# The Bulletin

**Electric Railroaders' Association, Incorporated**

Vol. 59, No. 7 July, 2016

**The Bulletin**

Published by the Electric Railroaders' Association, Incorporated, PO Box 3323, New York, New York 10163-3323.

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# 60 YEARS OF SUBWAY SERVICE TO THE ROCKAWAYS
## by Bernard Linder

June 28, 1956 was an important day. Subway trains started operating to the Rockaways. The first trains were the 6:38 PM Rockaway Park and the 6:48 PM B. 25th Street-Wavecrest trains from Euclid Avenue. Rockaway riders were able to enjoy more frequent service and a cheaper ride than the Long Island Rail Road previously provided. But passengers from the mainland leaving Rockaway stations paid an additional fare and passengers boarding at Rockaway stations paid two fares for trips beyond the second zone. For trips within the second zone, passengers paid two fares, received an identification ticket, and got a refund when leaving.

Because of a delay in delivering equipment, power was inadequate and trains operated in series for 3.70 miles between Howard Beach and Broad Channel. The original running time from Euclid Avenue was 44 minutes to B. 25th Street and 40 minutes to Rockaway Park. Less than a month later, July 22, 1956, sufficient power was available and running time was speeded up eight minutes.

During the summer, rush hour (E) trains operated from 179th Street to B. 25th Street (6 trains) and Rockaway Park (6 trains). At other times 4-car shuttles operated from Euclid Avenue to both terminals. Effective September 16, 1956, (A) trains ran between 207th Street and B. 25th Street except during the midnight hours, when shuttles still operated to Euclid Avenue. Six rush hour A trains ran between 207th Street and Rockaway Park while shuttles ran to Euclid Avenue at other times. (A) trains operating between 207th Street and Far Rockaway furnish the longest ride on the transit system, 32.29 miles. Midday express running time is about 99 minutes, but midnight locals take a little longer — 112 minutes.

Long Island Rail Road trains were providing service to the Rockaways long before subway service was extended there. Unfortunately, the railroad trains operated on a wooden trestle where fires occurred frequently. On May 7, 1950, another fire destroyed this trestle and the railroad was unable to spend large sums of money to repair it. To provide service on this busy route, the City of New York decided to buy it. On June 11, 1952, the Rockaway Line was sold to the city for $8.5 million, and the portions still operated by the Long Island Rail Road were leased back to it.

During the transition period, LIRR service was curtailed. Service to Hamilton Beach was reduced after the trestle fire, after which trains terminated at Ozone Park from October 2, 1955 to June 8, 1962. Pursuant to the lease with the City of New York, LIRR operated service over the city-owned portion between Ozone Park and White Pot Junction. The lease was renewed in 1956 and 1959, and expired June 10, 1962. LIRR discontinued operation and the property reverted to the City of New York. After the trestle fire, LIRR trains were rerouted via Valley Stream to Far Rockaway and Rockaway Park. Service was reduced again on October 2, 1955 and all trains terminated at Far Rockaway.

NYC Transit replaced the burned wooden trestle with an embankment built of sand dredged from Jamaica Bay, upon which tracks were supported by steel and concrete pilings. A new signal system was installed,

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**NEXT TRIP: WEEKEND TRIP TO ROCHESTER/CLEVELAND/BUFFALO — OCTOBER 15-17**

# FROM RECOGNITION TO DOMINANCE: THE NEW YORK CONNECTING RAILROAD (BRIDGING THE BAY AND CONNECTING THE PIECES) by George Chiasson (Continued from June, 2016 issue)

## LIRR ON THE CULVER LINE, RELATIONSHIP WITH THE BAY RIDGE BRANCH, AND OTHER RAPID TRANSIT VENTURES

The undeniable mobility movement toward trolleys and elevated trains in the rapidly developing city of Brooklyn eventually drew the Prospect Park & Coney Island to a closer affiliation with Long Island Rail Road through the 1890s, with its outright purchase being consummated on January 24, 1893. Culver's former company had already been operating a healthy chunk of its service into the "Union Depot" at 36th Street & 5th Avenue for some time, being readily supplied with passengers that transferred from the Fifth Avenue "L" above since June 7, 1890. For its first two years (until July 14, 1892) this service was operated in equal partnership with trains of the Brooklyn, Bath & West End Railroad, but after being financially wooed by the South Brooklyn Railroad and Terminal, the cohort company traded interest in the Union Depot for a separate deal to run about half of its trains into the adjacent 39th Street Ferry, which had seen little use for several years. From there patrons could access boats that steamed directly to and from Lower Manhattan instead of being required to navigate the dawdling, uncomfortable "L" system before and after each trip. This indeed proved to be a more attractive alternative and all remaining West End operations (by then operated entirely with electric streetcars) vacated Union Depot in favor of the 39th Street facility on June 29, 1895.

Meanwhile, Corbin was infatuated with the potential line-haul utility that the "L"s could offer, with his favored Culver and Manhattan Beach operations in line to be prime beneficiaries. He joined the Board of the Brooklyn Elevated Railroad Company in 1894 and ultimately influenced his fellow board members to allow a direct, physical connection between the Fifth Avenue "L" and the Culver Line which left the existing structure between 5th and 6th Avenues and ramped to the surface, tying into the "Prospect Park & South Brooklyn R.R." (the connecting trackage that had opened in 1890) as it entered Union Depot. On August 5, 1895 a jointly-operated seasonal service (at least in an administrative sense, the equipment and crews were provided by BER) was inaugurated which originated at the Washington (Sands) Street elevated station next to the Brooklyn Bridge, traversed the Fifth Avenue Elevated to 36th Street, and then took this new ramp connection to the Culver Line. On Gravesend (McDonald) Avenue, between the present-day Foster and Elmwood Avenues, was "Parkville Junction," where a left-hand turn-out had been added to allow these through excursion trains to enter the Bay Ridge Branch, cross above the Brighton Beach Railroad, and proceed onto the Manhattan Beach Branch for their final leg to the shore and its richness of attractions. This special service was offered in addition to LIRR's trains between Bay Ridge and Coney Island, and the Gravesend racing specials out of Long Island City, each of which had been using the Culver Line south of Parkville Junction since 1885 and 1886. It was taken seriously enough to generate the creation of a substantial railroad terminal at Manhattan Beach itself. For whatever reason (we might speculate that Corbin's preferred clientele didn't respond to the availability of through service over the elevated system as he had hoped) this particular routing nevertheless turned out to be a single-season affair upon its conclusion on October 30, with similar, jointly-operated trains consisting of BER equipment and crews sticking to the Culver Line for their whole trip to Coney Island beginning with the 1896 season that May. This was Corbin's final act as far as coordinated service between the Brooklyn "L"s and LIRR was concerned, for he died in an unfortunate accident on June 4. The schedule of existing seasonal specials then stayed the course through the summer of 1897, but by that time the Brooklyn traction empire was in an optimal stage of development and without Corbin to harness it in a fashion directed toward the benefit of his own interests, LIRR's newer, younger management (guided by another New Englander, successor President William H. Baldwin) seemed inclined to acquiesce to the competitive realities and let LIRR withdraw from the local transportation scene over time.

Owing to unfavorable business arrangements with connecting steamboat operators, both LIRR and its Prospect Park & Coney Island affiliate dropped all passenger service from its Bay Ridge terminal to Manhattan Beach and Coney Island (Culver Depot) after the 1897 season ended. Having been significantly enlarged from its original state between 1892 and 1895, trains and boats at the Bay Ridge facility were by then interacting at a newer, larger deep water port at the foot of 65th Street. This included the freight side of operations as well as passenger trains, with LIRR doubled in size at the site relative to the neighboring Sea Beach Railroad. Thereafter, commencing in May, 1898, LIRR trains to Coney Island originated from both Union Depot (nominal) and the newer 39th Street Ferry (seasonal), following the Culver Line for the length of their journeys. By this final season, the Culver Line had a slightly different range of stations than it had possessed ten years

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**From Recognition to Dominance**

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earlier, but still not those which completely resembled the present-day Ⓕ of MTA New York City Transit: City Line Junction (37th Street and 9th Avenue), Fort Hamilton Avenue (Parkway), Kensington Junction (Avenue C), Parkville (Avenue I), Woodlawn (Avenue N), Kings Highway, Gravesend, Van Sicklen, and Culver Depot. Trains from 39th Street Ferry missed the City Line Junction station because at 8th Avenue they were still in the open cut established by the South Brooklyn Railroad and Terminal Company in 1887. On June 16, 1898 a replacement service was also started from 39th Street Ferry to Manhattan Beach via the connection at Parkville Junction, while two days later that season's "joint" (BER) through excursions from Downtown Brooklyn to Coney Island via the Fifth Avenue "L" and the Culver Line were begun, extended on the westward end to Park Row in Manhattan. These specials were powered by steam engine as far as Sands Street, then shunted across the Brooklyn Bridge by motors that were electrically-powered at the terminals and nominally pulled by cable across the East River. All such operational eccentricities came to an end with the summer's conclusion in September, 1898, just as negotiations got underway for the inevitable transfer of the entire Culver operation to the Brooklyn Rapid Transit Company. In April of the following year the remaining steam-powered operations from both Greenwood and Union Depots to Coney Island and Norton's Point were suspended while the entire Culver Line (but not the Fifth Avenue "L") was electrified, its overhead wire intended for use by both trolleys and elevated trains.

Upon assuming custody of the former Prospect Park & Coney Island Railroad property, BRT reopened the Culver Line under its own stewardship on June 17 with rapid transit (i.e. "motor") trains from the Sands Street station (rush hours) or Park Row (non rush hours, using "Bridge" motors) to either Culver Depot or Norton's Point. These were powered by steam locomotives on the 5th Avenue "L," which stayed with the trains at least as far as the connecting ramp between 36th Street on the 5th Avenue "L" and the 8th Avenue surface station, with the changeover point to electrified trackage located next to the 36th Street Shops. There a motor car could assume command for the balance of the journey, if there was one available to lead the consist, with the steam-free operation of all trains occurring for the first time on August 2. Electric surface cars between Greenwood Depot and Coney Island were started on July 10, along with BRT's 1899 edition of its usual summertime special services that graced the Culver Line's rails: steam-powered through excursions from Park Row to Manhattan Beach by way of the 5th Avenue "L," Culver Line, and Parkville Junction to the Manhattan Beach Branch; and electrified trolleys (sometimes "L" trains as well) from the 39th Street Ferry to the Gravesend Race Track for all meets. Conversely LIRR was able to renew two steam-powered special services of its own with concessions to, and cooperation from the BRT: one from 39th Street Ferry to Manhattan Beach, the other from Long Island City to the Gravesend Race Track by way of Parkville Junction. As it separately tried to expand through rapid transit service across the Brooklyn Bridge to Park Row, BRT experienced a number of operational problems with its required modal change. Ergo, the practice of shunting its trains across the Brooklyn Bridge by motor was dropped effective on July 16, with all service *except* for excursion trains to Manhattan (and Brighton) Beach being truncated at Sands Street as a result.

The 5th Avenue "L" itself was first electrified with third rail on August 17, 1899, but these facilities were not similarly used by Culver trains that were so equipped until July 3, 1900. While it was then no longer necessary for them to undergo a change in motive power next to the 36th Street Shops, they were required to switch from third rail operation to overhead wire. After its start-up difficulties, the use of third rail-propelled electric motor trains was also belatedly extended across the Brooklyn Bridge to Park Row on January 21, 1901, though power supply shortages limited its usefulness to off-peak hours only (midday for the Culver Line). Despite this improvement, a mix of steam and electric trains remained on the "L"s and rapid transit surface lines for several more years (as late as 1905) while BRT slowly re-oriented its rolling stock fleet in totality. What is more, the special excursion trains between Park Row and Manhattan Beach were never electrified at all and continued to utilize electric/cable motors across the Brooklyn Bridge until they were ended. It was not until January, 1908 that Park Row at last became a full-time terminus for BRT's Culver, West End, and Brighton rapid transit lines. Both seasonal excursion services to Manhattan Beach (the LIRR from 39th Street Ferry and BRT from Park Row via the 5th Avenue "L" and Parkville Junction) were discontinued following their annual conclusions on October 6, 1902. Consequently, the only Long Island Rail Road trains still rolling along the Culver Line from 1903 onward were its Gravesend Race Track Specials from Long Island City, which lasted until May of 1909, when BRT and LIRR became embroiled in an insurance dispute that ended them, though there were other reasons. Wagering had already long been on treacherous ground by that time; reform politics was growing strong and the specter of harsh state regulation hung in the air for every racing site in New York. That same year the organizers of Gravesend's principal race, the Preakness Stakes, were successful in having that hallmark event brought back to its prior home at Pimlico in Baltimore, thereby further reducing Gravesend's gaming stature. The course was simply closed at the end of that racing season, and so it was that Long Island Railroad operations on the Culver Line came to a final conclusion.

As part of its acquisition of the Culver Line from LIRR, Brooklyn Rapid Transit Company forged an Agreement of Alliance with regard to the future division of operating

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## 60 Years of Subway Service to the Rockaways

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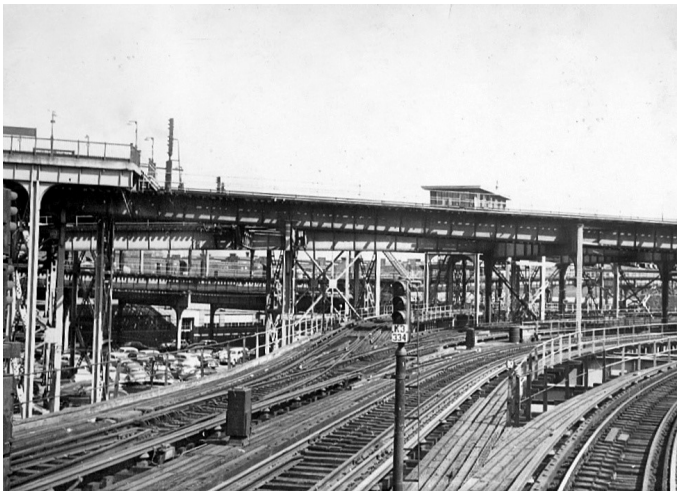
**Manhattan Junction looking toward Fulton Street, May 14, 1913.**
Bernard Linder collection



**Approaching East New York Yard, March 26, 1956.**
Bernard Linder collection

**Crescent Street station, Fulton Street "L," September 4, 1955.**
Bernard Linder collection

**Grant Avenue Tower, Fulton Street "L," April, 1956.**
Bernard Linder collection

**Approaching Rockaway Boulevard station, Liberty Avenue Line, looking west, December 12, 1955.**
Bernard Linder collection

**Looking east from Rockaway Boulevard station, Liberty Avenue Line.**
Bernard Linder collection

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## 60 Years of Subway Service to the Rockaways

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**Train of R-1 to R-9 cars on the Rockaway Line.**
Bernard Linder collection

**HH train of R-1 to R-9 cars on the Rockaway Line.**
Bernard Linder collection

**Train of R-10 cars on the Rockaway Line.**
Bernard Linder collection

**LIRR Hamilton Beach station.**
Bernard Linder collection

**Broad Channel station, May 10, 1969.**
Bernard Linder collection

**Rockaway Park station.**
Bernard Linder collection

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**60 Years of Subway Service to the Rockaways**

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two new bridges were built, and several stations were rebuilt. Also constructed were two tracks connecting the Liberty Avenue Line with the Rockaway Line.

New construction was progressing rapidly and schedules were revised frequently. Two months before the Rockaway Line was opened, work was completed on the extension from Euclid Avenue to Lefferts Boulevard via the Liberty Avenue Line. To operate this through service, a ramp was built connecting the new Grant Avenue station with the 80th Street station. Liberty Avenue platforms were lengthened to accommodate ten-car trains.

The Fulton Street "L" ceased operating on April 27, 1956 and buses replaced trains between the Euclid Avenue and Lefferts Boulevard until April 29, 1956, after which (A) trains ran between 207th Street and Lefferts Boulevard on weekdays and Saturday while shuttles operated between Lefferts Boulevard and Euclid Avenue on Sunday until the Rockaway Line opened.

Another elevated line and the C-Types finally disappeared.

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territories, a treaty which all but embargoed the Long Island Rail Road from any meaningful local transportation role in Brooklyn and also much of Queens, essentially along an imaginary line west of Jamaica, Flushing, and College Point (a situation which largely prevails to the present day). The railroad was, however, able to retain and improve existing local passenger service on the lines it already possessed, and to direct some of its finer clientele to the waning Manhattan Beach resort. The transit company consented to install a fully-electrified link between its Brighton rapid transit line (née Brooklyn, Flatbush & Coney Island) and the Manhattan Beach Branch near Emmons Avenue (governed by Tower 79½), with overhead wire continuing above LIRR trackage to the terminus. Starting July 18, 1899 it was initially used by an electric rapid transit connecting shuttle between the BRT Sheepshead Bay station and the Oriental Hotel, a service which was repeated each summer through the 1902 season. Financial success was relative, as the full force of the Agreement provided for genuine through service from Manhattan if possible. For the 1903 season (May to October) BRT thus switched its entire Brighton Line schedule to terminate at Manhattan Beach, and instead operated the connecting shuttle from Sheepshead Bay to Brighton Beach before evidently giving up on the mass marketability of service to the LIRR terminal altogether. Also eventually emerging from the 1893 Agreement of Alliance was the start of another "joint" (BRT) summer-only through service from Park Row to Manhattan Beach in July of 1899 after the Brighton Line had been physically connected to the former. This time, however, its steam-driven trains followed the Fulton St. "L" after crossing the Brooklyn Bridge, turned onto the Brighton Line at Franklin Avenue, and then took the connection at Tower 79½ to conclude their trips at the Oriental Hotel. Never electrified, this variation was also among those specialties that were dropped after the season concluded on October 6, 1902, being replaced for the summer of 1904 by a single, premium-fare "Parlor Car" on certain Brighton Line rapid transit trains that was cut away (or added) at Sheepshead Bay and forwarded to Manhattan Beach. This practice was then continued annually through October of 1907, by which time the actual "Brighton Line" was closed for reconstruction and its trains were being diverted to the Manhattan Beach Branch in any case. This had come about in March, 1906, at which time the line south of "BRT Junction" (near Avenue H) was equipped with overhead for BRT's needs and the so-called "Sheepshead Bay Junction" reversed for this purpose. The "modern" Brighton Line's 4-track embankment was finally opened along its parallel portion in May of 1908 and the diversion concluded.

As a measure of completeness, similar work had also been undertaken on the other two one-time steam excursion roads on behalf of the developing BRT during this time period. On the West End Line, year-round steam trains had given way to electric streetcars early on, after it was sold to the Atlantic Avenue Railroad in 1893. When it was handed on to BRT in 1898, the West End was found to be unfit for rapid transit use because of deficiencies with the wooden trestle across Coney Island Creek, so its trains were forced to use the Sea Beach Line from Bath Junction (where the two alignments crossed at the present site of MTA New York City Transit's 62nd Street/New Utrecht Avenue interchange between (D) and (N)) to Coney Island. This situation was remedied through replacement of the delinquent bridge by July, 1902 and BRT's elevated trains then became a fixture across the length of the West End Line until 1916, when the current steel elevated structure replaced the original surface alignment. Immediately after its acquisition by BRT, the Sea Beach Railroad was rebuilt for electric streetcars and an unusual sort of "motor train" in time for the summer season of 1898, including that portion adjacent to the Bay Ridge Branch (and was upgraded yet again several years later). With its original steam trains gone, this part of the line never did see true rapid transit service from the Brooklyn "L" system in that era. After the West End Line was made whole, "Sea Beach" cars were integrated with West End trains and only followed their namesake route south of Bath Junction, on a seasonal basis from 1903 to 1907, then full-time until 1913, after which it again was reconfigured as a BRT subway route.

## MUNICIPAL CONSOLIDATION, URBANIZATION. AND THE MANHATTAN BEACH DIVISION

As was all too common in many cities by the late 1890s, electrified urban transit and the power of the

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easy mobility it offered were rapidly transforming the City and soon-to-be Borough of Brooklyn from its roots as a largely agrarian setting to one of the densest and fastest-growing urban locales in all of North America. By all evidence, however, this manifestation was not necessarily beneficial to the Long Island Rail Road so much as it engendered an extensive system of surface cars and rapid transit lines, leaving the pioneering railway in a somewhat isolated state. In the end, while the seemingly infinite map of city streets was gradually filled in during the years preceding the 20th century, the Manhattan Beach Division was increasingly separated from harmony with its native environment. Governmentally, this intense urban development first brought about a virtual doubling in size of the city of Brooklyn, which absorbed the four remaining towns of "outlying" Kings County (New Utrecht, Flatbush, Gravesend, and Flatlands) in 1894, then led to the entire County being adopted by the City of New York as part of the great Municipal Consolidation of 1898. One consequence of the acceleration in sophisticated, external scrutiny and public good will this circumstance induced was creation of the "Atlantic Avenue Commission" in April, 1896, a body that was charged with the task of evaluating the current state of frenzied interplay between the Long Island Rail Road's line across Bedford-Stuyvesant and East New York, each quickly ripening neighborhoods through which its trains rolled, with the aim of developing and implementing a detailed plan of mitigation. By the middle of 1905 this effort had successfully produced the elimination of most grade crossings along the first five miles of the Atlantic Division, effectively converting it to a rapid transit line through the blended use of tunnels, elevated structures, and street separations. It also calmed the (apparently excessive) volume of station stops through eliminations, combinations and relocations.

In the meanwhile, from the perspective of infrastructure, time had virtually stood still along LIRR's Manhattan Beach and Bay Ridge Branches as the months and years passed into the 20th century, with the Kings County countryside through which they were originally laid being ever-consumed by Brooklyn's prolific, non-stop urban expansion. In the summer of 1897 a total of 67 daily trains were arranged to circulate among all corners of the Division (that is, the entire schedule of service to Bay Ridge, Flatbush Avenue, and Long Island City from Manhattan Beach), which was about an all-time high even though ridership had long since hit a plateau relative to the growth of transit alternatives in the precincts it served. Off-season scheduling was approximately half of the summertime quantity, with no passenger service at all on the Bay Ridge Branch after that same season. It is cited, for whatever reason, that four (4) trains per day were reinstituted between 65th Street Ferry and Manhattan Beach for the summer of 1904, but the suspicion (without ready proof) is this may have simply been subterfuge on the part of the railroad to brandish its franchise (and perhaps enhance its construction value) in advance of an even grander level of externally-funded improvements.

Whatever the case, the few changes that did occur on the Manhattan Beach Division at the turn of the century were unanimously carried out in response to its shifting stature from the local transportation resource that it started out as to a tool of mobility that enhanced its regional commercialism. This was clearly reflected by the addition of station stops on the Montauk Division main line at Maspeth (used from 1895 to 1903) and Penny Bridge (starting in 1902), as well as closure of the station at New Lots Road on the Manhattan Beach Division after its annual "winter" use ended in May, 1897. Manhattan Beach service to Flatbush Avenue was gradually discontinued during that line's reconfiguration in advance of the Atlantic Avenue Commission improvements, with local stops on the Atlantic Division at Bedford, Nostrand, Kingston, Troy, and Utica Avenues eliminated in October, 1898, then all such operation abandoned entirely as of October, 1899. Further, the double stop at East New York was erased (if not made a bit more inconvenient) in May of 1899 when operational streamlining enabled Manhattan Beach trains from Long Island City to use only the platform at Fulton Street while those from Brooklyn pulled up only at the Atlantic Avenue location. Also at that time, the station at Flatbush Avenue, known as "Flatlands" more in remembrance of its original site than its current presence, was re-christened "Vandeveer Park." This, we learn, was actually the first "packaged" development of fine Victorian homes in the "Village" (as opposed to Town) of Flatbush, implemented in five phases by Germania Real Estate (with industry-backed financing through the Germania Rail Company) after that concern acquired a portion of the original Vandeveer Farm for this purpose in 1892. In 2016 some isolated Victorian dwellings from this development are still clustered near the intersection of E. 38th Street and Avenue I, on one side of Amersfort Park. Finally, as part of its early process to carve the now-familiar street grid out of the farm fields bordering the Villages of Canarsie and East Flatbush, the nascent five-borough City of New York underwrote a somewhat primitive effort to elevate the tracks of the Manhattan Beach Division in the short distance between Remsen Avenue (a new thoroughfare extension) and Rockaway Avenue (an existing boulevard) during the construction season of 1902. On June 12, this brought about a slight relocation of the Ford's Corners station, which was renamed "Rugby" in reflection of a community that was being mass-developed to form the eastern quarter of what in 2016 is East Flatbush. It was still in the general vicinity of what had been Canarsie Road, as that former Colonial foot path gave way to a more conventional (and numbered) street. There were also grade crossings included along that modified survey for the newly-formed E. 92nd and E. 94th Streets, both raised above the former grade by a few feet. Again to speculate more

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# Commuter and Transit Notes

No. 332

by Ronald Yee and Alexander Ivanoff

**MTA Metro-North Railroad**

Metro-North Railroad announced on June 15 that it accepted an award from the Institute of Electrical and Electronics Engineers for the 1906 electrification of Grand Central Terminal. The award, known as the IEEE Milestone in Electrical Engineering and Computing, is a bronze plaque to be mounted on a wall at Grand Central Terminal. It was presented to Joseph Giulietti, President of Metro-North, by IEEE Past President Dr. Howard Michel at a ceremony at the terminal.

IEEE Milestones are given for revolutionary, historical innovations in fields covered by Institute of Electrical and Electronics Engineers activities, such as electricity, electronics, and information and communication. To earn the commendation, a technology must be recognized to have contributed to the development of society and industries for at least twenty-five years. The purpose of the award is to promote public understanding of technology that has changed our world for the better. As of 2016, more than 160 IEEE Milestones have been approved and dedicated across the globe.

The bronze plaque will placed on a wall at the entrance of Track 32 and inscribed with the citation, "Grand Central Terminal Electrification, 1906-1913."

Grand Central Terminal, in continuous use since 1913, was the first large-scale railroad electrification project, a development that enabled it to become a major railroad terminal. The modernization transformed railroad travel from old steam engines to more efficient, clean electrical power. The design of the terminal included several notable achievements in the field of electric traction, such as innovative designs of electric locomotives, multiple unit (MU) control of electric rolling stock, and the pioneering use of underrunning third rail.

With over 420,000 members in more than 160 countries, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. IEEE publishes a third of the world's technical literature in electrical engineering, computer science, and electronics, and is a leading developer of international standards that underpin many of today's telecommunications, information technology, and power generation products and services. The Milestone Award program is administered through the IEEE History Center. (MTA press release, June 15)

**Industry**

Škoda Transportation, Czech Republic, is to set up a subsidiary company in the United States with a view to selling light rail vehicles and trains in North America.

Škoda Transportation USA will be headed by Scott Ellis, who has been appointed Director of Business Development. Ellis joins Škoda from Kinkisharyo, where he was Manager of Business Development. Prior to that, Ellis worked for Dellner Couplers, Sweden, as North American Sales Manager, and for Voith.

Škoda has supplied trams to Portland and Tacoma and has transferred technology to United Streetcar, United States, to enable it to build trams for Tucson. Škoda Electric has also supplied 330 trolleybuses to Dayton and San Francisco, and is modernizing 32 trolleybuses for Boston. (***Railway Age***, June 14)

**Other Transit Systems**

***Philadelphia, Pennsylvania***

After your author discovered that a bus was operating on SEPTA's Route 15 (Girard Avenue Trolley), he discovered that SEPTA is doing summer-long track work that began on June 5 and will run through September 4. SEPTA forces will excavate, renew, and pave approximately 9,800 feet of track along Girard Avenue between 58th and 60th Streets, Ringgold and 25th Streets, and 9th and Broad Streets. SEPTA states that the reconstruction project is critical in maintaining safe and reliable Route 15 trolley service. Currently, trolley service is also suspended east of the Market-Frankford "L" for I-95 construction, which has been an ongoing project. (SEPTA press release, before June 5)

**Florida**

*Brightline*, the privately funded high-performance passenger rail system currently under development by Florida East Coast Industries subsidiary All Aboard Florida, provides this preview of the locomotive and passenger coaches under construction at the Siemens manufacturing plant in Sacramento, California.

The trainsets are being built by nearly 1,000 employees at the Siemens plant with assistance from suppliers nationwide. The first completed trainset is expected to be delivered to *Brightline* later this year. *Brightline* is scheduled to begin service between Miami, Fort Lauderdale, and West Palm Beach in mid-2017.

At the Siemens facility, *Brightline* revealed its first completed locomotive shell, constructed of carbon steel. The lightweight engine (Cummins QSK95) is certified to meet the ultra-low emissions required by EPA Tier 4 standards, with additional benefits including reduced noise and excellent response.

*Brightline* trains are built as integrated trainsets, comprised of two end-unit locomotives and four stainless steel passenger cars. The trains can be extended to include up to 10 passenger cars as demand warrants.

The *Brightline* trainsets are nothing short of marvelous, and pictures from the Siemens plant show a railcar that has more in common with European equipment than the Amfleets and Superliners that Amtrak riders are used to. *Brightline* has exceeded ADA requirements and is using a high-level configuration. Within the coaches, *Brightline* said it has placed an emphasis on comfort and convenience. Seating is ergonomic with corresponding tables that feature individual retractable trays. Power outlets including USB connections are built into

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seats and in tables (pop-up style units), so that guests will have easy access to power whenever needed. High ceilings and open luggage shelves create a welcoming and inviting ambiance. The bathrooms are "thoughtfully designed," touchless, and welcoming, with innovative conveniences in mind.

*Brightline* will offer a range of seating arrangements in two product offerings, Smart and Select, with specific seating reservations, much like VIA, with different seating arrangements. Riders can choose their configuration based on their travel needs. (***Railway Age***, June 10)

***Detroit, Michigan***

The first of the six streetcars being built for Detroit's QLINE is more than halfway complete.

Several board members of M-1 Rail, the organization charged with building and operating the Detroit streetcar line, got a look on June 13 at the car as it was being built at a factory in Pennsylvania.

The group — Leo Hanifin, Dean Emeritus of the College of Engineering and Science at the University of Detroit Mercy, Laura Trudeau, representing the Kresge Foundation, and Mark Davidoff of Deloitte — toured the Brookville Equipment factory, which is making the cars, according to M-1 Rail spokesman Dan Lijana. The company is producing six streetcars for the QLINE — two are currently under construction — as well as spare parts and support services for $32 million.

Lijana said the group, which included Paul Childs, M-1 Rail's Chief Operating Officer, got to see not only the streetcars being built for Detroit's system under construction on Woodward Avenue, but also a streetcar for the Dallas system in its final assembly. They were thrilled, and "eager to see our car at that stage," Lijana said, noting that the main difference between the two is that Detroit's cars are 6 inches wider.

Despite images showing a streetcar being built, it is still unknown what color scheme will ultimately be chosen for Detroit's system, which is expected to begin operations in 2017. (***Detroit Free Press***, June 13)

***Indianapolis, Indiana***

It has been eight months since Chicago-based Iowa Pacific Holdings took over as operator of the *Hoosier State* train and an executive with the rail line says the partnership is moving along "swimmingly." New numbers released by the state suggest ticket revenue has risen 20 percent and 90 percent of riders in recent months report being very satisfied with the service. The passenger train runs four days a week and is funded through a unique partnership that includes the state and the communities along the Indianapolis-to-Chicago route. In an interview on Inside Indiana Business Television, Hoosier State Sales and Marketing Manager Heather Hice said on-board amenities have taken a step up.

The line was in jeopardy of being scratched altogether after federal funding ran out in 2013. Several attempts, including a failed plan by Chicago-based Corridor Capital LLC to take it over last year, did not materialize until mid-2015 when the state, Iowa Pacific, and Amtrak reached an agreement. Amtrak operates the cars and provides train and engine crews, works with host railroads, and manages tickets and reservations. Iowa Pacific provides train equipment, maintenance and marketing services, and on-board amenities.

In early June, Lieutenant Governor Eric Holcomb and other officials were in Lafayette to showcase the passenger service, which the state says has become one of the one of the Amtrak system's highest-rated. "The renewed Hoosier State is an asset for tourism and transportation," said Holcomb. "Since state and local leaders added Wi-Fi, food service and refurbished heritage train cars nearly a year ago, customer-satisfaction scores, ticket revenue, and on-time performance have all improved. The train includes coach and a new business class. (***Inside Indiana Business***, June 10)

***Kansas City, Missouri***

Kansas City says that ridership of the new street car has far surpassed expectations, and some are already clamoring for a route expansion. The street car has seen roughly 6,000 riders every day since it opened to the public on May 6, according to the city. Currently, the KC Streetcar runs from Union Station to River Market. Some people around the metro are saying it would be much better if it went to the Country Club Plaza. Under a new proposed plan, it would.

The Kansas City Regional Transit Alliance submitted a petition to the Jackson County Circuit Court to consider a new transportation district that would extend the street car route four miles south to UMKC. The expansion would cost $227 million and would be funded the same way the current route is: a 1 percent sales tax within the district boundary and special assessments on businesses within ⅓-mile of the route.

If the court said forming the new district is legal, voters within the area would vote in a series of elections. That could take years. Then Kansas City would need to apply for federal funding and make engineering and design plans.

City leaders, including Mayor Sly James, have always said expansion is in the future. A city-led initiative failed in 2014. This new effort is led by KCRTA.

The court will set a public hearing later in the summer. (KSHB-TV, May 20 and June 9)

***Oklahoma City, Oklahoma***

The State of Oklahoma, virtually bankrupt and cutting practically every service to fill a $1.3 billion deficit despite the state's below average tax structure. Continued service on the *Heartland Flyer* passenger train between Oklahoma City and Fort Worth, Texas, is in danger because costs are rising and state funding is shrinking.

Oklahoma gives the state Department of Transportation $2.85 million a year to help pay for the service, but Oklahoma's annual cost to maintain the Amtrak service is $3.3 million. ODOT has used money from a revolving fund to make up the difference previously, but legislators this year tapped it to help cover a $1.3 billion short-

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**Commuter and Transit Notes**

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fall in Oklahoma's overall budget.

The *Heartland Flyer*'s terminus is the Santa Fe station in downtown Oklahoma City. Edmond, Moore, and Oklahoma City each have pledged funds to continue planning for commuter rail and streetcar lines to meet at the depot. Discussions have also been held about extending service northward.

ODOT officials said they have enough funding to cover the operating costs for another year, but its ability to continue service in fiscal year 2018 remains in question. ODOT will ask Amtrak to reconsider its costs to Oklahoma, especially since Texas transportation officials have said they will not be increasing their $2.5 million annual contribution. Both states are in fiscal straits due to the low energy prices that have affected the rest of the country over the last year. (***Greenfield Reporter*** via Associated Press, June 13)

***Las Vegas, Nevada***

XpressWest, the private U.S. firm proposing to build a high-speed rail link between Las Vegas and Los Angeles, terminated on June 9 a joint venture with Chinese companies less than nine months after the deal was announced, citing delays faced by its partner. XpressWest said the decision to end the relationship stemmed from problems with "timely performance" and challenges that the Chinese companies, grouped under a consortium called China Railway International (CRI), faced "obtaining required authority to proceed with required development activities."

XpressWest was started by Las Vegas developer Marnell Companies. It formed the venture with the Chinese consortium in September, infusing $100 million into the project. XpressWest had expected to break ground as soon as this year on the project, which one analyst estimated to be worth $5 billion.

The announcement is a blow to China, which has built the world's largest high-speed rail network in less than a decade. The XpressWest project was seen as a foothold into a burgeoning U.S. high-speed rail market and an opportunity to showcase China's technology. China's CRRC Corporation, the world's biggest train maker by revenue, joined the consortium in September.

XpressWest chief executive Tony Marnell said in a statement that his company's "ambitions outpace CRI's ability to move the project forward timely and efficiently".

XpressWest said it will now aggressively pursue other development partnerships and options.

The biggest challenge has been a federal funding requirement that high-speed trains be manufactured in the United States, even though no such trains are produced in the country, Marnell said.

XpressWest said it was anticipating the completion of environment work to develop the Southern California portion of the rail line, with environmental approvals expected by September.

XpressWest is one of at least three privately financed high-speed trains proposed to be built in the United States over the next few years. Companies in Texas and Minnesota also plan to tap private cash from investors globally, with help from foreign train makers and governments eager to export train technology. The projects rely primarily on partnerships with Japanese or Chinese firms that face saturated train markets at home. *(Editor's Note from Sasha Ivanoff: This is a significant setback for Las Vegas-to-California rail service, which requires international investment and, in the interim, overseas manufacturing. Unfortunately, for America to have high speed rail, Buy America laws will need to be relaxed for at least a decade. Currently, the United States lacks any realistic high speed rail manufacturing facilities, and it would take years for such facilities to open.)* (***Business Insider*** via Reuters, June 9; KVVU-TV, June 9)

***Rio de Janeiro, Brazil***

Rio de Janeiro Mayor Eduardo Paes inaugurated passenger service on the VLT Carioca tramway on June 5. Service on Phase 1a operates every 30 minutes between noon and 3 PM, serving eight stops between Santos Dumont and Parada dos Museus.

Passenger-carrying tests started on the central section in November. A total of six lines are planned, with a combined length of 28 kilometers and 32 stops. The network is being built by the VLT Carioca consortium of Companhia de Concessoes Rodoviarias, Odebrecht Transport, Invepar, Riopar, BRT, and RATP Dev under a contract awarded in April, 2013. RATP Dev will operate the network for 25 years. Around half of the total project cost of R$1.156 billion is being financed by the federal government and the remainder through a public-private partnership.

Alstom is supplying a fleet of 32 Citadis trams, the first five of which have been produced in La Rochelle, with the rest coming from Alstom's Brazilian factory in Taubaté. The seven-section trams run without overhead electrification using a combination of Alstom's APS ground-level power supply and roof-mounted Citadis Ecopack supercapacitor modules that can store braking energy. (***Railway Gazette***, June 6)

***Mannheim, Germany***

A day of celebrations on June 11 marked the opening of two tram branches in northern Mannheim, with the official start of passenger services the following day.

A groundbreaking ceremony for the Stadtbahn Mannheim Nord extension took place on December 3, 2012. Serving an area with 32,000 inhabitants, the new route is expected to add an extra 1 million passengers a year to the Rhein-Neckar regional network.

Branching off from the existing route at Bonifatiuskirche (formerly Grenadierstraße), the extension runs north along Ulmenweg and Hessische Straße to Hermann-Gutzmann-Schule. The western branch, designated Route 4, runs to Waldfriedhof, while the eastern branch, Route 4A, runs to Käfertaler Wald. There are 13 stops on the 6.4-kilometer alignment.

Service on routes 4 and 4A runx through the center of Mannheim and then across the Rhine to Oggersheim in Ludwigshafen, where interchange is provided with the

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## Commuter and Transit Notes

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Rhein-Haardtbahn to Bad Dürkheim.

Modernization of RHB started in 2014 and was completed this year. Part of the project was to make the stops more accessible, with the introduction of tactile paving and level boarding, as well as "modern and user friendly" ticket machines and real-time running information.

Upgrades to the track, overhead electrification and substations are due to be completed by the end of the year, allowing the maximum speed on the line to be raised from 70 kilometers per hour to 80 kilometers per hour. By 2018 several pedestrian crossings are to be modified to increase safety.

Starting in June, operator RNV has added one extra trip per hour in the peaks, to give a frequency of 20 minutes between Bad Dürkheim and Mannheim Hauptbahnhof. This operates as a limited-stop service designated Route 9. (***Railway Gazette***, June 13)

***Hamburg, Germany***

FWM Fahrzeugwerke Miraustrasse has awarded Vossloh Kiepe a contract to undertake part of the refurbishment of 10 Hamburg U-Bahn DT3 trainsets.

Vossloh Kiepe is responsible for the installation of new on-board converters and control unit, as well as overhauling the master controller. The modernization, being undertaken at FWM's plant in Henningsdorf, also includes overhaul of electronic components, correction of body shell corrosion, and modernization of the passenger area.

Work on the DT3 cars, in operation since 1971, is due to take place between June, 2016 and November, 2017. (***Railway Gazette***, June 13)

***Czech Republic***

The breakthrough of the Czech Republic's longest railway tunnel was celebrated on June 11, when the 115-meter-long Herrenknecht Type S-799 tunnel boring machine Viktorie broke through the southern bore of the 4.15-kilometer twin-bore tunnel under the Chlum and Homolka hills east of Plzeň after 16 months of work.

Boring had officially started on February 3, 2015 after a delay of over a year owing to archaeological surveys. Work on the northern bore will start this autumn.

The tunnel is the main feature of a new 14.1-kilometer alignment between Ejpovice and Plzeň-Doubravka. This will be suitable for speeds of up to 200 kilometers per hour and will cut 6 kilometers from the sinuous route via Chrást, reducing journey times by 9 minutes.

The project forms part of the modernization of the Plzeň-Rokycany section of infrastructure manager SŽDC´s Corridor 3/Praha-Plzeň-Cheb, which will reduce the Praha-Plzeň journey time by half to under an hour. The KC3.9 billion project is being carried out by a consortium of Metrostav and Subterra and is co-funded from the EU Cohesion Fund, with completion planned for mid-2018. (***Railway Gazette***, June 15)

***Poland***

City transport authority MPK Wrocław has placed an 11.5 million złoty order with Modertrans for an additional three Moderus Beta partly low-floor trams, to be delivered in 2017.

Last year MPK Wrocław placed a 23 million złoty order with Modertrans for six unidirectional trams, with an option for another 16. Options for the remaining 13 trams can be exercised up to the end of 2017.

*In addition to the 6 trams for Wrocław, Modertrans has recently delivered 24 Moderus Beta trams to MPK Poznań, 12 bidirectional variants to Tramwaje Śląskie, and two self-assembly kits for Tramwaje Szczecińskie. (**Railway Gazette**, June 13)*

***Jiaozuo, China***

China's top economic planner, the National Development and Reform Commission, has given the go-ahead for a high-speed line linking Jiaozuo, near Zhengzhou in Henan province, with Taiyuan, the provincial capital of neighboring Shanxi.

The 362-kilometer line will be designed for 250-kilometer-per-hour operation and construction is expected to take four-and-a-half years to complete.

The total cost of the project is Yuan 43.1 billion (US$6.5 billion), including Yuan 3.4 billion for a fleet of high-speed trains. The Shanxi provincial government will contribute Yuan 12.3 billion, with Yuan 1.2 billion coming from the Henan provincial government and Yuan 8.5 billion from China Railway Corporation.

**Correction**

On page 14 of last month's issue, we mentioned that Market Street Railway has a fleet of 60 historic vehicles in San Francisco. Actually, the vehicles belong to Muni. Market Street Railway supports Muni in its day-to-day historic streetcar operations in terms of promoting the service, doing some restoration work on vehicles that is not done by Muni, and acquiring additional historic streetcars and buses for eventual restoration and use by Muni. It makes suggestions to Muni to improve the service. But it does not actually provide the service, although many Muni employees are members of, and active supporters of, MSR, with some even donating their time in the restoration effort. Thanks to member Peter Ehrlich for the correction.

## Around New York's Transit System

*(Continued from page 14)*

*from 42nd Street to Broad Channel to my beach spot at B. 92nd Street. While I wonder how turning the shuttle will work, I think this is a great idea, keeping in mind* Ⓐ*'s unusual routing as the line has the two southern terminals at Far Rockaway and Lefferts Boulevard.*

**Wi-Fi Test Cars**

NYCT's Wi-Fi contractor, Transit Wireless, installed Wi-Fi test equipment on an Ⓔ train. The consist, R-160s 9563-4-5-6-7/9467-6-5-4-3, was to be tested in May, with the cars running 24 hours a day, 7 days a week.

# TOUR OF TURKEY
# by Jack May
# (Continued from June, 2016 issue)
# (Photographs by the author)

With an 11:30 departure time from Antalya's nearby airport we had a leisurely breakfast and then checked out of the Déjà Vu. Our car was again positioned for a quick getaway (I wonder how the hotel accomplishes that all the time). It was a little confusing at the airport, as there were two terminals, and it took us a while to figure out that one was for charter flights and did not have an active auto rental section. But we finally found Avis and were able to drop the car. Despite pointing out the scratched trunk and confessing to our lack of rental agreement papers, we were treated courteously and then never heard another word.

Our flight was on Anadolu Jet, the low-priced airline that advertised on the side of one of the ex-Jena single-truckers in Istanbul. We occupied two aisle seats opposite each other aboard a Boeing 737 that was only about 60 percent full and were treated to a choice of sandwich or cake, with coffee, tea, or water. Our jet pulled away from the gate at 11:27 (11:30) and we were in the air by 11:37, landing in Ankara at 12:20 and reaching the gate at 12:26 (12:35), a little under ten minutes early. It was a smooth and uneventful flight. We rode the airport bus to its terminal near the railroad station, and a taxi whisked us to the Hotel Etap Mola, in the heart of downtown.

After freshening up in our room, we were out the door by 14:00, as we had planned for only a half-day in Turkey's capital, Ankara. We had been here in 2001, and we both wanted to go back and do certain things again. For Clare that meant the archaeology museum, which is considered one of the world's best, and for me it meant riding and photographing Ankara's two Metro lines. I would skip the static steam railroad museum at the railroad station this time.

Ankara has a population of over 4 million with a growing third-rail-powered rapid transit system. First to open was Ankaray, a turnkey light Metro built in 1996 by Siemens. Thirty-three cars serve the 5.3-mile-long route. All but one of the 11 stations are underground, which makes Emek the only place to get daylight photos.

The signs and stations are painted green, as opposed to red for those of the "Metro," which connects with Ankaray at Kizilay in the heart of downtown. The 9.2-mile-long Metro was opened in 1997 and is especially notable for the large size of its rolling stock. In fact, on seeing the equipment, a well-traveled traction enthusiast might think he is in Toronto. The 108 cars on the line were built by Bombardier (Hawker Siddeley) in Thunder Bay, Ontario to the same design as Toronto's H-class subway cars, including the brushed aluminum exteriors, which in this case are offset by a thick orange stripe. In addition to a long underground section, the line also operates on elevated structures and at grade. Although there are pieces of infrastructure in the way when trying to shoot photos from the ends of the covered stations, it is easy to get pictures from the street and from the rail-fan window at the head end of each train (the latter only if you can outrace children and other adults to that prized location).

There is also a good covered overpass on the line, but I had to stand on my tippy toes to shoot over its solid barrier. A bunch of scruffy-looking teen-aged boys were smoking and hanging out on the overpass when I reached my photo spot, and I was a bit worried as I waited for a train to come. Eventually one of them approached me and asked me something in Turkish. I replied I was an American and did not understand their language. They responded in English, asking me questions about what I was doing there. They turned out to be a nice bunch of kids and we spoke about their plans for college. You never know.

Anyway, I rode the entire system and obtained a few good shots before the lengthening shadows told me it was time to get back downtown. Clare had just returned from her museum jaunt and we decided to eat in the hotel. The dining room was packed with teenaged kids of all sizes and shapes. Asking about them, we found out there was an international badminton (!) competition in Ankara, and that representatives of many nearby countries, in Asia and the former Soviet Union, were present, accompanied by chaperones. The dinner was just OK, exactly what one would expect from a hotel.

*(Editor's Note: This was written in 2011. The Ankara Metro was extended in 2014 on both ends, for a further 20 miles and 22 stations (11 on each end).)*

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**From Recognition to Dominance**

*(Continued from page 7)*

than 110 years later, this piece of the line might have taken some precedence because it was straight and level—ideal for developing construction methods that could later be applied on a previously-unimagined scale.

*(Continued next issue)*

## Tour of Turkey

*(Continued from page 12)*

*There are two independent, high-platform metro operations in Turkey's capital. One of these is Ankaray, which runs for 5.3 miles and opened in 1997.*

**Two views of the Siemens-built rolling stock used on the Ankaray Metro, taken from the Emek station, the only one above ground.**

*The second metro is called—the Metro. It is 9.2 miles long and uses Bombardier (Hawker Siddeley)-built cars very reminiscent of Toronto's H-class.*


**The Metro line is decorated in red, and stylized "M's" are prominently displayed at all station entrances. (Similarly, Ankaray's color is green and it has green "A's" at entrances.)**

**A westbound Metro train approaches the Hastane station, passing a parallel cable-stayed bridge. Note the overpass in the background.**

**A view of a westbound Metro train from the pedestrian overpass shown in the middle right photo.**

**An outbound Ankara metro train has just left the Demetevler station, as viewed from the railfan window in the front of a passing train.**

*(Continued next issue)*

# Around New York's Transit System

**Two Shuttles to be Expanded**

Two of NYC Transit's shuttles are getting expanded, one of them being for the summer season, the other permanently at an unannounced date.

New York City Transit on June 16 announced it will extend late-night (R) service to lower Manhattan in order to improve subway connectivity for customers traveling between Manhattan and the southwestern end of Brooklyn.

Late-night (R) service currently operates as a shuttle between Bay Ridge-95th Street and 36th Street in Brooklyn. Customers coming from Bay Ridge and Sunset Park must transfer between the (R) shuttle and (D)(N) trains in order to travel to other parts of Brooklyn and Manhattan. The proposed service extension would shift the northern final stop of the late-night (R) shuttle from 36th Street to Whitehall Street-South Ferry.

The proposal gives Bay Ridge customers a direct link to Manhattan while providing alternate service for late-night customers who use (N) between lower Manhattan and Brooklyn or those who use (D) between DeKalb Avenue and 36th Street in Brooklyn.

The demand for such a link between lower Manhattan and Brooklyn was reinforced by customer feedback at recent public hearings for the Second Avenue Subway, as well as feedback from elected officials and members of the community from affected neighborhoods. No date for the start of the extended (R) service has been announced.

NYC Transit is also boosting shuttle service to the Rockaways this summer. Rockaway Park shuttle trains will be extended north to the Rockaway Boulevard (A) station on weekends from June 12 through at least Labor Day. The extra service will run from 9 AM to 9 PM.

That means all (A) riders, not just those on a Far Rockaway-bound train, will be able to transfer to the shuttle, cutting down on travel times.

Meanwhile, beachgoers who take the Q35 bus from Flatbush will also see extra service starting July 3. MTA Bus Company will add 35 trips to the route's Saturday and Sunday schedules, with buses running every seven-and-a-half minutes instead of every 10 minutes.

In the Bronx, the Bx12 local route will run to Orchard Beach from 7 AM to 8 PM in the summer. *(Editor's Note from Sasha Ivanoff: Having frequented the Rockaways from when my dad took my brother and me, the Rockaway Line is familiar turf. Since 2012 I have taken, once a summer,* (A)

*(Continued on page 11)*

## SUBDIVISION "A" CAR ASSIGNMENTS

**CARS REQUIRED JUNE 12, 2016**

| LINE | AM RUSH | PM RUSH | LINE | AM RUSH | PM RUSH |
|---|---|---|---|---|---|
| (1) | 10 R-62, 310 R-62A | 10 R-62, 290 R-62A | (5) | 340 R-142 | 340 R-142 |
| (2) | 340 R-142 | 320 R-142 | (6) | 360 R-62A, 30 R-142A | 360 R-62A, 40 R-142A |
| (3) | 250 R-62 | 250 R-62 | (7) | 33 R-62A, 363 R-188 | 22 R-62A, 341 R-188 |
| (4) | 220 R-142, 130 R-142A | 210 R-142, 120 R-142A | (S) (42nd Street) | 10 R-62A | 10 R-62A |

## SUBDIVISION "B" CAR ASSIGNMENTS

**CARS REQUIRED JUNE 12, 2016**

| LINE | AM RUSH | PM RUSH | LINE | AM RUSH | PM RUSH |
|---|---|---|---|---|---|
| (A) | 304 R-46 | 10 R-32, 304 R-46, 8 R-68 | (L) | 160 R-143, 32 R-160 | 144 R-143, 24 R-160 |
| (B) | 48 R-68, 152 R-68A | 48 R-68, 136 R-68A | (M) | 184 R-160 | 176 R-160 |
| (C) | 64 R-32, 80 R-160 | 56 R-32, 80 R-160 | (N) | 8 R-68, 230 R-160 | 220 R-160 |
| (D) | 232 R-68 | 216 R-68 | (Q) | 8 R-68A, 220 R-160 | 220 R-160 |
| (E) | 260 R-160 | 260 R-160 | (R) | 232 R-46 | 232 R-46 |
| (F) | 32 R-46, 400 R-160 | 32 R-46, 400 R-160 | (S) (Rockaway) | 12 R-46 | 12 R-46 |
| (G) | 52 R-68 | 52 R-68 | (S) (Franklin) | 4 R-68 | 4 R-68 |
| (J)/(Z) | 96 R-32, 40 R-42, 24 R-160 | 96 R-32, 32 R-42, 24 R-160 | | | |