

NEW YORK CENTRAL STANDARD-DESIGN ALL-STEEL HEAVYWEIGHT COACHES

By John S. Horvath
& Richard L. Stoving



INTRODUCTION

Whenever railfans discuss all-steel heavyweight coaches, the subject of the Pennsylvania's class P-70 coach usually comes up. Many consider the P-70 to have been the quintessence of mass-produced heavyweight coach designs in this country. Indeed, one might be hard-pressed to refute this contention. The first P-70 was built in 1907 (and scrapped in 1966, incidentally). The P-70's were built for over 20 years, were rebuilt and modified in numerous ways in later years, and were used system-wide on the Pennsy. They saw revenue service in the early days of Amtrak, and some continue to roll today in suburban services.

Yet few people realize that the NYC had an all-steel heavyweight coach of a standard design all its own. It, too, was mass-produced, and, by any number of yardsticks, it was a success. For lack of a better name, these coaches were simply referred to as 70-foot steel coaches. The Central did not assign its rolling stock to classes but referred to its equipment by car type and lot number. A lot number was generally assigned to one group of identical cars built at the same time by a given builder. The 70-foot steel coaches were built in 69 lots between 1912 (Lot 801) and 1930 (Lot 2094). In total, 1,428 cars were constructed. Seven carbuilders were involved, including American Car and Foundry, Barney & Smith, Osgood Bradley, Pressed Steel Car, Pullman, Standard Steel Car, and the Central's own West Albany shop.

The 70-foot steel coaches saw service all over the system. The earliest cars were built before the 1914 consolidation which formed the New York Central Lines, so they were originally owned by predecessor roads New York Central & Hudson River, Lake Shore & Michigan Southern, and Chicago Indiana & Southern. Later cars were built for the NYC proper, as well as for subsidiaries Boston & Albany, CCC&StL (Big Four), Kanawha & Michigan (part of the Ohio Central Lines), Michigan Central, Peoria & Eastern, Pittsburgh & Lake Erie, and Pittsburgh, McKeesport & Youghiogheny. In later years,

most 70-foot coaches were air-conditioned (ACed), and some were rebuilt to varying degrees. Several were still in suburban service after the Penn Central merger.

CONSTRUCTION DETAILS

The 70-foot dimension which provides a convenient reference term for the standard NYC coach is actually the length of the interior, not including vestibules. The actual distance between coupler pulling faces was 78'-6 $\frac{3}{4}$ " or 78'-7 $\frac{3}{4}$ ", depending on the type of draft gear used. As built, these cars had 22 windows per side, the innermost 20 of which were evenly spaced and not paired. Windows were double-glazed, except for windows in the salon (toilet) areas, which were single-glazed. Window sashes were wood, with the exception of three late lots, 2081, 2082, and 2083, built in 1928 for the B&S, P&E, and P&LE respectively. These three lots had brass sashes.

General arrangement drawings of the 70-foot steel coaches, Nos. R-14858, -22501, -22824, and N-25181, are available from the NYCSHS through Mr. C. M. Smith. Consult the Locomotive and Car Drawing List of 1/1/76 for the specific lots covered by each R-series drawing. Drawing N-25181 covers all P&LE cars, Lot 951 and after.

Trucks were spaced 54' on centers. Both four- and six-wheel trucks (the Central had several different classes of each of the two types) were used when the cars were first built. Most early lots were equipped with six-wheel trucks, as was customary for steel cars at the time. Later lots generally came equipped with four-wheel trucks, because they were less expensive than the six-wheel variety and performed satisfactorily in service. Company records show that each lot of coaches was generally equipped with the same type and class of truck when built, except when the railroad provided second-hand trucks to the carbuilder. Then different

classes and/or types of trucks sometimes appeared in a given lot. During shopping in later years, four- and six-wheel trucks were freely switched among cars built prior to 1923. It was also common to switch truck classes within a given type, i.e., four- or six-wheel, for all cars. However, once a car was ACed, only four-wheel trucks were used.

All 70-foot coaches were built with clerestory roofs, and, except for No. 2545, which later got a turtle-back (streamlined) roof, retained this type of roof for their entire life. Originally, all cars were ventilated using a staggered pattern (when viewed from above the car) of Ward ventilators placed along both sides of the clerestory.



Typical 70-foot coach as built and lettered for the NYC proper. This car was later renumbered 2264 as part of the 1937 renumbering program. NYCSHS Collection

In 1934, the Central began to install AC in the 70-foot coaches. The pioneer program of 1934 encompassed 31 cars, 27 for the NYC proper, and four for the N&A. Only electro-mechanical AC was ever used. When a car was shopped for AC, the Ward ventilators were removed from the roof, and, beginning in 1941, the ventilators over the salons were changed also. Generally, the AC system was installed without adding external ductwork to the roof, although some cars did receive ductwork which almost completely covered the lower deck of the roof on one side only. Most of the cars which received the external ductwork had mid-car partitions and were originally designated coach-smokers. In general, the newest cars were ACed first. Some of the oldest cars were retired from revenue service before they were ACed. Although the AC program gained momentum in the 1940's and continued thereafter, it was not until late 1959, through continued ACing plus attrition of cars from revenue service, that every 70-foot coach still in revenue service was ACed.



This builder's photograph illustrates as-built lettering for a subsidiary road, in this case the P&LE, and the rare use of brass window sashes instead of the normal wooden sashes. NYCSHS Collection

The Central was one of the first railroads to recognize the need for more luxurious coaches to stem the loss of riders to automobiles. As built, the 70-foot coaches generally contained 87 seats of the walkover, non-reclining variety. Several early lots were delivered with 84 seats, and all B&A cars built after 1921 were outfitted with 88 seats. At least 113 cars were designated coach-smokers, after the addition

of a mid-car partition which divided the body into 58- and 27-seat sections. As-built salon (toilet) space was minimal. In an effort to upgrade coach service, a relatively small number of 70-foot coaches were modified in the late 1930's with a reduction in seating capacity, the installation of reclining seats in most cases, and the installation of lavatory space. The new seating capacities ranged from 43 to 68, with most containing 58 seats. Car No. 2548 was a one-of-a-kind on the NYC, as it contained 2-and-1 seating for 43 passengers to match the C&O's "Imperial Salon Cars" with which it operated in joint NYC-C&O service between Columbus and Detroit. The 18 cars rebuilt for the "Pacemaker" in 1939 each contained 46 seats, and were numbered 2181-2195 and 2385-2387. Three coaches, 2504, 2549, and 2550, even received buffets in conjunction with the reduced seating. The external appearance of almost all of these modified cars was changed by the shortening or complete covering of some of the windows near the ends of the cars. The war curtailed such extensive rebuilding programs, and, with the Central's dedication to using new lightweight coaches after the war, further rebuilding was not done. All told, 163 70-foot coaches, approximately 11% of the original fleet, received low-density seating modifications of some sort.

Other modifications of the 70-foot coaches included the rebuilding of eight to open-end lounge-observation cars in the late 1920's. This has been the subject of an earlier "Central Headlight" article. Twelve cars were designated commuter club cars at various times between 1927 and 1964. One of these club cars, No. 74, was later converted to dormitory car No. 2780. Another club car conversion involved NYC 2545, mentioned earlier as the only standard coach in the fleet to receive a turtle-back roof. This car was later outfitted as a commuter club car, third NYC 98, receiving third-rail pickup shoes to permit its use as a trailer in MU trains in the New York City area.

The early 1940's saw 59 cars converted to full baggage cars, 14 to baggage-coaches, and 12 to baggage-dormitory combines. The latter were unusual in that each had a large baggage compartment with two doors per side. After the war, nine of the baggage-dorms were further converted to full baggage cars, each with three doors per side. In addition, 11 cars were converted to full dormitory cars, including one coach which had endured a previous conversion to a commuter club car.

More exotic rebuildings included a bar-counter car, No. 1578, for the "Michigan Timberliner," and No. 2012, which received cab windows, headlight, and push-pull controls in 1965.

The final modification program, begun in 1946 and continued until 1966, was to convert 70-foot coaches into crew rider cars by blanking the middle 12 windows on each side, removing the seats within that section of each coach, and installing oil stoves and fuel tanks so that the cars could be self-sustaining from a heating point of view. These rider cars, numbered in the 2700 series, were used on mail and express trains, and were frequently seen in the 1960's behind long strings of Flexi-Vans. Eighty-one coaches were eventually rebuilt into such rider cars.

All of these conversion programs notwithstanding, the bulk of the 70-foot coaches retained their high-density, non-reclining seating and soldiered on in local and commuter service. With the decline of local trains in the late 1950's, the remaining 70-foot coaches were concentrated in Boston, Chicago, and New York City suburban services. The P&LE also used them on commuter trains out of Pittsburgh. The



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only major improvement to these suburban-service cars undertaken by the NYC proper began about 1961. Beech Grove shops replaced the original sash windows with double panes of dark green glass in a rubber mounting which gave the cars a more modern appearance and eliminated maintenance of the aging wood sashes and interior shades. Before 1961, a number of coaches had received thermopane windows, but that program was not extensive. As part of the 1961 Beech Grove program, the toilet was removed from one end of each car and replaced by a three-passenger bench seat. It was in this form that most of the roughly 90 70-foot coaches remaining in revenue service existed when the history of the NYC ended in 1968. By the early 1970's, none was left in passenger service. The cars were not so much victims of their age as of the willingness of the State of New York to replace them with second-hand lightweight coaches.

NUMBERING

Listed below are the as-built numbers for all of the 70-foot steel coaches, together with some very early renumbering data which was the result of the 1914 New York Central Lines consolidation:

- B&A 446-485, 506-530, 534-578 (also see NYC&HR listing)
- CCC&StL 748-968
- CI&S 12960-12969 (became NYC 1238-1247)
- K&M 224-228 (became NYC 793-797)
- LS&MS 865-936 (became NYC 865-936)
- MC 250-269, 280-439
- NYC 738-792, 798-864, 937-1237, 1453-1499
- NYC&HR 1248-1487 (became NYC 1248-1452; B&A 486-505, 531-533, 651-662)
- P&E 940-943
- P&LE 170-183, 400-470
- PMcK&Y 300-330

Note the apparent overlap between NYC&HR 1248-1487 and NYC 1453-1499. In reality, there was no overlap as 1453-1487 (1st), the NYC&HR cars, were renumbered to the B&A series during 1915-1918. Coaches 1453-1487 (2nd), the NYC cars, were not built until 1926.

The formation of the New York Central System in 1935 precipitated a renumbering of equipment which eventually included most of the 70-foot steel coaches. Presently available information indicates that, although the renumbering plan may have been formulated in 1936, the actual renumbering of coaches did not commence until early 1937. In any case, all NYC, CCC&StL, and MC cars were assigned new numbers in a single NYC numbering system. As discussed subsequently under PAINTING AND LETTERING, all MC and CCC&StL coaches were lettered NYC. The renumbered 70-foot steel coaches were placed in the following series: 1008-1040, 1100-1115, 1230-1917, and 2000-2532. Within the various series, gaps were left to accommodate possible future renumberings of B&A, P&E, P&LE, and PMcK&Y 70-foot steel coaches, none of which was affected by the 1937 renumbering. An interesting consequence of this massive renumbering program, which took at least two years to implement, was that many newly renumbered cars operated temporarily with a five-digit road number. To avoid duplication of numbers with cars in the old series still in service, a "1" preceded the new four-digit number on the renumbered car until the car with the conflicting old number went through the shop.

Further renumbering occurred in the 1940's. As more and more 70-foot steel coaches were ACed, older non-AC cars for suburban service were renumbered into the 728-799 series, while newer non-AC cars became 1229-1296 (2nd). Finally, in the late 1950's-early 1960's, the ACed cars in

New York City suburban service were regrouped in the 1801-2099 series.

As for the subsidiary roads, the B&A cars were not renumbered into the NYC series until 1957. Most of the P&LE cars were never renumbered into the NYC series.

PAINTING AND LETTERING

As built, the cars were painted with a dark green body. The color was mixed to match the body color of heavyweight Pullman cars of the period, so it will be referred to hereinafter as Pullman green. Roofs, underbodies, and trucks were painted black. The NYC&HR, LS&MS, and CI&S cars, after consolidation into the New York Central Lines in 1914, as well as cars built later for the NYC proper, had NEW YORK CENTRAL stenciled in a space about 21'-7" long at the center of the letterboard using 5" gold-leaf letters in the serif (Roman) style. On cars built for all subsidiary roads except the B&A, the words NEW YORK CENTRAL LINES were substituted in a longer space, also centered on the letterboard and using 5" gold-leaf letters. Cars of these subsidiary lines also carried, at each end of the letterboard, the initials, with periods, of the appropriate road exactly as follows: C.C.C.& St.L., M.C.R.R., P.&E.R.R., P.&L.E., or P.McK.&Y. These initials were in 3" gold-leaf serif-style letters. Cars built for the B&A had BOSTON & ALBANY stenciled at the center of the letterboard using 5" gold-leaf letters in the serif style. As built, all cars carried road numbers on both ends of each side in a position over or nearly over the center of each truck. The numbers were centered vertically between the bottom of the car side and the center of the belt rail. Numbers were 5"-high gold leaf, serif style.

Unfortunately, no official painting and lettering drawings of the as-built schemes are in the NYCSHS collection. However, builder's photos of many of the 70-foot coach lots are available from the NYCSHS through Mr. R. L. Stoving. They

may be found in the Passenger Car Photograph Collection List dated 4/1/78 under the following lot numbers: 867, 868, 869 (870), 871, 879, 880, 882 (883), 884, 903 (904,-5,-6), 907, 927, 933 (934), 935, 936, 937 (944), 951, 952, 954 (955), 956 (957), 958, 981, 996 (995), 997, 998, 999 (2014), 2029 (2031), 2030, 2032, 2059 (2060, -1), 2062, 2063 (2064), 2081 (2082), and 2083. The lot numbers in parentheses are not shown in the photos, but, except for the lettering, are otherwise identical to the cars in the lot number not in parentheses which precedes them. The third and fifth columns of the photo list identify the road numbers assigned to the cars in each lot as built. For example, there are photos of Lot 903, which included NYC 845-864 and 1118-1147 when built. However, except for lettering, MC 345-359, B&A 534-548, and P&LE 174-178 (Lots 904, 905, and 906 respectively) were identical to the Lot 903 cars.

The first lettering change began in 1934. As cars were shopped, the road number (unchanged) was placed in a single location at the center of each side. The bottom edge of the numerals was located 14" above the bottom of the car side. Serif-style numbers, 5" high in gold leaf, were retained. All other painting and lettering details remained unchanged from the as-built scheme. As discussed earlier, 1934, also marked the beginning of the AC program for coaches.

After a car was shopped for AC and repainted and relettered in the revised scheme described above, the letter "C", 2½" high in serif-style gold leaf, was stenciled 2¼" below the center of the road number. The only official drawing in Society files covering the revised lettering scheme of 1934 is for B&A cars. It is No. H-30515 (see the list of drawings in the 1st Quarter 1978 "Central Headlight").



This photo shows one of the earliest cars to be air conditioned as it appeared in 1939. Note that the car is still in pre-1939 serif-style lettering, with a "C" under the road number to indicate air conditioning. The use of one road number per side, as shown here, first appeared in 1934. Note also how the Ward ventilator openings along the side of the clerestory have been sealed over. Cars air conditioned after 1941 looked similar, but had a Garland ventilator installed over the lounges, whereas 2383 and other pre-1941 air conditioned cars retained the original Globe ventilators there. This car was built by Pullman in 1926 as MC 394. NYCSHS Collection



A typical air-conditioned coach with the sans-serif style of lettering which first appeared in 1939. This car was built by Standard Steel Car Company in 1924 as NYC 1049. W. M. Curtis, Edward L. May Collection

The next revision in the lettering of the 70-foot coaches began in 1937 in conjunction with the previously discussed system-wide equipment renumbering which changed the road numbers of all NYC, CCC&StL, and MC coaches. All CCC&StL and MC cars were integrated into the new NYC-proper numbering system, and their prior ownership was no longer externally distinguishable, as the word LINES and subsidiary road initials disappeared from the letterboards of former CCC&StL and MC cars. The new numbers for NYC, CCC&StL, and MC cars can be found in the sixth column of the previously mentioned photo list. For example, referring again to Lot 903, NYC 845-864 became NYC 1823-1842, and MC 345-359 became NYC 1873-1887. The size, style, and placement of all numbers and letters remained unchanged from the 1934 revision. No renumberings of revisions were made to B&A cars at the time of the 1937 renumbering. P&LE and PMcK&Y coaches retained their original, as-built numbers although their letterboards were stenciled NEW YORK CENTRAL SYSTEM replacing NEW YORK CENTRAL LINES. Furthermore, the initials P.&L.E. or P.McK.&Y. were removed from each end of the letterboards and placed in a single location above the road number on each side. Coaches in the P&E series were not renumbered. The initials P.&E. or P.&E.R.R. (it is not known at this writing which were used) were placed over the road number as on the P&LE and PMcK&Y cars. It is not known whether the corporate title on the letterboards of the P&E cars was changed to NEW YORK CENTRAL or to NEW YORK CENTRAL SYSTEM at this time. All that is known is that, by the postwar period, P&E cars were stenciled simply NEW YORK CENTRAL, with the initials P.&E. over the road numbers, while P&LE and PMcK&Y cars still retained the SYSTEM designation. Again, no drawings of the 1937 lettering scheme are in the NYCSHS files. Note that the B&A drawing mentioned under the 1934 revision is still applicable for the 1937 revision.

The third change in the lettering of NYC passenger cars occurred in 1939. Beginning in that year, as cars were shopped, the lettering was changed from serif (Roman) style to sans-

serif (Gothic) style. The color of all letters and numbers was also changed from gold leaf to imitation gold, which is often referred to as Dulux gold and was actually a dark yellow. However, no renumbering of equipment occurred, and the size and placement of numbers and letters remained unchanged from the 1937 revision. No painting and lettering drawings for the 1939 scheme are available from the NYCSHS for the B&A cars.

The first change in painting the 70-foot coaches occurred during the 1940's, when the use of Pullman green as the carbody color was dropped. A DuPont color called Pacemaker green was substituted. It was similar in shade to the Pullman color.

The second change in painting the 70-foot coaches occurred in 1953. Beginning in that year, ACed NYC and P&E cars were repainted in the two-tone gray scheme used on smooth-side, lightweight passenger cars in the postwar period: dark gray body; light gray window panel; and black roof, underbody, and trucks. Ends and side doors were all dark gray. Aluminum-gray (a non-metallic, almost white color) stripes separated the grays above and below the windows. Lettering and numbering style and placement followed the sans-serif style of 1939, but aluminum gray was used in lieu of imitation gold. However, the use of the letter "C" on the sides of ACed NYC and P&E cars was discontinued as the use of the two-tone gray scheme itself indicated an ACed car. Note that the initials P.&E. still were used over the road numbers of P&E cars. Drawing R-57062, listed in the 1st Quarter 1978 "Central Headlight," depicts this 1953 scheme.

No painting and lettering changes were made in 1953 to non-ACed NYC and P&E, and all P&LE coaches. No cars lettered for the PMcK&Y remained by 1953. Drawing N-51925, listed in the 1st Quarter 1978 "Central Headlight" and first issued in 1939 for the change to sans-serif lettering, was still used for these cars in 1953 and later, although the drawing had been retraced in 1949. Body color on these cars remained Pacemaker green, with lettering and numbering in imitation gold. P&LE cars continued to use NEW YORK



This photo is of unusual interest for two reasons. First, it illustrates the split-plate letterboard which was an as-built detail on a number of 70-foot steel coaches and which required a slightly higher-than-usual placement of the lettering. Most cars had the one-piece letterboard plate illustrated in the other photos. Second, this car was built by Standard Steel Car Company in 1918 as NYC 1152 and had been renumbered to NYC 1783 in 1937. But as part of a limited renumbering program, which covered some of the oldest non-ACed 70-foot steel coaches used in commuter service, this car was renumbered again in the 1940's to 789.

W. M. Curtis, Edward L. May Collection

CENTRAL SYSTEM on the letterboards, with NYC and P&E cars stenciled NEW YORK CENTRAL. ACed P&LE cars continued to use the letter "C" under the road number. Three other symbols were in use by 1953 on cars of all roads still using Pacemaker green. The letter "F", located in the same manner as the "C", designated a coach with ceiling fans, while a 1½"-diameter solid circle located 2 1/8" below the road number meant that the car was equipped with bulkhead fans. A 2", five-pointed star located 2" above the road number designated a car used as a crew coach with no change in its original number. All of these various symbols were imitation gold in color.

The integration of all B&A coaches into the number series of the NYC proper occurred in 1957. Cars were repainted with NEW YORK CENTRAL on the letterboards, and the body color was either two-tone gray or Pacemaker green, depending on whether or not the individual coach had been ACed.

There were several changes in later years. ACed NYC coaches continued in the two-tone gray scheme until July 1966 when the aluminum-gray boundary stripe above the windows was removed. Then, in October 1966, the scheme was changed completely to solid Pacemaker green body with imitation gold lettering, except that supplemental instructions stated that the supply of dark gray paint was to be used up first. As a result, a number of cars were painted solid dark gray with aluminum-gray lettering. To complicate matters, the 2" stripe below the windows (imitation gold or aluminum gray depending on the car's body color) was reinstated in December 1966. Finally, in January 1968, on the eve of the PC merger, the scheme was changed for the last time to a solid gray body with aluminum gray lettering and striping. With the many changes instituted in the two years before the merger, and the railroad's reluctance to spend money repainting cars which by then were used mainly in suburban service, it is not surprising that, at the time of the merger, most 70-foot coaches still wore the two-tone gray scheme instituted in 1953.

It should be stressed that all of the aforementioned painting and lettering data represent official NYC practices. It is possible some cars may have been outshopped in unorthodox ways.

MODELING

Those who wish to model the 70-foot steel coaches are fortunate; there are several choices: j-c Models offers an inexpensive wood and metal HO scale kit, No. HO-12, which is a good representation of the prototype. The drawbacks are oversized rivet detail and window sashes which are too wide. Walthers' HO scale kit No. 6680 and O scale kit No. 9170 are similar in construction and cost to j-c's product. The sides of the HO scale kit are about 2½' (scale) too short, but the number of windows and relative spacing are correct, so the overall appearance is good. Rivet detail, although incorrect, is much closer to prototype size than j-c's. The belt rail on the Walthers car is too large. At the time this was written (August 1979), The Roundhouse hobby shop in New York City was selling Japanese-made brass models of the 70-foot coaches. These models are outstanding in detail, and they duplicate the as-built prototypes very well. American Standard Car Company offers a plastic kit in O scale, No. 1701, which appears to assemble into an excellent representation of the prototype.

For painting, both Floquil and Scalecoat make Pullman green for use in modeling pre-1940's cars. Modelers should be advised that the two companies' products differ in shade. With heavyweight Pullmans long gone, it is difficult to say which is more correct. Scalecoat advises that they have formulated a Pacemaker green color, but do not plan to release it because they do not think the demand is there. Modelers should write to Scalecoat if they feel otherwise. Both Scalecoat and SMP Accu-paint market NYC dark and light grays. Again, there are differences between the two brands. Currently available information indicates that the Scalecoat products are more accurate. Mixing instructions for the grays using

Floquil paints appeared in the March 1976 "Central Headlight" as well as in "Diesel Locomotives of the New York Central System".

Depending on the era and road to be modeled, the decal situation is either feast or famine. No reasonably accurate decals are available for the pre-1939 serif style. Champ's sets No. PH-3 in HO scale and No. P-3 in 0 scale, very recently revised for the second time in just a few years, contain the correct imitation gold letters and numbers, including SYSTEM and subsidiary road initials, for 1939-1953 NYC and P&E (both AC and non-AC), post-1953 NYC and P&E (non-AC only), and post 1939 P&LE (both AC and non-AC) coaches. Champ's recently introduced sets No. PH-33A in HO scale and No. P-33A in 0 scale provide the correct aluminum-gray letters and numbers for post-1953 NYC and P&E ACed cars. Even the P&E initials are included. Note that this set also includes SYSTEM and other subsidiary road initials such as

P&LE and MCRR which never appeared in aluminum gray on any equipment. Champ's aluminum-gray stripes No. S-86 in HO scale and No. S-93 in 0 scale are to be used with these cars. Champ's B&A sets No. PH-24 in HO scale and No. P-24 in 0 scale are sans-serif imitation gold for use in the 1939-1957 period, but the letters are slightly too large and the numbers are in the wrong font. It appears that these sets have not been upgraded as were the PH-3 and P-3 sets.

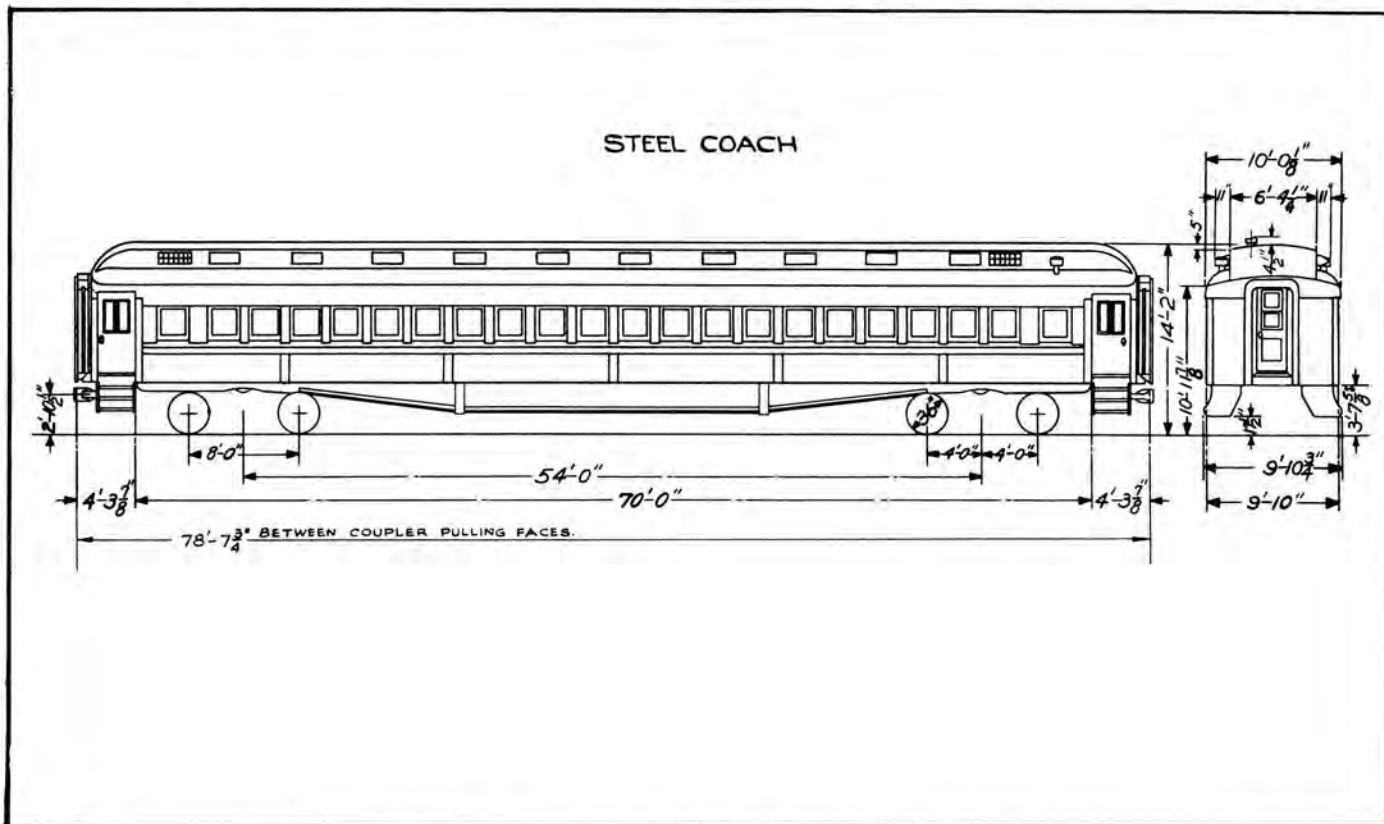
The four- and six-wheel trucks which were used under the 70-foot coaches generally had axle spacings of 8 and 11 feet respectively, with friction journals. In HO scale, close duplicates are available from Central Valley, MDC/Roundhouse, Walthers, and others.

The assistance of Messrs. W. D. Edson, and C. M. Smith, who provided much of the prototype data contained in this article, is gratefully acknowledged.



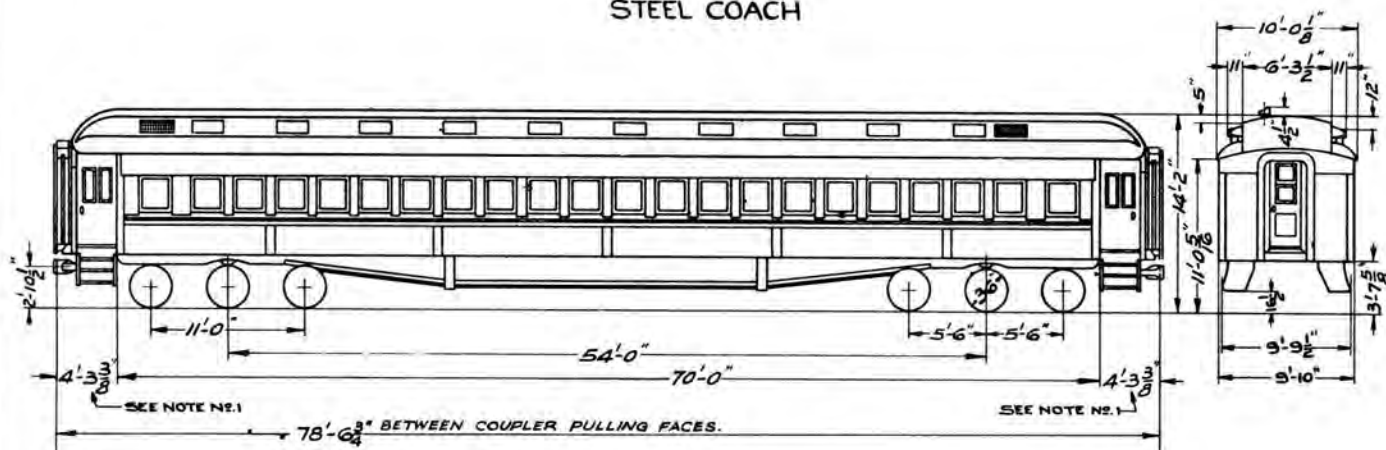
Pittsburgh & Lake Erie No. 420 after rebuilding. Photo taken on September 11, 1941.

George E. Votava Collection.



As-built cars equipped with four-wheel trucks. The open rectangles along the side of the clerestory are not vents of that shape, but indicate the location of Ward ventilators, which are shown in their true shape in the end view.

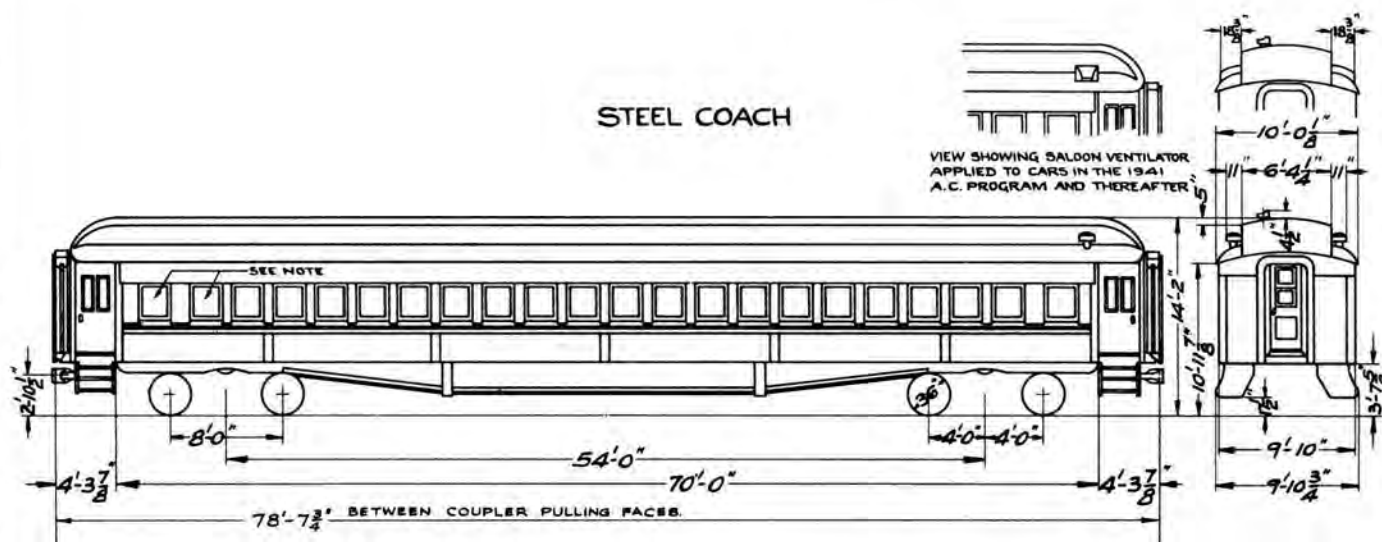
STEEL COACH



NOTE NO. 1:
THIS DIMENSION IS 4'-3 3/8" ON CARS EQUIPPED
WITH TYPE A-5-XB DRAFT GEARS.

As-built cars when equipped with six-wheel trucks.

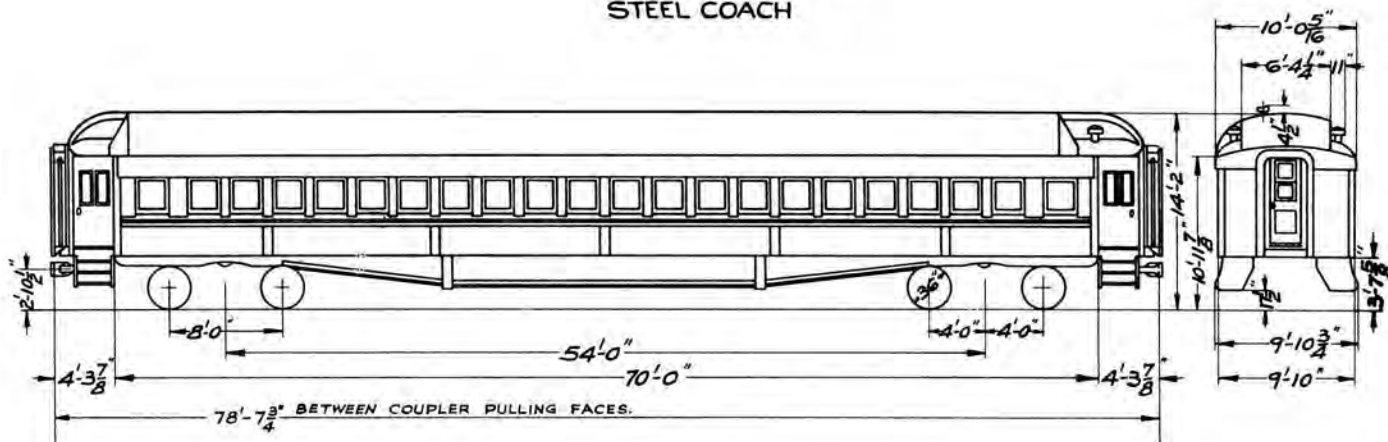
STEEL COACH



NOTE:
NO WINDOWS AT THESE LOCATIONS ON N.Y.C. CARS 2314-2345,
2424-2433 AND 2444-2457.

This diagram shows how most cars appeared after air conditioning and illustrates the pre- and post-1941 types of lounge vents. As a rule, ACed cars with the original 22 full-size windows per side still featured high-density, non-reclining seating. Almost all of the ACed cars which were modernized with lower density seating had windows blanked in the process.

STEEL COACH



This diagram illustrates those air-conditioned cars which received ductwork along one side of the lower roof deck. Most of these cars originally had a mid-car partition and were designated coach-smokers. Coach 2548 looked like this externally, but was a one-of-a-kind car that seated only 43 in a 2-and-1 arrangement of rotating reclining seats.

STEEL COACH

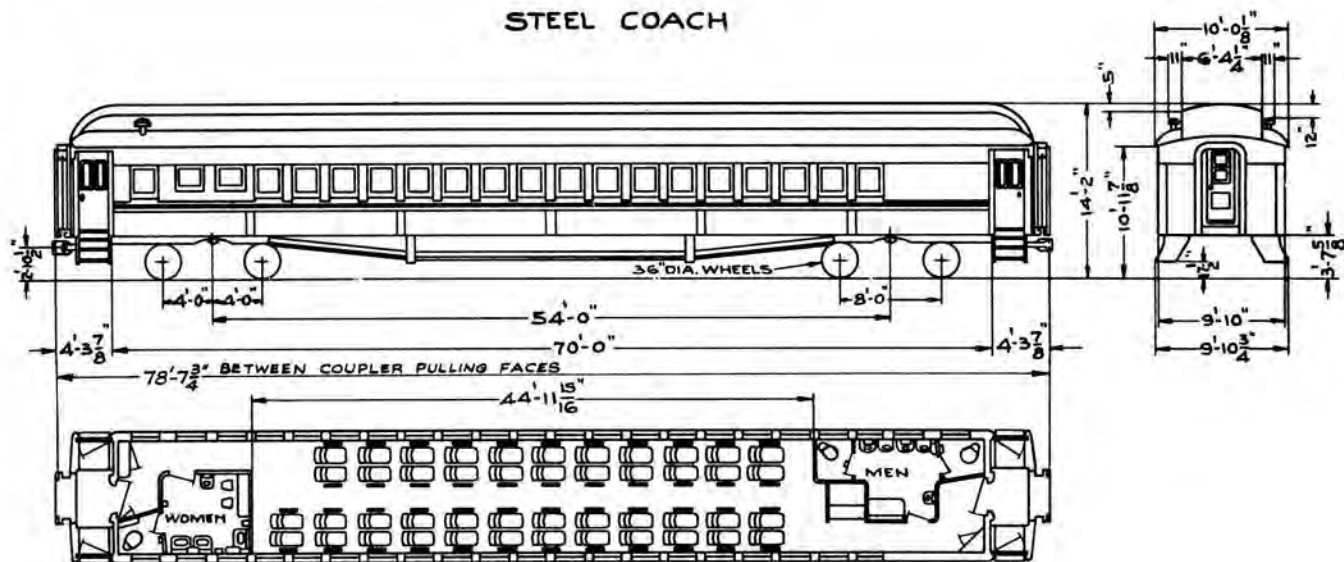


Diagram for a modernized car containing 46 reclining seats, and with lavatory space, with seats, added adjacent to each saloon. Note how some windows have been blanked and others shortened. These were the coaches used in the original consist of the "Pacemaker" in 1939. Most other modernized cars were less lavish, and contained 52 to 68 seats with smaller lounge spaces. However, almost all of the modernized coaches with reduced seating had one or more windows covered over.