur-Besbre	 France	Le Pal Monorail		1		Amusement Park	
Wuppertal	 Germany	Wuppertal Suspension Railway	1901	20	13.3 km (8.3 mi)		
Dresden	 Germany	Dresden Suspension Railway	1901	1	0.27 km (0.17 mi)		
Dortmund	 Germany	H-Bahn Monorail	1984	4	3.16 km (1.96 mi)		
Düsseldorf	 Germany	Düsseldorf SkyTrain Düsseldorf Airport	2002	4	2.5 km (1.6 mi)		
Rust	 Germany	Europa-Park	1995	4	2.5 km (1.6 mi)	Theme Park	
Soltau	 Germany	Heide Park	1985	1	1.6 km (0.99 mi)	Theme Park	
Mumbai	 India	Mumbai Monorail	2014	17	19.54 km (12.14 mi)		
Ravenna	 Italy	Mirabilandia Monorail	1992	1	1.5 km (0.93 mi)	Theme Park	

Location	Country	Name	Year opened	Stations	System length	Type	Notes
Chiba	 Japan	Chiba Urban Monorail	1988	18	15.2 km (9.4 mi)		
Urayasu	 Japan	Disney Resort Line	2001	4	5 km (3.1 mi)	Amusement Park	
Kitakyushu	 Japan	Kitakyushu Monorail	1985	13	8.8 km (5.5 mi)		
Naha, Okinawa	 Japan	Okinawa Monorail	2003	15	12.8 km (8.0 mi)		
Osaka Prefecture	 Japan	Osaka Monorail	1990	18	28 km (17 mi)		
Aki-ku, Hiroshima	 Japan	Skyrail Midorizaka Line	1998	3	1.3 km (0.81 mi)		
Kanagawa Prefecture	 Japan	Shonan Monorail	1970	8	6.6 km (4.1 mi)		
Western Tokyo	 Japan	Tama Toshi Monorail Line	1998	19	16 km (9.9 mi)		
Taitō, Tokyo	 Japan	Ueno Zoo Monorail	1958	2	0.3 km (0.19 mi)		
Tokyo	 Japan	Tokyo Monorail	1964	11	17.8 km (11.1 mi)		
Malacca City, Malacca	 Malaysia	Melaka Monorail	2010	3	2.5 km (1.6 mi)		
Kuala Lumpur	 Malaysia	Kuala Lumpur Monorail	2003	11	8.6 km (5.3 mi)		
Mexico City	 Mexico	Aerotrén	2007	2	3 km (1.9 mi)		
The Hague	 Netherlands	Drievliet Amusement Park				Amusement Park	
The Hague	 Netherlands	Slagharen Amusement Park				Amusement Park	
The Hague	 Netherlands	Hellendoorn Amusement Park				Amusement Park	
Rhenen	 Netherlands	Ouwehands Zoo				Zoo	
Calabar	 Nigeria	Intamin P8 monorail					A 1.1 km Intamin P8 monorail in Calabar in Cross River State opened in April 2016. ^[5]
Moscow	 Russia	Moscow	2004	6	4.7 km		

Location	Country	Name	Year opened	Stations	System length	Type	Notes
Singapore	 Singapore	Monorail Sentosa Express	2007	4	(2.9 mi) 2.1 km (1.3 mi)		
Nasrec, Johannesburg	 South Africa	Expo Centrek Monorail				Exposition Centre	Located next to the 2010 FIFA World Cup Soccer City) hosts a monorail ^[6] that operates during major events such as the Rand Easter Show
Sun City	 South Africa	Sun City Casino Resort Monorail				Casino	Linking day visitor parking area to main complex. ^[7]
Daegu	 South Korea	Daegu Metro Line 3	2015	30	23.9 km (14.9 m i)		
Zaragoza	 Spain	Plaza Imperial Monorail ^[8]	2008	2	0.6 km (0.37 m i)		
Dashu District, Kaohsiung	 Taiwan	E-DA Theme Park Monorail		2		Theme Park	Shuttle service
Chiang Mai Province	 Thailand	Chiang Mai Zoo Monorail	2005	4	2 km (1.2 mi)		
Bangkok	 Thailand	Dream World Theme Park Monorail				Resort Park	Dream World Theme Park in the northern side of Bangkok has a monorail attraction in Adventure Land
Chon Buri	 Thailand	Pattaya Park Resort Monorail			2 km (1.2 mi)	Resort Park	
Ashgabat	 Turkmenistan	Ashgabat Monorail	2016 ^[9]	3	5.2 km (3.2 mi)		
Dubai	 UAE	Palm Jumeirah Monorail	2009	2	5.45 km (3.39 m i)		
Chester	 UK	Chester Zoo Monorail	1991	2	1.5 km (0.93 m i)		
Alton Towers	 UK	Alton Towers Monorail	1987	2	1.4 km (0.87 m i)	Resort Park	Trains were originally used at Expo 86 in Vancouver, British Columbia,

Location	Country	Name	Year opened	Stations	System length	Type	Notes
Flamingo Land	 UK	Flamingo Land Monorail				Theme Park	Canada. An unusual feature of the new museum building in 1972 is the National Motor Museum Monorail[6] passing through its interior. This was inspired by the light railway running through the US Pavilion at the Montreal World's Fair, Expo 67
National Motor Museum	 UK	National Motor Museum Monorail				Museum	
Great Yarmouth Pleasure Beach	 UK	Great Yarmouth Pleasure Beach Monorail				Resort Park	
Tampa, Florida	 US	Tampa International Airport monorail				Airport	Connects the main terminal to the long-term parking garage
Newark, New Jersey	 US	AirTrain Newark, Newark Liberty International Airport				Airport	Connects terminals, parking lots, and Amtrak/NJ Transit Northeast Corridor rail station
Jacksonville, Florida	 US	Jacksonville Skyway	1989	8	4 km (2.5 mi)	Urban	
Las Vegas, Nevada	 US	Las Vegas Monorail	2004	7	6.3 km (3.9 mi)	Urban	
Seattle, Washington	 US	Seattle Center Monorail	1962	2	1.54 km (0.96 mi)	Urban	
Anaheim, California	 US	Disneyland Monorail System	1959	2	4 km (2.5 mi)	Amusement Park	
Bay Lake, Florida	 US	Walt Disney World Monorail System	1971	6	23.66 km (14.70 mi)	Amusement Park	
Hershey,	 US	Hersheypark				Amusement	

Location	Country	Name	Year opened	Stations	System length	Type	Notes
Pennsylvania						nt Park Ride	
Lancaster, Pennsylvania	 US	Dutch Wonderland ^[10]				Amusement Park Ride	
Ocean City, New Jersey	 US	Gillians Wonderland Pier				Amusement Park Ride	
Marshall, Wisconsin	 US	Little Amerricka				Amusement Park Ride	
Miami, Florida	 US	Miami Zoo Monorail	1984	4	5 km (3.1 mi)	Zoo	
New York, New York	 US	Bronx Zoo Monorail				Zoo	To visit Wild Asia exhibit in the Bronx Zoo
Dallas, Texas	 US	Dallas Zoo Monorail				Zoo	
Gilroy, California	 US	Gilroy Gardens Monorail				Other	Provides users with an aerial view of the gardens' giant greenhouse
Sacramento, California	 US	Cal Expo Monorail				Other	California Exposition has a monorail that runs for more than a mile around their fairgrounds. It is only open during the California State Fair ^[11]
Aiea, Hawaii	 US	Pearlridge Skycab				Other	Pearlridge Center. Connects the Uptown part of the mall to the Downtown part of the mall. It is the only monorail system in Hawaii.
Fairfield, Ohio	 US	Jungle Jim's International Market Monorail				Other	Brings riders from a remote parking lot to the Oscar Events Center; cars were originally used at nearby Kings Island. ^[12]
Memphis,	 US	Memphis				Other	A short suspended

Location	Country	Name	Year opened	Stations	System length	Type	Notes
Tennessee		Suspension Railway Monorail					monorail connects Mud Island in the Mississippi River to Memphis

This is a listing of operating monorails that are open to the public. Only true monorails (vehicle wider than track) are included; see [people mover](#) for a list of monorail-like systems.



Von Roll Monorail at Alton Towers, Alton, UK, originally built for Expo 86, Montreal in Canada; see Page 6



The Walt Disney World Straddle-Beam Monorail (ALWEG) System, USA.









The Moscow Steel-Box System Monorail

Under Construction

Physical construction work has started on the following monorails:

Eurasia

Country	City	Name of system	Opening
 Italy	Bologna	Marconi Express	2019
 Iran	Qom	Qom Monorail	2019
 Saudi Arabia	Riyadh	Riyadh Monorail	Unknown
 Thailand	Bangkok	Yellow Line	Unknown
 Thailand	Bangkok	Pink Line	2020 (estimated)
 Malaysia	Putrajaya	Putrajaya Monorail	Unknown

Americas

- São Paulo Metro of São Paulo, Brazil has one monorail line under construction, after one opened in 2014:
 - Line 17, São Paulo, Brazil. Opening Q1 2018.

Africa

- Rivers Monorail, Port Harcourt, Rivers State, Nigeria. Construction has been suspended since 2015.

Proposed Monorails

Africa

- Las Palmas de Gran Canaria, Spain 1974, 'Tren Vertebrado'
- Fez, Morocco (Skybus)
- Lagos, Nigeria
- Johannesburg, South Africa
- Cape Town, South Africa
- Accra, Ghana [1] [2]
- Alexandria, Egypt
- Onitsha, Nigeria
- Aba, Nigeria
- Umuahia, Nigeria

Americas

- Buenos Aires, Argentina. Proposed.^[1]
- Niterói, Brazil. Had received the go-ahead from Dilma Rousseff and will connect Niterói, São Gonçalo, and Itaboraí, before the State considered implementing a heavy metro solution instead.
- São Paulo, Brazil has a project (Line 17) to build a monorail that will connect Congonhas Airport to Morumbi and Jabaquara districts.^[19]
- São Paulo, Brazil has another project (Line 18) to build a monorail that will connect São Paulo to the neighbour ABC region.
- Chicago, Navy Pier
- Sherbourne Conference Center Monorail, Saint Michael, Barbados^[20]
- Los Angeles - Las Vegas, Maglev
- Atlanta - Chattanooga, Maglev
- Washington - Baltimore, Maglev

- As part of the DestiNY USA project in Syracuse, a monorail from Syracuse University to Syracuse Hancock International Airport via downtown and the DestiNY complexes is planned.
- Quebec province, Canada. Since many years plans for a high-speed transit system have been tabled. Since the cost for a new train would be too high and that it wouldn't be fit for the Québécois winters, the option for a monorail has been debated. In late 2012 TrensQuébec released two newsletters stating that they've found enough investors and supporting politicians to build a 5-kilometer test track.^[22]
- A small monorail in the Granby Zoo
- New York - Stony Brook University
- Pittsburgh International Airport - Pittsburgh - Greensburg, Pennsylvania - Maglev^[23]
- Lubbock, Texas
- Arequipa, Peru. Proposed.
- Vargas, Venezuela. Proposed. The system would be part of state of Vargas new governor's transportation plan. The project would connect 5 cities: Catia La Mar, Maiquetia, La Guaira, Macuto and Caraballeda. The Swiss corporation Intamil presented the proposal. The trains will ride around 80 km/h and will translate about 60.000 passenger per hour.
- Panama City, Panama. Panama City Metro Line 3. Currently in contractor selection stage. Expected EIS 2022.
- Vancouver. Flyda system. Proposed.

Asia

Bangladesh

- Dhaka Monorail, Dhaka, Bangladesh

China

- Wangjing Monorail, Beijing, China

Hong Kong

- Environmentally Friendly Linkage System, New Kowloon, Hong Kong
- West Kowloon Cultural District, Hong Kong (cancelled)

India

- Ahmedabad Monorail, Ahmedabad
- Aizawl Monorail, Aizawl
- Allahabad Monorail, Allahabad
- Bengaluru Monorail, Bangalore
- Chennai Monorail, Chennai
- Coimbatore Monorail, Coimbatore
- Delhi Monorail, New Delhi
- Hyderabad Monorail, Hyderabad
- Indore Monorail, Indore
- Kanpur Monorail, Kanpur
- Kolkata Monorail, Kolkata
- Navi Mumbai Monorail, Navi Mumbai
- Patna Monorail, Patna
- Pune Monorail, Pune
- Ranchi Monorail, Ranchi

- Thiruvananthapuram Monorail, Thiruvananthapuram
- Warangal Monorail, Warangal

Malaysia

- Johor Bahru Rapid Transit System, Johor Bahru, Malaysia
- KL Monorail, Kuala Lumpur, Malaysia
- Malacca Monorail, Malacca, Malaysia

Philippines

- Baguio Upland Monorail, Benguet, Philippines
- Balanga Monorail, Bataan, Philippines
- Iloilo Monorail, Iloilo, Philippines

Sri Lanka

- Colombo Monorail, Colombo, Sri Lanka

Thailand

- Pink Line (Nonthaburi and Bangkok)
- Yellow Line (Bangkok and Samut Prakan)
- Brown Line
- Chula-Siam Monorail
- Cyan Line
- Grey Line

Vietnam

- Ho Chi Minh City Monorail, Vietnam

Europe

- Liverpool to Manchester Bher monorail, circa 1900
- Manchester Monorail, a 16-mile (26 km) SAFEGE-type monorail proposed in 1966 for Manchester, UK, to run across the city to Manchester Airport
- Preston Monorail, United Kingdom^[30]
- Liverpool Monorail, United Kingdom (to be create as part of the Liverpool Waters project with link to John Lennon Airport)
- Thessaloniki Monorail, Greece, proposed monorail line that will start at Mikra Station and end at Makedonia International Airport. The plan is unlikely to be realised as an extension of the metro to the airport is preferred.
- MCH Skybus, Herning, Denmark - MCH's 2025 vision includes a monorail system between the exhibition centre and the town centre.^[31]

Oceania

- Brisbane Airport Monorail
- Melbourne Airport Monorail
- Nelson City Monorail^[34]

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First Monorail People Mover in Mumbai, India



Mumbai Monorail is a monorail system in the city of Mumbai, Maharashtra, built as part of a major expansion of public transport in the city. The project is implemented by the Mumbai Metropolitan Region Development Authority (MMRDA). It is the first monorail in India since the Kundala Valley Railway and Patiala State Monorail Trainways were closed in the 1920s. The system started commercial operation after partially opening its Phase 1 to the public in 2014. Upon the completion of entire Phase 1 in mid-2017, the Mumbai Monorail is set to become the fifth-largest monorail system in the world.

History

Background

The Mumbai Metropolitan Region Development Authority (MMRDA) first proposed a monorail in 2005. According to the MMRDA, the bus service operating in the city plied crowded and narrow areas at very slow speeds, thus offering no benefits to the commuters and adding to the traffic congestion. The MMRDA stated that the monorail would connect many parts of the city which were not connected by suburban rail system or the proposed metro rail system. The agency also stated that the monorail would be an efficient feeder transit to the metro and suburban rail systems offering efficient, safe, air-conditioned, comfortable and affordable public transport to commuters.

Then Chief Minister of Maharashtra Vilasrao Deshmukh cleared the notification for the construction of the first monorail line in Mumbai on 18 August 2008. The line would connect Jacob Circle, Wadala and Mahul via Chembur, providing a feeder service to the existing Mumbai Suburban Railway. The notification formally appointed the MMRDA as the system administrator for the monorail project. It would be responsible for land acquisition along the route, and the construction, allied structures, signalling and safety of the monorail system. On 11 November 2008, Larsen and Toubro, along with the Malaysian partners Scmi Engineering Bhd, were awarded a ₹24.6 billion (US\$340 million) contract to build and operate the monorail until 2029.

The cost of the monorail service was estimated in 2010 to be ₹2.0 billion (roughly ₹850 million (US\$12 million) per km). Approximately 135 kilometres (84 mi) of line is planned to be built in phases between 2011 and 2031.

Construction

Then Maharashtra Chief Minister Ashok Chavan laid the foundation stone in a ceremony at the Acres Club, Chembur on 9 February 2009.^[10] The MMRDA commissioned the construction of the line in two phases. The first stretch linked Wadala on the outskirts of the island city with Chembur in the north-east, and the second connected Wadala with Jacob Circle in South Mumbai. The original deadline for the project was April 2011.^[12] The project was delayed by issues involving land, removal of encroachments, delays in getting permissions from the civic body and railways, and missed several deadlines for completion. The following months had all been announced as deadlines for the first phase - December 2010, May 2011, November 2011, May 2012, December 2012, June 2013, August 2013, 15 September 2013, October 2013 and December 2013. Deadlines announced for the second phase were May 2011, December 2011, May 2012, December 2012, December 2013, June 2014, December 2014 and March 2015. A Right to Information (RTI) request filed by RTI activist Anil Galgali revealed that the three-year delay in commissioning the monorail was primarily due to change of alignment of its route, which led to further cost escalation of the project.

A 108-meter test run was successfully conducted on 26 January 2010. A one-kilometer test run from Wadala to the Bhakti Park monorail station was undertaken on 18 February 2012.^[18] The first test run of the entire route was conducted by the MMRDA in November 2012.

In late December 2013, the MMdra announced that it had submitted an application to Safety Certification Authority (Engineer) for the Chembur-Wadala stretch. The Safety Certification Authority goes through the documents, and physically inspects the corridor, and commercial operations can commence only after receiving its approval. The electrical systems were certified by the Electrical Inspector General. The contractor, the consortium of L&T and Scomi Engineering, had safety checks performed by an independent inspector. Official safety checks were performed by SMRT Corp of Singapore and R.C. Garg, retired Commissioner of Railway Safety. The final safety certificate was issued on 20 January. The safety certificate was then forwarded to the State Government, which issued a notification for commissioning the system. The notification contains norms for operation and maintenance of the system, which requires approval from the Chief Minister.¹

Opening

Line 1 was inaugurated by Maharashtra Chief Minister Prithviraj Chavan on 1 February 2014 at the Wadala Depot monorail station. After flagging off the first monorail train at 3:47 pm, Chavan along with Deputy Chief Minister Ajit Pawar, and other officials rode the entire route, arriving at Chembur monorail station, 20 minutes later. The party then proceeded to Gandhi Maidan, 15th Road, Chembur (East), where the Chavan declared the monorail "open". The monorail was opened to the public the following day,¹ with the first trip commencing from Wadala Depot at 7:08 am. According to the MMRDA, it had very few passengers, as the gates were opened to the public only at 7:10 am, when the train had already left. Nallasopara resident Sunil Appa Khade claimed to be the first ever commuter on the monorail. However, Abhishek Chopra claimed that though he was second in queue, he had managed to enter the monorail first. The first train from the opposite side, departed Chembur at 7:10am Services had been scheduled to operate until 3:00pm, however, station doors were closed by 2:30pm due to larger than expected ridership. Services were

operated until 4:30pm, in order to provide a ride to everyone who had purchased a ticket. On opening day, 19,678 passengers travelled on the line. Sixty-six services were operated on the first day, netting a revenue of ₹2.2 lakh (US\$3,100) through the sale of tickets and smart cards.

In the first week of operations (2–8 February 2014), the monorail transported 1,36,865 passengers in about 512 trips, earning a total revenue of ₹14,24,810. A total of 1,32,523 tokens and 1409 smart cards were also sold during the first week. According to the MMRDA, between 2 February and 1 March, a total of 4,58,871 commuters used the monorail, generating a total revenue ₹44,66,522.^[40] The monorail was closed for the first time on 17 March 2014 due to Holi.



Mumbai Monorail, India

Plan

The Mumbai Monorail master plan proposed the construction of 8 lines at a cost of ₹202.96 billion (US\$2.8 billion).

Phase	Line	Corridor	Length (km)	Estimated cost
Phase I	1	Chembur–Wadala Depot–Jacob Circle	19.54	₹27.16 billion (US\$380 million)
	2	Mulund–Goregaon–Borivali	30	₹41.7 billion (US\$580 million)
	4	Lokhandwala–SEEPZ–Kanjurmarg	13.14	₹18,265 million (US\$250 million)
	5	Thane – Mira-Bhayandar – Dahisar	24.25	₹33,708 million (US\$470 million)
Phase	6	Kalyan–Ulhasnagar–Dombivli	26.40	₹36,696 million

II			(US\$510 million)	
7	Chembur–Ghatkopar–Kopar Khairane	16.72	₹36,863 (US\$510 million)	million
8	Mahape–Shil Phata–Kalyan	21.10	₹29,329 (US\$410 million)	million

In September 2011, the MMRDA said that did not have an immediate plan to begin construction of a second monorail line in the region.^[43] They clarified that although it did not mean that they are not interested in carrying out the project, it may not follow the currently planned schedule. An MMRDA official stated, "There is no point in going for new routes. As long as the first route is not commissioned and the results are not out, we would not commission any new routes". MMRDA feels the need for a monorail would arise after all the proposed metro rail routes were commissioned with the monorail serving as a feeder service."

In 2009, the MMRDA proposed the construction of an additional line on the Thane-Bhiwandi-Kalyan route. The route was proposed to have a station at every kilometer, cost ₹3,750 crore (equivalent to ₹67 billion or US\$930 million in 2017) and be implemented on public-private partnership basis. It was further proposed to extend the corridor from Kalyan to Badlapur in the next phase.¹ This project was shelved by the MMRDA in February 2014. The proposed corridor would have been 23.75 km long, and cost approximately ₹3,169 crore.

Further development of the monorail system is on hold, and questions have been raised as to whether the proposed monorail corridors will have sufficient capacity to meet Mumbai's requirements. The monorail may not be further extended by the MMRDA, as it may prove inadequate for Mumbai's population density. Foreign consultants have suggested a Metro or LRT system over a monorail for many Indian cities, e.g. Bangalore.

On 16 April 2015, *The Economic Times* reported that the State Government had decided to scrap all future monorail projects. The paper quoted an MMRDA official as saying, "There was a proposal for a Monorail from Thane to Kalyan and Bhiwandi, and also a line from Thane to Wadala. However, all those plans have been scrapped. There won't be any new Monorail projects."



Line 1 on Mumbai Map

Line 1 connects Jacob Circle in South Mumbai with Chembur in eastern Mumbai. It was built at a cost of approximately ₹3,000 crore (US\$420 million). The 20.21 km line is fully elevated. Line 1 is owned and operated by the MMRDA. The monorail supplements service of the Mumbai Suburban Railway in some heavily populated areas. The first phase, built at a cost of ₹1,100 crore (US\$150 million), consists of 7 stations from Chembur to Wadala Depot, and was opened to the public on 2 February 2014. An extension for Line 1 consisting of 11 stations from Wadala Depot to Jacob Circle will be built at a cost of ₹1,900 crore (US\$260 million). It is scheduled to open early 2019 due to shortage of functional monorail rakes.

Infrastructure, Rolling Stock



Monorail Arrival inside Station

The monorail uses Scmi SUTRA systems built in Malaysia by Scmi Rail Bhd. The first car was shipped to India on 2 January 2010, marking the first time that rail cars manufactured by the company were exported overseas. Six trains currently operate in the first phase of the line. Ten more will be added in the second phase. Monorail trains are royal pink, apple green, and ice blue in colour, with black and white stripes.

Each monorail train consists of 4 coaches having a combined passenger capacity of 568. There are roughly 18 seated and 142 standing passengers at an average of seven persons per square metre per carriage (the end cars have a different capacity due to the driving position). The low number of seats was to ensure that the flow of people in and out of the coach was not hampered.¹ Some sections of seats are reserved for pregnant women, the elderly and the differently-abled. Handrails and handgrips are installed in coaches, within easy reach of all standing passengers. A 4-coach monorail train has a total length of 44.8 metres, and each coach weighs 15 tonnes. All coaches are air-conditioned.¹ There are 2 CCTV cameras installed in each coach.

Stations



Mumbai Monorail Bhakti Park Station

The elevated stations can be reached via staircases and escalators. Each station will soon have a total of four escalators - two from ground level to concourse, and two more from concourse to the platform. Stations do not have any public toilets.^[70] MMRDA Commissioner UPS Madan said, "Nowhere in the world are there public toilets at monorail stations. The monorail journey is a short one, so the provision of public toilets was not made when the plan for stations was chalked out." All stations are equipped with baggage scanners, armed security guards at all stations entry points and CCTV cameras.¹ Personnel of the Maharashtra State Security Corporation (MSSC) are deployed at the stations.¹

As part of the Station Area Traffic Improvement Scheme (SATIS), the MMRDA announced in April 2017 that it would move all bus and taxi stands to a distance of about 40–50 metres away from the monorail stations. The MMRDA believes that the current location of the stand just next the stations results in traffic congestion and restricts movement of pedestrians.

Depot and Control Centre

At Wadala, facilities were built on a 6.5-hectare site for administration and other operational needs. The operation control centre is equipped with surveillance video feeds from CCTVs and SCADA (supervisory control and data acquisition), which monitors the power supply.¹ Vehicle and train washing specialist Smith Bros & Webb was awarded a contract to provide Britannia Train Wash plants for the Mumbai Monorail. Smith Bros & Webb designs and manufactures its own wash equipment under the brand name of Britannia.¹

Safety and Security

Every station on the line is equipped with Door Frame Metal Detectors (DFMDs), X-ray baggage scanners, CCTV cameras and comply with NFPA (National Fire Protection Agency) 130 norms. Around 500 armed personnel and private guards are deployed at the

7 stations of the first phase. Officers in plainclothes are present inside trains, and real-time checks are conducted to curb trouble-makers, pickpockets and molesters. All stations have armed security guards at all entry points, and personnel of the Maharashtra State Security Corporation (MSSC) are deployed at the stations. All personnel manning the station premises are equipped with hand-held detectors. A bomb detection and disposal squad and a dog squad are also deployed at all stations.¹

The doors of coaches will not open when the train is in motion. Train operators will be given breath analyser tests when they report for duty. Violations will be met with disciplinary action, fines, and possible civil charges.

Bahia Governor signs Salvador Monorail Contract, Brazil

Feb 26, 2019

Written by [Renata Passos](#)

THE governor of the Brazilian state of Bahia, Mr Rui Costa, signed a contract on February 13 to launch an elevated monorail project that will link the Commerce district in Salvador with São João, Simões Filho.



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Work on [the Reais 1.53bn](#) (\$US 407m) project is due to begin in six months.

The 20km, 22 station line will have capacity for 150,000 passengers a day. The monorail will replace the current suburban line from Calçada to Paripe, benefiting the region's more than 600,000 residents according to the government. The 10 suburban rail stations will be deactivated and reused to provide other services to the community, such as military police stations and service centres.

The project also includes a possible four-station extension through São Joaquim, integrating with the Salvador metro.

Skyrail Bahia, a consortium of Build Your Dreams and Metrorail, was selected to construct and operate the line in May 2018 under a public-private partnership (PPP)..



Categories: [Central/South America](#)[MetrosNews](#)

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Medium Speed Maglev People Movers

Beijing Maglev carries Passengers, China

09 Aug 2017



CHINA: Passenger-carrying tests on maglev line S1 in Beijing began on August 5.

The first stage of Line S1, also known as the Mentougou Line, will offer a 20 min journey between Mentougou and Pingguoyuan, where interchange is provided with metro Line 1.

The 10.2 km Line S1 serves eight stations on a mostly elevated alignment. There is a short underground section where the line crosses the Beijing – Shacheng railway line.

Construction started in October 2013. CRRC Tangshan has supplied 10 six-car trainsets with a maximum speed of 110 km/h. These are stabled at a depot at the western end of the line.

Related news

- [01 Feb 2019 - Driverless 160 km/h metro train on test](#)
- [11 Jul 2018 - Max Bögl plans to enter urban maglev market](#)
- [13 Jun 2017 - Testing starts on Beijing maglev](#)
- [20 Dec 2016 - Beijing receives first maglev train](#)

Max Bögl plans to enter urban Medium-Speed Maglev Market, Germany



Animation of M. Bögl Medium-Speed Maglev People Mover

11 Jul 2018

GERMANY: Construction company Max Bögl is planning to relaunch the maglev concept with a view to winning export contracts. Instead of a high speed application, the company envisages low or medium speed operation over distances up to about 30 km.

Following the demise of Transrapid maglev technology in Germany after Transrapid 08 collided at around 170 km/h with a maintenance vehicle in September 2006, Max Bögl later revisited the concept and decided to explore its potential. The company built a short test guideway in Sengenthal, not far from Nürnberg, with a view to refining the infrastructure, vehicle and control technology.

Speaking to business publication *Handelsblatt*, CEO Stefan Bögl said that 'worldwide there is great potential for the technology' and that the 'market could be worth billions'. The initial target is China, where the company has reportedly found a partner business with a view to building a 3·5 km test installation in Chengdu.

Existing low to medium-speed maglev applications include the Linimo light metro originally built to serve the World Expo east of Nagoya in 2005, the Mentougou Line in Beijing, where passenger-carrying tests began in August 2017, and a peoplomover at Incheon Airport in South Korea.

The M. Bögl Maglev Monorail can lower on wheels at slow speed.



Max Bögl experimental Test Medium-Speed Maglev Track, Sengenthal, Germany

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- [04 Feb 2016 - Incheon Airport maglev starts passenger services](#)
- [30 Dec 2015 - Changsha maglev starts trial running](#)
- [20 May 2014 - Incheon Airport maglev unveiled](#)
- [07 Feb 2012 - Wind Chaser urban maglev unveiled](#)
- [27 Jun 2009 - Tangshan begins maglev testing](#)

China: CRRC Subsidiary Tests New Maglev Generation; China

30 Jan 2019 | Railway News

• Rolling Stock

Electric locomotive manufacturer CRRC Zhuzhou, a subsidiary of CRRC, tested a new generation of maglev trains with an operating speed of 160km/h last week. This is a speed increase of around sixty percent the model currently in service in Changsha, the capital of Hunan province.



Interior of CRRC's Maglev in Changsha © Baycrest under Licence

New Maglev Improvements

The traction efficiency of this new maglev model is 30 percent higher. It can also transport six more tons compared to the older generation. The previous generation is capable of transporting up to 500 passengers over three cars.

The maglev in Changsha, which began operating in May 2016, is China's first medium/low-speed maglev. CRRC says that this new model will lay the technical foundation for medium-speed maglevs in China. In addition, the company is working on an even more advanced maglev featuring a maximum speed of 200 kmph.

Changsha Medium-Speed Maglev starts Trial Running; China

30 Dec 2015

CHINA: Trial running has started on the 18.5 km 'medium-speed' maglev line linking Changsha Nan station with the city's Huanghua Airport.

Operated by Hunan Maglev Transport Co, the line has been designed for a maximum speed of 120 km/h, although the normal running speed is limited to 100 km/h.

Interchange is provided at Changsha Nan with the national rail network and Line 2 of the Changsha Metro. At present there is one intermediate station at Langlizhen, although two further stations are to be added in the future.

Construction of the maglev line began in May 2014, and the guideway was completed in mid October 2015, at a reported cost of 195m yuan per route-km. The line is worked by

48 m long sets of three maglev vehicles, being designed and built by CRRC Zhuzhou. Each set is designed to accommodate up to 363 passengers. The first set of vehicles was delivered in September, allowing time for commissioning and test running ahead of the start of passenger-carrying trials on December 26. Revenue service is expected to begin in early 2016.

- On December 28 a 4.5 km western extension of Changsha metro Line 2 was opened for trial operation. Running from Wangchengpo to West Meixi Lake. This adds a further four stations to the 19 km east-west line with 19 stations which opened between Wangchengpo and Guangda in April 2014.

Incheon Airport Medium-Speed Maglev starts Passenger Services, South Korea

04. Feb 2016



SOUTH KOREA: Passenger services on the first urban medium-speed maglev line with domestically-developed technology began on February 3.

Services on the 6.1 km line between Incheon International Airport and Yongyu with six stations run every 15 min between 09.00 and 18.00, although the operating hours are set to expand in the future.

Hyundai Rotem has supplied four driverless trains, each with capacity for 230 passengers. The vehicles have a maximum speed of 110 km/h, and run at up to 80 km/h during commercial service.

The Ministry of Land, Infrastructure & Transportation launched the Urban Maglev Programme in 2006, with Korea Institute of Machinery & Materials undertaking R&D work. A groundbreaking ceremony was held in August 2010, and a ceremonial demonstration run took place in May 2014.

Related news

- [11 Jul 2018 - Max Bögl plans to enter urban maglev market](#)
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- [20 May 2014 - Incheon Airport maglev unveiled](#)
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Al Mashaaer Al Mugaddassah, Mecca, suspended Monorail Metro Project, System MonoMetro-UK, Saudi Arabia.



The five-Car Sets for the Monorail were supplied by UK firm MonoMetro.

Location

Mecca, Saudi Arabia

Name

Al Mashaaer Al Mugaddassah Metro Line Project

Population

2.05 million (2012)

Ownership

Saudi Railways Organization

Opening Date
November 2010

Route(s)
Mecca, Arafat, Muzdalifa and Mina

Length
18.1km

Contractors
MonoMetro, Thales, Knorr-Bremse, Westinghouse Platform Screen Doors, Siemens, Lloyds Register, Systra, WS Atkins, Buro Happold, Intelligent Engineering Limited, Brecknell Willis, TPI Composites

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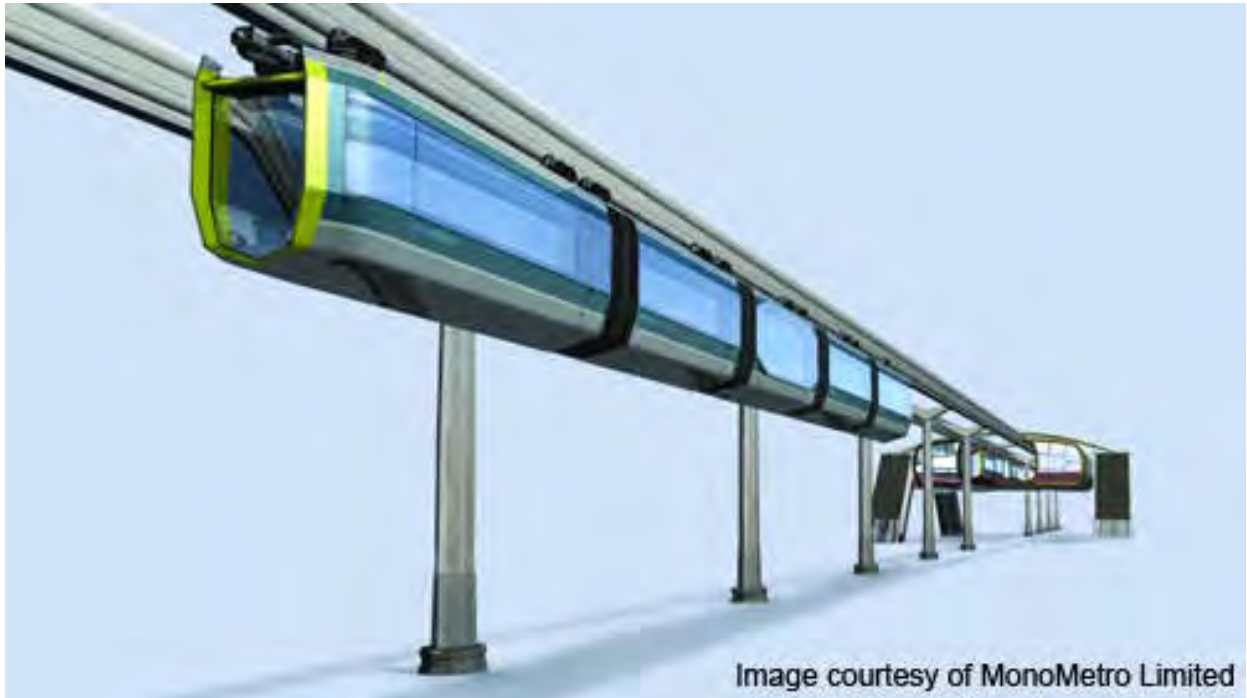
Image courtesy of MonoMetro Limited

The Vector bifurcation Bogie is articulated at the Vertex between either Side with Steel Wheels running on Steel Rails



Image courtesy of MonoMetro Limited

The Al Mashaaer Al Mugaddassah Metro Line Project connects the holy Cities of Mecca, Arafat, Muzdalifa and Mina



The Monorail Project consists of five-Car Train-Sets with separate Areas for Men and Women



The Mecca Metro Project includes several Phases of Construction



Image courtesy of MonoMetro Limited

The first Phase of the Project included the four-Line Loop with a Network of pick-up and drop-off Stations between Mina and Arafat.

The Al Mashaaer Al Mugaddassah Metro Line (MMMP), which is part of the Makkah (Mecca) Metro, is an 18.1km line constructed to connect the holy cities of Mecca, Arafat, Muzdalifa and Mina. The line was opened in November 2010 and became fully operational in November 2011.

The Mecca monorail project has been one of many undertaken by Saudi Arabia to expand its railway network to meet the transportation needs of its growing population of 25 million and improve an antiquated logistics infrastructure.

The line provides transport for about 3.5 million people who arrive at Mecca annually to perform Hajj. The number is expected to increase to five million in future.

Details of the Al Mashaaer Al Mugaddassah Metro Line Project

"The Makkah monorail project has been one of many undertaken by Saudi Arabia to expand its railway network."

Construction of the monorail project has helped to solve the problem of heavy traffic congestion in the holy cities during the Hajj period and meet the transportation needs of the local people . Masterplans drawn up by MonoMetro show that five monorails need to be constructed to handle the flow of pilgrims to the holy cities.

Based on the need to transport pilgrims from Mina to Arafat a four-line parallel loop network was developed. The line can transport about 500,000 pilgrims in six to eight hours. It has also allowed authorities to reduce the number of buses needed to transport pilgrims from 70,000 to 25,000.

The first phase of the project included the four-line loop with a network of pick-up and drop-off stations between Mina and Arafat. The first of the five new metro lines started operating with Automatic Train Protection at 35% capacity by November 2010.

The metro could carry 72,000 passengers in each direction per hour by 2011's Hajj. About 8,000 skilled and unskilled workers, along with 5,000 engineers, were engaged in the project.

The line services Mina, Arafat and Muzdafilah, each of which have three substations each. The four-line parallel loop network splits into single tracks covering all the encampment zones in Mina. Mina is the last station on the metro line and is located towards the west of the Jamarat Bridge. The metro line is linked to all the four floors of the bridge with elevators.

The four-line parallel route moves south towards Arafat before reaching a main station next to the Arafat Mosque and splitting again into a single-line network to carry pilgrims into Arafat. The lines come together again and move towards Muzdelefa, where pilgrims can spend ceremonial time before returning to Mina.

The line runs on a viaduct with the depot located at the end of the trail that is behind the first station in Arafat.

Infrastructure

The trains of the monorail can operate at an elevation ranging from 8m to 10m so that they do not obstruct the movement of vehicles and pedestrians on the ground.

"The metro reached full capacity to carry 72,000 passengers in each direction per hour by 2011's Hajj."

The trains comprise 12 carriages, each 20m long and 3m wide. The monorail runs on a powerful superstructure made of steel railroads supported by solid concrete pillars made of prefabricated steel masts and beams.

The design of the superstructure is auto-responsive to the forces of acceleration and emergency braking, with columns and specialised beamways that act as a kinetic energy absorbing/redistribution network, as well as the modular elevated station kit.

Controlled access to the monorail prevents accidents such as the tragedy at Mina in 2006, when more than 350 people died in a stampede. Trains on four elevated tracks transport 20,000 pilgrims per hour in an orderly manner. The project also included the construction of multi-storey parking facilities at the entrance of Mecca to help pilgrims park their cars before boarding the trains.

Rolling Stock

The rolling stock for the monorail includes five-car sets running together as ten-car sets supplied by MonoMetro, UK. Each five-car set is entirely interconnected and air-conditioned with separate areas for men and women.

Each five-car set has a central emergency escape car with inflatable chutes to enable pilgrims to escape in case of an emergency. As the tracks form a closed loop each train set circulates several times between Mina and Arafat. The rolling stock is stabled throughout the year for cleaning and maintenance at the depot in Arafat.

The technology on which the monorail is based is steel wheels running on steel rails in a vector bifurcation bogie capture configuration. The wheel-rail interface geometry for the

monorail was developed by MonoMetro with SKF, the Swedish bearings manufacturer. ESG, the mechanical engineering arm of English Welsh and Scottish Railways, developed the vector bifurcation bogie sets.

Knorr-Bremse was awarded a \$55m contract to provide braking systems for trains and station platform screen doors for nine stations of the metro line. The contract to supply 17 Type-A 12-car metro train sets was awarded to Changchun Railway Vehicles in April 2009.

Signalling and Communications

CRCC awarded a \$144m contract to Thales in June 2009 to supply, integrate and deploy its driverless train control and telecommunication systems for the project. Thales designed, integrated, installed, tested and commissioned the systems. It also installed the SelTrac Communications-Based Train Control (CBTC) system in the metro project.

Thales also supplied its fully integrated communications solution including an operation control centre, CCTV, SCADA and an automatic address and information system.

Contracts

"Each five-car set is entirely interconnected and air-conditioned with separate areas for men and women."

A contract worth \$1.8bn for the project was awarded by the Saudi Arabian government in February 2009 to a consortium of companies led by China Railway Construction (CRCC). CRCC carried out construction of the infrastructure and integration of various systems.

Westinghouse Platform Screen Doors provided the PSDs for the project, Siemens supplied power and Lloyds Register acted as the safety assessor. Systra carried out the civil work and WS Atkins was in charge of electrical and mechanical systems, and project management.

Brecknell Willis, a UK supplier of power rails and current collection shoes for railways, provided a lightweight aluminium power rail with stainless steel contact surface. It also supplied 1,500v DC and a current draw of 3,000A.

TPI Composites, a US manufacturer of high-strength low-weight composite lightweight vehicles, manufactured the cars.

UK firm Intelligent Engineering provided patented elastomeric bonding technology for the butterfly masts, side arms and the consecutive beam junction assembly with viscous damping. The technology enables cyclical expansion and contraction to sustain heat in the region. It also provides high resistance to emergency braking force. Buro Happold was responsible for developing the structural engineering of the MonoMetro superstructure.

Hsin Chong Construction Group provided consultancy services for the system design and construction.

Expansion of the Mecca (Mekkah) Metro

The Mecca Mass Rail Transit Project (MMRT) project will include the construction of four new metro lines A, B, C and D complementing the Al Mashaaer Al Mugaddassah metro line. The new lines will have a total length of 180km and will cover about 88 stations.

The SR62bn (\$16.53bn) MMRT project will be implemented in three phases for over the next 10 years. Phase 1 will include the construction of lines B and C by 2017, while lines A and D will be constructed in future phases.

The project will be managed by the Makkah Mass Rail Transit Company (MMRTC) and is entrusted by the Development Commission of Makkah and Mashaer (DCOMM).

Parsons Brinckerhoff will serve as a programme management office consultant for the MPTP programme.

SAFEGE Type cantilevered Suspension Monorail; France, China, Germany

From Wikipedia, the free encyclopedia

SAFEGE is an acronym for the French consortium *Société Anonyme Française d' Etude de Gestion et d' Entreprises* (English: French Limited Company for the Study of Management and Business) and is pronounced *SAY-fij* in English.

The consortium, consisting of 25 companies, including the tire-maker [Michelin](#) and the [Renault](#) automotive company, is a consulting and engineering bureau. It was formed in 1919 as *Société Auxiliaire Française d'Électricité, Gaz et Eau*, a holding company with interests in private water, gas, and electricity production and distribution. When in 1947, these public utilities were nationalised, the company became the engineering and consulting office which it is today, taking the name *Société Anonyme Française d'Études, de Gestion et d'Entreprises*.

Today the company is a [subsidiary](#) of [Suez Environnement](#) and specialises as a [consultancy](#) in water and environmental engineering, but not only (bought IDC, etc.) Its main market is France, with 60% of the turnover. It also is a leader in several consortias beneficiaries of lots from the EC FWCs.



The SAFEGE Test Track at [Châteauneuf-sur-Loire](#), France

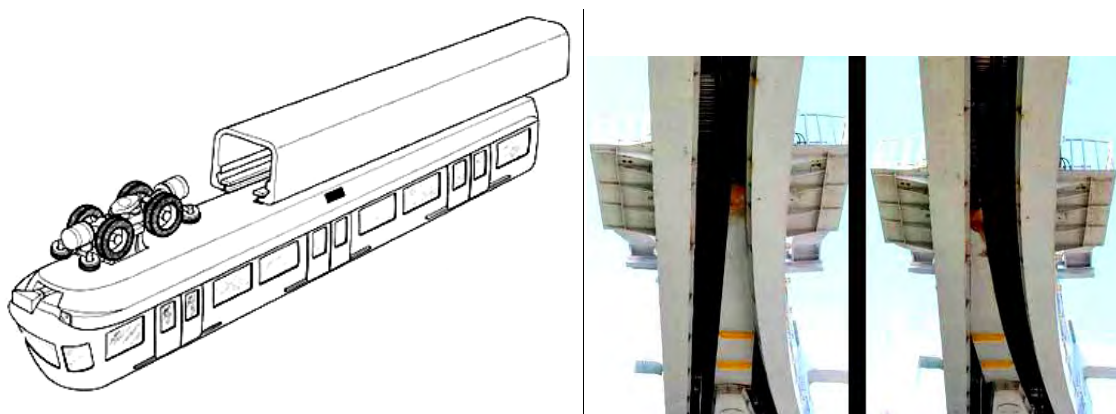


The Shonan Monorail in Kamakura, Japan

SAFEGE gained international recognition for its design of a suspended [monorail](#) in the 1960s. The design team was headed by [Lucien Chadenson](#).

Design Concept

The design of the system entails suspending passenger cars beneath rubber-tired wheel carriages of the type used more conventionally in the [Paris Metro](#). The carriages are enclosed and supported by a box-like track or beam, with an opening in the bottom. The rubber wheels of the train run inside the track, supported by flanges on the bottom of the beam:



Working Features of suspended SAFEGE Monorail Sky-Train

Unlike previous suspended monorails like the [Schwebebahn](#) in [Wuppertal](#), Germany, the tracks are not exposed to inclement weather, and do not need any cleaning or ice-removal systems. This advantage enables them to run in cities where ice and other conditions would impair the reliability of the system.

Test Installation

The test track built in France by SAFEGE in 1959, was a 1.4 kilometre monorail line that featured prominently in the 1966 movie adaptation of [Fahrenheit 451](#), directed by [François Truffaut](#).¹ Although the track was dismantled not long thereafter, the original car survived longer.

Market Position

SAFEGE systems are the leading type of suspended railway currently in [transit](#) use, though this consists of just four installations of two different systems. Its chief and more numerous competitor in modern monorail applications are variations of the German-designed [ALWEG](#) system, in which the vehicles run on top of, and straddle, a solid beam.

SAFEGE-Type Monorails in the World

[Mitsubishi Heavy Industries](#) of Japan has developed a working system of SAFEGE-type suspended railways, and have made three such installations, two of which remain in operation today.

- From early 1964 to December 1974, [a 0.5-kilometre \(0.31 mi\) single-line](#) ran between [Higashiyama Zoo and the nearby Botanical Gardens](#) in [Nagoya, Japan](#).^[6] While initially popular, it also suffered from mechanical problems and after the first two years of operation, the novelty wore off and it began making a loss. Plans to expand the zoo and gardens hastened its demise, although the car and a section of track is preserved at one of the stations. While it was initially marketed as a ride, rather than a means of transport, a fare was charged, making it the first revenue-earning SAFAGE/Mitsubishi-type monorail.
- In 1970 the [Shonan Monorail](#) opened. It runs from [Ōfuna Station](#) in [Kamakura](#) to [Shōnan-Enoshima Station](#) in [Fujisawa](#).
- In 1988 the first stage of the [Chiba Urban Monorail](#) system opened, in [Chiba](#). With a 15.2-kilometre (9.4 mi) route length, it is currently the longest suspended monorail in the world.
- Two Siemens [SIPEM](#) lines exist in Germany, one on the [Dortmund University](#) campus, the other at the [Düsseldorf Airport](#). Siemens no longer actively markets this system, but does still deliver the software for the automatic operation of a SIPEM network and vehicles.



CHIBA urban suspended Sky Mono-Railway, Japan



Siemens Düsseldorf Airport Sky-Train, Germany

Unfulfilled Proposals

In 1966, a proposal was considered to construct a SAFEGE-type monorail in the City of [Manchester](#). The 16-mile (26 km) line was planned to link [Manchester Airport](#) with the city and suburbs, with an underground tunnel under the city centre, but the scheme, along with the later [Picc-Vic tunnel](#) (which would be a conventional [rapid transit](#) line) was abandoned due to cost.^[8] The city eventually developed its own [light rail](#) network, [Manchester Metrolink](#),^[9] of which [one of its lines](#), opened in 2014, now links Manchester Airport to the city centre.

In November 1967, General Electric proposed to construct a SAFEGE monorail from downtown [San Francisco](#) to [San Francisco International Airport](#).^[10] The City of San Francisco studied the proposal, along with an extension of the [Southern Pacific Railroad's Peninsula Commute commuter rail](#) line and an extension of the [BART rapid transit](#) system. The proposal's incompatibility with other rail transit lines, the urban design concerns of an elevated guideway, and potential competitive impact on parallel rapid transit lines, led to its dismissal in favor of a BART extension. Ultimately, SFO was connected to downtown San Francisco via [BART](#).

CRRC Qingdao Sifang introduces Prototype suspended Monorail Train, China

July 26, 2017



Hancheng City suspended overhead Mono-Railway, China

CRRC Qingdao Sifang announced that it had produced a prototype mounted monorail train with a maximum operational speed of 70 km per hour, the fastest of its kind in China. Driven by a permanent magnet motor, the experimental train runs along an overhead monorail.

The train can be composed of three or five train cars, with a passenger transport capacity of 300 and 510 people, respectively. The train has a strong climbing ability with a maximum inclining in an altitude up to 100 meters over a length of 1,000 meters. The mounted monorail system is suitable for passenger transport in mountainous regions and urban areas where road traffic is heavy.

CRRC Qingdao Sifang, based in Qingdao City (Shandong Province, east China), is undertaking China's first overhead monorail project in Hancheng City (Shaanxi Province). The line will have 55 km and runs from the south to the north through the city, providing a link with the airport. The construction of the line began in November last year.

METRO NEWSLETTERS on URBAN MOBILITY

**PUBLIC MULTIMODAL URBAN, SUBURBAN AND
INTERURBAN PASSENGER TRANSIT SYSTEMS
WITH METRO-BUS, LIGHT-RAIL, METRO-RAIL,
REGIONAL RAPID TRANSIT, COMMUTER-RAIL,
ROPE-WAY/TRAIN, WATER-METRO,
AUTOMATED PEOPLE-MOVER**

**TRANSPORTATION AND ECONOMIC
DEVELOPMENTS IN MODERN
URBAN/MEGAPOLIS ENVIROMENT**

METRO Newsletter by Dr. F.A. Wingler
METRO 43, March 2019



Bengaluru Metro-Rail, India

PART I: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS IN INDIA

First Section of Ahmedabad Metro Phase 1 opens; India

Mar. 5, 2019

Written by [Andy Tebay](#)

INDIAN Prime Minister Mr. Narendra Modi opened the first 6.5 km Vastral – Apparel Park section of Ahmedabad Metro Phase 1 on March 4, before taking a ride on one of the driverless trains due to operate on the network.



The 40.03 km Phase 1 includes the 18.87 km, 15 station North-South Corridor from Motera Stadium to APMC and the 21.16 km, 18 station East-West Corridor from Vastral Gam to Thaltej Gam, which meet at the Old High Court Interchange. Phase 1 is due to be completed in 2023.

Construction on the network began in 2015. Four stations and approximately 6.5km of the East-West Corridor between Apparel Park and Old High Court Interchange will be underground, with the rest of the network elevated.

Hyundai Rotem was awarded a contract worth around Won 177.1bn (\$US 157.2m) [to deliver 96 cars for the network](#), including 54 for the East-West Corridor and 42 for the North-South Corridor. Three three-car trains will initially begin operations while the remaining trains will be delivered through to 2020.



Metro-Link Express for Gandhinagar and Ahmedabad (Mega) awarded Siemens [a €76m contract in January to provide electrification systems](#) for Phase 1. In addition to the 750V dc third rail electrification system, Siemens will supply a Scada system to monitor and control traction power.

The union council of ministers [approved for Phase 2 of the Ahmedabad Metro](#) on February 19. Phase 2 comprises the 22.84km section of the North-South Corridor from Motera Stadium to Mahatma Mandir and the 5.6km stretch of the East-West Corridor between Gujarat National Law University and Gujarat International Finance Tec-City (Gift City).

The total cost of the two extensions is Rs 53.84bn (\$US 763.6m).



Ahmedabad Metro opens as Work starts on Phase II; India



05 Mar. 2019

INDIA: The first 6.5 km section of the Ahmedabad metro was inaugurated on March 4 with a ceremony at the eastern terminus at Vastral Gam attended by Prime Minister Narendra Modi and the Chief Minister of Gujarat Vijay Rupani.

The network is being developed by the Gujarat Metro Rail Corp, a special purpose vehicle established in 2014 by the national and state governments to develop a metro network for the neighbouring cities of Ahmedabad and Gandhinagar. Construction of the first phase began in 2015 and is expected to be completed by 2023. The Rs107bn cost is being supported by an Rs60bn soft loan from Japan International Cooperation Agency.

The first phase includes two routes in Ahmedabad which intersect at Old High Court. The 21.2 km east-west Line 1 with 17 stations will run from Vastral Gam to Thaltej Gam, including 6.5 km underground through the city centre. The 18.9 km north-south Line 2 with 15 stations linking the Motera cricket stadium to APMC in Gvaspur will be elevated throughout.

The first section to open is the elevated eastern part of Line 1, between Vastral Gam and Apparel Park, serving six stations. Hyundai Rotem is supplying a fleet of three-car trains which will be based at two depots: Apparel Park on Line 1 and Gvaspur on Line 2.

During his visit, Modi also laid a foundation stone for the second phase of the metro, which had been formally approved by the national government on February 19. This will see the network expanded to Ghandinagar at an estimated cost of Rs53.8bn. Line 2 is to be extended north by 22.8 km from Motera Stadium to the Mahatma Mandir conference centre, while a 5.4 km branch will serve the Ghandinagar National Law University and the Gujarat International Fin-Tech City on the east bank of the Sabarmati River.

Related news

- [03 Jan 2019 - First Ahmedabad metro train delivered](#)
- [27 Jun 2018 - Metro standards committee formed](#)
- [09 Jan 2018 - Siemens to electrify Ahmedabad metro](#)
- [08 Nov 2017 - Hyundai Rotem to supply Ahmedabad metro train fleet](#)
- [08 Nov 2017 - State approves Ahmedabad metro Phase 2 plans](#)
- [21 Jan 2016 - Ahmedabad breaks ground on second metro line](#)

Kanpur Metro Project approved by Cabinet; India

05 Mar. 2019



INDIA: The Kanpur Metro Rail Project was approved by the national cabinet on February 28. Two lines have been authorised, with construction expected to take five years.

One line would run for 23.8 km from the Indian Institute of Technology Kanpur to Naubasta, with 14 elevated and eight underground stations. This line would run through

the heart of the city, serving IIT Kanpur, CSJM University and GSYM Medical College as well as Jhakarkati bus station and Kanpur Central railway station.

The second line would run 8·6 km from Agriculture University to Barra-8, with four elevated and four underground stations. This would improve connectivity in densely populated residential areas including Kakadeo and Govind Nagar.

The metro is expected to help reduce road traffic and associated congestion and pollution, and to cut journey costs and travel times. It would also promote the transit-oriented development of residential and commercial facilities along the corridors.

The stations would be served by a feeder network of bus, and non-motorized last-mile transport. As part of its support for the project, the cabinet has stipulated that urban bus services must be strengthened within one year of the approval of the project.

The project is to be managed by Lucknow Metro Rail Corp, which is owned 50:50 by the national and state governments and is to be renamed Uttar Pradesh Metro Rail Corp.

A detailed study for the project prepared by RITES had been approved by the state government in March 2016 and received government backing two months later. The National Urban Development Minister laid a ceremonial foundation stone on October 4 of that year.

The estimated cost of the project is Rs110·8bn, which is to be financed by the national and state governments on an equal equity basis and through soft loans from international funding agencies. The state government has already allocated Rs1·75bn for the project in the 2019-20 financial year.

Non-fare box revenue would come from rental and advertising as well as value capture from transit-oriented development and transfer of development rights.

Related news

- [06 Mar 2019 - Agra metro to serve Taj Mahal and fort](#)
- [13 Oct 2016 - Kanpur metro foundation stone laid](#)
- [15 Mar 2016 - Kanpur metro approved](#)
-

Agra Metro to serve Taj Mahal and Fort; India

06 Mar. 2019



INDIA: The cabinet has approved the two-line Agra Metro project, which as well serving one of the largest cities in Uttar Pradesh will serve tourist destinations including the Taj Mahal and Agra Fort. Completion is planned in five years at an estimated cost of Rs83·8bn. Line 1 would run for 14·0 km from Sikandra to Taj East Gate, with six elevated and seven underground stations serving destinations including the Taj Mahal, Agra Fort, Raja Ki Mandi station and the medical college.

Line 2 would run 15·4 km from Agra Cantt to Kalindi Vihar, with 14 elevated stations serving Agra Cantt station, Collectorate, Sanjay Place and densely populated residential areas.

There would be interchanges with the railway and bus stations, with feeder networks of motorised and non-motorised last mile transport; as part of its approval the national government has required improvements to local bus services within a year.

The project is to be managed by Uttar Pradesh Metro Rail Corp, which is to be formed by restructuring Lucknow Metro Rail Corp which is owned 50:50 by the national and Uttar Pradesh state governments. The project will be financed by the national and state governments and through soft loans from bilateral and multilateral international funding agencies. The state government has allocated Rs1·75bn for the 2019-20 financial year.

There would be a value capture mechanism to benefit from transit-oriented development and development rights along the metro corridors, and further income would come from rentals and advertising as well as well as fares.

Mumbai Monorail Phase 2 opens; India



INDIA: The second phase of the Mumbai monorail was opened by Devendra Fadnavis, Chief Minister of Maharashtra, on March 3.

The 11.3 km Phase 2 runs from Wadala to Sant Gadge Maharaj Chowk, and is an extension of the 8.3 km Phase 1 from Chembur to Wadala which opened in 2014.

Services operate from 06.00 to 22.00, with a journey time of 30 min for the entire 19.5 km route with 17 stations.

Construction of the monorail has been undertaken by a joint venture of Larsen & Toubro and Scmi Engineering, which supplied the air-conditioned four-car straddle trainsets with a capacity of 560 passengers and a maximum speed of 80 km/h.

In December Mumbai Metropolitan Region Development Authority terminated the joint venture's PPP concession to develop and operate the route and took operations in-house.

- **Mumbai Metropolitan Region Development Authority has awarded a consortium of Datamatics Global Services Ltd and Italian partner AEP Ticketing Solutions a contract to provide automatic fare collection systems for the future metro lines 2A, 2B and 7.**

PART II: ACTIVITIES FOR URBAN MOBILITY SOLUTIONS INTERNATIONAL

Preferred Bidders chosen for Ottawa Light-Rail Stage 2, Canada

Feb. 28, 2019

Written by [Keith Barrow](#)

THE City of Ottawa has selected two consortia as preferred bidders for the Stage 2 expansion of the light rail network in the Canadian capital.



Iris Station on the Confederation Line West Extension; City of Ottawa

[Bangalore orders 42 metro cars from BEML](#)

Feb 28, 2019 | [Fleet](#)

East-West Connectors, a consortium of Kiewit and Vinci, has been chosen to design, build and finance the extension of the Confederation Line 12.5km east from Blair to Trim Road and 15km west from Tunney's Pasture to Moodie Drive and Baseline.

The initial 12.5km section of the [Confederation Line](#) is expected to open in the spring, with the eastern extension due for completion in 2022 and the western extension in 2023.

Stage 1 contractor Rideau Transit Group will maintain both extensions.

TransitNext, a wholly-owned subsidiary of SNC-Lavalin, has been selected as preferred proponent for the design-build-finance-maintain contract for the second phase of the diesel-operated north-south Trillium Line. This involves extending the line south from its current terminus at Greenboro to Riverside South, with a branch from South Keys to Ottawa Macdonald-Cartier International Airport. The project will add 16km and eight stations to the Trillium Line.

As part of the contract TransitNext will maintain the extension for 27 years.

City councillors will review the report on the Stage 2 procurement results on March 6, when a vote on the contract award will also take place.

Although procurement is at an advanced stage, funding for the project is still uncertain.

Earlier this month, the city revealed the anticipated cost of Stage 2 had risen by \$C 1.2bn to \$C 4.66bn. The city will contribute \$C 2.56bn and plans to borrow an extra \$C 700m over the next 30 years to help cover the cost escalation, although this will require changes to the city's debt policy.

The Canadian federal government has allocated \$C1.2bn for the project and the previous administration of the province of Ontario committed \$C 1.2bn to Stage 2 in May 2018. Ontario's Progressive Conservative party leader Mr Doug Ford, who became the provincial premier in June 2018, pledged to support the project during last year's provincial election campaign.

However, despite assurances to Ottawa's mayor Mr Jim Watson, Ontario's contribution to Stage 2 has still not been finalised.

Categories: [Light Rail](#) [News](#) [North America](#)

Work starts on Ho Chi Minh City Metro Line 1, Vietnam

31 Aug. 2012



VIETNAM: Transport Minister Dinh La Thang and representatives from the Japanese embassy attended a groundbreaking ceremony for the future Ho Chi Minh City metro Line 1 on August 28.

Completion is planned for late 2017, with six months of testing and commissioning to be followed by regular services in 2018.

The first 17.1 km elevated section of Line 1 between Ben Thanh Market and Suoi Tien Park with 11 stations is to be designed and built by a consortium of state-owned Civil Engineering Construction Corp No 6 and Japanese firm Sumitomo Corp, under a 15.3tr dong contract signed on May 16.

Separate contracts are to be awarded for a 2.6 km underground section from Ben Thanh Market to Bason Shipyard with three station. A third contract will cover railway systems.

Initial daily ridership is predicted at 186 000 passengers, rising to 620 000 by 2020 and 1 million a day by 2040. Trains will run at up to 110 km/h on the elevated sections and 80 km/h underground, with headways of around 5 to 6 min.

The total cost of Line 1 is estimated at 47tr dong, of which 88% will come from Japanese official development assistance funds.

A total of six metro lines are planned for Ho Chi Minh City. Line 2 is already under construction, and basic designs have been approved for 3A and 3B.

Accessibility and Sustainability at the Heart of Berlin Transport Plan; Germany

01 Mar. 2019



GERMANY: The Senate of the *Land* of Berlin on February 26 issued a 2019-23 transport plan, with accessibility and emissions reduction key components.

As well as the bus, tram, U-Bahn and ferry networks operated by municipal company BVG, the plan also addresses multimodal transport investment and integration with the regional rail and S-Bahn networks. To ensure that long-term planning needs can be assessed 'for the preparation of new rail infrastructure', the plan also makes a series of recommendations looking ahead to 2035.

The plan has been developed in line with the recently adopted Berlin Mobility Act, which sets targets for sustainable transport adoption and is intended to ensure that economic development of the city region occurs in an environmentally conscious manner. This includes elimination of fossil fuels from the city's transport energy mix by the end of 2030.

Key measures include the requirement to specify more space for bicycle accommodation when procuring rail vehicles; adoption of 10 min headway bus, metro and tram routes as a minimum standard; linking property development consent to expansion of public transport provision; and development of a 'comprehensive offering' to serve the Berlin-Brandenburg airport when it opens. 'Flexible' transport options are also to be trialled in areas or times where demand is lower.

In line with existing legislation, the *Land* is required to introduce a fully accessible network by the end of 2022, but the plan recognises that this is unlikely to be achieved in the timeframe of the document. Nevertheless, significant investment is outlined, especially for modifications to bus stops.

- In line with the planning horizon of the transport plan, the Senate announced on February 26 its intention to directly award BVG an operating contract for the city transport network in 2020 when its existing agreement concludes. The new contract would run until 2035.

Mono-Rail guided Bus to Tram Plan confirmed, France

05 Feb. 2016





Centre Monorail guided Rubber tyred electric Bus; Impressions of the light Rail Route by the City Authority of Caen, France

The network would be operated by Keolis under the Twisto brand.

FRANCE: The municipality of Caen has confirmed its intention to develop a three-line light rail network for opening by the end of 2019.

The majority of the tramway would be converted from the existing TVR guided bus network under plans first announced in December 2011, but a feasibility study has suggested that several sections of new rail infrastructure should also be added to better serve local traffic generating hubs and optimise network operation.

Three routes are envisaged:

- T1: Hérouville Saint Clair – Ifs Jean Vilar;
- T2: Campus 2 – Presqu'île;
- T3: Théâtre – Fleury sur Orne.

The network would total 16.8 km with 37 stops. The two most significant sections of new infrastructure are a 2.2 km branch from Théâtre to Presqu'île and a 1 km extension beyond the current terminus of the guided bus at Grace de Dieu to Hauts de l'Orne in Fleury.

Services are expected to run at 3 min headways in peak times on the shared section used by all three routes. A fleet of 23 trams is to be acquired. Total project cost is estimated to be €247m, with work being undertaken by the ASyAS consortium of Artélia, Setec, Attica and Signes under a contract awarded in July 2015.

Berlin orders electric Mercedes Buses; Germany

06 Jul. 2018



GERMANY: Berlin transport operator BVG has ordered 15 Mercedes-Benz Citaro electric buses. Deliveries are due to begin in the first quarter of 2019. Each bus will have ten battery modules which will be charged using a plug-in charger at the depot. The axles will be powered by electric motors near the wheel hubs, and the buses will be fitted with a thermal management system to lower energy consumption

Battery Bus in Service in Hamburg; Germany

16 Nov. 2018



GERMANY: The first of 60 battery electric bus ordered by Hamburger Hochbahn has entered service in Hamburg.

The operator ordered a total of 60 eCitaro buses from Mercedes-Benz, which are to be delivered by the end of 2020. The next three are due to arrive in December.

The buses have capacity for 70 passengers, including 25 seated. The 243 kWh lithium-ion batteries are charged at the depot using plug-in charging and give the bus a 150 km range. The buses are also equipped with regenerative braking.

RNV becomes first Mercedes-Benz Citaro electric Bus Customer Germany

29 Nov. 2017



GERMANY: Rhein-Neckar transport authority RNV and Daimler subsidiary EvoBus have signed a memorandum of understanding for the supply of an unspecified number of electric buses. Daimler says that this will make RNV the launch customer for the new Mercedes-Benz Citaro electric bus.

As part of the agreement, the operator and supplier would exchange information about the performance of the buses in regular passenger operation.

The first vehicles are to be delivered at the end of 2018 from the EvoBus factory in Mannheim. Prototypes are currently undergoing tests, which include winter testing in the Arctic Circle and summer testing in the Sierra Nevada region of Spain.

The buses will be fitted with lithium ion batteries that can be recharged at the depot using plug-in charging or along the route using opportunity charging.

Münster orders more electric Buses; Germany

23 Oct. 2017



GERMANY: VDL Bus & Coach has received a follow-on order to supply five Citea SLF-120 Electric buses to Stadtwerke Münster.

In April 2015 VDL delivered five Citeas Electric to Münster for testing. One was delivered under the Fast Charging Systems for Electric Buses in Public Transport (SEB) programme, subsidised by the Ministry of Education & Research. The other four are part of the Zero Emission Urban Bus System (ZeEUS) project subsidised by the European Commission and co-ordinated by UITP.

Having analysed data from 4.5 million km of operations in Münster, it was decided that the buses from the follow-on order are to have the pantograph for fast charging further forward. The 12 m long buses with capacity for 80 passengers will be equipped with a Siemens central motor and 180 kWh battery pack.

Basel to test electric Bus, Switzerland

31 May. 2018



SWITZERLAND: Basel bus operator BVB is to test a VDL Citea SLFA-181 Electric bus on all its bus routes later this year. The pilot project is intended to give BVB experience of electric bus operation.

The low-floor articulated bus will be 18.1 m long. Its 248 kWh battery pack will be charged in 50 min at the depot using a 450 kW fast charger.

Osnabrück orders electric Buses; Germany

17 Jan. 2018



GERMANY: Stadtwerke Osnabrück announced on January 15 that it had selected VDL Bus & Coach to supply 13 electric buses and charging infrastructure.

The Dutch company will supply its Citeas SLFA Electric 18·1 m articulated buses, with deliveries due to commence in late 2018. These will be put into service on route 41, which would become the first fully electric bus route to run through the city centre.

VDL is also supplying three rapid charging stations — one for each terminus and one for the depot — and 14 depot charging stations.

Electric Buses enter Service in Differdange;Luxembourg

21. June 2017



LUXEMBOURG: The first series-built fully electric buses in Differdange have entered service.

Volvo has supplied four of its 7900 Electric buses to operator Sales-Lentz. These will be used on four routes of between 8 km and 9.5 km. Charging takes place every 25 min at the termini, with two Heliox opportunity charging stations that charge the batteries at 300 kWh for 3 to 6 min. The batteries are fully charged overnight, taking 3 to 4 h.

The 12 m long buses have capacity for 85 passengers. They are equipped with wi-fi and USB charging points.

Explaining the reasons for buying electric buses, Sales-Lentz Technical Director Georges Hilbert said: 'In our opinion, the noise aspect is at least as important as the emissions. It is an industrial city with narrow streets, many one way, and noise is more critical than in a capital city with wide boulevards.'

Sales-Lentz had previously purchased 12 Electric Hybrid buses and 30 Hybrid buses from Volvo, which are used on inter-city routes.

'Full electric was the next logical step after electric-hybrid, ahead in our strategy for sustainable urban mobility', said Sales-Lentz Director Jos Sales. 'We are excited to have done this turn-around in exactly nine months.'

R&D Centre to develop sustainable Buses for smart connected Cities; Canada

05 Mar. 2019



CANADA: Volvo Group company Nova Bus has officially opened a development centre close to its factory at Saint-Eustache in Québec, where it will undertake R&D to support the increased use of electric power for sustainable bus operation.

'Technologies and processes evolve at a very high rate', said Nova Bus Vice-President & General Manager Martin Larose at the inauguration ceremony on March 4. 'With this new development centre, we intend to be at the forefront and to offer sustainable transit solutions that meet the needs of smart connected cities.'

The centre covers 2 050 m² over three floors and has 150 staff.

'These new offices will be a place of excellence in research and innovation, which will foster the continued advancement and development of Nova Bus vehicles', said Louis Côté, Senior Director, New Product Development & Business Transformation.

Sofia orders Metro Trains; Bulgaria

05 Mar. 2019



BULGARIA: Sofia metro operator Metropolitan EAD has ordered a further 10 three-car Inspiro trainsets from a consortium of Newag and Siemens Mobility.

The latest order has been placed using an option on a September 2015 contract covering an initial 20 trains, which are currently being produced at Newag's Nowy Sącz factory. The first was delivered to the Bulgarian capital in June, and one was displayed in Berlin during InnoTrans 2018.

The 30 trains are to be used on Line 3, the first phase of which is expected to open later this year.

The air-conditioned trains for Sofia are based on the Siemens Inspiro fleet supplied to Warszawa, but are fitted with pantographs as the partly-underground Line 3 will have an overhead power supply.

Newag has an increased role in the supply of the Sofia sets, being responsible for design and fitting out of the interiors; and will also undertake servicing during the warranty period.

Dutch start Reconstruction of Amstelveen LRT, Hybrid Tram/Light Metro; Netherlands

Mar. 5, 2019

Written by [Quintus Vosman](#)

THE Amstelveen hybrid tram/light metro line linking Amsterdam South and Amstelveen Westwijk closed on the night of March 2-3 for conversion to a conventional tram line under a €300m project which is due to be completed by the end of 2020.



Conversion of the Amstelveen Tram/light Metro to Tram Operation is underway. Photo: Quintus Vosman

The Amstelveen line opened in 1990 as a hybrid system for operation by conventional trams and light metro trains with through running over the Amsterdam metro network, which necessitated bi-level station platforms. Most of the line follows the central reservation of the Beneluxbaan highway and has many level crossings. Despite traffic lights controlling the level crossings, there have been frequent collisions with road vehicles.

The existing light metro trains are dual voltage to cope with 750V dc third rail metro operation and 600V dc overhead on the tram section south of Amsterdam South. The vehicles also have retractable plates to bridge the gap between the train and station platform at metro stations where the loading gauge is wider than on the tram section. The switch between metro and tram operation at Amsterdam South often resulted in delays, which badly affected the performance and punctuality of other metro lines sharing the same tracks. The vehicles have also become increasingly unreliable due to their age.

Amstelveen Reconstruction

Reconstruction will involve the removal of the high-level platforms, grade separation at three level crossings, the closure of four stations, and the replacement of two adjacent stations with a single tram stop. All station platforms will be 60m long. A tram stabling yard will be constructed at Legmeerpolder, near the terminus at Amstelveen Westwijk.

The rebuilt line will be operated by a fleet of 63 bi-directional 2.4m-wide trams [supplied by CAF](#), Spain, with delivery starting this year and running through to 2022.

The Amsterdam municipality is contributing €225m to the cost of the project, while the Dutch government will provide the remaining €75m.

Uithoorn Extension

The Amstelveen Line will also be extended 4km from Westwijk south to Uithoorn. The extension will follow the route of a former railway, which closed in 1950. Work will start

once the reconstruction of the Amstelveen Line has been completed and is due to finish in 2022 at an estimated cost of €60m.

Kenya acquires DMUs from Mallorca for Nairobi Commuter-Rail Network; Kenya

Mar. 6, 2019

Written by [Keith Barrow](#)

KENYA's Ministry of Transport has reached a Shillings 1.5bn (\$US 15m) agreement with Mallorcan Railway Services (SFM) to acquire 11 DMUs for use by Kenya Railways Corporation (KRC) on the **Nairobi Commuter Rail (NCR)** network.



The metre-gauge Diesel propelled DMUs were rendered surplus to requirements by SFM's electrification programme, which was [completed in January](#).

The first trains are expected to arrive in Kenya in June and the fleet will be used on services from Nairobi Central to Syokimau, Embakasi Village, Thika, Kikuyu and Kitengela.

The acquisition of additional rolling stock is part of KRC's NCR Masterplan, which aims to increase capacity on commuter services in the capital from 13,000 to 132,000 passengers a day by 2022.

Categories: [AfricaFleetNews](#)

Tags: [KenyaNairobi](#)

Nairobi Commuter-Rail Extension opens; Kenya

Nov. 14, 2012

Written by [Shem Oirere](#)

KENYA's President, Mr Mwai Kibaki, officially opened a \$US 4.7m 2.3km extension of the Nairobi – Embakasi line to Syokimau on November 14, which is said to be the first new station built in Kenya for 80 years.



Trackwork was completed jointly by Kenya Railways and Rift Valley Railways, while El Noor Construction built the station.

The new station has lifts and escalators, ticket gates, CCTV, and parking for more than 3000 cars. It is expected to attract about 20,000 passengers a day as it has a wide catchment area and the train journey to Nairobi takes 20 minutes compared with around 90 minutes by road.

The extension is part of the \$US 300m Nairobi Commuter Rail Service project which involves building a further eight stations in the Nairobi area.

Categories: [Africa Commuter Rail News](#)

Tags: [Kenya](#) [Kenya Railway Corporation](#) [Nairobi](#) [Rift Valley Railways RVR](#)

Mallorca Electrification Programme completed; Spain Mallorca

Jan. 10, 2019

Written by [Keith Barrow](#)

MALLORCA marked the completion of a programme to electrify the metre-gauge Mallorca Rail Services (SFM) network on January 8, when the regional president of the Balearic Islands, Mrs Francina Armengol, officially launched electric services on the 31km Enllaç – Manacor line.



The European Regional Development fund covered 50% of the cost of the €32m project and work began in 2017.

The completion of electrification on the Manacor line follows the launch of electric services on the 14km Enllaç – Sa Pobla branch in October 2018.

Electrification of both lines was carried out by a consortium of Siemens, MAN and Sampol. The project included the construction of six 1.5kV dc traction substations, four on the Manacor line and two on the Sa Pobla line.

According to the Balearic Islands government, the completion of electrification will reduce Manacor – Palma journey times by up to eight minutes, in part by eliminating the need for passengers to change between diesel and electric trains at Enllaç.

The switch to electric operation is also expected to cut CO₂ emissions by 60% and reduce operating costs by €1.06m a year.

Categories: [Europe News](#)

Tags: [Electrification](#) [Siemens](#) [Spain](#)