

The Bulletin



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The Bulletin

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SHORT PLATFORMS EXTENDED FOR LONG TRAINS by Bernard Linder (Continued from February, 2017 issue)

At the present time, nearly all platforms are long enough to accommodate the trains that are scheduled to stop there. The exceptions are 145th Street-Lenox Avenue, where doors are opened on only five cars, and the original curved South Ferry station.

The original IND platforms are longer than the 10-car trains, and most are able to accommodate the 11-car trains that were operated in the 1950s. Eleven-car trains were in service on **E** from October 3, 1955 until it was canceled abruptly on September 8, 1958. In the AM rush, ten 11-car trains from Jamaica were laid up in Brooklyn and returned to Jamaica for the PM rush. Eleven-car trains never ran to the Rockaways and they were also operated on **F**, probably between the long **E**s.

We have no information about the length of the original BMT platforms, and we do not know whether they were extended before Unification. A train of eight 67-foot BMT cars was 536 feet long, but a train of ten 60-foot R-type cars that replaced them was 600 feet long. Platforms were extended to 615 feet before the new cars were placed in service, except on the Broadway (Brooklyn), Myrtle Avenue, and Canarsie Lines.

After checking previous *Bulletins*, we were able to compile an incomplete list of the dates that platforms were extended.

February 9, 1964 — Completed Newkirk Avenue (now Newkirk Plaza), Brighton Line
February, 1964—Work in progress, Atlantic Avenue to Newkirk Avenue, Brighton Line
August, 1964—Started work at Avenue H and Neck Road, Brighton Line
September 14, 1964—Avenue M, Avenue U, and Brighton Beach, Brighton Line, in service

October, 1965—Work in progress at Kings Highway, W. 8th Street, and Coney Island, Brighton Line

February, 1972 — Broadway, Fourth Avenue, and West End Line stations nearly completed; work was not started on 8th Avenue, New Utrecht Avenue, 18th Avenue, 20th Avenue, and 86th Street, Sea Beach Line. Platforms at other Sea Beach Line stations were long enough

The following IRT platform extensions, which were omitted from the previous issue, were also listed in the *Bulletin*:

April, 1961 — Livonia Avenue Line platforms were completed; Lexington Avenue Line local platforms from Brooklyn Bridge to 116th Street, Jerome Avenue Line stations, and 149th Street-Grand Concourse and Third Avenue-149th Street stations, White Plains Road Line, were started

February, 1962 — Atlantic Avenue and Nevins Street, Brooklyn Line, were extended. Dyre Avenue Line stations were to be extended

Concrete platforms were gradually replacing wooden platforms. The February, 1968 *Bulletin* informs us that wooden platforms were still in place from Jackson Avenue to 174th Street, White Plains Road Line, and from Dyckman Street to 242nd Street, Broadway Line.

After checking signal plans that were revised before and after Unification, we were able to determine the length of the Manhattan elevated platforms. The 47-foot 7-car trains (except Composites) were able to open all doors or gates if they stopped with their ends extending beyond the short 260-

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FROM RECOGNITION TO DOMINANCE: THE NEW YORK CONNECTING RAILROAD (BRIDGING THE BAY AND CONNECTING THE PIECES)

by George Chiasson
(Continued from February, 2017 issue)

Much like the Pennsylvania, the New York Central's Manhattan trackage was but a small part of a huge railway system that was regional and national in scope, so its electrification was to be limited from the start only to those lines directly feeding into Grand Central (namely the Hudson and Harlem Divisions) and their contiguous commutation zones, with the more conventional method of steam propulsion continuing to be applied beyond New York's outer reaches. In turn this resulted in the construction of two big power generating stations (one at Port Morris in the Bronx, another at Kingsbridge in Yonkers) that fed 11,000 volts of alternating current to several wayside substations at 25 Hz, where in turn it was converted to 660 volts of direct current for the third rail. Also like the Long Island Rail Road, the Central sought to employ trains of electric multiple-unit cars for its local service, and developed a custom-built series of electric locomotives to haul its longer-distance passenger trains through the electrified terminal zone. On September 30, 1906 the first electric motor train (locomotive and coaches) made a special press run along the Hudson Line from the Highbridge station in the Bronx (169th Street) to Grand Central, with scheduled operation then anticipated for a November start-up. Steel MUs were finally placed in local revenue service between these points on December 11, then on the Harlem Line as far as the Wakefield station at the Bronx-Westchester boundary effective January 28, 1907 and to Mount Vernon (West) on February 13. At that time the use of electric locomotives was concurrently started on the through trains traveling both branches, with a motive power change being made for continuance farther north (and vice versa for south) at both Mount Vernon (West) and Highbridge. This operation was briefly suspended after a serious accident between Botanical Garden (i.e. "Bedford Park") and Williamsbridge just three days later that claimed 22 lives and was blamed on a pilot truck design flaw in the otherwise reliable "S" motors. Nevertheless all Harlem Division trains were electrified in operation to Grand Central at the end of that April, with the Hudson Line following suit by July 1, well in advance of the legal mandate.

The operation of Harlem Line locals was finally extended from Mount Vernon (West) to North White Plains in March of 1910 (and there the third rail would end for 74 more years), with the motive power change on the Harlem Line's through trains simultaneously moved to White Plains. On the Hudson Division, through trains to Harmon, Peekskill, Poughkeepsie, and beyond continued to be hauled by "S" motors as far as Highbridge, while local service terminated there until April, 1908,

when both operations were extended to Yonkers. At the same time, the Central began using a temporary side terminal for its electric MU services at Lexington Avenue in Manhattan, set in place to stage some of its operations during the expansive, multi-year construction of the elaborate replacement terminal at Grand Central itself. Local MU service on the Hudson Line was then extended incrementally, with through trains being re-powered by steam at each interim electric terminal as the third rail advanced northward — to Glenwood in 1910 and Tarrytown in 1911. Electrification of the Hudson Division was then completed when the new Grand Central Terminal entered service in early February of 1913, at which time the third rail and local MU service reached Croton (later known as "Croton-North"), while the motive power change for regional and long-distance trains was relocated to its permanent locale at nearby Harmon (née Croton-Harmon), where a huge shop complex was also established.

As can be discerned, the New York, New Haven & Hartford was thus left to its own devices in electrifying its pathway into Grand Central, but had to accomplish this objective in compliance with the New York State mandate while simultaneously working around the New York Central's operational requirements. It was also necessary to factor in its own needs for longer-term corporate growth through the most advanced, economical, and productive means available. Whereas the latter qualities took precedence (and owing to some ongoing legal ramifications at that particular time), the company took immediate and decisive action to pursue a course of dual electrification which involved requisite use of the New York Central's d.c. third rail system inside that portion of its overall route and an overhead catenary system once on its own rails, powered by alternating current (a.c.). To briefly review its prior experience in this domain, the New Haven owned an extensive stable of local streetcar and regional trolley systems across New England, many of which were utilizing overhead wire electrifications from an early date (the first around 1890). In 1895 it tried the use of a similar system with some measure of success on its summer-oriented railway branch to Nantasket Beach and Hull south of Boston, and then implemented a crude form of third rail electrification (coined "rapid transit") on local service concentric to the Hartford area starting in 1896. Neither of these methods were seriously considered as a longer-term, longer-distance solution to the New Haven's quest for total operational efficiency owing to their associated cost and infrastructure requirements, but unin-

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From Recognition to Dominance

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tended consequences of another sort (liability from accidental electrocutions) may have been what irretrievably pushed the company in the direction of a system based on the employment of high-voltage, overhead power distribution.

The New Haven conducted its own independent engineering studies following the May, 1903 New York State enactment of its compulsory electrification legislation, which concluded that a power distribution system similar to that being installed on rapid transit lines and chosen by the Long Island Rail Road would not only be costly but grossly inefficient, with a loss factor of up to 25% between generation from the power house and contact by a moving train. Given the extraordinary horsepower required to replace, if not exceed the operational qualities offered by existing steam locomotion this was especially egregious, so the first conclusion was that it was best to transmit as high a voltage as possible directly from generator to locomotive in a single phase. This eliminated the need for intermediate distribution substations and associated voltage reconfiguration equipment, which thus maximized the effect and minimized the capital cost for the railroad. For their part both General Electric and Westinghouse worked out a complete matrix of options before a specific system was selected, such that the New Haven was able to get an excellent read on what the market would be able to offer along with its optimal results and detailed costs. The latter company was ultimately chosen to implement the electrification in 1905 and immediately commenced an extensive period of testing and experimentation that was intended to translate the ongoing theoretics of engineering into actual railroad operations. Ultimately, it was determined that the most advantageous output would be 11,000 volts of alternating current at a frequency of 25 Hz, based on the capacity of the best available generating equipment at the time, as well as the system's intrinsic commercial value (that is, its relationship with the surrounding electrical grid (such as it then was)) and its standing within the New Haven's existing range of infrastructure assets.

The New Haven electrical system's basis in theory as opposed to reality turned out to be the project's albatross for some months, but as progress was eventually made by trial and error, construction soon followed and by late 1906 a series of steel lattice catenary supports was gradually marching northward, placed at 300-foot intervals from a point just past Woodlawn, where the New Haven merged with the Harlem Line in the Bronx, well into Westchester County. These now-quaint, if not artful trusses (almost all of which survive as visual landmarks in 2017) were erected as such for cost containment purposes as much as engineering considerations, though it was hypothesized that an assembly of riveted steel strips shaped into uprights and cross members could be more flexible under load stress than would a union of rigid steel beams; speculation perhaps based

upon the New Haven's actual experience through the years with trolley wire anchored on plain wooden poles that were exposed to difficult weather environments. Whatever the case, the results were quite straightforward, with feeder lines from the New Haven's generating station at Cos Cob tied into the system at various strategic points through cables that adorned the tops of the catenary towers along with telephone and communication lines. A pair of messenger wires was fastened to the top or bottom cross-truss of each upright (otherwise known as a "bridge") through ceramic insulators, forming a top layer of parallel lines above the track bed, while the actual contact wire, which was also separated by insulators adjusted at a steady elevation and centered to the track at precise locations, was strung beneath the cross-trusses. Early on, that original running "wire" consisted of strengthened copper as was used to power traction interests, but after some apparent softness under load this material was changed to bronze. It was all stabilized by a unique series of "Y-shaped" steel braces which tied the whole system together *between* uprights, binding the twin messenger wires above with the lone contact wire below in the profile of a triangle and thus subscribing to the long-used descriptive of "triangular" catenary. Its composition was the product of extensive testing during those early years, which forced numerous revisions along the way to bear up to the system's natural and operational stresses. Even after reaching 90 years of age in a few locations, it remained capable of withstanding loads in the hundreds of pounds per foot with no lateral movement!

Given its moderate positioning from Grand Central of 33 miles and existing site as junction point for the New Canaan Branch (which was already powered with a simple d.c. trolley system using overhead wire and thus provided an opportunity to secondarily utilize forthcoming assets), Stamford, Connecticut was selected as the most logical end point for the company's initial main line electrification. As installation work was completed, the supports and catenary continued through the layover yard past the station there, which was to be henceforth dedicated for use by electric locomotives and coaches (then later MUs). Empty lattice "bridges" then proceeded for a distance of $\frac{8}{10}$ of a mile as far as the Main Street crossing to provide for the eventual extension of electrified operations even farther to the east. As on the New York Central, the New Haven set out to acquire custom-built electric locomotives with which to tote its strings of coaches, utilizing motors and control systems that were included as part of the overall package of upgrades by Westinghouse. The Baldwin Locomotive Company of Philadelphia had actually been experimenting with electric propulsion in this manner for some years, and was able to supply an initial stock of 35 diminutive "B+B" box-cab type units (class EP-1, delivered 1906), followed by 6 more in 1908 that were slightly modified as based on initial field experience, most obviously a "1+B-B+1" wheel arrangement to mute oscillation at speed. These units included no less than

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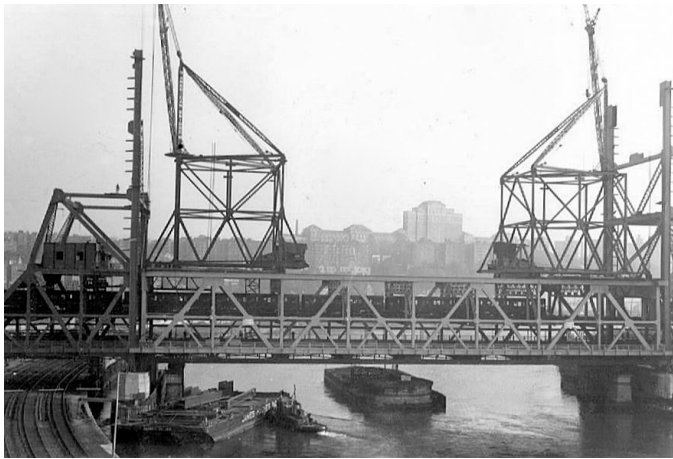
CONTRACT 1 SCENES



Looking south toward second Broadway Bridge from 225th Street station, April 25, 1959.
Bernard Linder photograph



Second Broadway Bridge, looking east, April 25, 1959.
Bernard Linder photograph



Looking east toward third Broadway Bridge under construction, October 11, 1961.
Bernard Linder photograph



238th Street station, Broadway Line, 1957.
Bernard Linder collection



W. 240th Street and Broadway, looking south.
Bernard Linder collection



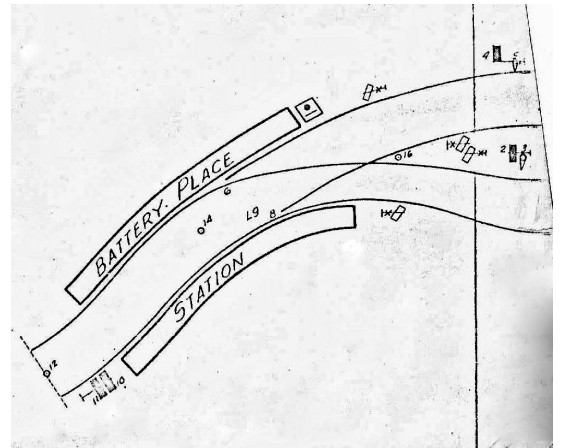
240th Street Yard.
Bernard Linder collection

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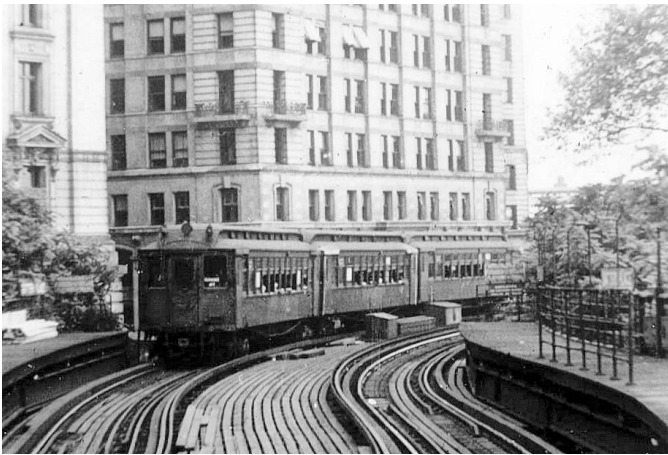
NINTH AVENUE "L" SCENES



South of Battery Place.
Bernard Linder collection



Battery Place station.



Battery Place station, looking south.
Bernard Linder collection



Battery Place station, looking north.
Bernard Linder collection



Rector Street station, looking north.
Bernard Linder collection



110th Street.
Bernard Linder collection

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three different arrays of conductive pick-up devices (a.c. pantographs, d.c. third rail shoes, and a small d.c. pantograph for overhead third rail at interlockings) and were outfitted with a transformer plus associated equipment that enabled them to collect both alternating current on the New Haven's line and direct current on the New York Central. So advanced were they at the time that one was used a basis for the Pennsylvania Railroad's development and testing of its own electric locomotive design in the fall of 1907.

Followed by an extensive period of training, the New York, New Haven & Hartford Railroad at last joined the then-select brotherhood of companies with electrified main line trackage on July 24, 1907, albeit in an imperfect state. At that time its first EP-1-powered coach consists were operated from Grand Central, drawing voltage from the New York Central's d.c. third rail as far as Woodlawn. Once there the units' pantographs were deployed at speed and they began collecting 11,000 volts of alternating current for the remaining 4½ miles to New Rochelle, where a yard and turntable were situated that could support the necessary engine change-outs. This phase of the electrification was applied to as many through trains as there were EP-1s to equip plus 12 locals per day. The local schedule was then expanded to 23 daily runs when the wires were activated as far as Port Chester on August 5 before finally reaching the intended terminal at Stamford on October 6. Some steam-powered through service from points such as New Haven, Boston and Springfield was continued until the New Haven's full stable of EP-1 locomotives was delivered, the last such trains being converted to electrified operation (and drawing all steam operation from Grand Central to a close) on June 27, 1908, just days before the deadline legislated five years previous. All through trains then continued the practice of changing between steam and electric locomotion at Stamford for several years more. The generators at Cos Cob were engineered to simultaneously output single- and three-phase power, the former fed into the catenary, the latter to supply the New Haven's own miscellaneous needs like signals and lighting as well as compensate the New York Central for use of its electrical facilities between Grand Central and Woodlawn. Once relayed to the facility at Port Morris, it could conceivably be returned to their system and converted to d.c. for the third rail.

In 1909 the New Haven took initial delivery of its first ten multiple-unit cars (motors 4020-3 and trailers 4200-5), innovative units from the Standard Steel Car works of Hammond, Indiana that were heavy, expensive, and somewhat anachronistic in that their steel body was laid out like a traditional railway coach, complete with old-fashioned open vestibules. There was more to this story though; their cabin length of 70 feet 10½ inches was lengthy for the time as the known science of steel coach construction went (a trait that yielded a generous seating capacity of 76) while their standard railroad roof was

reinforced for the application of two pantographs and cooling apparatus, while below the cars were built upon beefy steel framing to anchor the control group, transformer, grids, and coolant reservoir (at that time filled with mineral oil) into a compact space between huge trucks. All of this paraphernalia was in support of their biggest wonder: the ability to operate with ease on both the New Haven's high-voltage, alternating current overhead and the New York Central's direct current third rail into Grand Central Terminal. Weighing 84 tons (168,000 pounds) the four initial MU motor cars fielded by the New Haven were among the heaviest of railway coaches constructed. They were equipped with Westinghouse's "HB" control group, a manually-accelerated system that represented a technological twist compared to the automatic systems becoming widespread on LIRR and elsewhere at the time. Each car had four motors from the same supplier that produced up to 150 horsepower each (or 600 hp overall) to enable a maximum of three trailer cars of the six acquired to be matched with each pair of motors, all the while maintaining a maximum speed of about 60 mph to stay on schedule, a task they assumed upon entering revenue service on February 28, 1910. To be sure, the traction motors themselves were primarily engineered for use with a.c. power and received current through a transformer when under wire that took the 11,000-volt feed and stepped it down to the 650 volts required for the motor to function. By design they worked just as well, if not better, when straightforwardly provided with direct current, as the transformer was by-passed entirely. This first order was matched only by another procurement of 16 such MUs in 1912 consisting of 4 cars (4024-7) that were even heavier at 88 tons (176,000 pounds) with a seating capacity of 84 and driven by 175 hp traction motors, plus 10 trailers (4206-15) and 2 combines (4650 and 4651). They were used almost exclusively throughout their service lives on New Haven locals from Grand Central to several points (New Rochelle, Port Chester, and most notably Stamford), as well as an occasional appearance on the Harlem River Branch after its electrification.

Given the swirl of developments surrounding final approval of the New York Connecting Railroad and the imminent opening of Penn Station after 1909, it was incumbent upon the New Haven to step into the breach and establish a solid operating basis for its part of that overall venture. The electrification of its track connections to the Hell Gate Bridge and Pennsylvania Station in its own image were inevitable; such was the only assured means of relaying the trains it would exchange with the Pennsylvania Railroad to their final destinations in an efficient manner, regardless of whatever long-term electrification solution its operating partner might institute at a later date. This sentiment was finally codified in an agreement between the three railroad companies and officials of the New York Connecting Railroad dated October 16, 1912. Equally inevitable was the New Haven's extension of its initial electrification farther east

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into Connecticut, obviously at least to its New Haven terminal area and perhaps beyond. All of this forced the company to continue observing the developments in the science of railway electrification with a great self-interest, such that newer facilities would be improved in function, operation and economy. Its advancements were in no way stemmed or stymied by the 1907 initiation of service to Stamford; the state of the industry was such that the New Haven's proud installation was almost a lesson in obsolescence before it was even activated. In practical terms, the New Haven's starter system proved to be too firm and susceptible to its environment. It had engendered unforeseen trouble with electromagnetic interference to adjacent communication lines, and despite success in its somewhat limited first state of application, was perceived as lacking the inherent ability to support the electrification of much longer track intervals. This was not insignificant considering the hundreds of miles that made up the New Haven's greater system.

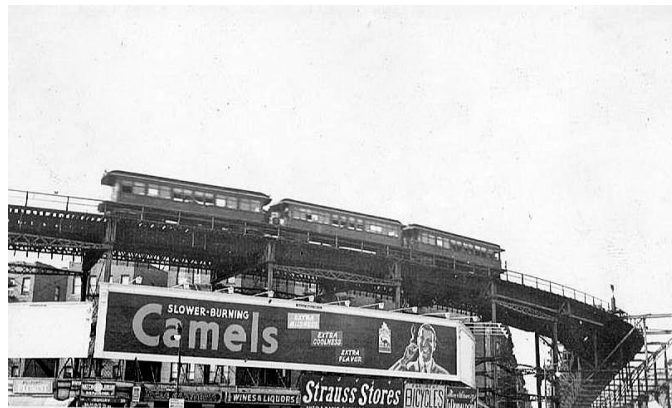
With electrification of the Harlem River Branch as component to the future support of anticipated traffic growth at both the Harlem River Terminal and Penn Station, the company took the next necessary step to transform ongoing theory and experimentation to an even more practical operating application. This would also aid in establishment of the ancillary New York, Westchester & Boston, which was to be similarly outfitted for purposes of system standardization and, taken altogether, provide a springboard for "Phase II" of the New Haven's gradual reinvention of itself as a first-class, electrified

railroad. So it was by the middle of 1911 that an entirely new series of steel lattice towers and associated catenary were raised over all six tracks of the Harlem River Branch as additional, higher voltage generating capacity was installed at the Cos Cob powerhouse, capable of doubling its line output to 22,000 volts. However, in this iteration the power was to be sent to a series of wayside "substations" instead of being fed directly into the catenary as had been done on the initial electrification to Stamford. These substations were not buildings that contained rotary converters in a traditional (d.c.) sense, but rather a bank of automatic transformers which determined the appropriate input for each section, set along the right-of-way with the line divided into several "sections" governed against overloads and outages by "circuit breakers" that were mounted atop certain catenary towers (and denoted by their coolant-filled tanks). In this manner 25 Hz power was re-distributed to the overhead at 11,000 volts or less through an "autotransformer" system, but only in the immediate area of each substation. The New Haven also took steps to guard against the possibility of overburdening its newly-fortified generating capabilities at Cos Cob by "sectionalizing" its output as far as West Farms Junction, where the New York, Westchester & Boston would eventually merge for the rest of its trip to Harlem River. South of that point the branch was to be supplied with the raw 25 Hz, 11,000/22,000-volts fed by the Sherman Creek powerhouse of the United Electric Light & Power Co. (located at 201st Street along the Harlem River) through a 2¼-mile long underground transmission line, with Cos Cob's output only being used as a "parallel" (back-up) resource if required.

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Ninth Avenue "L" Scenes

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110th Street.
Bernard Linder collection

Commuter and Transit Notes

No. 339

by Ronald Yee, James Giovan, and Alexander Ivanoff

METROPOLITAN TRANSPORTATION AUTHORITY

MTA Chairman and Chief Executive Officer Tom Prendergast officially retired on January 31, 2017 and New York State Governor Andrew Cuomo appointed NYC Transit President Ronnie Hakim as interim Chief Executive Officer and MTA Vice Chairman Fernando Ferrer will serve as acting Chairman until a permanent successor can be found. In turn, Ms. Hakim named Darryl C. Irick as acting President of NYC Transit in her absence. (*AM New York*, January 30, 2017; NY1 News, February 1)

The MTA Board approved an agency-wide 3-4% fare and toll increase, which will take effect on March 19. While the base fare of the NYC subways and local buses remains at \$2.75 (the single ride ticket stays at \$3.00), the increase in revenue will come from a lowering of discounts currently offered to purchasers of tickets or fares in bulk. There will only be a 5% bonus for purchases of *MetroCards* valued at \$5.50 and above, effectively raising the cost of each discounted ride from \$2.48 to \$2.62. The cost of a 7-day unlimited *MetroCard* will increase by \$1 to \$32 and the 30-day unlimited *MetroCard* will increase by \$4.50 from \$116.50 to \$121. Express bus fares remain at \$6.50 for a single ride and go from \$5.86 to \$6.19 with the *MetroCard* bonus. Fares on the Long Island Rail Road and Metro-North Railroad are slated to increase between 3 and 4 percent for monthly passes but may go up by as much as 6% for some single ride local tickets due to the need to increase single fare rides in increments of 25 cents. Tolls on the MTA bridges and tunnels will increase from \$5.54 to \$5.76 for New York State E-Z Pass holders and from \$8 to \$8.50 for cash tolls. Verrazano Bridge tolls are double the aforementioned tolls (collected in one direction), although Staten Island residents will see an increase of less than 25 cents. This fare increase is a part of the planned timetable to increase fares, not a result of and labor contract wage increases. (*Long Island Press*, January 26; Second Avenue Sagas, January 29)

MTA LONG ISLAND RAILROAD

At approximately 4 AM on Wednesday, February 8, the last car of a 10-car train deadheading (no passengers aboard) eastbound into Jamaica Station's Track 8 derailed, rendering a portion of that station's tracks and switches out of service. With reduced capacity at this critical LIRR hub, eight of 131 evening peak period trains were cancelled to avoid cascading delays that would have snarled the entire system with delayed and late trains. A 10-14-inch snowstorm that struck the New York City region and hit Long Island as a blizzard on February 9 added to the woes of Long Island's rail commuters as repairs to the damaged track had not yet been completed. (ABC7 News, February 8)

MTA METRO-NORTH RAILROAD

After an eight-year, \$9.4 million study of its options for improving service on the Port Jervis line, Metro-North Railroad has concluded that construction of a midpoint yard in Campbell Hall and three sets of passing sidings will do the trick faster, better, and cheaper than other alternatives.

"Our ultimate aspiration remains a one-seat ride to the city, but until all those pieces (of Amtrak's project to build new rail tunnels to Penn Station) are in place — and many of them are outside our control and years away — this will give our customers the more frequent service they've asked for," said Michael Shiffer, Metro-North's Vice President for Operations Planning and Analysis.

Shiffer and Elisa Van der Linde, the railroad's Assistant Director of Long-Range Planning, said the \$150 million worth of improvements they envision will give Metro-North the yard and track capacity to operate as many as 44 trains to and from Hoboken versus the 27 it fields now.

Assuming that additional funding beyond the \$24 million in the Metropolitan Transportation Authority's 2015-9 capital plan is forthcoming, the improvements could be in place in 2023. The cost estimates are in 2012 dollars and do not yet include any money for more rolling stock.

The planners said the resultant increase in peak, off-peak, and reverse peak trains would come in phases and would primarily benefit the 90 percent of Metro-North's customers who board at Middletown and stations to the east. For them, many of these trains would originate from the new yard in Campbell Hall rather than the old one in Port Jervis.

The remaining 10 percent — fewer than 100 customers — who board at the Port Jervis and Otisville stations would continue to have the same level of service they do now, but it would be spread throughout the day rather than remain clumped at rush hour.

"Some people don't take the train now because the schedule isn't convenient, so we'd be addressing that latent demand," said Shiffer, noting that the demand of today's commuters goes beyond the conventional definition of rush hour.

The railroad's ability to increase service has been constrained because the mostly single-track Port Jervis Line functions as a one-way street, keeping trains from moving in opposite directions at the same time — and forcing them to traipse the entire 95 miles between yards in Port Jervis and Hoboken before they can turn around.

The passing sidings, Van der Linde said, would be constructed within the railroad's right-of-way west of

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Commuter and Transit Notes

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Middletown, east of Salisbury Mills and the Moodna Viaduct, and north of Tuxedo. Each of them would be about two miles in length — and serve as predicates for the eventual double-tracking of the line.

The new yard would be built adjacent to the Campbell Hall station, parallel to the tracks, and be configured to hold as many as five of the Port Jervis Line's current inventory of nine trains — generally defined as a locomotive and eight cars.

Van der Linde said the yard, which has yet to be designed, is likely to be long and narrow, perhaps 3,000 feet by 400 feet, and could require the railroad to acquire some private property beyond its right-of-way.

The 29.5 acres that Metro-North owns along Watkins Road leading to the station is perpendicular to the tracks and thus not suited for the yard but could possibly be used in some support capacity.

The planners also considered the Harriman and Salisbury Mills stations for the midpoint yard, but eliminated Harriman because of its distance from Middletown, and Salisbury Mills because of its residential neighbors, hilly terrain, and wetlands.

"The key factor in the decision was that, with a yard in Campbell Hall, we would only have to deadhead trains six miles back to Middletown to serve riders there," said Van der Linde.

Middletown is the Port Jervis Line's third busiest station, after Harriman and Salisbury Mills. *(Editor's Note by Sasha Ivanoff: As a frequent customer of the Port Jervis Line, I am glad to see an effort is being made to improve service. The line's ridership includes a customer base from not only Orange and Rockland Counties, but also from Ulster & Sullivan counties but also Pike County, Pennsylvania, Sussex County, New Jersey, and possibly further locales. With low parking fees and plenty of spots, ridership from Orange that would traditionally use Beacon will now use Middletown far more often, or switch altogether. While not conceived by the Erie Railroad with passengers in mind, the Graham Line, constructed originally as a low-grade freight rail line, has sort of become New York's own Lackawanna Cutoff, with several sections of 79 MPH MAS (maximum authorized speed) running). (Times Herald Record, February 9)*

NJ TRANSIT

NJ Transit will be releasing a revamped and updated smartphone app that will be compatible with Apple iOS and Android platforms. The new app's home screen is in a "tile" format where users will have quick access to "buttons" that will be larger with functions that will provide timetable, ticket, and other transit information. The app will also have a "Quick Buy" option that will purchase fares at the click of just one button. NJT expects this new app to be made available to the public soon. *(Railpace, February 10)*

AMTRAK

Work is close to complete on a new station and line for the Amtrak Cascades service. Testing has recently begun on a newly upgraded line between Lakewood

and Nisqually. The project is part of a major plan to relocate Amtrak trains off the current BNSF freight rail line along the Puget Sound onto a more inland route that travels close to Interstate 5. The new line will relieve congestion caused by freight rail traffic and will allow for trains to travel at higher speeds. Cascades riders will save an expected 10 minutes when the new route opens for service. A new Amtrak station in downtown Tacoma at the site of the former Milwaukee Road freight house will also be part of the project and will benefit passengers nearby. The project is expected to be finished in Fall, 2017 and two round-trip Amtrak trains will be added to the schedule when the line opens. *(Trains Magazine, February 6)*

The *Hoosier State*, a train operating four times per week linking Indianapolis and Chicago, reverted to utilizing Amtrak locomotives and coaches and on-board service personnel effective March 1. For over a year, equipment and on-board services had been provided by Iowa Pacific, which introduced a vastly improved passenger experience with a full-length dome car, on-board Wi-Fi, and business class seating. An Iowa Pacific press release stated only that the terms of the contract with the Indiana Department of Transportation had turned out to be financially unfavorable. *(Railway Age, January 30)*

INDUSTRY

U.S. freight railroads are projected to spend an estimated \$22 billion in 2017 to upgrade and maintain the nation's private rail network, large investments that the industry believes will strengthen an essential transportation system. "This year's private network spending, a combination of capital expenditures and maintenance, is part of a continued trend of remarkable proportions, including more than \$630 billion since the industry was partially deregulated," remarked AAR President and CEO Edward R. Hamberger. "As the House of Representatives convenes today to discuss a '21st Century Infrastructure' and policymakers continue bipartisan discussions with the Trump administration, we hope these leaders realize how important America's private freight rail network is in moving raw and finished products, supporting the U.S. manufacturing sector, providing a foundation for commuter and passenger rail and lessening deterioration of this country's public infrastructure."

The anticipated \$22 billion in private spending in 2017, which equates to about \$60 million a day, will cover upgraded track and trains, in addition to technological advancements required to meet demand and increase safety. Freight railroads spend approximately six times more of their acquired revenues on capital expenses than the typical U.S. manufacturer. The most updated statistics available show that freight railroads created close to \$274 billion in economic activity, generated nearly \$33 billion in state and federal tax revenues and supported about 1.5 million jobs just in 2014. The freight rail industry has credited a large amount of its ability to spend based on regulatory frameworks enacted nearly

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40 years ago that allowed greater autonomy for business operations. (*Trains Magazine*, February 2)

MISCELLANEOUS

Elaine Chao was confirmed in a 93-6 vote as Secretary of Transportation in the Trump Administration. She had served as Secretary of Labor 2001-9 in the George W. Bush Administration and Deputy Transportation Secretary 1989-91 in the George H.W. Bush Administration and is married to Mitch McConnell, the current Senate majority leader. The almost unanimous vote to confirm her is indicative of support from both Democrats and Republicans, political support vital to forward any of the plans for a massive investment in transportation infrastructure promised by the new administration. It is hoped that rail and mass transit receives a fair share of the federal funding. (*Washington Post*, January 31)

OTHER TRANSIT SYSTEMS**PHILADELPHIA, PENNSYLVANIA**

The next chapter of recent woes to befall SEPTA began over the weekend of February 4, when a routine inspection revealed cracks in the body bolsters of two M-4 class Market-Frankford Line subway cars. Unlike the 2015 Rotem Silverliner V debacle involving cars less than 4 years old, the M-4 class cars have been plying the rails for almost 20 years, so it is uncertain whether this was brought on only after decades of service. Initial inspection reports show a possible pattern as some of the cars that had motor vents welded onto the load-bearing support beam had developed cracks while cars that did not have that weld did not have any cracks. Why cars within the same class are different and whether the welded part is a post-manufacture addition by SEPTA is unclear. Within two days, 108 of the fleet of 218 cars had been inspected and released for service. 58 cars were discovered to have these cracks, resulting in nearly 100 cars being removed from service as the cars are configured in permanently married pairs. As the line requires 144 cars to meet peak period service demands, peak period headways were lengthened with a supplemental bus service operating parallel to the line to make up the shortfall in carrying capacity. Off-peak, evening, and weekend schedules were not affected. As this *Bulletin* goes to press, SEPTA has not provided any details for the repair of these cars and an expectation of when normal service can be restored. (ABC News, February 6)

PITTSBURGH, PENNSYLVANIA

Transit managers at the Port Authority of Allegheny County have approved a seven-year plan to install Wi-Fi hotspots at seven light rail stations around Pittsburgh. The service will be available in stations near Station Square, downtown, and the North Shore region. The Wi-Fi is being installed at no cost to the transit agency and is being provided by Xfinity. It is expected to be online and ready for use in June and will be free of charge. Pittsburgh's light rail network spans 26.2 miles and currently has more than 50 stations. (*Trains Maga-*

zine, February 2)

BALTIMORE, MARYLAND

Maryland Transit Administration and the Maryland Stadium Authority will undertake a \$7.2 million joint venture to rebuild the MARC commuter rail station at Camden Yards. The current structure had been erected as a temporary facility in the late 1980's when Camden Yards stadium was built to house the Baltimore Orioles baseball team. While no definitive plans have been released, it is expected that the new facility will feature a brick structure building to match the motif and theme of the adjacent baseball stadium. The Federal Highway Administration will provide \$6 million as a part of its Transportation Alternatives Program with the state of Maryland contributing \$1.2 million. (*Baltimore Business Journal*, February 7)

WASHINGTON, D.C. AREA

WMATA began retiring its troublesome 4000-series subway cars on February 15. A class of 100 cars built by Breda in 1991, they had been plagued by several chronic mechanical issues resulting in a poor reliability record throughout their service life at WMATA. The latest issue involved the automated train controls, necessitating these cars to be "buried" mid-consist in six- and eight-car trains. With approximately half of the 1976-vintage 1000-series cars already retired, the 4000s were added to the retirement stream earlier than expected in an effort to reduce delays in the system caused by mechanical failures. WMATA intends on retiring all 1000- and 4000-class cars by the end of 2017. (*Progressive Railroading*, February 7)

CHICAGO, ILLINOIS

Construction workers have started renovations on the Chicago Transit Authority's Illinois Medical District station. The facility is located on the agency's Blue Line.

In early February, crews closed the Damen Avenue entrance so that modernization work could begin on the station's main entrance area. Through mid-May, construction workers will make exterior and interior improvements to the station and its concourse area.

The \$23-million project calls for upgrades to the station's appearance as well as improvements to accessibility, lighting, and signage. Crews will also install new security cameras and train tracker display screens. Both of the auxiliary entrances will receive new flooring and wall and ceiling finishes, among other improvements. (*Trains Magazine* via Al Holtz, February 9)

DALLAS, TEXAS

Texas Central promoters say they have secured 30 percent of the land they need so far to build the proposed Dallas to Houston high-speed railroad.

Managers with Texas Central say that there are parcels of land under negotiation in all of the ten counties that the 240-mile train route will pass through between Dallas and Houston. The option agreements provide for 50 percent of the required land in Waller and Grimes Counties, where a mid-point station will be built in an yet-to-be-determined location.

Most of the Texas Central's route will take advantage

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Commuter and Transit Notes*(Continued from page 10)*

of existing utility and railroad corridors. The purchase agreements are progress towards Texas Central's long-stated goal of acquiring the private property needed for the train without invoking the use of eminent domain proceedings. In a news release, rail promoters also said that the encouraging negotiations have inspired them to withdraw 17 lawsuits seeking court orders to allow surveyors onto private property, a prerequisite for eminent domain proceedings.

The possible use of forced land seizure has drawn vocal opposition at the state and local level. Some state legislatures have cast doubt on whether Texas Central meets the legal definition of a railroad — a prerequisite for invoking eminent domain clauses — and several counties have passed legislation making construction difficult without that designation.

"Texas Central withdrew their lawsuits but retained the option to bring the suits back to the court at a later date," Kyle Workman, President of Texans Against High-Speed Rail, says in a statement released in response to the announcement. (*Trains Magazine* via Al Holtz, February 9)

DENVER, COLORADO

Denver Regional Transportation District (RTD) opened a \$867 million, eight-station, 10.5-mile-long extension of the R Line on February 24. It extends the line from the Nine Mile station east then northward along Interstate 225 to the Peoria station on the A Line, which is the commuter line linking Denver International Airport with Denver's Union Station. The local single zone fare on the new line is \$2.60. (Al Holtz, February 1)

SAN FRANCISCO, CALIFORNIA

The San Francisco Municipal Transportation Company received its first of 215 light rail vehicles (LRV) built by Siemens of Sacramento, California on January 13. The testing program is expected to be completed by late Summer, 2017 with the LRVs placed in service afterward. (Al Holtz, January 17)

The new owners of the Napa Valley Wine Train are considering operating a commuter rail service on the same route that carries their famed wine and lunch/dinner tourist trains. In an effort to relieve severe traffic congestion on adjacent Highway 29, a commuter train service could address the issue and provide a viable transportation option for employees and possibly tourists along the corridor between St. Helena and as far south as Vallejo. Based on a rail corridor study performed in 2003, start-up costs would be almost \$139 million with a \$6.9 million annual operating cost. Equipment and funding/subsidy issues abound and must be clearly identified before the concept can move forward. (Napanews.com, January 18)

HONOLULU, HAWAII

A HART (Honolulu Authority for Rapid Transportation) inspector sent to the Hitachi (Breda) railcar manufacturing plant in Italy discovered a flaw in the aluminum beams that could result in fatigue cracking in the car-

body floor structure. While the issue is being addressed, the redesign will likely result in yet another delay to the commencement of railcar testing. (KITV Island News, January 7)

MONTREAL, QUEBEC, CANADA

New trains in Montreal's rail transit system have resumed passenger service after sustaining damage to the contact shoes that supply electricity to the cars, according to CBC Montreal. Societe de Transport de Montreal, the city's transit operator, reported that the new Alstom Azur Metro transit vehicles had experienced mechanical issues on the Orange Line that led to damaged contact shoes. The problem occurred on all twelve of the new railcars and even on some older MR-73 model transit cars. It is believed that the problem was related to lateral movement of the train cars. No additional information was provided by the transit agency, but necessary repairs have been made. (*Trains Magazine*, January 31)

ALBERTA, CANADA

The Canadian Pacific Railway is working in tandem with park officials to attempt to reduce the number of train-related grizzly bear fatalities in rural Alberta, according to the *Canadian Press*. It has been realized that grizzly bears need better travel paths and visibility of railroad tracks so they can stay out of danger. Parks Canada and Canadian Pacific funded a five-year study, which determined that grizzly bears tend to approach the right-of-way by railroad tracks because they are seeking loose grain from passing trains in addition to berries that grow adjacent to sunny sections of the tracks.

Park officials have suggested cutting vegetation along sections of track with low visibility to make it easier for bears to spot and avoid an approaching train. Canadian Pacific will spend \$750,000 over the next three years to take this action in addition to experimenting with flashing lights and sounding alarms to alert bears to oncoming trains in places where they are most likely to graze. The study began back in 2010 after it was found that 1/3 of all bear deaths in Banff National Park were caused by trains along the section of track that passes through it. (*Trains Magazine*, February 1)

GWYNEDD, WALES

Work has begun on a £2 million steam railway station in Gwynedd. The Ffestiniog and Welsh Highland Railway, the longest heritage rail line in the United Kingdom, is responsible for the plan and hopes to increase visitation by up to 5,000 more people every year. The project has been funded through the Welsh government's "Vibrant and Viable Places" program. Work on a water pipe has delayed construction on the project but the new station is anticipated to open in Spring, 2018. (bbc.com, February 5)

MALLORCA, SPAIN

A joint venture of Siemens, MAN, and Sampil has been awarded a €25 million contract to electrify at 1.5 kV d.c. the 31 kilometers of single track between Enllaç and Manacor on the 1,000-millimeter gauge SFM net-

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A REPORT FROM HONG KONG, SINGAPORE, AND KUALA LUMPUR, MALAYSIA by Ron Yee (Photographs by the author)

ERA Commuter and Transit News Co-Editor Ron Yee traveled to Asia during the three weeks leading up to Christmas Day, 2016. He spent 9 days in Hong Kong with side trips to Macau, Guangzhou, Singapore, and Kuala Lumpur. The length of this trip allowed him the time to perform some detailed riding and photographing of the diverse rail transit systems in Hong Kong, Singapore, and Kuala Lumpur. He had visited Hong Kong for a three-day visit in April, 1994 and was eager to see what changes were to be found 22 years later as well as experience the transit scene in Singapore and Kuala Lumpur as a first-time visitor. Feel free to use this as a railfan's guide, should you ever find yourself with an opportunity to travel to this part of the world.

HONG KONG

Much of Hong Kong's MTR subway operation is underground and almost impossible to photograph in a traditional railfan manner. All underground stations are air-conditioned (a welcome luxury in the often hot and humid climate Hong Kong is known for) and are equipped with full-height glass walls and platform doors, making the system a literal horizontal elevator. Fortunately, there are parts of the system that are outdoors with elevated or at-grade stations and rights-of-way offering some photo opportunities as those stations have shoulder-high platform barriers and gates. One such location is at the far western end of the system at Sunny Bay on Lantau Island where the Airport Express (Turquoise), Tung Chung (Orange), and Disney Shuttle (Pink), pass through, stop, or terminate respectively, offering good photo opportunities for the rolling stock of all three lines. The Disney Line operates a specialized fully automated consist of modified Class M cars that shuttles between Sunny Bay station and the Disneyland Resort and features cars with a Mickey Mouse motif, complete with stylized Mickey Mouse windows, deep cushioned sofa seating, and glass enclosed brass statues of Disney characters. West of the Lai King station, the Tsuen Wan (Red) Line operates over an elevated structure and a multi-story parking garage at the Kwai Fong station offers a great vantage point. The Kwai Hing station offers a nice view of the trains emerging out of a covered viaduct built to meet a noise reduction need, much like the Don Valley bridge on the Bloor-Danforth Subway in Toronto, Canada. The Kwun Tung (Green) Line operates on an elevated structure from Kowloon Bay to Lam Tin, the former station being adjacent to the headquarters building of the operating company, MTR.

There are several classes of subway trains in Hong Kong. The car classes can be divided into the following major classes: M Class, first introduced in 1979, built by Metro-Cammell of the United Kingdom spanning the period 1979-97, the oldest cars rebuilt by Goninan start-



Hong Kong MTR Metro-Cammell M Class trains at Kwai Fong, Tsuen Wan Line.

ing in 1998. The A Stock, placed into service in 1998, were built jointly by an Adtranz/CAF consortium, for the Airport Express and Tung Chung (Orange) Lines. The Airport Express consists were built by CAF; the cars have two doors per side and the interior is outfitted with comfortable transverse cushioned seating with luggage stands near the doorways. The Tung Chung trainsets have five doors per side that match the platform doors/gates throughout the regular MTR system and feature the standard longitudinal bench seating configurations. It should also be noted that there is a windowless car on the east or downtown end of all Airport Express consists that is dedicated to carrying checked baggage. MTR's Airport Express offers the option of checking in passenger luggage in the downtown Hong Kong or Kowloon stations before boarding the train to the Airport. MTR's East Line (Light Blue) also carries the through train services to Guangzhou and Shenzhen in the People's Republic of China (PRC) and used to be part of the old Canton-Kowloon Railway Company. MTR has since absorbed this line into its vast network and it is the only line without the platform gates and doors; the Kowloon Tung and Kwai Wai stations offer good photo-ops. If one has the time and knows the schedules of the Shenzhen and Guangzhou services, good photos of those trains can be had. All trains are locomotive-powered; some are bi-level push-pull consists while others are single-level coaches. The oldest car type on this line are the MLR class cars built by Metro-Cammell dating back to 1982 and rebuilt in 2004 by Alstom. In 2001, the SP1900 class, built by a consortium of Kawasaki and Kinki-Sharyo, supplemented this car fleet. An almost identical class, the SP1950, built by the same consorti-

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um in 2004, is assigned to the Ma On Shan Line (Brown) and West Rail Line (Lavender). K Stock, dating back to 2002, were built by Hyundai-Rotem for the Kwun Tong (Green) and Tseung Kwan O (Purple) Lines. In 2011, 22 C class consists became the first Chinese-built railcars ordered by MTR, built by CNR Changchun Railway Vehicles; they serve on the Kwun Tong (Green) and Tsuen Wan (Red) Lines. All classes of MTR trains appear to be made up of cars approximately 75 feet long with five identically spaced doors per side (in NYC Transit terms, the equivalent of R-46s/R-68s with five doors, not four), insuring commonality with the station platform doors system-wide and serving to minimize station dwell times. In 2015, MTR contracted with Chinese car builder CSR Qingdao-Sifang to completely replace all Metro-Cammell equipment system-wide.

A ride on the popular Victoria Peak incline railway/tram was quite scenic, but due to extreme crowds, the trams were impossible to photograph at the base terminal downtown in Hong Kong. However, a great photo opportunity can be had if one rides to the upper terminal platform and remains there until after the crowds exit, leaving an empty platform and unobstructed view of the tram. Hong Kong's famous double-deck streetcars ply the streets of downtown business district as well as the famous neighborhoods of Wan Chai and Causeway Bay, and a branch serves the Happy Valley horse racing track with a two-track terminus. Many photo opportunities abound with every turn of the line. There is a

The light rail vehicle (LRV) fleet is comprised of four car types. The original Phase I cars (1001-70), built in 1988 by Comeng, make up a majority of the car fleet. Initially, these cars had a similar appearance to the LRVs in Melbourne, Australia. They have recently been rebuilt to the aesthetic appearance of the newest LRVs, the Type IV. The 1992 Kawasaki-built Type II LRVs (1071-90 powered LRVs and cars 1201-10 non-powered trailers) have not yet been rebuilt and still retain the original look they shared with the Type Is. In 1997, A. Goninan built the class III LRVs (cars 1091-1110) and resemble the Phase I, II, and IVs except that they have a windscreen flush with the front of the carbody instead of the sloping windshield. Finally, in 2009, the phase IV LRVs (cars 1111-32) were delivered in a totally new paint and decorative scheme.



New Territories Phase I LRV built 1988 by Comeng at Chung Uk Tsuen.



Trams at Central Market.

"Tourist Tram," a modified double-deck tram with the forward portion of the upper deck converted to an open top section affording views upward during a narrated tour. An hour's travel on the MTR rapid transit West Line (Lavender) to Tuen Mun connects one with the New Territories region, an expansion district not far from the border with The People's Republic of China. There, an extensive light rail system serves the local populace.

SINGAPORE

Singapore's MRT (Mass Rapid Transit) system consists of five lines. Two of them, the Green (East-West) and Red (North-South) Lines, draw their power from 750V d.c. under-running third rail and share a pool of cars with a vintage spanning the system's opening in 1987 with C151A class cars built by Kawasaki that have undergone a rebuilding process starting in 2007 (although I did find myself riding in a consist that had what appeared to be the original interior and not yet rebuilt). The Siemens C651 class debuted in 1996, 2000 saw the C751B class from Kawasaki, 2003 the C751A by Alstom, and 2011 the C151A by Kawasaki. The Yellow (Circle) Line operates with fully automated (driverless) Alstom Metropolis trainsets built in 2009 while the other automated third rail Blue (Downtown) Line features brand-new Bombardier Movia C951 class railcars furnished in 2016 and also runs exclusively underground. The Purple (North-East) Line operates totally underground and uses 1500V d.c. overhead catenary as a power source. With full height platform walls and doors to insure rider safety and to also provide fully air-conditioned station platforms in the hot, humid Singapore environment, photographs of the cars on these

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Singapore Green Line C651 and Red Line C751 approaching Jurong East.



Bukit Panjang LRT C801A APM at South View.

lines are impossible for the general public. I did find the time to ride most of the 106-mile, 102-station, standard gauge MRT system and while I was driven around the city by my cousin, who lives there, I observed some of the cut-and-cover dig sites for the 2017 Stage 3 extension of the Blue (Downtown) Line extensions from Chinatown as well as the construction of the future Brown (Thompson-East Coast) Line slated for a 2019 opening.

Singapore also has three light rail systems on the outskirts of the city that act as feeder or collector networks to the rapid transit system. One is the Bukit Panjang (BP-LRT) which is its original mini-system, opened in November, 1999. The 14-station, 7.8-kilometer system located in the northwest corner of Singapore and connecting the Red and Blue Lines, operates with two distinct vehicle types. More of an automated people mover (APM) running on rubber tires on a concrete guideway guided by a steel rail in the middle, the original BP-LRT cars are almost identical to those seen on Miami's MetroMover. The BP-LRT is served by 19 Bombardier Innovia C801-class APM vehicles built in 1999 and supplemented by 13 Bombardier Innovia C801A-class cars delivered in 2014. Both classes of cars can be coupled to make up two-car trains. No mixed consists were observed, so the cars do not appear to be compatible with one another. I was fortunate in catching views of the LRT trains in the stations with open platforms. By the end of 2018, the entire system will be equipped with the ubiquitous platform gates to prevent people from falling onto the trackway. The cars on this line are equipped with one very unique feature, high-tech windows that are electrically triggered to instantly become opaque by trackside "triggers" whenever the cars pass in close proximity to residential apartment buildings, providing a degree of privacy for the residents.

The other two light rail systems are located in the far northeast corner of Singapore: the Punggol LRT (10.3 kilometers and 15 stations, three of which are completed but not yet open pending development of the

planned community there, connecting to the Purple Line at Punggol) and the Sengkang LRT (10.7 kilometers with 14 stations, connecting to the Purple Line at Sengkang) using identical fleets of rubber tired automated "Crystal Mover" people mover cars built in 2003 (class C810) and 2016 (class C810A) by Mitsubishi, serviced by a common maintenance facility and storage yard on the Sengkang LRT. The cars are quite different from the BP LRT in that the car bodies are quite angular and rakish in design, somewhat like the nose treatment of Amtrak's Genesis locomotives. Also designed to be coupled into two-car trains, they run individually during the off-peak periods and look like tiny pods running on an elevated guideway, not unlike Morgantown, West Virginia or Jacksonville, Florida. Incidentally, I had NO issues with railfan photography in Singapore, Hong Kong, or Kuala Lumpur. The cardinal rule was to never step over the yellow line ~18 inches from the platform edge – CCTV monitoring alerts central control and a verbal warning is sent over the public address system of the station.



Punggol LRV departing Sumang station.

KUALA LUMPUR, MALAYSIA

Kuala Lumpur (K-L) is the third of the cities covered

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during this trip. It has a population of over 5 million, a regional population of 8 million, with similarities to New York City in terms of vibrancy and diversity and, like the United States, has a car culture that generates a lot of traffic downtown and is handled by a network of Los Angeles-style freeways once out of the downtown area. It is served by a network of eight rapid transit, commuter, and monorail lines with two more under construction. In short, there are four major systems in K-L, a monorail line connecting the downtown business district and main railway station of "Sentral" with the shopping district, two light rail lines (actually more of a mini-metro rapid transit system called the Sri Petaling and Kelana Jaya Lines) and a "Komuter" commuter railway system running through Sentral station downtown. In June, 2016, the Sri Petaling and Kelana Jaya Lines were extended southward to where the two lines meet at Putra Heights. Like China and Singapore, Kuala Lumpur is on a building spree of new rail transit lines, so I should have plenty of new subject matter if I were to return there in 5-10 years.

K-L Rapid's Kelana Jaya (Red) line is a totally automated (driverless) mini-metro light rail line utilizing 210 cars of the Bombardier Innovia Mark II ART200 class. The Bombardier "ART" (Advanced Rapid Transit) is very



Kuala Lumpur Kelana Jaya Line at Wawasan station.

similar to those operating on NYC's JFK AirTrain and Vancouver's Expo and Millennium Lines utilizing the brand's longer Mark II-series cars. They are configured as either two- or four-car trainsets with an open gangway design between all units of the set. Station annunciator displays inform passengers of the arrival status of the next train and how many cars it has so people know where to queue on the platform for boarding. The first of these cars went into service when the line opened in 1998 with 70 married pair cars. A subsequent order for 35 four-car trainsets were delivered in 2008-10. A railcar refurbishment program is currently underway for the

original 1998 fleet, with many of the cars having gone through the program and emerging in a newer blue and white exterior color scheme and improved seating inside. The un-rebuilt cars have a black and white exterior color scheme like the four-car sets. An order for 56 new cars from Bombardier will introduce the Innovia Metro 300 class to the line (Bombardier has retired its "ART" designation in favor of "Metro.") Interestingly enough, although it is a driverless system, like Vancouver, there are no platform gates. It can only be assumed there is a sophisticated trackway intrusion alerting system to stop a train from running over debris or an errant person who has fallen or trespassed onto the tracks. With exception of the portion through the central business district of Kuala Lumpur, this line runs outdoors and mostly as a concrete elevated, which affords some great photo opportunities. The line has spurred major development around the stations, especially noticeable along the new southern extension, where clusters of brand new residential, educational, office towers, and shopping complexes have sprung up.

Kuala Lumpur's Sri Petaling and Ampang Lines utilize 50 new six-car trainsets manufactured 2015-6 by CSR Zhuzhou of China. It should be noted that these CSR cars are very similar to the new cars on the Buenos Aires Subte' Line A, which featured the famous 100-year-old wooden subway cars until 2011. These cars replaced the original 1996 car fleet of 90 EMUs manufactured by Australia's Walkers Limited. The new six-car trains on this line are run manually with an Operator and apparently have Communication-Based Train Control (CBTC) utilizing transmitting towers similar to that being installed on NYCT's 7 Flushing Line. Like the Kelana Jaya Line, the new southern extension (which is almost exclusively on a two-track concrete elevated) has also spurred a lot of new development surrounding many of



Monorail at Bukit Bintang station.

the new stations. K-L Rapid has a straddle-beam design monorail (Green Line) using SelTrac people mover Rapid Transit cars built as two- or four-car trains operating over an 11-station, five-mile elevated line. Opened in 2003, this line connects the downtown business district

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and main railway station at Sentral with the "Golden Triangle," which includes the Bukit Bintang shopping and tourist district. Originally, the line was equipped with two-car trains built by Scomi Rail of Malaysia utilizing a similar ALWEG technology used in Seattle's monorail. In December, 2014, the first of 12 four-car Scomi-Sutra trains ordered to address the growing ridership was delivered. All 12 sets should have gone into service by the end of 2015, enabling the two-car trains to be withdrawn from service. As of December, 2016, several two-car trains remain in service, indicative that there has been a

delay in completing the delivery of this order. As this line runs through downtown, many photo opportunities can be had of this line.

Rounding out the rail transit scene in Kuala Lumpur are the "Komuter" heavy rail commuter rail lines using 38 sets of six-car, bullet-nosed Class 92 EMUs built in 2011 by CSR Zhuzhou of China and the KLIA Airport Express Line with its dedicated fleet of four-car low-floor EMU consists. Operating out of "Sentral," Kuala Lumpur's equivalent of New York City's Penn Station, the far-reaching Komuter rail system extends north to the tourist attraction of Batu Caves and far south into the government center at PutraJaya, high tech CyberJaya (not kidding about the name, it is their version of our Silicon Valley) and southward to the Airport as well as far down the Klang River Valley.



Petaling Ampang rapid transit line at Bukit Jalil.



2012 Class 92 Komuter train departs Serdang inbound.

Commuter and Transit Notes

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work on Mallorca. Main works are expected to begin in March.

The contract includes the construction of four traction substations, five transformer stations, and a power feed from the island's electricity grid. Sampol will be responsible for modifying the SCADA system that it had previously supplied, as well as other electrical works. (*Railway Gazette*, February 10)

SOUTH KOREA

National operator Korail announced a 269 billion won order for 84 Hyundai Rotem EMU-250 electric multiple-unit cars on December 30, 2016. Deliveries are scheduled by the by the end of 2020.

Derived from the HEMU-430 experimental high-speed design unveiled in 2012, the EMU-250 has distributed traction giving a maximum service speed of 260 kilometers per hour.

Korail plans to use the EMUs on routes with a maximum operating speed of 200 kilometers per hour, including Cheongnyangni-Busan (48), Uijeongbu-Iksan (24), and Icheon-Mungyeong (12). In contrast to the KTX-Sancheon high speed trainsets, the EMU-250 will

be optimized for routes where high passenger capacity and rapid acceleration and braking between relatively closely spaced stations are more important than maximum speed. On December 22, 2016 Korail ordered a pair of eight-car 320 kilometer per hour HEMU trainsets at a cost of 59 billion won. (*Railway Gazette*, January 3, 2017)

CHINA

Ceremonies were held at the new Kunming Nan station on December 28, 2016 to mark the opening for revenue service of the Guiyang-Kunming Passenger-Dedicated Line. The link is the final stage in the 2,252-kilometer Shanghai-Kunming corridor, one of the four east-west and four north-south high speed lines developed under the 2011-5 master plan.

With the eastern part under construction since 2006, and the western section authorized in 2010, the Shanghai-Kunming corridor is now the country's longest east-west high-speed line. It connects the developed east coast to the southwest, traversing the provinces of Zhejiang, Jiangxi, Hunan, Guizhou, and Yunnan.

The route has opened in several phases. Trains began running over the 150 kilometers between Shanghai Hongqiao and Hangzhou Dong in 2009. The Nanchang-

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SWITZERLAND IN THE LATE SUMMER

by Jack May
(Photographs by the author)
(Continued from February, 2017 issue)

The Swiss railway system offers a checked baggage service between most cities for a nominal cost. And we were going to make good use of it on Sunday, as we had planned a very aggressive schedule for the day, aiming to end up in Basel, at the northern tip of the country. Thus we were going to drop our two carry-ons at Brig first thing in the morning and pick them up in Basel at the end of our activities. But gremlins (I think they are called gnomes in Switzerland) got in the way. Our itinerary called for a departure from Brig at 7:58, but on Sundays the station's baggage department doesn't open until 8:00. We hung around the ticket office in the hope that a staff member might come early, but this was Switzerland, and it was a good bet that the door would not be unlocked until 8 on the dot. Thus we were burdened with our bags for the entire day, although we were able to stash them at times in lockers along our route.

Both of us planned to spend a good portion of the day in Lausanne, Clare at one or more of the museums in that lovely city on Lake Lemman (also known as Lake Geneva), and me riding some rail transit. Our first stop though was Aigle, the terminal of three formerly independent interurban lines. In 1999 the three meter-gauge railways, Aigle-Leysin (AL), Aigle-Ollon-Monthey-Champéry (AOMC), and Aigle-Sepey-Les Diablerets (ASD) were merged with the Bex-Villars-Bretaye (BVB), which terminates one station down the line (slightly less than 5 miles) at Bex, into the regional Transports Publics du Chablais (TPC). The weather kept changing as we speeded northward, from drizzle to overcast to sunny and back, but upon our arrival at Aigle at 9:05 (06) it was partly cloudy. The interurban terminal in the station's forecourt had been upgraded since my last trip, and after 2007, instead of the tracks being embedded in pavement, each is now ensconced in groomed ballast alongside parallel canopied platforms containing electronic departure signs. But the basic layout has remained the same, although it is now a little more difficult to negotiate the area for good photographs. But that was not too much of a challenge; it just took longer, as I wanted to avoid scrambling across the tracks.

Clare settled down with the luggage and a book in the SBB (we'll call it CFF as on this day most of our travels were through the French-speaking part of Switzerland) waiting room for our hour's stay, while I observed (and photographed) the comings and goings of the interurban cars, which tend to operate on hourly headways, connecting with CFF regional services in both directions. TPC's official livery, which was applied to the cars of each of the three lines since my last visit, is now a

uniform two-tone lime green and lemon yellow with white trim. In earlier days the colors were: AL - brown and tan, AOMC - red and cream, and ASD - light blue/gray. But the rolling stock is far from being identical, as it reflects each line's historic requirements for negotiating the steep hills on their routes. The AL cars are numbered in the 300s and use the Abt rack system, the 400s of ASD do not encounter any cog-wheel trackage, while AOMC's 500s are equipped with Strub equipment. AL is the shortest of the three lines, with a length of less than 4 miles (although it is the steepest with grades as high as 23 percent), while the two others come in at just under 15 miles long. All three lines serve ski resorts, with AL serving Leysin to the north, ASD running east to Le Diablerets, and AOMC running south and west to Champéry. My first visit to these lines was in March, 1967, on a day off from an intensive week of skiing in Chamonix, France. Clare and I rode the international third rail line to Martigny in the last days of wooden coaches and then a CFF mainline train to Aigle for a great day photographing interurbans in the snow.

On this first trip, all three operations used street trackage to access their mainlines, but now, instead of first going east in pavement and then turning south, AOMC runs directly south from the forecourt, mostly alongside the SBB, where a new car house was built in 2001 to serve all of the lines. The other two still wend their way through the middle of town on single track in the center of parallel traffic-laden two-way streets on either side of Place du Marche. The voltage on AL and ASD has always been 1,500, with AOMC running at 850 volt d.c. Upon their merger the decision was made to raise AOMC's to 1,500 as well, which was planned for 2016 in conjunction with the acquisition of new low-floor cars. In the interim AL and ASD cars run at reduced power to reach the new car house. I have ridden each of the lines on several occasions; my favorite is ASD because of its pleasant scenery and "lighter" (more tram-like) construction.

I chose to take some photographs of the trains away from their terminal platforms and so I had to scurry a bit. At one point, when I saw an old ASD car in the yards, I did cross a track and was admonished by a local passerby. But after I explained what I was doing, the young lady directed me to a cafe on the far side of the terminal, where a number of hand-painted murals depicting interurban cars in mountain settings are on display. So my little bit of trespassing turned out to be fortuitous, as I was able to photograph some attractive rail-oriented artwork. All of the cars in service were painted

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Switzerland in the Late Summer

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in the new tropical color scheme except for one brown AL trailer of a train set that entered the station from the

street just before Clare and I left to resume our journey on the CFF. Miraculously, despite the large number of clouds in the sky, I was able to photograph all the equipment in bright sunlight.



Left and right: These Control Trailer-Motor lashups are outfitted with the Abt rack equipment, the norm for the Aigle-Leysin line. Trailers 361 and 362 were built in 1987, and 363 (not shown) is identical but was constructed in 1993. Matching motors 311-313, respectively, were built in the same years by a consortium of Vevey (ASMV), Swiss Industrial Group (SIG) and Brown Boveri (BBC), prior to the rationalization of the car building industry that saw Stadler and Bombardier acquire the railcar assets of those companies. The left photo shows the TPC's new paint scheme on a train waiting at the station, while the scene at right shows a motor pushing two trailers as it enters the same station on a lazy Sunday morning.



Left and right: Two views of the 400-series cars that run over the former Aigle-Sepey-Diablerets Line. There are four 1987-built motors on the roster, and they are usually paired with control trailers built in 1966 (but not necessarily on this Sunday morning). No longer do they load from the pavement of the forecourt of the CFF (SBB) railway station, but rather from regular railroad station platforms, as shown by the left photo. The view on the right shows operation along Avenue de Loes surrounded by a healthy display of poinsettias. The sky towards the west is threatening, but that weather never reached the eastern end of the Rhone Valley.

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Short Platforms Extended for Long Trains

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foot local platforms. These cars had no center doors and their end doors or gates were always closed. Second and Third Avenue express platforms and Bronx Third Avenue local platforms, which were 350-375 feet long, could accommodate 51-foot, 7-car Composite trains. These trains never carried passengers on Manhattan local tracks.

Battery Place was the most unusual station on the

transit system. The junction of the Sixth Avenue and Ninth Avenue Lines was near the center of the station, about 170 feet north of the south end of the station. Northbound Sixth Avenue and southbound Ninth Avenue trains could have stopped at the curved full-length platforms, but southbound Sixth Avenue and northbound Ninth Avenue trains could open doors or gates on only four cars. We do not know whether passengers had difficulty boarding at the curved platforms and we have included pictures and a signal plan of this complicated junction on pages 5 and 20 of this issue.

Switzerland in the Late Summer

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Left and right: The 500-series cars work the old Aigle-Ollon-Monthey-Chambery Line from the platforms closest to the CFF mainline. Driving trailer 531 from 1986-7 in the left photo is usually hitched to a motor of the matching 501-series, while 591 in the view at right is the precursor of what is to come for TPC's lines. It is a 70-percent low-floor articulated unit, one of two constructed by Stadler for the company in 2001. An updated breed of such cars has begun to appear throughout Switzerland, and in 2016 Stadler cars similar to recent ones built for other properties were to be placed in service in conjunction with AOMC's voltage being raised to 1,500.



The undertaking still maintains some ASD historic cars for the occasional celebratory event and for charter. Former control trailer 34 is shown attached to motor car 1 along the AOMC through tracks and car house lead adjacent to the CFF Rhone Valley mainline. Both units were built by SWS/BBC in 1913. SWS, commonly known as Schlieren for the city in which it was based, was purchased by Schindler in 1960 and closed in 1983. Schindler, known in the United States mainly for its elevators and escalators, sold its railcar (waggon) business to Adranz in 1997.



Mountain interurban operations are shown in murals in the cafe on the far side of Aigle's railway station's forecourt. Having a Feldschlosschen or a Cappuccino with a bite to eat in front of such scenes adds quite a bit of pleasure of to such an occasion. (Or if you are consuming the Swiss drink Rivella, it might even make the experience pleasant.)



Finally, a panoramic view of the forecourt of the Aigle station. Perhaps it should no longer be referred to as the forecourt, but rather as an extension of the CFF mainline station, since it is no longer in pavement and therefore not accessible by rubber-tired transport. From right to left: two AL trailers, an ASD motor, and an AOMC low-floor articulated, all waiting for connecting mainline trains.

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Around New York's Transit System

Arthur Kill Station Opens

As mentioned in last month's issue, Staten Island's new Arthur Kill station opened Saturday morning, January 21. This new station and a 150-car parking lot are located on Arthur Kill Road between Lion Street and Barnard Avenue. All doors of a 4-car train can be opened at the new station, compared with only one door at each of the old stations, Nassau and Atlantic; the Nassau station served primarily the Nassau Smelting Foundry, which closed in the 1980s. Both stations will be demolished.

The new station is compliant with the Americans with Disabilities Act. The northbound and southbound platforms are connected by an overhead structure that is accessible via platform stairways and ramps. Both towers of the structure are covered by canopies and enclosed with windscreens, providing shade and protection from inclement weather. New LED fixtures provide brighter lighting to supplement natural lighting through transparent windscreens.

On an average weekday, more than 16,000 passengers ride the Staten Island Railway, which has 29 miles of track. The MTA 2015-9 Capital Program includes

\$388 million in investments and improvements to the Staten Island Railway. They include replacement of the aging R-44s and three new substations for increased power supply. Capital investments include installing countdown clocks at all stations, track replacement, radio system improvement, and station repairs.

Second Avenue Subway Ridership

NYC Transit data reveals that the ridership levels on the newly opened Second Avenue Subway (SAS) steadily increased during the first month of operation, reaching 155,000 riders on January 27, 2017. Passenger boarding figures on the parallel Lexington Avenue Line (4 5 6) have been significantly reduced, 27% on weekdays with up to a 46% reduction during the morning peak periods between 8 AM and 9 AM compared with January, 2016. Load factors on 4 5 6 have been reduced, achieving one of the initial goals of the Second Avenue Subway, alleviating the overcrowding on the Lexington Avenue Line. (*Editor's Note by Ron Yee: It would also be interesting to review ridership levels on the M15 and M15SBS bus services to determine what if any impacts the Second Avenue Subway had on these East Side bus routes.*)

Commuter and Transit Notes

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Changsha Nan section opened for revenue service in September, 2014, being followed at the end of that year by Hangzhou Dong-Nanchang and Changsha Nan-Xinhuang Xi. The Xinhuang Xi-Guiyang Bei leg was inaugurated in June, 2015. Intermediate stations on the final stage have been provided at Pingba Nan, Anshun Xi, Guanling, Puan, and Panxian in Guizhou Province and at Fuyuan Bei, Qujing Bei, and Songming in Yunnan.

The line has been designed for 350 kilometer per hour operation, with trains initially running at up to 330 kilometers per hour according to China Railway Corporation. The fastest journey time between Shanghai and Kunming has been cut from 34 to 11 hours.

As well as four daily trains in each direction between Shanghai and Kunming, two through trains each way per day are due to be introduced between Kunming Nan and Shenzhen Bei via Guiyang and Guangzhou with effect from the January 5 timetable change. These will cut the end-to-end journey time on this route by 22 hours to around 7 hours.

China already has more than 20,000 kilometers of 350 kilometer per hour and 250 kilometer per hour lines in operation. The current master plan to develop eight north-south and eight east-west corridors is expected to see this figure increase to 45,000 kilometers by 2030, lifting the total national network to more than 150,000 route kilometers.

To connect with the new high-speed hub, located in

the Chenggong district around 20 kilometers south of the city center, a 5.4-kilometer branch of Kunming Metro Line 1 Chunrongjie to Kunming Nan was opened on December 26, 2016; this has intermediate stations at Shijixingzhengzhongxin, Yihelu, and Bailongtan. (*Railway Gazette*, December 28, 2016)

SINGAPORE

The Land Transport Authority has appointed AECOM Singapore and a team of specialist consultants to conduct the advanced engineering study for the complete design of the Singapore section of the future high-speed line to Kuala Lumpur in Malaysia.

The contract includes the provision of architectural, civil engineering, electrical, mechanical, and other design services for the Jurong East terminus, the tunnels, and the bridge across the Straits of Johor.

Announcing the award of the contract on February 8, LTA said the tender process had been "highly competitive." It said AECOM had extensive experience with high-speed rail projects, including planning and design for the Beijing Nan station, the West Kowloon Terminus for Hong Kong's Express Rail Link, and the High-Speed 2 project in the United Kingdom. AECOM Singapore is currently carrying out an engineering consultancy study for the planned Rapid Transit System Link between Singapore and Johor Bahru.

The governments of Singapore and Malaysia expect to complete the Singapore-Kuala Lumpur high-speed line by the end of 2026, with a fastest end-to-end journey time of 90 minutes on the 350-kilometer route. (*Railway Gazette*, February 8)