

A decorative flourish featuring a stylized bird with spread wings, possibly a hawk or eagle, perched atop a series of elegant, swirling lines that form a frame around the text.

Pocket Guide to

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# *American Locomotives*

by WALTER A. LUCAS

Associate Editor of the Locomotive Cyclopedia and the Car Builders' Cyclopedia

250 photos with full data covering locomotives in service on American railroads

Pocket Guide  
to  
*American Locomotives*

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Associate Editor of the Locomotive Cyclopeda  
and the Car Builders' Cyclopeda

This fascinating locomotive identification volume, written by one of the country's leading locomotive authorities, describes and illustrates practically every type of steam, diesel and electric locomotive now or recently in service on U. S. and Canadian railroads.

It has been written in response to popular demand for an illustrated guide book that will provide the model maker with a single source of motive power information, that will supply the railfan with a handy reference volume containing photographs and detailed data on just about every locomotive that he is apt to see on American railroads, and finally it is a basic book that professional railroaders will welcome

*(Continued on back flap)*





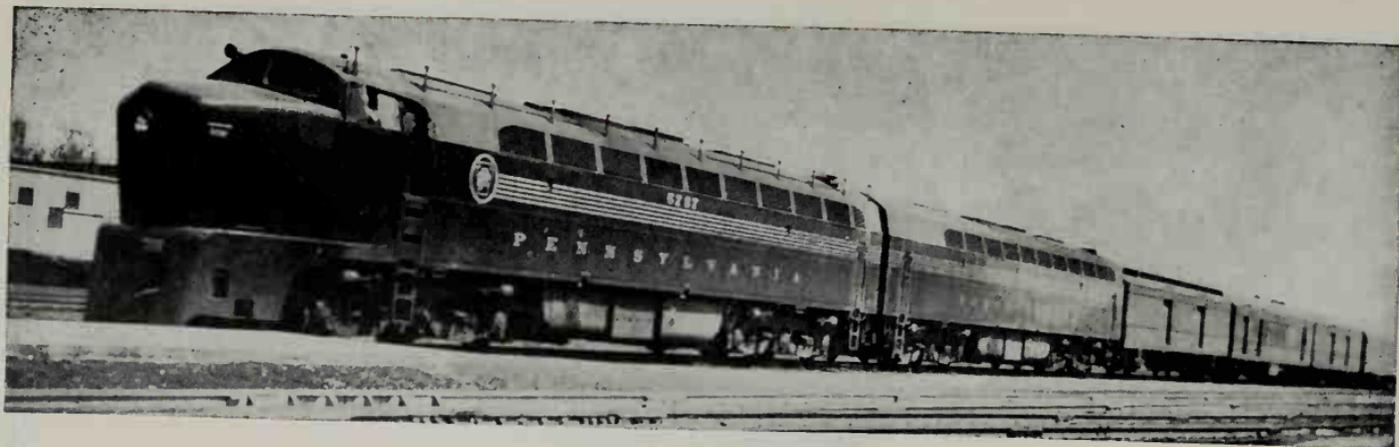
# Pocket Guide to American Locomotives

by

**WALTER A. LUCAS**

Associate Editor of the Locomotive Cyclopeda  
and the Car Builders' Cyclopeda

**SIMMONS-BOARDMAN PUBLISHING CORPORATION**  
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## FOREWORD

The great diversity of motive power employed today on the railroads in the United States and Canada has caused many a railfan and hobbyist to pause when he sees a train rush by and wonder what form of locomotive is hauling it. To aid in identifying that motive power this guide book to American locomotives was completed to provide pertinent information for readers who in a general way know the principal types but who desire to know more about the iron horse and how to tell its finer points.

There are many men of all ages whose hobby is that of railroading and the romance of the industry fascinates them. Ever since railroads became a part of our everyday life there have been men who have felt thus and in recent years the number has increased. This is due in part to a realization that the railroad from its very beginnings has been an integral part of Americana and a vital force in building the nation. This wide general interest in railroad lore has undoubtedly been generated

in most cases by viewing the spectacular operation of the steam locomotive. This admiration for the iron horse is happily still prevalent over all the continent.

Therefore, now that the steam locomotive is rapidly being supplanted by its oil-electric counterpart, it is fitting to record pictorially both types of motive power showing the unique points that characterizes them on various roads. Some of the steam locomotives shown in this volume already have been relegated to the scrap pile but it is thought proper to exhibit them as they will be remembered by many who have seen them running just prior to giving way to the ubiquitous diesel successor.

Although the selection of motive power offered here represents nearly every type of locomotive in service on the nation's railroads, it must be admitted that the list is not all inclusive. Much as the author would have liked to include every type and style of locomotive on each road it just was not possible owing to limitations of space.

## FOREWORD

While this notable change in motive power has been going on for several years on American railroads, there still are a few roads that rely largely on steam locomotives. One of these is the Norfolk and Western, running into the vast bituminous coal regions of the Virginias and operated completely by steam locomotives. Another is the Virginian operating in the same territory. Other roads with a preponderance of steam power are the Illinois Central; Chesapeake & Ohio; Pennsylvania; New York Central; Chicago & Illinois Midland; Chicago, Burlington & Quincy; Missouri Pacific; Baltimore & Ohio; New York, Chicago & St. Louis; Chicago & North Western; Southern Pacific; Chicago, Milwaukee, St. Paul & Pacific; Duluth, Missabe & Iron Range; Great Northern; Northern Pacific; Louisville & Nashville; Union Pacific; Wabash; Western Maryland; Canadian Pacific and Canadian National. However, if the present replacement continues, it is anticipated that in another eight or ten years the steam locomotive will have completely disappeared from the American railroad scene.

The reader will notice a different method of cataloging the illustrations in the two principal sections of this

book. In the steam locomotive section the photos are arranged according to the common method of classification under what is known as the Whyte system, that is, by wheel arrangement. The designs of steam locomotives on different railroads are seldom alike, there being no builders' standards in the accepted sense.

Standardized designs of steam locomotives were, however, adopted during the First World War when the railroads were under the control of the United States Railroad Administration (USRA) and plans for a dozen different types were prepared. Over eighteen hundred locomotives were constructed in accordance with these plans and allotted to many railroads requiring them. These USRA standard locomotives proved to be so well proportioned that duplicates continued to be ordered after the war when the railroads were restored to private ownership and some of these same locomotives are still running today.

Generally speaking, however, steam locomotives for many years have been built to conform to specifications provided by the railroads buying them. It was not unusual for different builders to be constructing at the

## FOREWORD

same time, locomotives that were exactly alike for an individual railroad. The result was that a great variety of details were embodied that became characteristic of each road. Today the general outline of a locomotive on any large railroad may often be recognized from the shape of its cab, dome, smokestack and other appurtenances.

Not so with the diesel-electric locomotive. From the beginning they have been a standardized product of each builder and the railroads take that which is offered, with very few changes. Thus any single type of diesel-electric locomotive intended for one railroad looks just the same, and generally is the same, as one going to a railroad a thousand miles away.

There are of course differences made in motor gearing and modifications to suit special operating conditions, but generally speaking, each builder of diesels has his own shape of cowling, cabs, hoods, windows and trucks so that they all look alike when emerging unpainted from a shop. This standardization has kept the cost of production down, as thousands of parts can be made alike at the same time.

In cataloging the diesels, we have shown various types that have been constructed by each builder under the builder's name. The builder's name is used instead of a wheel arrangement because there are only two general types of diesel locomotive trucks, four and six-wheel trucks. Straight electric locomotives are shown according to their axle arrangements as designated by the AAR standard system for locomotives having electric transmission.

Many of the illustrations and data included in this work have appeared in either the *Locomotive Cyclopedia* or in the magazine *Railway Age*, both of which are essentially trade publications not usually available to railroad fans and hobbyists. In turn this material was extensively furnished by the various locomotive builders and railroad companies whose names appear in the captions and to whom we extend our thanks for their cooperation. The author also wishes to thank Mr. G. M. Best, Mr. R. P. Middlebrook, Mr. D. L. Joslyn, Dr. E. B. Pedlow, Mr. C. B. Medin, and the late Mr. A. O. Geertz, for the photographs furnished by them.

WALTER A. LUCAS.

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## STEAM LOCOMOTIVES

Steam locomotives in America are classified according to the number of driving and carrying wheels employed in the running gear, the system having been originated by Mr. F. M. Whyte, Mechanical Engineer of the New York Central and Hudson River Railroad in 1900. Essentially it consists of even numerals representing the number of wheels in each of the three principal groups generally found under a locomotive. Beginning at the front or pilot end of the locomotive the first denotes the number of wheels in the leading truck, the second the number of drivers and the third the number of wheels in the trailing truck. In articulated locomotives a numeral is used for each group of driving wheels and in engines without trucks a cypher replaces the number that would usually denote truck wheels. The numerals are generally separated by hyphens. Thus a locomotive classified as 4-4-0 has a four-wheel leading truck, four driving wheels and no trailers.

Besides the Whyte system of classification, which was

presented at the annual meeting of the American Railway Master Mechanics Association in June 1901 and was adopted later as standard by the American Locomotive Company, an unofficial but generally accepted system of naming the various locomotive types has come into common use. This system grew slowly with the addition of newer wheel arrangements, especially after the adoption of trailing trucks. It had the disadvantage of being at the mercy of either the locomotive builder or railroad company which desired to name a new type. In that way we find that the 4-4-2, Atlantic type, has been known as the Chautauqua, Central Atlantic and other names not quite so complimentary. The 4-8-4, Northern type, has been known as the Pocono, Niagara, Wyoming and Golden State type depending upon the road on which it was used, but Northern is the more widely accepted term. Likewise the 4-6-4 type, which originated in France, was called the Baltic type when described in 1913. Fourteen years later the New York Central ordered

the first of the type to be used in America and it was promptly labeled the Hudson type. On the same road the 4-8-2 Mountain type is known as the Mohawk type.

A peculiarity in nomenclature arose when the first steam locomotive of the 4-8-0 type was built in 1855 for the Baltimore and Ohio and named *Centipede*. No others of this type were built for many years after and the *Centipede* was apparently forgotten. In 1882 the Southern Pacific built a locomotive with this wheel arrangement and about the same time one with a 4-10-0 wheel arrangement, the latter being the first of its kind. The 4-8-0 locomotive was named *Mastodon* and the 4-10-0 named *El Gobernador*. In later years the Lehigh Valley had some 4-8-0 locomotives constructed but the name *Mastodon* was not applied to the type, they were simply called *Twelve Wheelers*. In the latter part of the

nineteenth century the Schenectady Locomotive Works made some 4-8-0 locomotives for the Central Pacific in which they revived the designation by calling them the *Mastodon* type. No other builder seems to have adopted this name and when the first edition of the Locomotive Dictionary was published in 1906 it defined the 4-8-0 type as a *Twelve Wheel* locomotive while it designated the 4-10-0 type as the *Mastodon*. This name has been continued in that category up to the present time even though no locomotives of the 4-10-0 type have been built since the *El Gobernador*. Such are the vagaries of naming steam locomotive classifications.

Most of the steam locomotives shown in this book are coal burners and the fact is indicated in the table of particulars giving the tender fuel capacity in tons. Where oil fuel is used the capacity is given in gallons.

# STEAM LOCOMOTIVES: Wheel arrangements

## Locomotives with 2-Wheel Leading Trucks

2-4-0	<u>△<sub>o</sub> ○ ○</u>	4-Coupled
2-4-2	<u>△<sub>o</sub> ○ ○ ○</u>	Columbia
2-6-0	<u>△<sub>o</sub> ○ ○ ○</u>	Mogul
2-6-2	<u>△<sub>o</sub> ○ ○ ○ ○</u>	Prairie
2-8-0	<u>△<sub>o</sub> ○ ○ ○ ○</u>	Consolidation
2-8-2	<u>△<sub>o</sub> ○ ○ ○ ○ ○</u>	Mikado
2-8-4	<u>△<sub>o</sub> ○ ○ ○ ○ ○ <u>δ</u></u>	Berkshire
2-10-0	<u>△<sub>o</sub> ○ ○ ○ ○ ○</u>	Decapod
2-10-2	<u>△<sub>o</sub> ○ ○ ○ ○ ○ ○</u>	Santa Fe
2-10-4	<u>△<sub>o</sub> ○ ○ ○ ○ ○ ○ <u>δ</u></u>	Texas

## Switching Locomotives

0-4-0	<u>┘ ○ ○</u>	4-Wheel Switcher
0-6-0	<u>┘ ○ ○ ○</u>	6-Wheel Switcher
0-8-0	<u>┘ ○ ○ ○ ○</u>	8-Wheel Switcher
0-10-0	<u>┘ ○ ○ ○ ○ ○</u>	10-Wheel Switcher

## Articulated Locomotives (Partial)

0-6-6-0	<u>△ ○ ○ ○ ○ ○ ○</u>
2-6-6-2	<u>△<sub>o</sub> ○ ○ ○ ○ ○ ○ ○</u>
0-8-8-0	<u>△ ○ ○ ○ ○ ○ ○ ○</u>
2-8-8-0	<u>△<sub>o</sub> ○ ○ ○ ○ ○ ○ ○ ○</u>
2-8-8-2	<u>△<sub>o</sub> ○ ○ ○ ○ ○ ○ ○ ○ ○</u>

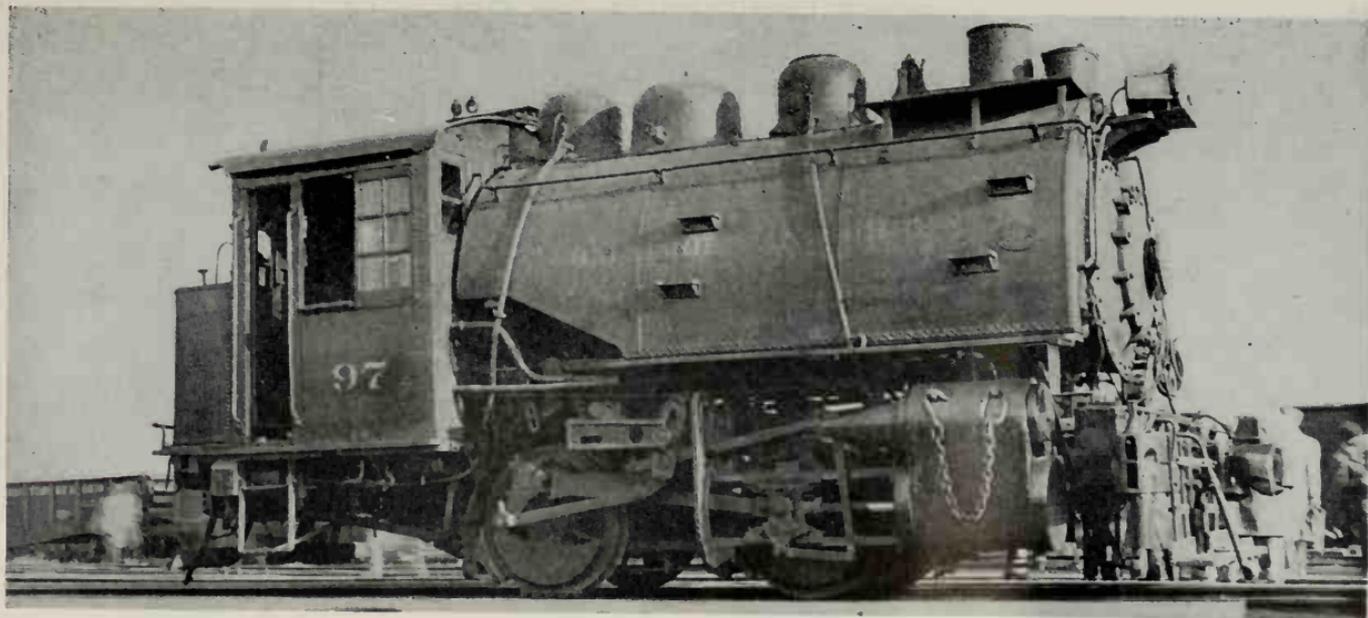
## STEAM LOCOMOTIVES: Wheel arrangements

## Locomotives with 4-Wheel Leading Trucks

4-4-0	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc$	American—8-Wheel
4-4-2	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \smallcirc$	Atlantic
4-6-0	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc$	10-Wheel
4-6-2	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc \smallcirc$	Pacific
4-6-4	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc \overline{o} \overline{o}$	Baltic—Hudson
4-8-0	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc \bigcirc$	Mastodon—12-Wheel
4-8-2	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc \bigcirc \smallcirc$	Mountain
4-8-4	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc \bigcirc \overline{o} \overline{o}$	Northern
4-10-2	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \smallcirc$	So. Pacific
4-12-2	$\Delta \overline{o} \overline{o} \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \smallcirc$	Union Pacific

## Tank Locomotives (Partial)

0-4-0 T	$\Delta \bigcirc \bigcirc$	
0-4-2 T	$\Delta \bigcirc \bigcirc \smallcirc$	
0-4-4 T	$\Delta \bigcirc \bigcirc \overline{o} \overline{o}$	Forney 4-Coupled
2-4-2 T	$\Delta \smallcirc \bigcirc \bigcirc \smallcirc$	
2-4-4 T	$\Delta \smallcirc \bigcirc \bigcirc \overline{o} \overline{o}$	
0-6-0 T	$\Delta \bigcirc \bigcirc \bigcirc$	
0-6-2 T	$\Delta \bigcirc \bigcirc \bigcirc \smallcirc$	
0-6-4 T	$\Delta \bigcirc \bigcirc \bigcirc \overline{o} \overline{o}$	Forney 6-Coupled
4-6-4 T	$\Delta \smallcirc \smallcirc \bigcirc \bigcirc \overline{o} \overline{o}$	
0-8-0 T	$\Delta \bigcirc \bigcirc \bigcirc \bigcirc$	

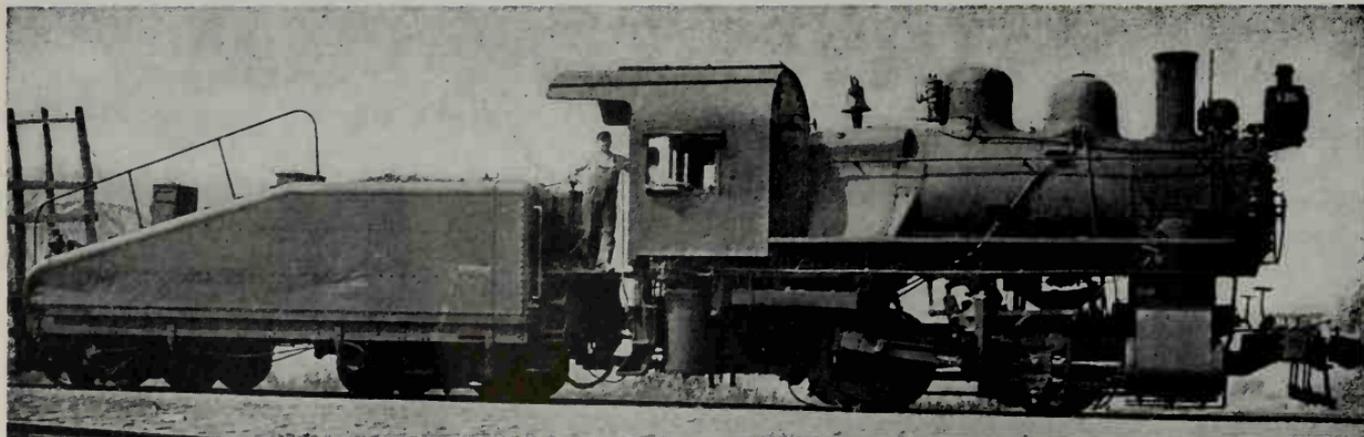


Baltimore & Ohio 0-4-0 Saddle-Tank Type Locomotive for switching service, Class C-16, Nos. 97-98. Built by The Baldwin Locomotive Works in 1912.

Traction force .....	27,600 lb.	Total weight of engine .....	120,000 lb.
Cylinders, diameter and stroke .....	19 in. x 24 in.	Driving wheel base .....	7 ft. 0 in.
Drivers, diameter .....	48 in.	Steam pressure .....	180 lb.
Weight on drivers .....	120,000 lb.	Tank and fuel capacity .....	2,000 gal., 650 gal. oil

Known to many as a dock-side switcher, this class of engine was the latest development of several used by the B & O for working in close quarters around industrial plants, warehouses, etc. At one time, several years ago, an 0-4-0 hauled cars off the floats to the freight yard in New York City, work that is now performed by a diesel switcher. Two other engines Nos. 96 and 99 Class C-16a were the same as C-16 but were equipped with tenders.

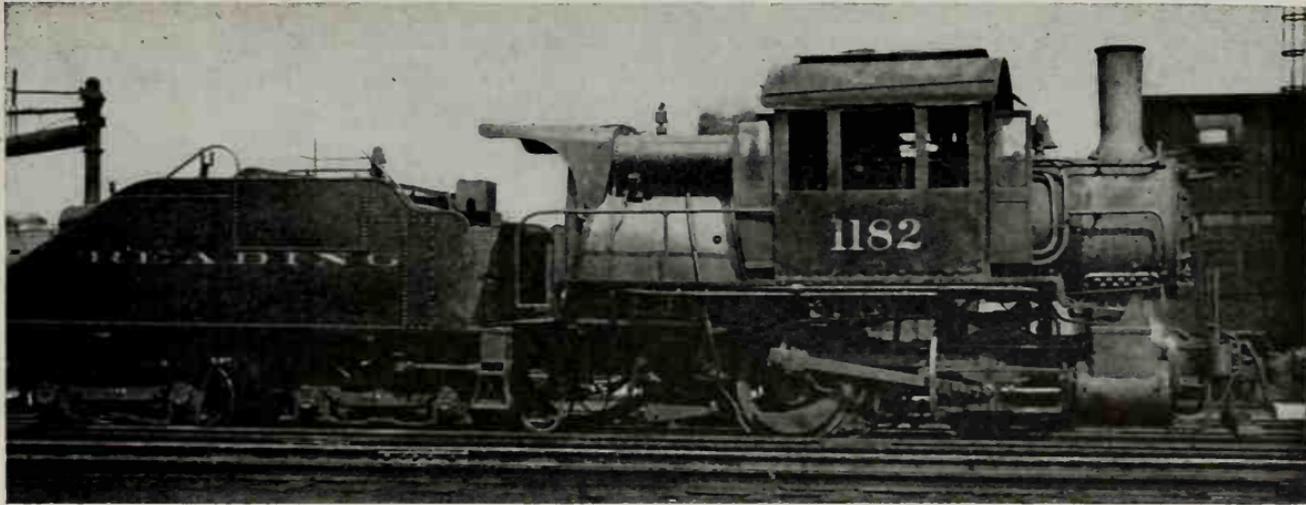
## STEAM LOCOMOTIVES: 0-4-0 Type



Pennsylvania Railroad 0-4-0 (Four-Wheel) Type Locomotive for switching service. Class A-5-s, No. 136. Built by the railroad at Altoona in 1917.

Tractive force .....	30,190 lb.	Weight of tender loaded .....	121,500 lb.
Cylinders, diameter and stroke .....	20 in. x 24 in.	Driving wheel base .....	7 ft., 3 in.
Drivers, diameter .....	50 in.	Steam pressure .....	185 lb.
Weight on drivers .....	131,750 lb.	Tender capacity .....	5,700 gal., 7 tons

A very short coupled locomotive capable of negotiating the sharp curves of the many industrial plants on the Pennsylvania. They are modernized versions of earlier four-wheel switchers and are equipped with superheaters and Walschaerts valve gear.



Reading Company 0-4-0 (Four-Wheel) Switching Locomotive No. 1182, Class A-5-a. Built by The Baldwin Locomotive Works in 1907.

Tractive force .....	24,456 lb.	Weight of tender .....	75,000 lb.
Cylinders, diameter and stroke .....	18 in. x 24 in.	Driving wheel base .....	7 ft., 0 in.
Drivers, diameter .....	50 in.	Steam pressure .....	185 lb.
Weight on drivers .....	110,450 lb.	Tender capacity .....	3,500 gal., 4 tons

The general use of Camelbacks on the Reading railroad is exemplified by the four-wheel switcher, the smallest to operate on the system. This little fellow successfully ran in the narrow streets and on the cramped wharves of Philadelphia negotiating curves as sharp as 75 ft. radius. Engines of this type, over one hundred of them, were employed in other places on the road including Wilmington, Del., Atlantic City, N. J., Reading, Pa., and wherever restricted clearance prevented the operation of larger machines. Diesels have supplanted all of them now.

## STEAM LOCOMOTIVES: 0-6-0 Type



Lehigh & New England 0-6-0 (Six-Wheel) Switching Locomotive, Class B-5, No. 207. Built by The Baldwin Locomotive Works in 1936.

Tractive force .....	44,200 lb.	Driving wheel base .....	11 ft., 0 in.
Cylinders, diameter and stroke .....	21 in. x 28 in.	Weight of tender, loaded .....	148,760 lb.
Weight on drivers .....	183,900 lb.	Steam pressure .....	215 lb.
Drivers, diameter .....	51 in.	Tender capacity .....	8,000 gal., 10 tons coal

This robust switcher was the only one of its kind and the last steam locomotive to be built for the Lehigh and New England. It performed excellently in the heavy manufacturing district of eastern Pennsylvania. The cover over the turret and the front-end throttle box helps to fill up the space on top of the boiler of this stubby engine.



Pennsylvania Railroad 0-6-0 (Six-Wheel) Switching Locomotive No. 4179, Class B-6-5B. Built by the railroad at Altoona in 1924.

Tractive force .....	36,140 in.	Weight of tended loaded .....	125,000 lb.
Cylinders, diameter and stroke .....	22 in. x 24 in.	Driving wheel base .....	11 ft., 6 in.
Drivers, diameter .....	56 in.	Steam pressure .....	205 lb.
Weight on drivers .....	180,300 lb.	Tender capacity .....	6,350 gal., 6¼ tons

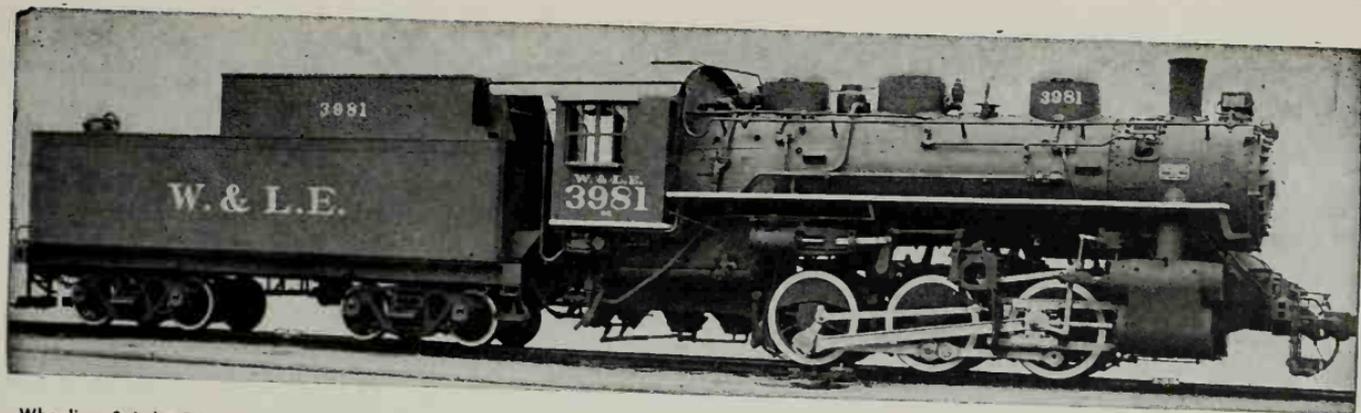
Locomotives of this class represent the standard heavy six-wheel switcher used on the Pennsylvania System prior to the advent of the diesels. They were found in all of the yards and terminals where heavy work was done.



Southern Pacific 0-6-0 (Six-Wheel) Switching Locomotive, Class S-14, Nos. 1285-1294. Built by the Lima Locomotive Works, Inc., in 1924.

Tractive force .....	31,020 lb.	Weight of tender .....	126,000
Cylinders, diameter and stroke .....	20 in. x 26 in.	Driving wheel base .....	11 ft., 0 in.
Drivers, diameter .....	57 in.	Steam pressure .....	200 lb.
Weight on drivers .....	155,000 lb.	Tender capacity .....	7,000 gal. water, 2,085 gal. oil

Engines Nos. 1285-1294 comprise a group of doughty switchers on the Espee that are second to none in their field. They are the last 0-6-0's built for the road. In design they appear to follow the curvacious dome outlines established by the common standards of the Harriman Lines in 1904 and a general resemblance to other locomotives on the UP is apparent. The Vanderbilt type of tender is unusual and not often found on six-wheel switchers.



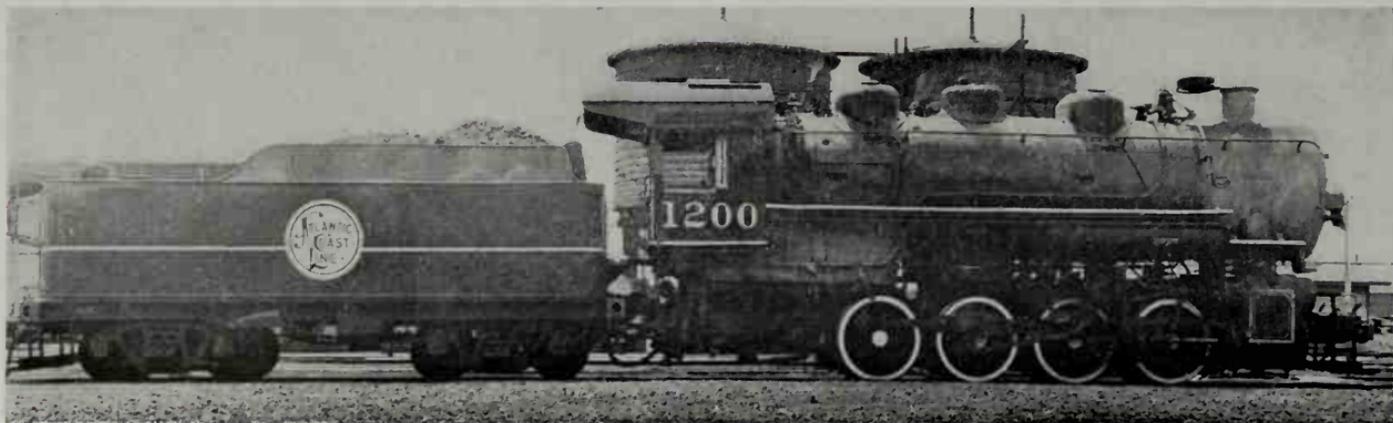
Wheeling & Lake Erie 0-6-0 (Six-Wheel) Switching Locomotive, Class B-5, Nos. 3981-3986. Built by the American Locomotive Company in 1944.

Tractive force .....41,200 lb.  
 Cylinders, diameter and stroke .....21 in. x 28 in.  
 Drivers, diameter .....51 in.  
 Weight on drivers .....168,000 lb.

Driving wheel base .....11 ft. 0 in.  
 Weight of tender, loaded .....163,100 lb.  
 Steam pressure .....200 lb.  
 Tender capacity .....8,950 gal., 12½ tons

One of the last tribe of six-wheel switchers built for this road, which is now part of the New York, Chicago and St. Louis. Its design was based upon that of the standard 0-6-0 type built for the United States Railroad Administration during the first World War, 1918. They now are numbered 381-386, Class B-5 on the NKP road.

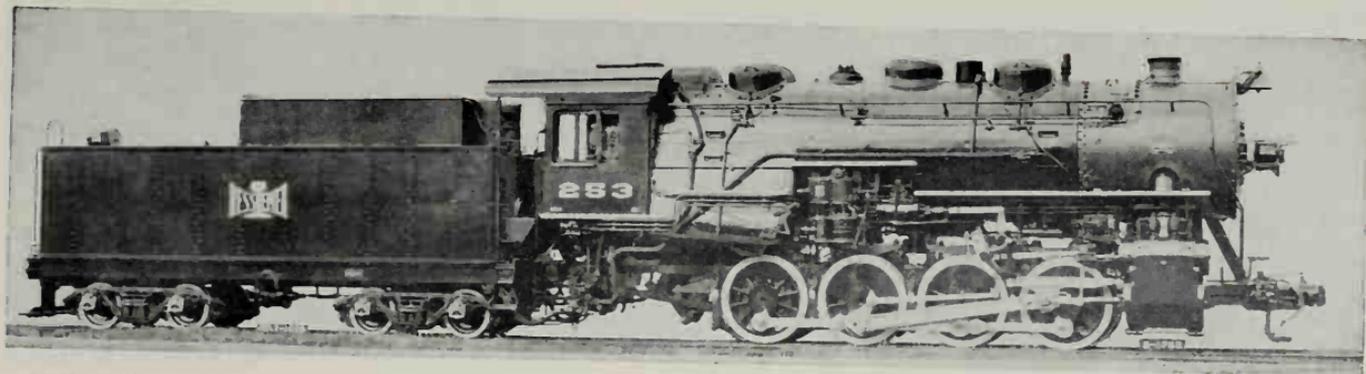
## STEAM LOCOMOTIVES: 0-8-0 Type



Atlantic Coast Line 0-8-0 (Eight-Wheel) Switching Locomotive, Class E-14, Nos. 1200-1234. Built by The Baldwin Locomotive Works in 1923-1926.

Traction force .....	53,960 lb.	Weight of tender .....	168,800 lb.
Cylinders, diameter and stroke .....	25 in. x 28 in.	Driving wheel base .....	15 ft. 0 in.
Drivers, diameter .....	51 in.	Steam pressure .....	185 lb.
Weight on drivers .....	214,000 lb.	Tender capacity .....	8,000 gal., 16 tons

Heavy switching is performed on the ACL by these thirty-five switchers. The industrial growth of manufacturing through the southland necessitated the adoption of eight-wheel switchers as long ago as 1923 on the road and the group represented above is the latest acquired.

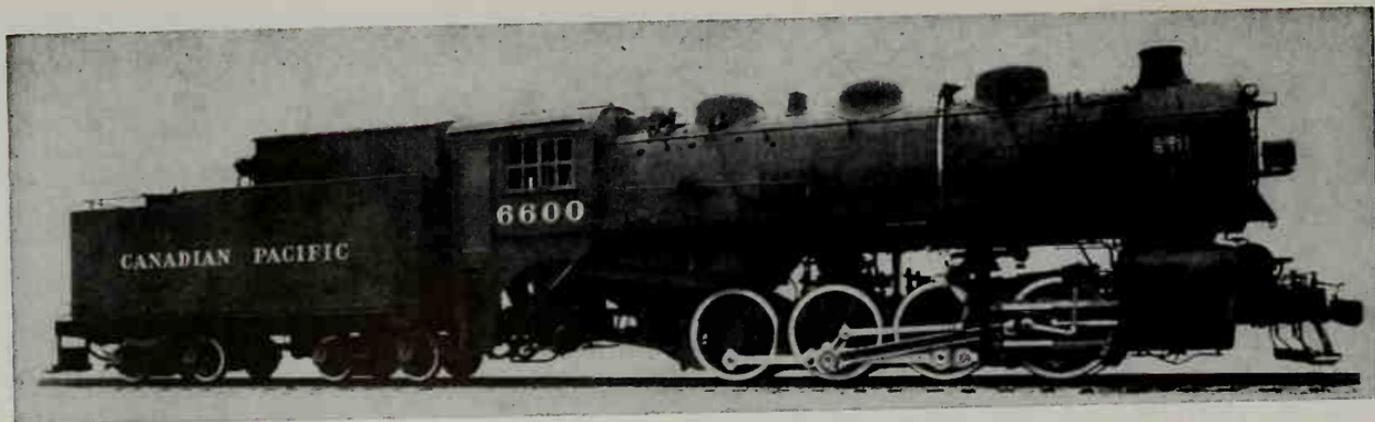


Bessemer & Lake Erie 0-8-0 (Eight-Wheel) Switching Locomotive, Class S-4a, Nos. 251-254. Built by the American Locomotive Company in 1936.

Traction force .....	64,300 lb.	Weight of tender, loaded .....	186,700 lb.
Cylinders, diameter and stroke .....	25 in. x 30 in.	Driving wheel base .....	16 ft. 0 in.
Drivers, diameter .....	57 in.	Steam pressure .....	230 lb.
Weight on drivers .....	279,000 lb.	Tender capacity .....	10,000 gal., 13 tons

Five separate orders covering twelve engines of this design were completed between 1936 and 1942. Their numbers run as high as 262. These locomotives are among the heaviest of their type ever built.

## STEAM LOCOMOTIVES: 0-8-0 Type



Canadian Pacific 0-8-0 (Eight-Wheel) Switching Locomotive, Class V-5a, Nos. 6600-6609. Built by the Canadian Locomotive Company, Ltd., in 1930.

Tractive force .....59,500 lb.  
 Cylinder, diameter and stroke .....22½ in. x 32 in.  
 Drivers, diameter .....58 in.  
 Weight on drivers .....269,000 lb.

Driving wheel base .....15 ft. 9 in.  
 Weight of tender loaded .....199,500 lb.  
 Steam pressure .....250 lb.  
 Tender capacity...8,000 Imp. gal. (9,600 U. S. gal.), 12 tons

A powerful engine with rather large driving wheels for its type. It has the characteristic outline of smoke stack used on many Canadian Pacific locomotives and the same arrangement of vestibuled cab as is used on their road engines. Note the extreme height of the tender.



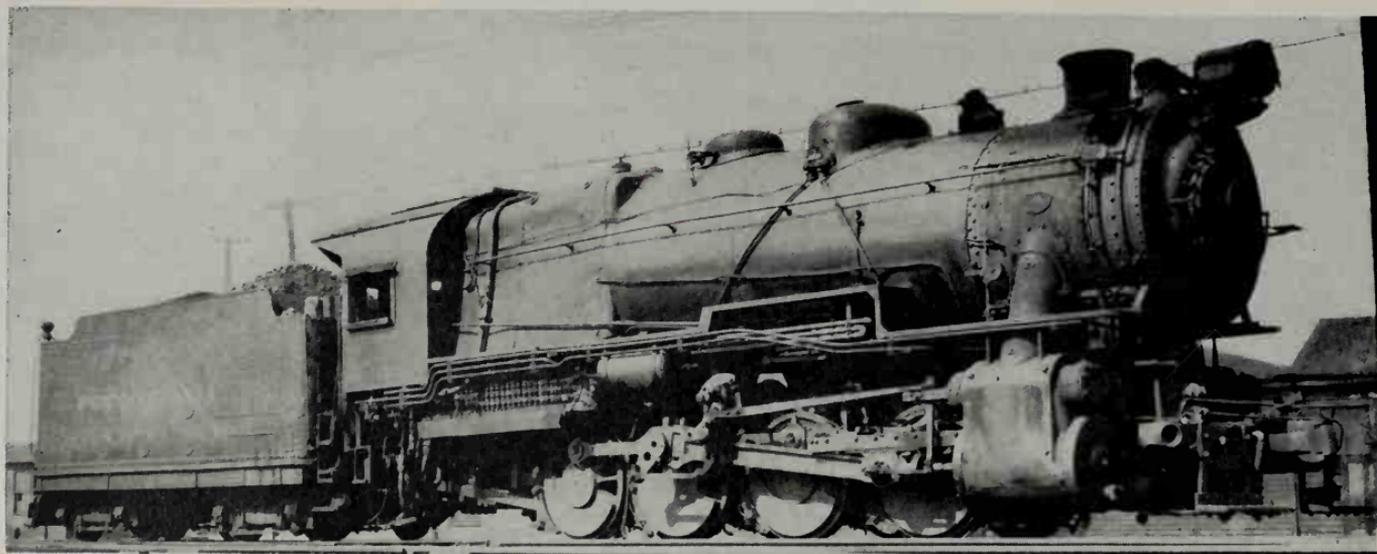
Chesapeake & Ohio 0-8-0 (Eight-Wheel) Switching Locomotive, Class C-16, Nos. 255-284. Built by The Baldwin Locomotive Works in 1948.

Tractive force .....57,200 lb.  
 Cylinders, diameter and stroke ..... 25 in. x 28 in.  
 Drivers, diameter .....52 in.  
 Weight on drivers .....247,000 lb.

Weight of tender, loaded .....159,200 lb.  
 Driving wheel base .....15 ft. 0 in.  
 Steam pressure .....200 lb.  
 Tender capacity .....8,000 gal., 12 tons

These thirty switchers are among the last steam locomotives built by Baldwin for domestic use. They are duplicates of 65 built by Alco in 1930, Nos. 175-239 and 15 built by Lima in 1943, Nos. 240-254. The engines shown above have been superseded by diesels and sold to the Norfolk and Western where they retain the same numbers, but are reclassified as S-1.

## STEAM LOCOMOTIVES: 0-8-0 Type



Pennsylvania Railroad 0-8-0 (Eight-Wheel) Switching Locomotive, Class C-1, No. 6556. Built by the railroad at Altoona in 1925.

Traction force .....	76,154 lb.	Weight of tender .....	167,000 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	15 ft. 9 in.
Drivers, diameter .....	56 in.	Steam pressure .....	250 lb.
Weight on drivers .....	278,000 lb.	Tender capacity .....	7,300 gal., 15½ tons

The culmination of heavy switch engine design is represented in this large eight wheeler, a great number of which are used in hump yard and other slow moving train service. The first group was built in 1925 and numbered 6550-6599. They were followed by engines 6600-6639 in 1927.



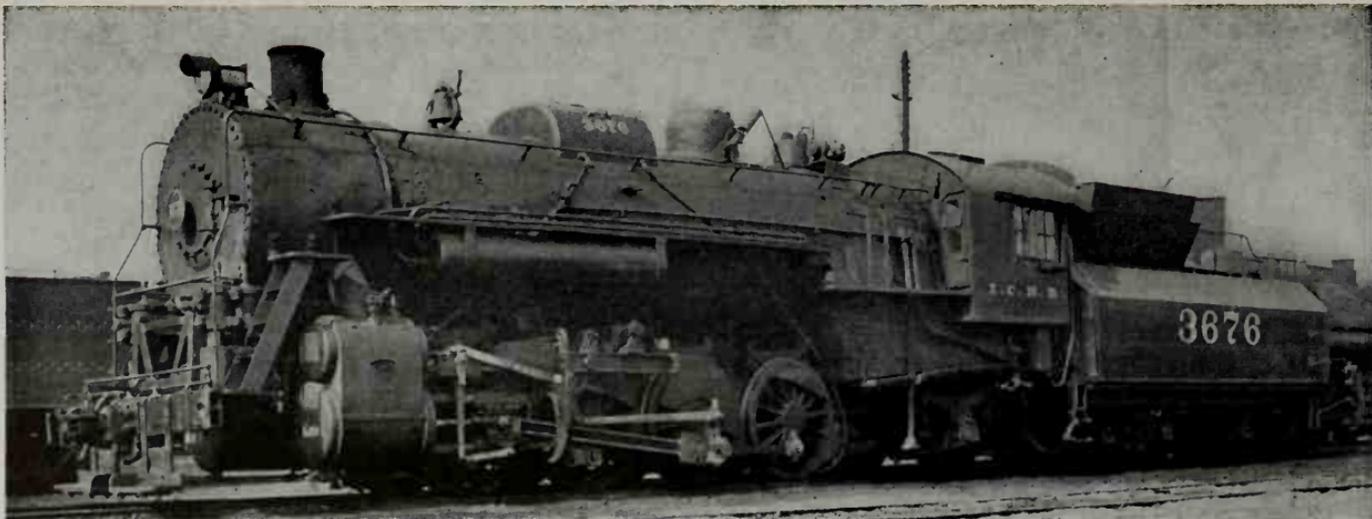
New York Central (P. & L.E.) 0-8-0 (Eight-Wheel) Switching Locomotive, Class U-3-L, Nos. 8050-8074. Built by the American Locomotive Company in 1944.

Tractive force .....54,350 lb.  
 Cylinders, diameter and stroke .....25 in. x 28 in.  
 Drivers, diameter .....52 in.  
 Weight on drivers .....234,000 lb.

Driving wheel base .....15 ft. 0 in.  
 Weight of tender, loaded .....188,000 lb.  
 Steam pressure .....190 lb.  
 Tender capacity .....10,000 gal., 16 tons

Relatively speaking the Pittsburgh and Lake Erie probably employs more eight-wheel switchers than any other road. Over 100 of them shunt the heavy cars of coal, iron ore and steel products in the Pittsburgh manufacturing area. The U-3 class originated with a class of locomotives built by Lima Locomotive Works in 1929.

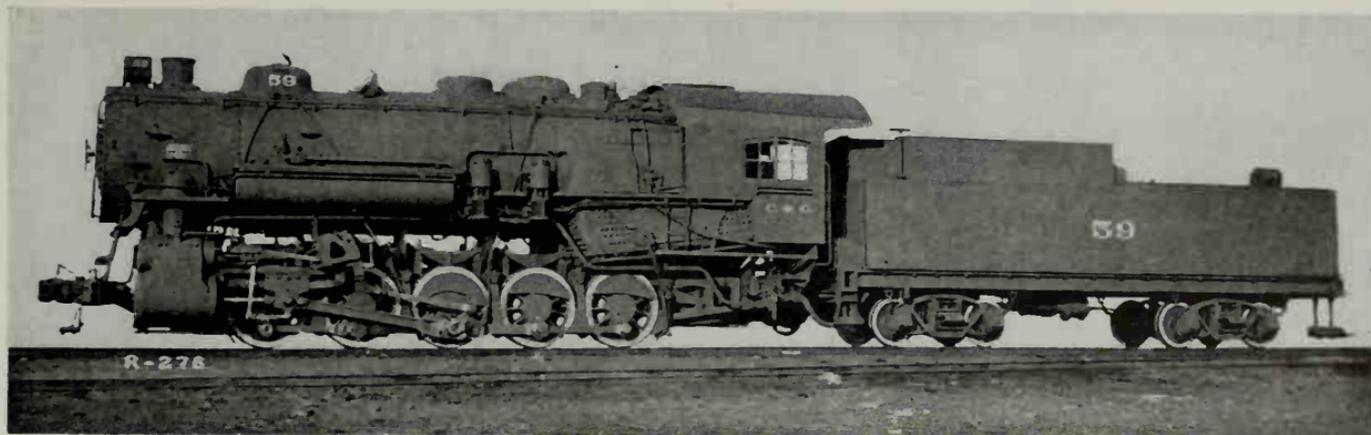
## STEAM LOCOMOTIVES: 0-8-2 Type



Illinois Central 0-8-2 (Transfer) Type Locomotive No. 3676, originally No. 1614, a 2-8-2 built by The Baldwin Locomotive Works in 1911. This is one of a group Nos. 3650-3699.

Traction force .....	75,000 lb.	Weight of tender .....	164,000 lb.
Cylinders, diameter and stroke .....	28 in. x 30 in.	Driving wheel base .....	16 ft. 6 in.
Drivers, diameter .....	63½ in.	Total engine wheel base .....	26 ft. 6 in.
Weight on drivers .....	264,500 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	294,000 lb.	Tender capacity .....	9,250 gal., 11 tons

The railroad rebuilt this locomotive from a 2-8-2 type by removing the front truck, thus throwing more weight upon the driving wheels and giving a greater tractive force for the service intended. Note the unusual shape of the sandbox and sloping side of the tender.

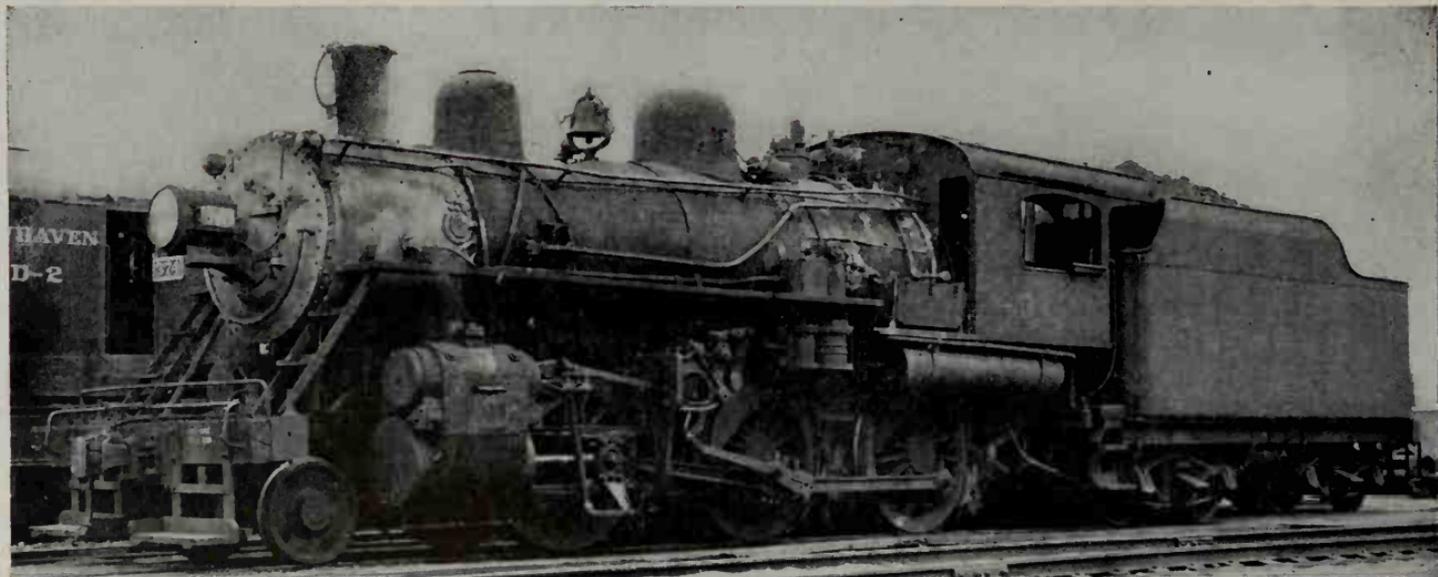


Chesapeake & Ohio 0-10-0 (Ten-Wheel) Switching Locomotive, Nos. 50-59. Built by the American Locomotive Company Richmond Works in 1919.

Tractive force .....63,000 lb.  
 Cylinders, diameter and stroke .....27 in. x 28 in.  
 Drivers, diameter .....51 in.  
 Weight on drivers .....296,000 lb.

Driving wheel base .....19 ft. 0 in.  
 Weight of tender, loaded .....185,700 lb.  
 Steam pressure .....185 lb.  
 Tender capacity .....10,000 gal., 15 tons

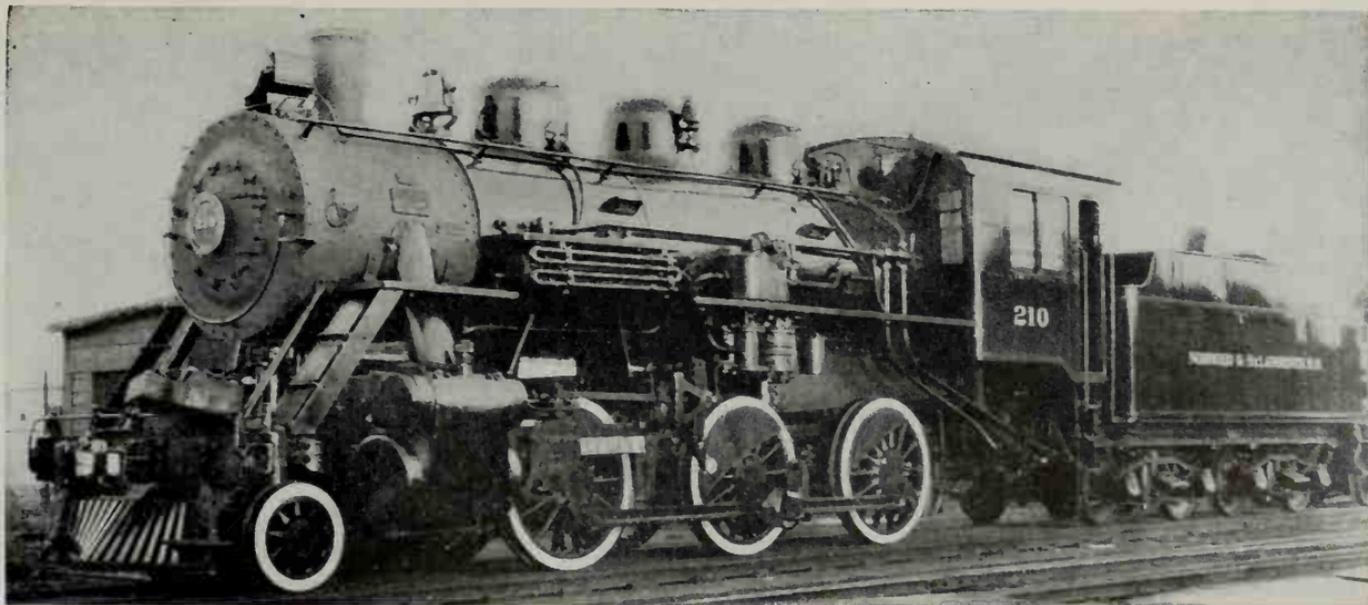
Comparatively few railroads in America have ever owned ten-wheel switchers. This is a good husky one used for heavy short drag and hump-yard service. Ten engines were built as shown above followed by five duplicates Nos. 60-64 in 1921. They were numbered 130-144 in 1924, Class C-12.



New York, New Haven & Hartford 2-6-0 (Mogul) Type Freight Locomotive, No. 374, Class K-1-b, Nos. 371-395. Built by the Rhode Island works of the American Locomotive Company in 1903.

Traction force .....	30,223 lb.	Weight of tender .....	114,000 lb.
Cylinders, diameter and stroke .....	20 in. x 28 in.	Driving wheel base .....	15 ft. 2 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	23 ft. 3 in.
Weight on drivers .....	130,000 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	155,000 lb.	Tender capacity .....	6,000 gal., 10 tons

Moguls were used on the New Haven for fast, frequent freight service and a few of them continued almost to the end of the steam era. The group classed as K-1-b was the largest, there being 195 of them built between 1900 and 1907 by Schenectady, Cooke and Rhode Island Works of Alco and some by The Baldwin Locomotive Works. They were numbered 260-269 and 325-479.



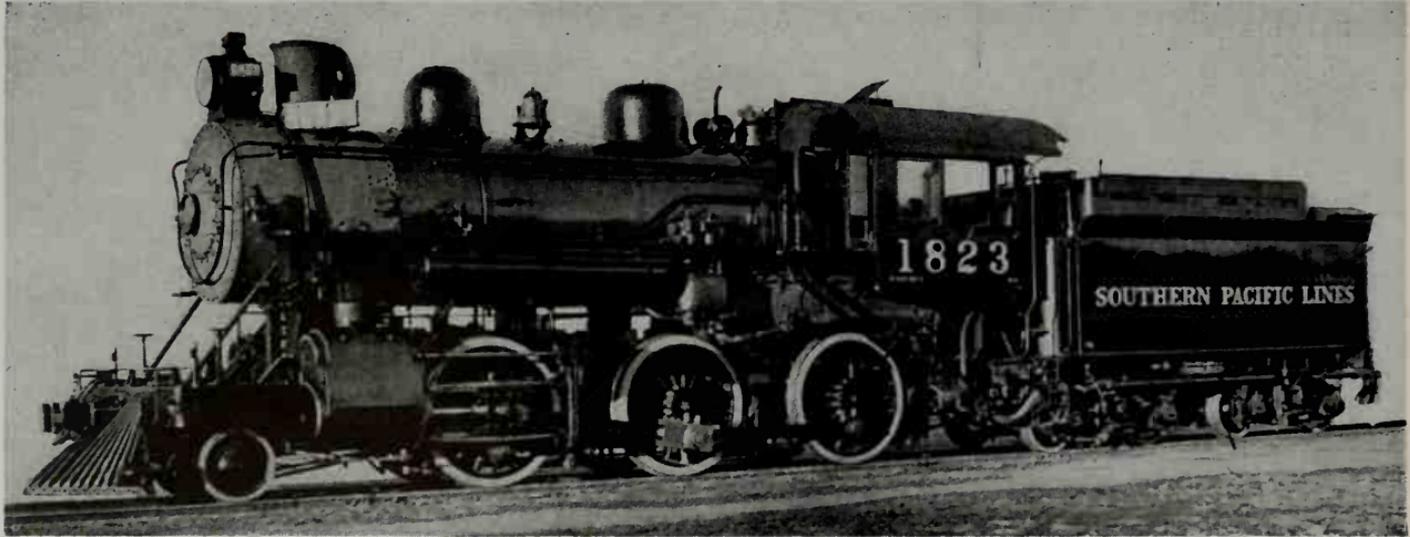
Norwood & St. Lawrence 2-6-0 (Mogul) Type Freight Locomotive No. 210. Built by the Cooke Works of the American Locomotive Company in 1923.

Tractive force .....28,400 lb.  
 Cylinders, diameter and stroke ..... 20 in. x 26 in.  
 Drivers, diameter .....56 in.  
 Weight on drivers .....129,000 lb.  
 Total weight of engine .....148,500 lb.

Weight of tender .....100,800 lb.  
 Driving wheel base .....14 ft. 0 in.  
 Total engine wheel base .....22 ft. 9 in.  
 Steam pressure .....180 lb.  
 Tender capacity .....5,000 gal., 8 tons

This short line in northern New York State is operated as a common carrier but is owned by a large paper manufacturing company. Its two locomotives are alike but built by different shops, Alco and Baldwin. A semi-enclosed cab with side doors keeps the engine crew snug and comfortable in the wintertime.

## STEAM LOCOMOTIVES: 2-6-0 Type



Southern Pacific 2-6-0 (Mogul) Type Locomotive No. 1823, Road Class M-6 for freight service. Built by the railroad at Sacramento Shops in 1917. Engines 1823-1825.

Tractive force .....	33,320 lb.	Weight of tender .....	133,100 lb.
Cylinders, diameter and stroke .....	21 in. x 28 in.	Driving wheel base .....	15 ft. 2 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	23 ft. 10 in.
Weight on drivers .....	153,000 lb.	Steam pressure .....	210 lb.
Total weight of engine .....	179,000 lb.	Tender capacity .....	7,000 gal. water, 2,900 gal. oil

Locomotives of this type, although of ancient vintage, fill a place in the transportation of fruits, and vegetables in the west. Their light weight allows them to go on almost any branch line when crops ripen and get them to the main lines rapidly. As seasons advance from south to north, a flock of these engines is kept busy working all the way from Texas to Oregon.



Atchison, Topeka & Santa Fe 2-6-2 (Prairie) Type Locomotive for freight service No. 1816. Built by The Baldwin Locomotive Works in 1906. Rebuilt by the A. T. & S. F. in 1928.

Tractive force .....	43,200 lb.	Weight of tender .....	170,000 lb.
Cylinders, diameter and stroke .....	25 in. x 28 in.	Driving wheel base .....	13 ft. 8 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	33 ft. 9 in.
Weight on drivers .....	192,100 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	272,400 lb.	Tender capacity .....	9,000 gal., 4,000 gal. fuel

The Santa Fe had several groups of Prairies of which the 1800 class is the largest example. The locomotives in this group were originally built as four-cylinder balanced compounds and were rebuilt to two cylinder simple engines by the railroad.

## STEAM LOCOMOTIVES: 2-6-2 Type



Chicago Great Western 2-6-2 (Prairie) Type Passenger Locomotive No. 182. Built by the Brooks Works of the American Locomotive Company in 1902.

Traction force .....	30,000 lb.	Weight of tender .....	120,000 lb.
Cylinders, diameter and stroke .....	21 in. x 26 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	31 ft. 8 in.
Weight on drivers .....	131,700 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	183,300 lb.	Tender capacity .....	6,000 gal., 12 tons

In common with many of the mid-western roads the CGW had Prairie type engines in both passenger service and freight service for a good many years. This one was in high-speed passenger service running through Oelwein, Iowa.



Northern Pacific 2-6-2 (Prairie) Type locomotive for freight service; Class T, Nos. 2300-2449. Built by the Brooks Works of the American Locomotive Company in 1906.

Traction force .....	33,300 lb.	Weight of tender .....	139,500 lb.
Cylinders, diameter and stroke .....	21 in. x 28 in.	Driving wheel base .....	11 ft. 0 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	28 ft. 11 in.
Weight on drivers .....	153,800 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	204,500 lb.	Tender capacity .....	7,000 gal., 12 tons

Prairie type locomotives were popular during the first decade of the present century and many of them survived until recent years. Although there were locomotives with this wheel arrangement before 1900 it remained for the CB & Q to popularize the type by constructing them in large numbers. Other roads soon followed, especially in the West including the N.P. which had 168 of them at one time.

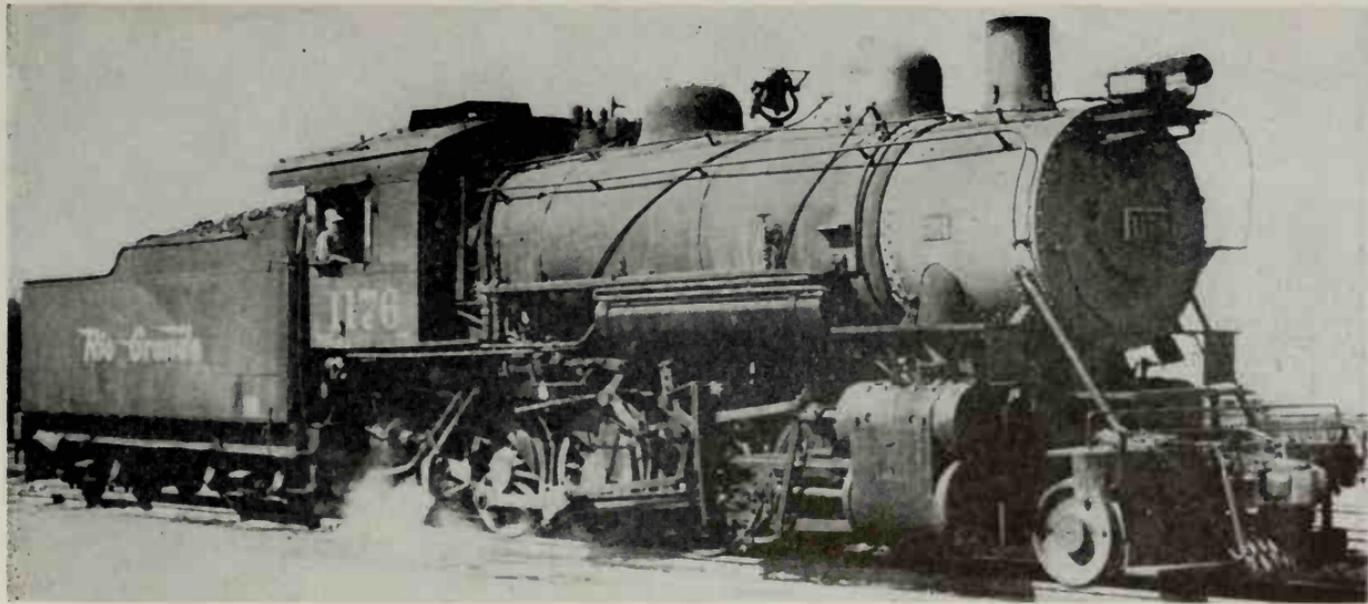
## STEAM LOCOMOTIVES: 2-8-0 Type



Bangor & Aroostook 2-8-0 (Consolidation) Type Locomotive, Class G-2, Nos. 400-404. Built by the American Locomotive Company in 1937.

Traction force .....	45,085 lb.	Weight of tender, loaded .....	162,240 lb.
Cylinders, diameter and stroke .....	22¼ in. x 30 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	.63 in.	Total engine wheel base .....	26 ft. 6 in.
Weight on drivers .....	198,400 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	238,800 lb.	Tender capacity .....	8,500 gal., 12 tons

Staunch locomotives of this type did yeoman service on the potato railroad of Maine prior to its dieselization. They still work at whatever they can find to do, a good trim design of the Consolidation type locomotive of which there were many thousands on American railroads.



Denver & Rio Grande Western 2-8-0 (Consolidation) Type Freight Locomotive, Class C-48, Nos. 1151-1178. Built by the American Locomotive Company in 1908.

Traction force .....	48,100 lb.	Weight of tender .....	159,700 lb.
Cylinders, diameter and stroke .....	24 in. x 28 in.	Driving wheel base .....	15 ft. 8 in.
Drivers, diameter .....	57 in.	Total engine wheel base .....	24 ft. 11 in.
Weight on drivers .....	194,100 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	220,400 lb.	Tender capacity .....	8,000 gal., 15 tons

A general purpose work-horse of a half century ago was the consolidation type of which the one shown here is a worthy example. It is one of the early engines equipped with Walschaerts valve gear and later was provided with a superheater and power reverse gear.

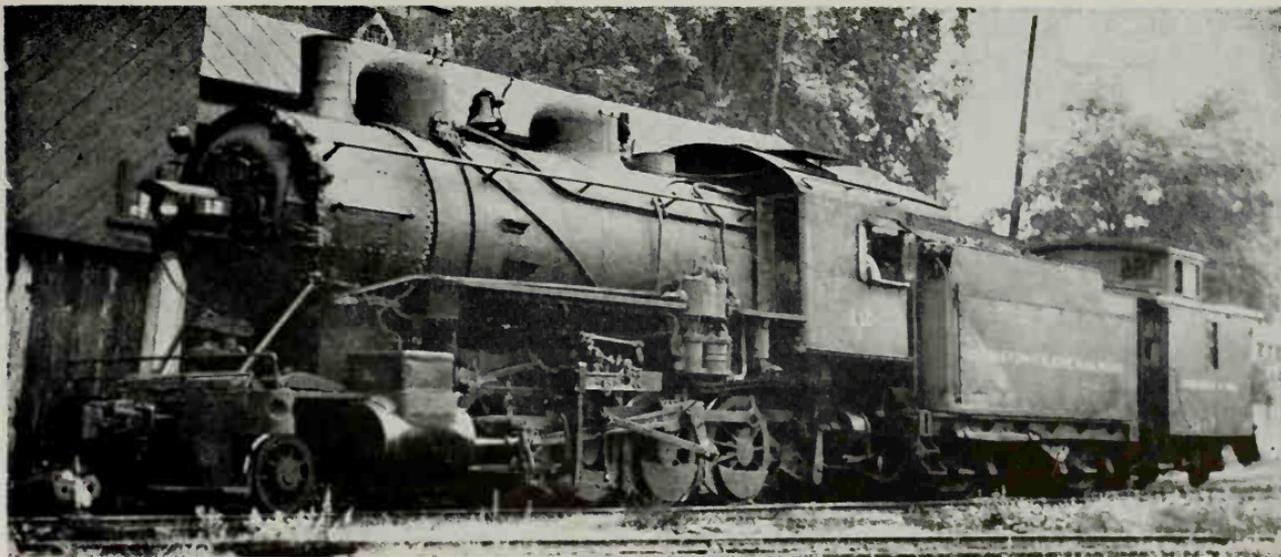
## STEAM LOCOMOTIVES: 2-8-0 Type



Great Western Ry. Co. 2-8-0 (Consolidation) Type Locomotive for freight service. Built by the American Locomotive Company in 1937.

Tractive force .....	31,290 lb.	Weight of tender .....	149,600 lb.
Cylinders, diameter and stroke .....	19 in. x 26 in.	Driving wheel base .....	14 ft. 0 in.
Drivers, diameter .....	51 in.	Total engine wheel base .....	22 ft. 4 in.
Weight on drivers .....	141,500 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	161,900 lb.	Tender capacity .....	8,000 gal. water, 12 tons coal

A comparatively light weight locomotive that is employed in hauling the products of the beet sugar manufacturing industry in Colorado. It is a clean-cut design with a narrow firebox located between the driving wheels and on top of the frames resulting in a smaller grate area but sufficient for this size of locomotive and the work it has to do.

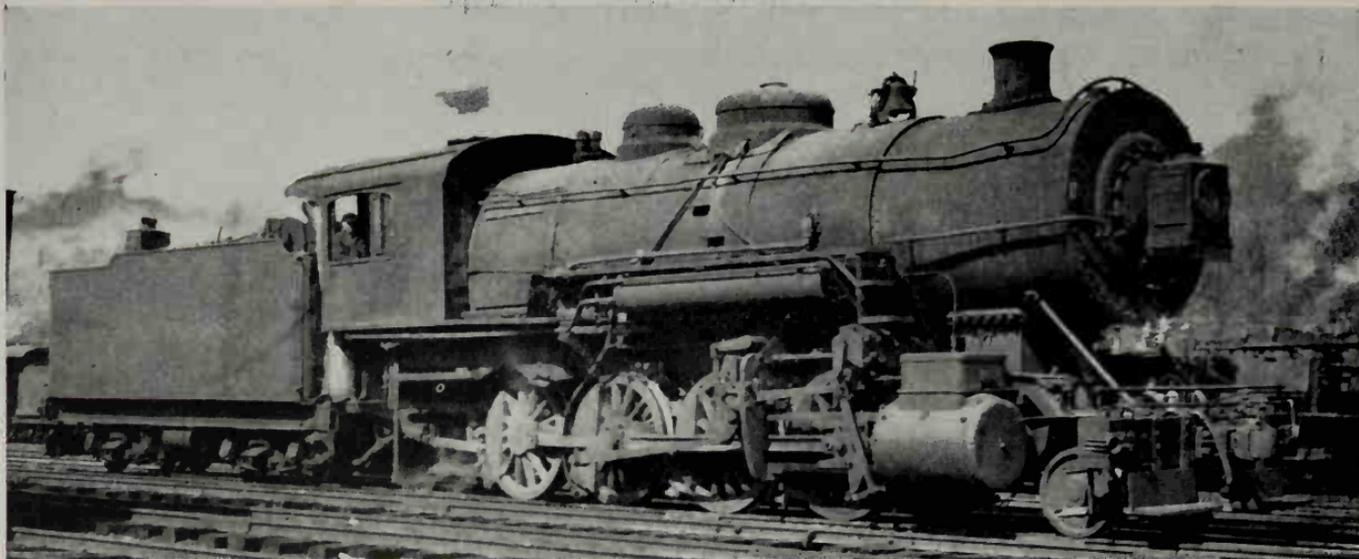


Morristown & Erie 2-8-0 (Consolidation) Type Freight Locomotive No. 12. Built by the Pittsburgh Works, American Locomotive Company in 1913.

Traction force .....	44,100 lb.	Weight of tender .....	133,000 lb.
Cylinders, diameter and stroke .....	21 in. x 30 in.	Driving wheel base .....	14 ft. 3 in.
Drivers, diameter .....	51 in.	Total engine wheel base .....	23 ft. 2 in.
Weight on drivers .....	168,600 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	192,000 lb.	Tender capacity .....	7,000 gal., 12 tons

Three of these low-wheel consolidations were purchased from the Monongahela to supplement older equipment on the M & E. A compact short line in northern New Jersey it serves a rapidly growing industrial area, and these locomotives can operate efficiently on its numerous grades and curves.

## STEAM LOCOMOTIVES: 2-8-0 Type



New York, Susquehanna & Western 2-8-0 (Consolidation) Freight Locomotive, Class H-27, No. 140. Built by The Baldwin Locomotive Works in 1906.

Traction force .....	54,100 lb.	Weight of tender .....	161,900 lb.
Cylinders, diameter and stroke .....	28 in. x 32 in.	Driving wheel base .....	17 ft. 0 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	26 ft. 6 in.
Weight on drivers .....	232,700 lb.	Steam pressure .....	160 lb.
Total weight of engine .....	260,100 lb.	Tender capacity .....	9,000 gal., 15 tons

Here is a locomotive that never ran on its own road. It was originally constructed as an exhibition engine for the Jamestown, Va., Exposition of 1907, and was the heaviest 2-8-0 then built. After the fair it was sent to the Rock Island which finally found out that it was too heavy for their track and it was then sold to the NYS & W which had the same experience. However the Erie, then in control of the Susquehanna, obliged the latter by taking over and used the engine in hump-yard service at Port Jervis, N. Y., for most of its working days. It finally became Erie No. 1540 a short time before being scrapped.

## STEAM LOCOMOTIVES: 2-8-0 Type

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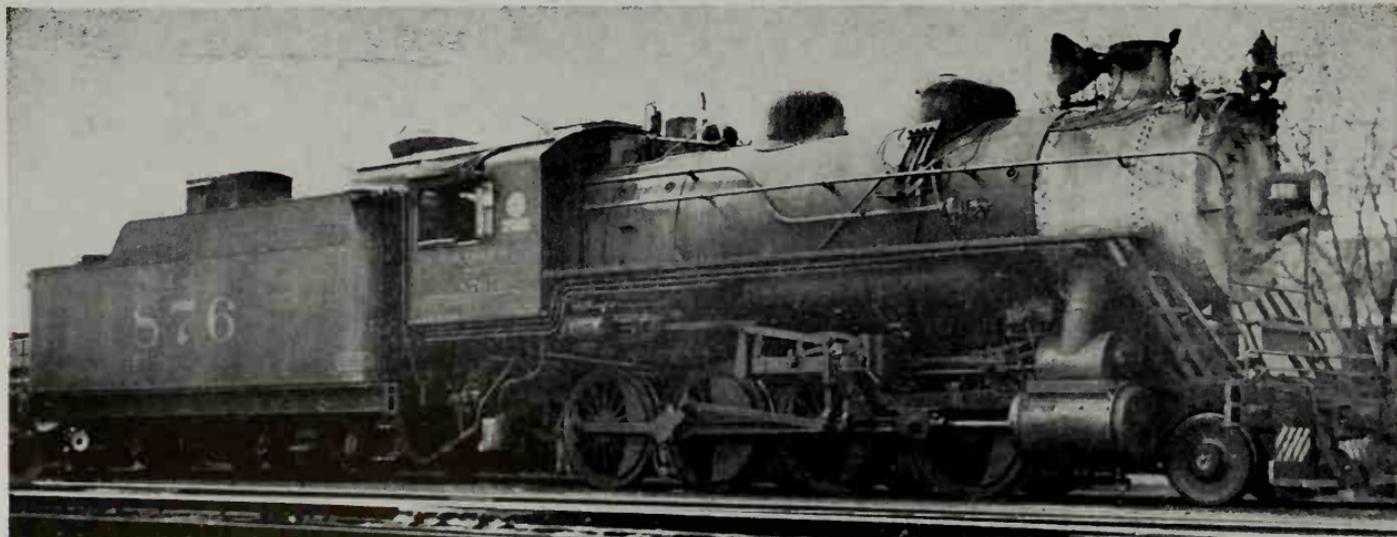


Roberval Saguenay 2-8-0 (Consolidation) Type Locomotive for freight service. Built by the Canadian Locomotive Company, Ltd.

Tractive force .....	47,300 lb.	Weight of tender .....	171,000 lb.
Cylinders, diameter and stroke .....	23 in. x 30 in.	Driving wheel base .....	15 ft. 10 in.
Drivers, diameter .....	57 in.	Total engine wheel base .....	25 ft. 3 in.
Weight on drivers .....	204,200 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	230,720 lb.	Tender capacity .....	7,000 Imp. gal., 14 tons

A compactly built Consolidation which operates in the aluminum ore district of the Province of Quebec, Canada. The general design follows the lines of the larger Canadian roads, the CPR and CNR, with the enclosed cab and hopper-type coal space on the tender.

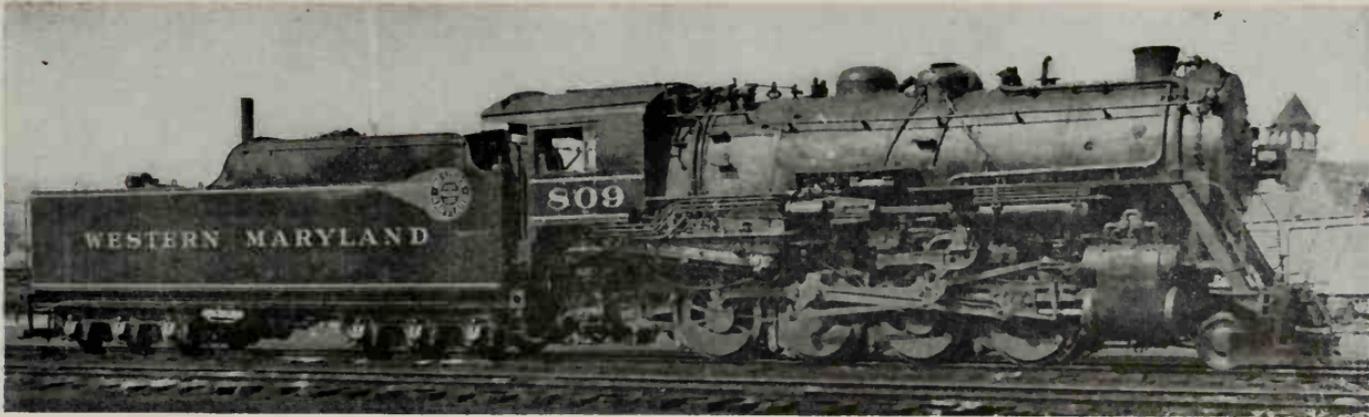
## STEAM LOCOMOTIVES: 2-8-0 Type



Southern 2-8-0 (Consolidation) Type Locomotive for freight service, Class Ks, No. 876. Built by The Baldwin Locomotive Works in 1906.

Tractive force .....	46,000 lb.	Weight of tender .....	143,000 lb.
Cylinders, diameter and stroke .....	22½ in. x 30 in.	Driving wheel base .....	16 ft. 0 in.
Drivers, diameter .....	57 in.	Total engine wheel base .....	24 ft. 3½ in.
Weight on drivers .....	185,000 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	208,000 lb.	Tender capacity .....	7,500 gal., 12½ tons

A large group of Consolidations was constructed by different builders for the Southern and affiliated companies during the early years of the present century. Many of them were subsequently modernized, being equipped with superheaters, outside valve motion and piston valves. After they became too light for main line work they were placed in yard and switching service.



**Western Maryland 2-8-0 (Consolidation) Type Freight Locomotive; Class H-9, Nos. 801-840. Built by The Baldwin Locomotive Works in 1921.**

Tractive force .....	68,200 lb.	Weight of tender .....	285,600 lb.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Driving wheel base .....	17 ft. 6 in.
Drivers, diameter .....	61 in.	Total engine wheel base .....	27 ft. 3 in.
Weight on drivers .....	287,900 lb.	Steam pressure .....	210 lb.
Total weight of engine .....	309,900 lb.	Tender capacity .....	15,000 gal., 23 tons

Following the discontinuance of government control of the railroads in 1921 the WM ordered 40 locomotives of the above class which are leaders of their particular type in point of capacity. They were followed, in 1923, by ten more of slightly modified design, known as Class H-9a, Nos. 841-850. These engines were originally assigned to run between Cumberland and Hagerstown, Maryland, where they hauled 100 car coal trains.

## STEAM LOCOMOTIVES: 2-8-2 Type

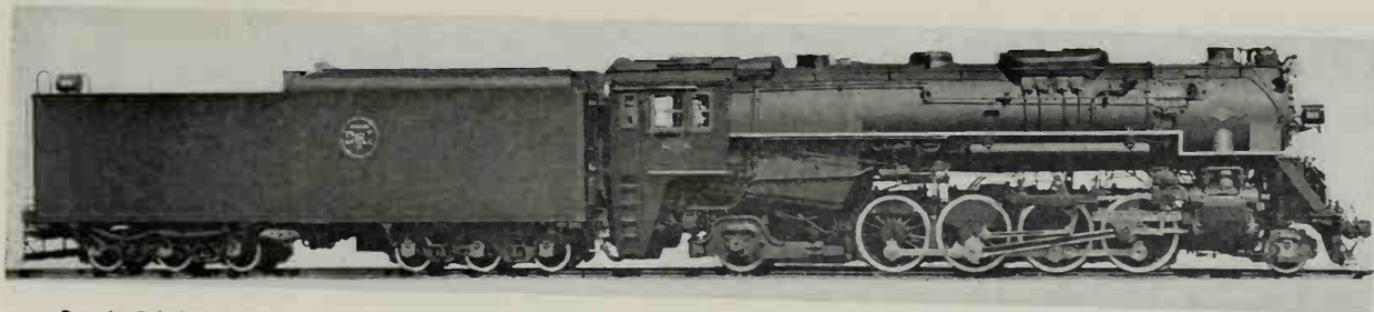


Akron, Canton & Youngstown 2-8-2 (Mikado) Type Locomotive for freight service, Class R-2, Nos. 404, 405. Built by the Lima Locomotive Works, Inc. in 1940.

Traction force .....	53,800 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	176,733 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	64 in.	Total engine wheel base .....	37 ft. 4 in.
Weight on drivers .....	227,500 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	319,700 lb.	Tender capacity .....	12,400 gal., 16 tons

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No longer in service, as they have been replaced by diesels, these rather small Mike's will be remembered by all who saw them on this 170-mile line in Ohio. Engines 404 and 405 were joined by No. 406 in 1944.

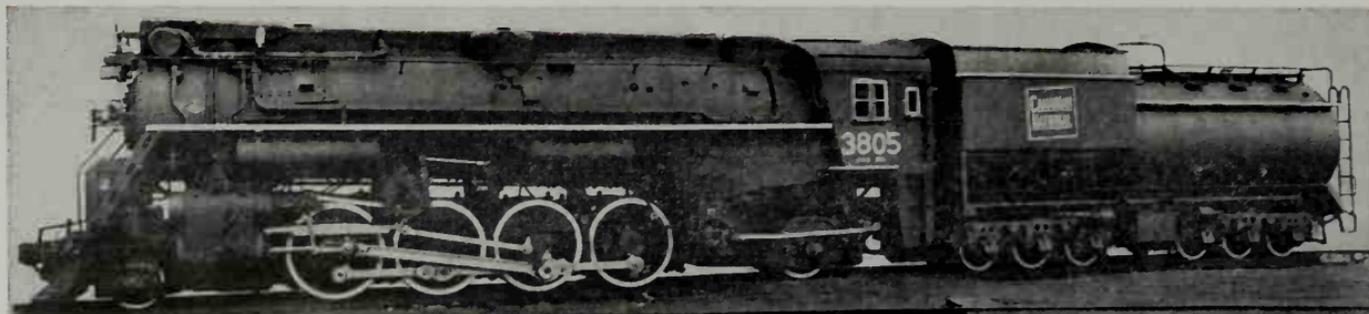


Detroit, Toledo & Ironton (Mikado) Type Locomotive, Nos. 808-811 for freight service. Built by Lima Locomotive Works, Inc. in 1944.

Tractive force .....	55,600 lb.	Weight of tender .....	284,200 lb.
Cylinders, diameter and stroke .....	23 in. x 30 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	37 ft. 3 in.
Weight on drivers .....	248,500 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	369,500 lb.	Tender capacity .....	22,000 gal., 22 tons

In 1935 the DT & I received four 2-8-4 type locomotives from Lima. These proved so satisfactory that two more were built in 1939. These are numbered 700-705. In 1940 four 2-8-2 types were built. This new power was used to augment the main line engines then in service and in the next year four more came, followed in 1944 by the final four shown here. They are numbered 800-811. The distinctive nickel-plated monogram and the vestibule cab are part of the very neat design of modern DT & I locomotives.

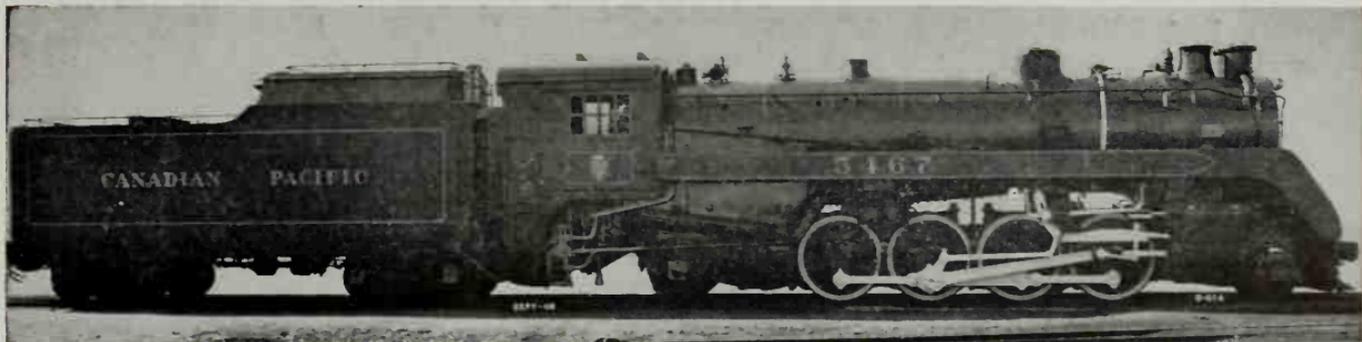
## STEAM LOCOMOTIVES: 2-8-2 Type



Canadian National 2-8-2 (Mikado) Type Locomotive for freight service, Class 5-4b, Nos. 3801-3805. Built by the Canadian Locomotive Company, Ltd. in 1936.

Tractive force .....	60,615 lb.	Weight of tender, loaded .....	279,000 lb.
Cylinders, diameter and stroke .....	24 in. x 30 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	37 ft. 8 in.
Weight on drivers .....	237,400 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	339,400 lb.	Tender capacity.....	11,600 Imp. gal water, 4,000 gal oil

The distinctive lines of CNR power is evident in this freight hauler which was built in Canada at Kingston, Ontario. The Vanderbilt tender is standard on most CNR modern locomotives as also is the vestibuled cab. To aid in a streamlining effect the boiler is provided with a horizontal covering extending from the cab to the smokebox. The engine was built to operate in districts where hard water conditions prevail.



Canadian Pacific 2-8-2 (Mikado) Type Locomotive, Class P2k, Nos. 5462-5473. (Four coal burners, eight oil burners). Built by the Montreal Locomotive Works, Ltd. in 1948.

Tractive force .....	57,500 lb.	Driving wheel base .....	16 ft. 6 in.
Cylinders, diameter and stroke .....	22 in. x 32 in.	Total engine wheel base .....	35 ft. 11 in.
Drivers, diameter .....	63 in.	Steam pressure .....	275 lb.
Weight on drivers .....	243,200 lb.	Tender capacity.....	3,100 Imp. gal. oil, 10,000 Imp.
Total weight of engine .....	333,000 lb.		gal. water, 18 tons coal

A flock of Mikados have been good freight haulers on the CPR, with a few passenger runs thrown in for good measure when the necessity arose, ever since 1912. The latest group, shown here, resembles all other CPR power built in recent years with the domeless boiler, vestibuled cab and skirted running boards. The forward two-wheel truck is equipped with outside bearings, a rather unusual arrangement in this type of locomotive.

## STEAM LOCOMOTIVES: 2-8-2 Type



Great Northern 2-8-2 (Mikado) Type Locomotive, Class O-8, Nos. 3375-3399, for freight service. Rebuilt by railroad.

Traction force (83½ per cent) .....	79,500 lb.	Total weight of engine .....	367,000 lb.
Cylinders, diameter and stroke .....	28 in. x 32 in.	Weight of tender, loaded .....	326,560 lb.
Drivers, diameter .....	69 in.	Steam pressure .....	250 lb.
Weight on drivers .....	280,000 lb.	Tender capacity .....	17,250 gal. water, 5,800 gal. oil

Twenty-five of these heavy Mikados operate on the GN. They are the latest and heaviest of their type on the road. In common with the practice followed on this road for many years they are equipped with Belpaire fireboxes, a style found on only a few railroads including the Pennsylvania.



Green Bay & Western 2-8-2 (Mikado) Type Locomotive for freight service, Class D-47, Nos. 401-406. Built by the American Locomotive Company in 1937 and 1939.

Tractive force .....	47,250 lb.	Weight of tender, loaded .....	176,000 lb.
Cylinders, diameter and stroke .....	22 in. x 30 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	64 in.	Total engine wheel base .....	36 ft. 11 in.
Weight on drivers .....	204,000 lb.	Steam pressure .....	245 lb.
Total weight of engine .....	285,000 lb.	Tender capacity .....	9,000 gal., 14 tons

Now superseded by diesel power the GB & W acquired these Mikados three at a time, two years apart. They hauled freight trains from Winona, Minnesota, to Kewaunee, Wisconsin, a distance of 214 miles.

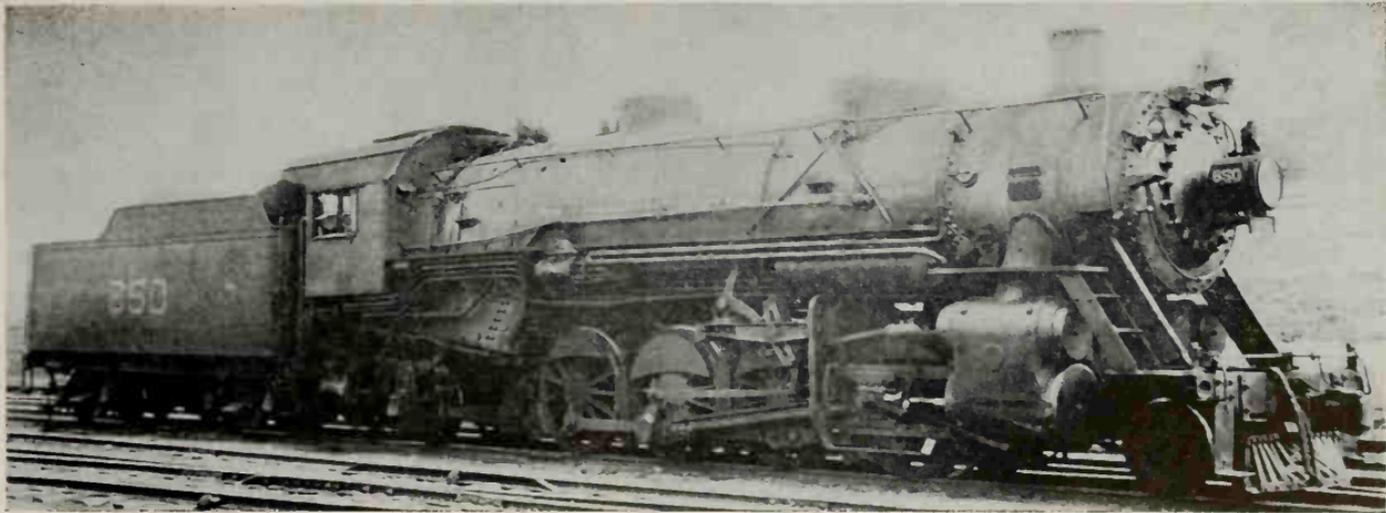
## STEAM LOCOMOTIVES: 2-8-2 Type



Kansas, Oklahoma & Gulf 2-8-2 (Mikado) Type Locomotive for freight service, Nos. 601, 602. Built by The Baldwin Locomotive Works in 1944

Traction force .....	54,800 lb.	Weight of tender, $\frac{2}{3}$ load .....	182,500 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	36 ft. 11 in.
Weight on drivers .....	223,500 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	299,500 lb.	Tender capacity .....	12,000 gal., 16 tons

Engines Nos. 601 and 602 are comparatively light weight Mikados used jointly by the parent road and its affiliated lines, the Midland Valley, and the Oklahoma City-Ada-Atoka operating 793 miles of railroad most of which is in Oklahoma. The location of the bell and the brakeman's shelter on the tender are notable characteristics of these locomotives.

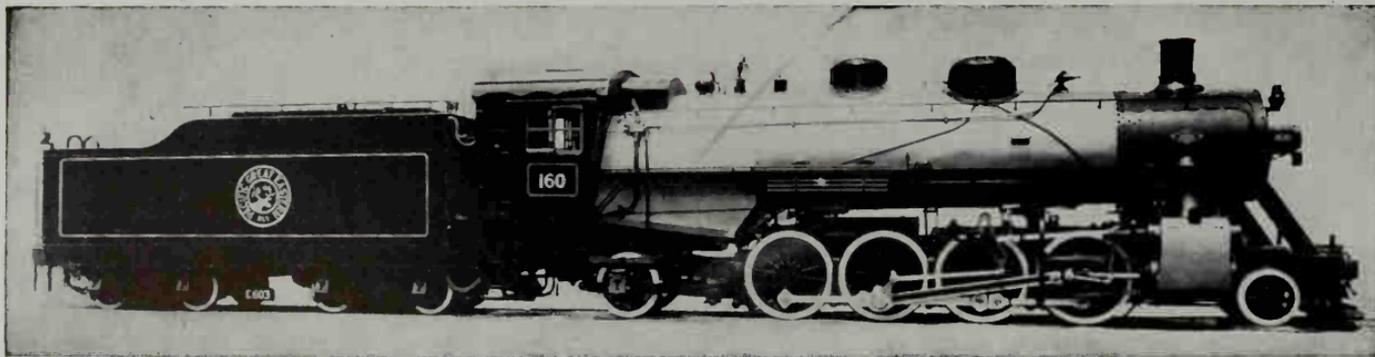


Nashville, Chattanooga & St. Louis 2-8-2 (Mikado) Type Freight Locomotive, Class L-2, Nos. 650-659. Built by the American Locomotive Company in 1918.

Tractive force .....	54,800 lb.	Weight of tender .....	185,200 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	36 ft. 11 in.
Weight on drivers .....	220,000 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	298,000 lb.	Tender capacity .....	10,000 gal., 17 tons

The Dixie Line was assigned ten of the USRA standard light Mikados during the First World War and they continued in service until 1951 when they were scrapped. These engines were duplicates of others on many roads, notably the B & O, NYC, SAL, T & P, and PRR, a total of 627 being constructed for all roads. On the NC & St L these 2-8-2's did not conform to the capped stack style that was prevalent on the road.

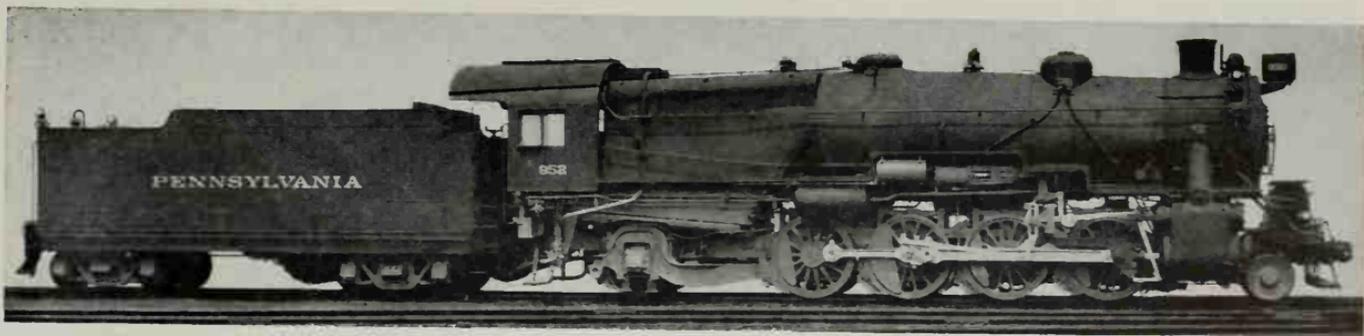
## STEAM LOCOMOTIVES: 2-8-2 Type



Pacific Great Eastern 2-8-2 (Mikado) Type Locomotive for freight service. Built by the Canadian Locomotive Company, Ltd. in 1945.

Traction force .....	38,500 lb.	Weight of tender, loaded .....	167,500 lb.
Cylinders, diameter and stroke .....	20 in. x 30 in.	Driving wheel base .....	15 ft. 0 in.
Drivers, diameter .....	57 in.	Total engine wheel base .....	32 ft. 6 in.
Weight on drivers .....	165,000 lb.	Steam pressure .....	215 lb.
Total weight of engine .....	224,000 lb.	Tender capacity ..	7,000 Imp. gal. water, 2,700 Imp. gal. oil

The PGE has four Mikados like this numbered 160-161 as shown and duplicates numbered 162-163 built in 1947. They closely resemble Canadian National engines but are of much lighter construction.



Pennsylvania Railroad 2-8-2 (Mikado) Type Locomotive, Class L-1-s, No. 952. Built by the railroad at Juniata Shops in 1918.

Tractive force .....	61,470 lb.	Weight of tender .....	182,300 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	17 ft. 0½ in.
Drivers, diameter .....	62 in.	Total engine wheel base .....	36 ft. 4½ in.
Weight on drivers .....	240,200 lb.	Steam pressure .....	205 lb.
Total weight of engine .....	320,700 lb.	Tender capacity .....	9,000 gal., 17½ tons

To handle heavy tonnage trains on long, hard pulls the Pennsylvania had built 574 of these versatile locomotives. They were contemporary with the famous passenger engines of the K-4-s class and had many interchangeable parts with them. The boilers were alike and wherever practicable other details were made common to both classes of locomotives.

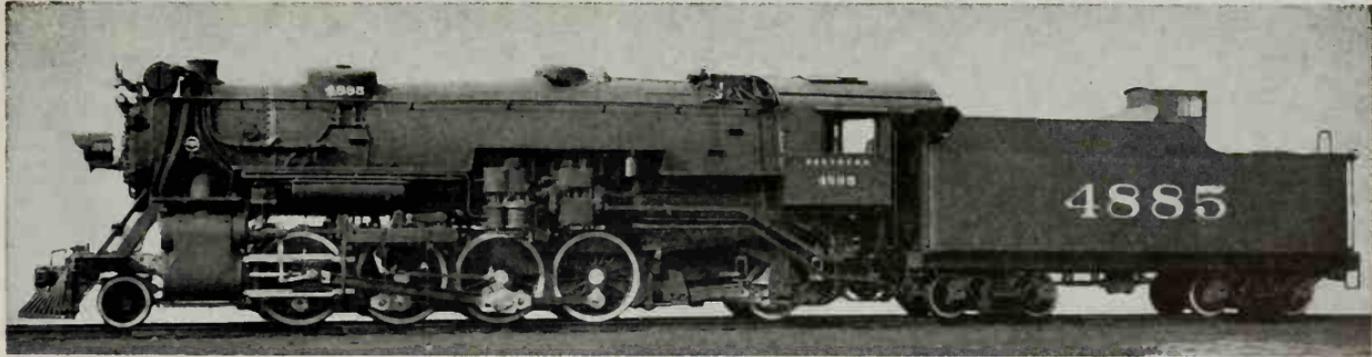
## STEAM LOCOMOTIVES: 2-8-2 Type



St. Louis-San Francisco 2-8-2 (Mikado) Type Locomotive with Booster for freight service, Nos. 4200-4219. Built by The Baldwin Locomotive Works in 1930.

Tractive force, engine .....	66,700 lb.	Total weight of engine .....	375,790 lb.
Tractive force, booster .....	11,700 lb.	Driving wheel base .....	16 ft. 9 in.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Total engine wheel base .....	37 ft. 7 in.
Drivers, diameter .....	63 in.	Steam pressure .....	230 lb.
Weight on drivers .....	274,690 lb.	Tender capacity .....	10,000 gal., 17 tons

Frisco's acquisition of Mikados began in 1919 with a group of 33 engines of the United States Railroad Administration. A group of 65 Baldwin engines built between 1923 and 1926 preceded the 2-8-2's shown above and were similar to them but lighter. Note the outside bearing front truck and the tell-tale electric light placed in front of the smoke stack. In common with other roads hauling long freight trains the Frisco equipped the tenders with brakeman's shelters.

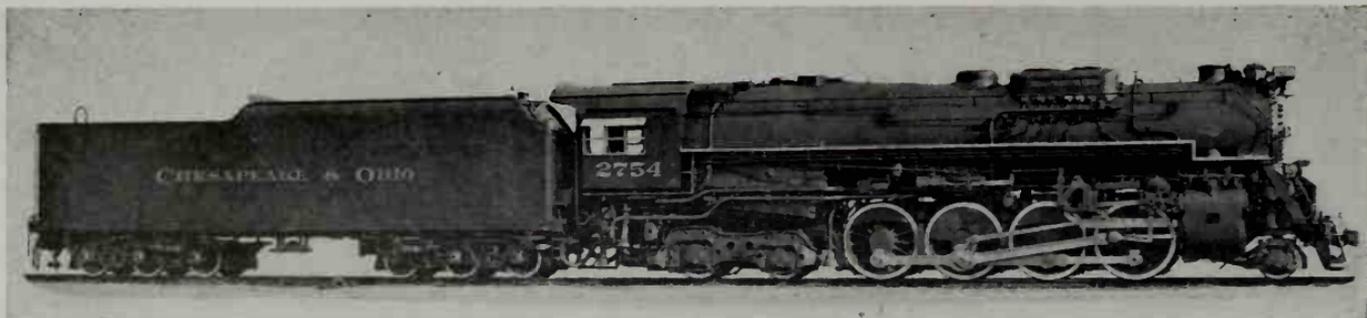


Southern Railway 2-8-2 (Mikado) Type Locomotive for freight service, Nos. 4885-4914. Built by The Baldwin Locomotive Works in 1928.

Traction force .....	59,900 lb.	Weight of tender, loaded .....	187,700 lb.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	.63 in.	Total engine wheel base .....	36 ft. 11 in.
Weight on drivers .....	241,800 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	329,300 lb.	Tender capacity .....	10,000 gal., 16 tons

A variety of Mikado type engines was in use on the Southern. Beginning with the first group built in 1911 they progressively increased in size to the class shown here. These were the last of their type built for the road. In many respects they resemble the heavy Mikados of the United States Railroad Administration constructed during the First World War. The addition of a feedwater heater and brakeman's cab on the tender are noticeable differences.

## STEAM LOCOMOTIVES: 2-8-4 Type



Chesapeake & Ohio 2-8-4 (Berkshire) Type Locomotive, Class K-4, Nos. 2750-2759. Built by the Lima Locomotive Works in 1947.

Ttractive force, engine .....	69,350 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	315,770 lb.
Ttractive force, booster .....	14,000 lb.	Driving wheel base .....	18 ft. 3 in.
Cylinders, diameter and stroke .....	26 in. x 34 in.	Total engine wheel base .....	42 ft. 0 in.
Drivers, diameter .....	69 in.	Steam pressure .....	245 lb.
Weight on drivers .....	293,100 lb.	Tender capacity .....	21,000 gal., 30 tons
Total weight of engine .....	489,680 lb.		

The C & O is a large coal carrying and freight hauler requiring speedy and powerful locomotives. Beginning in 1943 the road purchased 40 of these heavy Berkshires from the American Locomotive Co., Nos. 2700-2739 which were soon followed by 10 more from Lima, Nos. 2740-2749 in 1946, then the order shown above and finally by the last group Nos. 2760-2789 built by Alco in 1947. These engines are essentially the same design as those built for Pere Marquette, Virginian, Nickel Plate, W & LE, RF & P, and L & N, at about the same time.



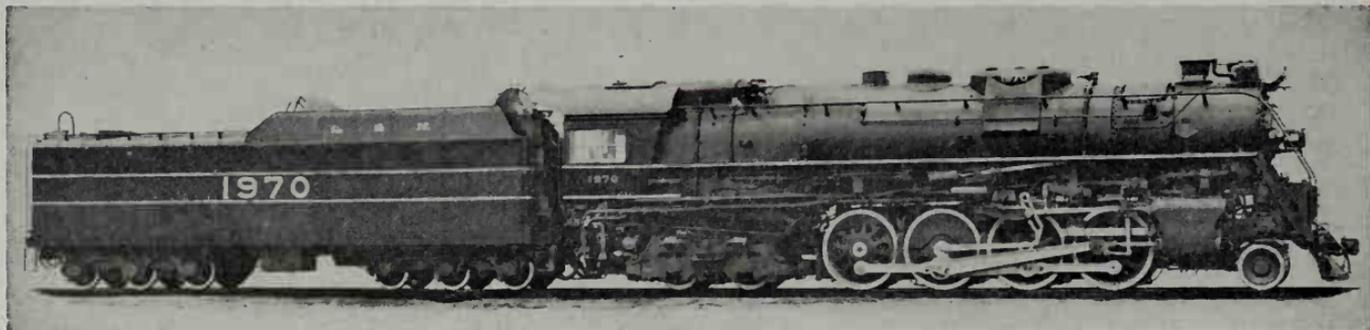
Erie Railroad 2-8-4 (Berkshire) Type Freight Locomotive, Class S-4, Nos. 3385-3404. Built by the Lima Locomotive Works, Inc., in 1927.

Traction force .....	72,000 lb.
Cylinders, diameter and stroke .....	28½ in. x 32 in.
Drivers, diameter .....	.70 in.
Weight on drivers .....	286,500 lb.
Total weight of engine .....	468,800 lb.

Weight of tender .....	278,000 lb.
Driving wheel base .....	18 ft. 3 in.
Total engine wheel base .....	44 ft. 0 in.
Steam pressure .....	250 lb.
Tender capacity .....	20,800 gal. 28 tons

In 1925 the Erie was faced with the necessity of moving over its main line heavier freight trains at greater speeds, and following the successful demonstration of Lima's experimental Berkshire type super-power locomotive A-1 it was decided that this type would meet the requirements. Accordingly the first orders were given; 25 engines to the Brooks Works of the American Locomotive Company and 25 to Lima. The first lot was classed as S-1, Nos. 3300-3324 and the second as S-2, Nos. 3325-3349 both of which were completed in 1927. The Baldwin Locomotive Works built the third order, Class S-3, Nos. 3350-3384 in 1928, followed by the order shown above. These 105 locomotives replaced approximately 300 obsolete engines that had seen better days on the road and continued to be the chief prime movers up until the advent of the diesel in freight service. Due to the Erie's large clearances the Class S engines stand 16 ft. 4 in. from the top of the rail to the top of the smoke stack.

## STEAM LOCOMOTIVES: 2-8-4 Type



Louisville & Nashville 2-B-4 (Berkshire) Type Locomotive, Nos. 1970-1991, with Booster for freight service. Built by the Lima Locomotive Works, Inc. in 1920.

Tractive force, engine .....	65,290 lb.	Weight of tender, $\frac{3}{4}$ load .....	308,900 lb.
Tractive force, booster .....	14,000 lb.	Driving wheel base .....	18 ft. 3 in.
Cylinders, diameter and stroke .....	25 in. x 32 in.	Total engine wheel base .....	42 ft. 4 in.
Drivers, diameter .....	69 in.	Steam pressure .....	265 lb.
Weight on drivers .....	267,500 lb.	Tender capacity .....	22,000 gal., 25 tons
Total weight of engine .....	448,100 lb.		

In common with a number of other large railroads the L & N progressed from the Mikado type to the Berkshire type in an effort to obtain a more efficient locomotive, so in 1942 they had The Baldwin Locomotive Works construct 14 of the latter type which were numbered 1950-1963 and in 1944 six more Nos. 1964-1969. Five years later engines 1970-1991 were turned out by Lima and were duplicates of the Baldwin engines.

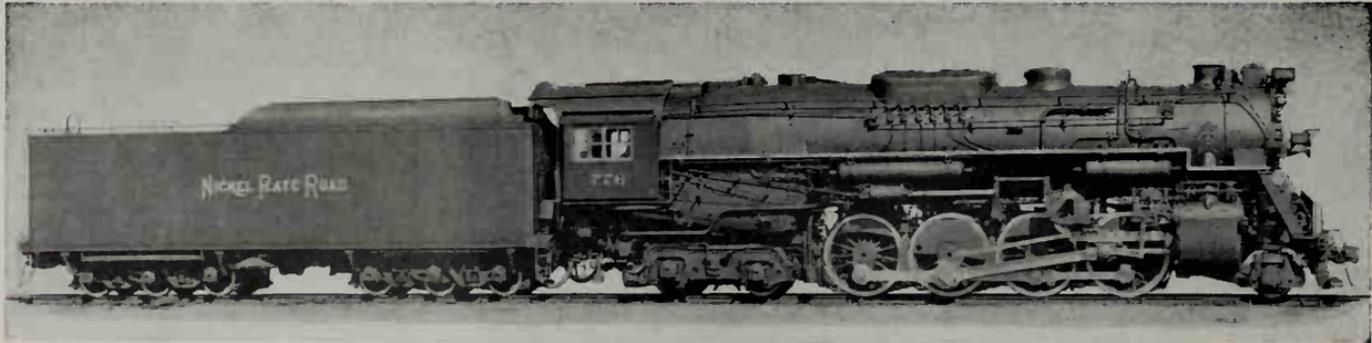


Pittsburgh & Lake Erie (New York Central System) 2-8-4 (Berkshire) Type Locomotive, Class A-2-a, Nos. 9400-9406 for heavy freight service.  
 Built by American Locomotive Company, May, 1948.

Traction force .....	67,130 lb.	Weight of tender .....	352,780 lb.
Cylinders, diameter and stroke .....	26 in. x 32 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	.63 in.	Total engine wheel base .....	41 ft. 2 in.
Weight on drivers .....	280,000 lb.	Steam pressure .....	230 lb.
Total weight of engine .....	426,000 lb.	Tender capacity .....	20,000 gal., 22 tons

Bids for ten of these engines were requested by the railroad but between the time they were received and the order, the cost of materials had so advanced that only seven locomotives could be purchased to keep within the budget. The boiler of these machines is so large that there is no room for a steam dome, so a perforated dry pipe is employed as in many English locomotives. This group of locomotives has the dubious honor of being the last steamers to be turned out of the Schenectady Works of the American Locomotive Co.

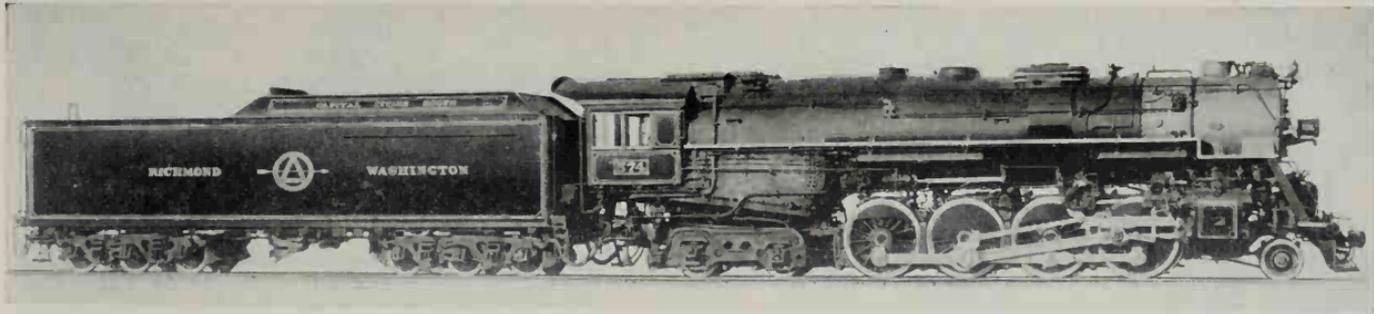
## STEAM LOCOMOTIVES: 2-8-4 Type



New York, Chicago & St. Louis (Nickel Plate) 2-8-4 Type Locomotive, Class S-3, for freight service, Nos. 770-779. Built by the Lima Locomotive Works in 1949.

Traction force .....	64,100 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	288,840 lb.
Cylinders, diameter and stroke .....	25 in. x 34 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	42 ft. 0 in.
Weight on drivers .....	266,030 lb.	Steam pressure .....	245 lb.
Total weight of engine .....	444,290 lb.	Tender capacity .....	22,000 gal., 22 tons

The Nickel Plate Road, to meet the increasing demands for fast freight service throughout the industrial territory it served in 1934 ordered 15 2-8-4 type locomotives from Alco. These were numbered 700-714, Class S. Their basic design proved to be successful and 15 more were ordered from Lima Locomotive Works in 1941. These, Nos. 715-729, Class S-1, were shortly followed by ten more of the same class. Nos. 730-739 all completed in 1942 and 1943, and another lot of 30, Nos. 740-769, Class S-2, from Lima in 1944. The final order for ten of these efficient Berkshires is illustrated here. This fleet of 80 locomotives comprises the backbone of the Nickel Plate's freight motive power.



Richmond, Fredericksburg & Potomac 2-8-4 Type Locomotive for freight service, Nos. 571-580. Built by the Lima Locomotive Works, Inc. in 1943.

Traction force .....	64,100 lb.	Weight of tender, $\frac{2}{3}$ load .....	303,400 lb.
Cylinders, diameter and stroke .....	25 in. x 34 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	42 ft. 0 in.
Weight on drivers .....	270,900 lb.	Steam pressure .....	245 lb.
Total weight of engine .....	433,200 lb.	Tender capacity .....	22,000 gal., 25 tons

The famous Capital Cities Route departed from its usual design of locomotives, the 4-8-4, during the Second World War and purchased ten of the Berkshires to augment its roster. They follow the general lines of other engines built by Lima during this period for the Nickel Plate Road, Pere Marquette, L&N, C&O, etc. The tasteful lettering and decorations make these engines an attraction when hauling a fast freight train between Richmond, Virginia, and Washington, D. C.

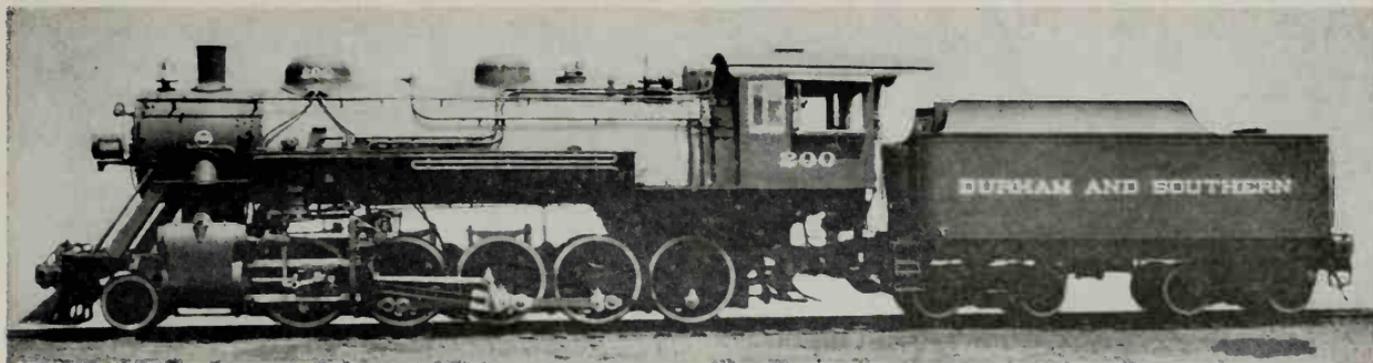
## STEAM LOCOMOTIVES: 2-8-4 Type



Wheeling & Lake Erie 2-8-4 Type Locomotive, Class K-1, for freight service, Nos. 6401-6410. Built by the American Locomotive Company in 1937.

Tractive force, engine .....	64,135 lb.	Weight of tender, $\frac{2}{3}$ load .....	289,000 lb.
Cylinders, diameter and stroke .....	25 in. x 34 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	42 ft. 0 in.
Weight on drivers .....	265,500 lb.	Steam pressure .....	245 lb.
Total weight of engine .....	415,000 lb.	Tender capacity .....	22,000 gal., 22 tons

For those who remember the W & LE before its absorption by the Nickel Plate Road the locomotive shown here was the predominate freight type in use on the road. So successful were they in service that three subsequent orders were given to the American Locomotive Company for 22 more. Nos. 6411-6415 were built in 1939, 6416-6422 in 1941 and 6423-6432 in 1942. They now form a part of the NKP roster still retaining their original numbers.

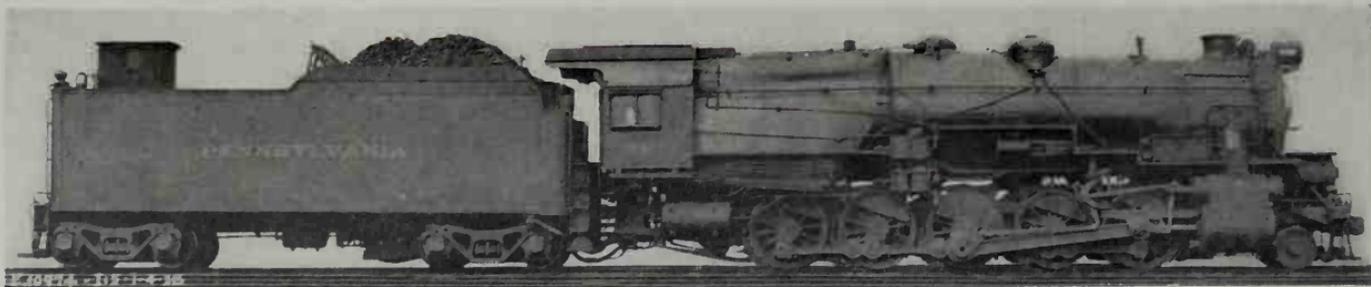


Durham & Southern 2-10-0 (Decapod) Type Freight Locomotive, Nos. 200-201. Built by The Baldwin Locomotive Works in 1930.

Tractive force .....	46,500 lb.	Weight of tender .....	141,500 lb.
Cylinders, diameter and stroke .....	24 in. x 28 in.	Driving wheel base .....	19 ft. 8 in.
Drivers, diameter .....	56 in.	Total engine wheel base .....	28 ft. 3 in.
Weight on drivers .....	190,000 lb.	Steam pressure .....	190 lb.
Total weight of engine .....	212,000 lb.	Tender capacity .....	7,000 gal., 12 tons

These two locomotives and No. 202 built in 1933 constitute the big power on this 59-mile road running between Durham and Dunn in North Carolina. At various points along the route it connects with the Seaboard Air Line, Southern, Norfolk & Western, Norfolk Southern, and Atlantic Coast Line. Except for their tenders, these Decapods are duplicates of a group of 14 built between 1924 and 1930 for the Seaboard Air Line.

## STEAM LOCOMOTIVES: 2-10-0 Type

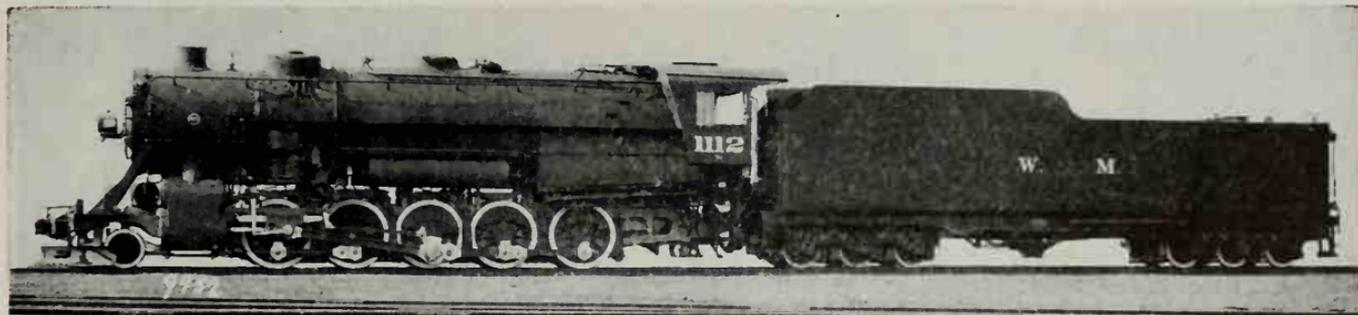


Pennsylvania Railroad 2-10-0 (Decapod) Type Freight Locomotive, Class 1-1-s, No. 4409. Built by The Baldwin Locomotive Works in 1923.

Tractive force .....90,000 lb.  
 Cylinders, diameter and stroke .....30½ in. x 32 in.  
 Drivers, diameter .....62 in.  
 Weight on drivers .....352,500 lb.  
 Total weight of engine .....386,100 lb.

Weight of tender, loaded .....240,770 lb.  
 Driving wheel base .....22 ft. 8 in.  
 Total engine wheel base .....32 ft. 2 in.  
 Steam pressure .....250 lb.  
 Tender capacity .....13,900 gal., 19 tons

Searching for a heavier and more powerful road freight locomotive prompted the railroad to build an experimental engine of the Decapod type in 1916 which was to succeed the numerous 2-8-2's. It proved so successful that 123 more were constructed at the Juniata shops and placed in service on the Pittsburgh Division. These were followed during 1922 and 1923 by one of the largest single orders for locomotives when the Baldwin Locomotive Works built 475 more of them.



Western Maryland 2-10-0 (Decapod) Locomotive, Class 1-2, for freight service, Nos. 1111-1130. Built by The Baldwin Locomotive Works in 1927.

Tractive force .....	96,300 lb.	Weight of tender .....	415,920 lb.
Cylinders, diameter and stroke .....	30 in. x 32 in.	Driving wheel base .....	26 ft. 6 in.
Drivers, diameter .....	61 in.	Total engine wheel base .....	33 ft. 1 in.
Weight on drivers .....	386,800 lb.	Steam pressure .....	240 lb.
Total weight of engine .....	419,280 lb.	Tender capacity .....	22,000 gal., 30 tons

One of the comparatively few railroads owning Decapods is the Western Maryland. This class was a sequel to some 2-10-0 Russian engines acquired during the First World War which gave excellent service in lighter work. They form the backbone of heavy road freight power on the road today along with some 4-8-4 and articulated engines of newer construction.

## STEAM LOCOMOTIVES: 2-10-2 Type



Atchison, Topeka & Santa Fe 2-10-2 (Santa Fe) Type Locomotive for heavy pushing and freight service. Built by The Baldwin Locomotive Works in 1907 and rebuilt at San Bernardino Shops in 1918.

Tractive force .....	74,800 lb.	Weight of tender .....	163,000 lb.
Cylinders, diameter and stroke .....	28 in. x 32 in.	Driving wheel base .....	19 ft. 9 in.
Drivers, diameter .....	57 in.	Total engine wheel base .....	35 ft. 11 in.
Weight on drivers .....	272,700 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	317,400 lb.	Tender capacity .....	8,500 gal., 10 tons

The home of the 2-10-2 type of locomotive is on the Santa Fe where it originated in 1903. Over 200 were in use on the road before the diesels took over. The 1600 series include 74 engines that originally were tandem compounds. In common with many other Santa Fe locomotives of the period they were equipped with inside bearing trailing trucks. The simplified cylinders and Walschaerts valve gear were applied at time of rebuilding.

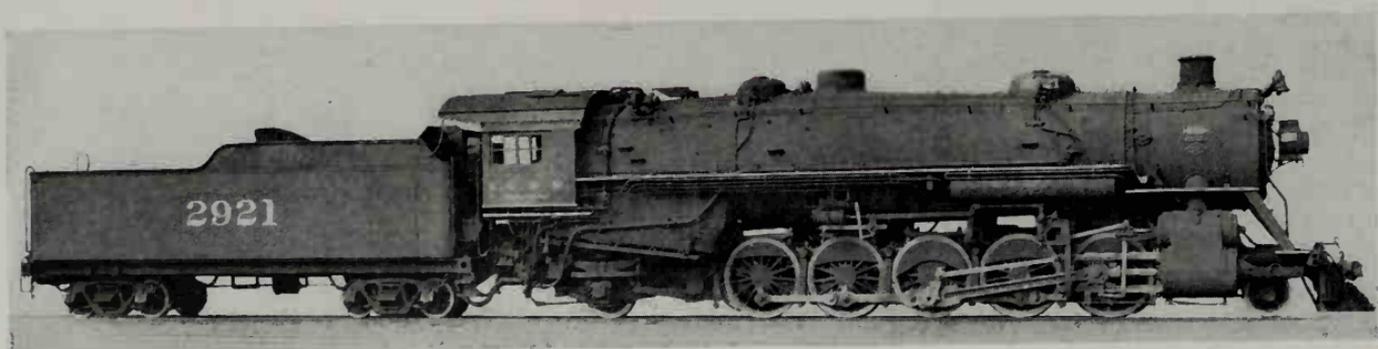


Chicago & Illinois Midland 2-10-2 (Santa Fe) Type Locomotive for freight service, Class H-1, Nos. 700-703. Built by the Lima Locomotive Works, Inc. in 1931.

Traction force, engine .....	77,700 lb.	Total weight of engine .....	405,600 lb.
Traction force, booster .....	10,500 lb.	Driving wheel base .....	24 ft. 4 in.
Cylinders, diameter and stroke .....	30 in. x 32 in.	Total engine wheel base .....	42 ft. 6 in.
Drivers, diameter .....	.63 in.	Steam pressure .....	.200 lb.
Weight on drivers .....	321,700 lb.	Tender capacity .....	12,000 gal., 16 tons

All steam operation of this 130-mile coal road is accomplished by 32 locomotives including the four 2-10-2's shown above. Also there are four others of the same type, similar in appearance but lighter in weight and with smaller dimensions Nos. 600-603, built by The Baldwin Locomotive Works in 1927 and 1929.

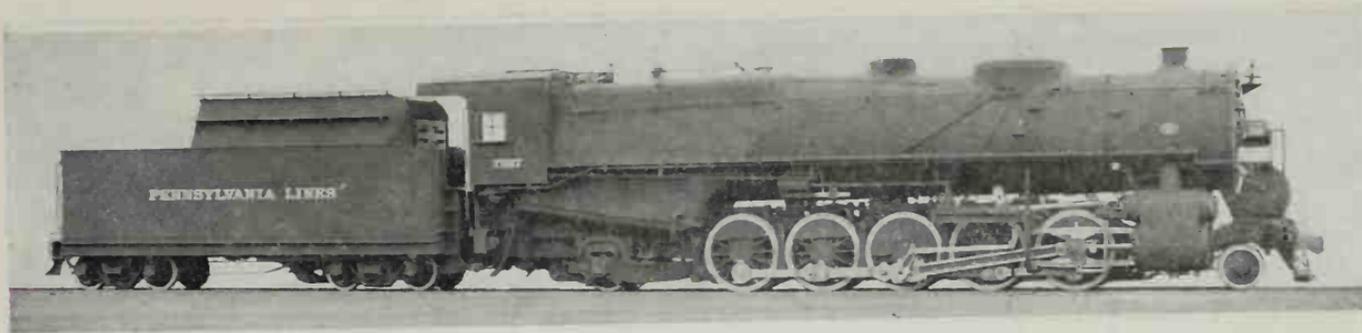
## STEAM LOCOMOTIVES: 2-10-2 Type



Illinois Central 2-10-2 (Santa Fe) Type Freight Locomotive, Nos. 2901-2950. Built by Lima Locomotive Works, Inc. in 1920.

Traction force .....	73,800 lb.	Weight of tender .....	208,600 lb.
Cylinders, diameter and stroke .....	30 in. x 32 in.	Driving wheel base .....	22 ft. 4 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	42 ft. 2 in.
Weight on drivers .....	296,500 lb.	Steam pressure .....	190 lb.
Total weight of engine .....	382,000 lb.	Tender capacity .....	12,000 gal.. 16 tons

Over one-third of IC freight tonnage is coal, and black diamonds are the fuel that powers its locomotives in a ratio of seven steamers to one diesel. Engines of this type haul the heaviest freight trains on the system. All motive power on the system is kept up to date by rebuilding and modernization in its own shops at Paducah, Ky.

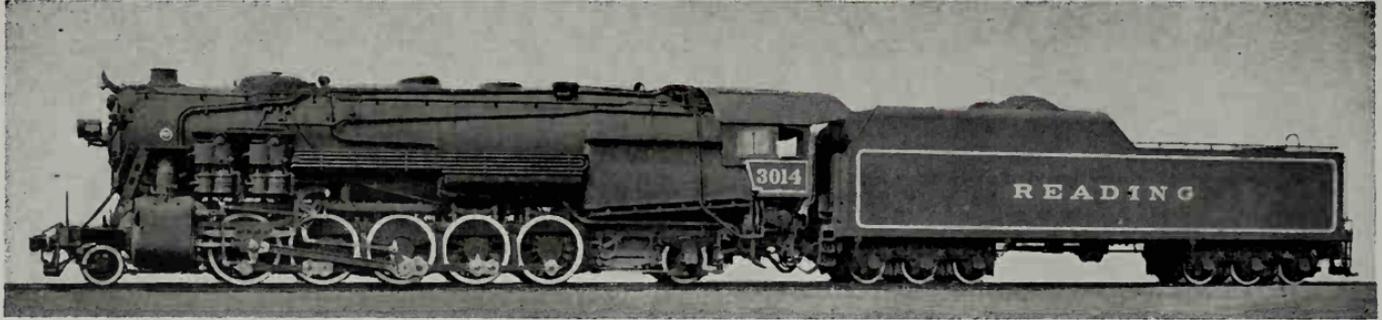


Pennsylvania 2-10-2 (Santa Fe) Type Locomotive for freight service, Class N-1-s, No. 7227. Built at the Brooks Works of the American Locomotive Co. for the Pennsylvania Lines in 1918.

Traction force .....	81,000 lb.	Weight of tender .....	211,300 lb.
Cylinders, diameter and stroke .....	30 in. x 32 in.	Driving wheel base .....	22 ft 2 in.
Drivers, diameter .....	62 in.	Total engine wheel base .....	41 ft. 11½ in.
Weight on drivers .....	351,300 lb.	Steam pressure .....	205 lb.
Total weight of engine .....	435,400 lb.	Tender capacity .....	10,000 gal., 20 tons

For handling heavy coal and ore trains on the lines west of Pittsburgh, 35 of these powerful machines were constructed by the American Locomotive Co. and 25 by The Baldwin Locomotive Works. Between Ashtabula, Ohio, and Conway Yard, near Pittsburgh, these locomotives are capable of hauling 85 cars loaded with iron ore weighing approximately 6,000 tons over grades of 0.3 per cent.

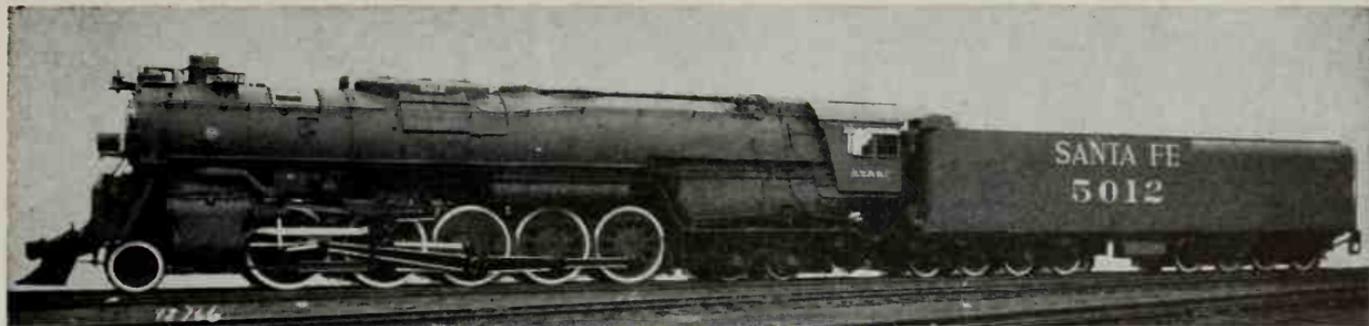
## STEAM LOCOMOTIVES: 2-10-2 Type



Reading 2-10-2 (Santa Fe) Type Locomotive for freight service, Class K-1-se, Nos. 3011-3020. Built by The Baldwin Locomotive Works in 1931.

Tractive force .....	92,500 lb.	Weight of tender, loaded .....	360,100 lb.
Cylinders, diameter and stroke .....	30½ in. x 32 in.	Driving wheel base .....	22 ft. 0 in.
Drivers, diameter .....	61½ in.	Total engine wheel base .....	42 ft. 1 in.
Weight on drivers .....	363,900 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	451,000 lb.	Tender capacity .....	19,000 gal., 26 tons

These engines were built following the successful use of similar engines rebuilt from Mallet articulated machines at Reading shops, Nos. 3000-3100. The rebuilds used the boiler of the original Mallets and on one engine, No. 3010, the Caprotti valve gear was applied, but did not prove successful so it was removed. The large golden lettering and striping gives the Reading locomotives an attractive appearance.

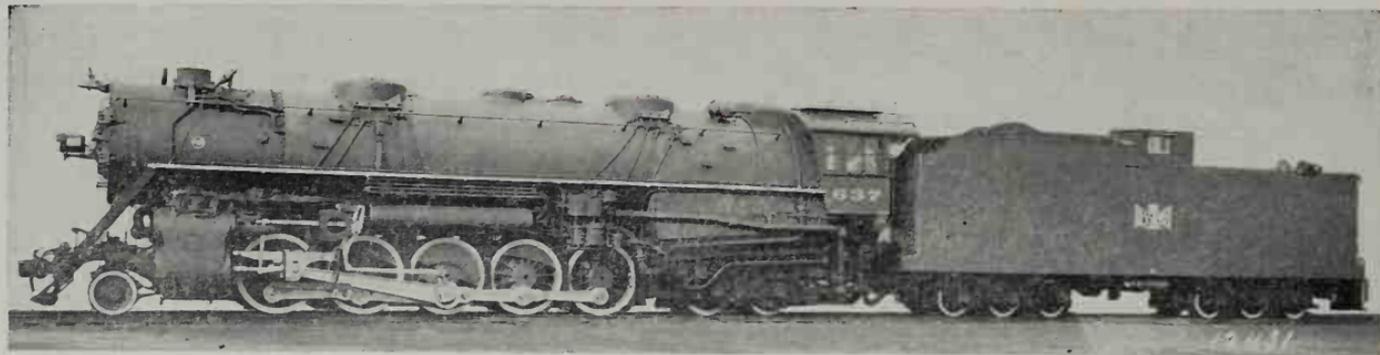


Atchison, Topeka & Santa Fe 2-10-4 Type Locomotive, No. 5012 for freight service, Nos. 5011-5035. Equipped with Limited Cutoff. Built by The Baldwin Locomotive Works in 1944.

Tractive force, engine (72.5 per cent) .....	93,000 lb.	Weight of tender (¾ loaded) .....	369,690 lb.
Cylinders, diameter and stroke .....	30 in. x 34 in.	Driving wheel base .....	26 ft. 2 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	50 ft. 2 in.
Weight on drivers .....	380,000 lb.	Steam pressure .....	310 lb.
Total weight of engine .....	538,000 lb.	Tender capacity .....	24,500 gal. water; 7,000 gal. oil

They build them big on the Santa Fe. This 2-10-4 is notable for its 74-inch diameter driving wheels, the largest ever used under an engine of this type. The first 2-10-4 on the Santa Fe was engine No. 3829 built in 1919 with a group of 2-10-2's. It was equipped with a four-wheel trailing truck antedating the first Texas type by six years. It was not duplicated as the next of this type came on the road in 1930. All told, the Santa Fe had 37 engines with the 2-10-4 wheel arrangement.

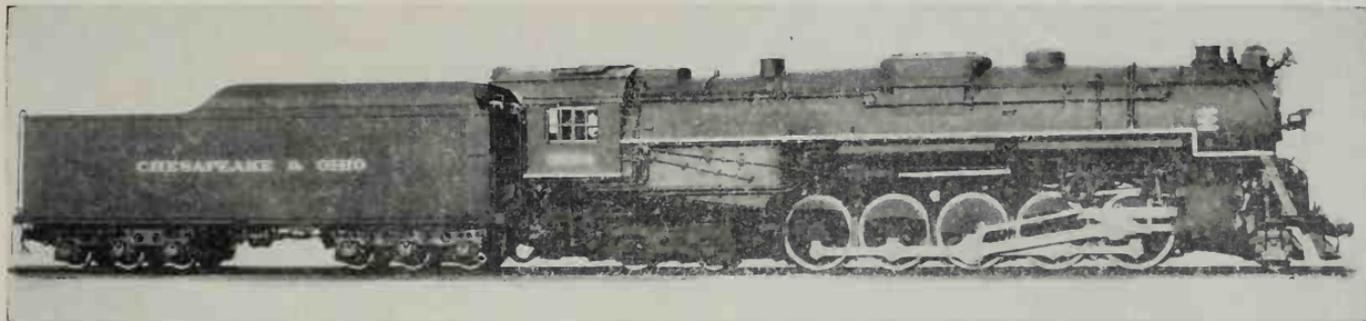
## STEAM LOCOMOTIVES: 2-10-4 Type



Bessemer & Lake Erie 2-10-4 Type Locomotive for freight service, Class H-1a, No. 601; Class H-1b, Nos. 602-610, and Class H-1c, Nos. 611-620. Built by the Baldwin Locomotive Works. Class H-1d, Nos. 621-630, built by the American Locomotive Company. Class H-1e, Nos. 631-635; Class H-1f, Nos. 636-637, and Class H-1g, Nos. 638-647, built by The Baldwin Locomotive Works. The last was built in 1944.

Tractive force, engine .....	96,700 lb.	Total weight of engine .....	523,600 lb.
Tractive force, booster .....	13,100 lb.	Driving wheel base .....	22 ft. 4 in.
Cylinders, diameter and stroke .....	31 in. x 32 in.	Total engine wheel base .....	45 ft. 6 in.
Drivers, diameter .....	64 in.	Steam pressure .....	250 lb.
Weight on drivers .....	371,359 lb.	Tender capacity .....	23,000 gal., 25 tons
Weight of tender, $\frac{2}{3}$ load .....	304,000 lb.		

The B & LE adopted Texas type locomotives in 1929 for hauling 13,000-ton iron ore trains from Lake Erie to Pittsburgh steel mills. Seven different orders produced a total of 47 locomotives, 18 of which have been subsequently sold to the Duluth, Missabe & Iron Range. These engines are the most powerful 2-10-4's, although not the heaviest in the country. They resemble locomotives of the same type on the Chicago & Burlington & Quincy.



Chesapeake & Ohio 2-10-4 Type Locomotive for freight service, Class T-1, Nos. 3000-3039. Built by the Lima Locomotive Works, Inc. in 1930.

Tractive force, engine .....	93,350 lb.	Total weight of engine .....	566,000 lb.
Tractive force, booster .....	15,275 lb.	Driving wheel base .....	24 ft. 4 in.
Cylinders, diameter and stroke .....	29 in. x 34 in.	Total engine wheel base .....	49 ft. 3 in.
Drivers, diameter .....	69 in.	Steam pressure .....	265 lb.
Weight on drivers .....	373,000 lb.	Tender capacity .....	23,500 gal., 30 tons

Among the largest Texas-type locomotives ever constructed is this group of 40 coal haulers on the C & O. A straightforward design, these engines were built after tests were conducted with an Erie 2-8-4 which did not prove to be as powerful as was required to haul the 160-car trains loaded with 12,000 tons of coal. However, the Erie's basic design was followed with the addition of another pair of drivers and increased dimensions to go with them. The C & O uses the T-1 Class between Russell, Ky., and Toledo, Ohio.

## STEAM LOCOMOTIVES: 2-10-4 Type



Canadian Pacific 2-10-4 Type Locomotive, Class T-1c, No. 5935, for freight service, Nos. 5930-5935. Equipped with Booster. Built by the Montreal Locomotive Works, Ltd. in 1949.

Tractive force, engine .....	76,900 lb.	Weight of tender .....	283,500 lb.
Tractive force, booster .....	12,500 lb.	Driving wheel base .....	22 ft. 0 in.
Cylinders, diameter and stroke .....	25 in. x 32 in.	Total engine wheel base .....	46 ft. 0½ in.
Drivers, diameter .....	63 in.	Fuel .....	Oil
Weight on drivers .....	311,200 lb.	Steam pressure .....	285 lb.
Total weight of engine .....	449,000 lb.	Tender capacity .....	12,000 Imp. gal. water, 4,500 Imp. gal. oil

The CPR has 36 2-10-4's which are called Selkirk's instead of Texas type. The first group of 20 engines was built in 1929 and proved highly satisfactory. The next group of ten engines was modified to include a streamlined effect which was duplicated in the last lot of six locomotives as shown. There is no steam dome on the boiler as a perforated dry-pipe is used to collect steam in the boiler. These are the largest locomotives in the British Empire and were the last steam locomotives built for the Canadian Pacific.



Kansas City Southern 2-10-4 Type Locomotive, Class J, No. 905; Nos. 900-909, for freight service. Built by the Lima Locomotive Works, Inc. in 1937.

Tractive force, engine .....	93,300 lb.
Cylinders, diameter and stroke .....	27 in. x 34 in.
Drivers, diameter .....	70 in.
Weight on drivers .....	353,300 lb.
Total weight of engine .....	509,000 lb.
Weight of tender, loaded (coal) .....	359,690 lb.
Weight of tender, loaded (oil) .....	348,000 lb.

Driving wheel base .....	24 ft. 4 in.
Total engine wheel base .....	48 ft. 8 in.
Fuel .....	Soft coal or oil
Steam pressure .....	310 lb.
Tender capacity .....	20,700 gal., 25 tons
Tender capacity .....	21,700 gal. water, 4,500 gal oil

These ten giants of the rails are among the best looking steam locomotives built in recent years. The vestibule cab is unusual for engines used in the south and is not often seen there except on this road and the Sunset Route of the Southern Pacific. Five of the engines, numbered 900 to 904, are oil burners and the remaining five, numbered 905 to 909, are equipped to burn coal. They replaced Mallet type power on heavy freight trains and the use of two lighter locomotives on the fast, through freight trains. Diesels have superseded them.

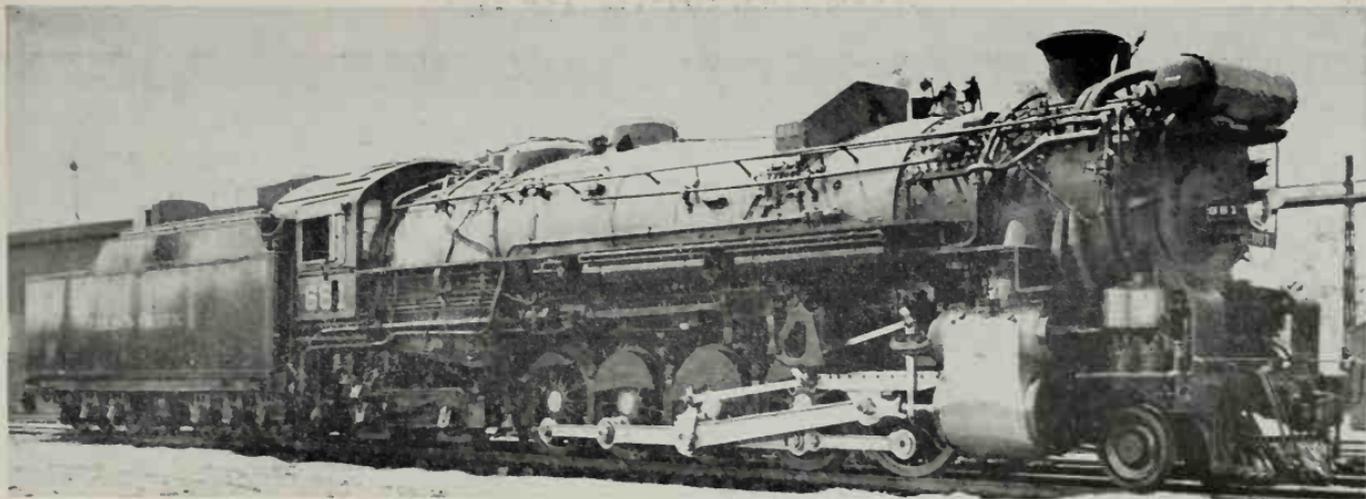
## STEAM LOCOMOTIVES: 2-10-4 Type



Pennsylvania Railroad 2-10-4 Type Locomotive, Class J-1, No. 6474. Built by the Pennsylvania Railroad Company in 1942, 1943 and 1944.

Tractive force, engine .....	95,100 lb.	Total weight of engine .....	575,880 lb.
Tractive force, booster .....	15,000 lb.	Driving wheel base .....	24 ft. 4 in.
Cylinders, diameter and stroke .....	29 in. x 34 in.	Total engine wheel base .....	49 ft. 3 in.
Drivers, diameter .....	69 in.	Steam pressure .....	270 lb.
Weight on drivers .....	379,493 lb.	Tender capacity .....	21,000 gal., 30 tons

During World War II the Pennsylvania felt the necessity for heavier and faster freight power and as the government restricted designs to those already built it was necessary to follow an existing locomotive. One was borrowed from the Chesapeake and Ohio, of a group of 40 2-10-4's built by Lima in 1930. It met all requirements and 125 engines of similar design were ordered from Altoona Works. They are divided into two classes: J-1, numbered 6150-6174 and 6435-6474; J-1a, numbered 6401-6434 and 6475-6500, the only difference between them being the material in the boiler sheets which alters the weights slightly. These were the first freight engines on the Pennsylvania having a four-wheel trailing truck and also an outside bearing on the front truck. The absence of the flat-topped Belpaire firebox is notable.

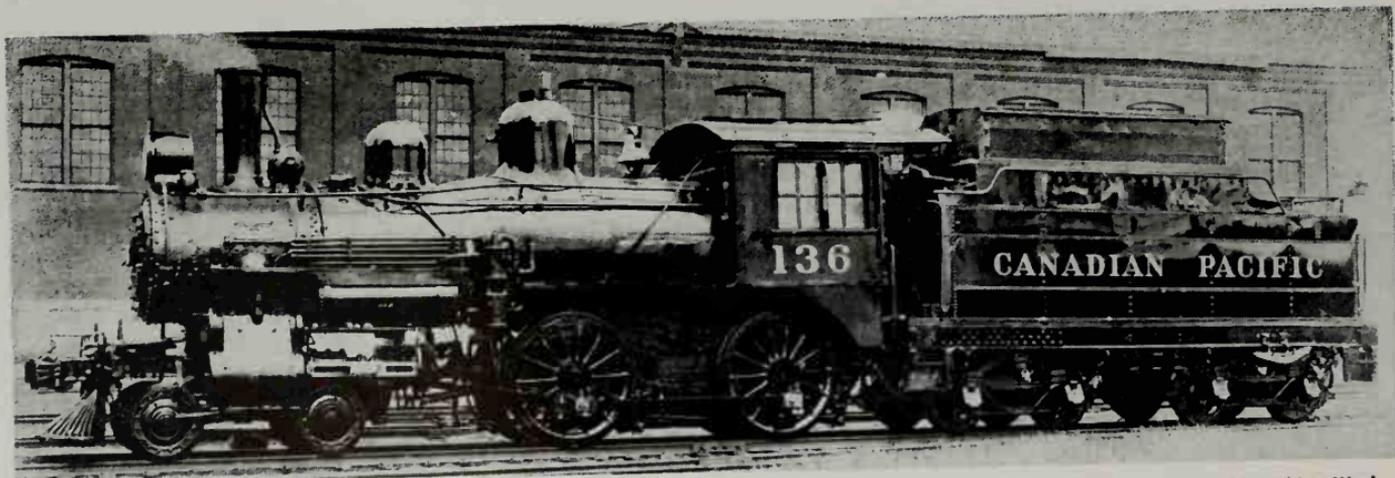


**Texas & Pacific 2-10-4 (Texas) Type locomotive No. 661 for freight service, Class I-1-d, Nos. 655-669. Built by the Lima Locomotive Works in 1929.**

Tractive force .....	84,600 lb.	Weight of tender .....	279,700 lb.
Cylinders, diameter and stroke .....	29 in. x 32 in.	Driving wheel base .....	22 ft. 0 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	46 ft. 8 in.
Weight on drivers .....	307,000 lb.	Steam pressure .....	255 lb.
Total weight of engine .....	457,500 lb.	Tender capacity .....	14,000 gal. water, 5,000 gal. oil

A short time after Lima's experimental 2-8-4 Berkshire type was built, the Texas and Pacific ordered ten locomotives which incorporated the same basic principles of the Super-Power type with the addition of another pair of driving wheels. This created a new wheel arrangement which was immediately named the Texas type by the builder in honor of the railroad and the state it serves. A total of 70 of these 2-10-4 engines have been built for the T & P on five different orders. Nos. 600-609, I-1, in 1925; 610-624, I-1a, in 1927; 625-639, I-1b, in 1928; 640-654, I-1c, in 1928, and the last lot above.

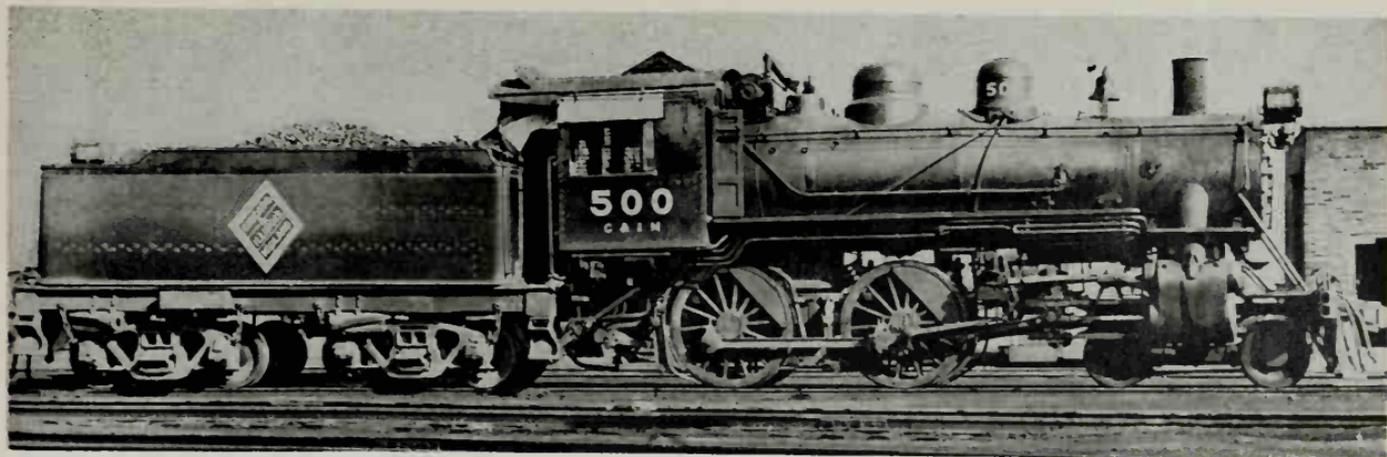
## STEAM LOCOMOTIVES: 4-4-0 Type



Canadian Pacific 4-4-0 Type Locomotive, Class A-2-m, No. 136, for branch line passenger service. Built by the Rogers Locomotive & Machine Works in 1883 and subsequently rebuilt with a new boiler, superheater and piston valves.

Traction force .....	15,000 lb.	Weight of tender .....	78,000 lb.
Cylinders, diameter and stroke .....	17 in. x 24 in.	Driving wheel base .....	8 ft. 6 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	23 ft. 0 in.
Weight on drivers .....	71,000 lb.	Steam pressure .....	160 lb.
Total weight of engine .....	115,000 lb.	Tender capacity .....	4,000 gal., 10 tons

Here is a very old locomotive, as locomotives are rated, but it has been rebuilt to such an extent that probably very little of the original machine remains. Three of them were in service hauling light passenger trains in the Province of New Brunswick during 1952.

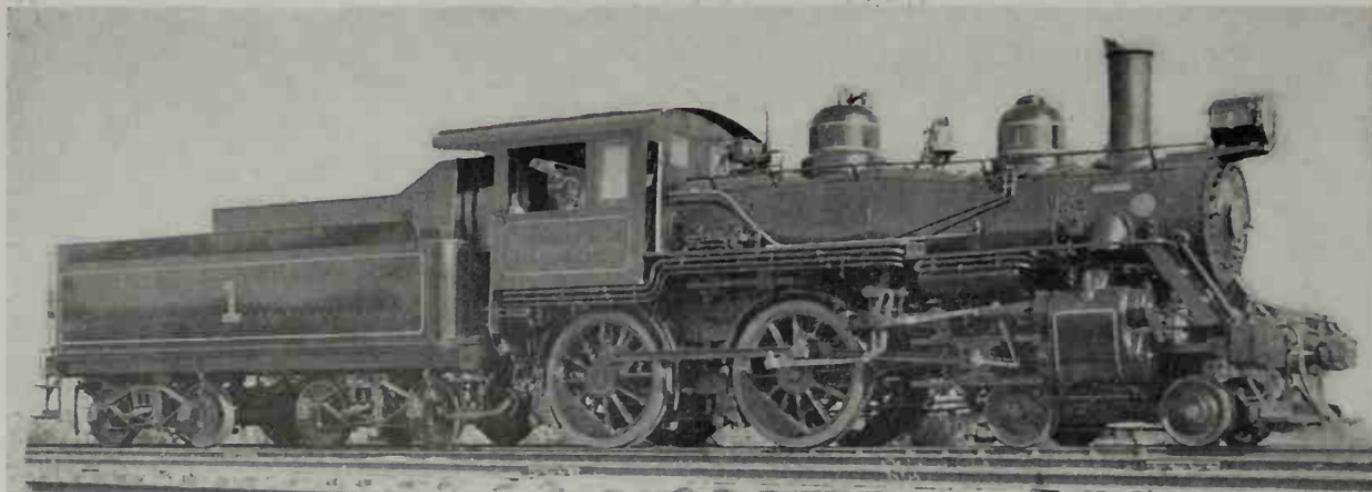


Chicago & Illinois Midland 4-4-0 Type Locomotive, Class A-1, Road Nos. 500-502, for passenger service. Built by The Baldwin Locomotive Works in 1927 and 1928.

Tractive force .....	18,800 lb.	Weight of tender .....	101,000 lb.
Cylinders, diameter and stroke .....	18 in. x 24 in.	Driving wheel base .....	7 ft. 0 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	21 ft. 4 in.
Weight on drivers .....	77,400 lb.	Steam pressure .....	180 lb.
Total weight of engine .....	118,400 lb.	Tender capacity .....	4,000 gal., 8 tons

The only passenger power on the C & IM was acquired to operate local trains between Springfield and Pekin, Illinois, of which only one is in service. Engine Nos. 500 and 501 were constructed in June 1927 and No. 502 in August 1928, it being the last 4-4-0 type locomotive to be built for an American railroad.

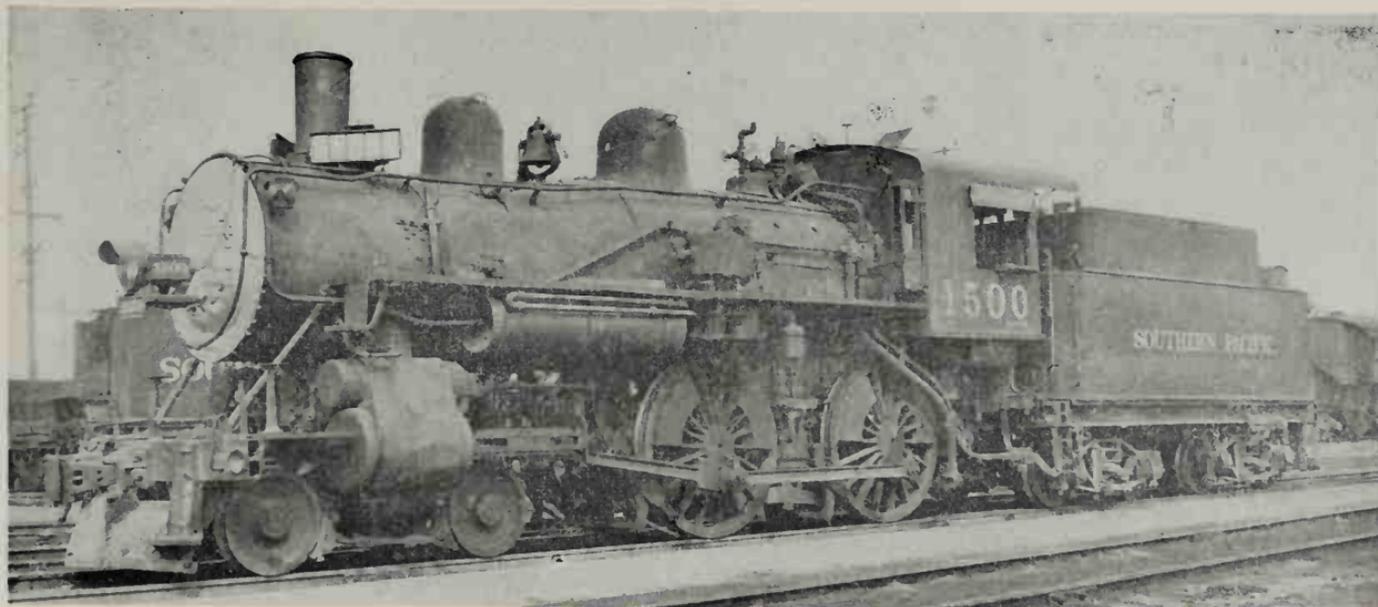
## STEAM LOCOMOTIVES: 4-4-0 Type



Louisiana Eastern 4-4-0 Type Passenger Locomotive No. 1 built by the Baldwin Locomotive Works in 1919.

Traction force .....	13,800 lb.	Weight of tender .....	79,000 lb.
Cylinders, diameter and stroke .....	15 in. x 24 in.	Driving wheel base .....	8 ft. 0 in.
Drivers, diameter .....	60 in.	Total engine wheel base .....	21 ft. 9 in.
Weight on drivers .....	54,200 lb.	Steam pressure .....	180 lb.
Total weight of engine .....	89,000 lb.	Tender capacity .....	4,000 gal., 4 tons

One of the rapidly vanishing breed of American type locomotives now in service on the Louisiana Eastern at Amite, La. It was originally built for the Red River and Gulf and is equipped with a superheater and other modern appliances. The Louisiana Eastern expects to build its present line across country connecting with through routes and is steam operated.



Southern Pacific 4-4-0 Type Locomotive, Class E-23, No. 1500, used in light passenger service. Built by the Schenectady Locomotive Works in 1898.

Tractive force .....	21,240 lb.
Cylinders, diameter and stroke .....	20 in. x 24 in.
Drivers, diameter .....	73 in.
Weight on drivers .....	101,200 lb.
Total weight of engine .....	147,000 lb.

Weight of tender .....	95,000 lb.
Driving wheel base .....	8 ft. 6 in.
Total engine wheel base .....	23 ft. 11 in.
Steam pressure .....	190 lb.
Tender capacity .....	4,500 gal., 3,000 gal. oil

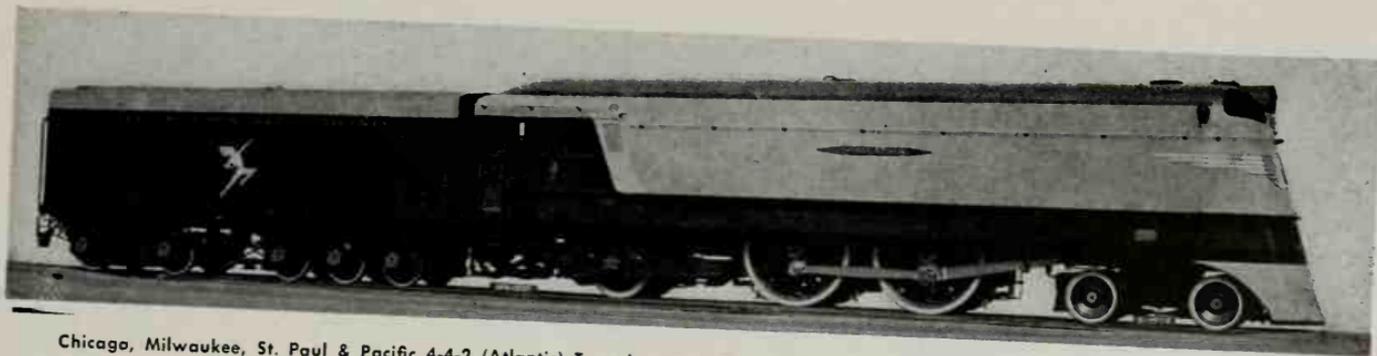
Here is one of the last 4-4-0 type locomotives to be used on the SP after 50 years of service. Originally built to haul the crack through trains it was equipped with Stephenson valve gear and slide valves and was subsequently modernized with a superheater and piston valves. Note the Davis patented counterbalances in the driving wheel which were used on the original engine.



Central Railroad of New Jersey 4-4-2 (Atlantic) Type Locomotive, Class P-6, No. 593. Fast passenger locomotive built by the Brooks Works of the American Locomotive Co. in June 1902.

Tractive force .....	28,400 lb.	Weight of tender .....	151,800 lb.
Cylinders, diameter and stroke .....	22 in. x 26 in.	Driving wheel base .....	7 ft. 8 in.
Drivers, diameter .....	47 1/2 in.	Total engine wheel base .....	29 ft. 11 in.
Weight on drivers .....	129,000 lb.	Steam pressure .....	210 lb.
Total weight of engine .....	215,700 lb.	Tender capacity .....	7,500 gal., 12 tons

Six of these fast Atlantics Nos. 590-595 were built shortly after the turn of the century to haul through trains such as the Queen of the Valley and Atlantic City expresses. They were originally equipped with Stephenson link motion and in 1917 the 593 was rebuilt with a superheater and Walschaerts valve gear. They were built with Davis counterbalances in the driving wheels, a common style on the CRR of NJ.

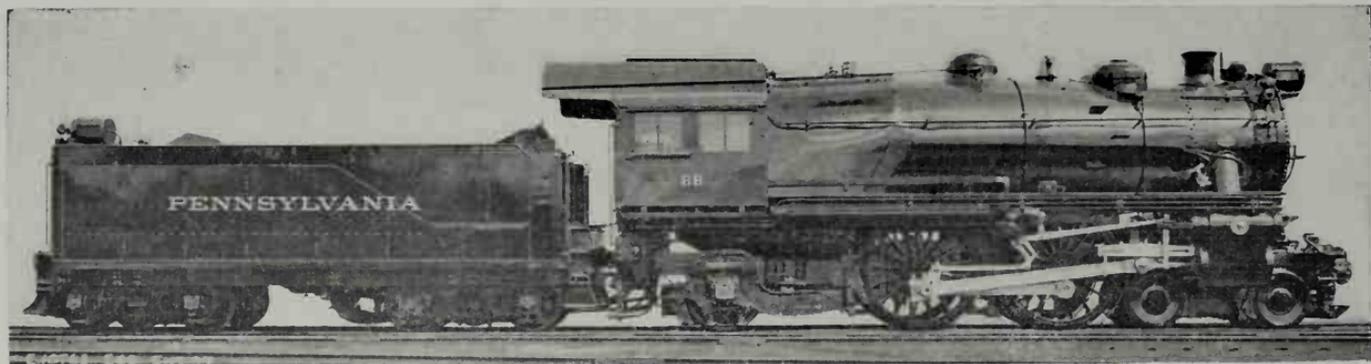


Chicago, Milwaukee, St. Paul & Pacific 4-4-2 (Atlantic) Type Locomotive for high speed passenger service, Class A, Nos. 1-4. Built by the American Locomotive Company in 1935-1937.

Tractive force .....30,700 lb.  
 Cylinders, diameter and stroke .....19 in. x 28 in.  
 Drivers, diameter .....84 in.  
 Weight on drivers .....144,300 lb.  
 Total weight of engine .....290,000 lb.

Weight of tender .....266,300 lb.  
 Driving wheel base .....8 ft. 6 in.  
 Total engine wheel base .....37 ft. 7 in.  
 Steam pressure .....300 lb.  
 Tender capacity .....13,000 gal., 4,000 gal oil

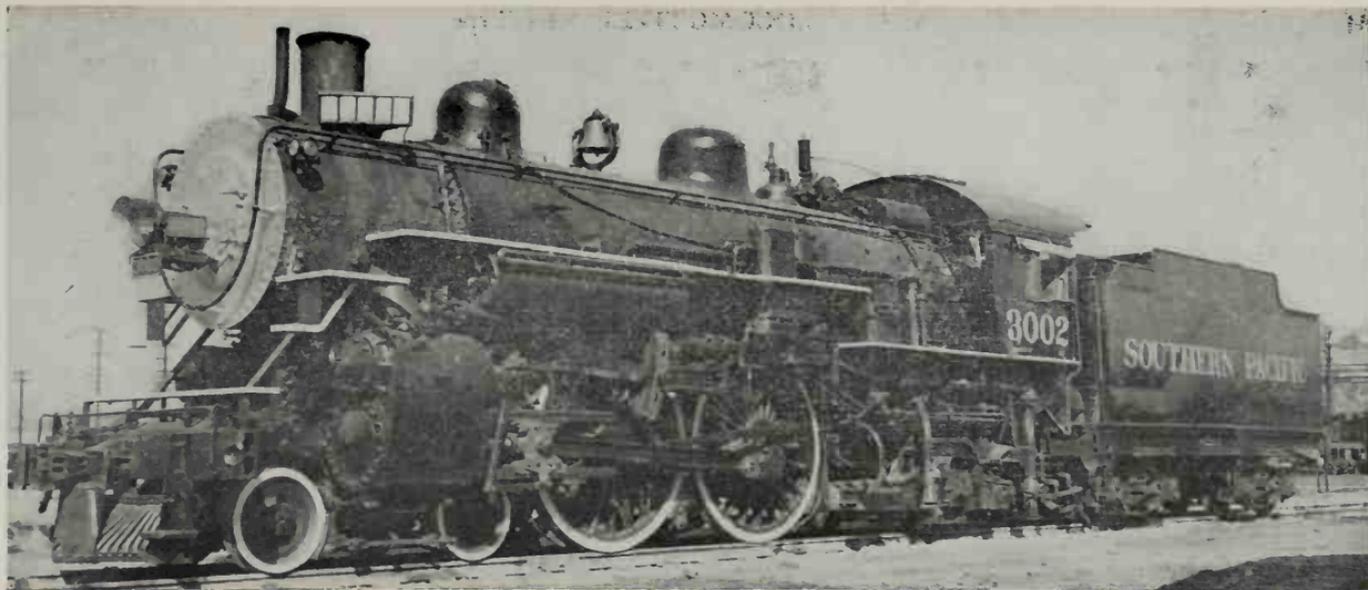
When the Milwaukee inaugurated its Hiawatha trains between Chicago and Minneapolis, St. Paul, Minnesota, in 1935, it acquired two of these orange and red trimmed streamliners to roll them along at better than 100 miles an hour. Continued success warranted the purchase of No. 3 in 1936 followed by No. 4 in 1937. They now are slated for scrap having been superseded by diesels.



Pennsylvania Railroad 4-4-2 (Atlantic) Type Locomotive, Class E6s, No. 68, for passenger service. Built by the railroad at Altoona in 1914.

Traction force .....	31,275 lb.	Weight of tender, loaded .....	169,150 lb.
Cylinders, diameter and stroke .....	23½ in. x 26 in.	Driving wheel base .....	7 ft. 5 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	29 ft. 9 in.
Weight on drivers .....	136,000 lb.	Steam pressure .....	205 lb.
Total weight of engine .....	243,600 lb.	Tender capacity .....	7,400 gal., 13 tons

The first of these high-stepping Atlantics was built in 1910 without a superheater. After undergoing thorough testing two more were constructed in 1912. Further workouts disclosed features that required some changes and in 1914 an order was given to build 80 more. One hundred miles an hour is not unusual speed for these locomotives on level portions of the road when under test. The K-4s Pacifics bear a close resemblance to the E-6s but have another pair of driving wheels.

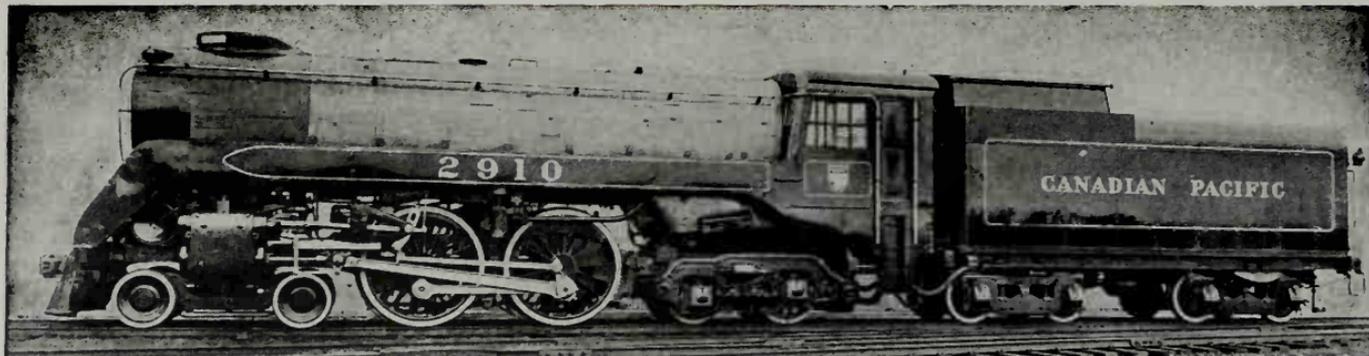


Southern Pacific 4-4-2 (Atlantic) Type Locomotive, Class A-6, No. 3002. Built by the American Locomotive Company at Schenectady, N. Y. in 1904 and rebuilt by the railroad at Sacramento, California, Shops in 1929.

Traction force .....	29,860 lb.	Weight of tender .....	169,700 lb.
Cylinders, diameter and stroke .....	22 in. x 28 in.	Driving wheel base .....	7 ft. 0 in.
Drivers, diameter .....	81 in.	Total engine wheel base .....	28 ft. 8 in.
Weight on drivers .....	127,000 lb.	Steam pressure .....	210 lb.
Total weight of engine .....	243,900 lb.	Tender capacity .....	9,000 gal., 2,940 gal. oil

One of the fast passenger locomotives built originally to the common standard design of the Harriman system. It was rebuilt by the railroad in 1929 and equipped with Walschaerts valve gear, superheater, booster, feedwater heater and a larger tender. This locomotive was preserved at Los Angeles for use of the moving picture industry. Another one, of similar design, has been presented to the City of Los Angeles by the railroad and reposes in a public park.

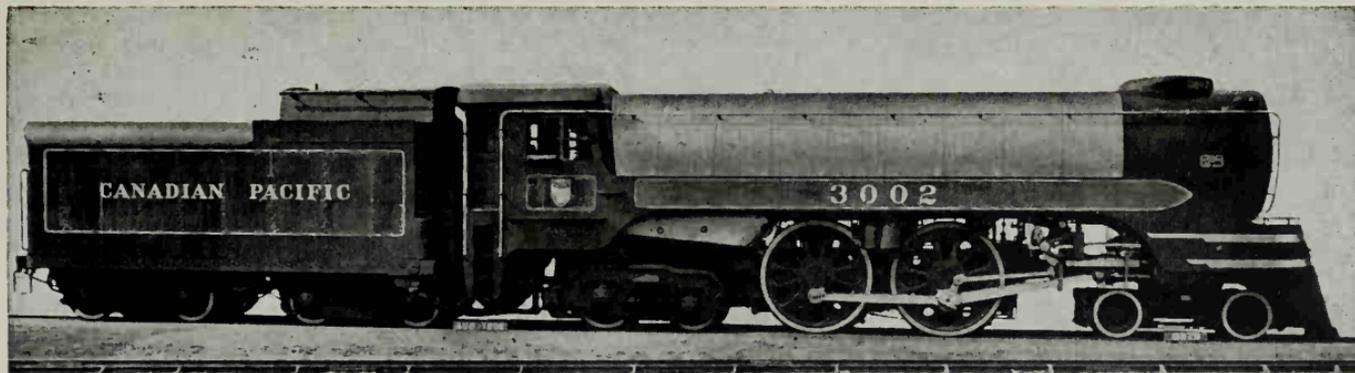
## STEAM LOCOMOTIVES: 4-4-4 Type



Canadian Pacific 4-4-4 Type Locomotive for passenger service, Class F-1a, Nos. 2910-2929. Built by the Canadian Locomotive Company, Ltd. in 1937-1938.

Traction force .....	26,000 lb.	Weight of tender, loaded .....	183,100 lb.
Cylinders, diameter and stroke .....	16½ in. x 28 in.	Driving wheel base .....	7 ft. 2 in.
Drivers, diameter .....	75 in.	Total engine wheel base .....	32 ft. 7 in.
Weight on drivers .....	111,250 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	239,130 lb.	Tender capacity .....	9,250 U. S. gal., 12 tons

Two road classes of locomotives are shown here and on the following page because of their unusual construction. They were built in an endeavor to determine the best design for fast passenger trains composed of light-weight steel cars. Engines of the 4-4-4 type had been built in 1915 by the Philadelphia & Reading where they were called Reading type but not proving successful they were rebuilt into Atlantics. The Baltimore and Ohio next tried this type with one engine in 1935, but it too soon went into discard. On the CPR the type is known as the Jubilee class in commemoration of the fiftieth anniversary of the opening of transcontinental service in 1936. The locomotive shown here has a conventional arrangement of driving rods and wheels while that shown on the following page differs in having a longer total wheel base and the main driving rod connected to the first pair of driving wheels.

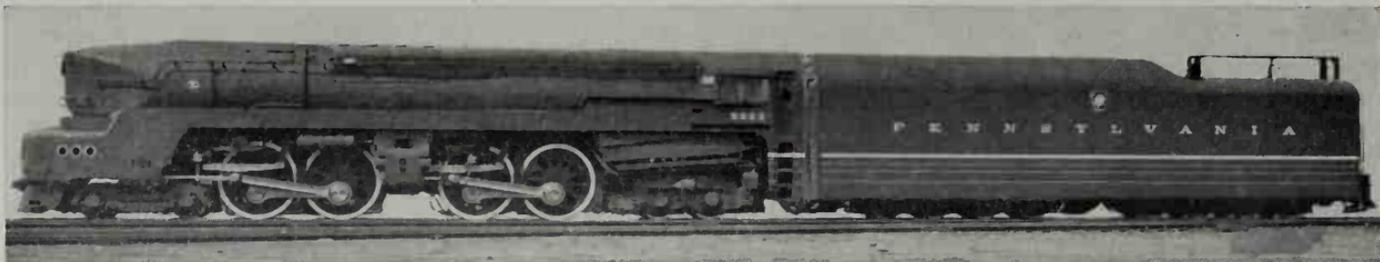


Canadian Pacific 4-4-4 Type Streamlined Locomotive, Class F-2a, Nos. 3000-3004. Built by Montreal Locomotive Works, Ltd. in 1936.

Tractive force .....	26,500 lb.	Weight of tender, loaded .....	198,500 lb.
Cylinders, diameter and stroke .....	17¼ in. x 28 in.	Driving wheel base .....	7 ft. 8 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	37 ft. 3 in.
Weight on drivers .....	121,000 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	263,000 lb.	Tender capacity .....	8,400 U. S. gal., 12 tons

The heavier of the two Jubilee class engines is represented by the 3002 of the CPR. Although given a later road class designation, these F-2a engines were built first and represent a modern stream-styled locomotive of their time. The boilers of both classes F-1a and F-2a are covered with a supplementary jacket that is higher than usual and a special smoke-deflecting stack is fitted. The pilot, cylinders and running board skirts are styled for smooth outline and the cab is the usual CPR standard vestibuled type with the railway company's shield stencilled beneath the cab window.

## STEAM LOCOMOTIVES: 4-4-4 Type



Pennsylvania Railroad 4-4-4 Type Locomotive, Class T-1, No. 5533, for through line passenger service. Built by The Baldwin Locomotive Works in May 1946.

Tractive force .....	65,000 lb.	Weight of tender .....	442,500 lb.
Cylinders, diameter and stroke .....	19 $\frac{3}{4}$ in. x 26 in.	Driving wheel base .....	25 ft. 4 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	51 ft. 11 in.
Weight on drivers .....	279,910 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	502,200 lb.	Tender capacity .....	19,200 gal., 43 tons

The forerunner of this locomotive was built at Altoona and first exhibited at The New York World's Fair in 1939 and 1940. It had six-wheel leading and trailing trucks which were not used in the subsequent designs. Two experimental engines Nos. 6110 and 6111, like the one shown, came from The Baldwin Locomotive Works in 1942, but it was not until 1946 that a substantial number were built including 25 from Altoona bearing road Nos. 5500 to 5524 and 25 from The Baldwin Locomotives Works, Nos. 5525 to 5549. Their shark-like boiler front is a unique adoption of streamlining and is familiar on the Pennsylvania from Harrisburg west. The Pennsylvania's insignia, name and extensive striping in gold on the tender enhances the appearance.



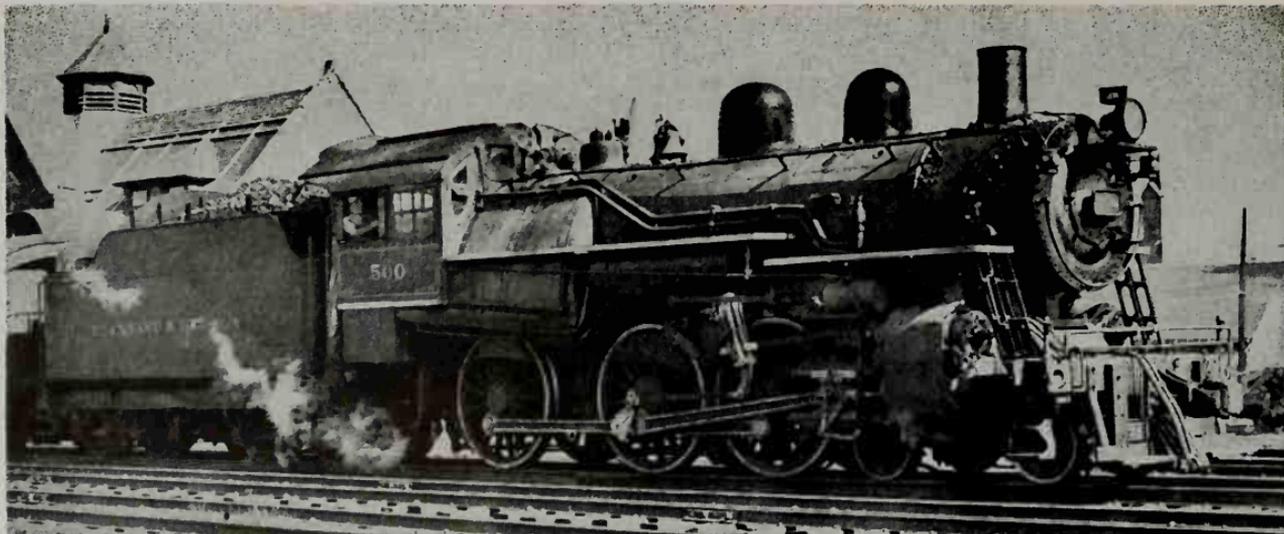
Central Railroad of New Jersey 4-6-0 (Ten-Wheel) Locomotive, Road Class L-8-s, later reclassified T-40, Nos. 780-789. Built by The Baldwin Locomotive Works in 1918.

Traction force .....	40,260 lb.
Cylinders, diameter and stroke .....	23 in. x 28 in.
Drivers, diameter .....	69 in.
Weight on drivers .....	170,800 lb.
Total weight of engine .....	225,600 lb.

Weight of tender .....	144,400 lb.
Driving wheel base .....	13 ft. 6 in.
Total engine wheel base .....	25 ft. 2½ in.
Steam pressure .....	220 lb.
Tender capacity .....	7,500 gal., 13 tons

Essentially built for fast freight service these engines were later relegated to suburban passenger service operating out of Jersey City. Some of them are equipped with a headlight and pilot on the tender so that they run equally well in either direction without being turned. They also have the distinction of being the last Wootten boilered engines to be constructed, called Mother Hubbards on the CRR of N.J.

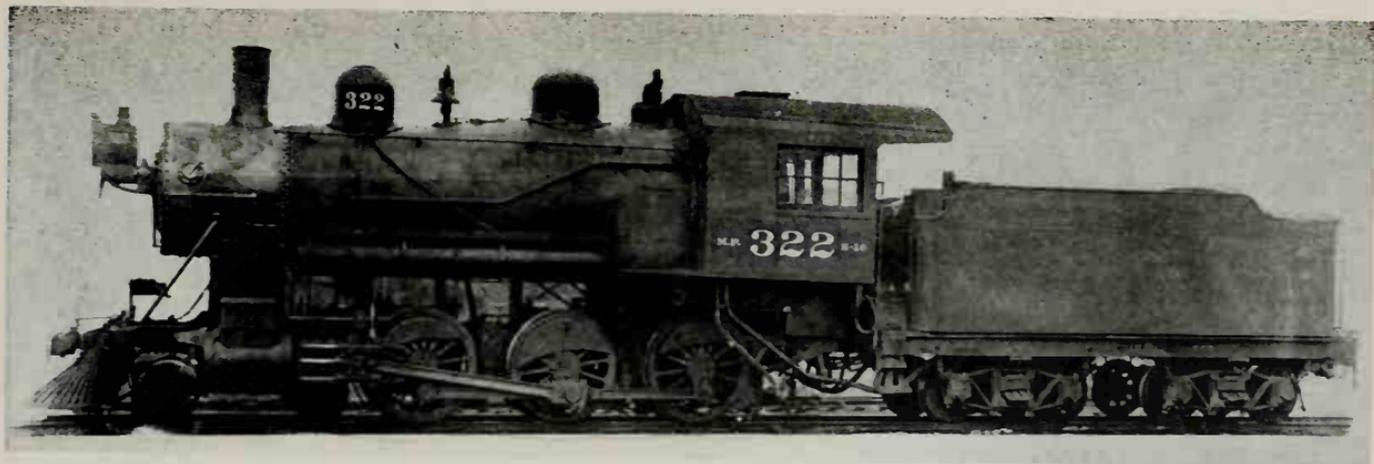
## STEAM LOCOMOTIVES: 4-6-0 Type



Delaware & Hudson 4-6-0 (Ten-Wheel) Type Locomotive for passenger service, Class D-3, Nos. 500-503. Built by the American Locomotive Co. in 1903. Rebuilt by the railroad in 1927.

Tractive force .....	30,150 lb.	Weight of tender .....	134,000 lb.
Cylinders, diameter and stroke .....	22 in. x 26 in.	Driving wheel base .....	15 ft. 0 in.
Drivers, diameter .....	72 in.	Total engine wheel base .....	26 ft. 4 in.
Weight on drivers .....	157,000 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	208,000 lb.	Tender capacity .....	7,000 gal., 12 tons

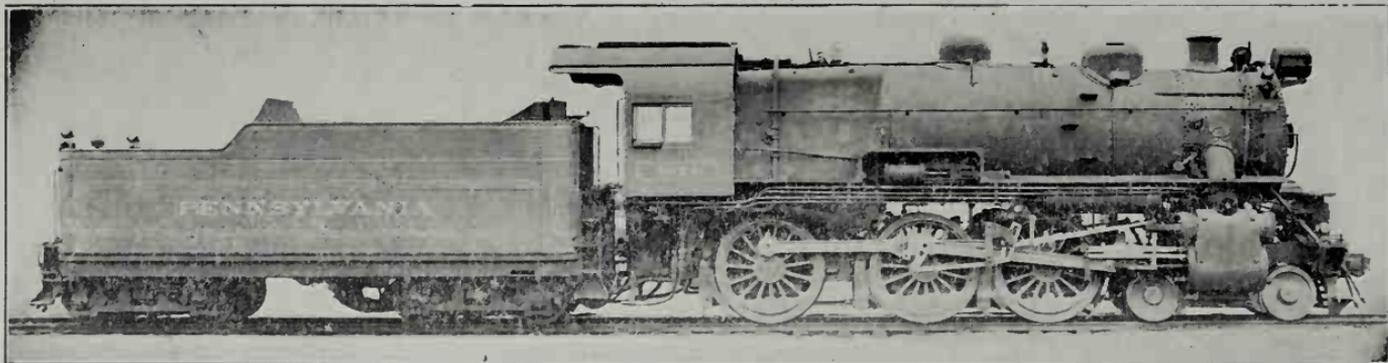
The D&H accumulated a variety of ten-wheelers between the years 1903 and 1911 that hauled the heaviest through passenger trains to Montreal. Some of these were built with modified Wootten fire boxes and cab astride the boiler while others were single cab engines. All of them were eventually rebuilt, the double cab engines as shown above equipped with superheater and piston valves. Several were provided with capped stacks and English type cabs.



Northern Pacific 4-6-0 (Ten-Wheel) Locomotive for freight service, Class 5-10, Nos. 320-329. Built by the Rogers Works, American Locomotive Company in 1907.

Traction force .....	26,600 lb.	Weight of tender .....	104,000 lb.
Cylinders, diameter and stroke .....	19 in. x 26 in.	Driving wheel base .....	12 ft. 0 in.
Drivers, diameter .....	57 in.	Total engine wheel base .....	22 ft. 1 in.
Weight on drivers .....	115,000 lb.	Steam pressure .....	190 lb.
Total weight of engine .....	153,000 lb.	Tender capacity .....	5,000 gal., 8 tons

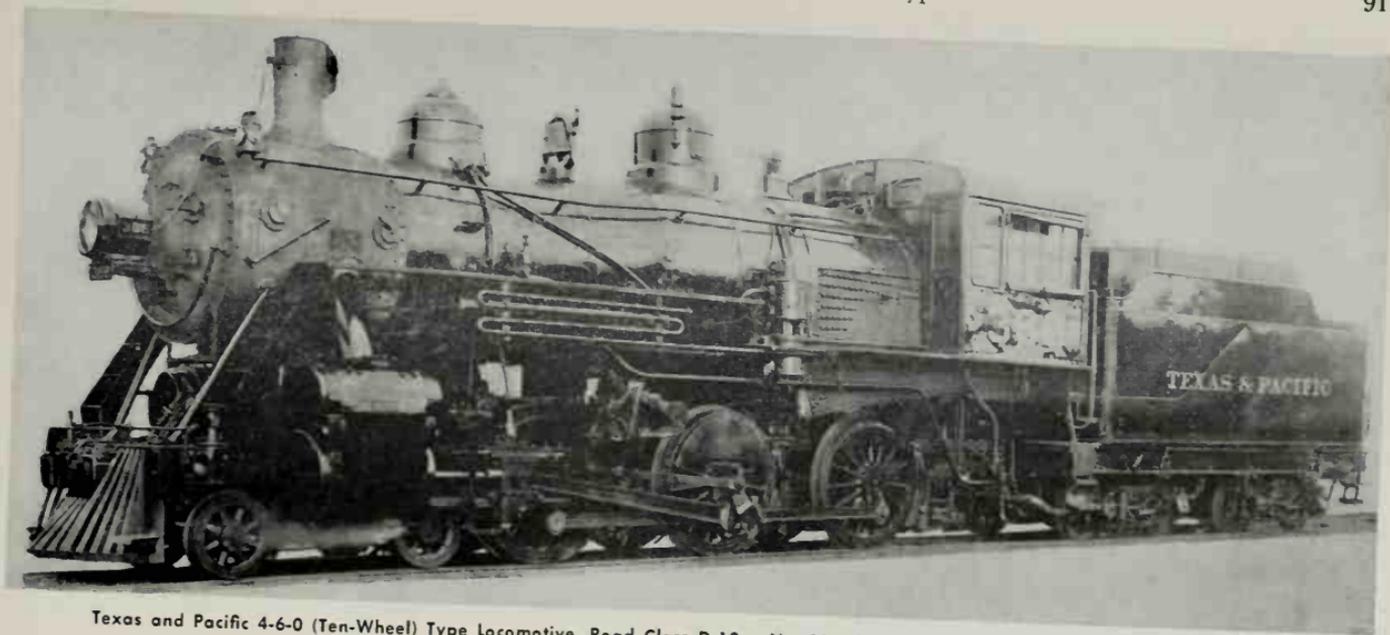
This is the last type of ten-wheel engines to be used by the NP. Originally there were ten of them which were purchased as a remainder of 20 ordered by the Chicago Southern in 1905. The CS acquired only six and could not pay for the rest, so they were sold by the builder. Besides the ten which went to the NP, one each went to the American Smelters Security Co., and to the Pullman Co. RR. and the final two were exported to the South Manchurian Ry. in 1907.



Pennsylvania Railroad 4-6-0 (Ten-Wheel) Type Locomotive, Class G5s, No. 1844, for heavy local passenger service. Built at Juniata Shop in 1923.

Tractive force .....	41,330 lb.	Weight of tender, loaded .....	172,900 lb.
Cylinders, diameter and stroke .....	24 in. x 28 in.	Driving wheel base .....	14 ft. 3 in.
Drivers, diameter .....	68 in.	Total engine wheel base .....	26 ft. 6 in.
Weight on drivers .....	178,000 lb.	Steam pressure .....	205 lb.
Total weight of engine .....	237,000 lb.	Tender capacity .....	8,300 gal., 12 tons

For working tough suburban runs the Pennsylvania constructed this class of locomotive in 1923 and 1924. They are used on various divisions wherever traffic warrants a quick starting and frequent stopping on local runs. These machines are among the heaviest ten-wheelers ever built. The Long Island, then under Pennsylvania domination, acquired 31 of them new and ran them to Oyster Bay, N. Y., and other steam suburban points. They now are being superseded by diesels.

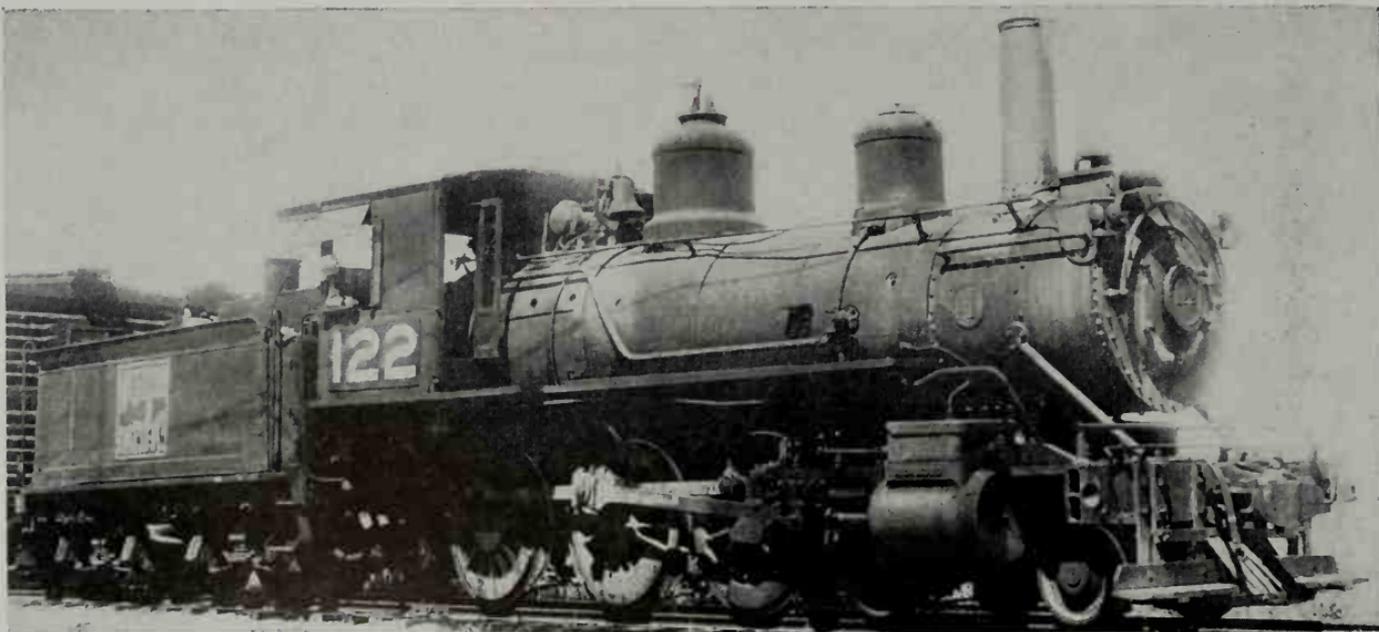


Texas and Pacific 4-6-0 (Ten-Wheel) Type Locomotive, Road Class D-10-s. No. 388, for local freight service. Built by Cooke Works, American Locomotive Company in 1907.

Tractive force .....40,256 lb.  
 Cylinders, diameter and stroke .....24 in. x 28 in.  
 Drivers, diameter .....63 in.  
 Weight on drivers .....163,000 lb.  
 Total weight of engine .....211,660 lb.

Weight of tender .....118,340 lb.  
 Driving wheel base .....14 ft. 10 in.  
 Total engine wheel base .....25 ft. 6 in.  
 Steam pressure .....185 lb.  
 Tender capacity .....6,500 gal., 3,200 gal. oil

Ten-wheelers were a standby on the T & P for many years in lighter service both freight and passenger. This group Nos. 361 to 400 was modernized and some were in use on the lines Louisiana and Texas as late as 1951.

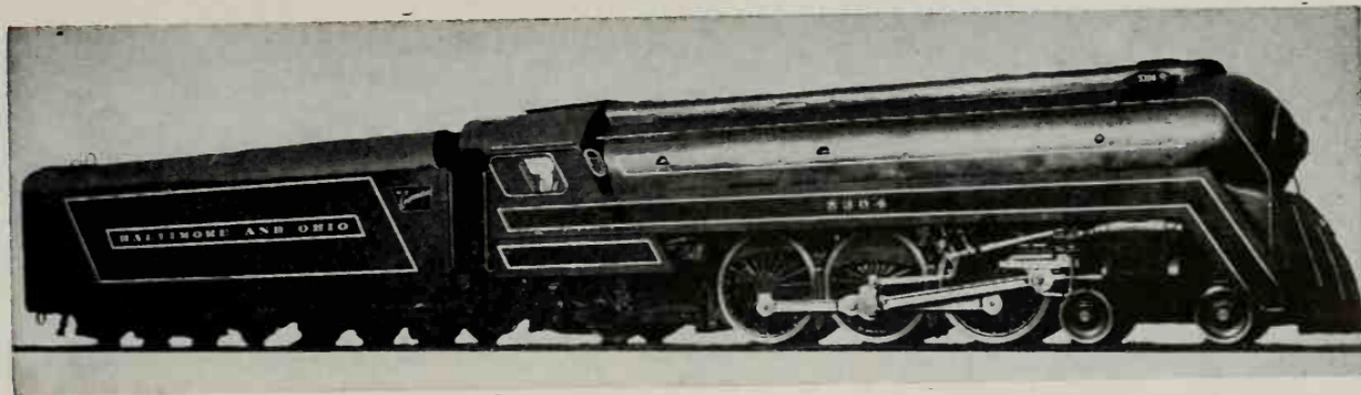


**Western Pacific 4-6-0 (Ten-Wheel) Type Freight Locomotive No. 122. Built by the Richmond Locomotive & Machine Works in 1896.**

Traction force .....	17,400 lb.
Cylinders, diameter and stroke .....	18 in. x 24 in.
Drivers, diameter .....	57 in.
Weight on drivers .....	82,500 lb.
Total weight of engine .....	114,500 lb.

Weight of tender .....	76,000 lb.
Driving wheel base .....	11 ft. 0 in.
Total engine wheel base .....	21 ft. 2 in.
Steam pressure .....	150 lb.
Tender capacity .....	4,000 gal. water, 1,584 gal. oil

Two locomotives were purchased in 1905 from the Alameda & San Joaquin to work construction trains in building the WP. They were numbered 121 and 122 and continued in use until 1950 when after 54 years of service they retired in favor of diesels.

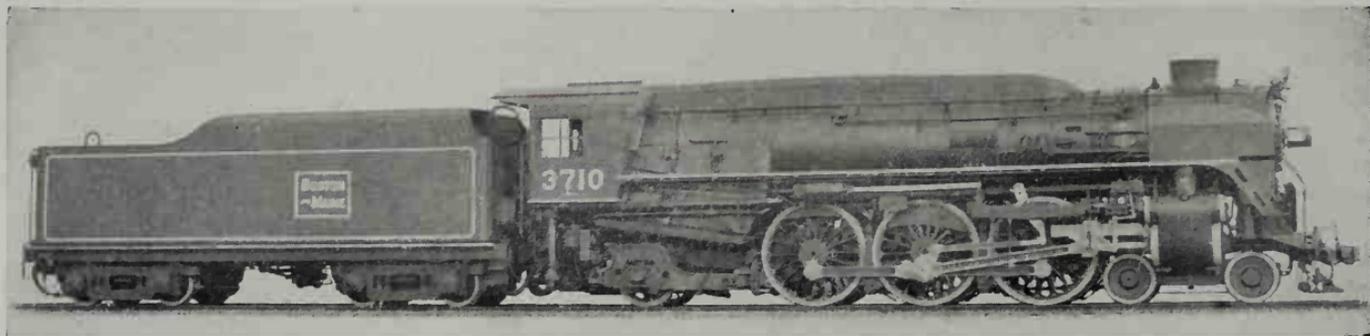


Baltimore & Ohio 4-6-2 (Pacific) Type Locomotive for passenger service, Class P-7-d, Nos.5301 -5304. Built by The Baldwin Locomotive Works in 1927. Rebuilt at the Mount Clare Shops in 1946.

Traction force, engine .....	50,000 lb.	Weight of tender, loaded .....	366,000 lb.
Cylinders, diameter and stroke .....	27 in. x 28 in.	Driving wheel base .....	14 ft. 0 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	37 ft. 1 in.
Weight on drivers .....	211,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	347,500 lb.	Tender capacity .....	20,000 gal., 25 tons

One of the well-known President engines streamlined for service on the "Cincinnati" train service between the latter city and Baltimore and Washington, inaugurated in 1947 and later discontinued. A very pleasing outline is accentuated by the sloping stripes on the side of the running board skirt and on the tender. Originally the P-7 Class consisted of 20 locomotives Nos. 5300-5319 some of which have been rebuilt in subsequent years.

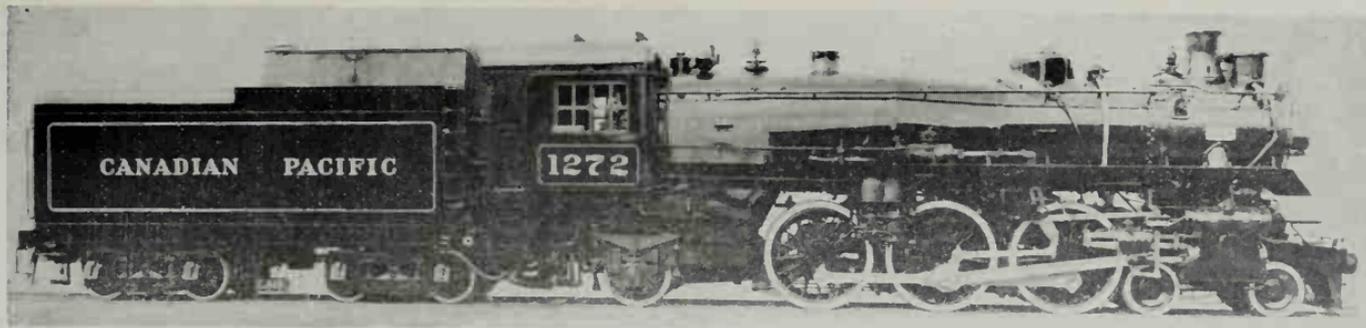
## STEAM LOCOMOTIVES: 4-6-2 Type



Boston & Maine 4-6-2 (Pacific) Type Locomotive for passenger service, Class P-4a, Nos. 3710-3714, built in 1934. Class P-4b, Nos. 31715-3719 built by Lima Locomotive Works, Inc. in 1937.

Tractive force (locomotive) .....	40,900 lb.	Weight of tender, loaded .....	240,800 lb.
Tractive force (booster) .....	11,900 lb.	Driving wheel base .....	14 ft. 0 in.
Cylinders, diameter and stroke .....	23 in. x 28 in.	Wheel base, engine and tender .....	77 ft. 7 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	36 ft. 11 in.
Weight on drivers .....	209,800 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	339,800 lb.	Tender capacity .....	12,000 gal. 18 tons

Ten locomotives represented by No. 3710 were built to replace older Pacific's used in passenger and fast merchandise service. Equipped with smoke lifters, an elongated stack and partial boiler shrouding gives them a noteworthy appearance.

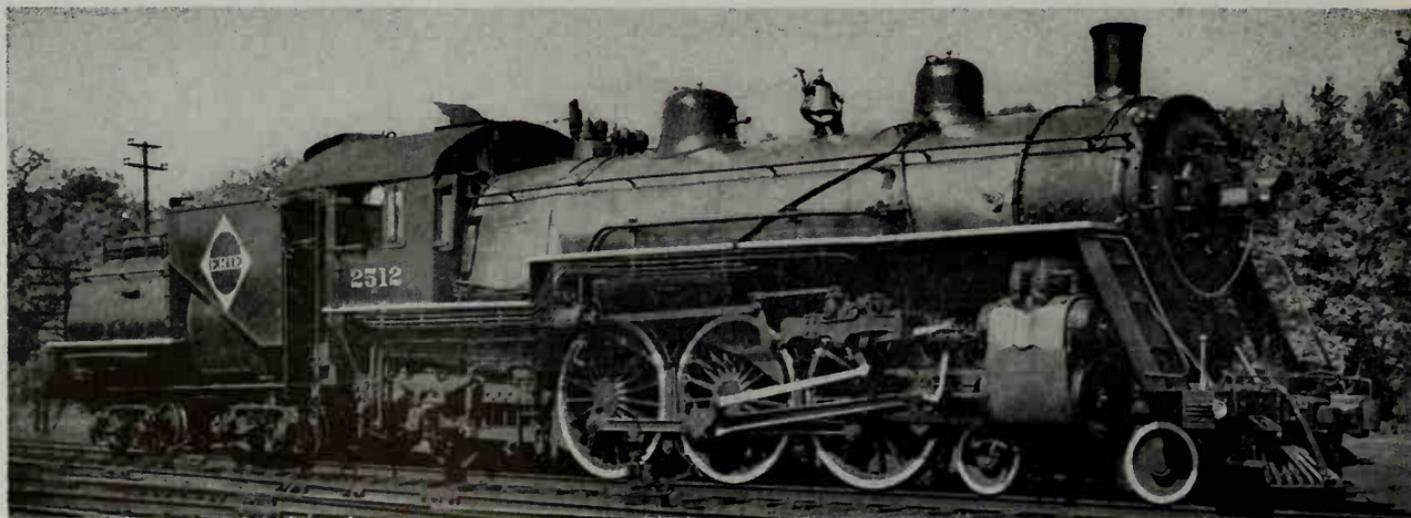


Canadian Pacific 4-6-2 (Pacific) Type Locomotive for light passenger service, Class G-5d, Nos. 1272-1301. Built by the Canadian Locomotive Co. in 1948.

Traction force .....	34,000 lb.	Weight of tender, loaded .....	188,000 lb.
Cylinders, diameter and stroke .....	20 in. x 28 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	33 ft. 8½ in.
Weight on drivers .....	152,500 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	234,000 lb.	Tender capacity .....	8,000 Imp. gal., 14 tons

Here is a group of locomotives that was constructed to replace some of the same type built 40 years earlier. Their principal dimensions coincide so that track and bridge limitations are not exceeded in strength. The dome boiler and vestibuled cab however, give them a more modern appearance than their predecessors. The first engines of the new class, Nos. 1200-1201, are known as road class G-5a. They were built at Angus Shops of the railway in May 1944 and were the first to be constructed there since 1931. Proving successful a duplicate order was given the Montreal Locomotive Works for engines No. 1202-1231 which were built in 1945-1946 as Class G-5b and shortly followed by another order by the same builder for engines Nos. 1232-1271, Class G-5c, which were built in 1946. The final order is shown above.

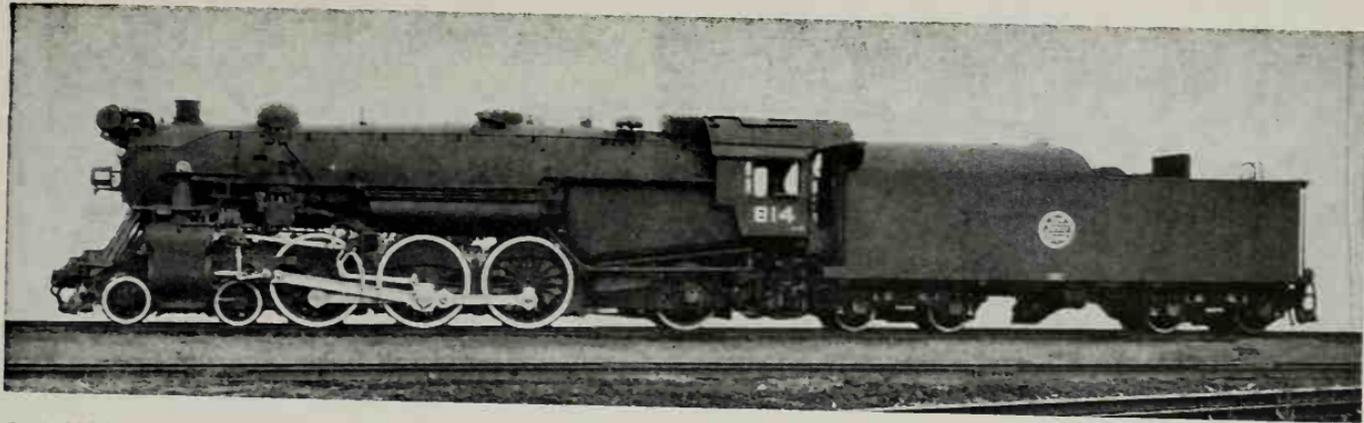
## STEAM LOCOMOTIVES: 4-6-2 Type



**Erie 4-6-2 (Pacific) Type Locomotive for passenger service, Class K-1, No. 2512. Built by Schenectady Works, American Locomotive Company in 1905. Rebuilt at Meadville, Pa., Shops of the railroad in 1912 and equipped with superheater and Walschaerts Valve Gear.**

Tractive force .....	30,000 lb.	Weight of tender, light .....	48,160 lb.
Cylinders, diameter and stroke .....	22½ in. x 26 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	74½ in.	Total engine wheel base .....	33 ft. 8½ in.
Weight on drivers .....	154,700 in.	Steam pressure .....	200 lb.
Total weight of engine .....	243,550 lb.	Tender capacity .....	6,800 gal., 14 tons

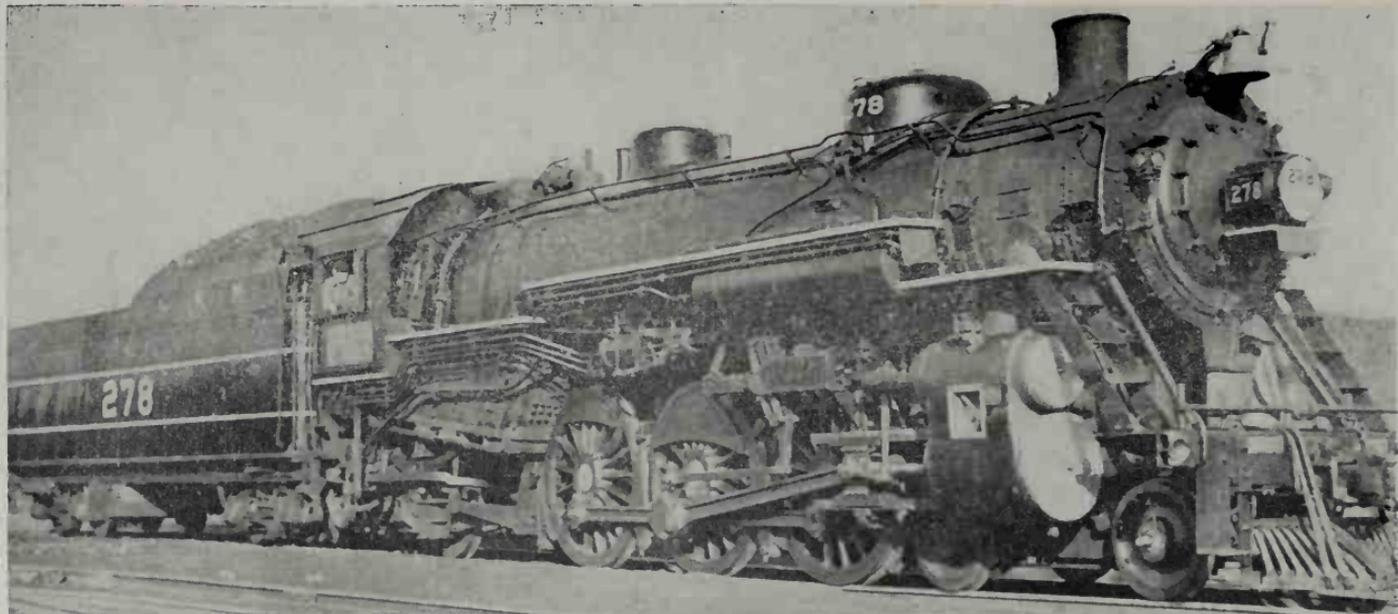
This is one of the oldest steam locomotives in the country still in regular service. Formerly it hauled the through main line trains Nos. 3 and 4, the Vestibuled Limited but later was relegated, with its mates, to suburban service working out of Jersey City. These Class K-1 engines certainly have earned their cost many times over and their record for consistent performance is hard to surpass. The Erie had 59 of them, the first three came from Schenectady in April 1905, Nos. 2510-2512. They were followed by Nos. 2513-2553 from Rogers Works in 1906 and in 1908 Baldwin built the last lot, Nos. 2554-2568.



Central Railroad of New Jersey 4-6-2- (Pacific) Type Locomotive for passenger service, Class G4s, Nos. 810-814. Built by The Baldwin Locomotive Works, in October 1930.

Traction force .....	52,180 lb.	Weight of tender, loaded .....	253,870 lb.
Cylinders, diameter and stroke .....	26 in. x 28 in.	Driving wheel base .....	13 ft. 10 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	36 ft. 8 in.
Weight on drivers .....	205,900 lb.	Steam pressure .....	240 lb.
Total weight of engine .....	333,830 lb.	Tender capacity .....	13,500 gal., 15 tons

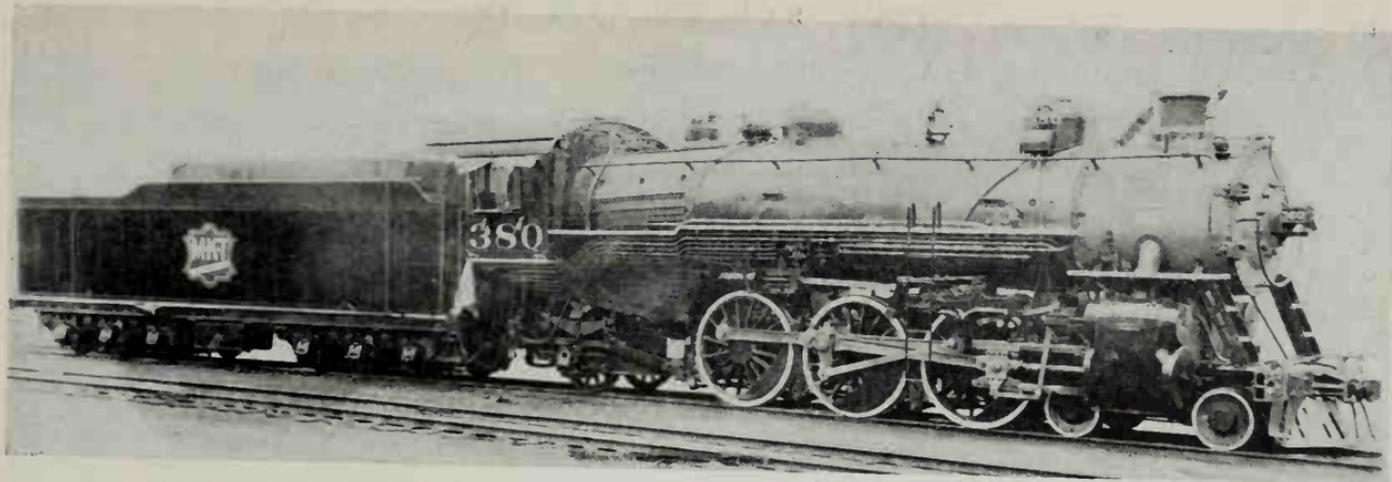
Through passenger trains on the CRR of NJ are handled by 21 Pacific type locomotives of four different classes. Before the curtailment of passenger service they ran from Jersey City to Scranton, Pa., and to Atlantic City, N. J. The first of the special name trains, the Blue Comet was hauled by these engines when inaugurated in 1928. Today it is not unusual for them to run to Philadelphia, Pa., and Harrisburg in conjunction with the Reading Company. With their extremely wide fireboxes these locomotives bear a resemblance to the latter company's Pacific type.



Louisville & Nashville 4-6-2 (Pacific) Type Passenger Locomotive, Class K-5, Nos. 272-283. Built by the American Locomotive Company in 1924.

Traction force .....	42,735 lb.	Weight of tender .....	243,300 lb.
Cylinders, diameter and stroke .....	25 in. x 28 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	34 ft. 11 in.
Weight on drivers .....	177,000 lb.	Steam pressure .....	210 lb.
Total weight of engine .....	284,000 lb.	Tender capacity .....	14,000 gal., 19 tons

L & N was allotted six USRA light Pacifics when the Richmond Works built them in 1919. They were numbered 240-245, Class K-5. Baldwin was given an order for seven more in 1923, Nos. 265-271 which was followed by six from Brooks Works in the same year, Nos. 272-277 and finally by the last six from Brooks Works Nos. 278-283. This last group was a modified USRA and was equipped later with a larger tender.

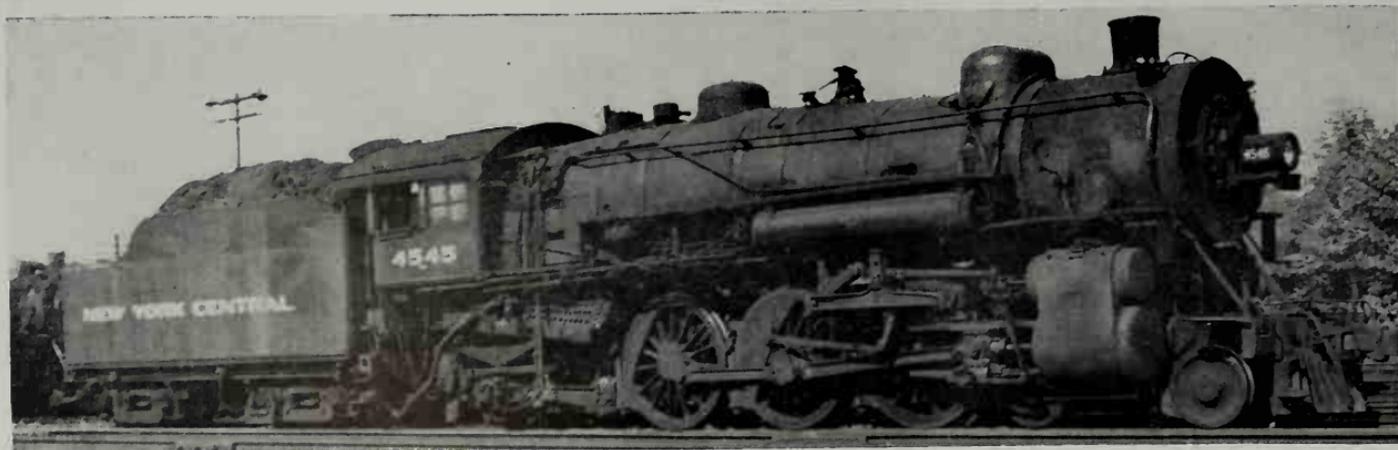


Missouri-Kansas-Texas 4-6-2 (Pacific) Type Passenger Locomotive. Built by the American Locomotive Company in 1915.

Tractive force .....	42,750 lb.	Weight of tender .....	160,000 lb.
Cylinders, diameter and stroke .....	25 in. x 28 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	34 ft. 4 in.
Weight on drivers .....	165,000 in.	Steam pressure .....	210 lb.
Total weight of engine .....	272,000 lb.	Tender capacity .....	12,600 gal., 4,900 gal. oil

Engines 377-383 were the first of an order of larger Pacifics acquired by the Katy over a period of eight years some of which were built at Schenectady and others at Lima. They constituted the main line heavy passenger power until superseded by diesels.

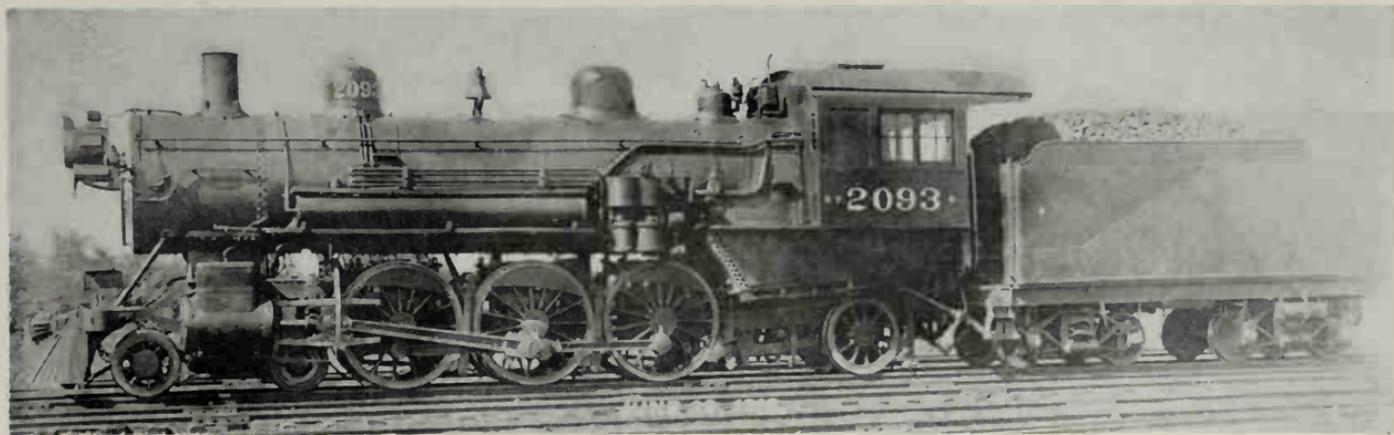
## STEAM LOCOMOTIVES: 4-6-2 Type



New York Central 4-6-2 (Pacific) Type Locomotive for suburban passenger service, Class K-11e, No. 4545. Built by the American Locomotive Co. 1912.

Tractive force .....	40,000 lb.	Weight of tender .....	208,600 lb.
Cylinders, diameter and stroke .....	26 in. x 26 in.	Driving wheel base .....	12 ft. 6 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	33 ft. 7 in.
Weight on drivers .....	186,900 lb.	Steam pressure .....	180 lb.
Total weight of engine .....	287,700 lb.	Tender capacity .....	8,000 gal., 14 tons

Although this engine was used recently in commuting service on the West Shore RR it was capable of hauling fast freight trains. This class of locomotive bears a common resemblance to the NYC Pacifics, some of which had 72-in. and 79-in. driving wheels for fast passenger service.

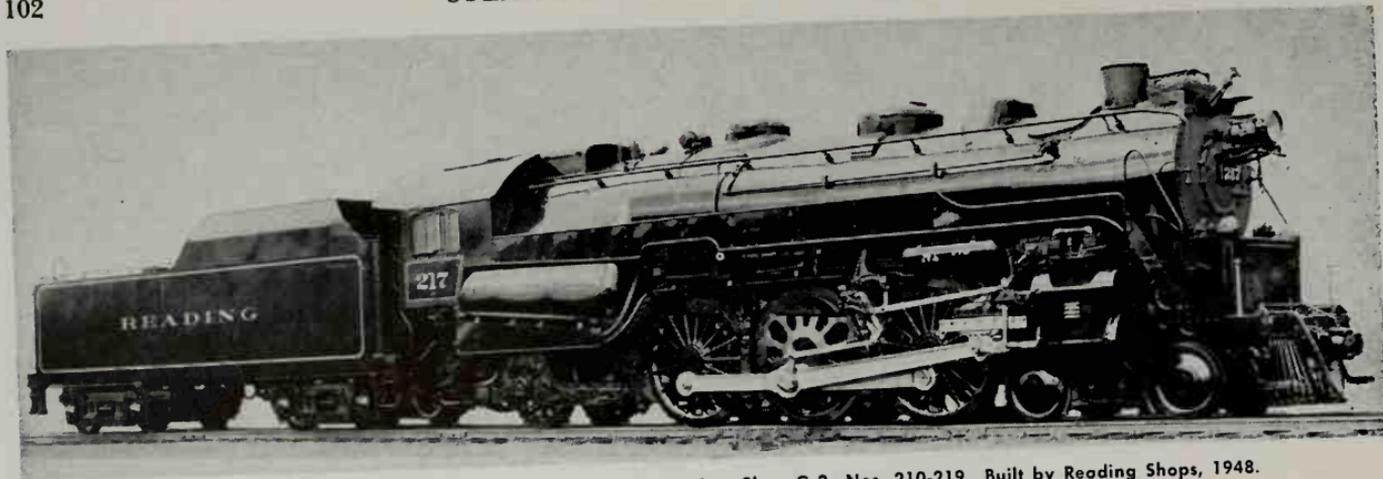


Northern Pacific 4-6-2 (Pacific) Type Locomotive for passenger service, Class Q, Nos. 2080-2099. Built by the American Locomotive Company in 1903.

Tractive force .....	31,000 lb.	Weight of tender .....	123,400 lb.
Cylinders, diameter and stroke .....	22 in. x 26 in.	Driving wheel base .....	12 ft. 0 in.
Drivers, diameter .....	.69 in.	Total engine wheel base .....	33 ft. 0 in.
Weight on drivers .....	132,000 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	195,000 lb.	Tender capacity .....	6,000 gal., 12 tons

One of the earliest roads to adopt the 4-6-2 type locomotive was the NP, and in common with most of the engines of the day they had Stephenson valve gear and slide valves. Eventually the NP acquired six more classes of Pacific type locomotives which are still in service.

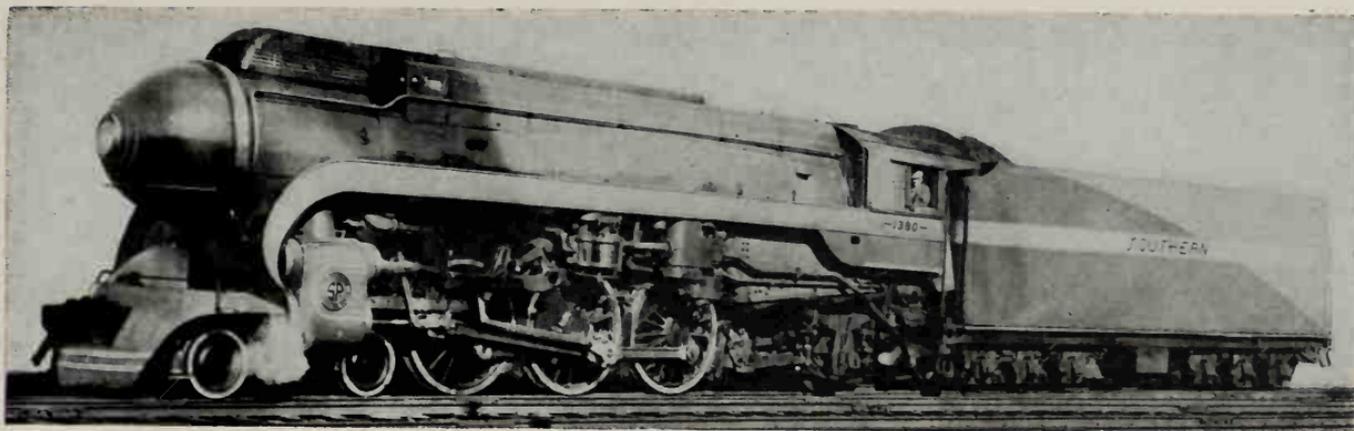
## STEAM LOCOMOTIVES: 4-6-2 Type



Reading 4-6-2 (Pacific) Type Locomotive for passenger service, Class G-3, Nos. 210-219. Built by Reading Shops, 1948.

Traction force .....	48,340 lb.	Weight of tender, loaded .....	257,540 lb.
Cylinders, diameter and stroke .....	25 in. x 28 in.	Driving wheel base .....	13 ft. 10 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	36 ft. 7 in.
Weight on drivers .....	197,184 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	329,450 lb.	Tender capacity .....	12,500 gal., 19 tons

The distinction of being the last Pacific type locomotive built in the United States belongs to this group of high steppers. The Reading built its first 4-6-2 in 1916 and it is now scrapped. The last ones, shown here are enlarged versions of the original, capable of hauling heavier trains on fast time. The cross-balanced main driving wheel center presents an odd contrast to the conventional spoked type used in the other two drivers.

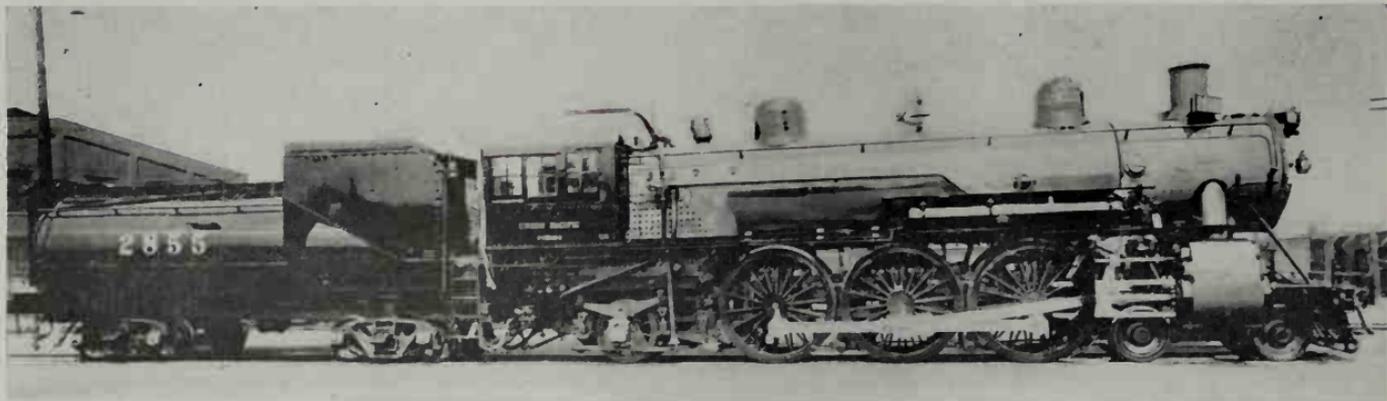


Southern Railway 4-6-2 (Pacific) Type Locomotive No. 1380, rebuilt, modernized and streamlined by the railroad. Originally built by the American Locomotive Company in 1923.

Traction force .....	45,000 lb.	Weight of tender .....	265,000 lb.
Cylinders, diameter and stroke .....	27 in. x 28 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	36 ft. 1 in.
Weight on drivers .....	180,000 lb.	Steam pressure .....	210 lb.
Total weight of engine .....	300,000 lb.	Tender capacity .....	14,000 gal., 16 tons

The streamline era brought forth this cream and green beauty on the Southern. It is kept as a reserve engine at Spencer, N. C. just in case a diesel breaks down. This is one of a series of locomotives Nos. 1375-1386 built by Schenectady Works.

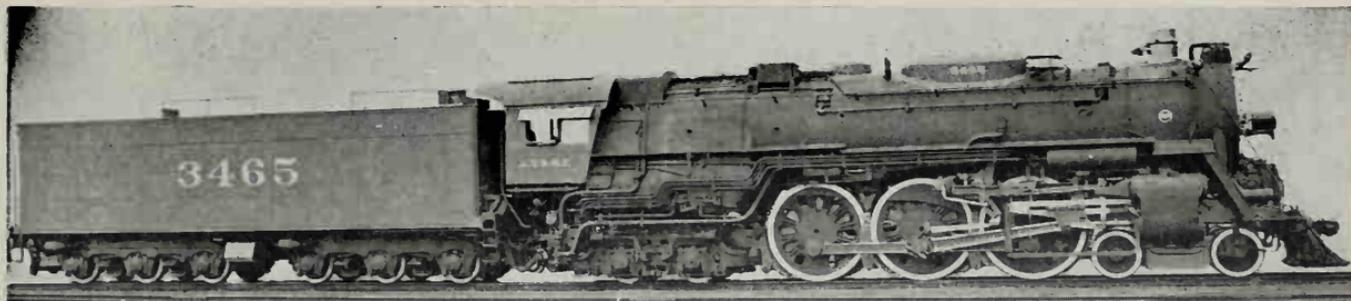
## STEAM LOCOMOTIVES: 4-6-2 Type



Union Pacific 4-6-2 (Pacific) Type Locomotive for passenger service. Built by The Baldwin Locomotive Works in 1904.

Tractive force .....	29,920 lb.	Weight of tender .....	169,000 lb.
Cylinders, diameter and stroke .....	22 in. x 28 in.	Driving wheel base .....	13 ft. 4 in.
Drivers, diameter .....	77 in.	Total engine wheel base .....	33 ft. 4 in.
Weight on drivers .....	149,000 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	238,825 lb.	Tender capacity .....	9,000 gal. water, 3,000 gal. oil

When E. H. Harriman built up his vast railroad empire it comprised both the UP and SP lines for which he had large numbers of Pacific type locomotives built to replace obsolete types. This associated lines standard 4-6-2 was the last word in design when it was built and was thought so well of that other railroads copied the design. It is here shown as equipped with a superheater, outside bearing trailing truck and larger tender than when originally constructed.

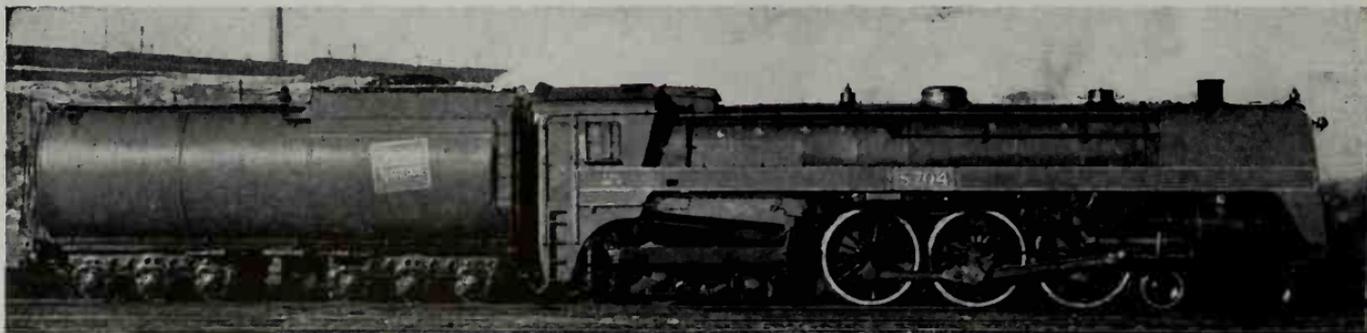


Atchison, Topeka & Santa Fe 4-6-4 Type Locomotive for passenger service, Nos. 3460-3465. Built by The Baldwin Locomotive Works in 1937.

Tractive force .....	49,300 lb.	Weight of tender, loaded .....	396,340 lb.
Cylinders, diameter and stroke .....	23½ in. x 29½ in.	Driving wheel base .....	14 ft. 6 in.
Drivers, diameter .....	84 in.	Total engine wheel base .....	41 ft. 1½ in.
Weight on drivers .....	213,440 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	412,380 lb.	Tender capacity .....	21,000 gal. water, 7,000 gal oil

The Santa Fe has been using Hudson Type locomotives since 1927 when ten were purchased, Nos. 3450-3459. Ten years later they acquired six more as shown here. Engine No. 3460, the first of the new lot was elaborately streamlined to a contour which blends into that of the train; and it was painted in two shades of blue, with under portions, including the running gear, in blue-gray. A stainless steel panel adorned the side of the engine and tender running full length. The remaining five engines were conventional as shown. Most of Santa Fe's through trains are diesel powered but many heavy trains use 4-8-2, 4-6-4 and 4-8-4 types of steam locomotives.

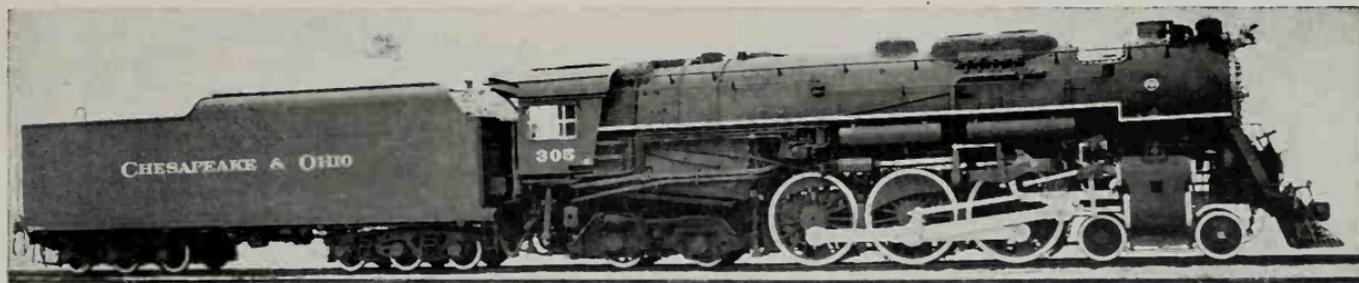
## STEAM LOCOMOTIVES: 4-6-4 Type



Canadian National 4-6-4 Type Locomotive for passenger service, Class K-5a, Nos. 5700-5704. Built by the Montreal Locomotive Works, Ltd., in 1930.

Tractive force, engine .....	43,300 lb.	Total weight of engine .....	356,400 lb.
Tractive force, booster .....	10,100 lb.	Driving wheel base .....	14 ft. 0 in.
Cylinders, diameter and stroke .....	23 in. x 28 in.	Total engine wheel base .....	40 ft. 2 in.
Drivers, diameter .....	80 in.	Steam pressure .....	275 lb.
Weight on drivers .....	188,600 lb.	Tender capacity .....	14,000 Imp. gal., 18 tons

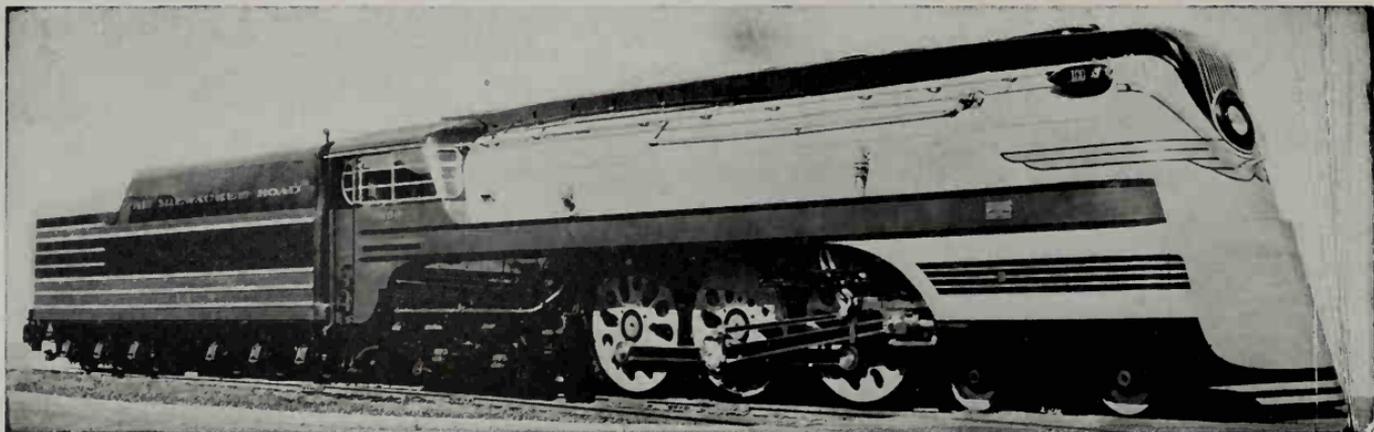
The only Hudson type locomotive on the CNR is represented by the one pictured above which was constructed for fast running between Montreal and Chicago. The sleek outline corresponds with its running mates the Mountain and Northern type locomotives commonly seen on the road. The large Vanderbilt tender reaches to the clearance limit of the top of the cab and carries enough fuel and water for lengthy runs without stopping.



Chesapeake & Ohio 4-6-4 Type Locomotive, Class L-2, Nos. 300-307. Built by The Baldwin Locomotive Works in 1942.

Tractive force, engine .....	52,000 lb.	Weight of tender, loaded .....	393,000 lb.
Tractive force, booster .....	12,600 lb.	Driving wheel base .....	14 ft. 0 in.
Cylinders, diameter and stroke .....	25 in. x 30 in.	Total engine wheel base .....	41 ft. 5½ in.
Drivers, diameter .....	78 in.	Steam pressure .....	255 lb.
Weight on drivers .....	217,500 lb.	Tender capacity .....	21,000 gal., 30 tons
Total weight of engine .....	439,500 lb.		

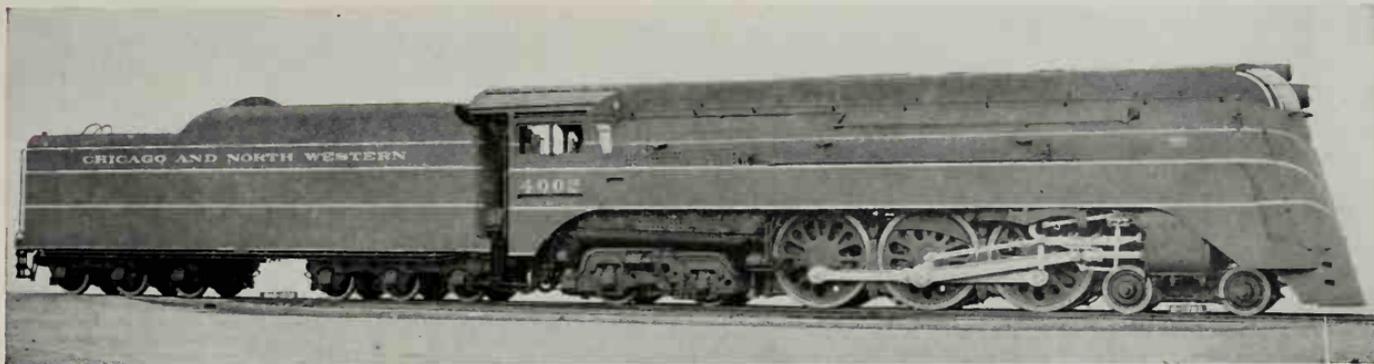
The first Hudsons on the C & O consisted of eight locomotives which ran between Hinton, West Virginia and Cincinnati and Toledo, Ohio. They were used on the famous trains, The George Washington, The Fast Flying Virginian, and The Sportsman. These engines are capable of hauling a 15-car passenger train at 90 miles an hour on straight level track. A duplicate order for five more was built in 1948, Nos. 310-314, which are slightly heavier and are equipped with poppet valves. Also in 1946 the C&O rebuilt five Pacifics into Hudsons, Nos. 490-494. These likewise have poppet valves and are Class L-1.



Chicago, Milwaukee, St. Paul & Pacific 4-6-4 Type Locomotive, for heavy passenger service, Class F-7, Nos. 100-105. Built by the American Locomotive Company in 1938.

Tractive force .....	50,300 lb.	Weight of tender, loaded .....	375,000 lb.
Cylinders, diameter and stroke .....	23½ in. x 30 in.	Driving wheel base .....	14 ft. 8 in.
Drivers, diameter .....	84 in.	Total engine wheel base .....	42 ft. 4 in.
Weight on drivers .....	216,000 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	415,000 lb.	Tender capacity .....	20,000 gal., 25 tons

The Milwaukee road acquired six of these Hudsons to operate the Hiawathas and other fast trains which had outgrown the capacity of lighter engines. They were quite striking in appearance, colored in the same livery as the original Hiawatha engines in yellow and maroon. Diesels have largely taken over their work.



Chicago & North Western 4-6-4 Type Streamlined Locomotive, Class E-4, Nos. 4001-4009. Built by the American Locomotive Company in 1938.

Tractive force .....	55,000 lb.	Weight of tender, loaded .....	360,000 lb.
Cylinders, diameter and stroke .....	25 in. x 29 in.	Driving wheel base .....	14 ft. 8 in.
Drivers, diameter .....	84 in.	Total engine wheel base .....	42 ft. 4 in.
Weight on drivers .....	216,000 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	412,000 lb.	Tender capacity .....	20,000 gal., 25 tons

A large cylinder bore and high boiler pressure gives the North Western's 4-6-4 type a greater tractive force than any other Hudsons on American railroads.

## STEAM LOCOMOTIVES: 4-6-4 Type



Delaware, Lackawanna & Western 4-6-4 Type Locomotive, Nos. 1151-1155. Built by the American Locomotive Company in 1937.

Tractive force .....	52,800 lb.	Weight of tender, loaded .....	313,100 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	14 ft. 0 in.
Drivers, diameter .....	.80 in.	Total engine wheel base .....	40 ft. 7 in.
Weight on drivers .....	198,000 lb.	Steam pressure .....	245 lb.
Total weight of engine .....	377,000 lb.	Tender capacity .....	15,800 gal., 26 tons

The Lackawanna proudly displayed one of these Hudsons at The New York World's Fair in 1939-1940 where it took part in the railroad pageant. For a time it pulled the through trains between Scranton, Pa., and Buffalo, N. Y., but later was assigned to the east end of the railroad where they have been finally relegated to commuting trains running out of Hoboken, N. J.

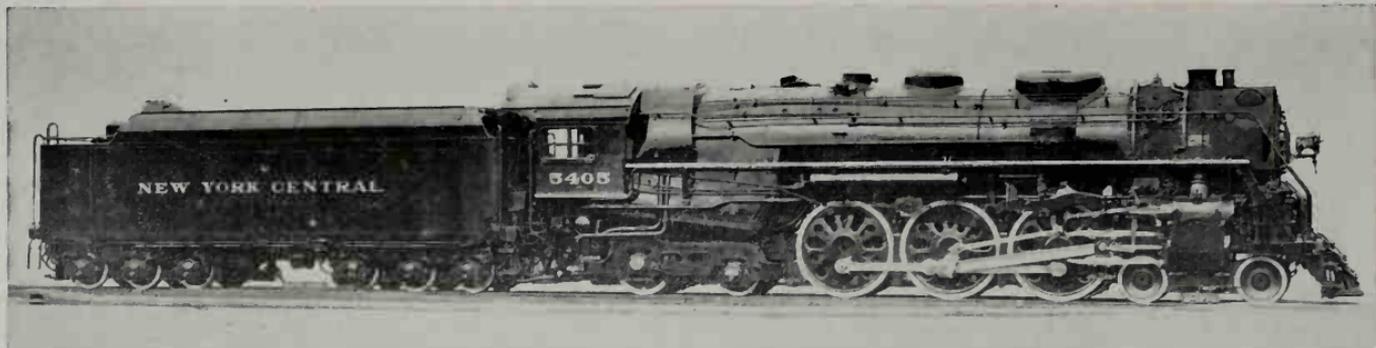


Maine Central 4-6-4 Type Locomotive for passenger service, Nos. 701-702. Built by The Baldwin Locomotive Works in 1930.

Tractive force .....	41,300 lb.	Weight of tender .....	190,000 lb.
Cylinders, diameter and stroke .....	23 in. x 28 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	38 ft. 5 in.
Weight on drivers .....	171,400 lb.	Steam pressure .....	240 lb.
Total weight of engine .....	312,590 lb.	Tender capacity .....	10,000 gal., 14 tons

Two moderate sized Hudsons operate through passenger trains between Portland and Vanceboro, Maine, a distance of 249 miles on the MeC. They are a direct development from preceding 4-6-2 engines but have greater steaming capacity. The MeC is now about half dieselized.

## STEAM LOCOMOTIVES: 4-6-4 Type



New York Central 4-6 4 (Hudson) Type Locomotive, Class J-3a, Nos. 5405-5444. Built by the American Locomotive Company in 1937.

Tractive force, engine .....	43,440 lb.	Weight of tender, loaded .....	314,300 lb.
Tractive force, booster .....	12,100 lb.	Driving wheel base .....	14 ft. 0 in.
Cylinders, diameter and stroke .....	22½ in. x 29 in.	Total engine wheel base .....	40 ft. 4 in.
Drivers, diameter .....	79 in.	Steam pressure .....	275 lb.
Weight on drivers .....	196,000 lb.	Tender capacity .....	14,000 gal., 30 tons
Total weight of engine .....	360,000 lb.		

The culmination of the 4-6-4 type locomotive on the New York Central is represented in the J-3 class. An engine with this wheel arrangement was built in France in 1913 and called the Baltic type but it was not until February 14, 1927 that the NYC placed in service the first of the type to be built in the United States. It was built to replace several classes of 4-6-2 types and eventually 260 of them were constructed. They have hauled all of the through trains until the advent of the 4-8-4 type and diesels.



St. Louis-San Francisco 4-6-4 Type Locomotive, Nos. 1060-1058. Rebuilt by the road from 4-6-2 Type.

Tractive force .....	47,800 lb.	Weight of tender .....	242,000 lb.
Cylinders, diameter and stroke .....	26 in. x 28 in.	Driving wheel base .....	13 ft. 0 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	38 ft. 10 in.
Weight on drivers .....	189,400 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	360,960 lb.	Tender capacity .....	13,300 gal., 4,500 gals. oil

Nine Pacific type locomotives originally built by The Baldwin Locomotives Works in 1917 were rebuilt as shown into Hudsons in 1937-1941 by the railroad at Springfield, Missouri, Shops. They retain their original numbers and are the only engines of their type on the road. A continuous light colored panel extending from the pilot to the rear of the tender gives these locomotives a long rakish appearance.

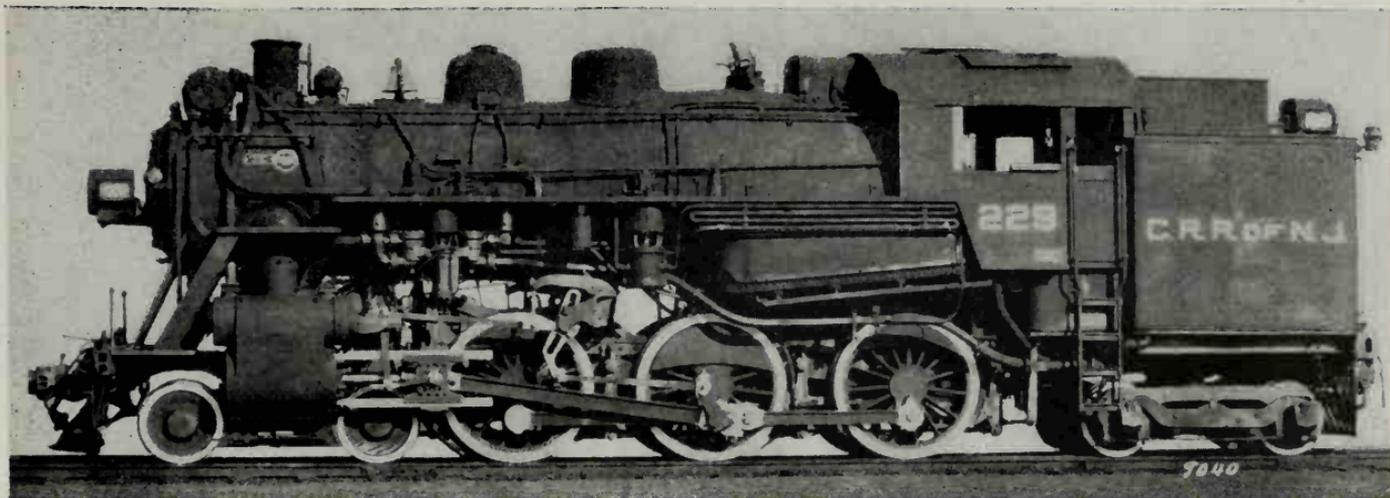
## STEAM LOCOMOTIVES: 4-6-4 Type



Wabash 4-6-4 Type Locomotive, Class P-1, Nos. 700-706. Rebuilt by the road from 2-8-2 Type Locomotives in 1943.

Tractive force .....	44,244 lb.	Weight of tender .....	196,000 lb.
Cylinders, diameter and stroke .....	26 in. x 28 in.	Driving wheel base .....	14 ft. 0 in.
Drivers, diameter .....	.80 in.	Total engine wheel base .....	40 ft. 7 in.
Weight on drivers .....	196,380 lb.	Steam pressure .....	220 lb.
Total weight of engine .....	374,690 lb.	Tender capacity .....	12,000 gal., 16 tons

These high-speed passenger engines were constructed from several three-cylinder Mikado type locomotives that had been built in 1925. The boiler of the original locomotive was used and a new running gear applied. Box spoke driving wheel centers and four-wheel trucks at both ends converted the older engine into a useful passenger hauler.

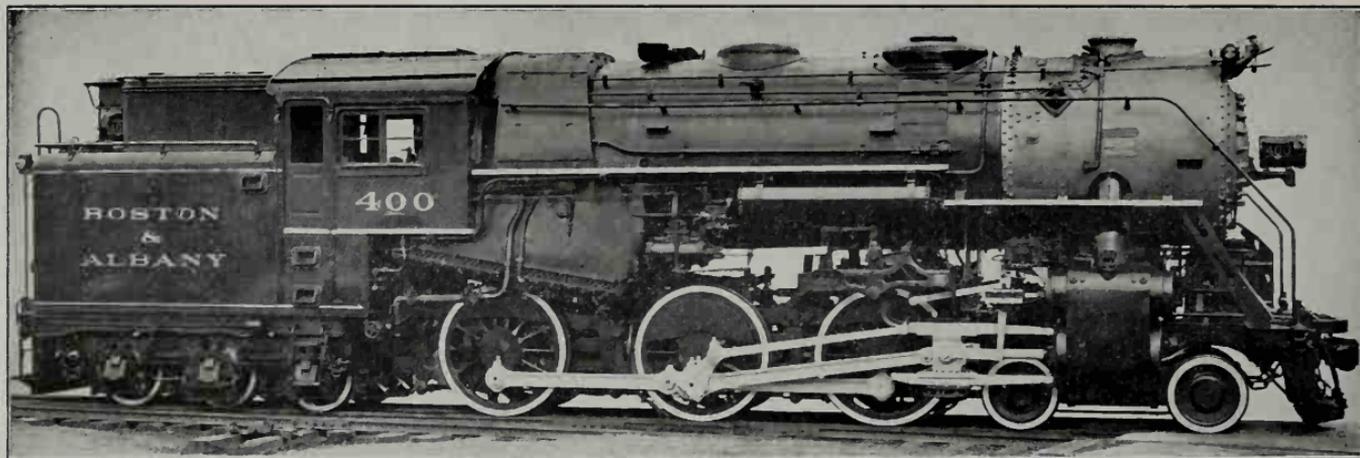


Central Railroad of New Jersey 4-6-4-T (Six Coupled) Doubled-End Tank Locomotive for suburban passenger service, Nos. 225-230. Built by the Baldwin Locomotive Works in 1923.

Tractive force .....30,940 lb.  
 Cylinders, diameter and stroke .....21 in. x 26 in.  
 Drivers, diameter .....63 in.  
 Weight on drivers .....163,450 lb.  
 Total weight of engine .....291,640 lb.

Driving wheel base .....13 ft. 9 in.  
 Total engine wheel base .....39 ft. 3 in.  
 Steam pressure .....200 lb.  
 Tank capacity .....4,000 gal., 6 tons

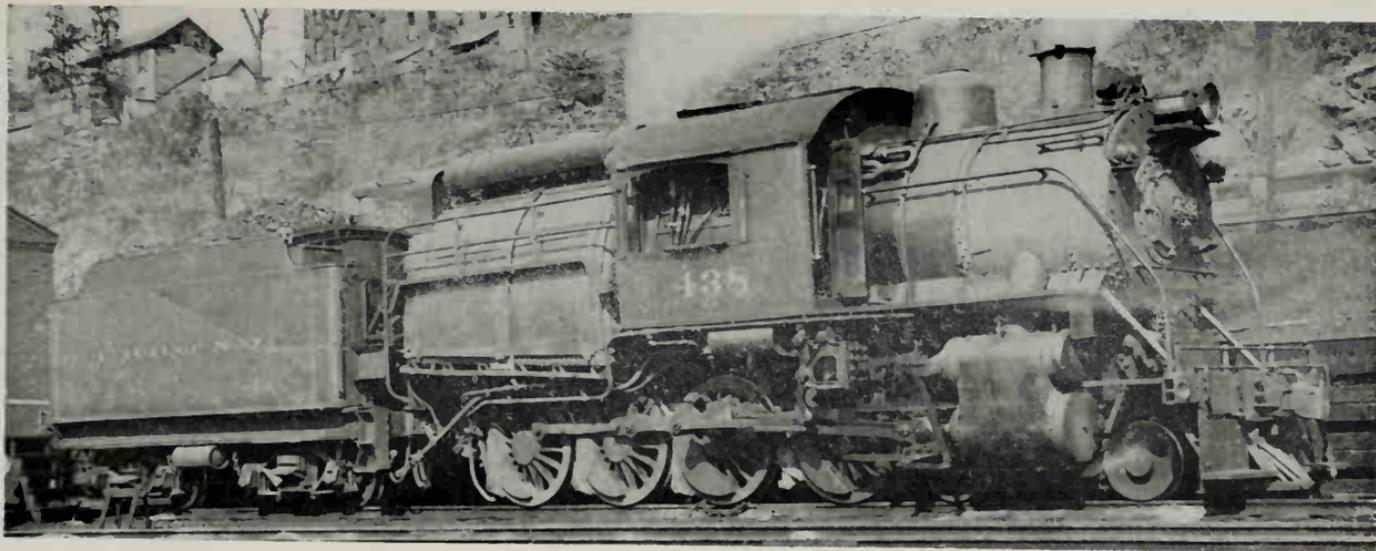
These six locomotives were used principally in hauling commuters to and from Jersey City, N. J. and supplemented a group of 2-6-2 tank-type double-enders that had been in service since the early part of the century. They have been succeeded by diesels and 4-6-0 road locomotives.



Boston & Albany 4-6-6-T (Six-Coupled) Double-End Tank Locomotive for suburban passenger service, Class D-1a, Nos. 400-404. Built by the American Locomotive Company, in 1928.

Tractive force .....	41,600 lb.	Driving wheel base .....	15 ft. 0 in.
Cylinders, diameter and stroke .....	23½ in. x 26 in.	Total wheel base .....	42 ft. 8 in.
Drivers, diameter .....	63 in.	Steam pressure .....	215 lb.
Weight on drivers .....	180,000 lb.	Tank capacity .....	5,000 gal., 6 tons
Total weight of engine .....	352,000 lb.		

Boston commuting trains were hauled by these husky double-enders which were among the heaviest built. They were augmented by a number of lighter 2-6-6 tank double-enders of earlier vintage and were in service until the advent of dieselization. Several of the 4-6-6 type have been relegated to roundhouse "goat" work until they are worn out.

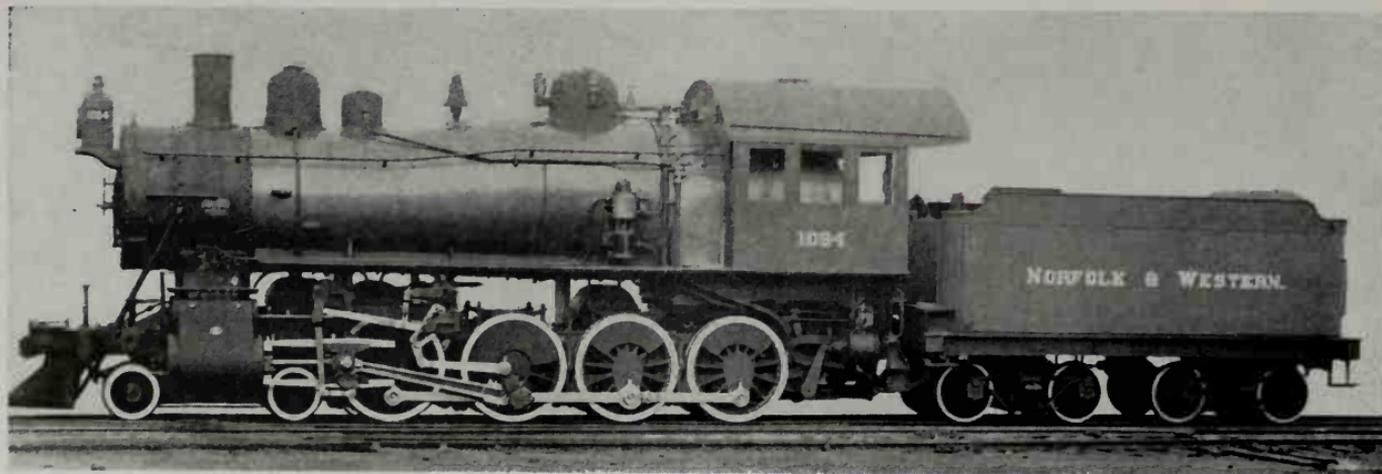


Central Railroad of New Jersey 4-8-0 (Twelve-Wheel) Type Freight Locomotive No. 438, Class K-1-as, later TW-40, Nos. 430-480. Built by the Brooks Locomotive Works in 1899.

Traction force .....	39,564 lb.	Weight of tender .....	141,800 lb.
Cylinders, diameter and stroke .....	20 in. x 32 in.	Driving wheel base .....	15 ft. 0 in.
Drivers, diameter .....	55 in.	Total engine wheel base .....	25 ft. 9 in.
Weight on drivers .....	172,000 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	224,400 lb.	Tender capacity .....	7,000 gal., 14 tons

Few 12-wheel type locomotives were built since the turn of the century and the Jersey Central acquired its share about that time. Originally constructed with Stephenson valve motion and inside piston valves, they were rebuilt as shown with Baker valve gear and superheaters in 1921. The DL & W also had some engines similar to these built by the same company.

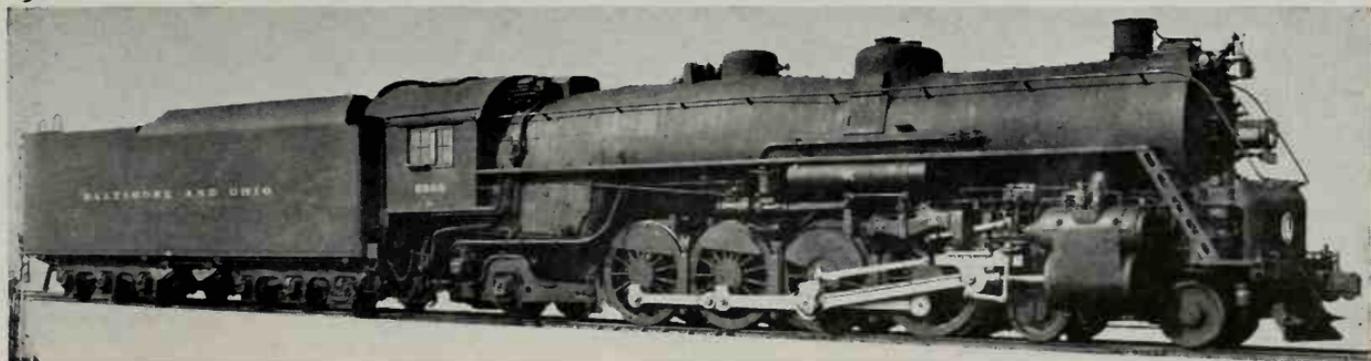
## STEAM LOCOMOTIVES: 4-8-0 Type



Norfolk & Western 4-8-0 (Twelve-Wheel) Type Freight Locomotive, Class M, No. 1094. Built at the Richmond Works of the American Locomotive Company in 1907.

Traction force .....	40,200 lb.	Weight of tender .....	109,700 lb.
Cylinders, diameter and stroke .....	21 in. x 30 in.	Driving wheel base .....	15 ft. 6 in.
Drivers, diameter .....	56 in.	Total engine wheel base .....	26 ft. 5 in.
Weight on drivers .....	166,650 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	204,750 lb.	Tender capacity .....	6,000 gal., 10 tons

Fifty locomotives like this one, numbered 1050-1099 and 75 similar ones numbered 375-449 comprised a large group of freight haulers on the N & W that eventually were placed in switching and yard service after many years of service. They were a common sight on this all steam railroad, an unusual type of wheel arrangement on any road.



Baltimore & Ohio 4-8-2 (Mountain) Type Locomotive, Class T-3b, Nos. 5565-5584. Built by the railroad at Mount Clore Shops, Baltimore, Md. beginning in 1943.

Tractive force .....	65,100 lb.	Weight of tender .....	365,000 lb.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	40 ft. 8 in.
Weight on drivers .....	255,000 lb.	Steam pressure .....	230 lb.
Total weight of engine .....	375,000 lb.	Tender capacity .....	20,000 gal., 25 tons

Following the construction of four experimental 4-8-2's in 1925 and 1930 the B & O embarked on a modernization program by building a series of these T-3 engines. The boilers were rebuilt from lighter 2-8-2 power, lengthened and an entirely new running gear applied. This series is numbered 5555-5594. Since these were built the B & O has acquired 13 more Mountain type engines from the B & M. They are numbered 5650-5662 Class T-4.

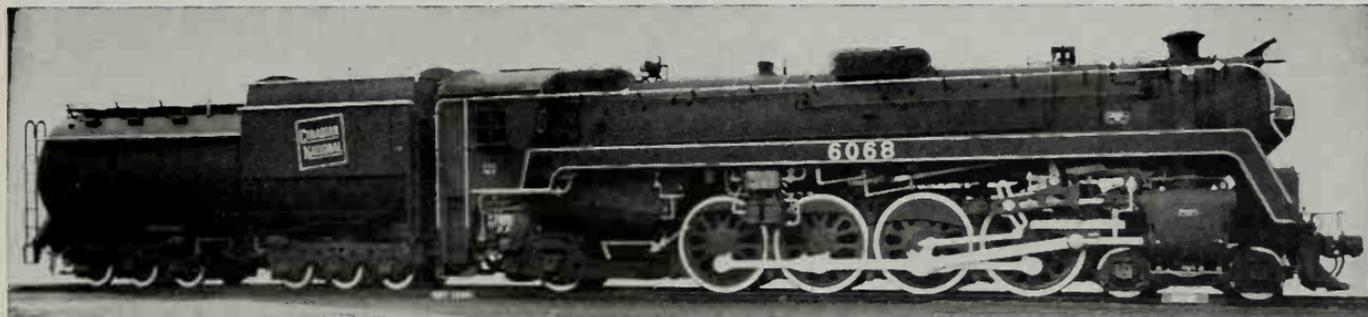
## STEAM LOCOMOTIVES: 4-8-2 Type



Bangor & Aroostook 4-8-2 (Mountain) Type Freight Locomotive, Classes M-A to M-J, Nos. 100-109. Built by the American Locomotive Company in the following years, Nos. 100-103 in 1929, 104-106 in 1930, 107-108 in 1935 and 109 in 1945.

Tractive force .....	49,200 lb.	Weight of tender .....	233,000 lb.
Cylinders, diameter and stroke .....	22½ in. x 30 in.	Driving wheel base .....	16 ft. 6 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	38 ft. 1 in.
Weight on drivers .....	214,500 lb.	Steam pressure .....	240 lb.
Total weight of engine .....	318,500 lb.	Tender capacity .....	12,500 gal., 18 tons

A comparatively light weight Mountain type locomotive built to haul through freight trains between Northern Maine Jct., and Oakfield and Houlton, Maine. Several novel features were incorporated in their design including an arrangement of a crosshead and guide support that allowed a shorter main rod to be used thereby allowing better balancing of reciprocating parts. No knuckle pins were used in the side rods and the leading truck was equipped with outside journal bearings similar to that used in car trucks.

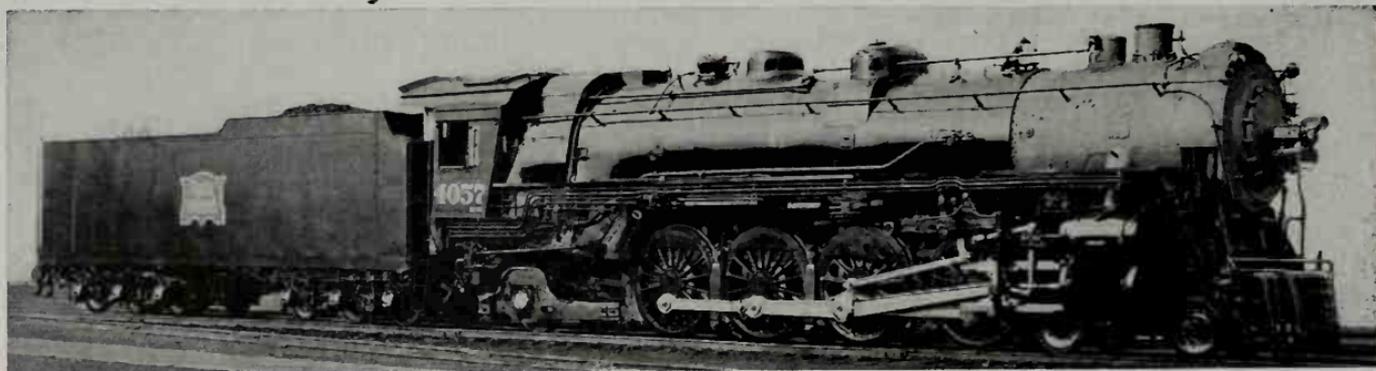


Canadian National 4-8-2 (Mountain) Type Locomotive for fast passenger service, Class U-1f, Nos. 6060-6079. Built by the Montreal Locomotive Works, Ltd. in 1944

Tractive force .....	52,315 lb.	Weight of tender, loaded .....	281,840 lb.
Cylinders, diameter and stroke .....	24 in. x 30 in.	Driving wheel base .....	19 ft. 0 in.
Drivers, diameter .....	73 lb.	Total engine wheel base .....	42 ft. 4 in.
Weight on drivers .....	236,950 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	355,700 lb.	Tender capacity .....	11,700 Imp. gal., 18 tons

Every since 1927 the CN has concentrated its locomotive buying on 4-8-4's, but occasionally a 4-8-2 type was acquired similar to the one shown above. The U-1f Class is decorated in the same style as the 4-8-4, but in addition has a cone-shaped smokebox front and capped stack.

## STEAM LOCOMOTIVES: 4-8-2 Type



Chicago, Rock Island & Pacific 4-8-2 (Mountain) Type Locomotive for passenger service, Class M-50a, Nos. 4044-4061. Built in 1926-1929 by the American Locomotive Company and modernized by railway company in 1942.

Ttractive force, engine .....	47,832 lb.	Weight of tender, loaded .....	343,500 lb.
Cylinders, diameter and stroke .....	26 in. x 28 in.	Driving wheel base .....	19 ft. 10 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	42 ft. 1 in.
Weight on drivers .....	253,500 lb.	Steam pressure .....	220 lb.
Total weight of engine .....	378,500 lb.	Tender capacity .....	20,000 gal., 20 tons.

The Rock Island was one of the first roads to use Mountain type locomotives, having purchased two, Nos. 998-999 in 1913 which were later numbered 4000-4001. It was not until after the First World War that a program of acquiring more of this type was begun. Starting in 1920 and continuing to 1929 there were 60 4-8-2 type locomotives placed in service, all built by Alco. Northern's were acquired after 1929 to round out the fast and heavy freight and passenger equipment.



Illinois Central 4-8-2 (Mountain) Type Locomotive for freight service, Nos. 2500-2555. Built by the railroad at Paducah, Kentucky Shops between 1937 and 1942.

Traction force .....	83,300 lb.	Weight of tender .....	225,500 lb.
Cylinders, diameter and stroke .....	30 in. x 30 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	42 ft. 3 in.
Weight on drivers .....	280,500 lb.	Steam pressure .....	240 lb.
Total weight of engine .....	409,500 lb.	Tender capacity .....	11,000 gal., 24 tons

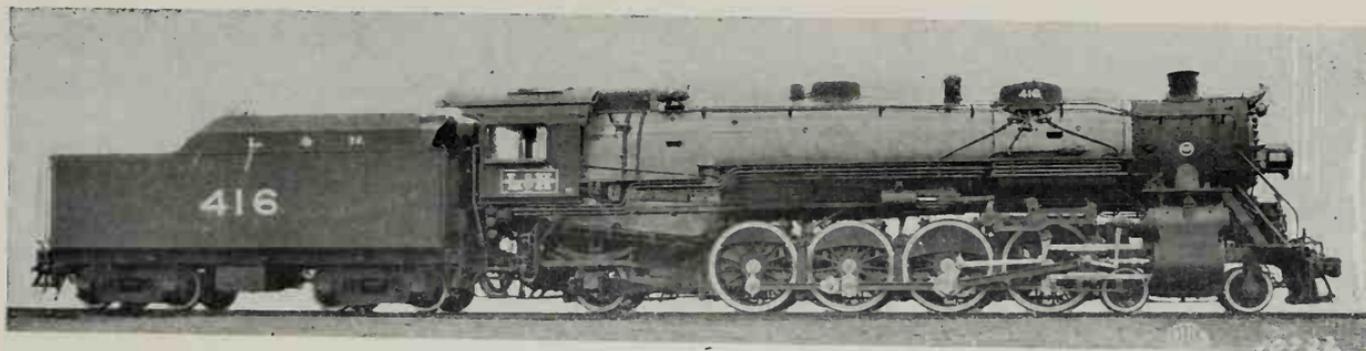
The backbone of IC fast freight power is a series of Mountain type steam locomotives. Numbered in the 2300-2619 series. Some of these have been built by the railroad and others rebuilt from older 4-8-2's and 2-10-2's. Engine No. 2540 shown here is equipped with roller bearings on all journals except the tender, otherwise in appearance it is the same as its mates of the same class.



Lehigh & Hudson River 4-8-2 (Mountain) Type Locomotive for freight service, Road Nos. 10-12. Built by The Baldwin Locomotive Works in 1944.

Tractive force .....	67,000 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	320,600 lb.
Cylinders, diameter and stroke .....	28 in. x 31 in.	Driving wheel base .....	19 ft. 3 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	44 ft. 2 in.
Weight on drivers .....	269,116 lb.	Steam pressure .....	240 lb.
Total weight of engine .....	415,200 lb.	Tender capacity .....	23,000 gal., 21 tons

Little road and big engine is this adaption of a Boston and Maine Mountain type freight hauler. The engines were built new in 1944 from the same design prevailing on the B & M and were used to power through freight trains from Allentown, Pa., to Maybrook, N. Y., via CRR of Pa., Pennsylvania and L & HR. Dieselization of the 96-mile road in 1951 destined these comparatively new locomotives to the scrap heap.



Louisville & Nashville 4-8-2 (Mountain) Type Locomotive for passenger service, Class L-1, Nos. 416-421. Built by The Baldwin Locomotive Works in 1930.

Tractive force .....	55,860 lb.	Weight of tender, loaded .....	196,000 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	40 ft. 0 in.
Weight on drivers .....	226,910 lb.	Steam pressure .....	210 lb.
Total weight of engine .....	337,730 lb.	Tender capacity .....	10,000 gal., 19 tons

These locomotives and an earlier group Nos. 400-415 built by Baldwin in 1926 constitute the biggest steam passenger power on the L&N. They hauled the crack trains including the Dixie Flyer, Dixie Limited and the Pan American. The latter is the most important run extending from Cincinnati to New Orleans, covering a distance of 921 miles, of which a goodly portion was operated by the Mountain type engines. The L-1 class locomotives resemble in design the standardized 4-8-2 of the United States Railroad Administration.

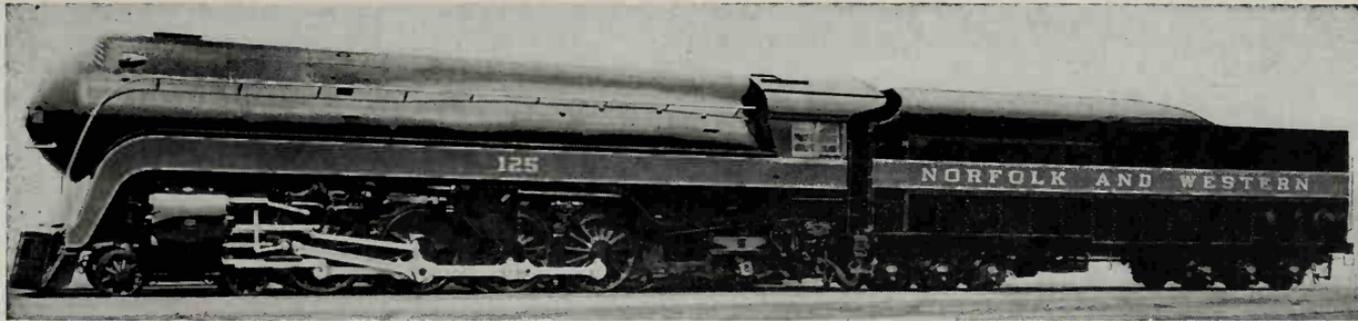
## STEAM LOCOMOTIVES: 4-8-2 Type



New York Central 4-8-2 (Mohawk) Type Locomotive for freight and passenger service, Class L-4a, Nos. 3100-3124 and Class L-4b, Road Nos. 3125-3149. Built by Lima Locomotive Works, Inc., in 1943.

Tractive force .....	59,900 lb.	Weight of tender, $\frac{3}{8}$ loaded .....	309,400 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	19 ft. 0 in.
Drivers, diameter .....	72 in.	Total engine wheel base .....	43 ft. 1 in.
Weight on drivers .....	266,500 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	401,100 lb.	Tender capacity .....	15,200 gal., 42 tons

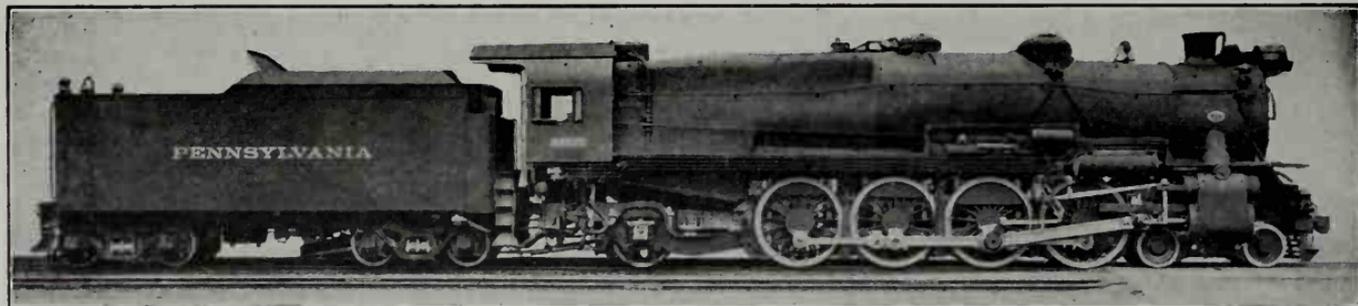
In the latter part of 1940, Lima Locomotive Works delivered the first of 15 4-8-2 type locomotives designated as Class L-3b to the New York Central for use on fast freight service between Harmon, N. Y., and Chicago, Ill., a distance of 925 miles. So successful did they prove that an additional 25 more were ordered in 1941. These additional locomotives, which are designated as Class L-4a, and a further order for 25 more, Class L-4b, were designed for use in emergency passenger service when the occasion arises as well as the customary role of freight haulers.



Norfolk & Western 4-8-2 (Mountain) Type Passenger Locomotive, Class K-2, Nos. 116-125. Built by the Brooks Works of the American Locomotive Company in 1918-1919.

Traction force .....	63,800 lb.	Weight of tender .....	378,600 lb.
Cylinders, diameter and stroke .....	28 in. x 30 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	40 ft. 0 in.
Weight on drivers .....	248,150 lb.	Steam pressure .....	220 lb.
Total weight of engine .....	359,460 lb.	Tender capacity .....	22,000 gal., 30 tons

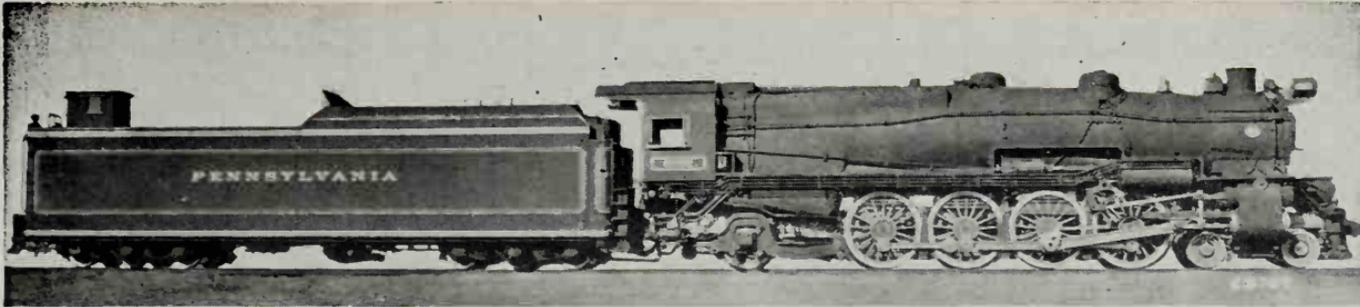
These ten engines were originally USRA Standards built during the First World War. They were streamlined and modernized at Roanoke Shops in 1945. Equipped with large tenders they are comparable to their larger mates in appearance, the J Class passenger engines. Also rebuilt are 12 K-2a Class locomotives Nos. 126-137 built by The Baldwin Locomotive Works.



Pennsylvania Railroad 4-8-2 (Mountain) Type Locomotive, Class M-1, Nos. 6800-6974. Built by The Baldwin Locomotive Works in 1926.

Tractive force .....	64,550 lb.	Weight of tender loaded .....	221,050 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	18 ft. 10 in.
Drivers, diameter .....	72 in.	Total engine wheel base .....	41 ft. ½ in.
Weight on drivers .....	267,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	385,000 lb.	Tender capacity .....	11,000 gal., 18 tons

One of the most versatile locomotives on the Pennsylvania is the M-1 Class as it is built for the heaviest express passenger service or for fast through freight service. First produced at the Juniata Shops of the railroad in 1923 it immediately became popular with the operating department because of its general usefulness and 200 of them were constructed during 1926. They bear numbers 6699 and 6800-6999, the last 25 of which were built by the Lima Locomotive Works. The Belpaire type of firebox, standard on the PRR, is quite in evidence on the boiler of these locomotives.

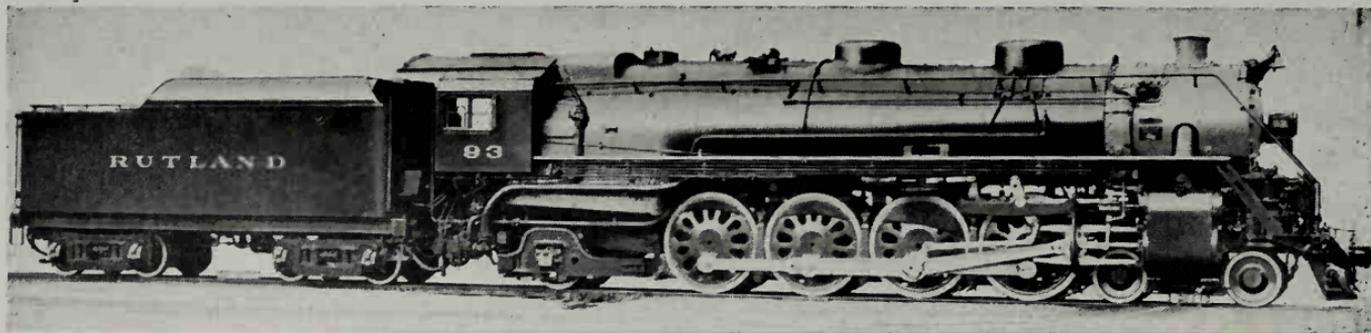


Pennsylvania Railroad 4-8-2 (Mountain) Type Locomotive, Class M-1a, Nos. 6700-6709 assigned to passenger service and Nos. 6710-6749 to freight service. Built by The Baldwin Locomotive Works in 1930.

Tractive force .....	64,550 lb.	Weight of tender, loaded .....	378,360 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	18 ft. 10 in.
Drivers, diameter .....	72 in.	Total engine wheel base .....	41 ft. 9½ in.
Weight on drivers .....	271,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	390,000 lb.	Tender capacity .....	22,090 gal., 31½ tons

The M-1a Class is an improved version of the original M-1, a notable change being made in the construction of the cylinder saddle which is extremely wide at the smokebox. Other details such as the guides, crossheads and other parts of the machinery of Classes M-1 and M-1a are duplicates of those used in Class I-1s Decapod locomotives. The M-1a is equipped with a larger tender than the M-1, which is mounted upon two six-wheel trucks and carries a brakeman's cab. Those in passenger service are more elaborately painted and striped in gold. Three groups of M-1a have been built; the one shown above, Nos. 6750-6774 by Altoona Works of the railroad and Nos. 6775-6799 by the Lima Locomotive Works, all in 1930. Since that time some have been provided with new boilers carrying higher pressure and are reclassified M-1b.

## STEAM LOCOMOTIVES: 4-8-2 Type



Rutland 4-8-2 (Mountain) Type Locomotive for fast freight service, Class L-1, Nos. 90-93. Built by the American Locomotive Company in 1946.

Tractive force .....	54,300 lb.	Weight of tender, loaded .....	207,770 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	19 ft. 3 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	41 ft. 6 in.
Weight of drivers .....	232,000 lb.	Steam pressure .....	230 lb.
Total weight of engine .....	348,000 lb.	Tender capacity .....	11,000 gal., 14 tons

Rutland acquired these doughty Mountain types to speed up its freight service but they also can pinch hit in passenger train hauling of the through Boston-New York to Montreal connections. They are akin to NYC locomotives of the same wheel arrangement but are lighter in weight.



St. Louis-Son Francisco 4-8-2 (Mountain) Type Locomotive, Nos. 4400-4422. Built by S. L.-S. F. Shops in 1939.

Tractive force ..... 68,600 lb.  
 Cylinders, diameter and stroke ..... 29 in. x 32 in.  
 Drivers, diameter ..... 70 in.  
 Weight on drivers ..... 298,800 lb.  
 Total weight of engine ..... 449,760 lb.

Weight of tender, loaded ..... 255,890 lb.  
 Driving wheel base ..... 18 ft. 3 in.  
 Total engine wheel base ..... 42 ft. 6 in.  
 Steam pressure ..... 210 lb.  
 Tender capacity ..... 14,000 gal water, 5,000 gal oil

A fast freight hauler equipped with disc driving-wheel centers, a type of construction not often seen. These engines burn oil and have an electric light placed in front of the smoke stack so that the fireman can observe the condition of the fire at night. Diesels have replaced them on the Frisco.

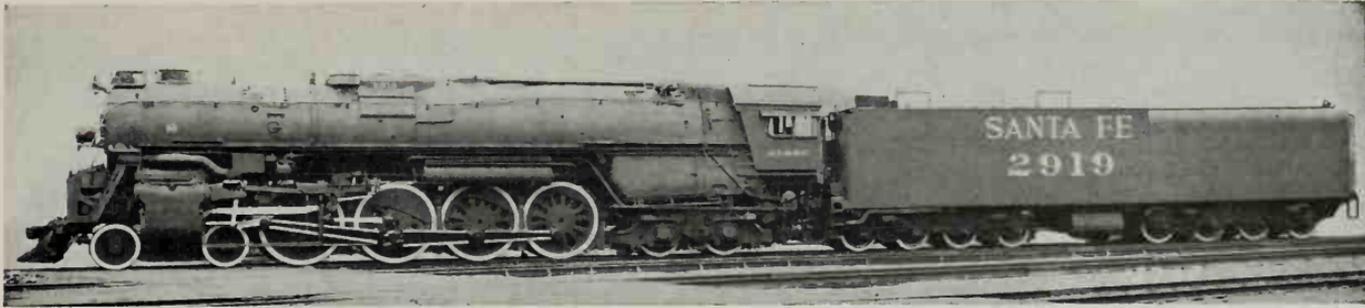
## STEAM LOCOMOTIVES: 4-8-2 Type



Union Pacific 4-8-2 (Mountain) Type Passenger Locomotive, Class MT, Nos. 7000-7039. Built by the American Locomotive Company in 1922-1923.

Tractive force .....	54,838 lb.	Weight of tender .....	237,800 lb.
Cylinders, diameter and stroke .....	29 in. x 28 in.	Driving wheel base .....	19 ft. 6 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	41 ft. 3 in.
Weight on drivers .....	230,200 lb.	Steam pressure .....	200 lb.
Total weight of engine .....	348,000 lb.	Tender capacity .....	12,000 gal., 20 tons

UP acquired 60 of these locomotives following the First World War to cope with the faster and heavier trains that could not be handled by Pacifics. Nos. 7000-7039 were built for service on the main line and Nos. 7850-7869 for the Los Angeles and Salt Lake RR. in 1923-1924. The first engine, No. 7000, was built at Schenectady Works and all the rest were constructed at Brooks Works.

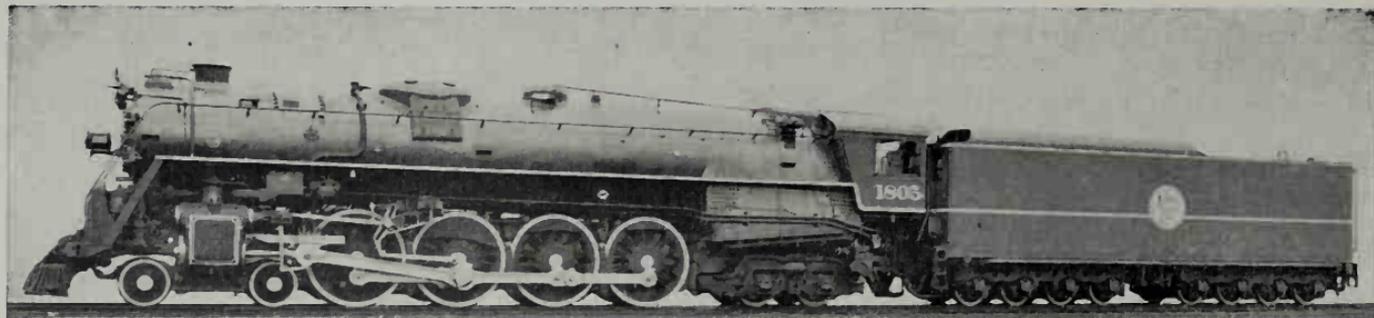


Atchison, Topeka & Santa Fe 4-8-4 Type Locomotive for passenger service, Class 2900, Nos. 2900-2929. Built by The Baldwin Locomotive Works in 1944.

Tractive force (70 per cent) .....	66,000 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	369,690 lb.
Cylinders, diameter and stroke .....	28 in. x 32 in.	Driving wheel base .....	21 ft. 3 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	50 ft. 0 in.
Weight on drivers .....	293,860 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	510,150 lb.	Tender capacity .....	24,500 gal. water, 7,000 gal. oil

The latest Northerns on the Santa Fe are provided with large drivers for fast running as are all of their older sisters on this road. It is quite an inspiring sight to see one of these streaking across the desert in Arizona with a long train of passenger cars and outrunning highway traffic on parallel roads. The 4-8-4's on the Santa Fe were specially designed to operate between La Junta, Colorado, and Los Angeles, California, a run of 1235 miles, on which grades as steep as  $3\frac{1}{2}$  per cent are encountered. The huge tender required in this grueling service is mounted up two eight-wheel trucks.

## STEAM LOCOMOTIVES: 4-8-4 Type



Atlantic Coast Line 4-8-4 Type Locomotive for high-speed heavy passenger service, Class R-1, Nos. 1800-1811. Built by The Baldwin Locomotive Works in 1938.

Ttractive force .....	63,900 lb.	Weight of tender, loaded .....	435,500 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	20 ft. 9 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	47 ft. 9 in.
Weight on drivers .....	263,127 lb.	Steam pressure .....	275 lb.
Total weight of engine .....	460,270 lb.	Tender capacity .....	24,000 gal., 27 tons

The last steam locomotives built for the ACL were these beautiful specimens intended to haul the long Florida bound seasonal passenger trains between Richmond, Va., and Jacksonville. They now are in freight service since all ACL streamliners are powered by diesels. An unusual feature of these engines is their 16-wheel tender arranged in two trucks of eight wheels each.

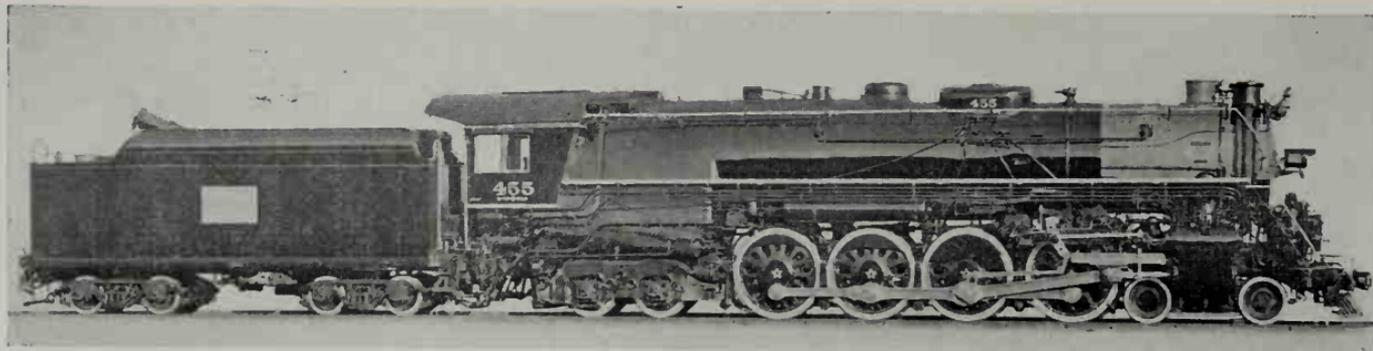


Canadian National 4-8-4 Type locomotive for passenger and fast freight service, Class U-2h, Nos. 6235-6264. Built by the Montreal Locomotive Works in 1943 and 1944.

Tractive force .....	56,800 lb.	Weight of tender, loaded .....	277,590 lb.
Cylinders, diameter and stroke .....	25½ in. x 30 in.	Driving wheel base .....	19 ft. 6 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	43 ft. 10 in.
Weight on drivers .....	246,100 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	400,300 lb.	Tender capacity .....	11,600 Imp. gal., 18 tons

The CNR adopted the 4-8-4 type as a modern freight and passenger engine in 1927 and now has 203 of them, the most extensive user of this type on the North American continent. They are divided into Classes U-2, U-3 and U-4. The Vanderbilt style of tender and vestibuled cab are noteworthy features.

## STEAM LOCOMOTIVES: 4-8-4 Type



Central of Georgia 4-8-4 Type Locomotive, Class K, for fast passenger and freight service, Nos. 451-458. Built by the Lima Locomotive Works, Inc. in 1943.

Traction force .....	62,300 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	196,500 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	20 ft. 0 in.
Drivers, diameter .....	73½ in.	Total engine wheel base .....	45 ft. 10 in.
Weight on drivers .....	260,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	447,200 lb.	Tender capacity .....	13,000 gal., 21 tons

For hauling the fast and heavy Florida trains from connections with other roads the C of G acquired these eight Northernns and when necessary uses them on fast freight trains. They are primarily used on named passenger trains, such as the Southland, Flamingo, Dixie Flyer, Dixie Limited and Seminole on the Macon and Columbus, Georgia divisions. To a large extent these engines resemble some of the same type built for the Western Pacific and Southern Pacific during the Second World War.

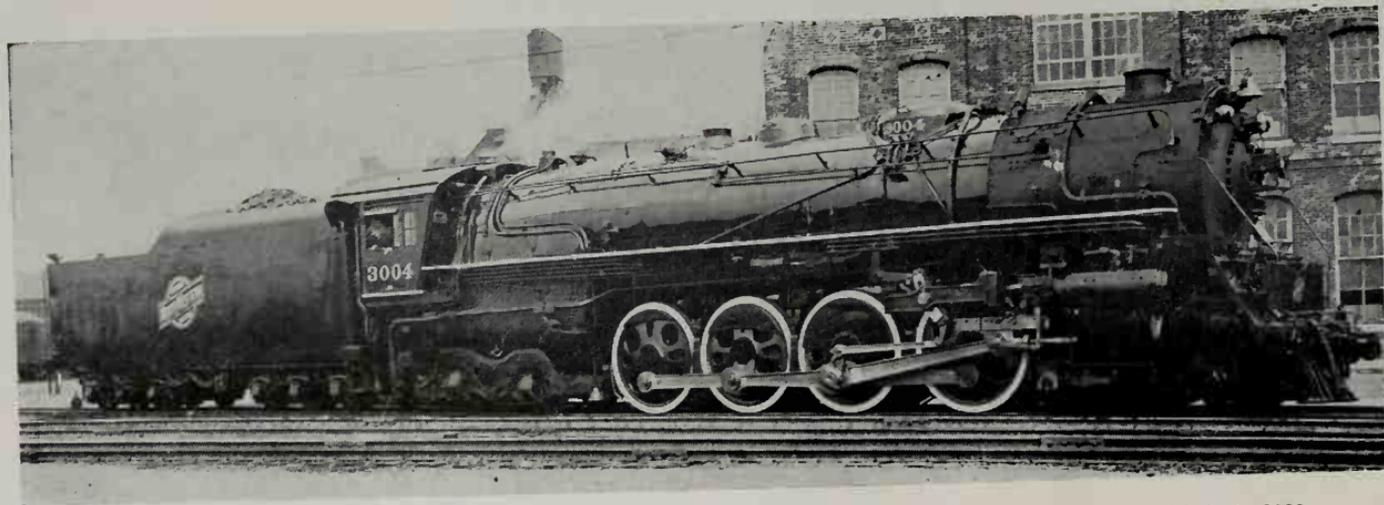


Chesapeake & Ohio 4-8-4 Type Locomotive for passenger service, Class J-3a, Nos. 605-606 and 610-614. Built by Lima Locomotive Works, Inc. in 1948.

Tractive force, engine .....	68,300 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	309,700 lb.
Tractive force, booster .....	12,400 lb.	Driving wheel base .....	19 ft. 3 in.
Cylinders, diameter and stroke .....	27½ in. x 30 in.	Total engine wheel base .....	47 ft. 1 in.
Drivers, diameter .....	72 in.	Steam pressure .....	255 lb.
Weight on drivers .....	282,400 lb.	Tender capacity .....	21,500 gal., 25 tons
Total weight of engine .....	479,400 lb.		

Five engines of the J-3 Class numbered 600-604 preceded the J-3a. They also were built by Lima and differed in details and weights although they had the same tractive force. Walschaerts valve gear and plain driving rod bearings and a total weight of 503,500 lb. were the principal variations. These engines were used between Charlottesville, Va., and Hinton, W. Va., handling such trains as the George Washington, the F. F. V., etc., over three ranges of the Alleghenies, with maximum grades of 1.52 per cent. Diesels have recently taken over their arduous assignments and relegated them to high-speed merchandise trains on the east end of the road.

## STEAM LOCOMOTIVES: 4-8-4 Type



Chicago & North Western 4-8-4 Type Locomotive, Class H-1, Nos. 3001-3035. Built by The Baldwin Locomotive Works in 1929.  
Reconstructed by C. & N. W. in 1946.

Traction force, engine .....	71,800 lb.	Weight of tender .....	320,000 lb.
Traction force, booster .....	12,400 lb.	Driving wheel base .....	20 ft. 6 in.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Total engine wheel base .....	48 ft. 7 in.
Drivers, diameter .....	76 in.	Steam pressure .....	275 lb.
Weight on drivers .....	288,000 lb.	Tender capacity .....	18,000 gal., 20 tons
Weight of engine, original .....	498,000 lb.		

After seven years intensive service the North Western decided to give these locomotives a new lease on life by remodeling them with new and stronger bed frames, multiple bearing guides, lighter nickel-steel driving rods, box-spoked driving wheel centers and new superheater. They were originally Class H and as rebuilt are designed for speeds up to 90 miles an hour.



Chicago, Burlington & Quincy 4-8-4 Type Locomotive, Class O-5a, for fast freight and passenger service; Nos. 5621-5635. Built by C. B. & Q. at West Burlington Shops in 1938, 1940.

Tractive force .....	67,500 lb.	Weight of tender, loaded .....	362,000 lb.
Cylinders, diameter and stroke .....	28 in. x 30 in.	Driving wheel base .....	19 ft. 3 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	45 ft. 6 in.
Weight on drivers .....	281,410 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	476,050 lb.	Tender capacity .....	18,000 gal., 27 tons

The Burlington's first 4-8-4's were Nos. 5600-5607, built by The Baldwin Locomotive Works in November 1930. They were constructed especially for fast freight runs between Galesburg, Illinois; Lincoln, Nebraska and Denver, Colorado, where they replaced lighter 2-8-2's. Subsequent orders consisted of two groups built by the railroad; engines 5608-5620 in 1936, 1937 and 5621-5635 in 1938 and 1940. The straightforward design of these locomotives has resulted in a very successful machine capable of fast freight or passenger hauling.

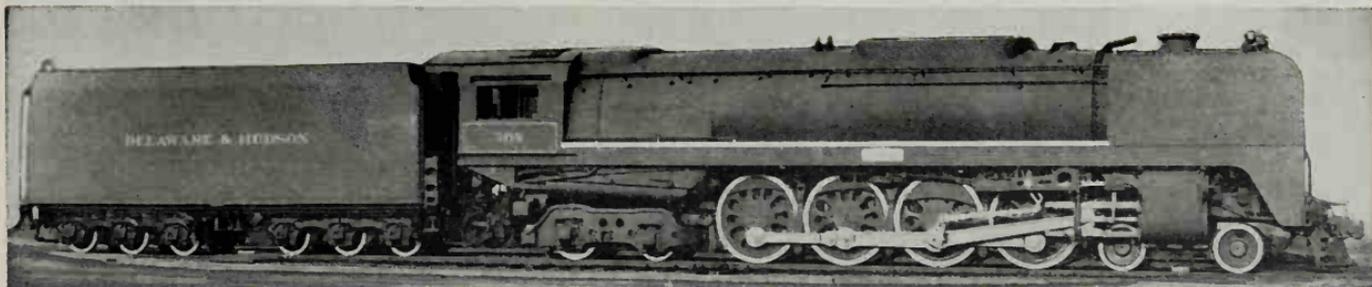
## STEAM LOCOMOTIVES: 4-8-4 Type



Chicago, Rock Island & Pacific 4-8-4 Type Locomotive, Class R-67, Nos. 5110-5119. Built by the American Locomotive Company in 1946.

Traction force .....	67,000 lb.	Weight of tender .....	370,500 lb.
Cylinders, diameter and stroke .....	26 in. x 32 in.	Driving wheel base .....	19 ft. 9 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	47 ft. 1 in.
Weight on drivers .....	280,000 lb.	Steam pressure .....	270 lb.
Total weight of engine .....	475,000 lb.	Tender capacity .....	21,500 gal., 22 tons

Since the dieselization of its passenger service the Rock Island has relegated its larger engines to freight trains. The R-67 class includes locomotives numbered 5001-5064 built by Alco in 1929 and 1930 and 5100-5109 built in 1944 as well as the ones pictured here. No attempt was made to streamline these engines but their trim design is noteworthy. The sandbox and domes are combined in one casing.



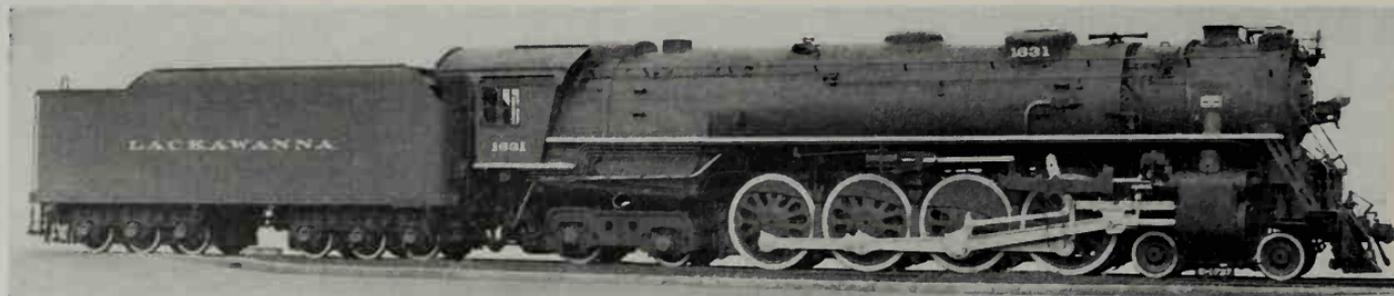
Delaware & Hudson 4-8-4 Type Locomotive, Class K-62, for fast freight service, Nos. 300-314. Built by the American Locomotive Company in 1943.

Tractive force .....62,040 lb.  
 Cylinders, diameter and stroke .....24½ in. x 32 in.  
 Drivers, diameter .....75 in.  
 Weight on drivers .....270,000 lb.  
 Total weight of engine .....470,000 lb.

Weight of tender,  $\frac{2}{3}$  loaded .....298,000 lb.  
 Driving wheel base .....19 ft. 9 in.  
 Total engine wheel base .....47 ft. 1 in.  
 Steam pressure .....285 lb.  
 Tender capacity .....20,000 gal., 25 tons

The Delaware and Hudson was the first railroad to use a steam locomotive in North America and now is committed to all dieselization as soon as possible. The Class K-62 engines are adaptable to dual service and still function in that role. Their streamline effect is enhanced by smoke lifter wings of ample size, a skirted running board, double enclosure of dome and sandbox and capped smoke stack. The latter is a feature of D & H motive power in passenger service and other modern locomotives.

## STEAM LOCOMOTIVES: 4-8-4 Type



Delaware, Lackawanna & Western 4-8-4 Type Locomotive, Class Q-4, Nos. 1631-1650. Built by the American Locomotive Company in 1934.

Tractive force .....	72,000 lb.	Weight of tender ...	313,000 lb.
Cylinders, diameter and stroke .....	28 in. x 32 in.	Driving wheel base .....	19 ft. 6 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	46 ft. 1 in.
Weight on drivers .....	274,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	447,000 lb.	Tender capacity .....	16,000 gal., 26 tons

The Lackawanna calls these locomotives Poconos after the mountains they climb in Pennsylvania. They are a dual purpose machine capable of handling fast passenger runs as well as the bread-winning freights on the road of anthracite. Three orders numbering 50 locomotives, 1601-1650, comprised the entire group which was constructed between 1929 and 1934. Diesels are rapidly replacing steam on the Lackawanna.

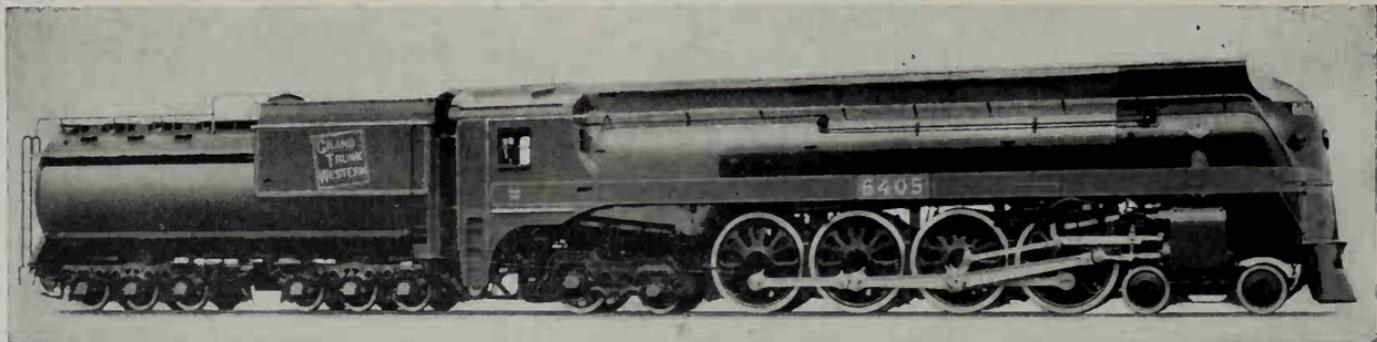


Grand Trunk Western (Canadian National) 4-8-4 Type Locomotive, for fast freight service, Class U-3b, Nos. 6312-6336. Built by the American Locomotive Company in 1942.

Traction force .....	59,000 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	221,500 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	19 ft. 6 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	43 ft. 10 in.
Weight on drivers .....	245,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	403,000 lb.	Tender capacity .....	14,300 gal., 16 tons

A variation of the type of locomotive that is the workhorse on the Canadian National system in Canada. These husky engines operate the GTW trains in the United States.

## STEAM LOCOMOTIVES: 4-8-4 Type



Grand Trunk Western (Canadian National) 4-8-4 Type Locomotive for passenger service, Class U-4b, Nos. 6405-6410. Built by the Lima Locomotive Works, Inc. in 1938.

Tractive force .....	52,500 lb.	Weight of tender, loaded .....	270,500 lb.
Cylinders, diameter and stroke .....	24 in. x 30 in.	Driving wheel base .....	20 ft. 0 in.
Drivers, diameter .....	77 in.	Total engine wheel base .....	44 ft. 1½ in.
Weight on drivers .....	237,900 lb.	Steam pressure .....	275 lb.
Total weight of engine .....	382,700 lb.	Tender capacity .....	14,300 U. S. gal. water, 16 tons

The first five locomotives of this group, Class U-4a, Nos. 6400-6404, are practically the same as the one shown here except that they are lettered Canadian National and were constructed by the Montreal Locomotive Works Ltd., in 1936. Engine No. 6401 had the distinction of hauling the Royal Train in which Princess Elizabeth and the Duke of Edinburgh rode 3,460 miles over the Canadian National Railways during their visit to Canada in 1951.

The second lot of six locomotives illustrated above, handle the through trains from Montreal to Chicago, in the United States between the latter city and Port Huron, Michigan.

All eleven of these locomotives bear a resemblance to their larger counterparts running on the Southern Pacific but are painted a more conservative color. The cab, running board and skirt are olive green with red panels and lettering in gold.

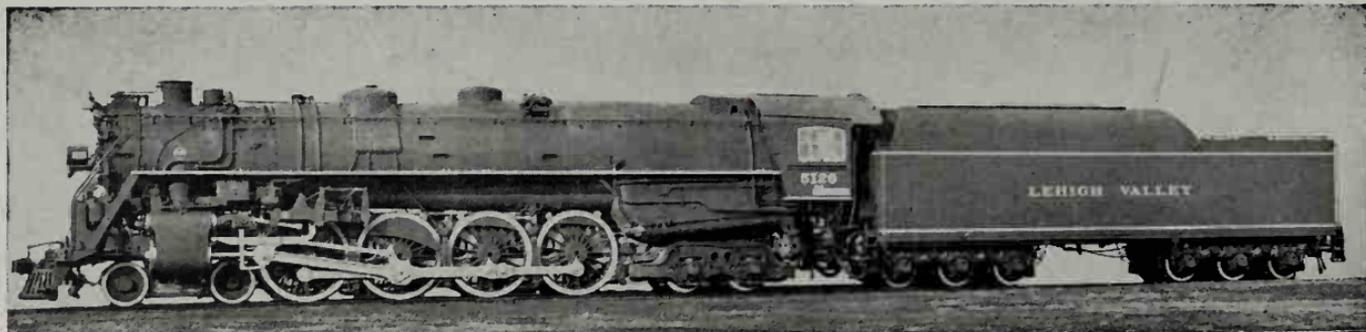


Great Northern 4-8-4 Type Locomotive, for passenger service, Class S-2, Nos. 2575-2588. Built by The Baldwin Locomotive Works in 1930.

Tractive force .....	58,300 lb.	Weight of tender, loaded .....	326,900 lb.
Cylinders, diameter and stroke .....	29 in. x 29 in.	Driving wheel base .....	20 ft. 9 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	47 ft. 9 in.
Weight on drivers .....	247,300 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	420,900 lb.	Tender capacity .....	17,000 gal. water, 5,800 gal. oil

Two groups of Northern are employed on the GN, Classes S-1 and S-2. They are similar in appearance but Class S-2 is equipped with larger drivers. Six of the first and 14 of the second, a total of 20 engines hauled such trains at the Empire Builder, consisting of 14 heavy steel cars over all divisions between Seattle, Wash., and St. Paul, Minn. Their service is now restricted due to the use of diesels in through line service. Class S-1 engines are Nos. 2550-2555 and have Belpaire fireboxes. They were built in 1929.

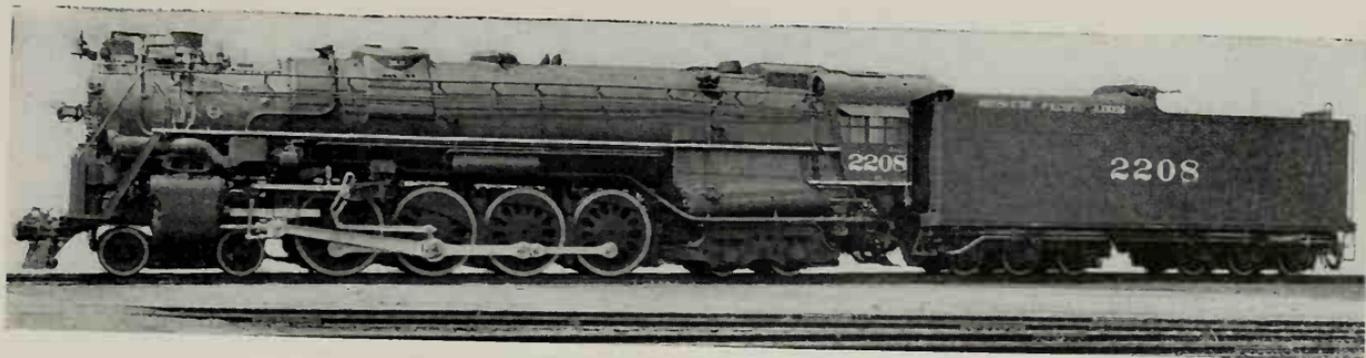
## STEAM LOCOMOTIVES: 4-8-4 Type



Lehigh Valley 4-8-4 Type Locomotive, for passenger and fast freight service, Class T-3, Nos. 5125-5129. Built by The Baldwin Locomotive Works in 1934.

Tractive force, engine .....	66,500 lb.	Weight of tender, loaded .....	389,000 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	20 ft. 0 in.
Drivers, diameter .....	77 in.	Total engine wheel base .....	45 ft. 11 in.
Weight on drivers .....	270,100 lb.	Steam pressure .....	275 lb.
Total weight of engine .....	441,440 lb.	Tender capacity .....	20,000 gal., 30 tons

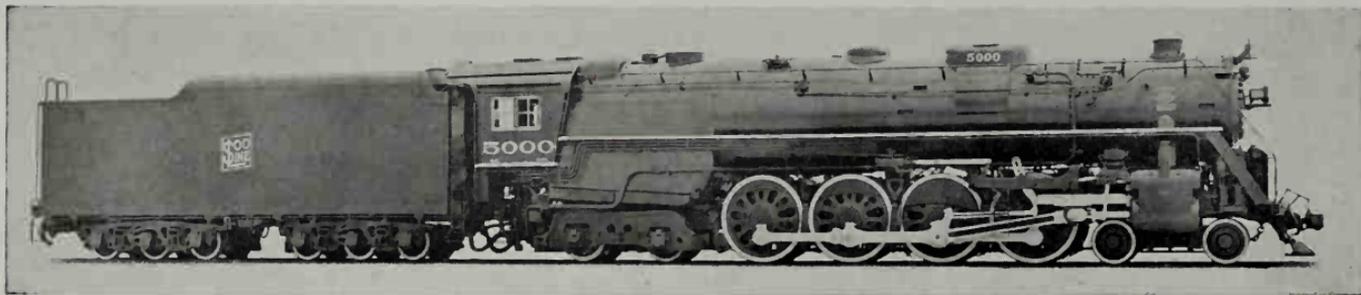
Beginning in 1931 the LV acquired three general classes of 4-8-4 engines of which the T-3 had the largest driving wheels. They were used in hauling fast freight and passenger trains over difficult territory between Mauch Chunk and Wilkes-Barre, Pa., as well as on the more open sections of the road. Although all train service is operated with diesels today, the Valley for a while retained ten 4-8-4's in storage, just in case of an emergency.



Missouri Pacific 4-8-4 Type Locomotive, Nos. 2201-2215. Built by the Baldwin Locomotive Works in 1943.

Traction force, 85 per cent .....	67,200 lb.	Weight of tender, $\frac{3}{8}$ loaded .....	292,000 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	19 ft. 3 in.
Drivers, diameter .....	73 in.	Total engine wheel base .....	47 ft. 1 in.
Weight on drivers .....	280,000 lb.	Steam pressure .....	285 lb.
Total weight of engine .....	496,000 lb.	Tender capacity .....	19,350 gal., 20 tons

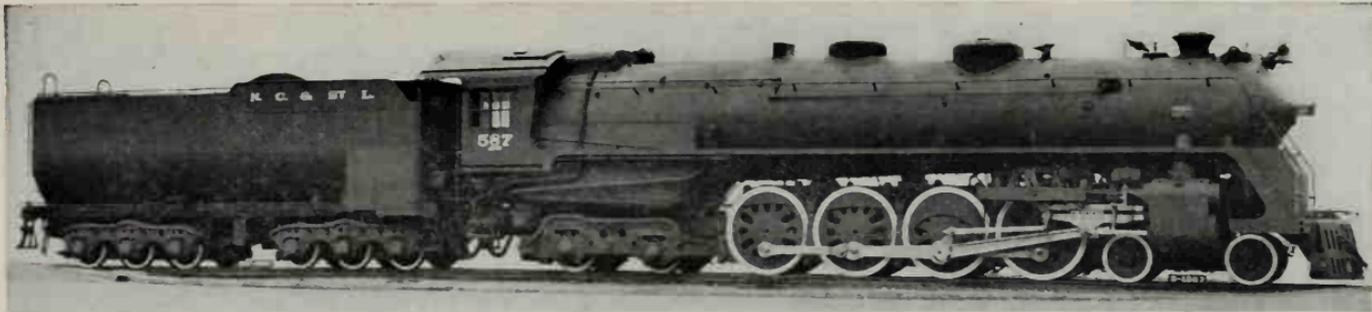
Known as the Dixie type locally these 4-8-4's of the MOP present a straightforward design that characterized a number of orders in recent years. They are coal burners, and are equipped with a brakeman's cab on the tender. They were the final order of steam locomotives placed by the road.



Minneapolis, St. Paul & Sault Ste. Marie (Soo Line), Wisconsin Central Division 4-8-4 Type Locomotive for passenger and fast freight service, Class O-20, Nos. 5000-5003. Built by the Lima Locomotive Works, Inc. in 1938.

Traction force .....	66,000 lb.	Weight of tender, loaded .....	317,600 lb.
Cylinders, diameter and stroke .....	26 in. x 32 in.	Driving wheel base .....	19 ft. 9 in.
Drivers, diameter .....	75 in.	Total engine wheel base .....	46 ft. 9 in.
Weight on drivers .....	263,000 lb.	Steam pressure .....	270 lb.
Total weight of engine .....	445,550 lb.	Tender capacity .....	17,000 gal., 24 tons

The 5000's are the heaviest motive power on the SOO Line as well as the most powerful. Although there are only four of them in service they have given a good account of themselves by averaging over 100,000 miles of running in one year. Minneapolis, Minn., and Chicago is their territory.

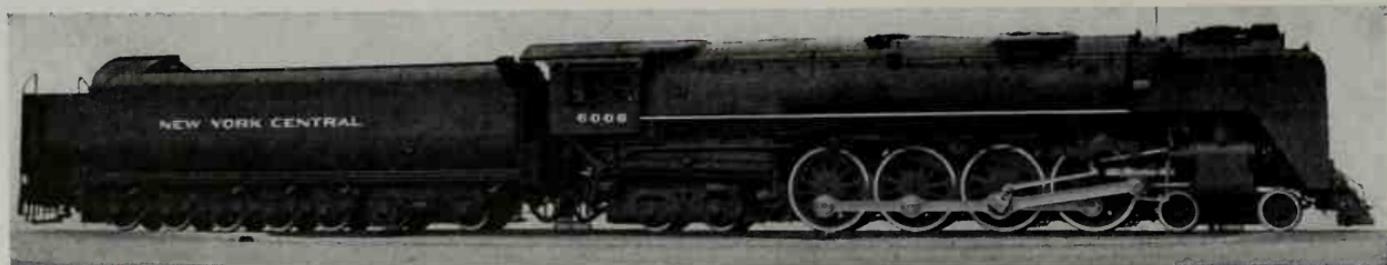


Nashville, Chattanooga & St. Louis 4-8-4 Type Locomotive for passenger and fast freight service, Class J-3, Nos. 570-589. Built by the American Locomotive Company in 1943.

Traction force .....	57,000 lb.	Weight of tender, $\frac{3}{8}$ loaded .....	234,700 lb.
Cylinders, diameter and stroke .....	25 in. x 30 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	45 ft. 1 in.
Weight on drivers .....	228,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	399,000 lb.	Tender capacity .....	15,000 gal., 16 tons

Unique, best describes the appearance of the Dixie Line's 4-8-4's. Their pleasing design starts at the smokebox with its conical front followed by the capped stack. The latter has been a standard on the road for many years and is a survival of the days when locomotives were built with an eye toward beauty. The curve connecting the cab front to the running board and the round bottom tender present a singular aspect.

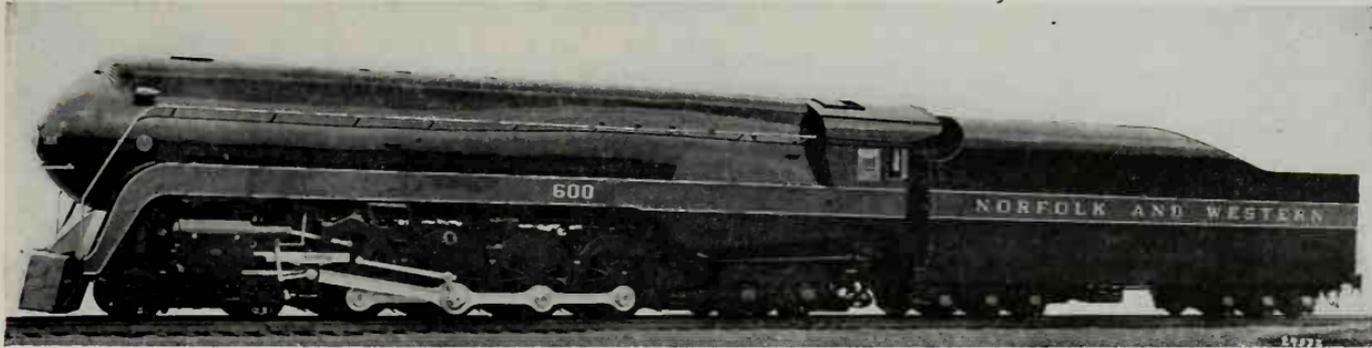
## STEAM LOCOMOTIVES: 4-8-4 Type



New York Central 4-8-4 Type Locomotive for fast passenger service, Class S-1b, Nos. 6001-6025. Built by the American Locomotive Company in 1946.

Traction force .....	61,500 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	337,400 lb.
Cylinders, diameter and stroke .....	25½ in. x 32 in.	Driving wheel base .....	20 ft. 6 in.
Drivers, diameter .....	79 in.	Total engine wheel base .....	48 ft. 5 in.
Weight on drivers .....	275,000 lb.	Steam pressure .....	275 lb.
Total weight of engine .....	471,000 lb.	Tender capacity .....	18,000 gal., 46 tons

On the NYC the 4-8-4 is known by the name, Niagara type, 27 of which now are in service on the Limiteds between Harmon, N. Y. and Chicago. Following the receipt of one experimental locomotive No. 6000, Class S-1a, in March, 1945, its performance so impressed the Central that 25 similar ones were ordered as shown above and one other experimental engine No. 5500, Class S-2a. The latter was equipped with poppet valves steam distribution. Otherwise these engines are alike. A notable feature is the large tender running upon 14 wheels.



Norfolk & Western 4-8-4 Type Locomotive for passenger service, Class J, No. 600. Built by the Norfolk & Western at Roanoke Shops in 1941.

Traction force .....	80,000 lb.	Weight of tender, loaded .....	378,600 lb.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Driving wheel base .....	18 ft. 9 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	47 ft. 3½ in.
Weight on drivers .....	288,000 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	494,000 lb.	Tender capacity .....	20,000 gal., 35 tons

Here is No. 600, the N & W's first streamlined locomotive—veritably a powerful, high speed, glistening blue-black giant of the rails, with a bright Tuscan red stripe set off by a gold border, running the entire length of the engine and tender. Highly polished rods and motion work emphasize the speed and power when running. Subsequently 13 more of these were built, Nos. 601-604 in 1941 and 1942; Nos. 605-610 in 1943, and Nos. 611-613 in 1950. They are of 5,500 horsepower each and capable of speeds up to 90 miles an hour.

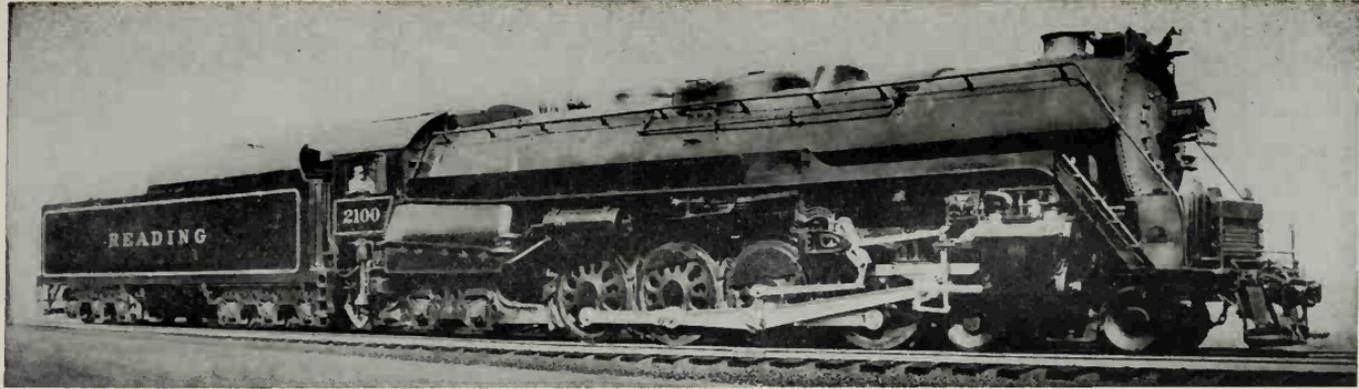
## STEAM LOCOMOTIVES: 4-8-4 Type



Northern Pacific 4-8-4 Type Locomotive for passenger service, Class A-5, Nos. 2680-2689. Built by The Baldwin Locomotive Works in 1943.

Traction force, engine .....	69,800 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	356,000 lb.
Cylinders, diameter and stroke .....	28 in. x 31 in.	Driving wheel base .....	20 ft. 8 in.
Drivers, diameter .....	77 in.	Total engine wheel base .....	48 ft. 7 in.
Weight on drivers .....	295,000 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	508,500 lb.	Tender capacity .....	25,000 gal., 27 tons

The Northern type was apparently named after the road which first used the 4-8-4 wheel arrangement in 1926. Six different classes, including the famous Timken engines No. 1111, are in use on the NP, the last order being shown above. Although the 4-8-4 type is an outgrowth of the 4-8-2 type the NP never used any of the latter, their largest passenger power being 4-6-2's prior to 1926. These engines have established an enviable record in high-speed, long-distance passenger runs hauling the North Coast Limited between St. Paul, Minnesota, and Livingston, Montana, 1800 miles with 18 cars without changing locomotives.

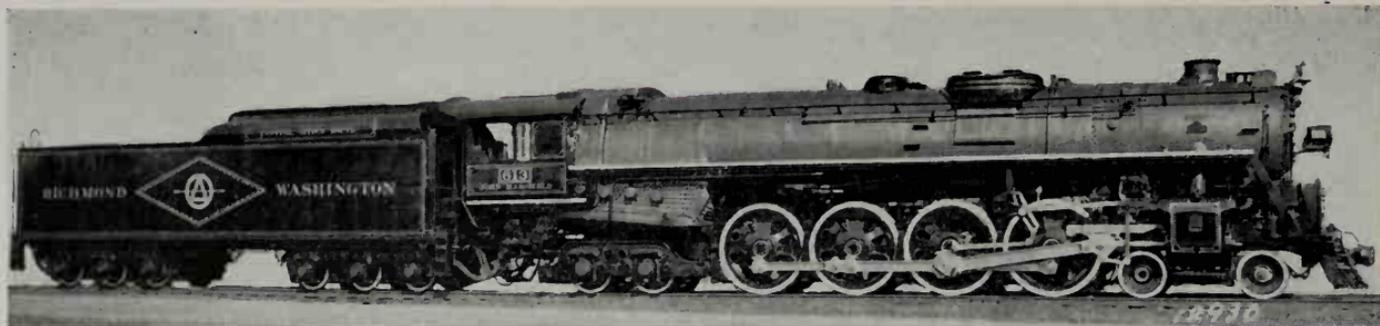


Reading 4-8-4 Type Locomotive for fast freight service. Class T-1, Nos. 2100-2129. Built at Reading Shops.

Tractive force, engine .....	68,000 lb.	Weight of tender, loaded .....	367,700 lb.
Tractive force, booster .....	11,100 lb.	Driving wheel base .....	19 ft. 3 in.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Total engine wheel base .....	45 ft. 10 in.
Drivers, diameter .....	70 in.	Steam pressure .....	240 lb.
Weight on drivers .....	278,200 lb.	Tender capacity .....	19,000 gal., 26 tons
Total weight of engine .....	441,300 lb.		

The Reading Company has been building steam locomotives for over 100 years and this is one of the largest ever constructed at its shops. The extremely wide firebox, skirted running board and boiler jacket covering the smokebox are notable features easily recognized. Engines No. 2100-2107 were built in 1945, Nos. 2108-2110 in 1946 and both lots were equipped with plain driving axle bearings and roller bearings on all other axles. Nos. 2120-2123 were completed in 1946 and 2124-2129 in 1947. They have roller bearings on all axles.

## STEAM LOCOMOTIVES: 4-8-4 Type

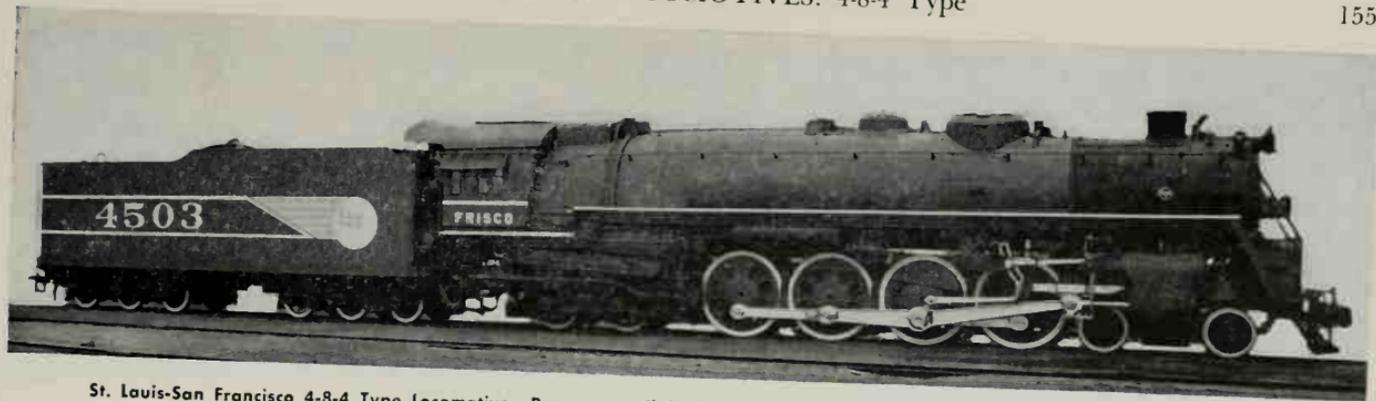


Richmond, Fredericksburg & Potomac 4-8-4 Type Locomotive for fast passenger service, Nos. 613-622. Built by The Baldwin Locomotive Works in 1945.

Traction force .....	62,800 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	310,400 lb.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Driving wheel base .....	20 ft. 0 in.
Drivers, diameter .....	77 in.	Total engine wheel base .....	46 ft. 1 in.
Weight on drivers .....	266,500 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	414,000 lb.	Tender capacity .....	20,000 gal., 22 tons

Beginning in 1937 the RF & P acquired four separate sets of Northern culminating in the above order. The principal dimensions of all four are the same but the weights vary. There are 27 locomotives all told of this type on the Capital Cities Route and each carries a raised brass number plate on the side of the cab with a name placed beneath it. The engines are named in groups after Confederate generals, Virginia governors and Virginia statesmen as follows:

No. 551 General Robert E. Lee	No. 603 Governor Thomas Nelson	No. 610 Governor Fitzhugh Lee	No. 617 John Randolph
No. 552 General T. J. Jackson	No. 604 Governor Benjamin Harrison	No. 611 Governor William Smith	No. 618 James Madison
No. 553 General J. E. B. Stuart	No. 605 Governor James Monroe	No. 612 Governor Claude A. Swanson	No. 619 William Byrd
No. 554 General A. P. Hill	No. 606 Governor John Tyler	No. 613 John Marshall	No. 620 George Wythe
No. 555 General J. E. Johnston	No. 607 Governor Edmund Randolph	No. 614 George Washington	No. 621 Richard Henry Lee
No. 601 Governor Patrick Henry	No. 608 Governor Henry A. Wise	No. 615 Henry Clay	No. 622 Carter Braxton
No. 602 Governor Thomas Jefferson	No. 609 Governor John Letcher	No. 616 George Mason	

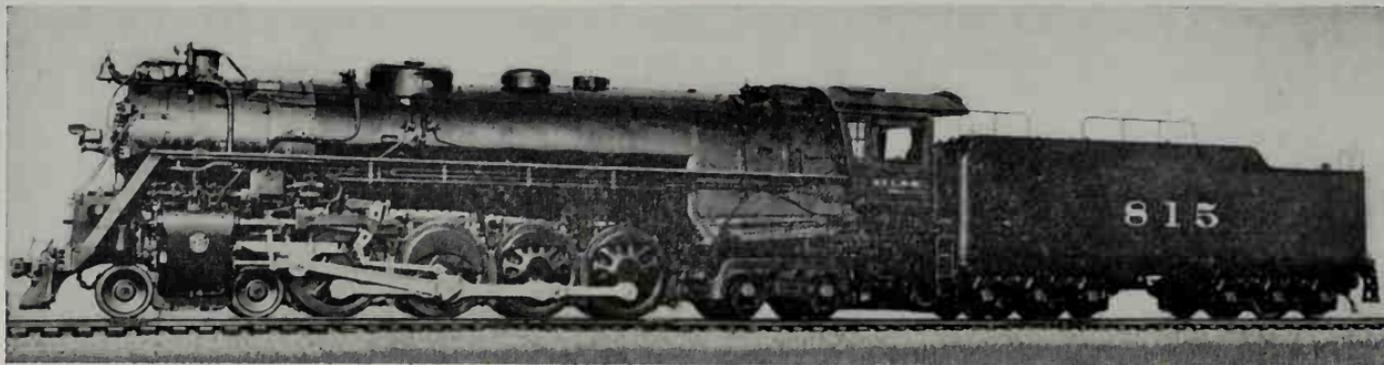


St. Louis-San Francisco 4-8-4 Type Locomotive. Passenger, oil fuel, Nos. 4500-4502; Freight, coal fuel, Nos. 4503-4514. Built by The Baldwin Locomotive Works in 1942.

Tractive force .....	71,200 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	275,400 lb.
Cylinders, diameter and stroke .....	28 in. x 31 in.	Driving wheel base .....	19 ft. 3 in.
Drivers, diameter .....	74 in.	Total engine wheel base .....	46 ft. 6 in.
Weight on drivers .....	280,000 lb.	Steam pressure .....	255 lb.
Total weight of engine .....	462,500 lb.	Tender capacity.....	18,000 gal. water, 24 tons, 6,500 gal oil

The last steam locomotives built for the Frisco were these Northern and a duplicate set of ten in 1943. The latter were numbered 4415-4424. Now they are gone as the road embarked on a dieselization program in 1947 which was completed by March 1, 1952. During that time the Frisco acquired 407 diesel units, enough to handle all freight, passenger and switching assignments. While in service these steam locomotives operated on the Eastern Division from St. Louis to Monett, Missouri, and over the Southwestern Division to Tulsa, Oklahoma, in both freight and passenger service.

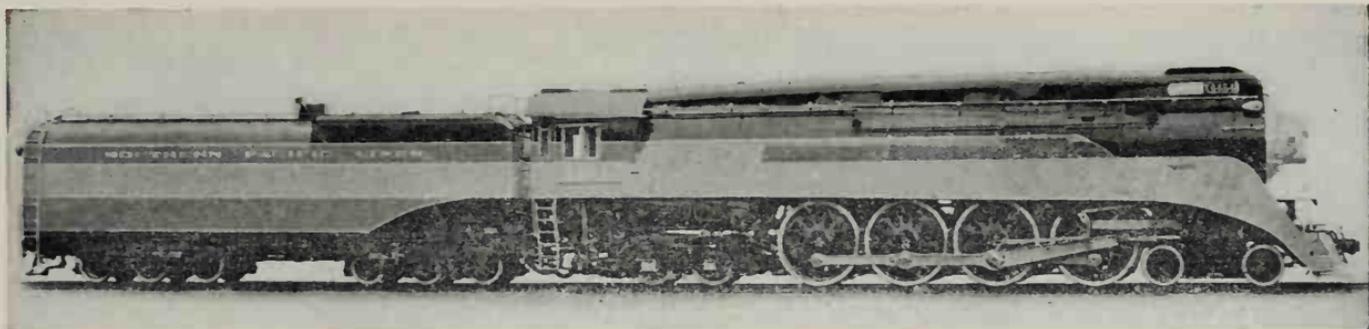
## STEAM LOCOMOTIVES: 4-8-4 Type



St. Louis-Southwestern 4-8-4 Type Locomotive for freight and passenger service, Class L-1, Nos. 815-819. Built by railroad shops, Pine Bluff, Ark. in 1942.

Tractive force, engine .....	61,500 lb.	Weight of tender, loaded .....	312,000 lb.
Cylinders, diameter and stroke .....	26 in. x 30 in.	Driving wheel base .....	18 ft. 9 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	45 ft. 0 in.
Weight on drivers .....	248,000 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	425,500 lb.	Tender capacity .....	15,000 gal. water, 5,000 gal. oil

The Cotton Belt had 20 engines like this. The first ten, Nos. 800-809 were built by The Baldwin Locomotive Works in 1930 and differed only slightly from the next lot of five, Nos, 810-814, which were built by the railroad company in 1937. The last group is shown here. These locomotives replaced older ones of the 2-8-0 and 4-6-0 type enabling the road to operate faster and heavier trains. Several of them recently have been leased to the SP.

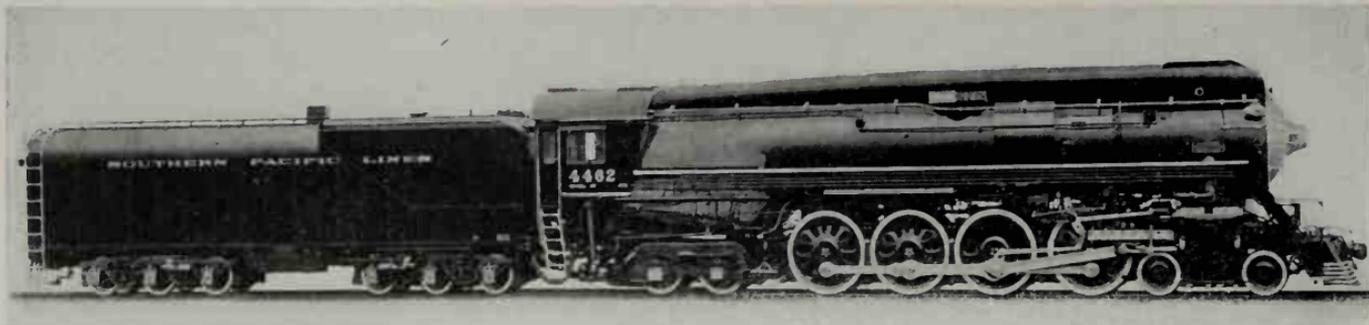


Southern Pacific 4-8-4 Type Locomotive for passenger service; Class GS-4, Nos. 4430-4457. Built by Lima Locomotive Works, Inc. in 1941-1942. Class GS-3, Nos. 4416-4429 and GS-5, Nos. 4458-4459 are similar.

Traction force, engine .....	64,760 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	313,730 lb.
Traction force, booster .....	13,000 lb.	Driving wheel base .....	21 ft. 6 in.
Cylinders, diameter and stroke .....	25 $\frac{1}{2}$ in. x 32 in.	Total engine wheel base .....	47 ft. 8 in.
Drivers, diameter .....	80 in.	Fuel .....	Oil
Weight on drivers .....	275,700 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	475,000 lb.	Tender capacity .....	23,300 gal. water, 5,880 gal. oil

A most spectacular group of locomotives consists of the Espees Classes GS-3, 4 and 5. Popularly known as Daylight or Golden State engines because they power the Daylight trains between Los Angeles and San Francisco, one engine makes the run of 470 miles in less than ten hours, hauling 21 articulated cars. They develop 5,500 horsepower when running at a speed of 55 miles an hour. In appearance these engines are unique with a streamline shroud over the top of the boiler and a smoke lifter around the stack. A bright orange band full length from pilot to the rear of the tender and red body color matches the rest of the train. A never-to-be forgotten sight is one of these locomotives hauling the Daylight along the bluffs overlooking the Pacific Ocean. For night service some of these engines are equipped with a supplementary rotating headlight which can be seen at a great distance.

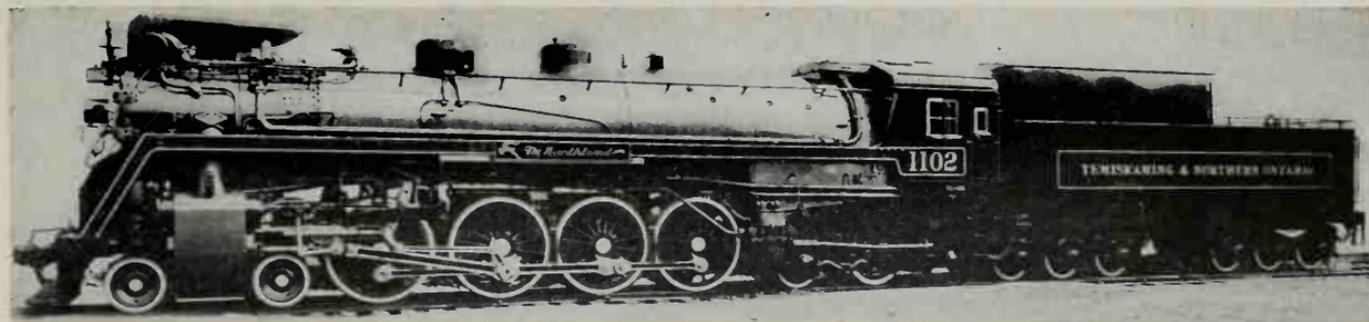
## STEAM LOCOMOTIVES: 4-8-4 Type



Southern Pacific 4-8-4 Type Locomotive for freight service. Class GS-6, Nos. 4460-4463. Built by Lima Locomotive Works, Inc., in 1943.

Tractive force, engine .....	64,200 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	317,800 lb.
Tractive force, booster .....	11,300 lb.	Driving wheel base .....	20 ft. 0 in.
Cylinders, diameter and stroke .....	27 in. x 30 in.	Total engine wheel base .....	45 ft. 10 in.
Drivers, diameter .....	73½ in.	Fuel .....	Oil
Weight on drivers .....	283,200 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	468,400 lb.	Tender capacity .....	23,200 gal. water, 6,080 gal. oil

An undecorated version of the Daylight engine is represented by these locomotives built during the wartime restrictions for fast freight service. They can be recognized by their plain black livery and silver lettering. Although this class has smaller drivers and less steam pressure than their predecessors the tractive force is about the same.

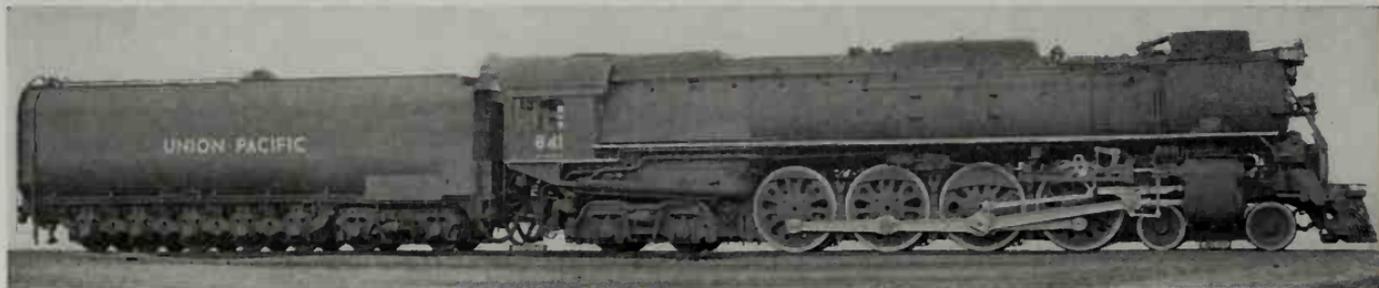


Temiskaming & Northern Ontario 4-8-4 Type Locomotive for passenger service, No. 1102. Built by the Canadian Locomotive Co., Ltd. in 1937.

Tractive force .....	54,500 lb.	Weight of tender .....	281,500 lb.
Cylinders, diameter and stroke .....	22½ in. x 30 in.	Driving wheel base .....	18 ft. 6 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	42 ft. 10 in.
Weight on drivers .....	218,210 lb.	Steam pressure .....	275 lb.
Total weight of engine .....	371,320 lb.	Tender capacity .....	11,000 Imp. gal., 20 tons

Ontario Northland Ry., is the new name of the T&NO, which operates its main line between North Bay and Moosonee, Ontario, a distance of 440 miles. Four locomotives of this Confederation type, as the 4-8-4 is called in Canada, power the through trains. They are equipped with an odd smoke lifter and a fully enclosed cab. The name of the train, The Northland, and the figure of a leaping deer in gold decorates the skirt of the running board which is painted red as is the panel on the tender.

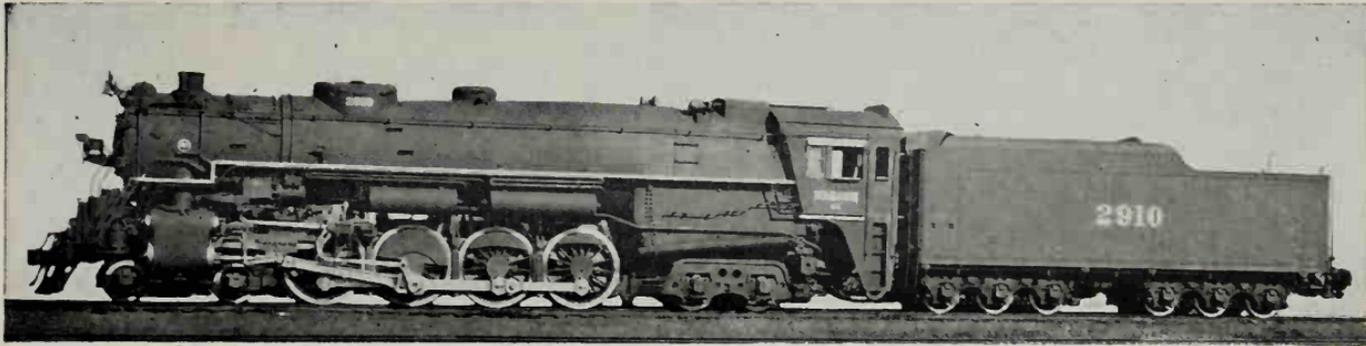
## STEAM LOCOMOTIVES: 4-8-4 Type



Union Pacific 4-8-4 Type Locomotive for passenger service, Class FEF-3, Nos. 835-844. Built by the American Locomotive Company in 1944.

Tractive force .....	63,800 lb.	Weight of tender .....	411,400 lb.
Cylinders, diameter and stroke .....	25 in. x 32 in.	Driving wheel base .....	22 ft. 0 in.
Drivers, diameter .....	80 in.	Total engine wheel base .....	50 ft. 11 in.
Weight on drivers .....	270,300 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	490,700 lb.	Tender capacity .....	23,500 gal., 25 tons

Three different classes of 4-8-4's are in use on the UP hauling the heavy fast passenger trains. All were built by the American Locomotive Company and are numbered 800-819 built in 1937, 820-834 in 1939, and the last shown here. They are of very massive design, constructed for rugged service. A multiple smoke stack, combined dome and sandbox casing and a 14-wheel tender contribute to their hugeness.

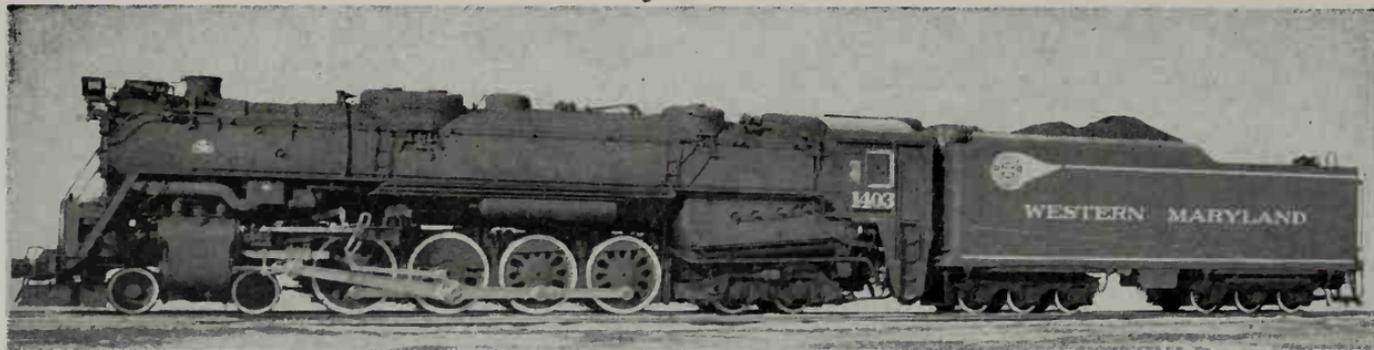


Wabash 4-8-4 Type Locomotive for freight service, Class O-1, Nos. 2900-2924. Built by The Baldwin Locomotive Works in 1930-1931.

Traction force .....	70,817 lb.	Weight of tender, loaded .....	307,510 lb.
Cylinders, diameter and stroke .....	27 in. x 32 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	45 ft. 0 in.
Weight on drivers .....	274,100 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	454,090 lb.	Tender capacity .....	15,000 gal., 18 tons

Wabash uses two groups of heavy and speedy locomotives in freight hauling. In appearance they are somewhat alike, the first Nos. 2800-2824 are Mountain type engines which were built in the early part of 1930 and were shortly followed by the Northern types shown above. Both types have the same cylinder and driving wheel dimensions and practically the same tractive force. The sloping, vestibuled cab and outside bearing leading truck is a common characteristic of both types.

## STEAM LOCOMOTIVES: 4-8-4 Type



Western Maryland 4-8-4 Type Locomotive for freight service, Class J-1, Nos. 1401-1412. Built by The Baldwin Locomotive Works in 1947.

Tractive force .....	70,600 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	340,500 lb.
Cylinders, diameter and stroke .....	26 $\frac{1}{2}$ in. x 32 in.	Driving wheel base .....	19 ft. 3 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	46 ft. 10 in.
Weight on drivers .....	290,000 lb.	Steam pressure .....	255 lb.
Total weight of engine .....	506,500 lb.	Tender capacity .....	22,000 gal., 30 tons

These Northernns are the latest steam power on the WM and were designed to operate fast freight trains between Cumberland, Maryland and Harrisburg, Pennsylvania. They feature a boiler of high capacity and are equipped with roller bearings on all axles. The boiler jacket is carried forward to cover the smokebox and the cab is vested following a trend that originated on the Canadian Pacific and has been adopted on a number of other railroads in late years. The WM slogan Fast Freight Line is painted upon the tender.

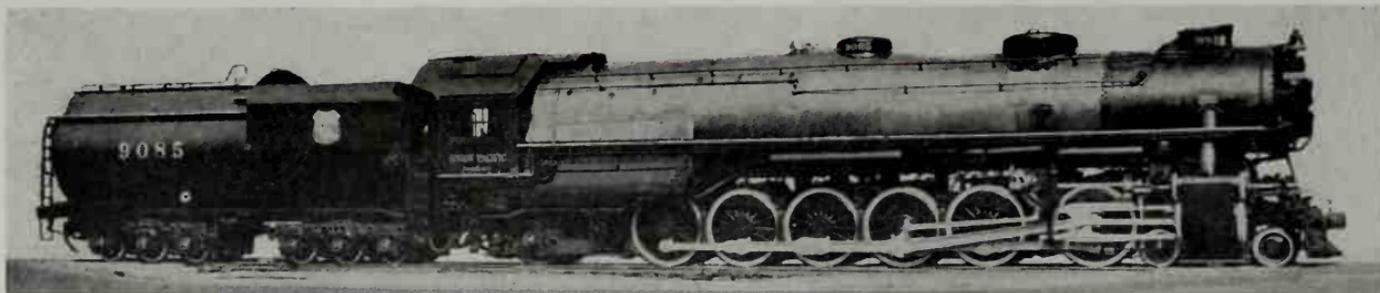


Southern Pacific 4-10-2 (Southern Pacific) Type Freight Locomotive, Class SP-2, Nos. 5039-5048. Built by the American Locomotive Company in 1927.

Tractive force .....	83,500 lb.	Weight of tender .....	291,000 lb.
Cylinders, diameter and stroke.....	25 in. x 28 in. inside 25 in. x 32 in. outside	Driving wheel base .....	22 ft. 10 in.
Drivers, diameter .....	63½ in.	Total engine wheel base .....	45 ft. 3 in.
Weight on drivers .....	317,500 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	445,000 lb.	Tender capacity .....	16,000 gal. water, 4,912 gal. oil

One step beyond the Mountain type is the 4-10-2, a type original with the SP which purchased the first one, No. 5000, in April 1925. A week afterward the UP acquired its first one which was almost a duplicate of the SP engine but slightly lighter in weight. This was numbered 8000 and one more order was built for the UP, Nos. 8800-8808 to be used on the LA & SL line. The SP continued to buy more and subsequently acquired Nos. 5501-5015, Class SP-1, in 1925; 5016-5038, Class SP-2 in 1926 followed by the lot shown above. All of these 4-10-2's for both the SP and UP were of the Alco three-cylinder, non-compound type.

## STEAM LOCOMOTIVES: 4-12-2 Type



Union Pacific 4-12-2 (Union Pacific) Type Freight Locomotive, Class UP, Nos. 9063-9087. Built by the American Locomotive Company in 1930.

Tractive force .....	96,650 lb.	Weight of tender .....	308,800 lb.
Cylinders, diameter and stroke.....	27 in. x 31 in. inside 27 in. x 32 in. outside	Driving wheel base .....	30 ft. 8 in.
Drivers, diameter .....	.67 in.	Total engine wheel base .....	52 ft. 4 in.
Weight on drivers .....	372,000 lb.	Steam pressure .....	220 lb.
Total weight of engine .....	515,000 lb.	Tender capacity .....	18,000 gal., 22 tons

Unique in more ways than one are these 4-12-2 type locomotives which originated on the UP, hence the name. They have three simple cylinders, the middle one connected to a cranked axle on the second pair of driving wheels. The six pairs of drivers mounted in a rigid frame are unusual. Engines 9000-9014 were the first of this type and were built at Brooks Works in 1926. They were followed by Nos. 9015-9029 and 9700-9707 by the same works in 1928 and 9030-9054, 9063-9087 in 1929 and 1930 at Schenectady Works.



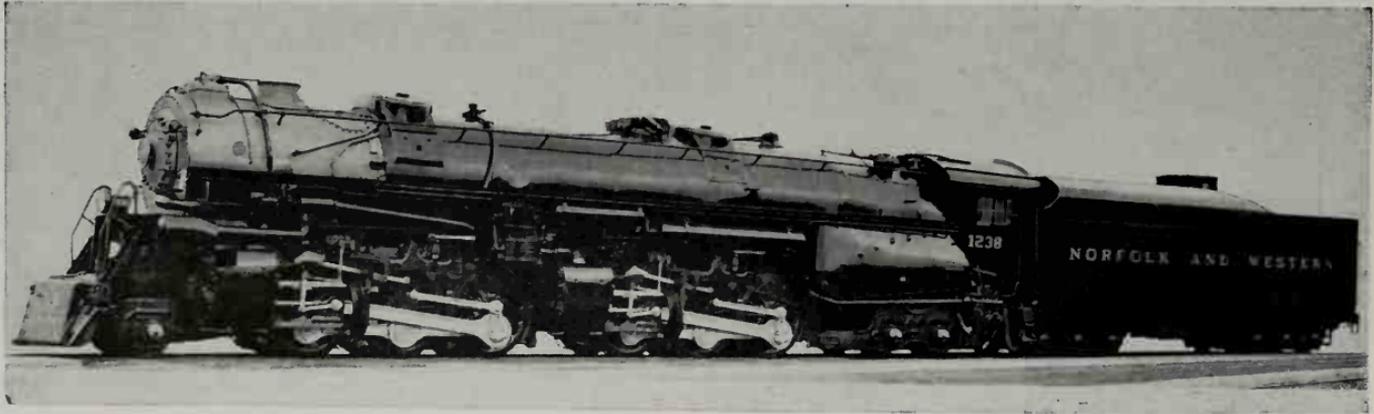
Chesapeake & Ohio 2-6-6-2 Type Compound Mallet Articulated Locomotive, Class H-6, Nos. 1300-1309. Built by The Baldwin Locomotive Works in 1949.

Traction force, simple .....	98,700 yb.
Traction force, compound .....	78,250 lb.
Cylinders, diameter and stroke.....	22 in. & 35 in. x 32 in.
Drivers, diameter .....	56 in.
Weight on drivers .....	366,700 lb.
Total weight of engine .....	434,900 lb.

Weight of tender, $\frac{3}{8}$ loaded .....	164,500 lb.
Driving wheel base, each .....	10 ft. 0 in.
Total engine wheel base .....	48 ft. 10 in.
Steam pressure .....	210 lb.
Tender capacity .....	12,000 gal., 16 tons

Duplicating a design of engine built in 1918, the C & O acquired ten more to operate on branch lines to numerous coal mines where sharp curvature of track and lighter rail predominates. These were among the last steam locomotives built for domestic use at the Baldwin Works.

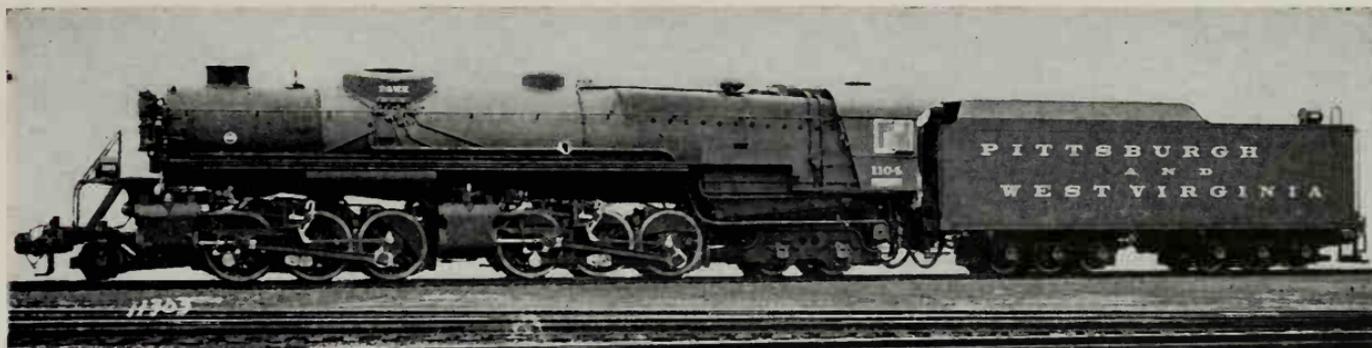
## STEAM LOCOMOTIVES: 2-6-6-4 Articulated Type



Norfolk & Western 2-6-6-4 Single-Expansion Articulated Locomotive, Class A, No. 1238, for fast freight service. Built by N. & W. Shops, Roanoke, Va. in 1949.

Traction force .....	114,000 lb.	Weight of tender .....	378,600 lb.
Cylinders, diameter and stroke (4) .....	24 in. x 30 in.	Driving wheel base .....	35 ft. 5 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	60 ft. 5 in.
Weight on drivers .....	432,350 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	573,000 lb.	Tender capacity .....	22,000 gal., 30 tons

This is a versatile type of locomotive being used for slow freight service in certain districts, for time freight service in other districts and for heavy passenger trains over practically all main line districts. In passenger service they run at sustained speeds in excess of 70 miles per hour. N & W now has 43 Class "A" engines in service numbered 1200-1242; built between the years 1936 and 1950. The latest lot is equipped with roller bearings including the side rods.

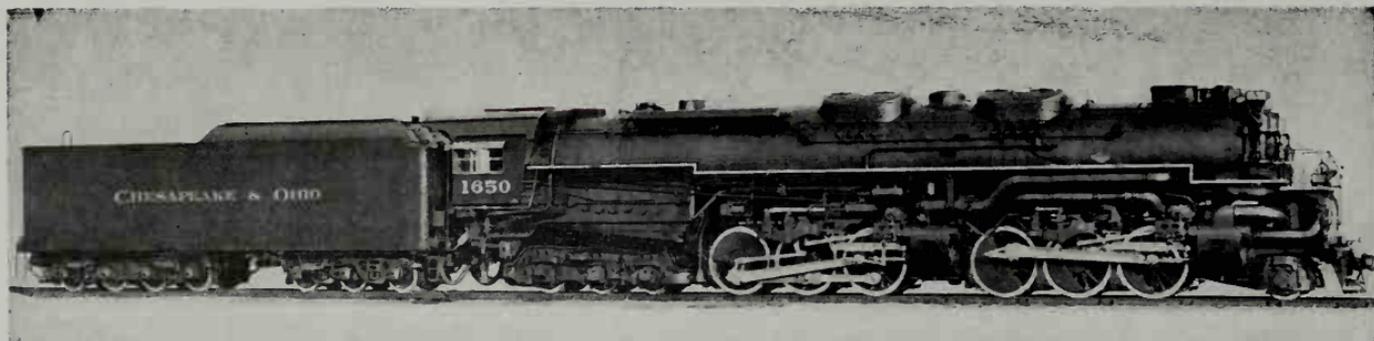


Pittsburgh & West Virginia 2-6-6-4 Type Single-Expansion Articulated Locomotive, Nos. 1100-1102 and 1103-1106. Built by The Baldwin Locomotive Works in 1934-1937.

Traction force .....	97,500 lb.	Weight of tender, loaded .....	377,600 lb.
Cylinders, diameter and stroke (4).....	23 in. x 32 in.	Driving wheel base, each .....	11 ft. 0 in.
Drivers, diameter .....	.63 in.	Total engine wheel base .....	55 ft. 8 in.
Weight on drivers .....	397,300 lb.	Steam pressure .....	225 lb.
Total weight of engine .....	528,040 lb.	Tender capacity .....	20,000 gal., 20 tons

A new wheel arrangement was created in 1934 when the P & WV wanted three new freight engines to haul the increased tonnage of iron ore, coal and steel passing over its rails. They were duplicated in 1937 by four more which began a style followed on the Norfolk and Western and the Seaboard Air Line. Twin smoke stacks, a Belpaire firebox and very large sandbox are distinctive points of these machines.

## STEAM LOCOMOTIVES: 2-6-6-6 Articulated Type



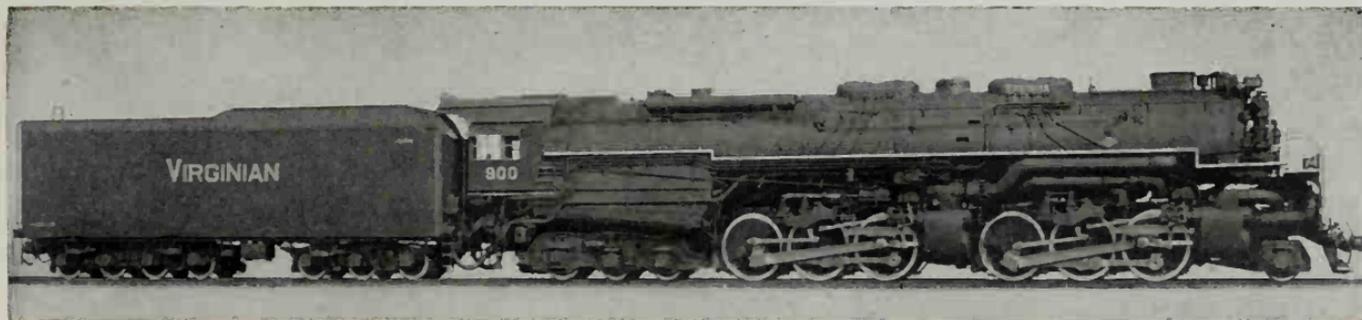
Chesapeake & Ohio 2-6-6-6 Type Single-Expansion Articulated Locomotive, Class H-8, Nos. 1600-1644 built in 1941 and 1645-1659 in 1949.  
Built by the Lima Locomotive Works, Inc.

Traction force .....	110,200 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	346,710 lb.
Cylinders, diameter and stroke (4).....	22½ in. x 33 in.	Driving wheel base, each .....	11 ft. 10 in.
Drivers, diameter .....	67 in.	Total engine wheel base .....	62 ft. 6 in.
Weight on drivers .....	504,000 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	751,830 lb.	Tender capacity .....	26,500 gal., 25 tons

Lima Locomotive Works said, "This locomotive is a unit of power. It illustrates a significant fact. Where the amount of power that can be packed into a single unit is important—where you want 6000, 8000, even 10,000 horsepower in one engine—the steam locomotive is unchallenged.

"We build such locomotives—steam locomotives like this that have developed 8,000 horsepower and can do more. We will continue to do so. They are fine pieces of machinery. Modern in every respect, they are establishing remarkable records for economy, reliability and low maintenance.

"Don't sell these steam giants short. They have their place—and in their place are unsurpassed."

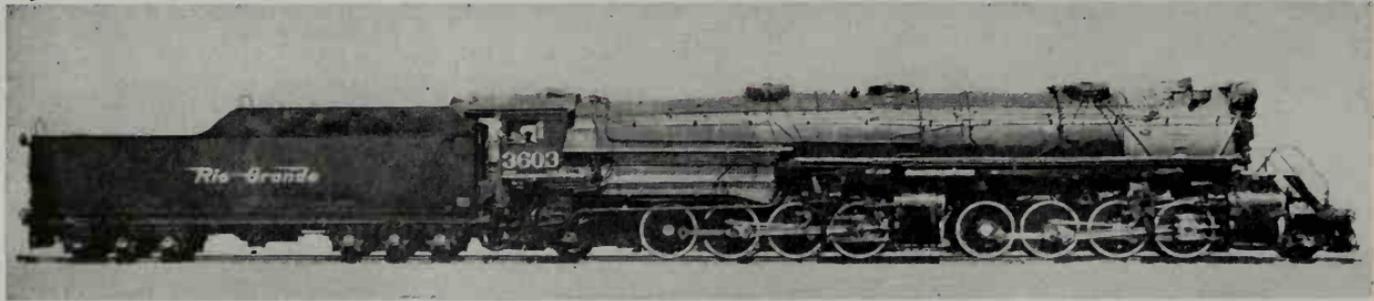


Virginia 2-6-6-6 Type Single-Expansion Articulated Locomotive; Class AG, Nos. 900-907. Built by the Lima Locomotive Works, Inc. in 1945.

Tractive force .....	110,200 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	351,500 lb.
Cylinders, diameter and stroke (4).....	22½ in. x 33 in.	Driving wheel base, each .....	11 ft. 10 in.
Drivers, diameter .....	67 in.	Total engine wheel base .....	62 ft. 6 in.
Weight on drivers .....	495,000 lb.	Steam pressure .....	260 lb.
Total weight of engine .....	753,000 lb.	Tender capacity .....	26,500 gal., 25 tons

These locomotives are practically duplicates of those of the same type used on the Chesapeake and Ohio and built in 1944. They are employed in the heavy coal hauling territory of Virginia and West Virginia. The successful six-wheel trailing truck as applied to the C & O engines in 1941 was the unique point on all these locomotives.

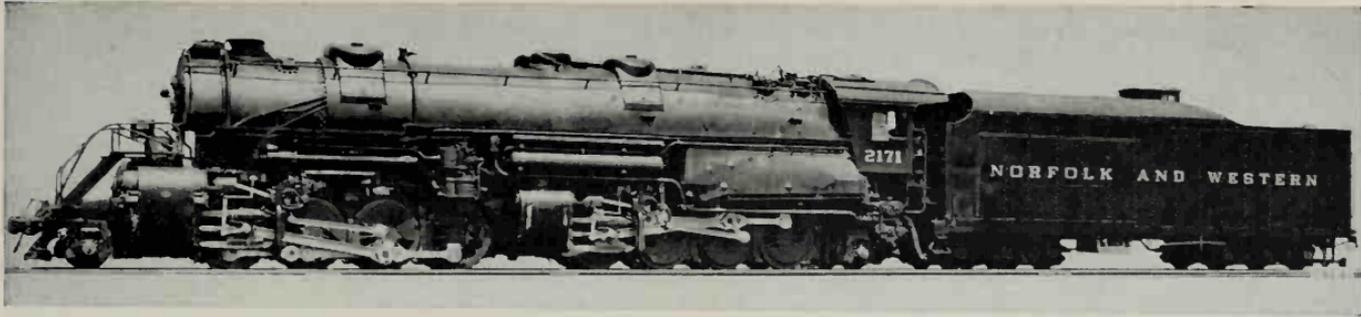
## STEAM LOCOMOTIVES: 2-8-8-2 Articulated Type



Denver & Rio Grande Western 2-8-8-2 Type Single-Expansion Articulated Locomotive, Class L-131, Nos. 3600-3609. Built by the American Locomotive Company in 1927.

Tractive force .....	131,800 lb.	Weight of tender .....	343,500 lb.
Cylinders, diameter and stroke (4) .....	26 in. x 32 in.	Driving wheel base .....	16 ft. 9 in.
Drivers, diameter .....	63 in.	Total engine wheel base .....	62 ft. 10 in.
Weight on drivers .....	559,500 lb.	Steam pressure .....	240 lb.
Total weight of engine .....	649,000 lb.	Tender capacity .....	180,000 gal., 30 tons

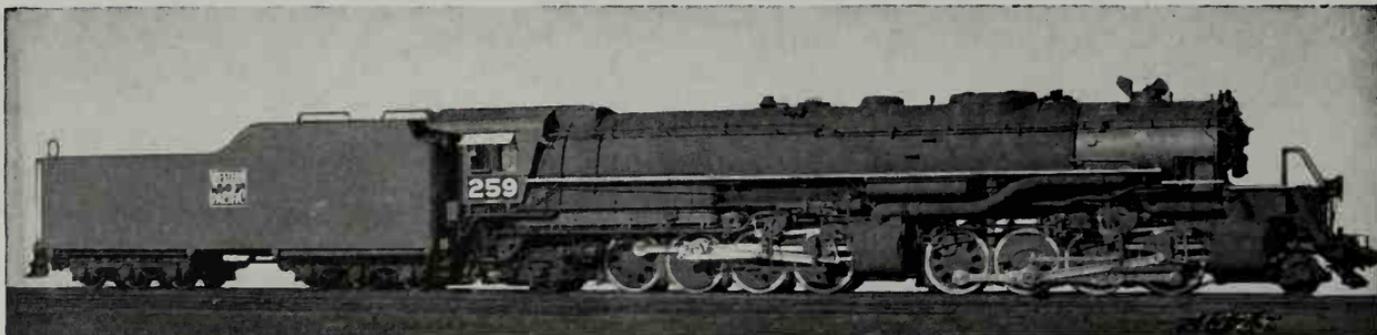
One of the most powerful steam locomotives operating in the Rocky Mountains is the D & RGW example shown above. This group of ten engines was constructed specially for road and pushing service on the Salida, Colorado division of the road. They use high-pressure steam in all four cylinders. When working in full gear, the steam valves cut-off at 70 per cent of the stroke. Another group of similar locomotives, Nos. 3610-3619, was built in 1930.



Norfolk & Western 2-8-8-2 Type Compound Mallet Articulated Locomotive, Class Y-6b, No. 2171. Built by the N. & W. at the Roanoke Shops in 1948.

Traction force, simple .....	152,206 lb.	Weight of tender, loaded .....	378,600 lb.
Traction force, compound .....	126,838 lb.	Driving wheel base, each .....	15 ft. 9 in.
Cylinders, diameter and stroke (4) ..	25 in. & 39 in. x 32 in.	Total engine wheel base .....	58 ft. 0 in.
Drivers, diameter .....	58 in.	Steam pressure .....	300 lb.
Weight on drivers .....	522,850 lb.	Tender capacity .....	22,000 gal., 30 tons
Total weight of engine .....	582,900 lb.		

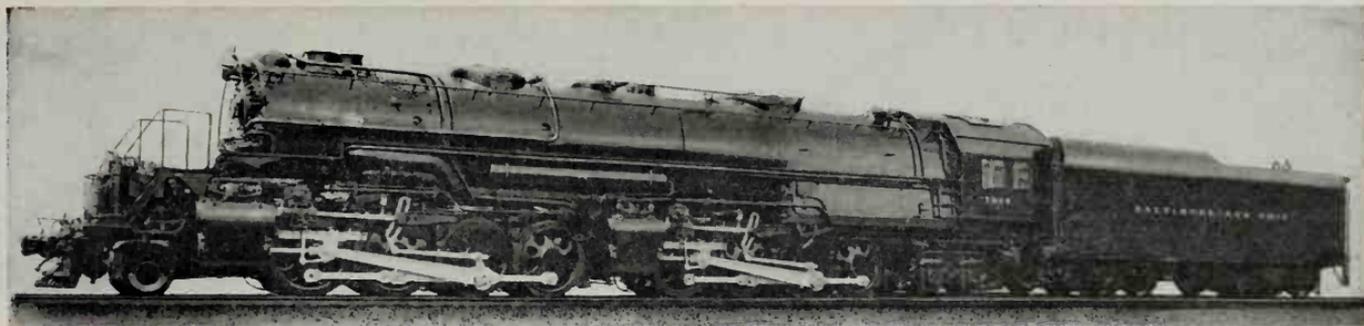
No diesels disturb the all-steam operated N & W rails. All trains are operated with modern steam locomotives of which the Y-6b is the largest and most powerful. These locomotives are assigned to both time and slow freight service in mountainous territory. Where operating conditions permit, they attain top speeds of 45 to 50 miles per hour with tonnage trains. The N & W is one of the few roads that have compound locomotives in service. The Y-6b Class engines are numbered 2171-2200; built from 1948 to 1952.



Western Pacific 2-8-8-2 Type Single-Expansion Articulated Locomotive, Class M-137-151, Nos. 251-260. Built by The Baldwin Locomotive Works in 1931 and 1939.

Tractive force .....	137,000 lb.	Driving wheel base, each .....	11 ft. 0 in.
Cylinders, diameter and stroke (4).....	26 in. x 32 in.	Total engine wheel base .....	61 ft. 5 in.
Drivers, diameter .....	.63 in.	Fuel .....	Oil
Weight on drivers .....	549,656 lb.	Steam pressure .....	235 lb.
Total weight of engine .....	663,100 lb.	Tender capacity .....	22,000 gal. water, 6,000 gal. oil
Weight of tender, loaded .....	403,350 lb.		

These ten engines are the heaviest and most powerful used on the Feather River Canyon Route. The first lot of six, Nos. 251-256 were constructed in 1931 and the second lot Nos. 257-260 came in 1939. The Feather River Canyon route is the scene of the California gold rush of 1849 and the WP climbs 4,629 feet, going from Oroville, nestling at the foot of the Sierra Nevadas to Portola, a distance of 117 miles. There are 33 tunnels on this section of the line but the maximum grade is not over one per cent. Seasonal, heavy fruit trains bound for eastern markets pass over this route as does the famous daily passenger train, the California Zephyr.

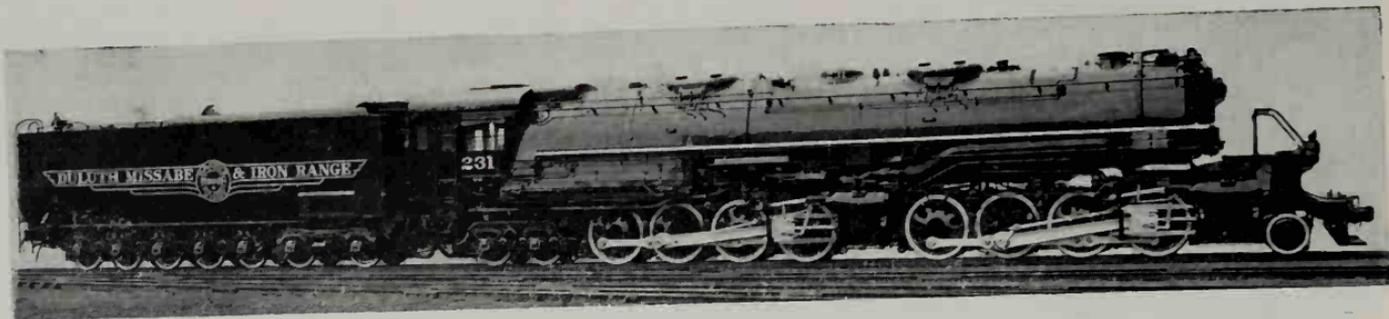


**Baltimore & Ohio 2-8-8-4 Type Single-Expansion Articulated Locomotive, Class EM-1, Road Nos. 7600-7629. Built by The Baldwin Locomotive Works in 1944-1945.**

Tractive force .....	115,000 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	304,000 lb.
Cylinders, diameter and stroke (+) .....	24 in. x 32 in.	Driving wheel base, each .....	11 ft. 2 in.
Drivers, diameter .....	64 in.	Total engine wheel base .....	65 ft. 2 in.
Weight on drivers .....	485,000 lb.	Steam pressure .....	235 lb.
Total weight of engine .....	628,700 lb.	Tender capacity .....	22,000 gal. water, 25 tons coal

Baltimore and Ohio 2-8-8-4's are the largest steam locomotives on the system, the first 20 of them were delivered in 1944 and the remaining ten in the following year. They are primarily used to haul, without a helper engine, coal trains from the mines in West Virginia to the eastern seaboard. Here they handle 2000-ton loads over the Allegheny Mountains with ease and at faster speeds than the older Mallets which they replaced.

## STEAM LOCOMOTIVES: 2-8-8-4 Articulated Type



Duluth, Missabe & Iron Range 2-8-8-4 Type Single-Expansion Articulated Locomotive, Class M-4, Nos. 228-237. Built by The Baldwin Locomotive Works in 1943.

Tractive force .....140,000 lb.  
 Cylinders, diameter and stroke (4) .....26 in. x 32 in.  
 Drivers, diameter .....63 in.  
 Weight on drivers .....565,000 lb.  
 Total weight of engine .....699,700 lb.  
 Weight of tender, loaded .....438,300 lb.

Driving wheel base .....17 ft. 3 in. and 17 ft. 3 in.  
 Total engine wheel base .....67 ft. 2 in.  
 Total engine and tender wheel base .....113 ft. 4 $\frac{3}{4}$  in.  
 Steam pressure .....240 lb.  
 Tender capacity .....25,000 gal. water, 26 tons coal

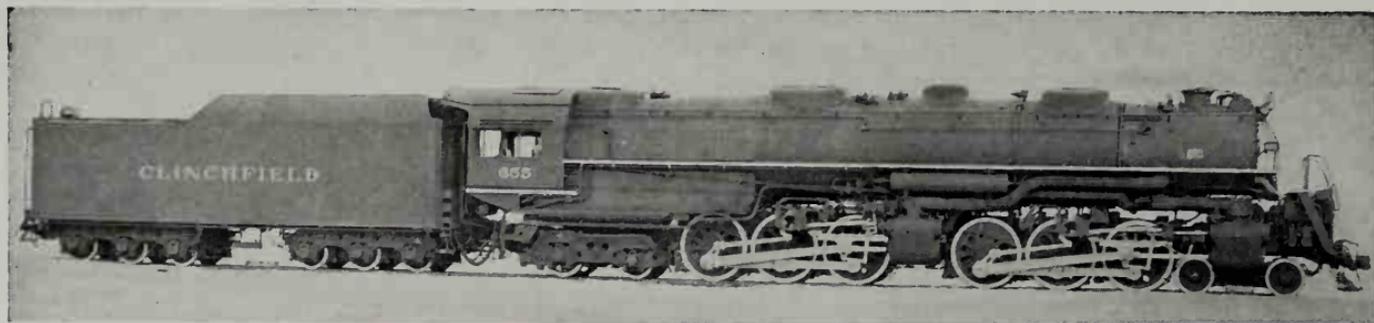
Two groups of these Yellowstones are at work on the DM & IR hauling heavy trains of iron ore from the mines at Hibbing, Minn., to the shipping docks at Duluth and Two Harbors. All steam power is used on this road and a recent acquisition is a large number of 2-10-4's from the Bessemer and Lake Erie. Class M-3 which is similar to those shown above are numbered 220-227 and also built by Baldwin in 1941.



Northern Pacific 2-8-8-4 (Yellowstone) Type Locomotive, Class Z-5, Nos. 5001-5011. Built by The Baldwin Locomotive Works in 1930.

Tractive force .....	140,000 lb.	Weight of tender .....	402,000 lb.
Tractive force with booster .....	153,400 lb.	Driving wheel base .....	16 ft. 9 in.
Cylinders, diameter and stroke (4) .....	26 in. x 32 in.	Total engine wheel base .....	66 ft. 8 in.
Drivers, diameter .....	63 in.	Steam pressure .....	250 lb.
Weight on drivers .....	558,900 lb.	Tender capacity .....	21,200 gal., 27 tons
Total weight of engine .....	723,400 lb.		

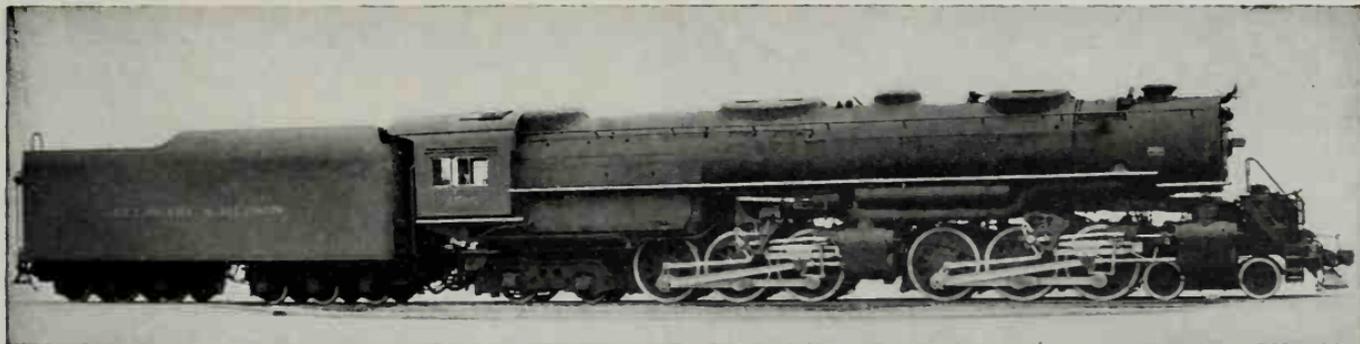
The first locomotive having a 2-8-8-4 wheel arrangement was built by Alco in 1929, NP No. 5000. It was duplicated in the following year by 11 more as shown. These engines were built to operate in the "bad lands" of North Dakota and were the largest steam-propelled units ever constructed prior to 1929. Like many NP locomotives, they have very large fireboxes to burn Rosebud coal, a species of lignite found in Montana. Their fireboxes are 9 ft. 6 in. wide x 22 ft. 2 in. in length.



Clinchfield 4-6-6-4 Type Single-Expansion Articulated Locomotive, Class E-1, Nos. 650-657, and Class E-2, Nos. 660-663. Built by the American Locomotive Company in 1943 and 1947.

Tractive force .....	101,120 lb.	Weight of tender, $\frac{3}{8}$ loaded .....	316,900 lb.
Cylinders, diameter and stroke (4) .....	22 in. x 32 in.	Driving wheel base, each .....	12 ft. 2 in.
Drivers, diameter .....	.69 in.	Total engine wheel base .....	59 ft. 11 in.
Weight on drivers .....	420,000 lb.	Steam pressure .....	265 lb.
Total weight of engine .....	607,000 lb.	Tender capacity .....	22,500 gal., 26 tons

Comparatively few locomotives of the Challenger type are owned by eastern roads. The Clinchfield has 18, built at three different times. The first two lots are as shown and the third was acquired from the D & RGW in 1947 and are numbered 670-675, Class E-3. This last lot is a duplicate of some UP engines built for the D & RGW during the Second World War. The classes E-1 and E-2 resemble D & H 4-6-6-4's built in 1940, but are heavier and more powerful. They are used in general freight and coal service.

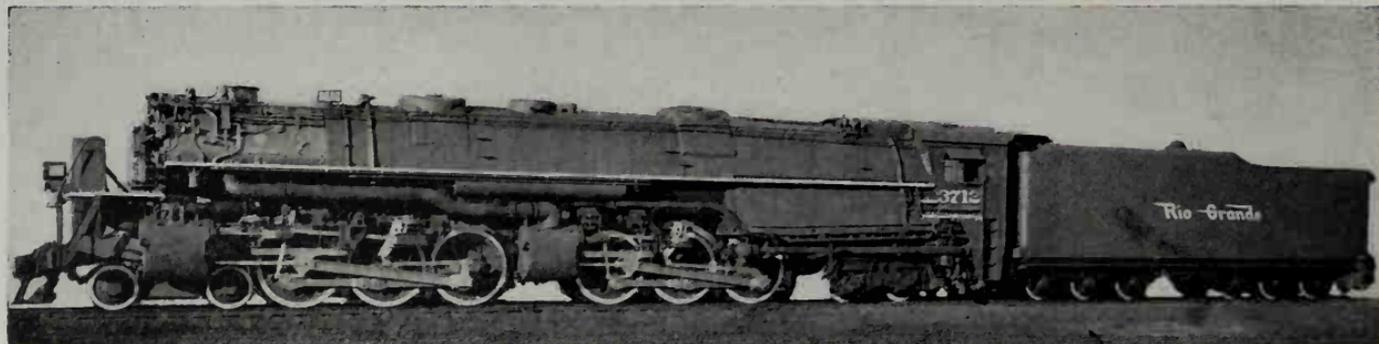


Delaware & Hudson 4-6-6-4 Type Single-Expansion Articulated Locomotive for fast freight, Class J-95, Nos. 1500-1519. Built by the American Locomotive Company in 1940.

Tractive force (85 per cent) .....	94,400 lb.	Total engine wheel base .....	59 ft. 11 in.
Cylinders (4) .....	20½ in. x 32 in.	Steam pressure .....	285 lb.
Drivers, diameter .....	69 in.	Tender capacity, water .....	22,500 gal.
Weight on drivers .....	406,500 lb.	Tender capacity, coal .....	26 tons
Total weight of engine .....	597,000 lb.	Tender weight, two-thirds capacity .....	310,200 lb.
Driving wheel base, each .....	12 ft. 2 in.		

A new wheel arrangement was chosen when the D & H ordered these locomotives. To obtain the desired tractive force to operate heavy freight trains in mountainous territory it was necessary to resort to the double engine articulated type. Mallet articulated engines were in use on this road as early as 1908, but the newer locomotives outweigh the slower and more powerful ones by 15 tons. Twenty of the J-95 Class were built as shown above, 15 more, Nos. 1520-1533 in 1942 and the last five Nos. 1535-1539 in 1946.

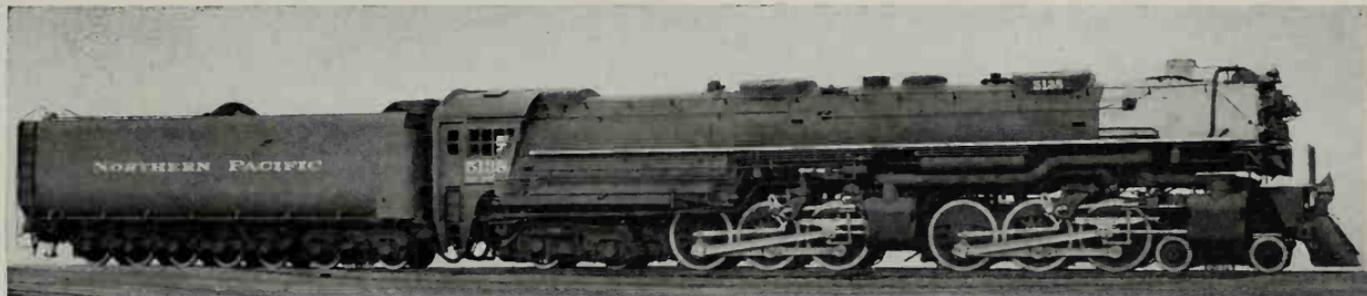
## STEAM LOCOMOTIVES: 4-6-6-4 Articulated Type



Denver and Rio Grande Western 4-6-6-4 Type Single-Expansion Articulated Locomotive, Nos. 3700-3714, Class L-105. Built by The Baldwin Locomotive Works in 1933 and 1941.

Traction force .....	105,000 lb.	Weight of tender .....	320,000 lb.
Cylinders, diameter and stroke (4) .....	23 in. x 32 in.	Driving wheel base .....	35 ft. 6 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	61 ft. 6 in.
Weight on drivers .....	435,472 lb.	Steam pressure .....	255 lb.
Total weight of engine .....	641,700 lb.	Tender capacity .....	20,000 gal., 26 tons

Following a trend begun by the UP in 1936, the D & RGW acquired three groups of 4-6-6-4's. The first group included engines 3700-3709 built by Baldwin in 1938 and the second Nos. 3710-3714 as shown here. They were practically alike differing only slightly in weights and heating surfaces. These locomotives are closely akin to several groups built for the NP with a vestibuled cab. A further lot of six locomotives Nos. 3800-3805 was built by the American Locomotive Company in 1943. These were Class L-97 and were duplicates of engines 3950-3969 on the UP. Ownership of this last lot was vested in the United States Government and they were sold in 1947 to the Clinchfield.



Northern Pacific 4-6-6-4 Type Single-Expansion Articulated Locomotive for freight service, Class Z-8, Nos. 5130-5149. Built by the American Locomotive Company in 1943 and 1944.

Tractive force .....	106,900 lb.	Driving wheel base, each .....	12 ft. 4 in.
Cylinders (4) .....	23 in. x 32 in.	Total engine wheel base .....	62 ft. 2 in.
Drivers, diameter .....	70 in.	Steam pressure .....	260 lb.
Weight on drivers .....	444,000 lb.	Tender capacity, water .....	25,000 gal.
Total weight of engine .....	644,000 lb.	Tender capacity, coal .....	27 tons

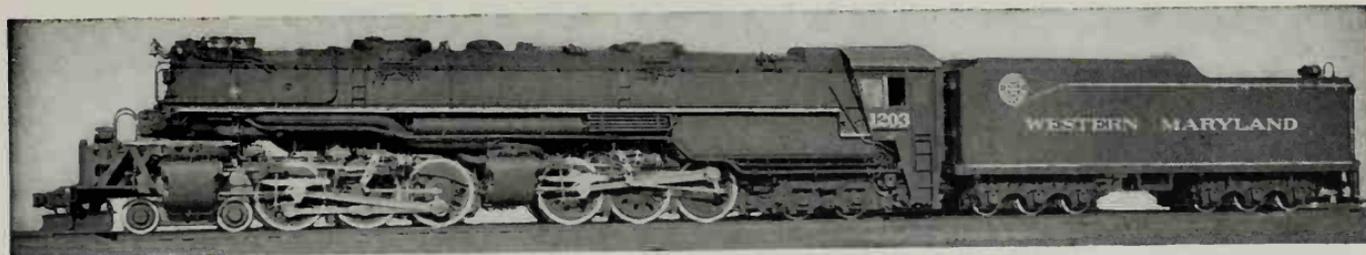
The "Main Street of the Northwest" pioneered in the development and use of the 4-6-6-4 wheel arrangement late in 1936 when it received the first of 21 engines of this Z-6 type from Alco. Then came six more, Nos. 5121-5126 in 1941, followed by two orders for Class Z-8 which is shown. Nos. 5130-5141 were built in 1943 and 5142-5149 in 1944. These high-speed freight engines proved to be so capable that they were duplicated on a number of other roads. The NP still has a large number of steam locomotives in use as it owns its own coal mines providing abundant fuel.



Union Pacific 4-6-6-4 (Challenger) Type Single-Expansion Articulated Locomotive for fast freight service. Road Nos. 3950-3969. Built by the American Locomotive Company in 1942.

Traction force .....	97,350 lb.	Weight of tender, $\frac{2}{3}$ loaded .....	348,000 lb.
Cylinders, diameter and stroke (4) .....	21 in. x 32 in.	Driving wheel base, each .....	12 ft. 2 in.
Drivers, diameter .....	.69 in.	Total engine wheel base .....	60 ft. 4 $\frac{1}{4}$ in.
Weight on drivers .....	406,200 lb.	Steam pressure .....	280 lb.
Total weight of engine .....	634,500 lb.	Tender capacity .....	25,000 gal., 28 tons

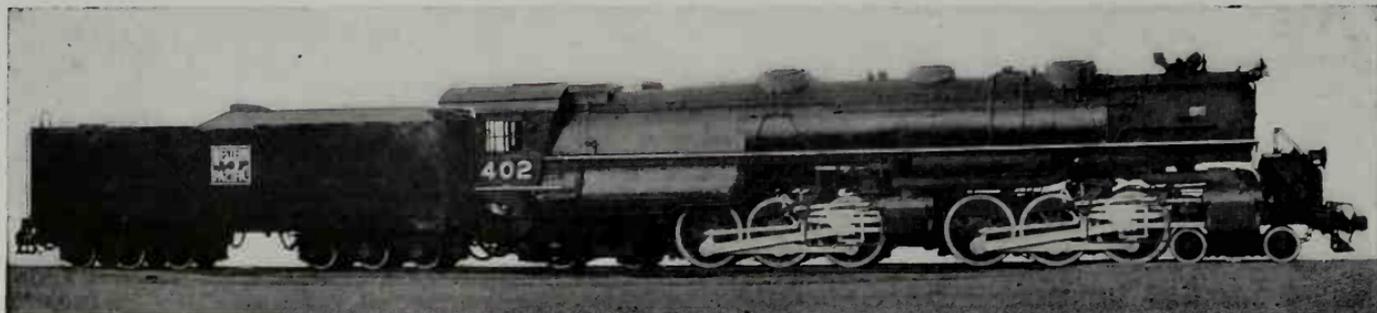
The 4-6-6-4 Challenger type locomotive originated on the UP and the first ones of this type to be completed were numbered 3900-3914, Class CSA-1 in August 1936. A year later 25 more were received from Alco, Nos. 3915-3939, Class CSA-2. All of the foregoing were eventually renumbered 3800-3839. The next lot of this popular type was numbered 3950-3969, built in 1942, then came Nos. 3975-3999 in 1943 and finally Nos. 3930-3949 which were constructed in 1944.



Western Maryland 4-6-6-4 Type Single-Expansion Articulated Locomotive, Class M-2, Nos. 1201-1212. Built by The Baldwin Locomotive Works in 1940-1941.

Traction force, engine .....	95,500 lb.	Weight of tended, $\frac{2}{3}$ loaded .....	338,250 lb.
Cylinders, diameter and stroke (4) .....	22 in. x 32 in.	Driving wheel base, each .....	12 ft. 0 in.
Drivers, diameter .....	69 in.	Total engine wheel base .....	60 ft. 4 in.
Weight on drivers .....	402,266 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	601,000 lb.	Tender capacity .....	22,000 gal., 30 tons

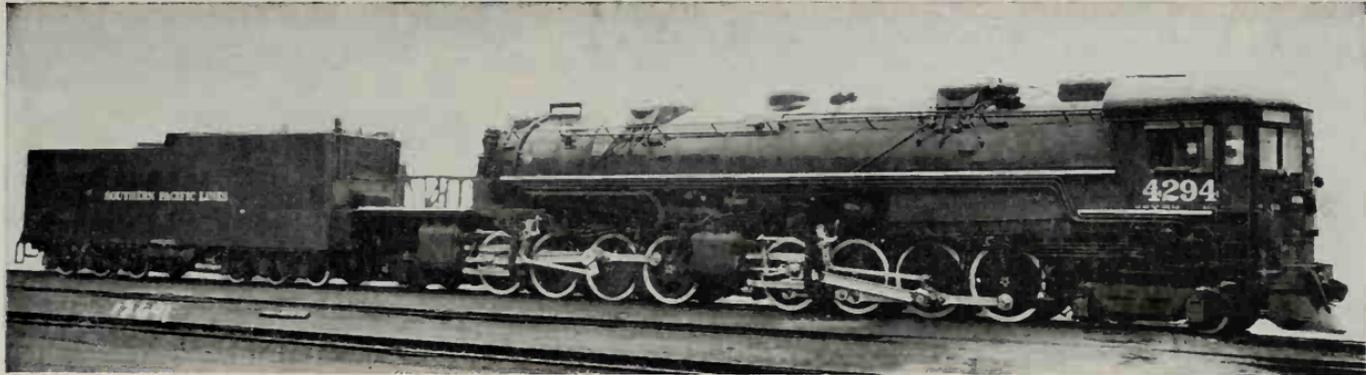
The heavy grades on the WM between Hagerstown, Maryland and Connellsville, Pennsylvania are capably overcome by the 12 4-6-6-4's which can handle 11,000-ton freight trains on the 1.75 per cent grade in a climb of 23 miles between Cumberland and Colmar. Previous locomotives in this service were 20 Decapods which had about the same tractive force as the articulated engines but the latter has greater speed ranging as high as 50 miles per hour.



Western Pacific 4-6-6-4 Type Single-Expansion Articulated Locomotive, Nos. 401-407. Built by the American Locomotive Company in 1938.

Traction force, engine .....	99,600 lb.	Weight of tender .....	491,500 lb.
Cylinders, diameter and stroke (4) .....	22 in. x 32 in.	Driving wheel base, each .....	12 ft. 2 in.
Drivers, diameter .....	70 in.	Total engine wheel base .....	59 ft. 11 in.
Weight on drivers .....	399,000 lb.	Steam pressure .....	265 lb.
Total weight of engine .....	590,000 lb.	Tender capacity .....	22,000 gal., 25 tons

In common with a number of roads operating in the western mountain areas, the WP purchased seven Challenger type locomotives for fast freight service. They are being superseded by diesels.

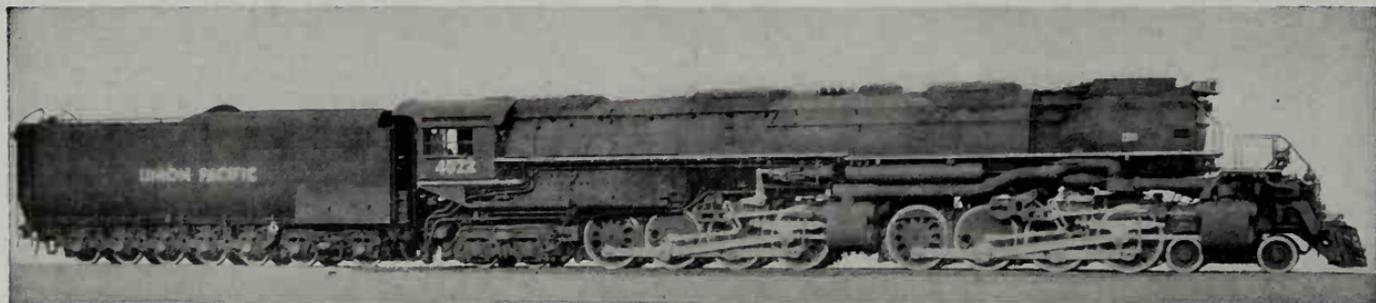


Southern Pacific 4-8-8-2 Type Single-Expansion Articulated Locomotive for passenger and freight service, Class AC-12, Nos. 4275-4294. Built by The Baldwin Locomotive Works in 1944.

Tractive force .....	124,300 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	315,500 lb.
Cylinders, diameter and stroke (4) .....	24 in. x 32 in.	Driving wheel base, each .....	16 ft. 11 in.
Drivers, diameter .....	63 $\frac{1}{2}$ in.	Total engine wheel base .....	67 ft. 3 in.
Weight on drivers .....	531,700 lb.	Steam pressure .....	250 lb.
Total weight of engine .....	657,900 lb.	Tender capacity .....	22,000 gal. water, 6,100 gal. oil

Backward-running Mallets is about the best description of these Leviathans of the rails on the SP. One hundred ninety-five have been built, all by The Baldwin Locomotive Works and operate on various parts of the system in the heaviest train service. It is not unusual to see one of them pulling into Los Angeles with a long string of sleeping cars or another headed for the high Sierras with a heavy load of reefers tied to her tender. As the engineer is located up ahead he has an unobstructed view of the track. There are eight separate classes of these 4-8-8-2's; Nos. 4100-4294 AC-4 to AC-8, and AC-10 to AC-12. Class AC-9 is a conventional locomotive of the same wheel arrangement but has the cab next to the tender.

## STEAM LOCOMOTIVES: 4-8-8-4 Articulated Type



Union Pacific 4-8-8-4 Type Single-Expansion Articulated Freight Locomotive, Nos. 4015-4024. Built by the American Locomotive Company in 1944.

Tractive force .....	135,375 lb.	Weight of tender, $\frac{3}{4}$ loaded .....	348,000 lb.
Cylinders, diameter and stroke (4) .....	23 $\frac{3}{4}$ in. x 32 in.	Driving wheel base .....	18 ft. 3 in.
Drivers, diameter .....	68 in.	Total engine wheel base .....	47 ft. 3 in.
Weight on drivers .....	545,000 lb.	Steam pressure .....	300 lb.
Total weight of engine .....	772,000 lb.	Tender capacity .....	25,000 gal., 28 tons

Big Boys, the affectionate name given these engines by the railroad men could outpull at high speed any steam locomotive yet built. They are as huge and rugged as the Rocky Mountain country through which they operate. Two groups of them have been constructed, both by Alco. The first group consists of 15 locomotives, Nos. 4000-4014, completed in 1941, and the second group as above. The extremely large firebox and 14-wheel tender are notable features of these locomotives.

# DIESEL-ELECTRIC and ELECTRIC LOCOMOTIVES

## A.A.R. Standard System of Nomenclature for Axle and Truck Arrangement of Locomotives Having Electric Transmission

Diesel-electric locomotives usually consisting of two trucks, with either four or six wheels, are designated according to the axle system adopted by the Mechanical Division of the Association of American Railroads which also applies to straight electric locomotives. These types are not named beyond the service intended such as road-passenger and freight, switcher, transfer, general service or kindred names.

The A. A. R. nomenclature system used for diesel-electric locomotives was adopted in 1932 and revised in 1949. It is similar to the German or Continental system. The Whyte system of locomotive classification, which is commonly used for steam locomotives is frequently applied to diesel-electric locomotives. However, this system is not as descriptive of locomotives having electric transmission as the A.A.R. Standard System because the symbols do not distinguish between motor-driven and idler axles.

### A.A.R. Standard System

Starting at the front end of locomotives designed for single end operation or at either end of locomotives built for double end operation, the wheels in any wheel base, the truck connections for the individual units, and the connections between such units, are designated in their consecutive order. Letters represent the driving axles, numerals the guiding or carrying axles, and signs the absence or presence of connections between trucks.

1. The number of adjacent driving axles (a) in a rigid wheel base, or (b) on a truck, is represented by a letter selected according to its alphabetical order.

Examples: A—One driving axle.

B—Two driving axles.

C—Three driving axles.

D—Four driving axles, etc.

2. The number of adjacent idle (non-driving) axles in

a rigid wheel base or a truck is represented by an Arabic numeral:

Examples: 1—One idle axle.

2—Two idle axles, etc.

3. Trucks having both driving and idle axles in the same rigid wheel base are designated by a letter and a numeral placed together in proper order.

Examples: 1A—Truck with one idle and one driving axle.

1B—Truck with one idle and two adjacent driving axles.

A1A—Truck with one idle and two non-adjacent driving axles.

Additional examples of various truck wheel arrangements are shown in diagram form on the following page.

4. Plus (+) signs are used to indicate.

(a) Articulated joints between trucks under a single unit locomotive.

(b) Permanent connections between units of multiple unit locomotives, such as drawbars.

5. Minus (−) signs are used to indicate:

(a) Separation between swivel type trucks, not articulated.

(b) Separation between a rigid base of any group of driving wheels and adjacent guiding or carrying trucks not connected through an articulated joint.

(c) Readily separated connection, such as A.A.R. couplers, between units of multiple unit locomotives.

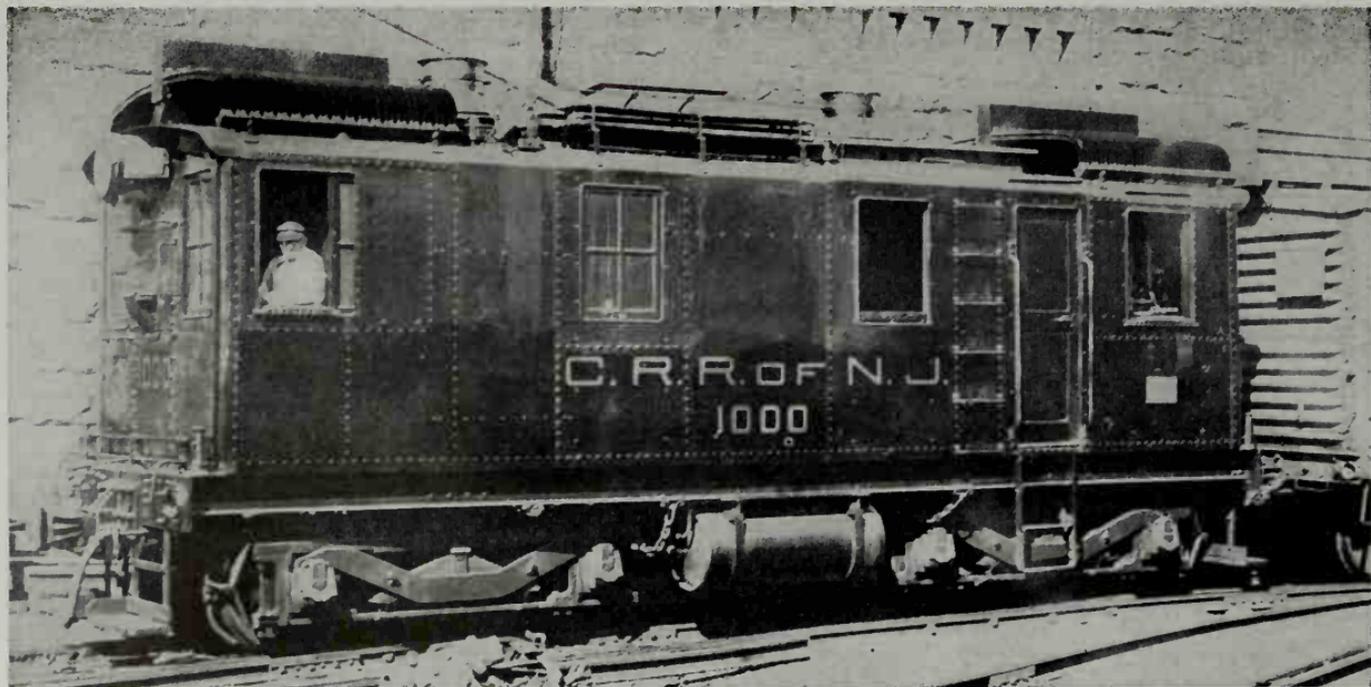
6. (a) When two or more similar motive power units with automatic couplers between units, each with the same or symmetrical wheel arrangement, are operated in multiple as a locomotive, the number of units is indicated by a numeral preceding the classification of one unit put in parenthesis.

(b) When two or more units with dissimilar wheel arrangements are operated in multiple, the wheel arrangement of each unit is shown in consecutive order, starting from the front of the locomotive, setting off each unit by parenthesis with plus or minus signs between the units to represent articulated or automatic couplers respectively, to indicate connections between the units.

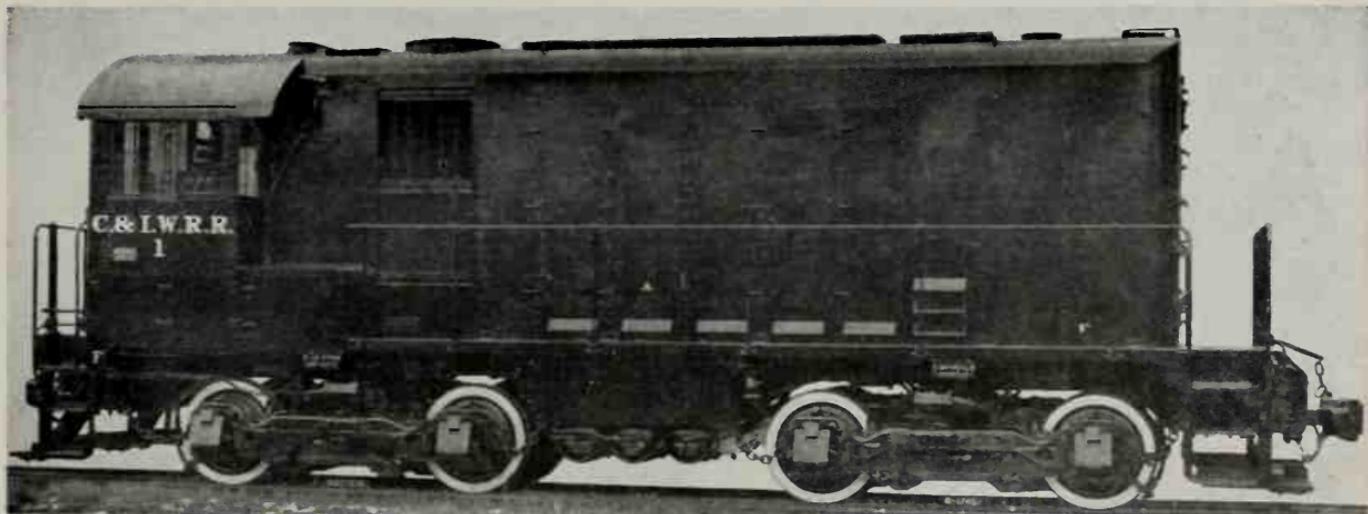
7. Examples of designating wheel arrangements of single and multiple units with various types of trucks, and connections between trucks and units, are shown in diagram form on the next page.

DESCRIPTION OF TRUCK OR LOCOMOTIVE	DIAGRAM OF AXLE AND TRUCK ARRANGEMENT	DESIGNATION
Two Wheel Truck. (a) With driving axle	⊙	A
(b) With idler axle	○	I
Four Wheel Truck. (a) With all driving axles	⊙⊙	B
(b) With all idler axles	○○	2
(c) With leading idler axle	○⊙	1A
(d) With leading driver axle	⊙○	1A1
Six Wheel Truck. (a) With all driving axles	⊙⊙⊙	C
(b) With all idler axles	○○○	3
(c) With center idler axle	⊙○⊙	A1A
(d) With leading idler axle	○⊙⊙	1B
Eight Wheel Truck. (a) With all driving axles	⊙⊙⊙⊙	D
(b) With all idler axles	○○○○	4
(c) With leading and trailing idler axles	○⊙⊙○	1B1
(d) With leading and trailing driving axles	⊙○⊙⊙	A2A
(e) With leading and second idler axles	○⊙⊙⊙	2B
(f) With second idler axle	⊙○⊙⊙	A1B
Single Unit Locomotive. (a) With two swivel 4 wheel trucks, all driving axles	∟⊙⊙-⊙⊙	B-B
(b) With two swivel 6 wheel trucks, center idler axle	∟⊙○⊙-⊙○⊙	A1A-A1A
(c) With 4 wheel guiding truck and two 4 wheel trucks, having all driving axles, with articulated connection between driving trucks	∟○⊙⊙-⊙⊙+⊙⊙	2-B+B
(d) With 2 wheel guiding truck and one 6 wheel truck, having all driving axles	∟○-⊙⊙⊙⊙	1-D
(e) With 4 wheel guiding truck at each end of locomotive, and two 6 wheel trucks, having all driving axles and with articulated connection between driving trucks	∟○⊙⊙-⊙⊙⊙⊙+⊙⊙⊙⊙-○⊙	2-D+D-2
Multiple Unit Locomotive. (a) Three units, each with two 4 wheel swivel trucks, having all driving axles, units connected by automatic coupler	∟⊙⊙-⊙⊙-⊙⊙⊙-⊙⊙⊙-⊙⊙⊙-⊙⊙⊙	3 (B-B)
(b) Two units, each with two 6 wheel swivel trucks, having center axle idler and units connected by automatic coupler	∟⊙○⊙-⊙○⊙-⊙○⊙⊙-⊙○⊙⊙	2 (A1A-A1A)
(c) Two units, each with two 4 wheel swivel trucks, all driving axles with articulated connection between units	∟⊙⊙-⊙⊙⊙+⊙⊙⊙-⊙⊙	(B-B)+(B-B)
(d) Four units, each with two 4 wheel swivel trucks, all driving axles with articulated connection between 1 <sup>st</sup> and 2 <sup>nd</sup> , and between 3 <sup>rd</sup> and 4 <sup>th</sup> units and automatic couplers between 2 <sup>nd</sup> and 3 <sup>rd</sup> units	∟⊙⊙-⊙⊙⊙+⊙⊙⊙-⊙⊙⊙-⊙⊙⊙-⊙⊙⊙+⊙⊙⊙⊙	2[(B-B)+(B-B)]
Three unit locomotive with 4 wheel guiding truck on leading and trailing units with all units having two 4 wheel driving trucks, with articulated connection between driving trucks and permanent drawbars between units	∟○⊙⊙-⊙⊙⊙+⊙⊙⊙+⊙⊙⊙⊙+⊙⊙⊙⊙-○⊙	(2-B+B)+(B-B)+(B-B-2)

Axle and truck arrangements of locomotives having electric transmission.



Central Railroad of New Jersey No. 1000, 300-Hp. Switching Locomotive built by American Locomotive Company-General Electric Company and Ingersoll-Rand Company in December 1924 and placed in regular service October 1925, the first oil-electric locomotive to achieve that honor on a railroad in the United States. Total weight 124,000 lb., starting force 37,200 lb., continuous one-hour rating 16,800 lb. Total wheel base 24 ft. 2 in. Diameter of driving wheels 36 in.



Chicago & Illinois Western No. 1, 600-Hp. Switching Locomotive built by American Locomotive Company-General Electric Company in November 1935. This is the type of locomotive with the high, narrow hood prevalent on Alco-GE switchers that was built prior to 1939.

## American Locomotive Company—General Electric Company, 660-Hp. Switching Locomotive

## General Characteristics, Weights and Dimensions

## 660-Hp. Switching Locomotive

Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	6 cyl., 4-cyle, in line
Cylinders, bore and stroke, in. ....	12½ by 13
Horsepower .....	660
Generator:	
Make .....	G.E.
Type .....	GT-552-A
Traction motors:	
Number .....	4
Make .....	G.E.
Type .....	GE-731
Journal hearings:	
Type .....	Plain
Size .....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft.-in.:	
Truck .....	8-0
Locomotive .....	30-0
Distance between truck centers, ft.-in. ....	22-0
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-0
Height .....	14-4
Length over coupler pulling faces .....	44-5 3/4
Weights in working order, lb.:	
Locomotive, total, approx. ....	199,000
On drivers, approx. ....	199,000
Minimum radius curvature, ft. ....	50
Supplies (total capacity):	
Lubricating oil, gal. ....	80
Fuel oil, gal. ....	635
Engine cooling water, gal. ....	220
Sand, cu. ft. ....	27
Air brake schedule .....	14-EL
Gear ratio .....	75:16
Starting tractive force, lb. (30 per cent adhesion) ....	59,700
Maximum speed, m.p.h. ....	60

## Partial List of Railroads Using Alco-G.E.

## 660-Hp. Switching Locomotive

Alameda Belt Line	Minneapolis & St. Louis
Ann Arbor	Minnesota Transfer
Atchison, Topeka & Santa Fe	Missouri Pacific
Baltimore & Ohio	Nashville, Chattanooga & St. Louis
Belt Railway of Chicago	Newburgh & South Shore
Birmingham Southern	New Jersey, Indiana & Illinois
Boston & Albany	New Orleans & Lower Coast
Boston & Maine	New York Central
Buffalo Creek	New York, Chicago & St. Louis
Canadian National	New York, New Haven &
Canadian Pacific	Hartford
Central of Georgia	Northern Pacific
Central R.R. of New Jersey	Northern Pacific Terminal
Chicago & Eastern Illinois	Pennsylvania
Chicago & Northwestern	Port Huron & Detroit
Chicago Great Western	Portland Terminal
Chicago, Milwaukee, St. Paul &	Pullman R.R.
Pacific	Reading
Chicago, Rock Island & Pacific	River Terminal
Chicago, St. Paul, Minneapolis &	Seaboard Air Line
Omaha	South Buffalo
Delaware, Lackawanna & Western	Southern Pacific
Delray Connecting	Southern
Des Moines Union	South Omaha Terminal
Detroit & Mackinac	Spokane, Portland & Seattle
East St. Louis Junction	St. Louis & O'Fallon
Elgin, Joliet & Eastern	Tennessee Central
Erie	Tennessee Coal Iron & R.R.
Essex Terminal	Terminal Rwy. Assn. of St. Louis
Graysonia, Nashville & Ashdown	Texas City Terminal
Green Bay & Western	Texas Pacific—Missouri Pacific
Gulf, Mobile & Ohio	Terminal
Iowa Transfer	Toledo, Angola & Western
Kansas City Terminal	Union
Lehigh Valley	Wabash
Long Island	Washington, Idaho & Montana
Louisville & Nashville	West Pittston-Exeter
Maine Central	Western Maryland
Massena Terminal	Western Pacific



Boston & Maine No. 1173; 660 Hp. Switching Locomotive built by Alco-G.E. in September 1950.

Many of these 660-hp. switchers are employed at industrial and manufacturing plants including:

Armco Steel Corp.  
Brooks Scanlon Inc.  
Davison Chemical Corp.  
Donner-Hanna Coke Corp.  
Great Lakes Steel Corp.  
Hammond Lumber Co.

John Morrell & Co.  
Lone Star Steel Co.  
Republic Steel Corp.  
Sheffield Steel Corp.  
Solvay Process Co.  
Studehaker Corp.

Texas Oil Co.  
Timken Roller Bearing Co.  
Truax-Traer Coal Co.  
U. S. Govt.  
Weirton Steel Co.

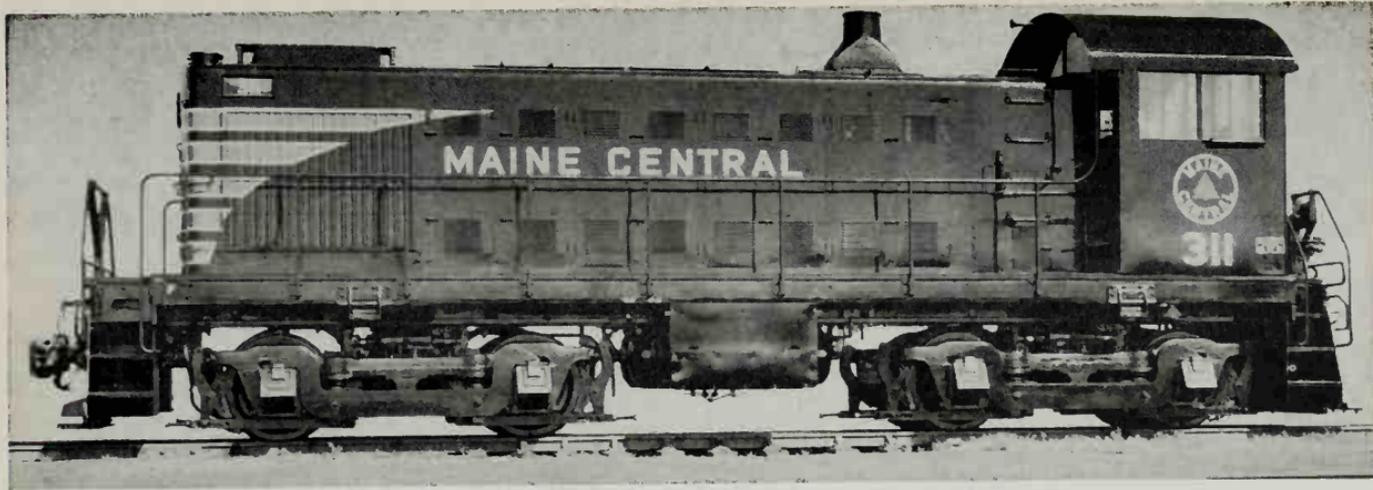
## American Locomotive Company—General Electric Company, 1,000-Hp. Switching Locomotive

## General Characteristics, Weights and Dimensions

Track gauge, ft.-in. ....	4-8½
Wheel arrangement .....	0-4-4-0
No. of engines per cab .....	One
Horsepower available for traction .....	1,000
Type .....	Friction
Journal bearings:	
Size .....	6½ by 12
Wheels:	
Driving, pairs .....	Four
Idling, pairs .....	0
Diameter, in. ....	40
Wheel base:	
Truck, ft.-in. ....	8
Locomotive, total, ft.-in. ....	30-6
Underframe construction .....	Welded steel
Weights, in working order, lb.:	
Locomotive, total .....	230,000
On drivers .....	230,000
Light .....	220,000
Truck, complete .....	35,000
Maximum overall dimensions, ft.-in.:	
Width .....	10-0
Height .....	14-6
Length, inside knuckles .....	45-5¾
Minimum radius curvature .....	50 ft.
Supplies (total capacity):	
Lubricating oil, gal. ....	80
Fuel oil, gal. ....	635
Engine cooling water, gal. ....	240
Sand, cu. ft. ....	27
Air brake schedule .....	14 EL
Gear ratio .....	75:16
Continuous-rating t.f. lb. ....	34,000
Continuous-rating speed, m.p.h. ....	8
Maximum speed, m.p.h. ....	60
Starting traction force (at 30 per cent adhesion), lb. ....	69,000

Partial List of Railroads Using Alco-G.E.  
1,000-Hp. Switching Locomotive

Akron, Canton & Youngstown	Illinois Terminal
Alton	International Great Northern
Atchison, Topeka & Santa Fe	Kansas City Terminal Ry.
Atlantic Coast Line	Lehigh and New England
Baltimore & Ohio	Lehigh Valley
Belt Ry. of Chicago	Long Island
Birmingham Southern	Longview, Portland & Northern
Bingham & Garfield	Los Angeles Junction Ry.
Boston & Maine	Louisville & Nashville
Canadian Pacific	Maine Central
Central of Georgia	Manufacturers Ry.
Central R. R. of New Jersey	Massena Terminal R.R.
Central Vermont	Mexican Govt.
Chesapeake & Ohio	Minneapolis & St. Louis
Chicago and North Western	Minneapolis, St. Paul & Sault
Chicago, Burlington & Quincy	Ste. Marie
Chicago Great Western	Minnesota Transfer Ry.
Chicago, Milwaukee, St. Paul & Pacific	Missouri Pacific
Chicago, Rock Island & Pacific	Monongahela Connecting
Chicago, St. Paul, Minneapolis & Omaha	Nashville, Chattanooga & St. Louis
Delaware & Hudson	Newburgh & South Shore
Delaware, Lackawanna & Western	New York Central
Delray Connecting	New York, Chicago & St. Louis
Denver & Rio Grande Western	New York, New Haven & Hartford
Donora Southern	New York, Susquehanna & Western
Elgin, Joliet & Eastern	Northeast Oklahoma
Erie	Northern Pacific
Fairport, Painesville & Eastern	Northern Pacific Terminal
Fonda, Johnstown & Gloversville	Ontario Northland
Galveston, Houston & Henderson	Oregon Electric
Grand Trunk Western	Patapsco & Back Rivers
Great Northern	Pennsylvania
Green Bay & Western	Peoria & Pekin Union
Gulf, Mobile & Ohio	Philadelphia, Bethlehem & New
Houston Belt & Terminal	England
Illinois Northern	Pittsburgh & Lake Erie
	Portland Terminal
	Reading



**Maine Central No. 311; 1,000-Hp. Switching Locomotive built by American Locomotive Company-General Electric Company in August 1950.**

Richmond, Fredericksburg & Potomac	Terminal Rwy. Assn. of St. Louis
Seaboard Air Line	Texas Pacific—Missouri Pacific
Southern	Terminal
Southern Pacific	Toledo Terminal
South Buffalo	Union
Spokane, Portland & Seattle	Union Pacific
State Belt of California	Wabash
Staten Island	Western Maryland
St. Louis-San Francisco	Western Pacific
Tennessee, Coal, Iron & R.R.	Youngstown & Northern

**Industrial and Manufacturing Companies Who Use the Alco-GE  
1,000-hp. Switcher include the following:**

Aluminum Co. of Canada	Michigan Limestone and Chemical Co.	Solvay Process Co.
Carnegie Illinois Steel Corp.	New Jersey Zinc Co.	Truax-Traer Coal Co.
Kaiser Co., Inc.	Oliver Iron Mining Co.	Weirton Steel Co.
Kaiser Steel Corp.	Shafer Brothers Logging Co.	Wheeling Steel Corp.

## American Locomotive Company—General Electric Company, 1,000-Hp. Road Switching Locomotives

## Alco-G.E. 1,000-Hp. Road Switching Locomotive

## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol	0-4-4-0
A.A.R. symbol	B-B
Engines:	
Number per unit	One
Type	6 cyl., 4-cycle, in line, supercharged
Cylinders, bore and stroke, in.	12½ by 13
Horsepower, each engine	1,000
Generator:	
Make	G-E
Type	GT-553-A
Traction motors:	
Number	4
Make	G.E.
Type	GE-731-D
Journal bearings:	
Type	Plain
Size	6½ by 12
Wheels, diameter, in.	40
Wheel base, ft.-in.:	
Truck	9-4
Locomotive	40-4
Distance between truck centers, ft.-in.	31-0
Maximum dimensions, over-all, ft.-in.:	
Width	10-0
Height	14-6
Length over coupler pulling faces	54-11¾
Weights in working order, lb.:	
Locomotive, total, approx.	240,000
On drivers, approx.	240,000
Minimum radius curvature, ft.	100
Supplies (total capacity):	
Lubricating oil, gal.	80
Fuel oil, gal.:	
With steam generator	800
Without steam generator	1,600

Engine cooling water, gal.	240
Train heating water, gal. (when supplied)	800
Sand, cu. ft.	27
Air brake schedule	14-EL
Gear ratio	75:16
Starting tractive force, lb. (30 per cent adhesion)	72,000
Continuous rating, tractive force, lb.	34,000
Maximum speed, m.p.h.	60

## Partial List of Railroads Using Alco-G.E.

## 1,000-Hp. Road Switching Locomotive

Akron, Canton & Youngstown	Illinois Terminal
Alabama, Tennessee & Northern	Kansas City Southern
Alaska	Lake Erie, Franklin & Clarion
Alton	Lake Superior & Ishpeming
Ann Arbor	Long Island
Atchison, Topeka & Santa Fe	Midland Continental
Atlanta & St. Andrews Bay	Minneapolis, St. Paul &
Atlantic & East Carolina	-Sault Ste. Marie
Bamberger	Minneapolis & St. Louis
Central R.R. of New Jersey	New York Central
Chicago & Eastern Illinois	New York, New Haven & Hartford
Chicago & Northwestern	New York, Susquehanna & Western
Chicago & Western Indiana	Northern Pacific
Chicago, Milwaukee, St. Paul &	Pennsylvania
Pacific	Rutland
Chicago, Rock Island & Pacific	St. Marys
Duluth, Southern Shore & Atlantic	Spokane International
Genesee & Wyoming	Spokane, Portland & Seattle
Great Northern	Tennessee Coal Iron & R. R.
Gulf, Mobile & Ohio	Washington Terminal

## Some Industrial and Manufacturing Companies have these road switchers in service including:

General Electric Co.    A. E. C. Hanford    E. I. Dupont de Nemours



Atchison, Topeka & Santa Fe No. 2395; 1,000-Hp. Road Switching Locomotive built by American Locomotive Company-General Electric Company in November 1949.



Alton No. 55, Class DSA; 1,000-Hp. Road Switching Locomotive built by American Locomotive Company-General Electric Company in Nov. 1945.

## DIESEL-ELECTRIC LOCOMOTIVES: Road Switching

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### American Locomotive Company—General Electric Company, 1,600-Hp. Road Switching Locomotives

#### General Characteristics, Weights and Dimensions

Model .....	RS-3
Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	12 cyl., 4-cycle, vee
Model .....	Series 244
Cylinders, bore and stroke, in. ....	9 by 10½
Horsepower available for traction .....	1,600
Generator:	
Make .....	G.E.
Type .....	GT-581
Traction motors:	
Number .....	4
Make .....	G.E.
Type .....	GE-752
Journal bearings:	
Type .....	Plain
Size, in. ....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft.-in.:	
Truck .....	9-4
Locomotive .....	39-4
Distance between truck centers, ft.-in. ....	30-0
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-0¼
Height .....	14-5¾
Length over coupler pulling faces .....	55-11¾
Weights in working order, lb.:	
Locomotive, total, approx. ....	240,000
On drivers, approx. ....	240,000
Minimum radius curvature, deg. (with train) .....	21
Supplies (total capacity):	
Lubricating oil, gal. ....	200
Fuel oil, gal. ....	800
Engine cooling water, gal. ....	250
Train heating water, gal. (when supplied) .....	800
Sand, cu. ft. ....	28

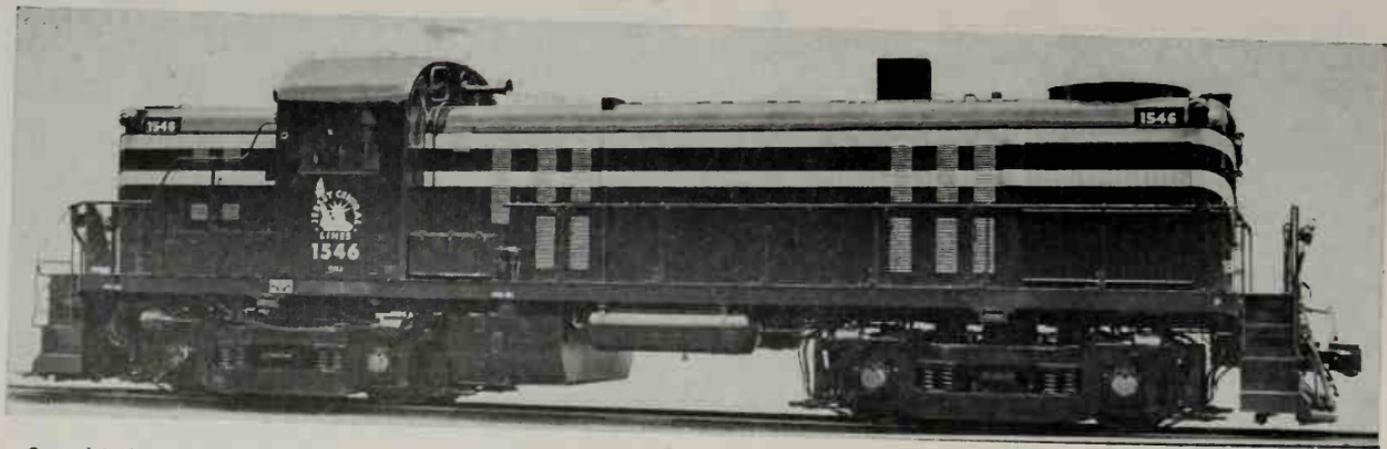
Air brake schedule .....				6-SL
Gear ratio .....	74:18	65:19	64:19	62:21
Continuous rating, tractive force, lb. ....	52,500	46,000	43,000	38,000
Maximum speed, m.p.h. ....	65	75	80	92

#### Partial List of Railroads Using Alco-G.E. 1,500-Hp. and 1,600 Hp.

##### Road Switching Locomotives

Atchison, Topeka & Santa Fe	Litchfield & Madison
Alton & Southern	Louisville & Nashville
Atlantic & Danville	Macon, Dublin & Savannah
Belt Railway of Chicago	Maine Central
Birmingham Southern	Minneapolis, St. Paul & Sault Ste. Marie
Blue Ridge	Minnesota Transfer
Boston & Maine	Missouri-Illinois
Canadian Pacific	Missouri-Kansas-Texas
Carolina & North Western	New York Central
Central of Georgia	New York, New Haven & Hartford
Central R.R. of New Jersey	Ontario Northland
Central R.R. of Pennsylvania	Piedmont & Northern
Chesapeake & Ohio	Reading
Chicago & Northwestern	Roberval Saguenay
Chicago Great Western	Rutland
Chicago, Indianapolis & Louisville	Seaboard Air Line
Chicago, Milwaukee, St. Paul & Pacific	Southern
Chicago, Rock Island & Pacific	Spokane, Portland & Seattle
Danville & Western	St. Louis & Belleville Electric
Delaware & Hudson	St. Louis-San Francisco
Delaware, Lackawanna & Western	St. Louis South-Western
Denver & Rio Grande Western	Tennessee Central
Detroit, Joliet & Eastern	Terminal R.R. of St. Louis
Detroit & Mackinac	Texas & Pacific
Erie	Texas Pacific—Missouri Pacific
Great Northern	Terminal
Green Bay & Western	Toledo, Peoria & Western
Gulf, Mobile & Ohio	Union Pacific
Lake Superior & Ishpeming	Union
Lehigh & Hudson River	Utah
Lehigh & New England	Western Maryland
Lehigh Valley	Youngstown & Northern

## DIESEL-ELECTRIC LOCOMOTIVES: Alco-G.E.



Central Railroad of New Jersey No. 1546, Class FPD-46; 1,600-Hp. Road Switching Locomotive built by American Locomotive Company-General Electric Company in June 1950.



New York, New Haven and Hartford No. 0400; 1,500-Hp. Diesel-Electric Freight Locomotive, A Unit built by Alco-G.E. in May 1947.

Total wheel base .....36 ft. 6 in.  
Rigid wheel base .....9 ft. 4 in.

Total weight, working order .....223,000 lb.  
Tractive force, starting .....55,700 lb.

This type of locomotive preceded the 1,600-hp. Freight and Passenger Unit now being built by Alco-G.E. It differs slightly in the dimension and weights as shown above. Sometimes the A units are operated in pairs and at other times with B units shown on the following page.



New York, New Haven and Hartford No. 0450; 1,500-Hp. Diesel-Electric Freight Locomotive, B Unit built by Alco-G.E. in May 1947.

Total wheel base .....36 ft. 6 in.  
Rigid wheel base .....9 ft. 4 in.

Total weight, working order .....230,000 lb.  
Tractive force, starting .....57,500 lb.

B units have no cab control and are operated only in conjunction with the A units. This one is the mate of the one shown on the preceding page.

American Locomotive Company—General Electric Company: 1,600-Hp. Freight and Passenger Locomotives

**Alco-GE 1,600-Hp. Dual-Purpose Locomotive**  
**General Characteristics, Weights and Dimensions**

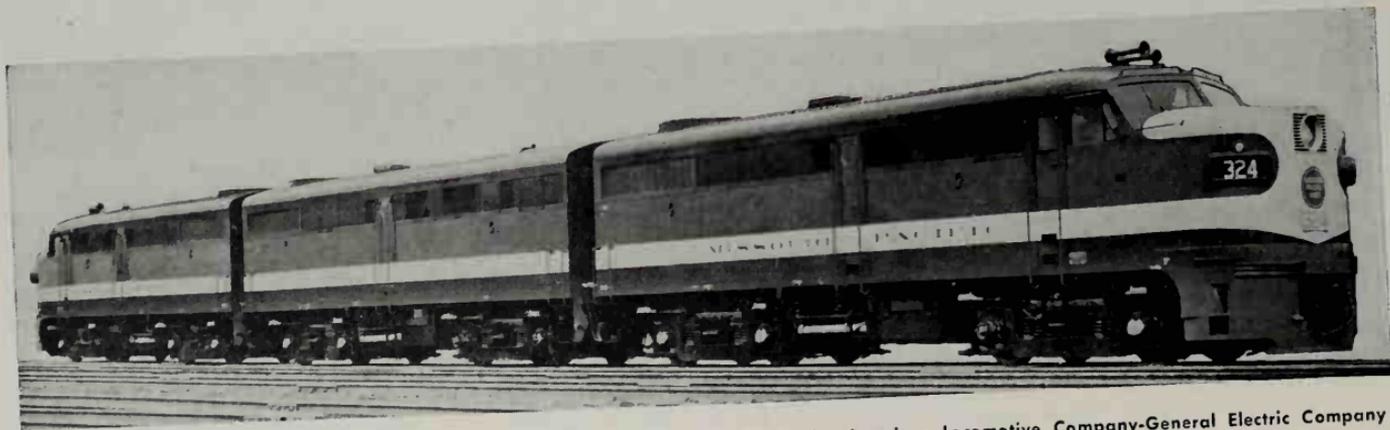
Model .....	FA-2
Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	12 cyl., 4-cycle, vee
Model .....	Series 244
Cylinders, bore and stroke, in. ....	9 by 10½
Horsepower available for traction .....	1,600
Generator:	
Make .....	G.E.
Type .....	GT-581
Traction motors:	
Number .....	4
Make .....	G.E.
Type .....	G.E.-752
Journal bearings:	
Type .....	Roller
Size, in. (diam.) .....	6½
Wheels, diameter, in. ....	40
Wheel base, ft.-in.:	
Truck .....	9-4
Locomotive .....	38-6
Distance between truck centers, ft.-in. ....	29-2
Maximum dimensions, over-all, ft.-in. ....	A Unit B Unit
Width .....	10-6½ 10-6½
Height .....	14-10 14-6
Length over coupler pulling faces .....	53-6 52-8

Weights in working order, lb.:	
Locomotive, total, approx. ....	240,000
On drivers, approx. ....	240,000
Minimum radius curvature, deg. ....	21
Supplies (total capacity):	
Lubricating oil, gal. ....	200
Fuel oil, gal. ....	1,200
Engine cooling water, gal. ....	250
Train heating water, gal. (when supplied) .....	1,200
Sand, cu. ft. ....	22
Air brake schedule .....	24RL
Gear ratio .....	74:18 65:18 64:19 62:21
Continuous rating, tractive force, lb. ...	52,500 46,000 43,000 38,000
Maximum speed, m.p.h. ....	65 75 80 92

**Partial List of Railroads Using Alco-G.E. 1,500-Hp. Road Freight and 1,600-Hp. Dual-Purpose (Freight and Passenger) Locomotives**

Ann Arbor	Missouri-Kansas-Texas
Baltimore & Ohio	Missouri Pacific
Canadian National	New York Central
Canadian Pacific	New York, New Haven & Hartford
Chicago, Rock Island & Pacific	Pennsylvania
Erie	Reading
Great Northern	Seaboard Air Line
Kewaunee, Green Bay & Western	Sonora-Baja California
Gulf, Mobile & Ohio	Southeastern Rwy. of Mexico
Lehigh & New England	Spokane, Portland & Seattle
Lehigh Valley	St. Louis-San Francisco
Louisville & Nashville	Tennessee Central
Mexican Govt.	Union Pacific
Minneapolis, St. Paul & Sault	Wabash
Ste. Marie	Western Maryland

## DIESEL-ELECTRIC LOCOMOTIVES: Alco-G.E.



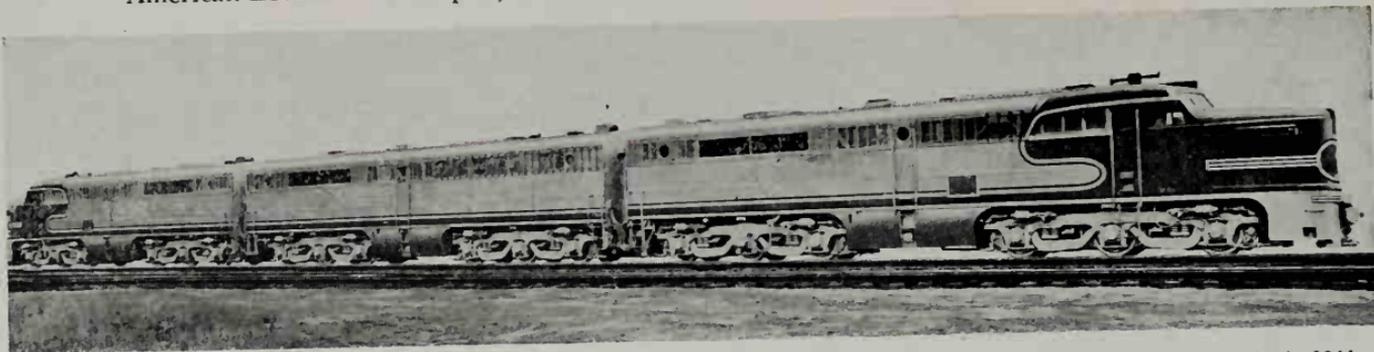
Missouri Pacific Nos. 323, 322-B & 324, Three Unit 4,800-Hp. Freight Locomotive built by American Locomotive Company-General Electric Company in May 1950.



Western Maryland Nos. 301 & 302, Class DF-19; Two Unit 3,200-Hp. Freight Locomotive built by American Locomotive Company-General Electric Company in January 1951.

## DIESEL-ELECTRIC LOCOMOTIVES: Alco-G.E.

American Locomotive Company—General Electric Company, 2,000-Hp. Passenger Locomotive



Atchison, Topeka & Santa Fe No. 51, Three Unit 6,000-Hp. Passenger Locomotive built by American Locomotive Co.-General Electric Co. in 1944.  
General Characteristics, Weights and Dimensions

Track gauge, ft.-in. ....	4-8½	Maximum dimensions, over-all, ft.-in. ....	10-6½
Wheel arrangement .....	0-6-6-0	Width .....	14-11
No. of engines per unit .....	One	Height .....	14-11
Horsepower available for traction .....	2,000	Length, inside knuckles:	
Journal bearings:		A Unit .....	65-8
Type .....	Roller	B Unit .....	63-6
Size .....	6½ by 2	Minimum radius curvature .....	21 deg.
Wheels:		Supplies (total capacity):	
Driving, pairs .....	Four	Lubricating oil, gal. ....	230
Idling, pairs .....	Two	Fuel oil, gal. ....	1,200
Diameter, in. ....	40	Engine cooling water, gal. ....	300
Wheel base, ft.-in.:		Heating boiler water, gal. ....	1,000
Truck .....	15-6	Sand, cu. ft. ....	22
Locomotive, total .....	49-8	Air Brake schedule .....	24RL
Underframe construction .....	Welded steel	Gear ratio .....	64:19 62:21 60:23 58:25
Weights in working order, lb.:		Continuous-rating t.f. lb. ....	35,000 30,500 27,000 24,000
Locomotive, total .....	306,000	Continuous-rating speed, m.p.h. ....	17 20 23 26
On drivers .....	204,000	Maximum safe speed, m.p.h. ....	80 90 100 117
Light .....	280,000	Starting tractive force (at 25 per cent adhesion), lb. ....	51,000
Truck, complete .....	59,000		

This was the first type of high-speed passenger locomotive built by Alco-G.E. It has been succeeded by the present model shown on the following pages.

American Locomotive Company—General Electric Company, 2,250-Hp. Passenger Locomotive

**General Characteristics, Weights and Dimensions**

Type:		
Whyte symbol	0-6-6-0	
A.A.R. symbol	A1A-A1A	
Engines:		
Number per unit	One	
Type	16 cyl., 4 cycle, vee, turbocharged	
Cylinders, bore and stroke, in.	9 by 10½	
Horsepower available for traction	2,250	
Generator:		
Make	G.E.	
Type	GT-566	
Traction motors:		
Number	4	
Make	G.E.	
Type	GE-752	
Journal bearings:		
Type	Roller	
Diameter, in.	6½	
Wheels, diameter, in.	40	
Wheel base, ft.-in.:		
Truck	15-6	
Locomotive	40-8	
Distance between truck centers, ft.-in.	34-2	
Maximum dimensions, over-all, ft.-in.	A Unit	B Unit
Width	10-6½	10-6½
Height	14-11	14-8
Length over coupler pulling faces	65-8	63-6
Weights in working order, lb.:		
Locomotive, total, approx.	300,000	300,000
On drivers, approx.	202,000	200,000
Minimum radius curvature, deg.		21

Supplies (total capacity):

Lubricating oil, gal.	230
Fuel oil, gal.	1,200
Engine cooling water, gal.	300
Train heating water, gal.	1,000
Sand, cu. ft.	22
Air brake schedule	24-RL
Gear ratio	64:19 62:21 60:23 58:25
Continuous rating, tractive force, lb.	43,000 38,000 33,500 29,500
Maximum speed, m.p.h.	80 90 100 117

**Partial List of Railroads Using Alco-G.E.**

**2,000-Hp. and 2,250-Hp. Passenger Locomotives**

Atchison, Topeka & Santa Fe	New York Central
Chicago and Northwestern	New York, Chicago & St. Louis
Chicago, Rock Island & Pacific	New York, New Haven & Hartford
Denver & Rio Grande Western	Pennsylvania
Erie	Pittsburgh & Lake Erie
Gulf, Mobile & Ohio	Southern Pacific
International Great Northern	Southern
Lehigh Valley	St. Louis-Southwestern
Missouri-Kansas-Texas	Union Pacific
Missouri Pacific	Wabash

Locomotives of this type are used as single "A" Units or in combinations of "A" and "B" Units to form 4,500-Hp., 6,750-Hp. and 9,000-Hp. Locomotives.



Erie No. 856, Class PA-20; 2,000-Hp. Passenger Locomotive built by American Locomotive Company-General Electric Company in 1949.



New York Central No. 4208, Class DPA-4a; 2,250-Hp. Passenger Locomotive built by American Locomotive Company-General Electric Company in June 1950.

## DIESEL-ELECTRIC LOCOMOTIVES: General Electric

## General Electric 44 Ton Yard and Road Service Locomotive

## General Characteristics, Weights and Dimensions

Track, gauge, ft.-in. ....	4-8½
Wheel arrangement .....	0-4-4-0
No. of engines per cab .....	Two
Horsepower available for traction .....	350
Journal bearings:	
Type .....	Friction
Size, in. ....	5 by 9
Wheels:	
Driving, pairs .....	Four
Idling, pairs .....	0
Diameter, in. ....	33
Wheel base, ft.-in.:	
Truck .....	6-10
Locomotive, between truck centers .....	18-9
Underframe construction .....	Welded fabricated
Weights in working order, lb.:	
Locomotive, total .....	89,000
On drivers .....	89,000
Light .....	86,000
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-1
Height .....	13-3
Length, inside knuckles .....	33-5
Minimum radius curvature, with train .....	125 ft.
Supplies (total capacity):	
Lubricating oil, gal. ....	50
Fuel oil, gal. ....	250
Engine cooling water, gal. ....	40
Sand, cu. ft. ....	8

Air brake schedule .....	14-EL
Gear ratio .....	11.25:1
Continuous- rating t.f., lb. ....	13,000
Continuous-rating speed, m.p.h. ....	Seven
Maximum safe-speed, m.p.b. ....	35
Starting tractive force (at 30 per cent adhesion), lb. ....	26,400

## Partial List of Railroads Using the 70 Ton Switching Locomotive

Atchison, Topeka & Santa Fe  
 Boston & Maine  
 Canadian National  
 Chicago, Burlington & Quincy  
 Chicago, Milwaukee, St. Paul & Pacific  
 Erie  
 Delaware, Lackawanna & Western  
 Denver & Rio Grande Western  
 Great Northern  
 Illinois Central  
 Maine Central  
 Minneapolis & St. Louis  
 Missouri Pacific  
 New York, New Haven & Hartford  
 Northern Pacific  
 Pennsylvania  
 St. Louis-San Francisco  
 Southern Pacific  
 Southern  
 Union Pacific



New York, Chicago & St. Louis No. 90, 350-Hp. Switching Locomotive built by General Electric Company.

DIESEL-ELECTRIC LOCOMOTIVES: General Electric



Missouri Pacific No. 811; 350-Hp. Switching Locomotive built by General Electric Company.

## General Electric 70-Ton Road Switching Locomotive

## General Characteristics, Weights and Dimensions

Track gauge, ft.-in. ....	4-8½
Wheel arrangement .....	0-4-4-0
No. of engines per cab .....	One
Horsepower available for traction .....	600
Journal bearings:	
Type .....	Friction
Size, in. ....	5½ by 10
Wheels:	
Driving, pairs .....	Four
Idling, pairs .....	0
Diameter, in. ....	36
Wheel base, ft.-in.:	
Truck .....	6-10
Locomotive, total .....	26-3
Underframe construction .....	Welded
Weights in working order, lb.:	
Locomotive, total .....	139,000
On drivers .....	139,000
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-0
Height .....	13-5¾
Length, inside knuckles .....	37-0
Minimum radius curvature, locomotive alone .....	75 ft.

## Supplies (total capacity):

Fuel oil, gal. ....	500
Lubricating oil, gal. ....	125
Engine cooling water, gal. ....	100
Sand, cu. ft. ....	12
Air brake schedule .....	14-EL
Gear ratio .....	105:15
Continuous-rating t.f., lb. ....	8
Maximum safe speed, m.p.h. ....	55
Starting tractive force (at 30 per cent adhesion), lb. ....	41,700

## Partial List of Railroads using the 44 Ton Switching Locomotive

Canadian National Rys.  
 Chesapeake & Ohio Ry.  
 Louisville & Nashville  
 Missouri-Kansas-Texas  
 Rutland R.R.  
 Pacific Great Eastern  
 Southern Pacific



Louisville and Nashville No. 126; 70 Ton 600-Hp. Switching Locomotive built by General Electric Company.



Delaware, Lackawanna & Western No. 455; 102 ton, 600-hp. Switching and Road Locomotive built by General Electric Company in October 1934.

Equipped with two Ingersoll-Rand engines; total wheel base 32 ft. 6 in., starting tractive force 60,900 lb., continuous tractive force 28,000 lb. at five m.p.h.



Canadian National Nos. 9400 & 9401, Class W-1-A; Two Unit 3,000-hp. Freight Locomotive built by Montreal Locomotive Works Ltd.—  
Canadian General Electric Company Ltd. in 1950.

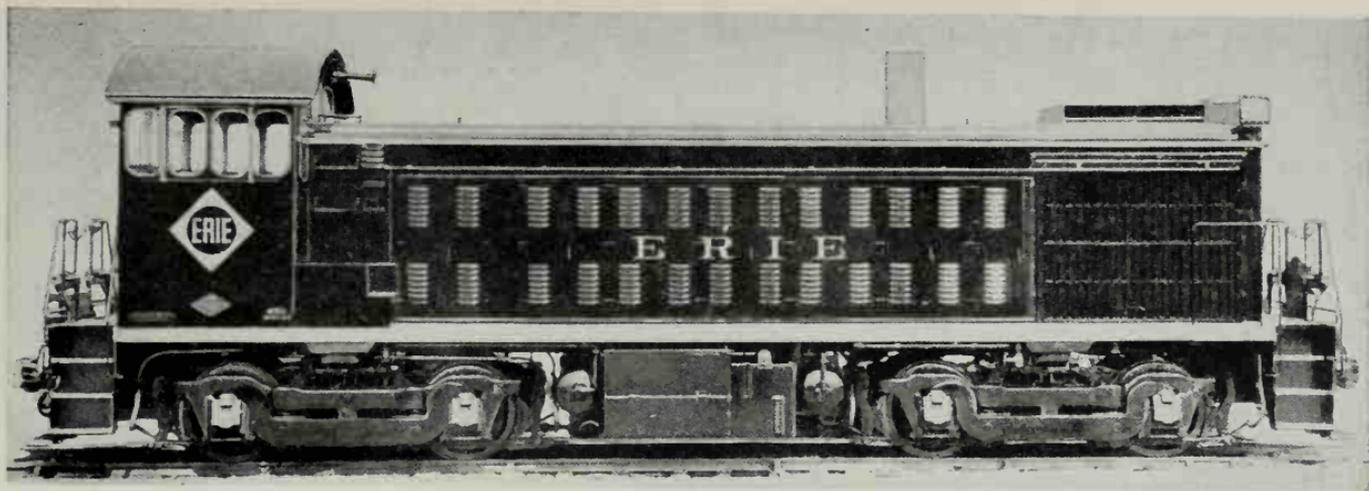


Roberval Saguenay No. 20, 1,500-hp. Road Switching Locomotive built by Montreal Locomotive Works Ltd.-Canadian General Electric Company Ltd. in December 1949.



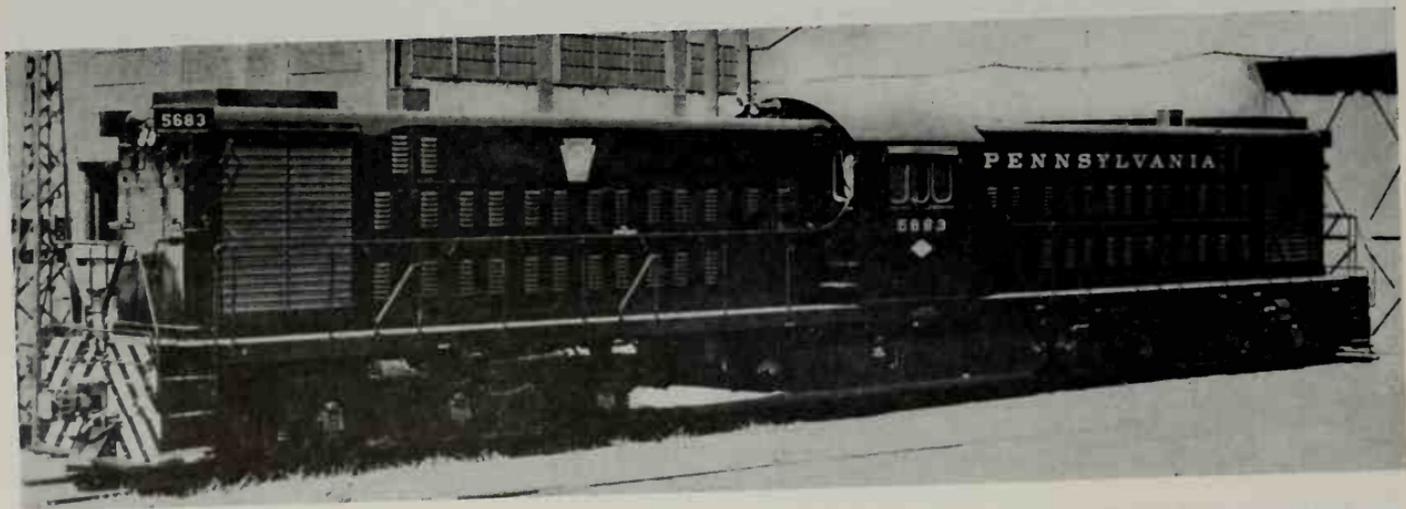
Lima-Hamilton 1,200-hp. Road Switching Locomotive.

General Characteristics, Weights and Dimensions	
Type	0-4-4-0
Whyte symbol	B-B
A.A.R. symbol	B-B
Engines:	One
Number per unit	8 cyl., 4 cycle, in line
Type	9 by 12
Cylinders, bore and stroke, in.	1,200
Horsepower available for traction	1,200
Generator:	Westinghouse
Make	499A
Type	4
Traction motors:	Westinghouse
Number	362D
Make	Plain
Type	6½ by 12
Journal bearings:	40
Type	9-10
Size	40-10
Wheels, diameter, in.	40-10
Wheel base, ft.-in.	40-10
Truck	40-10
Locomotive	40-10
Distance between truck centers, ft.-in.	31-0
Maximum dimensions, over-all, ft.-in.:	10-2½
Width	14-6
Height	57-0
Length over coupler pulling faces	57-0
Weights in working order, lb.:	250,000
Locomotive, total, approx.	250,000
On drivers, approx.	150
Minimum radius curvature, ft. (with train)	150
Supplies (total capacity):	145
Lubricating oil, gal.	800
Fuel oil, gal.	225
Engine cooling water, gal.	800
Train heating water, gal.	30
Sand, cu. ft.	6SL
Air brake schedule	14:68
Gear ratio	62,500
Starting tractive force, lb.:	75,000
At 25 per cent adhesion	75,000
At 30 per cent adhesion	75,000
Maximum speed, m.p.h.	60



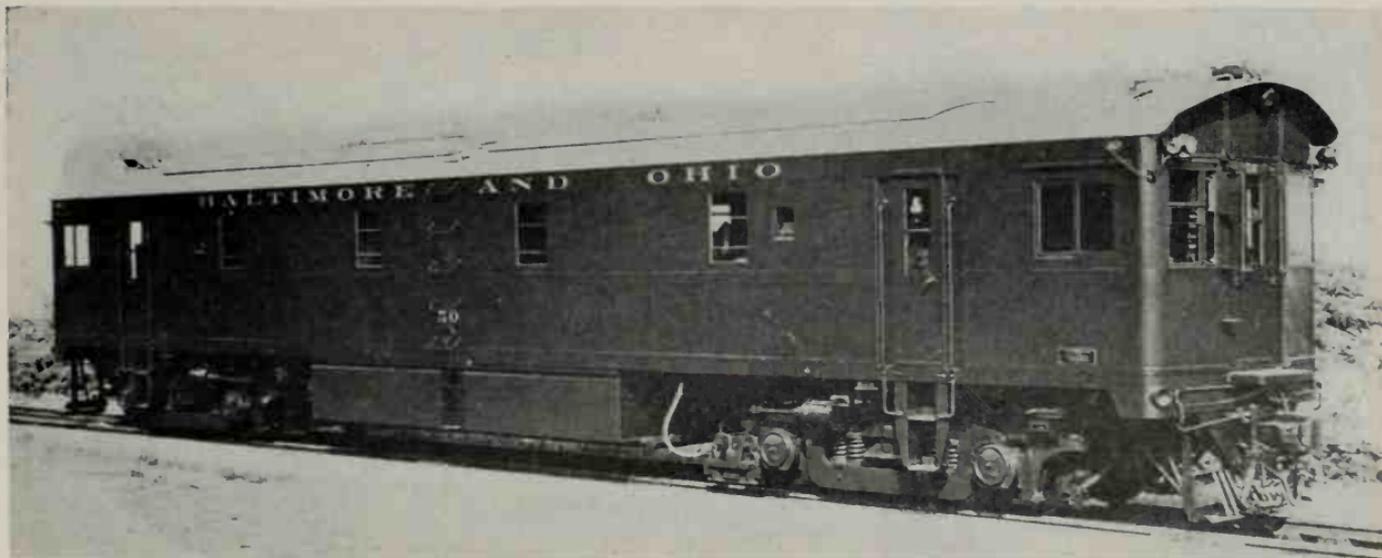
Erie No. 652, Class MSL-10; 1,000-hp. Switching Locomotive built by Lima Locomotive Works Division—Lima-Hamilton Corporation in 1949.

Lima's switchers are similar in appearance and this one is the half-way mark between the 800-hp. and 1,200-hp. It has the same characteristics except the following—driving wheel base 32 ft. 6 in. Total weight 240,900 lb., starting tractive force at 30 per cent adhesion 72,270 lb. and continuous tractive force 34,000 lb.



Pennsylvania No. 5683, Class LS-25, 2,400-hp. Transfer Type Locomotive built by the Lima Locomotive Works Division of the Lima-Hamilton Corp.

This was the last locomotive built at Lima, ending a 72-year career of steam and diesel construction in September 1951.



Baltimore & Ohio No. 50, Class DP-1; 1,800-hp. Diesel-Electric Passenger Locomotive built by the St. Louis Car Co., to Electro-Motive design in 1935.

This was the first railroad-owned passenger diesel to be placed in regular train service in the United States.

## General Motors 600-Hp. Switching Locomotive Model SW-1

## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	6 cyl., 2 cycle, vee
Cylinders, bore and stroke, in. ....	8½ by 10
Horsepower available for traction .....	600
Traction motors, number .....	4
Journal bearings:	
Type .....	Plain
Size .....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft-in.:	
Truck .....	8-0
Locomotive .....	30-0
Distance between truck centers, ft-in. ....	22-0
Maximum dimensions, over-all, ft-in.:	
Width .....	10-0
Height .....	14-4½
Length over coupler pulling faces .....	44-5
Weights in working order, lb.:	
Locomotive, total, approx. ....	198,000
On drivers, approx. ....	198,000
Minimum radius curvature, ft. ....	100
Supplies (total capacity):	
Lubricating oil, gal. ....	124
Fuel oil, gal. ....	600
Engine cooling water, gal. ....	151
Sand, cu. ft. ....	28
Air brake schedule .....	6-BL
Gear ratio .....	62:15
Maximum speed, m.p.h. ....	65
Starting tractive force, lb.:	
At 25 per cent adhesion .....	49,500
At 30 per cent adhesion .....	59,500

## Partial List of Railroads Using the SW-1 Switching Locomotive

Alaska Railroad	Illinois Central
Allegheny & South Side	International Great Northern
Atchison, Topeka & Santa Fe	Lehigh Valley
Atlantic & East Carolina	Louisville & Nashville
Baltimore & Ohio	Maryland & Pennsylvania
Boston & Maine	Mexico Northwestern
Buffalo Creek	Minneapolis & St. Louis
Canton	Missouri Pacific
Central of Georgia	Mpls., St. Paul & S.S. M.
Central of Indiana	Nashville, Chatt. & St. L.
Central R.R. of New Jersey	New York Central
Chesapeake & Ohio (P.M.)	New York, Chicago & St. Louis
Charleston & Western Carolina	Patapsco & Back Rivers
Chicago & Eastern Illinois	Pennsylvania
Chicago & North Western	Philadelphia, Bethlehem & New England
Chicago, Burlington & Quincy	Portland Traction
Chicago Great Western	Reading
Chicago, Ind. & Louisville	Richmond Terminal
Chicago, Milw.-St. Paul & P.	River Terminal
Chicago River & Indiana	Roscoe, Snyder & Pacific
Chicago, Rock Island & Pacific	St. John's River Terminal
Chicago, St. Paul, Minn. & O.	St. Joseph Belt
Chicago Short Line	St. Joseph Terminal
Conemaugh & Black Lick	Seaboard Air Line
Delaware, Lackawanna & Western	Steeleton & Highspire
Detroit, Toledo & Ironton	Southern
Elgin, Joliet & Eastern	Southern Pacific
Erie	Tennessee Coal Iron & Railroad
Fort Worth & Denver City	Terminal R.R. Assn. of St. L.
Fort Worth Belt	Union
Georgia & Florida	Union Terminal
Grand Trunk Western	Wabash
Great Northern	Western Pacific
Houston Belt & Terminal	



Lehigh Valley No. 113, Class BB-4, 600-hp. Switching Locomotive built by Electro-Motive Division—General Motors Corporation in 1940.



New York Central No. 588, Class DES-5c, 600-hp. Switching Locomotive built by Electro-Motive Division—General Motors Corporation in 1949.

## General Motors 800-Hp. Switching Locomotive Model SW-8

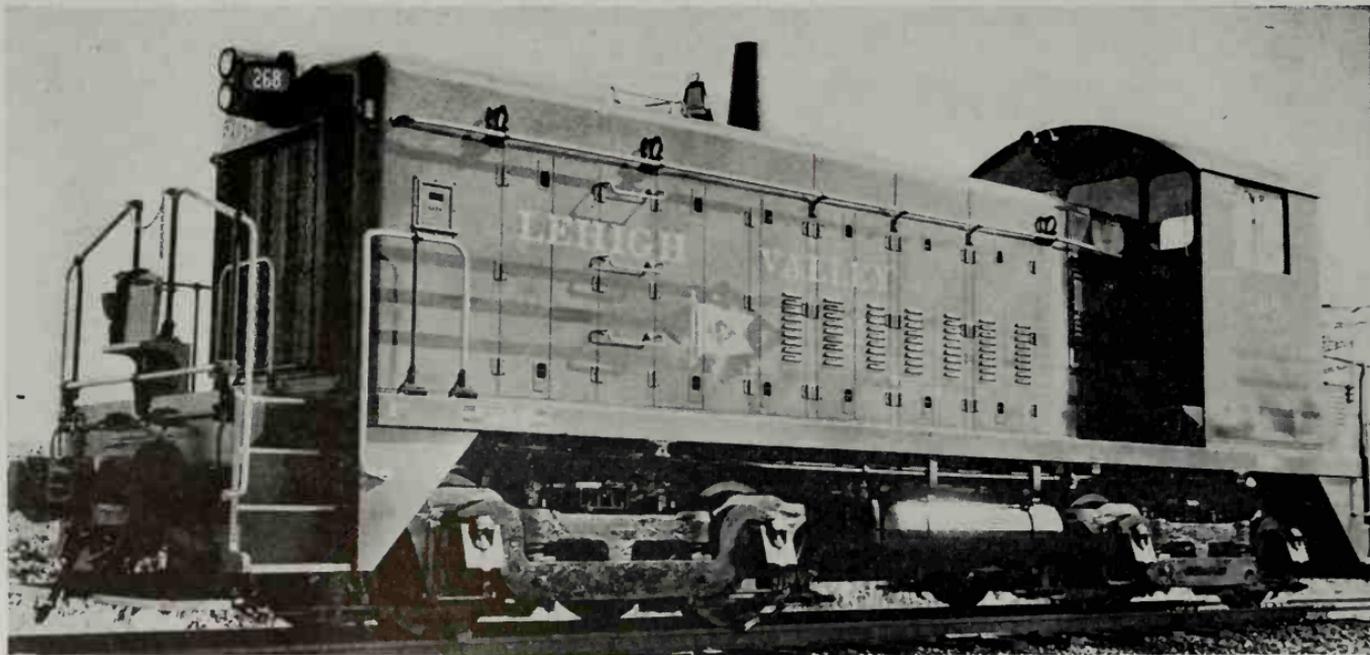
## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	8 cyl., 2 cycle
Cylinders, bore and stroke, in. ....	8½ by 10
Horsepower available for traction .....	800
Traction motors, number .....	4
Journal bearings:	
Type .....	Plain
Size .....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft.-in.:	
Truck .....	8-0
Locomotive .....	30-0
Distance between truck centers, ft.-in. ....	22-0
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-0
Height .....	14-6½
Length over coupler pulling faces .....	44-5
Weights in working order, lb.:	
Locomotive, total, approx. ....	230,000
On drivers, approx. ....	230,000
Minimum radius curvature, ft. ....	100
Supplies (total capacity):	
Lubricating oil, gal. ....	145
Fuel oil, gal. ....	600
Engine cooling water, gal. ....	190
Sand, cu. ft. ....	28

Air brake schedule .....	6-BL
Gear ratio .....	62:15
Starting tractive force, lb. (30 per cent adhesion) .....	69,000
Maximum speed, m.p.h. ....	65

## Partial List of Railroads Using the SW-8 Switching Locomotive

Atlantic Coast Line  
 Chicago & North Western  
 Chicago River & Indiana  
 Chicago, Rock Island & Pacific  
 Chicago, West Pullman & Southern  
 Cincinnati Union Terminal  
 Colorado & Wyoming  
 Delaware, Lackawanna & Western  
 DeQueen & Eastern  
 Donora Southern  
 Georgia Northern  
 Great Northern  
 Illinois Terminal  
 Lakeside & Marblehead  
 Lake Terminal  
 Lehigh Valley  
 Louisiana & Northwest  
 Ludington & Northern  
 Monessen South Western  
 New York Central  
 New York, Chicago & St. Louis  
 Texas & Pacific  
 Wabash



Lehigh Valley No. 268, Class BB-6, 800-hp. Switching Locomotive built by Electro-Motive Division—General Motors Corporation.

## General Motors 1,200-Hp. Switching Locomotive Model SW-9

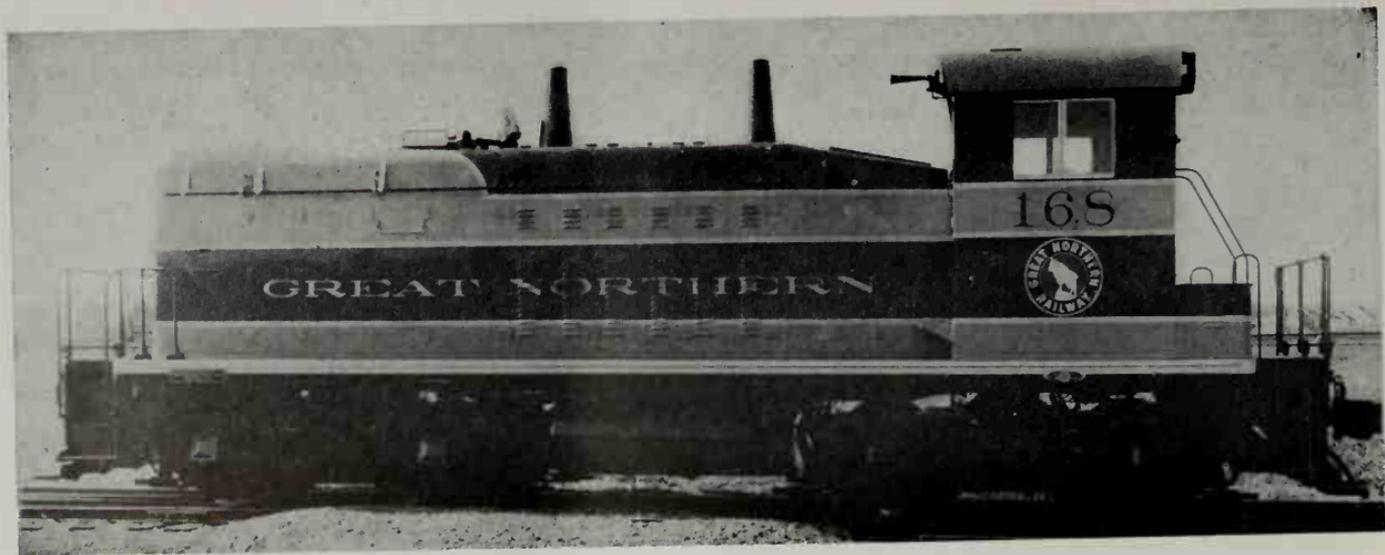
## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	12 cyl., 2 cycle
Cylinders, bore and stroke, in. ....	8½ by 10
Horsepower available for traction .....	1,200
Traction motors, number .....	4
Journal bearings:	
Type .....	Plain
Size .....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft-in.:	
Truck .....	8-0
Locomotive .....	30-0
Distance between truck centers, ft.-in. ....	22-0
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-0
Height .....	14-6½
Length over coupler pulling faces .....	44-5
Weights in working order, lb.:	
Locomotive, total, approx. ....	248,000
On drivers, approx. ....	248,000
Minimum radius curvature, ft. ....	100
Supplies (total capacity):	
Lubricating oil, gal. ....	165
Fuel oil, gal. ....	600
Engine cooling water, gal. ....	223
Sand, cu. ft. ....	28
Air brake schedule .....	6-BL
Gear ratio .....	62:15
Starting tractive force, lb.:	
At 25 per cent adhesion .....	62,000
At 30 per cent adhesion .....	74,500
Maximum speed, m.p.h. ....	65

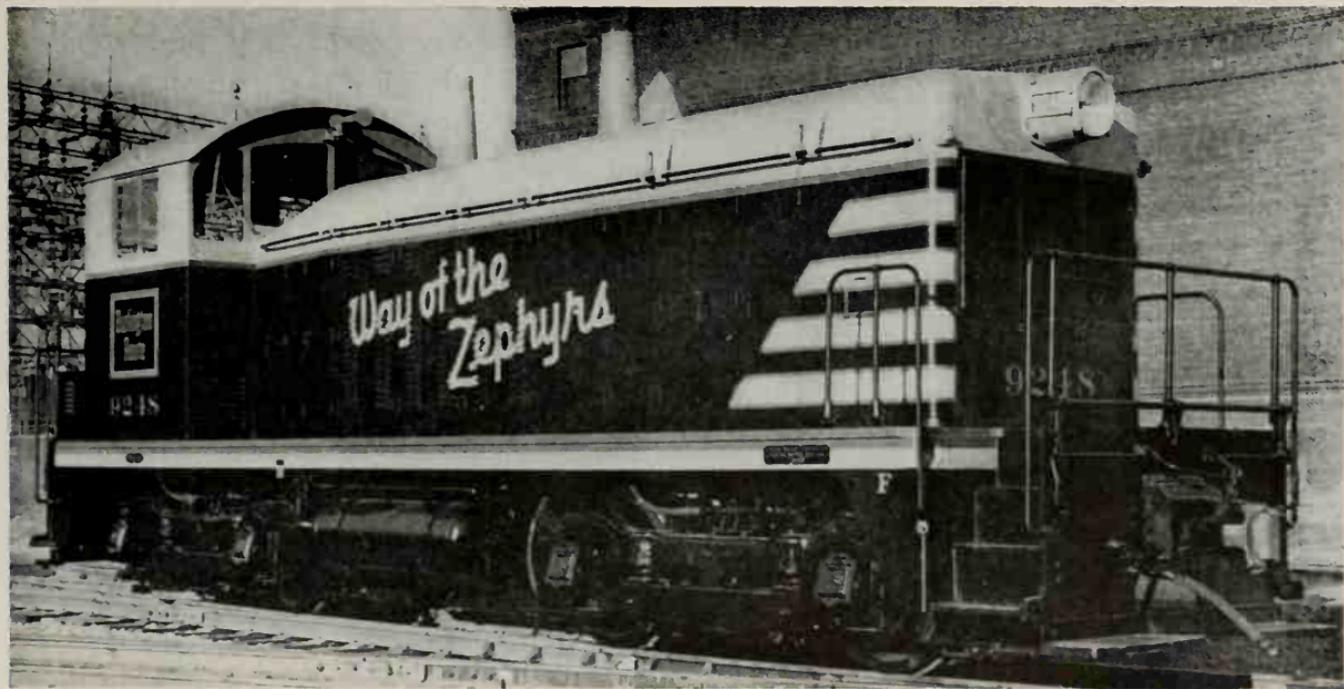
## Partial List of Railroads Using the SW-9 Switching Locomotive

Alabama Great Southern	Kansas City Southern
Apalachicola Northern	Lakeside & Marblehead
Arkansas & Louisiana Missouri	Lehigh Valley
Ashley, Drew & Northern	Louisiana Midland
Atlantic Coast Line	Louisville & Nashville
Baltimore & Ohio	Maine Central
Bauxite & Northern	Maryland & Pennsylvania
Belt Railway of Chicago	Missouri-Kansas-Texas
Boston & Maine	Missouri Pacific
Cambria & Indiana	Monessen South Western
Central of Pennsylvania	Montour
Charleston & Western Carolina	Nashville, Chattanooga & St. Louis
Chesapeake & Ohio (P.M.)	New Orleans & North Eastern
Chicago & Eastern Illinois	New York Central
Chicago & Illinois Western	New York, Chicago & St. Louis
Chicago & North Western	Northern Pacific
Chicago, Burlington & Quincy	Pennsylvania
Chicago Great Western	Peoria & Eastern
Chicago, Milw., St. Paul & Pacific	Peoria & Pekin Union
Chicago River & Indiana	Philadelphia, Bethlehem & New
Cincinnati, New Orleans & Texas	England
Pacific	Pittsburgh & Lake Erie
Clinchfield	Pittsburgh, Chartiers &
Colorado & Southern	Youghiogheny
Conemaugh & Black Lick	River Terminal
Delaware, Lackawanna & Western	St. Louis, Brownsville, & Mexico
Detroit & Toledo Shore Line	St. Louis-San Francisco
Detroit Terminal	St. Louis Southwestern
Detroit, Toledo & Ironton	Spokane, Portland & Seattle
Erie	Steelton & Highspire
Georgia	Texas & Pacific
Georgia Southern & Florida	Union
Great Northern	Wabash
Houston Belt & Terminal	Western Pacific
Illinois Central	Youngstown & Southern
Indiana Harbor Belt	

DIESEL-ELECTRIC LOCOMOTIVES: E. M. D.—General Motors



Great Northern No. 168, 1,200-hp. Switching Locomotive built by Electro-Motive Division—General Motors Corporation in 1949.



Chicago, Burlington & Quincy No. 9248, 1,200-hp. Switching Locomotive built by Electro-Motive Division—General Motors Corporation in 1952.

## General Motors 1,500-Hp. Road Switching Locomotive Model GP-7

## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	16 cyl., 2 cycle, vee
Cylinders, bore and stroke, in. ....	8½ by 10
Horsepower available for traction .....	1,500
Traction motors, number .....	4
Journal bearings:	
Type .....	Roller
Size .....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft-in.:	
Truck .....	9-0
Locomotive .....	40-0
Distance between truck centers, ft-in. ....	31-0
Maximum dimensions, over-all, ft-in.:	
Width .....	10-3
Height .....	14-6
Length over coupler pulling faces .....	55-11
Weights in working order, lb.:	
Locomotive, total, approx. ....	240,000
On drivers, approx. ....	240,000
Truck, each .....	37,800
Minimum radius curvature, deg. ....	39
Supplies (total capacity):	
Lubricating oil, gal. ....	200
Fuel oil, gal. ....	800
Engine cooling water, gal. ....	230
Train heating water, gal. (when steam generator installed) .....	800
Sand, cu. ft. ....	18
Air brake schedule .....	6-BL
Gear ratio .....	65:12 62:15 61:16 60:17 59:18 58:19
Continuous rating, t.f., lb. ....	52,400 40,000 37,000 34,000 32,000 29,509
Maximum speed, m.p.h. ....	55 65 71 77 83 80

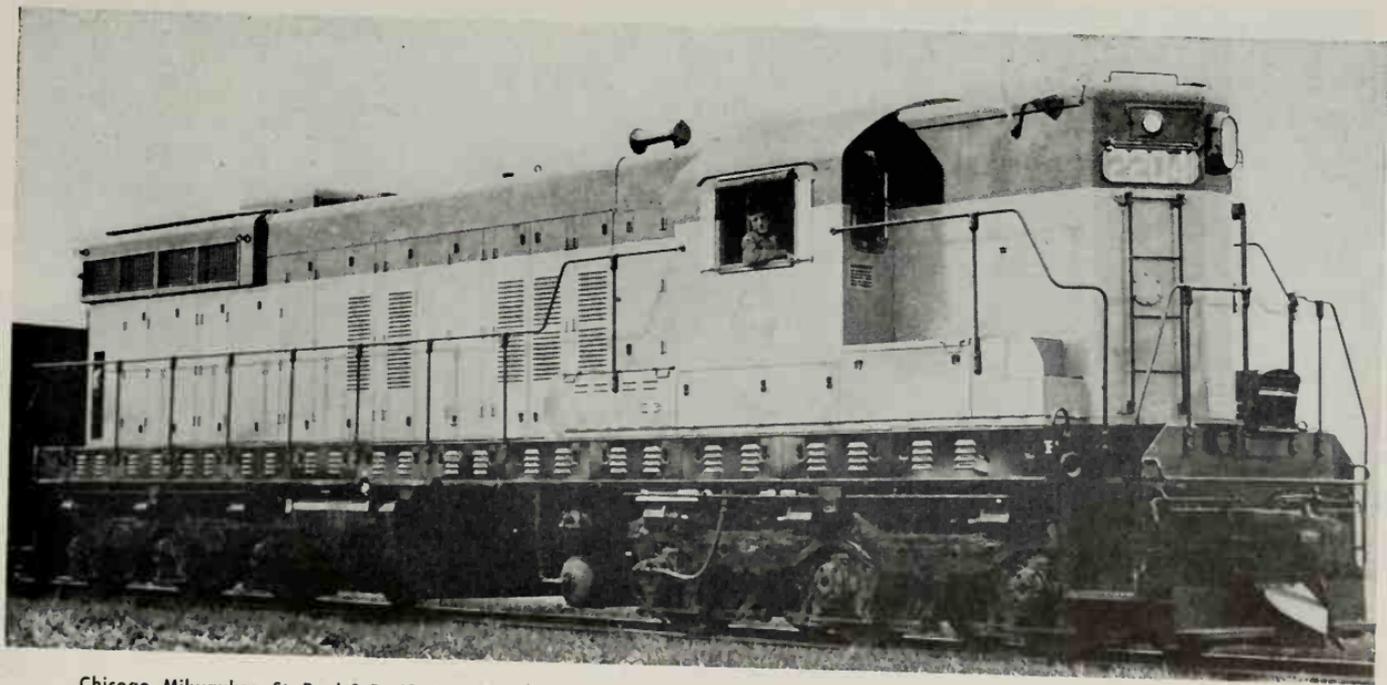
## Partial List of Railroads Using the GP-7 Road Switching Locomotive

Aberdeen & Rock Fish	Great Northern
Alabama Great Southern	Illinois Central
Atchison, Topeka & Santa Fe	International Great Northern
Atlanta & St. Andrew's Bay	Kansas City Southern
Atlanta & West Point	Kansas, Oklahoma & Gulf
Atlantic & East Carolina	Louisville & Nashville
Atlantic Coast Line	Maine Central
Bangor & Aroostook	Minneapolis, St. Paul & Sault
Belt Railway of Chicago	Ste. Marie
Boston & Maine	Missouri-Kansas-Texas
Butte, Anaconda & Pacific	Missouri Pacific
Central of Georgia	Nashville, Chattanooga & St. Louis
Charleston & Western Carolina	New York Central
Chesapeake & Ohio (P.M.)	New York, Chicago & St. Louis
Chicago & Eastern Illinois	Northern Pacific
Chicago & North Western	Pennsylvania
Chicago, Burlington & Quincy	Peoria & Eastern
Chicago Great Western	Pittsburgh & Lake Erie
Chicago, Rock Island & Pacific	Portland Terminal
Cincinnati, New Orleans & Texas	Richmond, Fredericksburg & Potomac
Pacific	Seaboard Air Line
Clinchfield	St. Louis, Brownsville & Mexico
Colorado & Wyoming	Texas & Pacific
Columbia, Newberry & Laurens	St. Louis-San Francisco
Delaware, Lackawanna & Western	St. Louis Southwestern
Denver & Rio Grande Western	Southern
Detroit & Toledo Shore Line	Tennessee, Alabama & Georgia
Detroit, Toledo & Ironton	Texas & Pacific
Erie	Texas-Mexican
Georgia	Toledo, Peoria & Western
Georgia & Florida	Wabash
Georgia Southern & Florida	Western Maryland
	Western Railway of Alabama



Missouri-Kansas-Texas No. 1504, 1,500-hp. Road Switching Locomotive built by Electro-Motive Division—General Motors Corporation in 1949.





Chicago, Milwaukee, St. Paul & Pacific No. 2204, Class 15E-RS6, 1,500-hp. Road Switching Locomotive built by Electro-Motive Division—  
General Motors Corporation.

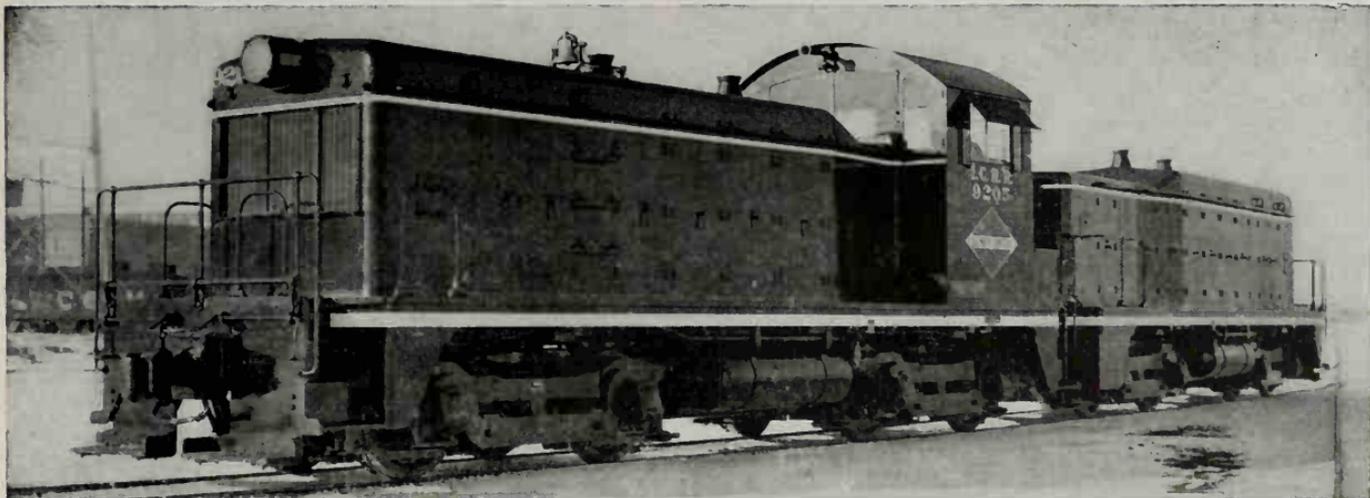
## General Motors 2,400-Hp. Transfer Locomotive



Chesapeake &amp; Ohio No. 6000, Two Unit 2,400-hp. Transfer Locomotive.

## General Characteristics, Weights and Dimensions

Model .....	TR-4	Distance between truck centers, ft.-in. ....	64-0
Type:		Maximum dimensions, over-all, ft.-in. ....	
Whyte symbol .....	0-4-4-0 + 0-4-4-0	Width .....	10-0
A.A.R. symbol .....	B-B + B-B	Height .....	14-6½
Engines:		Length over coupler pulling faces .....	86-5
Number per unit .....	One	Weights in working order, lb.:	
Type .....	12 cyl., 2-cycle, vee	Locomotive, total, approx. ....	496,000
Cylinders, bore and stroke, in. ....	8½ by 10	On drivers, approx. ....	496,000
Horsepower available for traction .....	1,200	Minimum radius curvature, ft. ....	100
Traction motors, number .....	4	Supplies (total capacity):	
Journal bearings:		Lubricating oil, gal. ....	330
Type .....	Plain	Fuel oil, gal. ....	1,200
Size .....	6½ by 12	Engine cooling water, gal. ....	446
Wheels, diameter, in. ....	40	Sand, cu. ft. ....	56
Wheel base, ft.-in.:		Gear ratio .....	62:15
Truck .....	8-0	Continuous rating, tractive force, lb. ....	62,400
Locomotive .....	72-0	Maximum speed, m.p.h. ....	65



Illinois Central No. 9205, 2,000-hp. Transfer Locomotive formed by adding a booster unit to a 1,000-hp. Switching Locomotive built by Electro-Motive Division—General Motors Corporation in 1940, Model TR.

General Motors, 1,500-hp. Locomotive Model F-7, its predecessors Model F-3 and the FT 1,350-hp. unit, are versatile locomotives intended for freight and heavy duty passenger service. They operate as single units of 1,500-hp. or in combinations of 3,000, 4,500 and 6,000-hp.

#### General Characteristics, Weights and Dimensions

Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	16 cyl., 2-cycle, vee
Model .....	567B
Cylinders, bore and stroke, in. ....	8½ by 10
Horsepower .....	1,500
Traction motors, number .....	4
Journal bearings:	
Type .....	Roller
Size .....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft.-in.:	
Truck .....	9-0
Locomotive .....	39-0
Distance between truck centers, ft.-in. ....	30-0
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-8
Height .....	15-0
Length over coupler pulling faces .....	50-8
Weights in working order, lb.:	
Locomotive, total, approx. ....	230,000
On drivers, approx. ....	230,000
Truck, each .....	37,800
Minimum radius curvature, deg. ....	23
Supplies (total capacity):	
Lubricating oil, gal. ....	200
Fuel oil, gal. ....	1,200
Engine cooling water, gal. ....	230
Sand, cu. ft. ....	16
Air brake schedule .....	24-RL
Gear ratio .....	.65:12, 62:15, 61:16, 60:17, 59:18, 58:19, 57:20, 56:21
Continuous rating, tractive force, lb. ....	
52,400, 40,000, 37,000, 34,000, 32,000, 29,500, 27,500, 25,500	
Maximum speed, m.p.h. ....	55, 65, 71, 77, 83, 95, 102

#### Partial List of Railroads Using the F-3 and F-7 Locomotive

Alabama Great Southern	Kansas, Oklahoma & Gulf
Achison, Topeka & Santa Fe	Lehigh Valley
Atlantic Coast Line	Louisiana & Arkansas
Baltimore & Ohio	Louisville & Nashville
Bangor & Aroostook	Maine Central
Bessemer & Lake Erie	Mexican Government Ry.
Boston & Maine	Minneapolis & St. Louis
Canadian National	Mpls. St. Paul & S. St. Marie
Central of Georgia	Missouri-Kansas-Texas
Charleston & Western Carolina	Missouri Pacific
Chesapeake & Ohio	Nashville, Chatt. & St. Louis
Chicago & Eastern Illinois	New York Central
Chicago & North Western	New York, Ontario & Western
Chicago, Burlington & Quincy	Northern Pacific
Chicago Great Western	Pennsylvania
Chicago, Ind. & Louisville	Reading
Chicago, Milw., St. P. & P.	Richmond, Fred. & Potomac
Chicago, Rock Island & Pacific	St. Louis, Brownsville & Mexico
Cincinnati, New Orleans & Texas Pacific	St. Louis-San Francisco
Clinchfield	St. Louis-Southwestern
Colorado & Southern	Seaboard Air Line
Delaware, Lackawanna & Western	Southern
Denver & Rio Grande Western	Southern Pacific
Erie	Spokane, Portland & Seattle
Florida East Coast	Texas Mexican
Fort Worth & Denver City	Texas & Pacific
Georgia Railroad	Toledo, Peoria & Western
Grand Trunk Western	Union Pacific
Great Northern	Wabash
Gulf, Mobile & Ohio	Western Maryland
International Great Northern	Western Pacific
Kansas City Southern	Western Railway of Alabama
	Wisconsin Central



Atchison, Topeko & Santo Fe No. 40, Four Unit 6,000-hp. Passenger Locomotive built by Electro-Motive Division—General Motors Corporation in 1948.



Chicago & North Western No. 4071-A, Two Unit 3,000-hp. Locomotive built by Electro-Motive Division—General Motors Corporation in 1948.

## General Motors 1,500-Hp. Heavy Duty Passenger Locomotive Model FP-7

## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	16 cyl., 2-cycle, vee
Cylinders, bore and stroke, in. ....	8½ by 10
Horsepower available for traction .....	1,500
Traction motors, number .....	4
Journal bearings:	
Type .....	Roller
Size .....	6½ by 12
Wheels, diameter, in. ....	40
Wheel base, ft.-in.:	
Truck .....	9-0
Locomotive .....	43-0
Distance between truck centers, ft.-in. ....	34-0
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-8
Height .....	15-0
Length over coupler pulling faces .....	54-8
Weights in working order, lb.:	
Locomotive, total, approx. ....	258,000
On drivers, approx. ....	258,000
Truck, each .....	37,800
Minimum radius curvature, deg. ....	23
Supplies (total capacity):	
Lubricating oil, gal. ....	200
Fuel oil, gal. ....	1,200
Engine cooling water, gal. ....	230

Train heating water, gal.:	
Without dynamic brakes .....	1,750
With dynamic brakes .....	1,150
Sand, cu. ft. ....	16
Air brake schedule .....	24-RL
Gear ratio .....	62:15 61:16 60:17 59:18 58:19
Continuous rating, tractive force, lb. ....	40,000 37,000 34,000 32,000 29,500
Maximum speed, m.p.h. ....	65 71 77 83 89

## Partial List of Railroads Using the FP7 Passenger Locomotive

Atlanta & West Point  
 Atlantic Coast Line  
 Chesapeake & Ohio  
 Chicago & Eastern Illinois  
 Chicago Great Western  
 Chicago, Milwaukee, St. Paul & Pacific  
 Chicago, Rock Island & Pacific  
 Cincinnati, New Orleans & Texas Pacific  
 Clinchfield  
 Florida East Coast  
 Georgia Railroad  
 Louisville & Nashville  
 Mexican Government Railway  
 Minneapolis, St. Paul & Sault Ste. Marie  
 Missouri-Kansas-Texas  
 Northern Pacific  
 Pennsylvania  
 Reading  
 Richmond, Fredericksburg & Potomac  
 St. Louis-San Francisco  
 St. Louis Southwestern  
 Toledo, Peoria & Western  
 Western Pacific  
 Western Railway of Alabama



Chicago, Rock Island and Pacific No. 402; 1,500-hp. Passenger Locomotive built by Electro-Motive Division—General Motors Corporation in 1949.



Union Pacific Nos. 959A & 961B, Two Unit 4,000-hp. Passenger Locomotive built by Electro-Motive Division—General Motors Corp. in 1946, Model E-7.

This is the model that preceded that shown on the following page. It has the same general characteristics but less horsepower. Partial list of railroads using the Model E-7 passenger locomotives includes:

Atchison, Topeka & Santa Fe  
Atlantic Coast Line  
Baltimore & Ohio  
Bangor & Aroostook  
Boston & Maine  
Central of Georgia

Chesapeake & Ohio (P.M.)  
Chicago & Eastern Illinois  
Chicago & North Western  
Chicago, Burlington & Quincy  
Chicago, Milw., St. P. & P.  
Chicago, Rock Island & Pacific

Florida East Coast  
Great Northern  
Gulf, Mobile & Ohio  
Illinois Central  
Kansas City Southern  
Louisville & Nashville

Maine Central  
Missouri-Kansas-Texas  
Missouri Pacific  
New York Central  
Pennsylvania  
St. Louis-San Francisco

Seaboard Air Line  
Southern  
Southern Pacific  
Spokane, Portland & Seattle  
Texas & Pacific  
Union Pacific  
Wahash

## General Motors 2,250-Hp. Passenger Locomotive Model E-8

## General Characteristics, Weights and Dimensions

Type:		
Whyte symbol	0-6-6-0	
A.A.R. symbol	A1A-A1A	
Engines:		
Number per unit	2	
Type	12 cyl., 2-cycle, vee	
Model	567B	
Cylinders, bore and stroke, in.	8½ by 10	
Horsepower, each engine	1,125	
Traction motors, number	4	
Journal bearings:		
Type	Roller	
Size	6½ by 12	
Wheels, diameter, in.	36	
Wheel base, ft.-in.:		
Truck	14-1	
Locomotive	57-0	
Distance between truck centers, ft.-in.	43-1	
Maximum dimensions, over-all, ft.-in.	A Unit	B Unit
Width	10-8	10-8
Height	14-10½	14-7½
Length over coupler pulling faces	70-3	70-0
Weights in working order, lb.:		
Locomotive, total, approx.	316,500	308,300
On drivers, approx.	210,750	207,500
Trucks, each	51,450	51,450
Maximum radius curvature, deg.	21	21
Supplies (total capacity):		
Lubricating oil, gal.	330	330
Fuel oil, gal.	1,200	1,200
Engine cooling water, gal.	400	400

Train heating water, gal.	1,350	1,350
Sand, cu. ft.	16	none
Air brake schedule	24-RL	
Gear ratio	52:25 55:21 56:21	57:20
Continuous rating, tractive force, lb.	19,500 23,500 25,000	27,000
Maximum speed, m.p.h.	117 98 92	85

## Partial List of Railroads Using the E-8 Passenger Locomotive

Atlantic Coast Line  
 Baltimore & Ohio  
 Boston & Maine  
 Canadian Pacific  
 Central of Georgia  
 Chesapeake & Ohio  
 Chicago & North Western  
 Chicago, Burlington & Quincy  
 Chicago, Rock Island & Pacific  
 Delaware, Lackawanna & Western  
 Erie  
 Illinois Central  
 Kansas City Southern  
 Louisville & Nashville  
 Missouri-Kansas-Texas  
 Missouri Pacific  
 New York Central  
 Pennsylvania  
 Richmond, Fred. & Potomac  
 St. Louis-San Francisco  
 Seaboard Air Line  
 Southern  
 Southern Pacific  
 Wabash  
 Texas & Pacific  
 Union Pacific

DIESEL-ELECTRIC LOCOMOTIVES: E. M. D.—General Motors  
General Motors 2,250-Hp. Passenger Locomotive Model E-8

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Electro-Motive Division—General Motors Corporation No. 952, 2,250-hp. Passenger Locomotive.



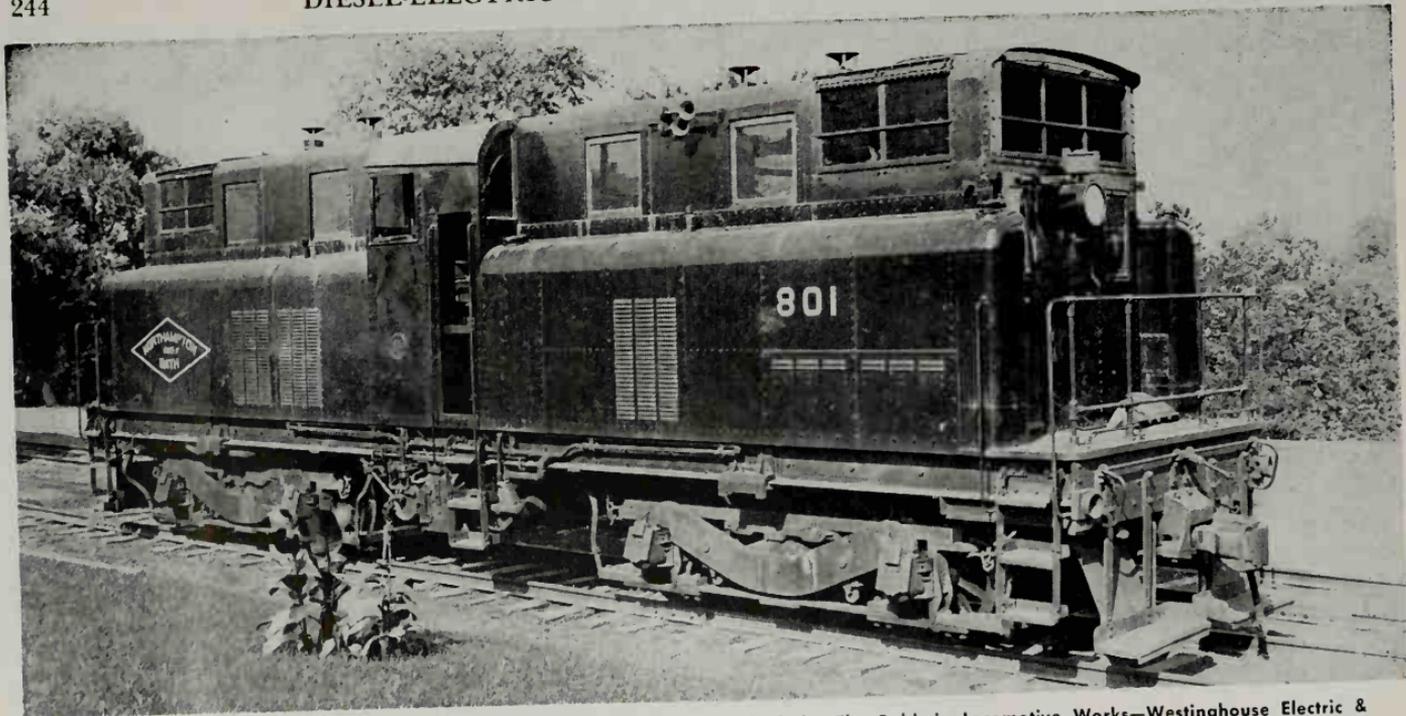
Canadian Pacific No. 1800, Class DPA 22a, 2,250-hp. Passenger Locomotive built by Electro-Motive Division—General Motors Corporation in 1949.

The Canadian Pacific Railway has embarked on a long range plan of dieselization with orders each year for all types of diesel-electric locomotives to replace steam locomotives that become obsolete. With a vast network of rails covering most of Canada it encounters extremes in operating conditions including that of temperatures ranging from summer heat to 60 degrees F. below zero in winter.



Long Island No. 403A & 403B, Class AA-4, Two Unit, 600-hp. Diesel-Electric Switching Locomotive built by The Baldwin Locomotive Works—  
Westinghouse Electric & Manufacturing Co. in September 1927.

Each unit was equipped with one engine having six cylinders, developing 300-hp. at 800 r.p.m. The total weight 174,000 lb. Tractive force, starting 52,200 lb., continuous tractive force 6,500 lb. Total length inside coupler knuckles 46 ft. 8½ in. Wheel base, each unit 9 ft. 6 in. Diameter of wheels 38 in.



Northampton & Bath No. 801, 800-hp. Road and Switching Locomotive built by The Baldwin Locomotive Works—Westinghouse Electric & Manufacturing Co., March 1930. Placed in service October 15, 1932.

Two, six-cylinder Westinghouse diesel engines of 400-hp. each. Total weight 230,000 lb. Tractive force, starting 69,000 lb., continuous 23,000 lb. Total length inside coupler knuckles 47 ft. 8 in. Total wheel base 33 ft. 10 in. Diameter of wheels 44 in.

## Baldwin-Westinghouse 800-Hp. Switching Locomotive Model S-8

## General Characteristics, Weights and Dimensions

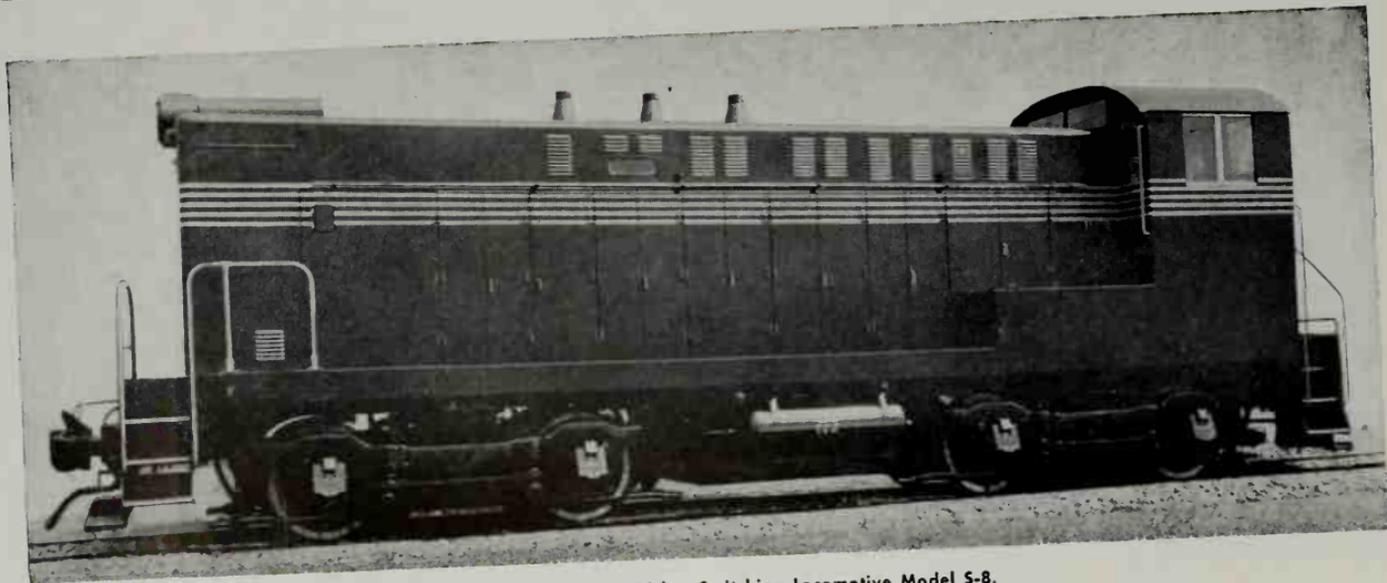
Type:			
Whyte symbol	0-4-4-0	Distance between truck centers, ft.-in.	22-8
A.A.R. symbol	B-B	Maximum dimensions, over-all, ft.-in.:	
Engines:		Width	10-0
Number per unit	One	Height	14-0
Type	6 cyl., 4-cycle, in line, normally aspirated	Length over coupler pulling faces	46-0
Cylinders, bore and stroke, in.	12 $\frac{3}{4}$ by 15 $\frac{1}{2}$	Weights in working order, lb.:	
Horsepower available for traction	800	Locomotive, total, approx.	198,500
Generator:		On drivers, approx.	198,500
Make	Westinghouse	Minimum radius curvature, deg. (with train)	44
Type	480	Supplies (total capacity):	
Traction motors:		Lubricating oil, gal.	165
Number	4	Fuel oil, gal.	650
Make	Westinghouse	Engine cooling water, gal.	250
Type	362	Sand, cu. ft.	30
Journal bearings:		Air brake schedule	6-SL
Type	Plain	Gear ratio	68:14
Size	6 $\frac{1}{2}$ by 12	Starting tractive force, lb. (30 per cent adhesion)	59,550
Wheels, diameter, in.	40	Continuous rating, tractive force, lb.	34,000
Wheel base, ft.-in.:		Maximum speed, m.p.h.	60
Truck	S-0		
Locomotive	30-8		

## Partial List of Railroads Using Baldwin-Westinghouse 660-hp., 750 hp. and 800-hp. Switching Locomotives

Akron & Barberton Belt	Chicago, St. Paul, Minneapolis & Omaha	Missouri Pacific	Southern
Atchison, Topeka & Santa Fe	Denver & Rio Grande Western	Nashville, Chattanooga & St. Louis	St. Louis-San Francisco
California Western	Elgin, Joliet & Eastern	New Orleans Public Belt	Terminal R.R. of St. Louis
Central of Georgia	Erie	New York Central	Texas, Mexican
Central R.R. of N. J.	Georgia Northern	Norfolk-Southern	Union Railway of Memphis
Chesapeake & Western	Kansas City Southern	Northern Pacific	Upper Merion & Plymouth
Chicago, Milwaukee, St. Paul & Pacific	La Salle & Bureau County R. R.	Pacific Electric	Wabash
Chicago & Northwestern	Long Island	Patansco & Back Rivers	Western Maryland
Chicago, Rock Island & Pacific	Louisville & Nashville	Pennsylvania	Wyandotte Southern
	Minneapolis, Northfield & Southern	Reading	Wyandotte Terminal
		Seaboard Air Line	

## Many Industrial and Manufacturing Companies Use These Switchers Including:

American Cyanamid Company	Warner Co.	Youngstown Sheet and Tube Co.
Standard Steel Work	Westinghouse Electric Corp.	United States Army and Navy



Baldwin-Westinghouse 800-hp. Switching Locomotive Model S-8.

This locomotive is primarily designed for yard switching but is advantageously used in local or branch line freight and transfer service under moderate loads and speed conditions. Similar locomotives have been built in 660-hp. and 750-hp. prior to this model.



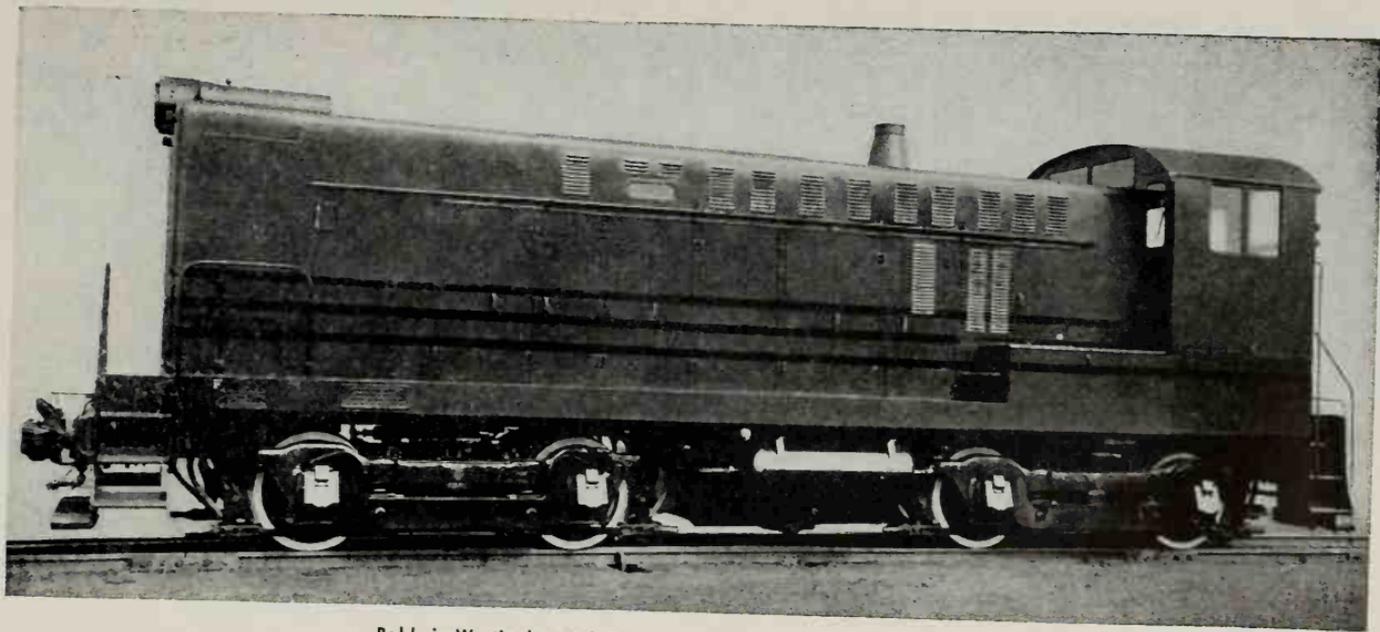
Texas Mexican No. 510, 800-hp. Switching locomotive built by Baldwin-Lima-Hamilton Corp.

## Baldwin-Westinghouse 1,200-Hp. Switching Locomotive Model S-12

## General Characteristics, Weights and Dimensions

Type:		
Whyte symbol .....	0-4-4-0	
A.A.R. symbol .....	B-B	
Engines:		
Number per unit .....	One	
Type .....	6 cyl., 4-cycle, in line, supercharged	
Cylinders, bore and stroke, in. ....	12¾ by 15½	
Horsepower available for traction .....	1,200	
Generator:		
Make .....	Westinghouse	
Type .....	480	
Traction motors:		
Number .....	4	
Make .....	Westinghouse	
Type .....	362	
Journal bearings:		
Type .....	Plain	
Size .....	6½ by 12	
Wheels, diameter, in. ....	40	
Wheel base, ft.-in.:		
Truck .....	8-0	
Locomotive .....	30-8	
		Distance between truck centers, ft.-in. ....
		22-8
		Maximum dimensions, over-all, ft.-in.:
		Width .....
		10-0
		Height .....
		14-0
		Length over coupler pulling faces .....
		46-0
		Weights in working order, lb.:
		Locomotive, total, approx. ....
		240,000
		On drivers, approx. ....
		240,000
		Minimum radius curvature, dep. (with train) .....
		44
		Supplies (total capacity):
		Lubricating oil, gal. ....
		170
		Fuel oil, gal. ....
		650
		Engine cooling water, gal. ....
		250
		Sand, cu. ft. ....
		30
		Air brake schedule .....
		6-SL
		Gear ratio .....
		68:14
		Starting tractive force, lb. (30 per cent adhesion) .....
		72,000
		Continuous rating, tractive force, lb. ....
		34,000
		Maximum speed, m.p.h. ....
		60

For a list of railroads using the S-12 Switching Locomotive see Page No. 250.



Baldwin-Westinghouse 1,200-hp. Switching Locomotive Model S-12.

Although primarily designed for yard switching, the S-12 Locomotive may be used advantageously in local or branch line freight and transfer service under moderate loads and speeds.

## Baldwin-Westinghouse 1,200-Hp Road Switching Locomotive Model RS-12

## General Characteristics, Weights and Dimensions

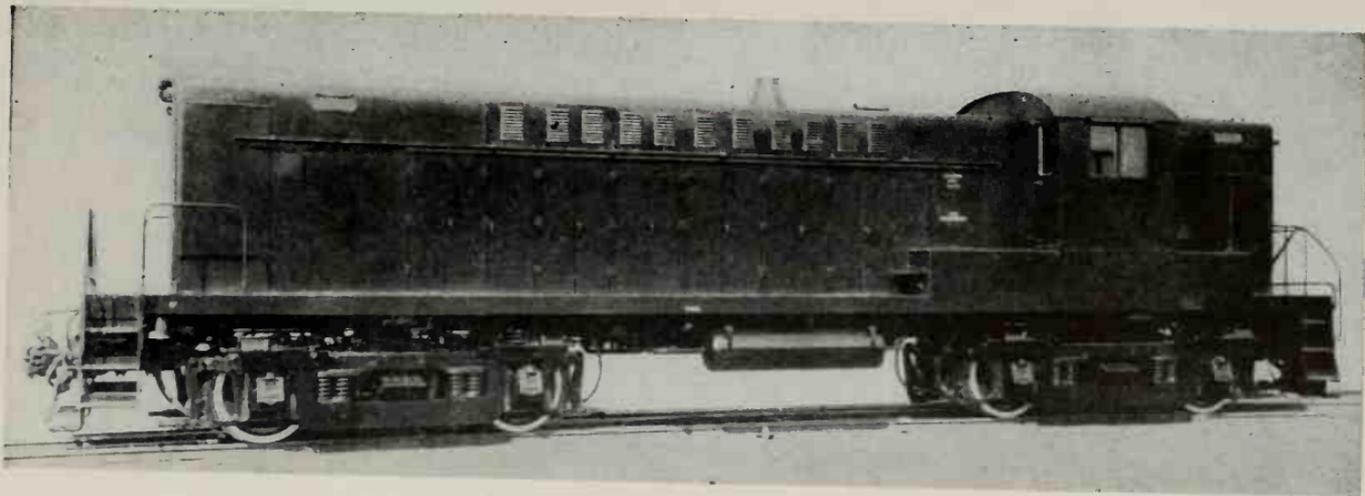
Type:	
Whyte symbol .....	0-4-4-0
A.A.R. symbol .....	B-B
Engines:	
Number per unit .....	One
Type .....	6 cyl., 4-cycle, in line, supercharged
Cylinders, bore and stroke, in. ....	12 $\frac{3}{4}$ by 15 $\frac{1}{2}$
Horsepower available for traction .....	1,200
Generator:	
Make .....	Westinghouse
Type .....	480
Traction motors:	
Number .....	4
Make .....	Westinghouse
Type .....	362
Journal bearings:	
Type .....	Plain
Size .....	6 $\frac{1}{2}$ by 12
Wheels, diameter, in. ....	42
Wheel base, ft.-in.:	
Truck .....	9-10
Locomotive .....	42-1
Distance between truck centers, ft.-in. ....	32-3
Maximum dimensions, over-all, ft.-in.:	
Width .....	10-0
Height .....	14-0
Length over coupler pulling faces .....	58-0
Weights in working order, lb.:	
Locomotive, total, approx. ....	224,000
On drivers, approx. ....	224,000
Minimum radius curvature, deg. (with train) .....	30
Supplies (total capacity):	
Lubricating oil, gal. ....	170
Fuel oil, gal. ....	900
Engine cooling water, gal. ....	250
Train heating water, gal. (when furnished) .....	900
Sand, cu. ft. ....	30
Air brake schedule .....	6-SL
Gear ratio .....	68:14
Starting tractive force, lb. (30 per cent adhesion) .....	67,200
Continuous rating, tractive force, lb. ....	32,400
Maximum speed, m.p.h. ....	60

## Partial List of Railroads Using the 1,000-hp. Switcher and S-12 and RS-12 Switching and Road Switching Locomotives

Akron & Barberton Belt	Litchfield & Madison
Apache	Long Island
Atchison, Topeka & Santa Fe	Louisville & Nashville
Atlanta & West Point	Macon, Dublin & Savannah
Atlantic Coast Line	Minneapolis & St. Louis
Baltimore & Ohio	Minneapolis, Northfield & Southern
Bessemer & Lake Erie	Minneapolis, St. Paul & Sault Ste. Marie
Canadian Pacific	Missouri-Kansas-Texas
Canton	Missouri Pacific
Central of Georgia	Nashville, Chattanooga & St. Louis
Central R.R. of N. J.	National Railways of Mexico
Central R.R. of Penna.	New York Central
Chicago, Burlington & Quincy	New York, Chicago & St. Louis
Chicago, Milwaukee, St. Paul and Pacific	Norfolk-Southern
Chicago, Rock Island & Pacific	Northern Pacific
Chicago, Great Western	Pacific Electric
Chicago & Northwestern	Patapsco & Back Rivers
Chicago, St. Paul, Minneapolis & Omaha	Pennsylvania
Chicago Short Line	Pittsburgh & West Virginia
Copper Range	Reading
Detroit Terminal	Seaboard Air Line
Ouluth, South Shore & Atlantic	Southern Pacific
Elgin, Joliet & Eastern	Southern
Erie	Spokane, Portland & Seattle
Escanoba & Lake Superior	St. Louis, Brownsville & Mexico
Georgia	St. Louis-San Francisco
Great Northern	Tennessee Central
Gulf, Mobile & Ohio	Terminal R.R. of St. Louis
International Great Northern	Union Pacific
Ironton	Union Pacific
Kansas City Southern	Wabash
Kentucky & Indiana Terminal	Western Alabama
Lehigh Valley	Western Maryland
	Western Pacific

## Besides Railroads, Many Industrial and Manufacturing Companies Use These Road Switchers Including

American Smelting & Refining Co.	Phelps Dodge Corp.
Carnegie Steel Co.	Tennessee Eastman Corp.
Geneva Steel Co.	Tennessee Coal, Iron and RR. Co.
Kennecott Copper Corp.	United States Army and Navy.



Baldwin-Westinghouse 1,200-hp. Road Switching Locomotive, Model RS-12.

The RS-12 is designed primarily for light road freight, light passenger, or terminal service. It is particularly adaptable for combination road freight and passenger service where boilers are required for passenger train heating.

## DIESEL-ELECTRIC LOCOMOTIVES: Baldwin—Westinghouse

## Baldwin-Westinghouse 1,600-Hp. All-Service Locomotive Models AS-16, AS-416 and AS-616

## General Characteristics, Weights and Dimensions

	AS-16	AS-416	AS-616	Maximum dimensions, over-all, ft.-in.:			
Model .....	AS-16	AS-416	AS-616	Width .....	10-0	10-0	10-2
Type:				Height .....	14-0	14-0	14-1
Whyte symbol .....	0-4-4-0	0-6-6-0	0-6-6-0	Length over coupler pulling faces....	58-0	58-0	58-0
A.A.R. symbol .....	B-B	A1A-A1A	C-C	Weights in working order, lb.:			
Engines:				Locomotive, total, approx. ....	236,000	252,000	325,000
Number per unit .....	One	One	One	On drivers, approx. ....	236,000	174,000	325,000
Type .....	8 cyl., 4 cycle, in line	8 cyl., 4 cycle, in line	8 cyl., 4 cycle, in line	Minimum radius curv., deg. (with train)	30	22	22
Cylinders, bore and stroke, in. ....	12½x15½	12½x15½	12½x15½	Supplies (total capacity):			
Horsepower available for traction .....	1,600	1,600	1,600	Lubricating oil, gal. ....	200	200	200
Generator:				Fuel oil, gal. ....	900	900	1,900
Make .....	West.	West.	West.	Engine cooling water, gal. ....	300	300	300
Type .....	471	471	471	Train heating water, gal. (when furn.)	500	900	900
Traction motors:				Sand, cu. ft. ....	30	30	30
Number .....	4	4	6	Air brake schedule .....	6-SL	6-SL	6-SL
Make .....	West.	West.	West.	Gear ratio .....	68:15	68:15	68:15
Type .....	370	370	370		63:15	63:15	63:15
Journal bearings:					62:17	.....	.....
Type .....	Plain	Plain	Plain	Starting tractive force, lb. (30 per cent adhesion) .....	70,800	52,200	97,500
Size .....	6½x12½	6½x12½	6½x12½	Continuous rating, tractive force, lb. ...	52,500	52,500	78,750
Wheels, diameter, in. ....	42	42	42		48,600	48,600	72,900
Wheel base, ft.-in.:					42,200	.....	.....
Truck .....	9-10	11-6	13-0	Maximum speed, m.p.h. ....	65	65	60
Locomotive .....	42-1	43-9	44-6		70	65	60
Distance between truck centers, ft.-in....	32-3	32-3	32-3		80	.....	.....

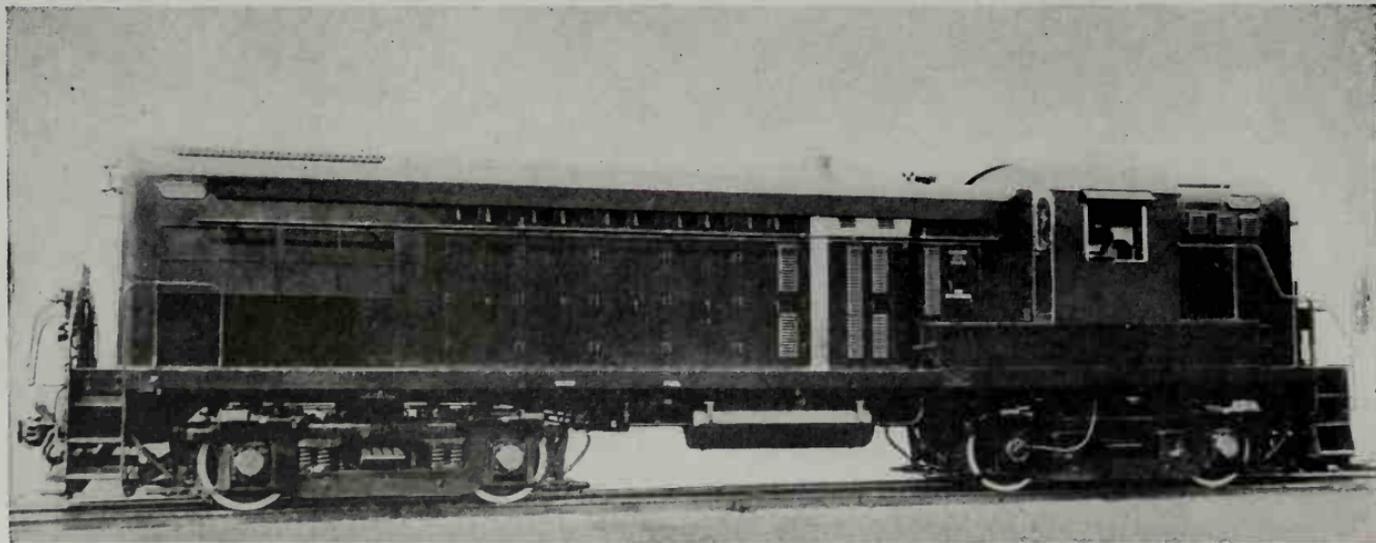
## Partial List of Railroads Using Baldwin-Westinghouse 1,500-hp. and 1,600-hp. All-Service Locomotives

Baltimore & Ohio	Erie	Missouri Pacific	Savannah & Atlanta
Bessemer & Lake Erie	Houston Belt & Terminal	National Railways of Mexico	Seaboard Air Line
Central R.R. of N. J.	Lehigh Valley	New York Central	Southern Pacific
Chesapeake & Ohio	McCloud River	Norfolk-Southern	St. Louis, Brownsville & Mexico
Chicago & Northwestern	Minneapolis, Northfield & Southern	Northern Pacific	Tennessee Coal, Iron & R.R.
Chicago, Rock Island & Pacific	Minneapolis, St. Paul & Sault	Pennsylvania	Union Pacific
Columbus & Greenville	Ste. Marie	Pennsylvania-Reading Seashore Lines	Union
Duluth, South Shore & Atlantic	Missouri-Kansas-Texas	Reading	Western Maryland



Chicago & North Western No. 1502, Baldwin-Westinghouse 1,600-hp. All-Service Locomotive with six axles and six motors, Model AS-616.

All motorized trucks particularly adapt this type to the services wherever locomotives are required with large tractive force capacity, such as main line or branch line freight service, transfer, helper, switching and humping service. Model AS-416 is similar to AS-616 in appearance with the exception of the truck which in AS-416 have the wheels spaced equally. The motors are applied to the end axles and the center axle is an idler. With this construction, the AS-416 is intended for use on roadbeds requiring light axle loadings. It is a locomotive of great versatility, being suitable for operation in passenger, freight, transfer, helper or switching service.



Baldwin-Westinghouse 1,600-hp. All-Service Locomotive, Model AS-16.

Equipped with four axles, all motorized, Model AS-16 is a motive power unit of great versatility, being designed for operation in any or all railroad services, including main line or branch freight service; suburban or branch line passenger service, switching, transfer, helper and humping service.

## Baldwin-Westinghouse 1,600-Hp. Freight Locomotive Model RF-16

This locomotive is made of single units or in combination forming two, three or four unit machines, of 3,200, 4,800 and 6,400-hp. with A and B units.

## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol	0-4-4-0
A.A.R. symbol	B-B
Engines:	
Number per unit	One
Cylinders, bore and stroke, in.	12 $\frac{3}{4}$ by 15 $\frac{1}{2}$
Type	8 cyl., 4-cycle, in line, supercharged
Horsepower available for traction	1,600
Generator:	
Make	Westinghouse
Type	471
Traction motors:	
Number	4
Make	Westinghouse
Type	370
Journal bearings:	
Type	Roller
Size	6 $\frac{1}{2}$ by 12
Wheels, diameter, in.	42
Wheel base, ft.-in.:	
Truck	9-10
Locomotive	38-0
Distance between truck centers, ft.-in.	28-2
Maximum dimensions, over-all, ft.-in.:	
Width	10-6
Height	15-0

Length over coupler pulling faces:	
A Unit	54-8
B Unit	53-2
Weights in working order, lb.:	A Unit B Unit
Locomotive, total, approx.	248,000 244,000
On drivers, approx.	248,000 244,000
Minimum radius curvature, deg. (with train)	21
Supplies (total capacity):	
Lubricating oil, gal.	200
Fuel oil, gal.	1,200
Engine cooling water, gal.:	
A Unit	300
B Unit	370
Sand, cu. ft.	16
Air brake schedule	24-RL
Gear ratio	See curve
Starting tractive force, lb. (25 per cent adhesion):	
A Unit	62,000
B Unit	61,000
Continuous rating, tractive force, lb.	See curve
Maximum speed, m.p.h.	See curve

Partial List of Railroads Using Baldwin-Westinghouse 1,500-hp.,  
1,600-hp., 2,000-hp. and 3,000-hp. Road Locomotives

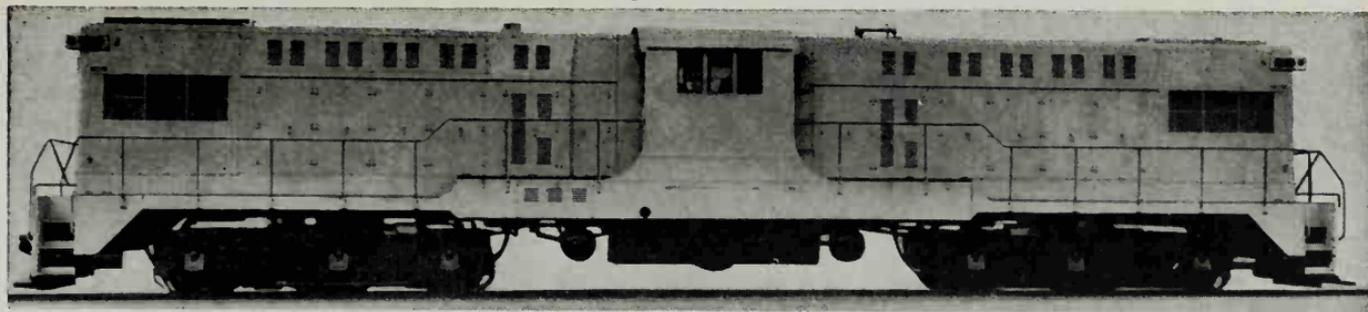
Baltimore & Ohio	National Railways of Mexico
Elgin, Joliet & Eastern	New York Central
Gulf, Mobile & Ohio	Pennsylvania
Jersey Central Lines	Seaboard Air Line
Missouri Pacific	



Baldwin-Westinghouse 6,400-hp. Locomotive with four RF-16 units.

The model RF-16 is a road freight locomotive of 1,600-hp, motive power units, available in "A" and "B" units. The "B" units are duplicates of the "A" units, except for omission of operator's cab and related equipment. The RF-16 units are engineered and built for heavy duty freight operation.

## Baldwin-Westinghouse 2,400-Hp. Transfer Locomotive Model RT-624-1

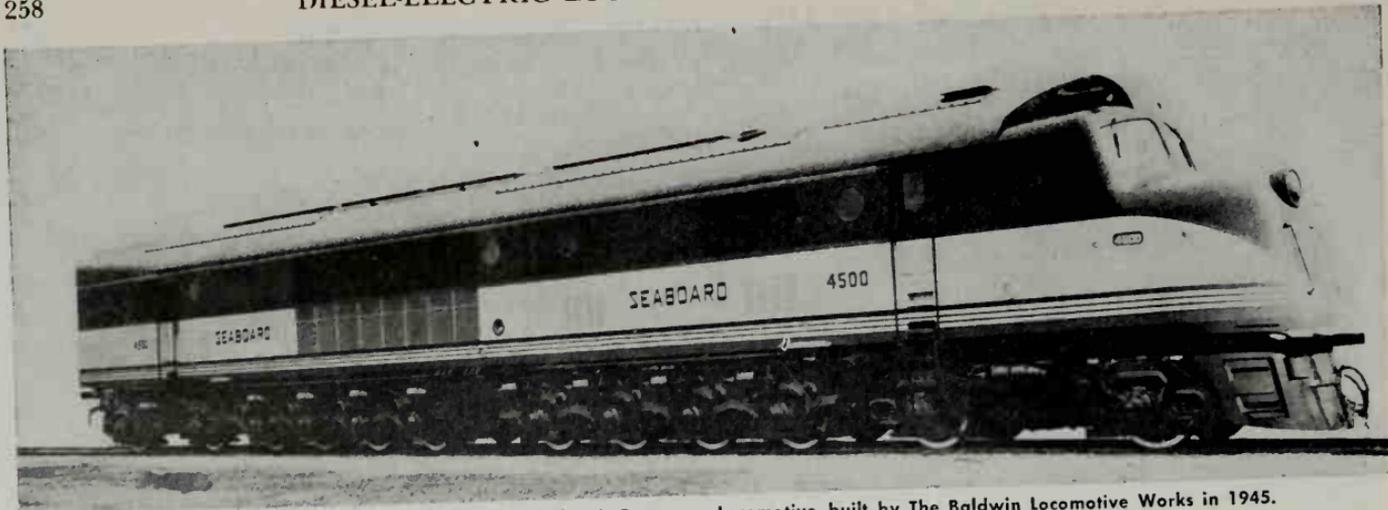


## General Characteristics, Weights and Dimensions

Type:			
Whyte symbol	.....	0-6-6-0	
A.A.R. symbol	.....	C-C	
Engines:			
Number per unit	.....	Two	
Type	.....	6 cyl., 4-cycle, in line, supercharged	
Cylinders, bore and stroke, in.	.....	12 $\frac{3}{4}$ by 15 $\frac{1}{2}$	
Horsepower available for traction, each engine	.....	1,200	
Generator:			
Make	.....	Westinghouse	
Type	.....	480	
Traction motors:			
Number	.....	6	
Make	.....	Westinghouse	
Type	.....	370	
Journal bearings:			
Type	.....	Plain	
Size	.....	.6 $\frac{1}{2}$ by 12	
Wheels, diameter, in.	.....	42	
Wheel base, ft.-in.:			
Truck	.....	13-0	
Locomotive	.....	54-9	
			Distance between truck centers, ft.-in. ....41-0
			Maximum dimensions, over-all, ft.-in.:
			Width .....10-2
			Height .....15-4 $\frac{3}{4}$
			Length over coupler pulling faces .....74-0
			Weights in working order, lh.:
			Locomotive, total, approx. ....354,000
			On drivers, approx. ....354,000
			Minimum radius curvature, deg. (with train) .....22
			Supplies (total capacity):
			Lubricating oil, gal. ....340
			Fuel oil, gal. ....1,500
			Engine cooling water, gal. ....500
			Sand, cu. ft. ....45
			Air brake schedule .....6-SL
			Gear ratio .....63:15
			Starting tractive force, lh. (30 per cent adhesion) .....106,200
			Continuous rating, tractive force, lh. ....72,900
			Maximum speed, m.p.h. ....60

## Partial List of Railroads Using Baldwin-Westinghouse 2,000-hp. and 2,400-hp. Transfer Locomotives

Atchison, Topeka & Santa Fe	Elgin, Joliet & Eastern	Pennsylvania
Duluth, South Shore & Atlantic	Minneapolis, Northfield & Southern	St. Louis-Southwestern



Seaboard Air Line No. 4500, 3,000-hp. Diesel-Electric Passenger Locomotive built by The Baldwin Locomotive Works in 1945.

#### General Characteristics, Weights and Dimensions

Type:	4-8-8-4
Whyte symbol	4-8-8-4
A.A.R. symbol	2-D + D-2
Engines:	Two
Number per unit	8 cyl., 4-cycle, in line
Type	12¾ by 15½
Cylinders, bore and stroke, in.	3,000
Horsepower available for traction	Westinghouse
Generator:	480
Make	8
Type	Westinghouse
Traction motors:	370
Number	Roller
Make	6½ by 12
Type	40
Journal bearings:	
Type	
Size	
Wheels, diameter, in.	
Wheel base, ft.-in.:	16-3
Truck	77-10
Locomotive	
Maximum dimensions, over-all, ft.-in.:	10-6
Width	15-3
Height	91-6
Length over coupler pulling faces	
Weights in working order, lb.:	577,200
Locomotive, total, approx.	410,000
On drivers, approx.	18½
Minimum radius curvature, deg. (with train)	
Supplies (total capacity):	270
Lubricating oil, gal.	3,500
Fuel oil, gal.	600
Engine cooling water, gal.	40
Sand, cu. ft.	24-RL
Air brake schedule	25-54
Gear ratio	123,000
Starting tractive force, lb. (30 per cent adhesion)	45,300
Continuous rating, tractive force, lb.	85
Maximum speed, m.p.h.	

## Fairbanks-Morse 1,600-Hp. All-Purpose Locomotives

## General Characteristics, Weights and Dimensions

	H16-44	H16-64	H16-66
Model .....	H16-44	H16-64	H16-66
Type:			
Whyte symbol .....	0-4-4-0	0-6-6-0	0-6-6-0
A.A.R. symbol .....	B-B	A1A-A1A	C-C
Engines:			
Number per unit .....	One	One	One
Type .....	8 cyl., 2 cycle, opposed piston	8 cyl., 2 cycle, opposed piston	8 cyl., 2 cycle, opposed piston
Model .....	38D8½	38D8½	38D8½
Cylinders, bore and stroke, in. ....	8½ by 10	8½ by 10	8½ by 10
Horsepower for traction .....	1,600	1,600	1,600
Traction motors, number .....	4	4	6
Journal bearings:			
Type .....	Plain	Plain	Plain
Size .....	7 by 14	6½ by 12	6½ by 12
Wheels, diameter, in. ....	42	42	42
Wheel base, ft.-in.:			
Truck .....	9-6	10-10	13-0
Locomotive .....	39-6	40-10	42-3
Distance between truck centers, ft.-in. ....	30-0	30-0	30-0
Maximum dimensions, over-all, ft.-in.:			
Width .....	10-4	10-4	10-4
Height .....	14-6	14-6	14-0
Length over coupler pulling faces .....	54-0	55-8	55-8
Weights in working order, lb.:			
Locomotive, total, approx. ....	240,000	252,000	300,000
On drivers, approx. ....	240,000	168,000	300,000
Minimum radius curvature, deg. (with train) .....	23	22	22
Supplies (total capacity):			
Lubricating oil, gal. ....	300	300	300
Fuel oil, gal. ....	900	800	800
Engine cooling water, gal. ....	175	175	175
Train heating water, gal. ....	740	740	740
Sand, cu. ft. ....	28	28	28
Air brake schedule .....	6-SL	6-SL	6-SL
Starting tractive force, lb. (30 per cent adhesion) .....	72,000	50,400	90,000
Gear ratio .....	68:15 63:15 62:17 60:19	68:15 63:15	68:15 63:15
Continuous rating, tractive force, lb. ....	52,500 48,600 42,200 36,600	52,500 48,600	52,500 48,600
Maximum speed, m.p.h. ....	65 70 80 90	65 70	65 70



Chicago, Indianapolis & Louisville No. 36, 1,600-hp. All-Purpose Locomotive built by Fairbanks, Morse & Company in 1947.

**List of Railroads Using Fairbanks-Morse 1,600-hp. All-Purpose Locomotives**

Akron, Canton & Youngstown  
 Atchison, Topeka & Santa Fe  
 Central of Georgia  
 Central Railroad of New Jersey  
 Chicago, Indianapolis & Louisville

Chicago & North Western (6-Motor)  
 Chicago, Rock Island & Pacific  
 Denver & Rio Grande Western  
 Kansas City Southern  
 Long Island

Missouri-Kansas-Texas  
 New York, New Haven & Hartford  
 Southern  
 Union Pacific

## Fairbanks-Morse 2,000-Hp. Heavy Duty Locomotive Model H 20-44

## General Characteristics, Weights and Dimensions

Model .....	H20-44	Wheel base, ft.-in.:	
Type:		Truck .....	9-6
Whyte symbol .....	0-4-4-0	Locomotive .....	36-6
A.A.R. symbol .....	B-B	Distance between truck centers, ft.-in. ....	27-0
Engines:		Maximum dimensions, over-all, ft.-in.:	
Number per unit .....	One	Width .....	10-6
Type .....	10 cyl., 2-cycle, opposed piston	Height .....	14-6
Model .....	38D8½	Length over coupler pulling faces .....	51-0
Cylinders, bore and stroke, in. ....	8½ by 10	Weights in working order, lb.:	
Horsepower available for traction .....	2,000	Locomotive, total, approx. ....	250,000
Generator:		On drivers, approx. ....	250,000
Make .....	Westinghouse	Minimum radius curvature, deg. (with train) .....	23
Type .....	474-A	Supplies (total capacity):	
Traction motors:		Lubricating oil, gal. ....	350
Number .....	4	Fuel oil, gal. ....	1,200
Make .....	Westinghouse	Engine cooling water, gal. ....	200
Type .....	370-DE	Sand, cu. ft. ....	28
Journal bearings:		Air brake schedule .....	6SL
Type .....	Plain	Starting tractive force, lb. (30 per cent adhesion) .....	75,000
Size .....	7 by 14	Gear ratio .....	68:15, 63:15
Wheels, diameter, in. ....	42	Continuous rating, tractive force, lb. ....	52,500, 48,600
		Maximum speed, m.p.h. ....	65, 70

## Partial List of Railroads Using the Fairbanks-Morse 2,000-hp.

## Heavy Duty Locomotive H20-44

Akron, Canton & Youngstown  
 New York Central  
 Pennsylvania  
 Pittsburgh & West Virginia  
 Union Pacific



Union Pacific No. D.S. 1361, 2,000-hp. Heavy Duty Switching Locomotive built by Fairbanks-Morse & Company.

DIESEL-ELECTRIC LOCOMOTIVES: Fairbanks-Morse  
Fairbanks-Morse Consolidation-Line Freight Locomotives

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**General Characteristics, Weights and Dimensions**

Model	CF16-4	CF20-4	CF24-4
Type:			
Whyte symbol	0-4-4-0	0-4-4-0	0-4-4-0
A.A.R. symbol	B-B	B-B	B-B
Engines:			
Number per unit	One	One	One
Type	8 cyl., 2 cycle opposed piston	10 cyl., 2 cycle, opposed piston	12 cyl., 2 cycle, opposed piston
Cylinders, bore and stroke, in.	8½ by 10	8½ by 10	8½ by 10
Horsepower for traction	1,600	2,000	2,400
Traction motors, number	4	4	4
Journal bearings:			
Type	Roller	Roller	Roller
Size	6½ by 12	6½ by 12	6½ by 12
Wheels, diameter, in.	42	42	42
Wheel base, ft.-in.:			
Truck	9-4	9-4	9-4
Locomotive	43-4	43-4	43-4
Distance between truck centers, ft.-in.	34-0	34-0	34-0
Maximum dimensions, over-all, ft.-in.:			
Width	10-6	10-6	10-6
Height	15-0	15-0	15-0
Length over coupler pulling faces	56-6	56-6	56-6
Weights in working order, lb.:			
Locomotive, total, approx.	240,000	246,000	252,000
On drivers, approx.	240,000	246,000	252,000
Minimum radius curvature, deg. (with train)	21	21	21
Supplies (total capacity):			
Lubricating oil, gal.	300	350	400
Fuel oil, gal.	1,200	1,200	1,200
Engine cooling water, gal.	310	330	350
Sand, cu. ft.	20	20	20
Air brake schedule	24-RL	24-RL	24-RL
Starting tractive force, lb. (30 per cent adhesion)	72,000	73,800	75,600
Gear ratio	68:15	63:15 62:17	60:19
Continuous rating, tractive force, lb.	52,500	48,600 42,200	36,500
Maximum speed, m.p.h.	65	70 80	90

**Partial List of Railroads Using the Fairbanks-Morse Consolidation Line Heavy Duty Freight Locomotives, Models CF16-4, CF20-4, CF24-4**

Chicago, Milwaukee, St. Paul & Pacific

New York Central

Pennsylvania



New York Central No. 5012, Class DFA-6a, 2,000-hp. Freight Locomotive, Model CF 20-4, built by Fairbanks-Morse & Company in 1950.



Pennsylvania No. 9448, Class FF-16, Three Unit, 4,800-hp. Freight Locomotive built by Fairbanks-Morse & Company in 1950.

## DIESEL-ELECTRIC LOCOMOTIVES: Fairbanks-Morse

### Fairbanks-Morse Consolidation-Line Passenger Locomotives

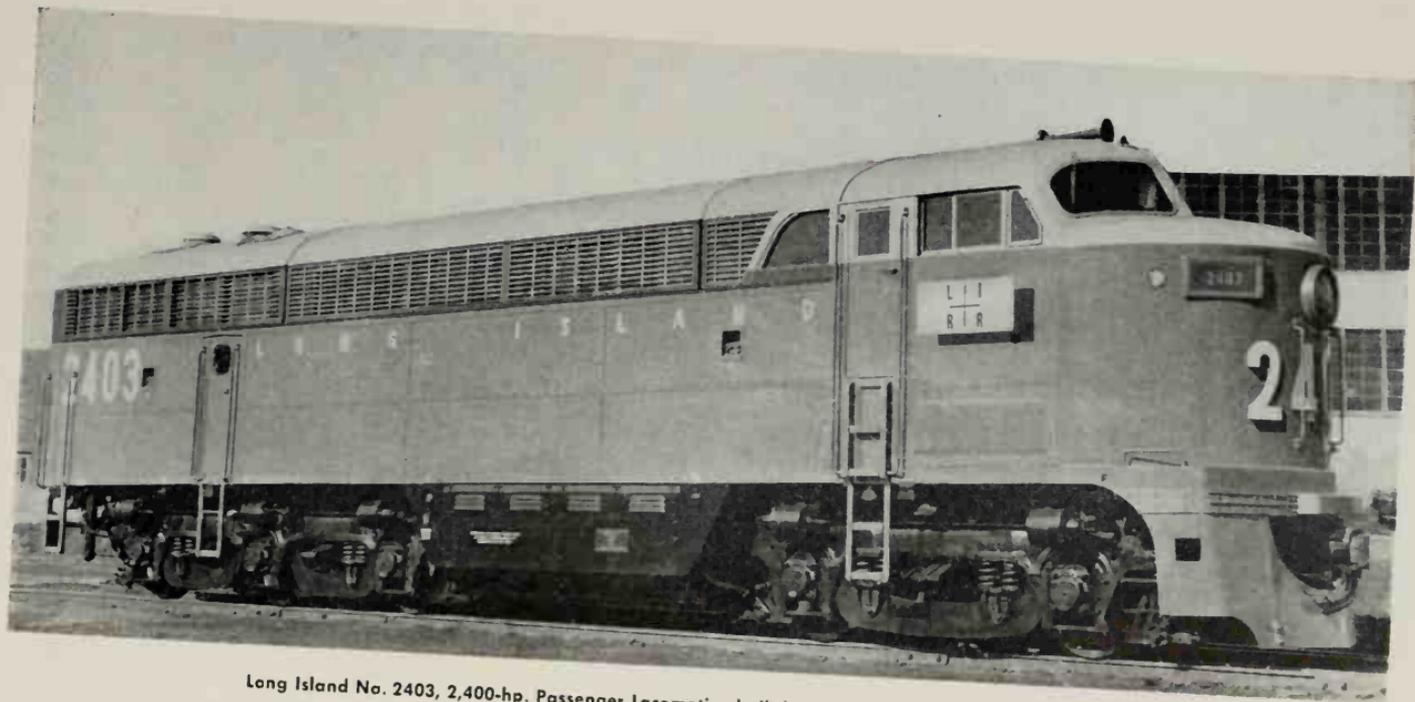
General Characteristics, Weights and Dimensions					
Model	CP16-4	CP16-5	CP20-5	CP24-5	
Type	CP16-4	CP16-5	CP20-5	CP24-5	
Whyte symbol	0-4-4-0	0-4-6-0	0-4-6-0	0-4-6-0	
A.A.R. symbol	B-B	B-A1A	B-A1A	B-A1A	
Engines:					
Number per unit	One	One	One	One	
Type	8 cyl., 2 cycle, opposed piston	8 cyl., 2 cycle, opposed piston	10 cyl., 2 cycle, opposed piston	12 cyl., 2 cycle, opposed piston	
Cylinders, bore and stroke, in.	8½ by 10	8½ by 10	8½ by 10	8½ by 10	
Horsepower for traction	1,600	1,600	2,000	2,400	
Traction motors, number	4	4	4	4	
Journal bearings:					
Type	Roller	Roller	Roller	Roller	
Size	6½ by 12	6½ by 12	6½ by 12	6½ by 12	
Wheels, diameter, in.	42	42	42	42	
Wheel base, ft.-in.:					
Truck: Front	9-4	9-4	9-4	9-4	
Rear	9-4	15-6	15-6	15-6	
Locomotive	43-4	43-5	43-5	43-5	
Distance between truck centers, ft.-in.	34	31	31	31	
Maximum dimensions, over-all, ft.-in.:					
Width	10-6	10-6	10-6	10-6	
Height	15-0	15-0	15-0	15-0	
Length over coupler pulling faces	56-6	56-6	56-6	56-6	
Weights in working order, lb.:					
Locomotive, total, approx.	250,000	272,000	282,000	286,000	
On drivers, approx.	250,000	222,000	230,000	234,000	
Minimum radius curvature, deg. (with train)	21	21	21	21	
Supplies (total capacity):					
Lubricating oil, gal.	300	300	350	400	
Fuel oil, gal.	1,200	1,200	1,200	1,200	
Engine cooling water, gal.	310	310	330	350	
Train heating water, gal.	700	1,400	1,400	1,400	
Sand, cu. ft.	20	20	20	20	
Air brake schedule	24-RL	24-RL	24-RL	24-RL	
Starting tractive force, lb. (30 per cent adhesion)	75,000	66,600	69,000	70,200	
Gear ratio	68:15	63:15	62:17	60:19	58:21
Continuous rating, tractive force, lb.	52,500	48,600	42,200	36,600	32,000
Maximum speed, m.p.h.	65	70	80	90	100
					110

#### Partial List of Railroads Using the Fairbanks-Morse Consolidation Line Passenger Locomotives.

Long Island

New York, New Haven &amp; Hartford

New York Central



Long Island No. 2403, 2,400-hp. Passenger Locomotive built by Fairbanks-Morse & Company in 1951.





Union Pacific Nos. 984A & 985A, 4,000-hp. Two Unit Passenger Locomotive built by Fairbanks-Morse & Company in 1947.

Each unit is equipped with two six-wheel trucks having four traction motors driving the end pair of wheels in each truck.

## Fairbanks-Morse, 1,200-Hp. Switching Locomotive. Model H 12-44

## General Characteristics, Weights and Dimensions

Type:	
Whyte symbol	0-4-4-0
A.A.R. symbol	B-B
Engines:	
Number per unit	One
Type	6 cyl., 2-cycle, opposed piston
Model	38D8½
Cylinders, bore and stroke, in.	8½ by 10
Horsepower for traction	1,200
Traction motors, number	4
Journal bearings:	
Type	Plain
Size	6½ by 12
Wheels, diameter, in.	40
Wheel base, ft.-in.:	
Truck	8-0
Locomotive	33-6
Distance between truck centers, ft.-in.	25-6
Maximum dimensions, over-all, ft.-in.:	
Width	10-2
Height	14-6
Length over coupler pulling faces	48-10
Weights in working order, lb.:	
Locomotive, total, approx.	246,000
On drivers, approx.	246,000
Minimum radius curvature, deg. (with train)	29.5
Supplies (total capacity):	
Lubricating oil, gal.	250
Fuel oil, gal.	750
Engine cooling water, gal.	135
Sand, cu. ft.	28

Air brake schedule	6-SL
Gear ratio	68:14
Starting tractive force, lb. (30 per cent adhesion)	73,800
Continuous rating, tractive force, lb.	34,000
Maximum speed, m.p.h.	60

Partial List of Railroads Using Fairbanks-Morse 1,200-hp.  
Switching Locomotive H12-44

Apache  
 Atchison, Topeka & Santa Fe  
 Baltimore & Ohio  
 Chicago, Indianapolis & Louisville  
 Chicago, Milwaukee, St. Paul & Pacific  
 Chicago North Western  
 Denver & Rio Grande Western  
 Indianapolis Union  
 Kentucky & Indiana Terminal  
 Minneapolis, St. Paul & Sault Ste. Marie  
 Minnesota Western  
 New York Central  
 New York, Chicago & St. Louis (Nickel Plate)  
 Pennsylvania  
 St. Louis-San Francisco  
 Terminal Railroad Association of St. Louis  
 Union Pacific  
 Wabash



New York Central No. 9110, Class DES-14E, 1,200-hp. Switching Locomotive built by Fairbanks-Morse & Company in 1950.

DIESEL ELECTRIC LOCOMOTIVES: Canadian Loco. Co.



Canadian Locomotive Company, Ltd. No. 7005 & 7006, Two Unit 3,200-hp. Freight Locomotive powered by Fairbanks-Morse engines.  
Total weight 520,000 lb., built in July 1950.



Chicago, Milwaukee, St. Paul & Pacific No. E-12, Class EP-3, 3,000-Volt D.C. Passenger Locomotive built by the Westinghouse Electric & Mfg. Co. and The Baldwin Locomotive Works in 1918. Nos. E-10 to E-19.

Length inside coupler knuckles .....88 ft. 7 in.  
 Total wheel base .....79 ft. 10 in.  
 Rigid wheel base .....16 ft. 9 in.  
 Total weight .....567,000 lb.

Weight on drivers .....367,000 lb.  
 Continuous rating .....3,400 hp.  
 Tractive force .....49,000 lb.  
 Maximum tractive force .....153,000 lb.

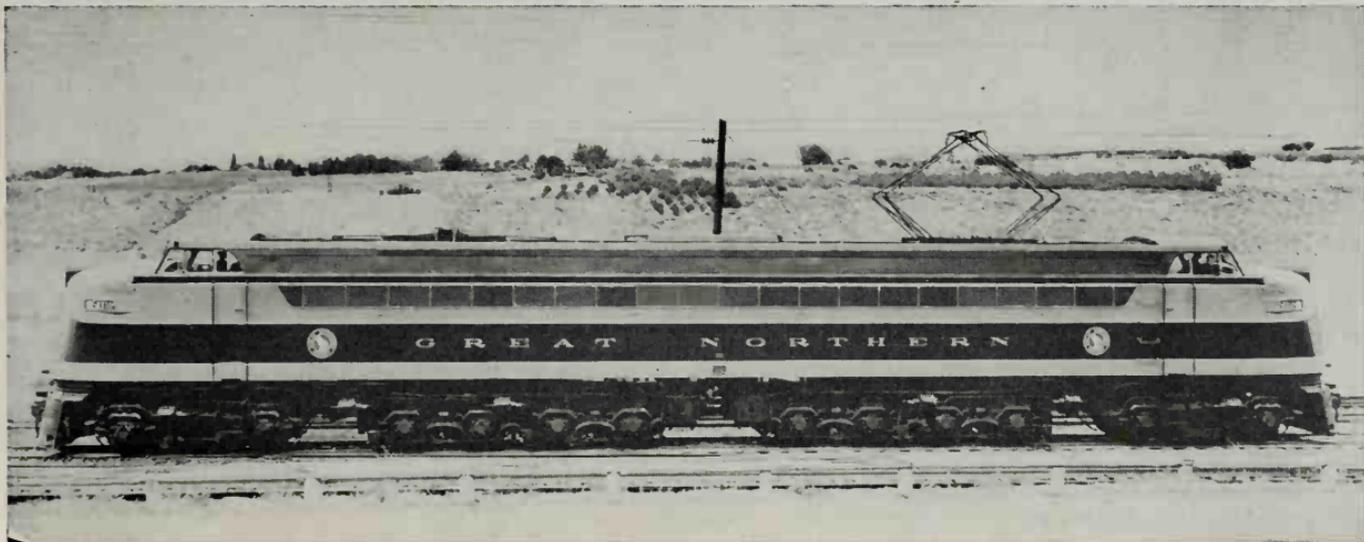
Passenger traffic on the 440-mile line through the Rockies between Harlowton, Montana and Avery, Idaho was handled by these ten locomotives which are capable of hauling 12-car trains unassisted over the entire division.

## ELECTRIC LOCOMOTIVES: 2 (1-D-1) Type



Great Northern Double-Unit Motor-Generator Type Electric Passenger and Freight Locomotive, Class Z-1, built by The Baldwin Locomotive Works and Westinghouse Electric Corporation in 1926.

Originally there were ten single-unit locomotives of this type Nos. 5000-5009. They are now operated as five double units equipped with eight 600-volt D. C. traction motors. Total weight 714,400 lb. Weight on driving wheels 550,000 lb. Diameter of driving wheels 56 in. Total overall length 94 ft. 4 in. Starting tractive force, 137,400 lb., 3,660 continuous horsepower, maximum speed 37.5 miles per hour.



Great Northern Single Cab, Motor-generator Locomotive, built by General Electric Company in 1946. Total weight 720,000 lb., 11,000-volt, 25 cycle, single phase 5,000-hp., 119,000 lb. tractive force, Class B-D + D-B with all axles motorized.

Two of these large locomotives operate the Cascade Tunnel route on the GN. They are numbered 5018-5019, Class W-1.



Cleveland Union Terminal Electric Locomotive for passenger service, built by American Locomotive Company and General Electric Company in 1929.

These 3,000-volt D. C. locomotives operated through trains on the electrified section of the NYC at Cleveland, Ohio. The advent of diesels has curtailed their use and one of them has been converted to 600-volt operation in the New York City area, with more contemplated. For this service the pantograph is removed and third rail shoes added for collecting the electric current. Total weight 408,000 lb., 2,465-hp., 48 inch drivers and tractive force 23,600 lb.



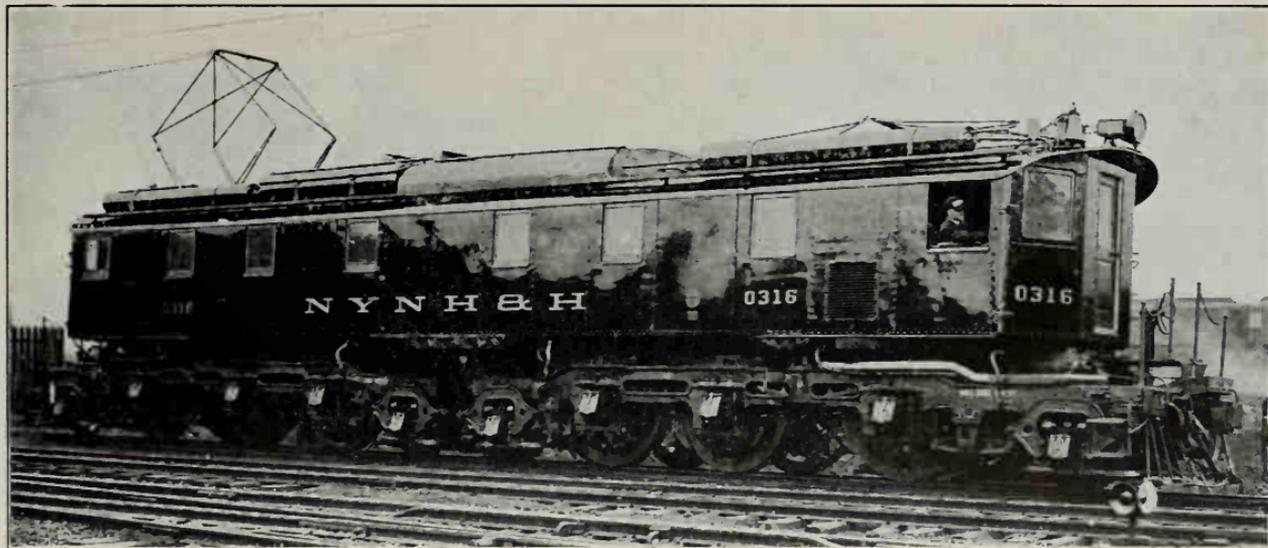
New York Central Freight Locomotive Class R-2, built by American Locomotive Company and General Electric Company in 1930.

For handling freight in the electrified zone around New York City, the NYC uses 42 of these 600-volt D. C. locomotives. They weigh 266,000 lb., all carried on 44 in. diameter driving wheels. The total horsepower is 2,025 with a tractive force of 31,620 lb.



**New York Central Electric Auxiliary for Diesel Pushers, Class DHT-1a, operates an current drawn from Diesel-Electric Switchers.**

This unit was converted from a double unit D. C. freight locomotive by cutting down the cab to a housing for the control equipment only. It was originally built by the American Locomotive Co. and General Electric Co. in 1926.



New York, New Haven & Hartford 11,000-volt, 25-cycle, Alternating Current Passenger Locomotive, Class EP-2, Road Nos. 0300-0326, built by Westinghouse Electric Corporation and The Baldwin Locomotive Works.

The largest single group of electric passenger locomotives on the New Haven is represented by these 27 box cab type engines that were built between 1919 and 1928. As shown here they were built with pantograph trolley but have since been equipped with third-rail shoes for operation on NYC tracks into Grand Central Terminal. Total weight varies from 350,000 lb. to 358,000 lb., maximum tractive force 47,500 lb., diameter of driving wheels 63 in.



New York, New Haven & Hartford 11,000-volt A.C. and 600-volt D.C. Electric Passenger Locomotive, Class EP-3, Road Nos. 0351-0360, built by Westinghouse Electric Corporation and The Baldwin Locomotive Works in 1931.

Prior to the streamline era New Haven acquired these ten engines to operate its fast trains from Grand Central Terminal in New York City to New Haven, Conn. They were the basis of design for the GG-1 class on the Pennsylvania and are capable of making 100 miles an hour. They weigh a total of 403,000 lb. and have a maximum tractive force of 68,500 lb.



New York, New Haven & Hartford Electric Passenger Locomotive, Class EP-4, Road Nos. 0361-0366, combination 11,000-volt A.C. overhead and 600-volt D.C. third rail, built by General Electric Co. in 1938.

For operating on the tracks of the NYC into Grand Central Terminal, which is equipped with electrified third rail, the New Haven provides its alternating current locomotives with collector shoes for direct current pick-up. Total weight 432,000 lb and the maximum tractive force 68,500 lb.



New York, New Haven & Hartford 11,000-volt A.C. Freight Locomotive, Class EF-3a, Road Nos. 0155-0159.

Ten of these freight locomotives are in service on the New Haven. Five were built by The Baldwin Locomotive Works-Westinghouse Electric Corp. in 1942; Nos. 0150-0154, Class EF-3 and five by the General Electric Co. in 1943; Nos. 0155-0159. They have a maximum tractive force of 90,000 lb., weight on driving wheels 360,000 lb., total weight 494,000 lb. Their continuous capacity at 65 miles per hour is 4,800 horsepower.



Pennsylvania Railroad 11,000-Volt Alternating Current Locomotive, Class GG-1, Nos. 4800-4938, for passenger service, built by General Electric Company, Westinghouse Electric Corporation, The Baldwin Locomotive Works and Pennsylvania Railroad.

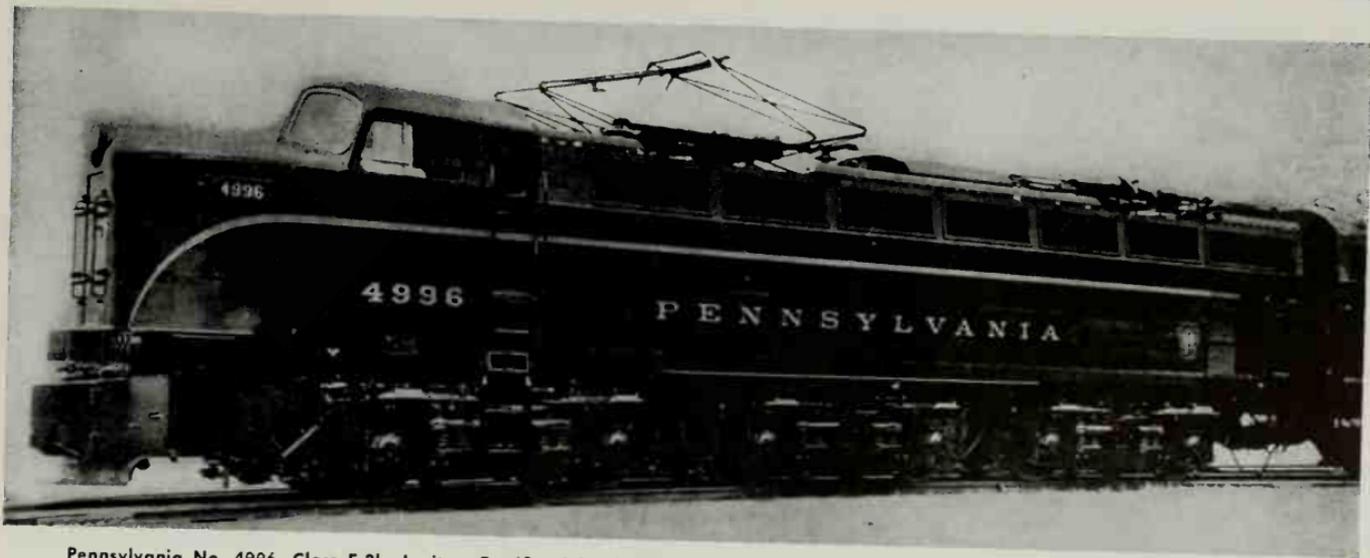
Engine truck wheel diameter .....	36 in.	Weight on drivers .....	303,000 lb.
Driving wheel diameter .....	57 in.	Total weight .....	477,000 lb.
Rigid wheel base .....	13 ft. 8 in.	Rating continuous hp. at rail .....	4,620
Total wheel base .....	69 ft. 0 in.	Maximum starting tractive force,	
Length—coupler faces .....	79 ft. 6 in.	25 per cent adhesion .....	70,700 lb.
Number of motors .....	12	Maximum speed .....	100 m.p.h.

The mainstay of Pennsy electric operation between New York, Philadelphia, Washington and Harrisburg is the GG-1 locomotive. The first of these was built in 1934 following a series of experiments with a New Haven electric locomotive whose wheel arrangement proved to be more suitable than the P-5 Class in very high speed service. Beginning in 1934 and continuing to 1942, a total of 139 GG-1's was constructed.



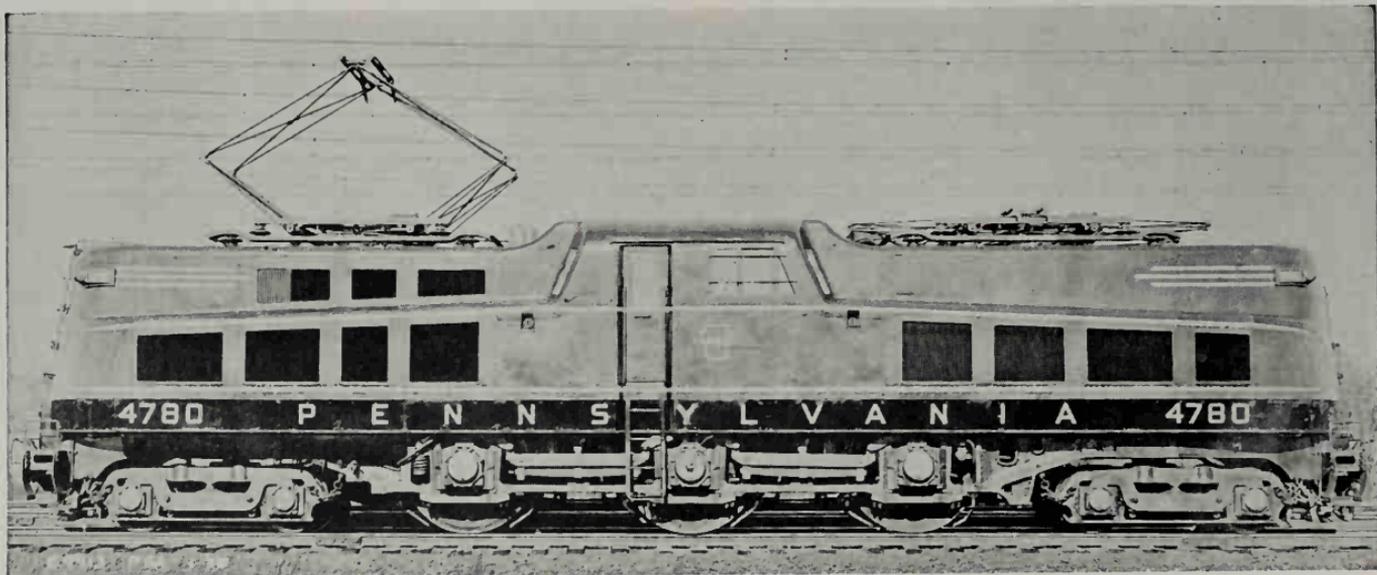
Pennsylvania No. 4941, Class E-2b, 111,000-Volt A.C., 2,500-hp. Freight Locomotive, built by the General Electric Co. in 1951.

Tractive force 35,400 lb. Diameter of driving wheels 48 in. Length over all 54 ft. 3 in. Total weight 240,000 lb. Two of these units are generally operated together forming a 5,000-hp. locomotive. They are numbered 4939-4942, Class E-2b.



Pennsylvania No. 4996, Class E-3b, Ignitron-Rectifier 3,000-hp. Freight Locomotive built by the Westinghouse Electric Corp., in 1951.

Tractive force 66,000 lb. Diameter of driving wheels 44 in. Length over all 62 ft. 0 in. Total weight 375,000 lb. Two of these units are generally operated together forming a 6,000-hp. locomotives capable of handling the heaviest freight trains. Alternating current at 11,000 volts is converted to direct current by the ignitron rectifiers and used in the traction motors of these locomotives. Four units are in service, two as shown and two are equipped with three axle trucks. The first are numbered 4995 and 4996, the last 4997 and 4998 Class E-2c.



Pennsylvania 11,000-volt Alternating Current Locomotive, Class P5a, for passenger service, built by General Electric Co., Westinghouse Electric Corporation and Pennsylvania Railroad.

The 4700's were the first electric locomotives on the Pennsylvania to be built in quantity. They were originally built with a large box-like cab and some of them are running today with that construction. After the GG-1 Class was adopted for passenger service many of the P-5 Class were relegated to freight service and it is not unusual to see three of them coupled together operating as multiple units on heavy freight trains



Pennsylvania Railroad 11,000-volt Alternating Current Locomotive, No. 7850, Class O-1, for passenger service, built at Altoona in 1930.

Eight of these locomotives were constructed preceding the Class P-5 engines which they resemble but have one less pair of drivers. Their total weight is 306,500 lb. Maximum starting tractive force 33,500 lb. Diameter of driving wheels 72 in.



Virginian 6,800-hp. Motor-Generator Locomotive built by the General Electric Co. in 1948.

Four of these giants Nos. 125-128 composed of two units each haul the heaviest coal trains on the road. Each double locomotive weighs 1,033,832 lb. and has a starting tractive force of 260,000 lb. All wheels are 42 in. diameter and each truck has a 9 ft. wheel base. The total length over all is 150 ft. 8 in. A. C. current is collected from overhead wire; 11,000 volts, single phase, 25 cycle.

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*(Continued from front flap)*

as a convenient up-to-date survey of all types of modern motive power.

The contents of this extraordinary book are arranged that anyone can instantly identify any locomotive he sees by noting its wheel arrangement and particular construction design. Not only does it identify the locomotive but it also describes noteworthy features peculiar to certain machines together with supplying operating and performance data as well as principal dimensions and characteristics of each locomotive pictured. Finally, it lists the railroads on which the locomotives are now or have recently been operated.

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**WALTER A. LUCAS**, by having the good fortune to grow up in and around Paterson, New Jersey, where he became well acquainted with the men and products of the famous old Rogers Locomotive Works and the Cooke Locomotive Works, became a locomotive and railroad enthusiast at the early age of 10.

From that time on to the present day his love for and appreciation of fine railroad equipment, whether full-size or model, has been equaled only by his extensive knowledge of American railroad and motive power history. Not only

has Walter Lucas engaged in the drafting and designing of railroad equipment for such firms as the American Car and Foundry Co., Canadian Pacific Railway Co., Magor Car Co., Gregg Car Co., and General Chemical Co., but fortunately for the purposes of this book he has also been a newspaper correspondent, an amateur railroad photographer of wide recognition, and an industrious collector of widely assorted American railroadiana. Further, he played a leading role in instituting and acquiring exhibits for the famous railroad collection of The New Jersey Historical Society museum in Newark, N. J.

In addition to numerous contributions to publications of the *Railroadians of America*, of which he is an active member, Walter Lucas is also the author of *History of the New York, Susquehanna & Western Railroad*, and *From the Hills to the Hudson*, the history of the forerunners of the modern Erie Railroad. Since 1945 Mr. Lucas has been associate editor of the *Car Builders'* and *Locomotive Cyclopedias* where his broad experience in the railroad equipment field has added lustre to the international reputation of these authoritative volumes.

Mr. Lucas' home is now and has been for years in Hawthorne, N. J., within easy whistle distance—preferably steam—of his beloved Erie Railroad.

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