The Bulletin

Electric Railroaders' Association, Incorporated

Vol. 60, No. 12 December, 2017

The Bulletin

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

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STATEN ISLAND'S 157-YEAR-OLD RAILROAD
(Continued from November, 2017 issue)

The Staten Island Railway was originally a "steam" railroad and was operated under traditional "steam" railroad practices for more than a century. These rules were still followed because the Federal Railroad Administration (FRA) retained jurisdiction until the railroad was officially severed from the national rail network in November, 1988. Although FRA no longer has jurisdiction over SIR, management still observes many FRA rules.

When MTA started operating the Staten Island trains in 1971, there was a car shortage. With only 48 cars available, SIR had difficulty operating full rush hour service. Before transferring or ordering new cars, NYCT sent the following clearance train to Staten Island on October 26, 1971. It included test cars XC575, 675, and 775, work motors (R-21) 7070 and 7296, and two R-44 body shells whose numbers are unknown.

To relieve the car shortage, LIRR MP-72 cars 2505, 2517, and 2646, built in 1955, were transferred to SIRT. They were tested on May 21 and 24, 1972 and were first operated in revenue service during the June 15, 1972 rush hour. With only end doors, the cars were slow loaders. SIRT was not satisfied with their performance and they were out of service by late 1973.

With the exception of outside grab handles, SIR's R-44s look almost the same as NYCT's R-44s. The SIRT cars were built to railroad buff strength with screens protecting resistor grids, a slip-slide system (necessitating speed sensors), and door controls operated by mobile Conductors and their Trainmen.

Even-numbered cars 400-466 are "A" cars and are designated multiple unit electric (MUE) passenger cars. They are single-ended fully-equipped cab cars. Odd-numbered cars 401-435 are "B" cars. They are blind passenger cars that must be coupled to an "A" car.

The first three cars were delivered January 2, 1973 and were tested January 25, 1973 on the NYCT Sea Beach (Ⓝ) Line and February 1, 1973 on LIRR. On February 28, a three-car train transported officials from St. George to Grasmere, after which it entered revenue service. Because most platforms were only 220 feet long, three-car 75-foot R-44 trains were operated. The original electric cars and the LIRR train were taken out of service as soon as enough R-44s were available. The original electric cars were scrapped in 1976.

Several years later, cars were transferred again. The $16.6 million contract for overhauling the R-44s transferred from NYCT's Ⓐ route to SIRT was awarded November 24, 1986 despite the Inspector General's warning that the contractor performed poorly on two previous projects. Cars 388-399 were built by St. Louis Car Company in 1972. Even-numbered "A" cars are cab cars and odd-numbered "B" cars are blind cars similar to the 400-series cars described above. The 300s were to be rebuilt first, replacing SIRT cars that were shipped for overhauling.

In October, 1987, the first rebuilt R-44 failed its load test when the 1½-inch upward camber failed to return to its position after passenger load was removed. On April 6, 1988, American Coastal Industries and Newport News Industrial Corporation filed a $21 million suit against MTA for material purchased

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THE GENESIS OF DASHING DAN — ENTER THE NORTH SIDE DIVISION
by George Chiasson

ENTER THE NORTH SIDE-NUMBER ONE: FLUSHING AS A RAILROAD HUB

Having gained a purchase on its early, frenetic operations at Penn Station, LIRR continued moving ahead with its overall plan to increase such service as originally envisioned, and undertook the integration of its close-by "North Side Division" lines with the few electrified m.u. routes that had already been developed. This was a logical choice for several reasons including straight geographic terms, with Whitestone Landing being the railroad's nearest outward terminal at a distance of just 12 miles, and the Port Washington Branch following it closely at a difference of only 18 miles. Other factors were the North Shore's rather heady and ongoing pace of residential development (along with a relatively-high socio-economic standing achieved by its overall populace); and the fulfillment of a directional (and inherently political) void given their northerly counter to Penn Station's established, frequently served routes to the south and east which included the Rockaway Peninsula, Long Beach, and Hempstead. Moreover, the existing branch to Port Washington was going to require an extensive, costly upgrading in any case to better assimilate with the rapidly-developing portions of Queens through which it had travelled for over 40 years by this time, one which was all the more justified if completed as part of an overall objective of bringing its patrons a direct, one-seat ride to Manhattan.

As disclosed previously, railroading in Queens County had its beginnings when diminutive trains of the Flushing Railroad began journeying between the untamed, marshy tidal basins of Flushing Bay and Newtown Creek, joining the relatively isolated port community of Flushing itself with a terminal across from Manhattan on the East River at Long Island City. After an initial period of financial difficulty, the line's first passenger-carrying duties were actually performed before its construction was totally complete, hauling multitudes of horse racing fans (then known as "swells") from New York to a temporary station near the National Race Course in "West Flushing" (present-day Corona) for a four-day series of meets starting on June 26, 1854. The Flushing Railroad, in its classic sense, then commenced formal operation two months later on August 26, its single track originating from a terminal in "Hunter's Point," and being connected to the river by a wharf used to exchange passengers and freight between water-borne vessels and the railway. Its physical location was across from the three-way intersection of Borden, Jackson, and Vernon Avenues (as then and now) from which the line followed the north side of Newtown Creek on a series of wooden trestles to the hindmost side of Calvary Cemetery and over to Haberman's Tin Mill. From there it struck a northeastward path on undeveloped and relatively level ground to the community of Newtown, passed briefly through an excavated cut, then tip-toed across the flood plain of Flushing Bay on another series of wooden trestles which included a drawbridge at Flushing Creek that led into its namesake village. It was a short distance from that point to the opposite terminal at Main Street, right in the middle of Flushing's central business district between Grove Street (40th Road) and Bradford (41st) Avenue.

Given the sparse character of its territory, it might be expected that there were not many stations along the Flushing Railroad corridor, and there were not. One served the rather cheerless destination of Calvary Cemetery (now corresponding to Greenpoint Avenue); another was next to "The Penny Bridge," a stoutly-built, wooden toll structure that connected the extreme edges of Queens and Kings Counties across Newtown Creek. This bridge enjoyed a long history of its own that included BRT's Meeker and Marcy Avenues trolley line, and ultimately lasted until the present-day Kosciuszko Bridge, along with its associated piece of the Brooklyn-Queens Expressway, came into being in April, 1939 (and which itself was finally replaced in 2017). As it approached Flushing Bay the railroad's next station was situated at "Winfield," named for an adjacent estate and location of the lone passing siding. It was positioned at a relatively arbitrary point in Newtown that was later at the intersection of Madison Avenue & Clinton Street, and is now 70th Street and 50th Avenue. The original station at "West Flushing" was also in a relatively raw parcel on the marshy fringes of Flushing Bay, which the railroad then negotiated on trestlework to cross Flushing Creek on a drawbridge before entering the outpost of civilization then represented by Flushing proper. Though not necessarily set in the bucolic mold of other major Queens County thoroughfares of the time, Main Street even then was the most important commercial artery through the Village of Flushing (originally established as a component within the old Town of Flushing in 1813), being an appropriate and available point at which to terminate its namesake railroad. For support, the new company's modest engine house, turntable, and freight house, along with a siding or two for the storage of coaches, were located next to the depot in Flushing. In modern terms the Main Street terminal sat exactly where the present station is located on today's Port Washington Branch (next to the intersection of Main Street and Kissena Boulevard), but was positioned at ground level and boxed in to the northeast by a craggy, rock-filled slope that offered little optimism for its immediate extension.

As with the other railroads that developed across Long Island, more station stops were added along the Flush-

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ing Railroad as a handful of new communities, both real and projected, were set up in the raw, nebulous wetlands and farm fields of southern Queens. The first station of three to be called "Maspeth" was opened to what little public existed in its vicinity on January 15, 1855, being located in a nondescript zone almost midway between (the) Penny Bridge and Winfield, on property that now lies within Mt. Zion Cemetery. Another new stop known as "Newtown" was added during the same year where the Hell Gate Ferry Road (later Broadway) crossed the Flushing Railroad, which was one of the then-relative commercial centers scattered about the humungous plot that had once constituted colonial-era Newtown. When competition was resumed at the National Race Course on April 2, 1855 the Flushing Railroad re-established a station stop to serve it, located at the crossing of National Street (so named for its access to the horse racing track). The racing circuit itself was located in a large rectangle of land bounded by the Newtown & Flushing Turnpike (37th Avenue), Clinton (97th) Street, Jackson Avenue (Northern Boulevard), and Grant (105th) Street, some seven blocks north of the railroad. In 1856 it was renamed the "Fashion" Race Course, but within just two more years its site was being squeezed by both moral forthrightness and surrounding development, and the heretofore part-time, recreational stop was drafted into more of a full-time commuting role by 1858.

On July 20, 1858 the Fashion Race Course gained notoriety in the news for hosting the city's first baseball "all-star game" (admission 50¢) featuring local, paid "sandlot" talent from Manhattan and Brooklyn. While this event opened a door of opportunity for what later became the major leagues, it would be more than two decades before the New York Gothams and Brooklyn Atlantics (much later known as the Giants and Dodgers) began playing real National League schedules in 1883. As the present neighborhood of Corona initially grew around it, the Fashion Race Course remained in use for equestrian and exhibition events for several more years, while the swampier territory around the railroad's original station at West Flushing (located at the present crossing of 108th Street) continued to languish and it was no longer in use shortly after the baseball game of local legends related above. Once eliminated, the older stop's name was then assumed by the one built to serve the race course (and now burgeoning residential neighborhood), becoming the "new" West Flushing. Its renaming to the more familiar "Corona" is a little harder to pin down, but the post office location bearing that name was opened in October, 1872, and by that fall this designation was regularly being used as reference in local news and announcements, after which the former title drifted away into time.

It appears that the Flushing Railroad also gave up on its station at "Maspeth" during 1858, likely in response to anemic patronage and its (ultimately) poor, desolate location. Despite the founders' grand intentions, this was definitely a symptom of a larger disease as the line remained revenue-starved, with the company forced into reorganization under the auspices of the New York & Flushing Railroad on March 22, 1859. By that time, the real "pro" of the local railroading business, the Long Island Rail Road, was in the process of stringing together a replacement "Main Line" to Long Island City (under the name New York & Jamaica) as it faced eviction from its original route into Downtown Brooklyn. Politically connected, savvy and (at least seemingly) well-bankrolled, LIRR proved an easy magnet for the aspiring Flushing operation, and both became cooperative parties to the rather halting and somewhat unwieldy undertaking of laying the new route across Queens County. From the long-awaited opening of LIRR's new Main Line in May, 1861 the two lines crossed each other twice, once at Winfield and again just shy of their respective Hunter's Point termini at East (11th) Street in Long Island City. A physical connection was established at the latter shortly afterward, and after an operating agreement between the two parties was reached the New York & Flushing diverted its freight and passenger operations from the original, confined terminal of 1854 into the newer and more commodious quarters offered by its colleague (though not its full business partner) on March 31, 1862. The older facility was later removed, its site on the south side of Borden Avenue in Long Island City being occupied in 2017 by a large and rather elderly public parking lot.

Continuing its combat against corporate poverty, the New York & Flushing finished out the Civil War years in a state of diminishing public respect, scorned in the media and somewhat despised by its riding public for a growing lack of reliability and general slovenliness. Despite this public undercurrent of abomination, a group of separate local investors brought about formation of the North Shore Railroad by 1863, which financed and constructed a long-sought but difficult-to-build expansion of the original Flushing Railroad six miles farther into the North Shore, as far as the community of Great Neck. Most notable on this proposed continuation was the necessity of tunneling through the brunt of Flushing proper to reach the residential area at its rear. This entailed a slight realignment of the original station at Main Street, including the addition of a small depot that was completed in February, 1865 and expanded toward Prospect (41st) Avenue in late 1870. The extension then proceeded underneath that previously-mentioned hill across Main Street from the original end of track and into a short tunnel, which continued almost as far as Union Street before emerging into an open cut that reached South Parsons Avenue (Parsons Boulevard). Altogether they combined for about 0.3 miles of costly property acquisition, building relocation, and long-running excavation, all done by hand. Part of this project involved a passage beneath and underpinning of the Flushing Institute, a secondary school for boys that was housed in a large Greek Revival building on the hill

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Staten Island's 157-Year-Old Railroad

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Grasmere, looking north, November, 1965.
Bernard Linder collection

Looking south from Fingerboard Road bridge, south of Grasmere station, October 18, 1968.
Larry Linder photograph

Old Town, looking north, October 18, 1968.
Larry Linder photograph

Dongan Hills, looking north, September 27, 1968.
Larry Linder photograph

Dongan Hills, looking south, September 27, 1968.
Larry Linder photograph

Dongan Hills, looking south, October 18, 1968.
Larry Linder photograph

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Staten Island's 157-Year-Old Railroad

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Dongan Hills, looking north, August 19, 1961.
Bernard Linder photograph

Dongan Hills, looking south, September 27, 1968.
Larry Linder photograph

Jefferson Avenue, looking north, August 30, 1968.
Bernard Linder photograph

Grant City, looking north, September 6, 1966.
Bernard Linder photograph

Grant City, looking north, September 6, 1966.
Bernard Linder photograph

Looking north at Lincoln Avenue, north of Grant City, September 6, 1966.
Bernard Linder photograph

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that climbed Amity Street (now Roosevelt Avenue). The school's site was later occupied by the "North Shore Bus Terminal" until about 1954, and has most recently been home to an R.H. Macy's department store that immediately abuts entries to the Main Street 7 terminal of MTA New York City Transit. Meanwhile the extension also had to employ another set of wooden trestles to step through the intervening part of the large, marshy tidal basin of Long Island Sound that was Little Neck Bay, and had a drawbridge at Alley Creek. From there it attained a route on dry, relatively level ground into the unincorporated Queens County village of Great Neck, which was contained within the town of North Hempstead.

Revenue service on the extension to Great Neck, at first consisting of a lone New York & Flushing trip operated beyond Main Street from its existing schedule, finally commenced on October 27, 1866. New stations on the single-track line were concurrently opened at Broadway on the easterly edge of Flushing; in the village of Bayside at Bell Avenue (Boulevard); at Main Avenue in Little Neck; and at the crossing of Middle Neck Road in Great Neck, where a newer but still modest engine house and turntable were added. The outer terminal was actually a fair distance south of the village center and sat in a district that was later known as Thomaston (including a Post Office so named) but was only briefly (if ever) designated as such by the railroad. Later still (sometime around 1927), what was originally known as "Manhasset Village" to the south of Great Neck Depot (a zone more recently entitled "Lower Manhasset") assumed the name "Thomaston" while the identity of the area around LIRR finally advanced to its most publicly-recognized form: "Great Neck Station." Depot buildings were installed at each of these locations (all originally opened as platforms only) after mild weather returned in May of 1867. At Little Neck, resident William Douglas donated one of his family's existing structures to act as a stationhouse, with the railroad then hailing the entire area as "Douglaston" soon after. This was reputedly in gratitude for the free building, but when another new stop was added to the itinerary at the crossing of "Old House Landing" in July of 1870, it became a separate entity known generically as "Little Neck," though its surrounding neighborhoods were later identified by the names Westmoreland and Marathon Park.

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SUBDIVISION "A" CAR ASSIGNMENTS

CARS REQUIRED NOVEMBER 5, 2017

LINE	AM RUSH	PM RUSH	LINE	AM RUSH	PM RUSH
1	20 R-62, 300 R-62A	20 R-62, 290 R-62A	5	360 R-142	360 R-142
2	350 R-142	340 R-142	6	340 R-62A, 10 R-142A	340 R-62A, 10 R-142A
3	250 R-62	250 R-62	7	33 R-62A, 363 R-188	22 R-62A, 352 R-188
4	190 R-142, 170 R-142A	190 R-142, 170 R-142A	S (42nd Street)	10 R-62A	10 R-62A

SUBDIVISION "B" CAR ASSIGNMENTS

CARS REQUIRED NOVEMBER 5, 2017

LINE	AM RUSH	PM RUSH	LINE	AM RUSH	PM RUSH
A	10 R-32, 296 R-46	20 R-32, 296 R-46, 8 R-68A	L	168 R-143, 24 R-160	168 R-143, 24 R-160
B	40 R-68, 160 R-68A	32 R-68, 152 R-68A	M*	168 R-160	160 R-160
C	48 R-32, 96 R-160	40 R-32, 96 R-160	M Shuttle**	12 R-42	12 R-42
D	232 R-68	216 R-68	N/W	24 R-68, 300 R-160	24 R-68, 300 R-160
E	260 R-160	260 R-160	Q	210 R-160	8 R-68, 210 R-160
F	56 R-46, 370 R-160	56 R-46, 370 R-160	R	240 R-46	240 R-46
G	52 R-68	52 R-68	S (Rockaway)	12 R-46	12 R-46
J/Z	96 R-32, 16 R-42, 48 R-160	96 R-32, 16 R-42, 48 R-160	S (Franklin)	4 R-68	4 R-68

*Service operates between Forest Hills/71st Avenue and Broadway Junction during Phase II of the Myrtle Viaduct reconstruction project
**Service operates between Metropolitan Avenue and Wyckoff Avenue during Phase II of the Myrtle Viaduct reconstruction project

STATUS OF NORTH AMERICAN TRANSIT PROJECT OPENINGS SCHEDULED FOR 2017
by Randy Glucksman

Using the latest available information at time of publication, there are three projects listed in the table below that were scheduled for completion by the end of 2017 but had no opening dates. If they open before December 31, I will include this information in the January, 2018 ***Bulletin***. Houston's Green Line extension, which opened on January 9, did not appear in the January list. The Zia Road station was originally scheduled to open in 2011! As usually happens, there were some projects that "slipped" into 2018. They are located in: Charlotte, Denver, St. Louis, San Jose, and Potomac Shores (VRE). Hopefully you will find them listed next year.

DATE	AGENCY	CITY	TYPE	LINE	DETAILS
January 9	Houston Metro	Houston, Texas	LR	East End / Green Phase II	Altic to Magnolia Transportation Center 3.3 miles, 2 stations
January 21	MTA Staten Island Railway	Staten Island, New York	HR	Arthur Kill station	Replaced Nassau and Atlantic stations
February 24	Denver RTD	Denver, Colorado	LR	R - (Aurora/I-225)	Nine Mile to Peoria 10.5 miles, 8 (new) stations
March 25	Bay Area Rapid Transit	San Francisco, California	HR	Warm Springs Extension	Fremont to Warm Springs 5.4 miles, 1 station
April 24	Rio Metro Regional Transit District	Albuquerque, New Mexico	CR	New Mexico Rail Runner Express	Zia Road station opens
May 12	M-1 Rail	Detroit, Michigan	LR	Q Line	Woodward Avenue to 8 Mile Road 3.3 miles, 12 stations
May 22	Massachusetts Bay Transportation Authority	Brighton, Massachusetts	CR	Framingham/ Worcester	Boston Landing station (fill-in station) opens between Yawkey and Newtonville
June 15	Empire State Development Corporation	New York, New York	LD	Northeast Corridor	Moynihan Station Phase I opens
August 22	Long Island Rail Road	Suffolk County	CR	Main Line 2nd Track Phase I	Double-track: Central Islip to Ronkonkoma 4.7 miles
August 25	Sonoma Marin Area Rail Transit	Petaluma, California	DMU	Initial Operating Segment	Sonoma County Airport to San Rafael 43 miles, 10 stations
August 31	Chicago Transit Authority	Chicago, Illinois	HR	Brown, Green, Orange, Pink, and Purple	Washington/Wabash Opens - Replacing Randolph/Wabash and Madison/Wabash
Later this year	Southern California Regional Rail Authority	Los Angeles, California	CR	San Bernardino Line	Extension to Downtown San Bernardino 1 mile, 1 station
December 17	Toronto Transit Commission	Toronto, Ontario	HR	Toronto-York-Spadina Extension	Sheppard West (Downsview) to Vaughn Metro Centre 5.3 miles, 6 stations
December	Florida East Coast Industries (All Aboard Florida)	Miami, Florida	LD	Brightline Phase I	Miami to West Palm Beach 70 miles, 3 stations
Winter	Amtrak	Miami, Florida	LD	Tri-Rail	Trains begin serving Miami International Airport Station

Legend:
CR: Commuter Rail HR: Heavy Rail SC: Streetcar
DMU: Diesel Multiple Unit LD: Long Distance

Staten Island's 157-Year-Old Railroad

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and labor ordered. We do not know how this dispute was settled.

To provide adequate service, R-46 cars 584-689-743-916 and 1024-1023-1147-1158 were transferred from NYCT to Staten Island. Like the R-44s, even-numbered cars are cab cars and odd-numbered cars are blind cars. The R-46s were on SIRT's July 1, 1990 roster and were returned to NYCT after all the Staten Island cars were overhauled.

The overhaul of the R-44s brought the fleet to the desired total of 64 cars.

NYCT cars 388-399 were converted in NYCT's shops to meet SIR's railroad standards and were made compatible with SIR's original 52 cars.

The Clifton Car Shop is mostly self-sufficient, but motor and wheel/axle work is sent to NYCT's Coney Island Shop and is returned on serially-numbered axles with new wheels installed. The shop also performs truck assembly and air brake repair. *(Continued next issue)*

TORONTO TRIP REPORT
by Ronald Yee
(Photographs by the author)

While attending various family events in Toronto, Ontario, Canada and staying along the downtown lakefront within walking distance of Union Station, I was afforded many opportunities to inspect, ride and photograph the rail transit scene there in late October, 2017.

The first equipment I covered was the Toronto Transit Commission's (TTC) "Flexity" 5-section light rail vehicles, built by Bombardier, which have been trouble-plagued to say the least. The first car, 4400, was delivered to Toronto on September 25, 2012 and formally unveiled at TTC's Hillcrest Shops on November 15, 2012 with nighttime test runs commencing in March, 2013. On July 23, 2013, a daytime run was performed for the press and media. At that point, thing were looking good; the new LRVs would enable the quick retirement of the 1980s-vintage ALRVs first and then the 1978-80-vintage CLRVs, both car fleets suffering from corrosion decay from years of operating on wintry city streets treated with salt to reduce ice formation. Parts to maintain these aging cars were also an ever increasing issue with keeping these 30+-year-old cars operating. However, numerous flaws were soon detected in early production Flexity LRVs, forcing production to be suspended until these issues were resolved. Labor issues at Bombardier's Thunder Bay plant resulted in a months-long strike during which no work was performed in manufacturing the LRVs or devising fixes for the issues already identified. As a result, the new LRVs did not go into service as quickly as expected, with the first Flexity LRV going into service on August 31, 2014 on Route 510/Spadina, almost two years after the first car was delivered. The acceptance rate was so low that only 30 cars were deemed operational by the end of 2016. During this time period, Bombardier and TTC came to an agreement where production rates were renegotiated with a new schedule of deliveries, slow at first but ramped up in 2018 to meet the contractual completion date by the end of 2019 for the C$1.22 billion, 204-car order. The revised production plan promised the delivery of 40 cars by the end of 2017. Local railfans have reported seeing LRV 4444 (#45 of 204 off the production line or only #15 of the promised 40 cars for 2017) at Thunder Bay on September 12, 2017. With the delays in introducing the new LRVs onto the streets of Toronto, TTC has been forced to perform a C$34.1 million emergency overhaul on its CLRV fleet to keep them going for up to five more years. Fortunately, the contract with Bombardier has a clause allowing TTC to charge a penalty of up to 5% of the contract value (around C$50 million) for delays and/or late delivery of the Flexity order. These monies could be applied to offset the costs of the emergency rehabilitation work on the CLRV fleet. Meanwhile, Bombardier was to open up a second production line in Kingston, Ontario to enable the company to ramp up production rates to eight cars per month by November, 2017, enabling the order to be completed by 2019. An ambitious plan, only time will tell if the strategy will work.

From my first-hand observations of the operation of these cars, I found little to fault with the ones that are running. They ride nicely and accommodate the crowds easily and in relative comfort with full HVAC systems and a decent amount of seating. The retractable handicapped access ramps worked well on the two occasions I saw them in use. One fault I observed was an operating practice. While the cars are equipped with individual passenger activated door controls to enter/exit, TTC continues to cycle all four doors open and closed at the stations the cars stop at, causing needless wear and tear on door motors when no one was using them. One car had an on-board data uplink issue, resulting in no fares being deducted from passengers' fare media, while another car had issues with the onboard ticket vending machine, preventing ticket sales. Flexity LRVs are now operating on Route 509/Harbourfront between Union Station and Exhibition utilizing the pantograph located in the middle section of the five-section LRV, over the same tracks and under the same wires. Surprisingly, along Queen's Quay, all the way through the Union Station loop, Flexity LRVs on Route 510 continue to operate with trolley poles at the rear. TTC apparently has devised a manner in which the trolley wire can accommodate both simultaneously. A bit of research reveals that when deadheading to and from the yards and shops off line, Route 509 Flexity LRVs must operate with trolley poles. This practice must continue until the rest of the TTC streetcar network has been re-wired to accommodate pantograph operations. As information, I stayed in my cousin's 20th floor condominium on Queen's Quay, affording me easy access to the Queen's Quay line, Routes 509 and 510, and some spectacular vantage points of the line from 200 feet above. Routes 509 and 510 and the new 514/Cherry route along King Street are the only routes with the Flexity LRVs. ALRVs are limited to Queen Street and Long Branch services with CLRVs covering everything else: King, Dundas, College, and St. Clair. The entire Route 511/Bathurst was out of service for repairs during my stay with buses filling in. I suspect that route's trolley wires are being upgraded for pantograph operation and may be the next candidate for the Flexity to take over.

To improve the travel times of the streetcar network, TTC and the City of Toronto need to come to an agreement on providing streetcars with traffic signal preemption devices to speed up its light rail services. Despite operating on a reserved right-of-way along Spadina Avenue, the Route 510 Flexity LRVs were constantly

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Toronto Trip Report

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mired in traffic jams stemming from cross-street traffic and left turns. The travel times up and down on Spadina north of Front Street all the way to Bloor Street take far too long; the incessant delays tend to discourage transit ridership, not encourage it. A ban of left turns on the streets carrying light rail lines is also needed. The number of left turns on streetcar routes causes a tremendous amount of needless traffic delays with a cascading effect onto the streetcar and city bus routes.

Until 2013, TTC utilized a mix of two types of Canadian-built light rail vehicles dating back to the late 1970s and early 1980s, the CLRV and ALRV, the latter a two-section articulated LRV built to handle the larger crowds riding the then-busiest streetcar line in the city, Route 501/Queen Street. They plied the rails between Neville Loop on the east side of the city and as far west as Long Branch on the west end of the city along the lake shore. The CLRVs handled most of the other routes in the TTC streetcar network. Of note to those unfamiliar with Toronto's streetcar history, the CLRV and ALRVs had replaced the venerable PCC streetcars, which numbered in the hundreds from the 1930s through the 1970s. Although a few years younger than the CLRVs, the ALRVs are slated to be the first class of LRV to be retired. These cars did not receive much in the way of upgrades or mid-life overhauls and are thus in a more deteriorated state. Like all TTC vehicle types, a number of the cars are "wrapped" in advertisements, some of them detracting from the car's appearance. Most of the ALRVs have significant rust spots along the lower portions of the carbody. It is my understanding that the underfloors of the ALRVs are also badly corroded from decades of salt exposure during Toronto's harsh winters. As the more Flexity LRVs are delivered and accepted for service, the ALRVs will soon fade from the Toronto streetscape, most likely sometime during 2018. Once the ALRV is fully retired, the CLRVs will be replaced by the balance of the Flexity order of 204 cars, each new car having the capacity of over almost 3 CLRVs or 2 ALRVs.

There is an apparent shortage of ALRVs on Route 501 during peak periods, requiring supplemental buses to "fill in" service gaps between streetcars. Going westbound, some buses are signed up as Route 501 terminating at Queen and University, others as far as Queen and Bathurst. Service along Queen Street is rather sporadic. In bygone days, Queen Street was famous for having M.U.'d pairs of PCCs lined up like elephants in both directions. Today, ALRVs and CLRVs alternate on 5-minute headways (the former to Long Branch and the latter to Humber Loop) but in reality, it is more like 10-15 minutes with 2-4 cars bunched up like a parade of elephants at the circus. In the years since the ALRV was assigned to the Queen Street route to accommodate the heavy ridership (this route was once considered as the alignment of the next subway line in Toronto due to the high ridership), the route has lost ridership due to changing demographics and travel patterns and the King Street route now carries the highest passenger loads of all the streetcar routes. In my opinion, converting the Bathurst route to Flexity LRVs before addressing the urgent Queen Street, King Street, and ALRV crisis would not be a wise allocation of resources. Assigning Flexity LRVs to the King Street route and reassigning a greater number of CLRVs to replace the ALRVs on Queen Street seems like the most sensible next step for TTC. Future visits by me and reports from local railfans in Toronto will reveal how the fleet replacement with Flexitys is staged.

TTC has four rapid transit lines, three heavy rail rapid transit lines and one automated intermediate capacity transit line (similar to Vancouver's BC Transit SkyTrain). A few years ago, TTC provided numerical designations for its four rapid transit lines. The north-south "Yonge-University Line" became Line 1, the east-west "Bloor-Danforth Line" became Line 2, the automated intermediate capacity transit "Scarborough Line" linking Line 2's eastern terminal at Kennedy Road with the community of Scarborough became Line 3, and the short stub-ended "Sheppard Line" was designated as Line 4. Lines 1 and 4 have been fully re-equipped with the newest generation of subway train on TTC, officially called class TR, TR representing "Toronto Rocket," manufactured by Bombardier and delivered to TTC 2010-7. There are 76 six-car TR consists assigned to Line 1 and 6 four-car TR consists assigned to Line 4. All are built as individual cars linked with an "open gangway" design (now becoming common in Asian and European transit systems) connecting all cars without doors at each car end, enabling passengers to walk from one car to another without having to open doors and walk between cars. It also increases the passenger capacity of each consist by around 5-10%. Line 2 is covered by a fleet of 192 T-1 class married-pair subway cars built by Bombardier between 1995 and 2002. On December 17, 2017, TTC is scheduled to open a 6.8-kilometer, six-station extension of the northwestern leg of Line 1, extending the line from its current terminus at Downsview-Sheppard West to a new terminus at Vaughan Metropolitan Centre. The new line extension will be equipped with automated train control (ATC), which is already in effect between the Dupont and Wilson stations. An additional order for TR-class subway trains has already been delivered to ensure there are enough trains to operate the new extension. TTC is currently installing digital displays on one side window on each side of every car with information on route and destination and work is already underway to extend ATC to the remainder of Line 1 and eventually Line 4. It is uncertain if Line 2's T-1 class subway cars are capable of being retrofitted for ATC. The future of Line 3 is still uncertain. Either it will be re-equipped with next-generation automated cars similar to Vancouver Translink's latest Mark 3 cars or converted into a heavy rail rapid transit line as an extension of Line 2. On the TTC subway system, the old-style, low-level, three-arm turnstiles are systematically being re-

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Commuter and Transit Notes

No. 347

by Ronald Yee, James Giovan, and Alexander Ivanoff

Metropolitan Transportation Authority

MTA awarded a $573 million design-build contract to Cubic Systems to totally change the manner in which customers will pay their fares. The 1994-vintage *MetroCard* is scheduled to be fully replaced by the new system in 2023. It will enable riders to pay fares with their smartphones and bank cards on all buses and turnstiles/faregates as well as on the commuter rail network. For those riders who may not have that option, a new farecard, similar to London's "Oyster Card," a "tap-and-go" type of card, will replace the *MetroCard* and will be used to pay fares on the subways and buses (including express and Select Bus Service) and also on the Long Island Rail Road, Metro-North Railroad, and Staten Island Railway. By 2019, 500 subway turnstiles and 600 city buses will be equipped to handle all of the aforementioned fare media with the rest being phased in until the changeover is completed in 2023. *(Editor's Note by Ronald Yee: It would really be great if this new farecard can be made into the New York City region's universal fare media, valid on NJ Transit commuter rail, light rail, and buses, NICE, and Suffolk and Westchester County buses. MetroCard is already valid in certain circumstances on PATH; it can be assumed that PATH will be already be included in this contract. One wonders if the multiple agencies in charge of the transit systems all around the tristate region can ever operate in such a cooperative manner. One note of caution: with a tap-on/tap off system, a form of distance-based fare can eventually be implemented on the New York City subways.)* (***New York Daily News***, October 25)

While on the topic of the progression of fare payment media, NYC Transit issued a sales notice for surplus materiel for which bidding closes on December 4. Several tons of metal NYCTA tokens are being auctioned off to qualified scrap vendors. They include hundreds of bags of surplus tokens ranging from the original small "Y," large "Y," solid "Y," bulls-eye and pentagon hole 5-Borough tokens used through the "token years" prior to the *MetroCard* taking over. One caveat for potential token collectors: the contract includes a clause mandating that the destruction of these tokens must be witnessed and verified by one or more MTA officials during the scrapping process. (MTA Asset Recovery posting, October 31)

MTA Long Island Rail Road

LIRR extended its contract with the New York & Atlantic Railway, which will continue to operate all freight trains over the 269 miles of LIRR track for the next ten years. NY&A pays LIRR $3 million per year and carries an average of 30,000 car loads annually. (***Trains Magazine***, October 30)

New LIRR timetables were issued effective November 13-December 10, covering the period including the Thanksgiving holiday weekend. These timetables commenced the "North Fork" train service enhancements between Ronkonkoma and Greenport. A new train departing Greenport at 9:43 AM enables riders to reach New York Penn Station as well as Atlantic Terminal in Brooklyn at 12:33 PM. The existing Greenport-Ronkonkoma mid-day "scoot" was rescheduled around two hours later to permit the operation of this new train. The midday eastbound train arrives at 2:06 into Greenport and departs there at 2:43 PM. People making the journey to Riverhead for jury duty at the federal court located there will still have an eastbound "jury train," #202, leaving Ronkonkoma at 7:30 AM and arriving at Riverhead at 8:14 AM (instead of 8:55 AM) and a train leaving Riverhead at 3:21 PM for Ronkonkoma with connections onward to New York City. A new westbound train leaves Yaphank at 6 PM connecting at Ronkonkoma for New York City-bound trains. The November 13 schedules also contain the restoration of midday train service on the Montauk Branch between Patchogue and Speonk. As the track work was to actually conclude on November 17, restoration of train service was to occur on November 20. On the Far Rockaway Branch, the seasonal "sundown train service" was resumed as a 3:15 PM out of Jamaica that serves the "Five Towns" region of Nassau County and arrives into Far Rockaway at 3:46 PM, well ahead of the earliest December sundown times for the riders who follow the traditions of the Jewish Sabbath on that line. These schedules will be succeeded by a winter timetable effective December 11, 2017-February 25, 2018. *(Editor's Note by Ronald Yee: Despite low patronage, the "jury trains" are a necessary public service. For federal jury duty in Queens, Brooklyn, or Long Island, there are two courts, one at Borough Hall, Brooklyn, the other at Riverhead, Suffolk County. Living in Queens, Brooklyn, Nassau, or Suffolk places one into a "pool" of jurors that both courthouses can draw upon. A summons for federal jury duty could mean a trip to Riverhead for a Queens or Brooklyn resident or a trip to Brooklyn for a Nassau or Suffolk County resident. Crazy but true, this Editor, who lives in Queens County, lucked out last summer and was called to serve at the Brooklyn federal court. Whew!)* (LIRR press release, November 3)

MTA Metro-North Railroad

The two "Big Boards" at Grand Central Terminal are slated for replacement as part of a $124 million capital investment that will also replace the 93 smaller information displays at the entrance to each platform gate. The total cost of replacing all of the 19-year-old boards with digital video boards is estimated at $8 million. The new displays are expected to stay within the same housing as the older ones. *(Editor's Note by Ronald Yee: This will finally address the never-ending issue of being able to promptly communicate late-breaking information during service delays/disruptions. While the current board is capable of providing service change messaging, the process can be cumbersome — it is limited to an alphanumeric format and*

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must be manually loaded by an operator. The graphics potential of the new system will offer a vastly improved ability to convey up-to-date information.) (Lohud.com, October 26)

MTA Metro-North Railroad is operating its usual holiday season "Shoppers' Specials" on the Hudson and New Haven Lines between November 18 and December 24. Saturdays will see two added trains on the Upper Hudson Line and eight added trains on the New Haven Line. Sundays will see three additional trains on the outer New Haven Line. These trains were included on the October 8 weekend schedule panels. To add to the holiday spirit, the New York Transit Museum annex located in Grand Central Terminal will put on its usual Holiday Model Train Show featuring a 34-foot-long O-gauge model train layout with a Manhattan theme on eight loops of track representing NYC Transit, Metro-North, and New York Central trains. (***Mileposts***, November, 2017)

Metro-North announced the completion of its comprehensive improvement project on the Port Jervis Line on November 17. Full train service was restored November 20, eliminating the need for shuttle buses between Harriman and Port Jervis. Structural repairs were made to the Moodna and Woodbury Viaducts, 12,639 wood ties, 4,571 feet of welded rail, and three new switches were installed, and 19 field welds of running rail and 7.6 miles of track were resurfaced for a smoother and safer ride. Rock slope remediation work was performed along the right-of-way to prevent rockslides and falling brush and trees that could delay service. (Al Holtz, November 14)

NJ Transit

25-foot-long extensions to the platforms at Exchange Place have been completed allowing NJ Transit to operate its extended light rail cars south of Hoboken on the Hudson-Bergen Light Rail line (HBLR). The 52 original Kinki-Sharyo light rail vehicles (LRVs) went into service starting in 2000. While 90 feet long with a capacity of 190 passengers (68 seated, 122 standees), population and ridership levels along the line have outstripped the ability of the fleet to accommodate peak period crowds. In July, 2013, NJ Transit unveiled its prototype extended LRV which had two sections inserted into the center of the car, extending its length by 37 feet to a total length of 127 feet. Capacity was increased to 300 (102 seated, 198 standees). Following its success, 25 additional HBLR LRVs were contracted to be extended in a similar manner. Seven have been placed in service, with the remaining 18 scheduled for delivery through 2018. The platform at Exchange Place was the only station requiring an extension, limiting the seven extended cars to operating only on the Hoboken-Tonnelle Avenue portion of the line. That restriction is now lifted. (NJ Transit press release, October 29)

Starting with this winter season, NJT will place on its website a printable Level 1 and Level 2 schedule for each of its commuter rail lines to be used in the event of severe weather, especially in winter months. The schedules will be available on the NJ Transit website year-round and provide clear and concise information on when the trains will operate. These schedules do not represent any additions to scheduled service but are designed to meet the operational needs during severe or extremely severe weather that have negative impacts on service. NJ Transit will transmit, via all media, any announcements of the implementation of Level 1 or Level 2. (nj.com, November 6)

On January 8, 2018, phase two of the Penn Station track rehabilitation project will commence and run through May 28. It will result in the closure of one and up to three of the 21 tracks in the station complex. While at least one track will be out of service on a continual basis, up to a total of three tracks may be out during weeknights and weekends to accommodate the work. While the outages are not expected to impact off-peak NJ Transit service, some peak period trains will be affected. In the morning, on the North Jersey Coast Line (NJCL), Train #3318 will depart Bay Head at 5:32 AM, make all stops to Avenel (except Perth Amboy), then operate express to Newark and New York Penn and be renumbered as train #3316. Train #3216 will depart Long Branch 12 minutes later and be diverted to Hoboken and renumbered as #2604. Trains #4306/2606 will depart Bay Head 10 minutes later and depart Long Branch at 6:49 AM. Train #3222 will depart Long Branch at 6:34 AM, 15 minutes earlier. On the Northeast Corridor (NEC) Line, train #3122 will depart new Brunswick one minute earlier at 7:05 AM and terminate at Newark Penn Station, renumbered as train #3124. Train #3124 will depart New Brunswick 5 minutes earlier and skip the Newark Airport and Secaucus Transfer stations on its way to New York City and Train #3502 will arrive in New York Penn Station at 8:18 AM. In the PM Peak, NJCL Train #3267, the 5:25 PM from New York Penn to Long Branch, will originate in Hoboken at 5:22 PM and connect with Bay Head shuttle Train #4367 out of Long Branch at 7:09 PM. Train #3269 will depart New York City one minute earlier at 5:33 PM and stop at Secaucus and connect with Bay Head shuttle service. On the NEC, Train #3867 will depart New York Penn 4 minutes later at 5:21 PM with the stop at Newark Airport eliminated, Train #3869 will be renumbered to #3727 and depart 5 minutes later at 5:37 PM, skipping Newark Airport and only operating as far as Jersey Avenue. Train #3171 (the 5:32 PM out of New York Penn) is renumbered to #5869, will originate out of Newark at 6:03 PM, add a stop at Newark Airport, operate express to Rahway, then make all stops to Trenton. Train #3441, the 6:51 PM out of New York Penn, is cancelled and #3875 will continue to leave New York Penn at 6:47 PM and make all local stops, replacing train #3441. (NJ Transit press release, November 14)

Amtrak

Caltrans and the Illinois Department of Transportation (IDOT) have decided to amend the $352 million contract they once had with Nippon-Sharyo for 130 high-speed,

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125 mph-capable bi-level push-pull passenger coaches to be assigned to Chicago-based corridor services to Detroit and St. Louis (88 cars) and 42 cars for California services such as the *Pacific Surfliner*, *Capitol*, and *San Joaquin* corridors. Nippon-Sharyo had constructed a manufacturing plant in Rochelle, Illinois to build these cars anticipating that additional orders would materialize after the 130-car order was completed. This plant already builds gallery-style commuter cars for Chicago's Metra. But a prototype bi-level car body failed its FRA-mandated (800,000 pound compression forces) structural integrity test in 2015 and the contract had been in limbo since. Caltrans and IDOT re-awarded the contract to Siemens of Sacramento, California for $371 million which will include 137 cars, 88 for the Midwest and 49 for California. Sumitomo will be a partner in building these new coaches. The interesting development of this entire transition is that the cars will now be a single-level design, very similar to the coaches already built by Siemens for Florida's Brightline, with production expected to commence within a year as it is considered an "off the shelf" design. The delivery schedule was also changed from five years to just 24-34 months. (***Railway Age***, November 9; ***Chicago Tribune***, November 15)

New York Penn Station Repairs - Act II will apparently commence on the evening of Friday, January 5, 2018. This will be a continuation of the ongoing effort to bring the tracks of the station up to a state of good repair following the emergency-level repairs that were performed this past summer, July-August, 2017, following a series of derailments and major service disruptions stemming from track defects. That effort required up to 4-5 of the 21 tracks of the station and major sections of Interlocking "A" west of the platforms leading to the Hudson River Tunnels to be taken out of service. To accommodate that project, significant peak period service adjustments were required to reduce the number of train movements into and out of the station. This second stage of repairs is expected to remove one track on weekdays and up to three tracks on weeknights and weekends, plus portions of Interlocking "C," which will affect only a small number of peak period trains for Amtrak, NJ Transit, and LIRR. The tracks affected are Tracks 15, 18, and 19. Amtrak has announced that it will cancel one round-trip *Northeast Regional* train and terminate one *Keystone* train at Newark, New Jersey. While NJ Transit has already revealed its plans to accommodate the project, as of press time, LIRR has yet to release information on its plans. The only statement issued as this ***Bulletin*** goes to press is that, like NJ Transit, it will not offer any alternative modes of transport to Manhattan nor will there be any fare discounts or cross-honoring of commuter rail tickets as the impacts are not expected to be severe. *(Editor's Note by Ronald Yee: As Tracks 18 and 19 are two of the three affected tracks, this phase of the repair project may have more of an impact on LIRR operations than Amtrak or NJ Transit.)* (Al Holtz, November 16)

On Monday, November 6, the Connecticut Department of Transportation (CDOT) opened its new station at Wallingford, a $21 million, two-track facility with two high-level side platforms located less than a mile north of the original 1871 New Haven Railroad station. The new facility features ticket vending machines, overpasses, elevators, passenger information display monitors, bicycle racks, two parking lots with 221 spaces, and, interestingly, an automated platform snow-melting and deicing system. One of three new stations being built along the 62-mile Springfield Line currently operated by Amtrak, in May, 2018, the line will be served by 19 Connecticut Rail trains in each direction operated for CDOT by a joint venture of two private companies, TransitAmerica Services and Alternate Concepts. Most trains will operate between New Haven and Hartford with some trains extended north to Springfield, financed by the state of Massachusetts.

The former station on Hall Avenue will be used to house several organizations, including the Wallingford Adult Education Center and the New Haven Society of Model Engineers Railroad Club. (***Trains Magazine***, ***Meridan Record-Journal***, November 6)

On November 1, Amtrak launched daily *Northeast Regional* service to and from Roanoke, serving the heart of the Blue Ridge Mountains of Virginia. This is Roanoke's first Amtrak service since 1979. This is the fourth expansion of Amtrak service in the Commonwealth of Virginia since 2009, following new or additional service to Lynchburg, Richmond, and Norfolk. The *Northeast Regional* now extends from Lynchburg and provides a same-seat trip to and from Roanoke. The stop, located in downtown Roanoke, is an accessible, high-level concrete platform with a canopy. Public parking facilities are available adjacent to the Roanoke station stop.

In addition to the new Roanoke stop, the *Northeast Regional* makes stops in Charlottesville, Culpepper, Manassas, Alexandria, Washington, D.C., Baltimore, Philadelphia, New York City, and other cities along the Northeast Corridor. Future plans call for the Roanoke service to be expanded to Bristol, Virginia, which would also serve parts of Eastern Tennessee. (Amtrak press release, October 30)

Industry

General Electric expects to sell off its transportation business unit over the next two years, along with several other aspects of its business, new CEO John Flannery confirmed on November 13. The company has already divested from its consumer and finance operations.

Presenting his reshaping program to investors, Flannery indicated that he was looking to "focus the portfolio" around the power, aviation, and healthcare markets, plus additive manufacturing, as he battles to turn around a business that has seen its stock market value fall by 35% this year, or more than $100 billion. Other changes include reducing the company Board from 18 to 12 members and reducing dividend payments to around $1 from a target of $2 per share, the first reduc-

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tion since 2009.

Insisting that GE Transportation was a "global market leader" with a premier offering and strong digital business that was "close to key customers," the group said the recent downturn in the North American locomotive market had been partly offset by international growth and a strong backlog in the services business. "Adapting to realities" had included base cost reductions through "rigorous supply chain management" and a focus on capital investment to optimize working capital requirements. (***Railway Gazette***, November 13)

Other Transit Systems

Boston, Massachusetts

MBTA is planning to expand the use of transit vehicle prioritization technology. After a pilot testing period on the B, C, and E Green Line light rail routes, this technology will be installed on the B/Commonwealth Avenue and E/Huntington Avenue branches of the Green Line. The pilot program showed that the prioritization technology extended green signals for the trolleys by an average of 10-14 seconds while increasing red light duration for cross traffic by only 6-8 seconds with a negligible negative impact on vehicular traffic. (Dailyfreepress.com, October 27)

Philadelphia, Pennsylvania

Member Bob Wright reports from Philadelphia that SEPTA is currently installing turnstiles at Suburban Station and Jefferson Station (former Reading Terminal). It can be assumed that SEPTA has similar plans for 30th Street Station's suburban level, but due to the layout of its platform access points that may be a complex undertaking. SEPTA is apparently expecting to activate the *KEY Card*-capable turnstiles at these two stations in Spring, 2018. (Bob Wright, November 2)

Minneapolis-St. Paul, Minnesota

In a move even more draconian than what Philadelphia's SEPTA did for the Papal visit and San Francisco's MUNI did for Super Bowl L in 2016, a plan by Metro Transit, the operator of Minneapolis-St Paul's (MSP) transit system, has surfaced that is likely to infuriate local residents and regular riders of the system. Super Bowl LII on February 4, 2018 will be hosted by the twin cities at the Metrodome. To accommodate the throngs of people that are being encouraged to use mass transit to reach not only the game itself but all of the events downtown during the days leading up to the big game starting on January 26, to prevent overcrowding, the plan is to limit access to MSP's two light rail lines on Super Bowl Sunday only to persons holding a $30 Game Day Pass AND a Super Bowl game ticket. During the lead-up period of festivities, only those who purchase an unlimited fan pass for $40 valid January 26-February 4, 2018 or a daily all-day pass with prices dependent on the days they are purchased for, will be permitted to ride. It appears that regular riders simply wanting to travel about the system on their daily routines will be excluded from their own city's transit system. To add to MSP's woes, the 2,500 unionized employees of Metro Transit, represented by ATU Local 1005, have rejected the latest contract offer and have voted to go on strike during the Super Bowl festivities if negotiations do not lead to an acceptable contract. *(Editor's Note by Ronald Yee: A slap in the face to its regular ridership, this limited access plan may also be on shaky legal grounds, since public transit is generally defined by its namesake, "public." The plan to totally eliminate access by the general public of a city to its own public transit system will probably end up in a court battle. Metro Transit should simply continue to sell its passes to encourage mass transit use by attendees and allow its regular riders to ride about on their normal activities. Most local folk with an ounce of common sense will make plans to stay off the system and away from the festivities if at all possible. Those who have no choice but to ride to reach their jobs and vital appointments should be allowed their normal routines, albeit inconvenienced by large crowds and their impact on the overall service.)* (Citypages.com. November 14)

San Francisco, California

Following the completion of all required testing for its new Siemens light rail vehicles (LRVs), the first five cars were cleared for passenger service on November 12 with the first new LRV, car 2006, entering revenue service on Friday, November 17. This car also features a plaque honoring Larry Martin, a civil rights advocate and MUNI employee who started there in 1966 and rose up in the ranks of the Transport Workers Union (TWU) to become its International Vice President. The 219-car order will totally replace the 151 Breda LRVs and expand the total fleet by 68 cars. SFMTA expects to have 24 new LRVs on the property by the end of 2017 and 68 by the end of 2018. The cars are officially designated as class LRV4 by SFMTA. The new cars will feature longitudinal seating for wider aisles and increased passenger capacity, pull-down seats, leaning pads, open floor space for strollers, a simplified and more mechanically reliable door and raiseable step system enabling the cars to service high-level platform or street level boarding, a designed mean distance between failure (MDBF) rate of 59,000 miles (compared with the 5,000 MDBF for the current Beda fleet), and destination signs that are designed to be readable from 200 feet away. (SFMTA posting, November 17)

Los Angeles, California

The Board of the Los Angeles County Metropolitan Transportation Authority (LAMTA) has approved a staff recommendation to study improvements to the Orange Line Bus Rapid Transit (BRT) that could be viewed as the initial steps toward the eventual conversion of the 18-mile route to light rail. Some of the things being considered are grade crossing-style gates at street intersections and grade separation at certain key intersections as well as the congested stretch between Van Nuys and Sepulveda Boulevards. LAMTA has set aside $286 million for improvements to this line. (***Progressive Railroading***, October 27)

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Waterloo, Ontario, Canada

Construction of the initial phase of the Ion light rail network in the Canadian city of Waterloo reached a milestone on November 7, when LRV testing began on a section of line close to the depot on Dutton Drive.

The initial unpowered tests will focus on wayside and station platform clearances as well as catenary testing. Stage 1 of the Ion project involves constructing a 19-kilometer, 16-station light rail line from Conestoga Mall in Waterloo to Fairview Park Mall in neighboring Kitchener, together with a 17-kilometer Bus Rapid Transit line from Fairview Park to Ainslee Street in Cambridge.

The light rail line is being constructed by the GrandLinq consortium under a 33-year design, build, finance, operate, and maintain contract awarded in 2014. Bombardier is supplying 14 Flexity Freedom LRVs worth C$92.4 million (US$70.9 million) with an option for 14 additional vehicles. (***International Railway Journal***, November 7)

Berlin, Germany

Berlin transport operator BVG has ordered a further 80 metro cars from Stadler Pankow, in response to an urgent need to increase capacity on its small-profile lines. The first must be delivered at the latest during the second half of 2019.

BVG announced in 2011 its intention to purchase 40 four-car sets to replace its ageing A3L71 stock, placing an initial order for two prototype Type IK trainsets in July 2012. In July, 2015 BVG called off a €60m firm order for an initial series build of 11 units, followed by a €140m order for the remaining 27 sets last year. (***Metro Report International***, October 31)

Szczecin, Poland

Tramwaje Szczecińskie has selected sole bidder Modertrans to supply two Moderus Beta trams kits for assembly by TS at its workshops.

The first kit is to be delivered within 90 days, with the second to come by the end of September, 2018. The assembled vehicles will have a 36-month warranty. The 9.7 million złoty (US$2.7 million) contract includes options for two more, which can be drawn by 2021.

TS previously assembled two Moderus Beta trams in 2014 under an earlier deal. (***Metro Report International***, October 31)

Tbilisi, Georgia

Two modernized four-car trainsets entered service on Tbilisi Metro Line 1 on October 23.

Originally built by Metrowagonmash, the sets were modernized by Electro-Rolling-Stock Repair Plant Tbilisi Branch (ZREPS), a 50-50 joint venture of Tbilisi Transport Co and the Moscow Electric Stock Repair Plant. They have received new control systems, microprocessors, LED lighting, external and internal CCTV cameras, and USB sockets, as well as a redesigned exterior and interior. The first set started test running on September 11.

ZREPS is carrying out work on three more sets, which are expected to enter service on Line 1 by the end of the year.

On October 16 a mile long, one-station extension of Tbilisi Metro Line 2 opened from Vazha Pshavela to State University. Construction began in 1985 but was suspended in 1993 owing to lack of funds. Work resumed in 2015 and was carried out by a joint venture of Cobra Instalaciones y Servicios and Assignia Infraestructuras. (***Metro Report International***, October 31)

Nanjing, China

The Qilin Line tram route in Nanjing began trial passenger operation on October 31.

Test running started last year on the approximately 10-kilometer route, which links Maqun station on Metro Line 2 with Wang Wu Zhuang. There are 13 stops, including one elevated. Service is operated using seven five-section low-floor trams supplied by CRRC Nanjing Puzhen based on Bombardier's Flexity 2 design and built under a 10-year technology licensing agreement between the two suppliers. Bombardier has supplied Primove lithium-ion batteries, Mitrac propulsion equipment, and Flexx Urban 3000 trucks.

Each tram is equipped with two 49 kilowatt-hour batteries, which are recharged through the pantograph at stops; only 10% of the route is equipped with catenary. Recharging time is 45 seconds at intermediate stops and 10 minutes at the termini.

Eight more trams are operating on the unconnected 8-kilometer Hexi Line, which opened on August 1 2014. (***Metro Report International***, November 1)

Around New York's Transit System

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18 months and diverting 250,000 riders onto alternate subway routes or buses.

BQX Mockup Displayed

A 46-foot-long mockup of a prototype light rail vehicle (LRV) for the planned 16-mile-long BQX light rail line linking Sunset Park, Brooklyn with Astoria, Queens, based upon the Alstom Citadis 100% low-floor design, was shipped to New York City from Nice, France and is available for the public to see in the Brooklyn Navy Yard. Located in the New Lab technology space, it features an interior mockup with 23 cushioned seats, cushioned "leaning bars" for standees to lean against, an Operator's cab, and an articulated joint housing an open-gangway design linking the two sections of the mockup. The floor level is a mere 12.8 inches above street level, making it accessible to the mobility-impaired via low-rise station islands of the same height. Whether the LRVs will be powered by continuous catenary or batteries or a combination of both remains to be determined as the project moves along in the planning process. Other companies such as Siemens and Bombardier are also vying for the contract to supply LRVs for this proposed line.

FIRST DAY OF R-179 REVENUE TESTING
by Alexander Ivanoff

On Sunday, November 19, the Bombardier R-179 started its 30-day revenue testing prior to full acceptance. For the last twelve months, the cars have been tested through the system to get to the revenue testing, and by all accounts it has been a slow, excruciating process similar to the roll-out of TTC's new fleet of streetcars. The train departed at 6:55 AM from Jamaica Center on J. Its consist was S-3058-9-60-1/3062-3-4-5-N.

Around 12:30 PM a rumor spread across the Internet that the cars were being taken out of service due to an errant application of the emergency brakes. It was later determined that there was a milk crate on the tracks and testing continued on, albeit with a minor delay to service. Another errant emergency brake application was rumored to have happened, but all reports indicate that the incident was not enough to warrant removing the train from service.

I rode an F train to connect with the J at Delancey Street, where a shuttle bus was available due to weekend work at Marcy Avenue, causing trains to terminate at Hewes Street. From there I waited for the R-179 unit but received a message from a friend that testing was being terminated due to the errant emergency brake application. As it turned out, the first train back that I was going to catch turned out to be none other than the R-179 in service!

The cars are a marvel, despite their issues. The doors and motors are quiet, a change from the R-160 motors, which have a distinctive noise. According to one Train Operator, the interior announcements need adjustments, and while they sound clearer than on prior equipment, the volume is inaudible over the climate control and the noise of a full car. The FIND system is a port-over of the R160s' but with a bigger screen, making the images appear pixelated and out of focus. Signage in the cars (both digital and permanent) is clear and easy to read (but this is probably also due to the cars being new). But most importantly, the cars ride well and accelerate very smoothly and do not make the noises the older new technology trains (NTTs) make.

While it will be another few years before the R-32s and R-42s will be replaced, November 19 marked a new chapter in MTA's rocky recent history. The new cars will go far in bringing customers back to the system and once the cars are fully delivered and the bugs worked out will be popular among passengers. It is only fitting that the cars that are replacing the R-32s and R-42s are replacing cars that replaced equipment dating back to the First World War.

R-179 pilot train before its first trip in revenue service.
Andrew Grahl photograph

Interior photo, showing FIND system. As noted above, it is similar to the one on the R-160.
Alexander Ivanoff photograph

SWITZERLAND IN THE LATE SUMMER
by Jack May
(Photographs by the author)
(Continued from November, 2017 issue)

This segment covers Mulhouse's urban tramway.

With regard to the previous segment and my trip from Basel to Mulhouse, the late Dwight Long reminded me that it was the Schengen Agreement that eliminated internal borders among the signatories, creating free movement and thereby obviating the need for Customs and Immigration between the Swiss and French portions of the SBB Bahnhof.

The system consists of three lines, covering 11 miles with 30 stations. It opened in 2006 and employs 27 Citadis 302 cars. North-south Route 1 and east-west Route 2 provide excellent base service frequencies of every 6 minutes, while service on Route 3 runs every 15 minutes with alternating tram-trains to the northern terminal at Lutterbach. Its unique section runs along the SNCF, which the tram-train joins beyond Lutterbach (see http://www.urbanrail.net/eu/fr/mulhouse/mulhouse-tram.htm).

Most of the stations on Route 2 feature a pair of distinctive arches over the right-of-way painted in a pastel color. They are the distinguishing badge of the city's tramway, and their visibility probably serves as a unique wayfinding tool. Route 1 was extended from Rattachement to Chataignier in 2009, traversing a greenbelt on reserved track, and then being beautifully channeled along quiet streets through a suburban development.

Tram Route 1, sharing track with the tram-train, approaches Gare Centrale through the trees (and flowers) that line the grassed right-of-way.

Two scenes along the predominantly north-south Route 1. The Citadis cars glide through a greenbelt surrounding a recreation complex before continuing on the street through a suburban-like setting.

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Switzerland in the Late Summer

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Pink arches decorate the eastern terminal of Route 2. Cars lay up and change ends beyond the platforms. The arches, which are used only at Route 2 stops (but not all of them) are painted in a combination of pastel shades, which are repeated due to the large number of way stations.

With the Nouveau Bassin terminal in the background, a Citadis heads west through a tree-lined reservation toward the city center.

The shopping center at the Daguerre station has an overhead pedestrian walkway that is especially appreciated by traction photographers.

The western terminal of Route 2 at Coteaux with a tram laying over on the tail track to wait for time before starting its return journey to the city center.

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Toronto Trip Report

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placed by new, taller profile fare-gates equipped to handle the new "Presto" tap cards. Currently, the Queen Street station is closed on late evenings to facilitate the installation of new fare gates and the construction of a re-designed fare control area.

On October 14, 2015, GO Transit introduced Bombardier's version of the push-pull cab control car with a safety cab and energy management in the nose of the car in the event of an impact crash as part of a CAD $481 million, 65-car order, bringing the GO Transit fleet up to a total of 743 multilevel coaches. A bit of history is required at this point. Los Angeles' Metrolink commuter system purchased the Bombardier multilevel commuter coach design in the 1990s. It became apparent after numerous grade crossing collisions on Los Angeles' Metrolink commuter trains that the original design cab car by Bombardier was structurally substandard as far as crew and passenger protection. The cab car layout was essentially an adaptation of a single level rapid transit car with the Operator located on the right side corner of the leading end, leaving a substandard degree of protection in the event of a collision. Los Angeles' Metrolink and Florida's TriRail elected to contract with Rotem (the rail division of Hyundai South Korea) for new cab cars with a safety cab design. It remains to be seen if other cities utilizing the original Bombardier cab cars, Seattle's Sounder Commuter Rail, Vancouver's West Coast Express, San Francisco's CalTrain, and the Bay Area's Altamont Commuter Express, San Diego's Coaster, Salt Lake City's FrontRunner, New Mexico's

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STREETCARS RETURN TO THE BRONX!
by Gary and Andrew Grahl

Streetcars return to The Bronx, at least in the form of art! Nestled behind the employee and truck parking at the Sure Fire Fuel Corporation at 2610 East Tremont Avenue, at Maclay Avenue near Westchester Square in the Bronx, is a mural of Third Avenue Railway streetcar 631.

The large (18 x 60-foot) mural as created by artist Damien Mitchell was sponsored by the Westchester Square Business Improvement District. If you want to see the real TARS 631, you must travel to the Seashore Trolley Museum in Maine!

Toronto Trip Report

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RoadRunner, Dallas-Fort Worth's Trinity Railway Express, Minneapolis-St Paul's Northstar, and Florida's SunRail will purchase similar cab cars. For some, it is unlikely due to the small size of the car fleet or in San Francisco's case, the cars will soon be replaced by EMUs when the line is electrified by around 2021. GO Transit purchased a Bombardier safety cab design and has equipped most consists with them. However, there are still a few consists that continue to operate with the original design cab car. These trains are likely used only as rush hour "trippers" making one trip each peak period, minimizing the exposure risk. Today's GO Transit's engine fleet is made up of 67 Motive Power MP-40-PH-3C class diesel locomotives (600-666) delivered between late 2007 and 2014 and eight (557-564) of the 49 1988-94-vintage EMD F-59-PHs remain on the passenger service roster and will be replaced by 16 new MP-54-AC units now on order. Some of GO's F-59-PHs have been sold or leased to commuter rail operators in Dallas-Fort Worth, Los Angeles, Vancouver, and Montreal. All of GO Transit's original late 1960s GP-40-TCs and 1970s F-40-PHs were retired by 1994 by the F-59-PH.

The Union Station-Pearson Airport Express (UPX) also has a terminus at Union Station. Its two- and three-car Diesel Multiple Unit (DMU) consists began plying the rails of GO Transit's Kitchener (CN) Line between Toronto's Pearson International Airport and Toronto's Union Station on June 6, 2015 utilizing Nippon-Sharyo diesel multiple unit rail cars. Initially, a very high fare was charged (C$27.50 cash or C$19 using the Toronto region's *Presto* transit farecard) for a non-stop run between the airport and Union Station. Ridership was abysmal. Nine months later, on March 9, 2016, changes were made to increase ridership levels, namely the addition of two intermediate stops at the Weston and Bloor stations on the GO Transit Kitchener Line (after adding high-level platforms as extensions of the stations at the Weston and Bloor) and charging GO Transit fares amongst and between those stations and the endpoints of the line. Essentially, those two intermediate stations now have close to a rapid transit level of service linking them with downtown and the airport. Ridership has since increased. One suggestion to newcomers to the Toronto area: the one-way fare is now C$9.25 with the *Presto* card and C$12.35 cash/credit/debit. Suggestion for newcomers to Toronto region: if you are going to utilize the UPX on a round trip basis for your visit, see the ticket agent at the UPX platform and buy a *Presto* card for C$6 and a *Presto* UPX fare of C$9.25. Using

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UPX for a round trip, one ends up paying close to the equivalent of the C$12.35 cash fare but receives a *Presto* Card that normally costs C$6 by itself, for free. The UPX DMUs are similar to what is now operating on the SMART commuter line north of San Francisco. There are two types of cars in the DMU fleet; an “A” car DMU, featuring a sloped nose at one end, and the “B” car DMU, which has a flat-faced front and rear with an end door that is retracted when coupled to another car, similar to the "C" cars in the San Francisco-East Bay BART system.

Lastly, Toronto Pearson Airport has a cable-propelled shuttle tram linking Terminal 1 (and the UPX terminal) with Terminal 3 and the long-term parking garage. It is a low-capacity people mover powered only by pull cables.

ALRV 4215 on Queen Street passing the old City Hall westbound.

Flexity LRV 4437 just south of Spadina Circle at College Street.

Train of “Toronto Rocket” cars entering Rosedale.

GO Transit engine 321 leads a train of equipment in the new solid color scheme passing North Bathurst Yard.

UPX 3-car DMU westbound at Weston.

Pearson Airport cable-powered rail shuttle approaching Terminal 3.

Around New York's Transit System

NYC Transit Has A New President

Andrew Byford, Chief Executive Officer of the Toronto Transit Commission (TTC) for the last five years, stepped down from that job effective mid-December to accept the position of MTA New York City Transit President and Chief Executive Officer. He will begin his tenure in January, 2018. Byford, 52, a native of Plymouth, England, has 28 years' experience in transportation. Earlier this year, the American Public Transportation Association named TTC its Transit System of the Year.

Barriers to be Installed at Third Avenue L Station

As a pilot project, NYCT will be installing floor-to-ceiling barriers along the platform edges at the Third Avenue L station, testing the concept of platform gates as a means to prevent riders from falling onto the tracks or being pushed off the platform by a deranged person. This line is being selected as the equipment type assigned is uniform in car length and door spacings. The platform barriers will be installed in late 2019 during the period when L is closed in 2019-20 for the rehabilitation of the Canarsie Tubes. *(Editor's Note by Ronald Yee: While effective in preventing people from falling onto the tracks, platform barriers and gates will be difficult to implement with the current mix of 60- and 75-foot-long cars on Subdivision "B." While fleet assignments can be manipulated to create a uniform fleet on each route, service disruptions and construction work can and will result in diversion routings for trains with cars that would not match up with the platform gates on a particular route. On Subdivision "A," there are just two car types with similar door spacings and this concept would be easier to implement. And unless NYCT plans to air-condition its subway station platforms, full-height barriers are not necessary to achieve this goal. For example, in Tokyo, Japan, platform barriers and doors stand approximately 4 feet tall at all stations so equipped, both underground or open air/elevated, more than sufficient to insure passenger safety while minimizing cost and maintenance issues. In Hong Kong, Singapore, and Malaysia, full-height platform walls and doors are used only in underground stations that are air-conditioned. At outdoor and elevated stations, only half-height gates and doors are utilized. Air-conditioning of stations is the only advantage full height walls and doors offer. In the tunnels of NYCT, the primary means to ventilate the stations (and tunnels) is through piston action, air being forced into and sucked out of stations and tunnels by moving trains with fresh air entering the station via street entrance stairwells and sidewalk ventilation grates. Putting up full-height, floor-to-ceiling walls and doors will nullify this vital means of ventilation for the non-track areas, namely the station platforms, mezzanines, waiting areas, and stairwells. The result can be a stifling atmosphere that could become life-threatening during a service delay in summer heat. This Editor truly hopes this issue is being addressed.)*

Holiday Train to Operate

The annual Holiday Train operated by NYCT in cooperation with the New York Transit Museum will once again operate out of Second Avenue at Houston Street and northward along the Sixth Avenue Line through 47-50th Street/Rockefeller Center. However, for 2017, the train will not be turning east onto 53rd Street and going to Queens Plaza. Instead, it will continue north to 57th Street and Sixth Avenue and join the 63rd Street Subway, stop at Lexington Avenue, and then proceed onto the Second Avenue Subway to 96th Street. The train, made up of eight R-1 to R-9 former IND subway cars, will operate on November 26 and December 3,10, 17, and 24 departing northward from Second Avenue and Houston Street on F at 10 AM, 12 noon, 2 PM, and 4 PM and departing the Q 96th Street-Second Avenue terminus at 11 AM, 1 PM, 3 PM, and 5 PM.

Service Increases Coming in June, 2018

Beginning June, 2018, NYCT will increase the number of trains operated on 2 3 7 N Q W to address ridership increases and also attract more riders by making the service more attractive. 7 is slated to receive the largest increase, with four added round trips between 6 and 8 PM on Saturday evenings and eight additional trains on Sundays between 4 and 8 PM to meet increasing ridership levels. Service on 2 will be increased between 9 and 11 PM while 3 will have one additional train on weeknights. N Q W will see added service throughout the day on weekdays, two added trains between 6 and 7 AM, another train between 10:30 and 11 AM, and one added train between 11:30 PM and midnight. Ironically, for the first time since 2009, overall NYCT subway ridership has experienced a decrease, possibly from rider dissatisfaction stemming from an increasing number of service disruptions and delays system-wide, overcrowding, and competition from ride-sharing apps like Uber and Lyft siphoning off riders.

Flood Prevention Equipment Demonstrated

As part of the ongoing $7.6 billion "Fix and Fortify" program to repair Hurricane Sandy flood damage and to protect the subway system from future storms of that magnitude and even worse, on the fifth anniversary of that epic storm, NYCT unveiled some of its recently added protections and barriers to future floodwaters. Three massive retractable steel doors at the entrances to the new South Ferry station should hold off any flooding from storm surges up to 14 feet above the sidewalk level, enough to withstand a nearly 20-foot storm surge. The Whitehall Street station has also been equipped with a 3,000 pound steel door similar to those on naval vessels that can be sealed tightly with a pump. Flexible covers made of Kevlar are being manufactured for lower Manhattan street entrances and mechanical hatch doors are being installed to seal off each of the over 2,000 sidewalk ventilation vents. Four of the nine East River tunnels have been fully repaired and fortified against future flooding with L's Canarsie Tubes being the toughest to repair, requiring a continuous closure for

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