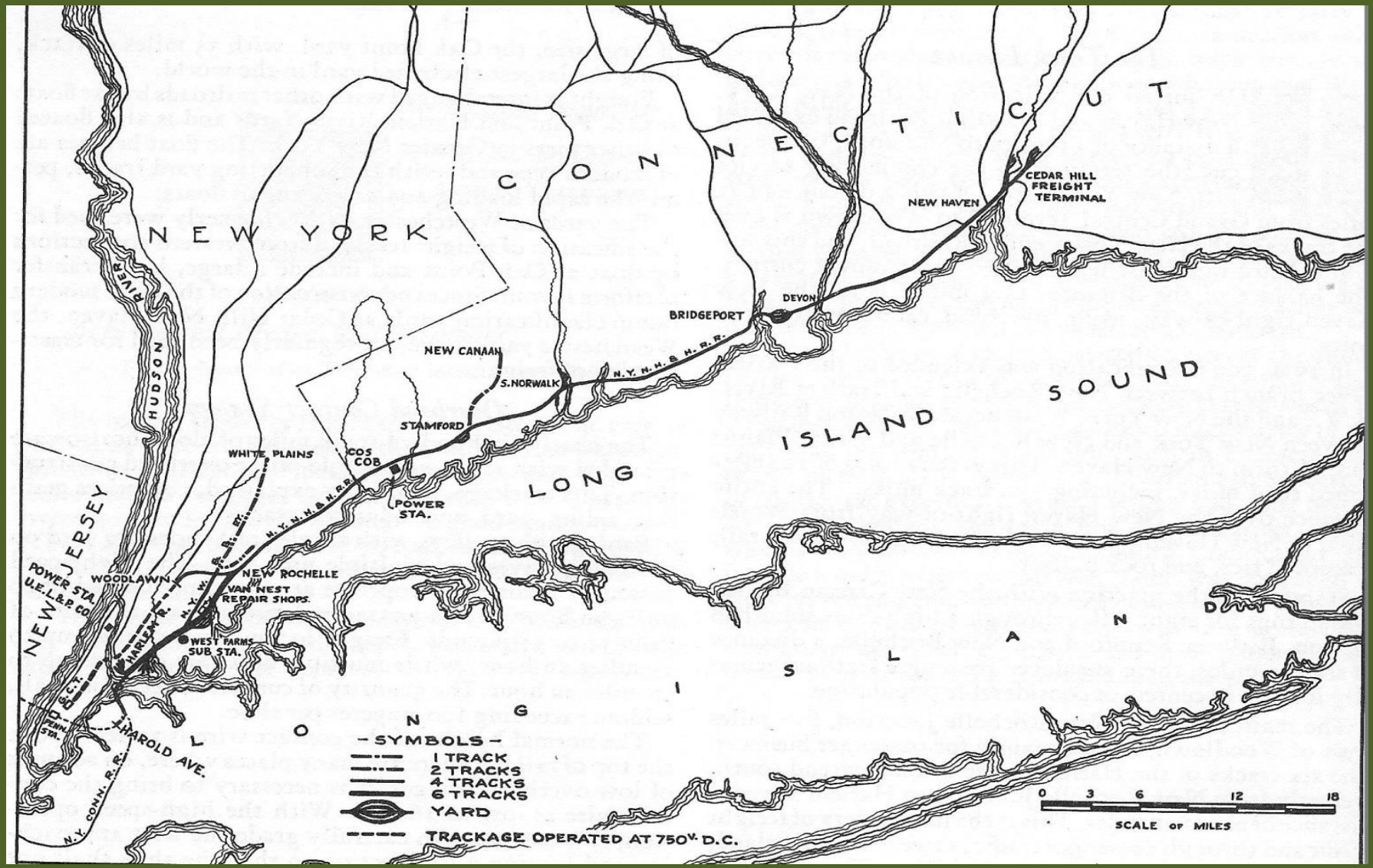

NEW HAVEN RAILROAD ELECTRIC ENGINES AND THE CATENARY THAT POWERED THEM
NEW HAVEN
360

Why did the NYNH&H electrify?
A law was passed in NYC prohibiting the use of combustion in RR tunnels

Pennsylvania Station

Grand Central Terminal

Map showing electrification in 1914

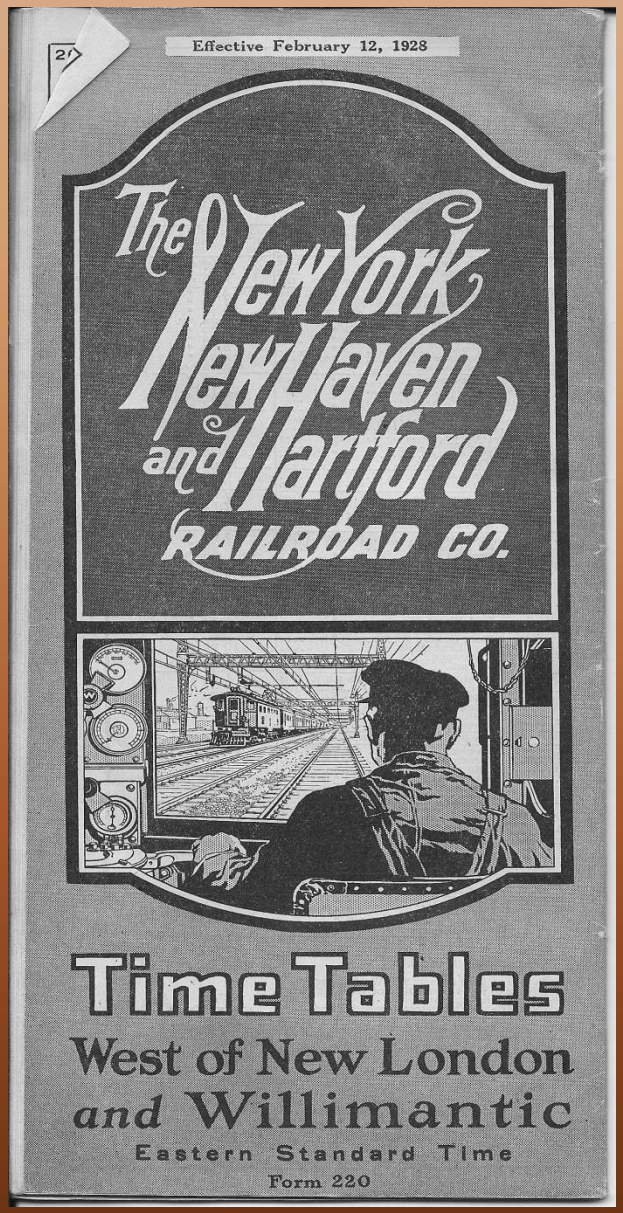


ELECTRIC POWER

THE **NEW HAVEN** R.R.

Serving New York and the Great Industrial States of Massachusetts, Rhode Island and Connecticut

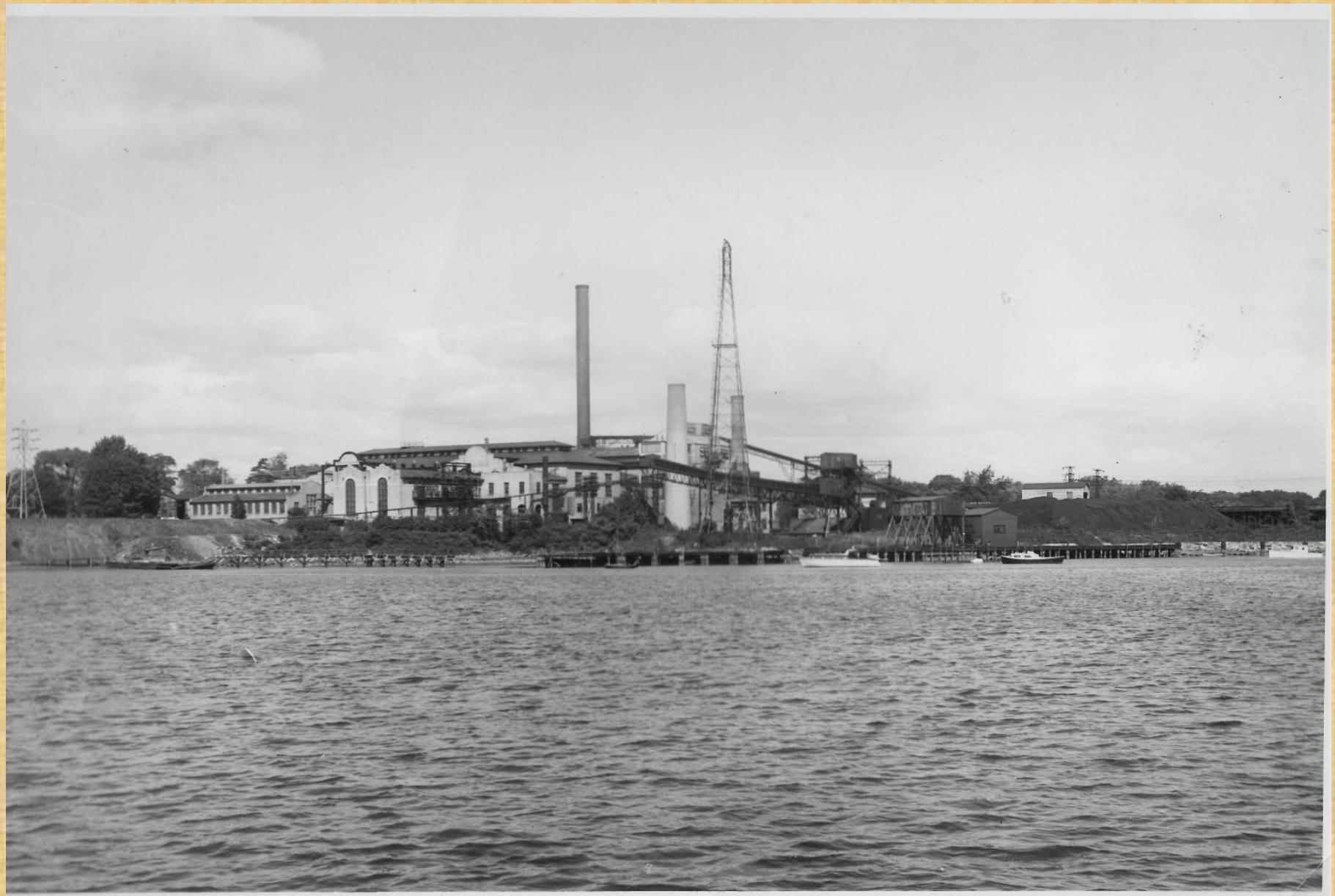
Timetables featuring motors



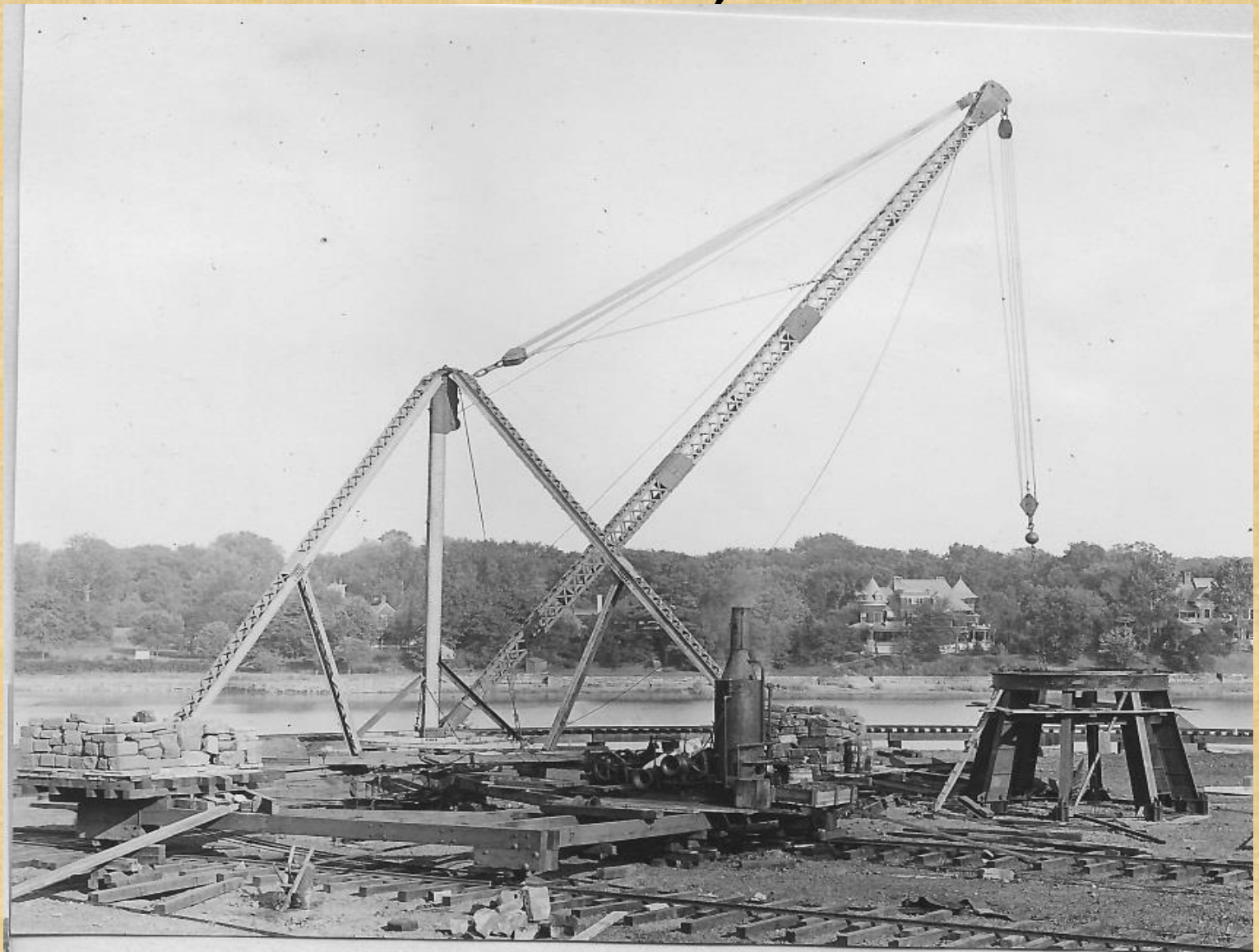
Standard warning signs in the electric zone

Cos Cob, CT Power Plant ca.1920

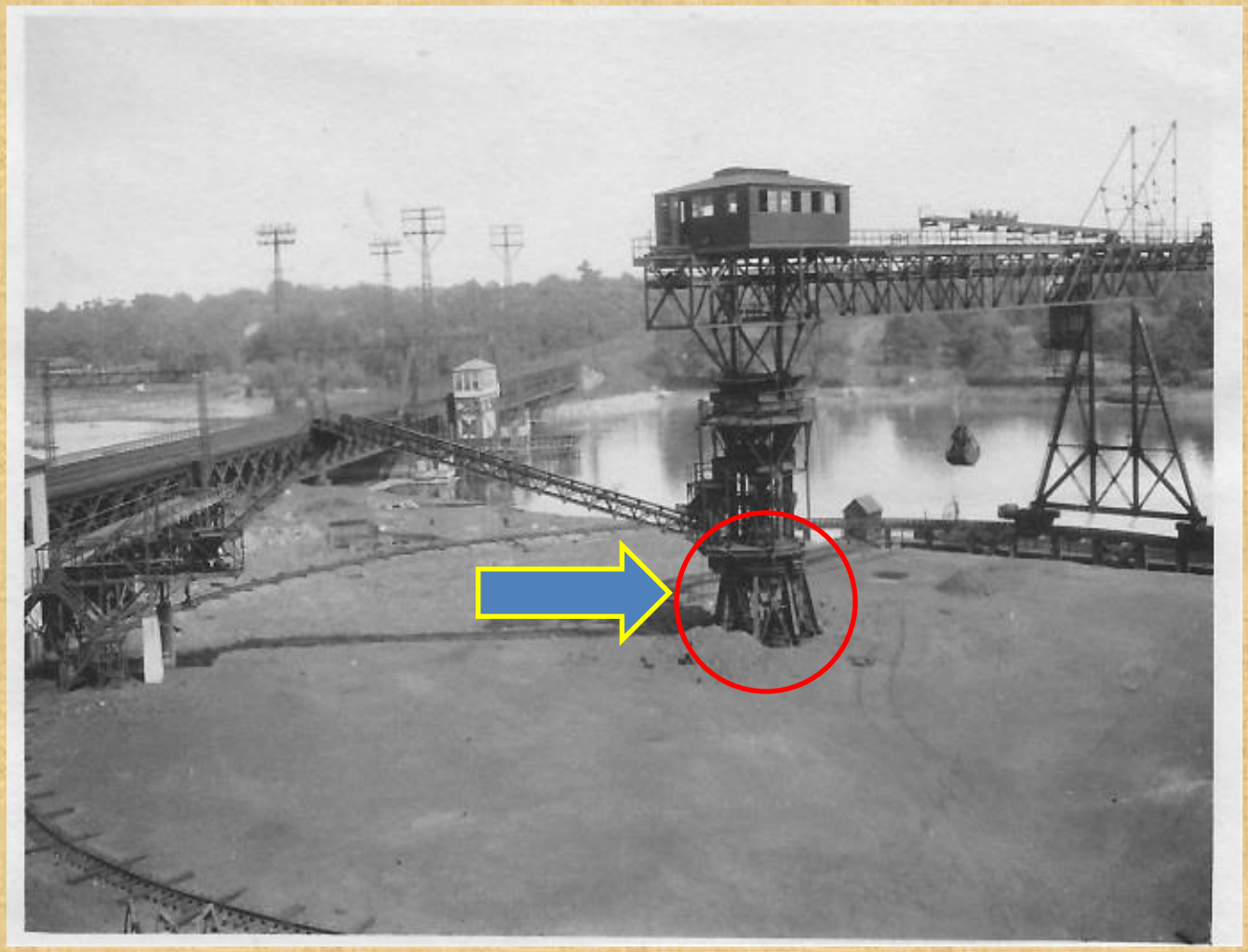
Power Plant viewed from Mianus River



Coal unloading derrick pedestal under construction, ca.1902



Completed coal unloading derrick

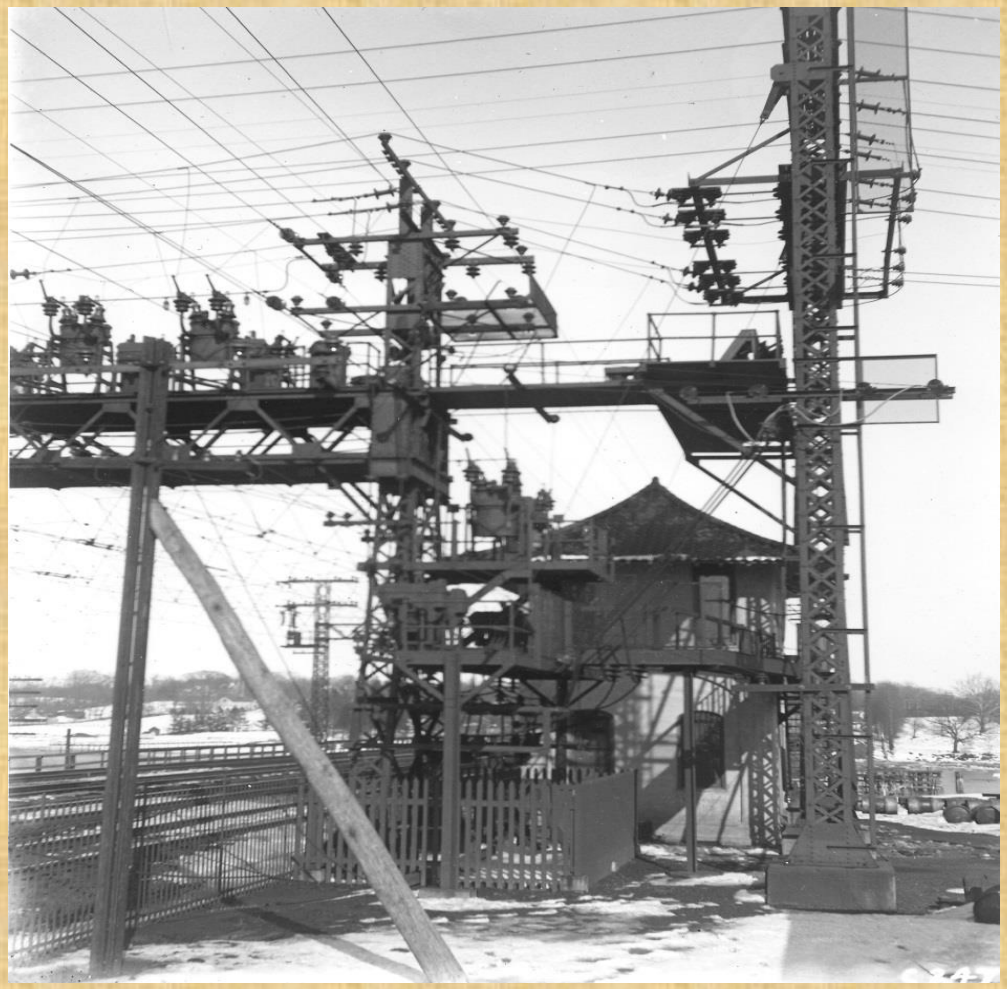


Cos Cob coal trestle

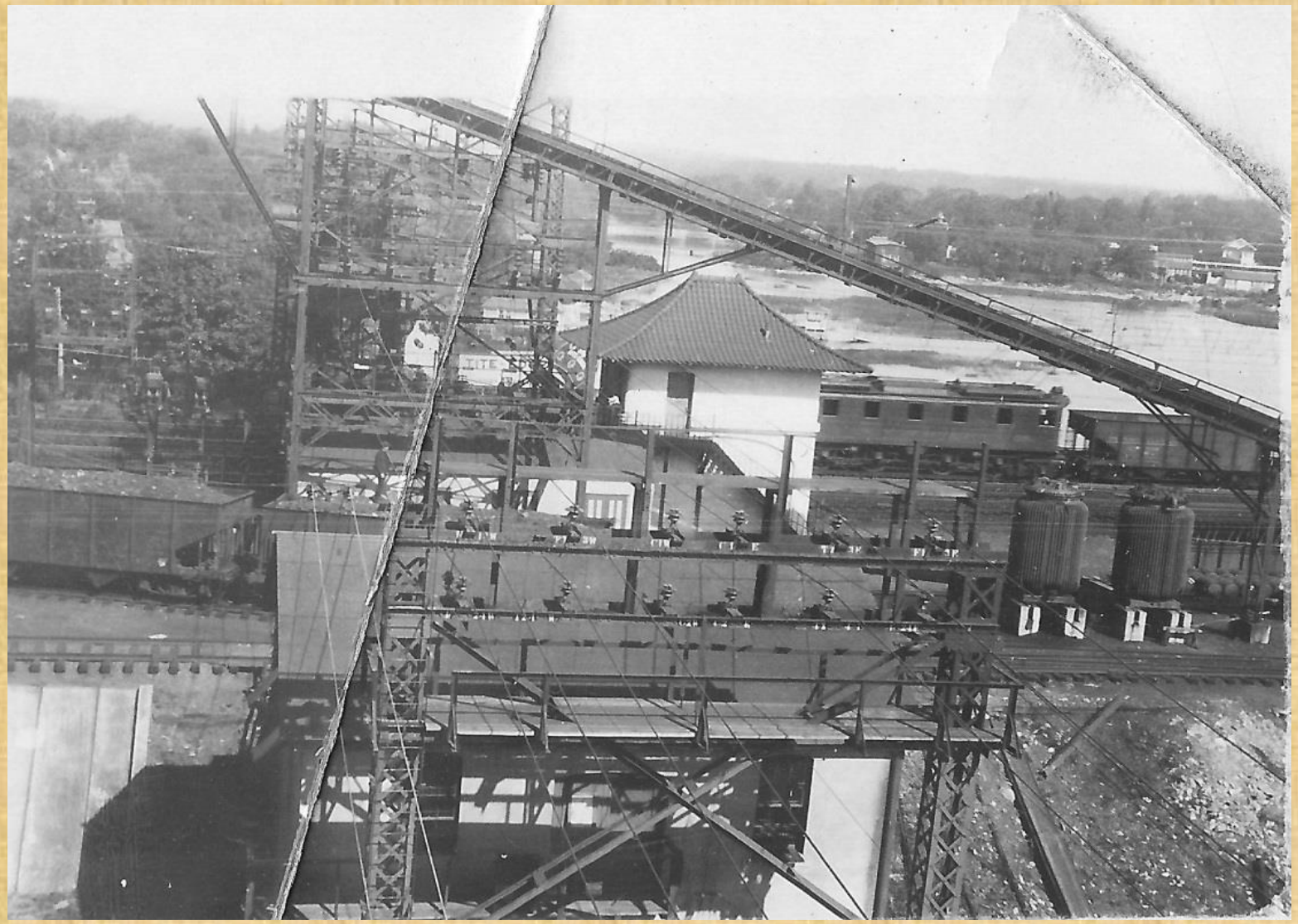
Cos Cob coal transport track
Note the cable in the gauge

Cos Cob main control room

Main 11000V AC, 25 cycle feeders to the catenary at Cos Cob.

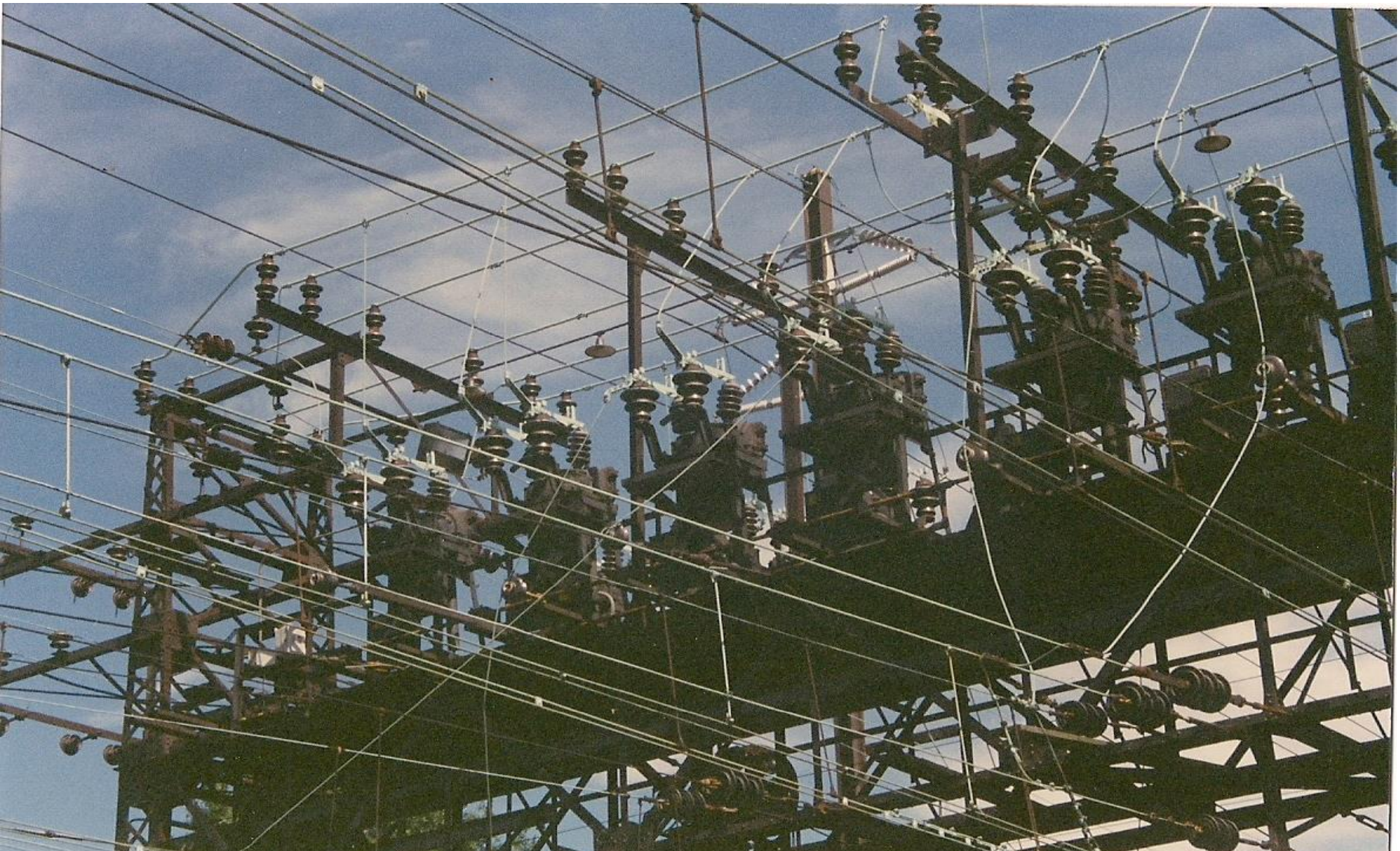


Cos Cob feeders, overhead view

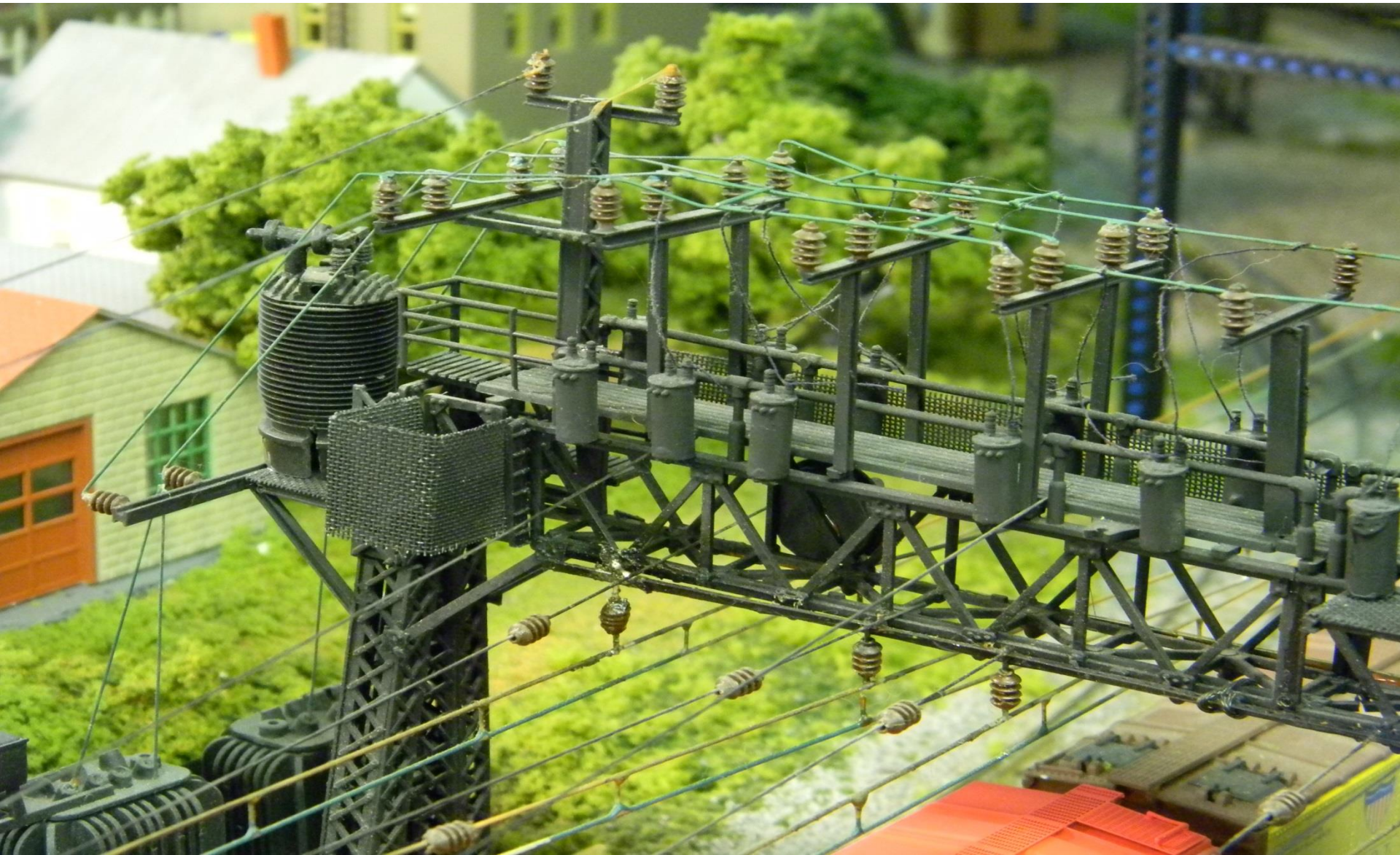


AC power sectionalizing Anchor Bridge in Greenwich, CT. May, 1931

Detail of Anchor Bridge Devon,CT



Scratchbuilt HO AB-867



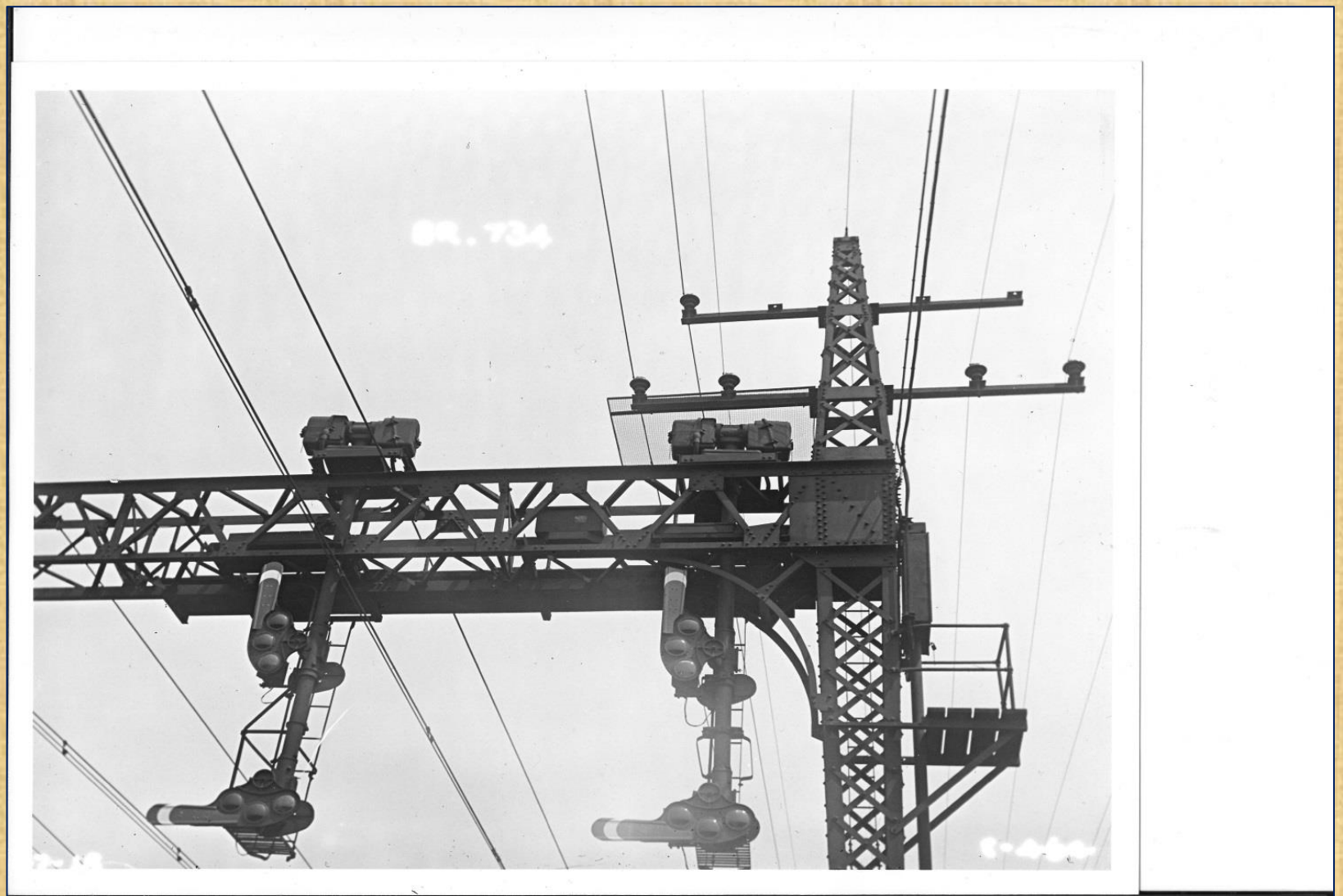
Anchor Bridge AB-867
Devon, CT

HO Scale Anchor Bridge

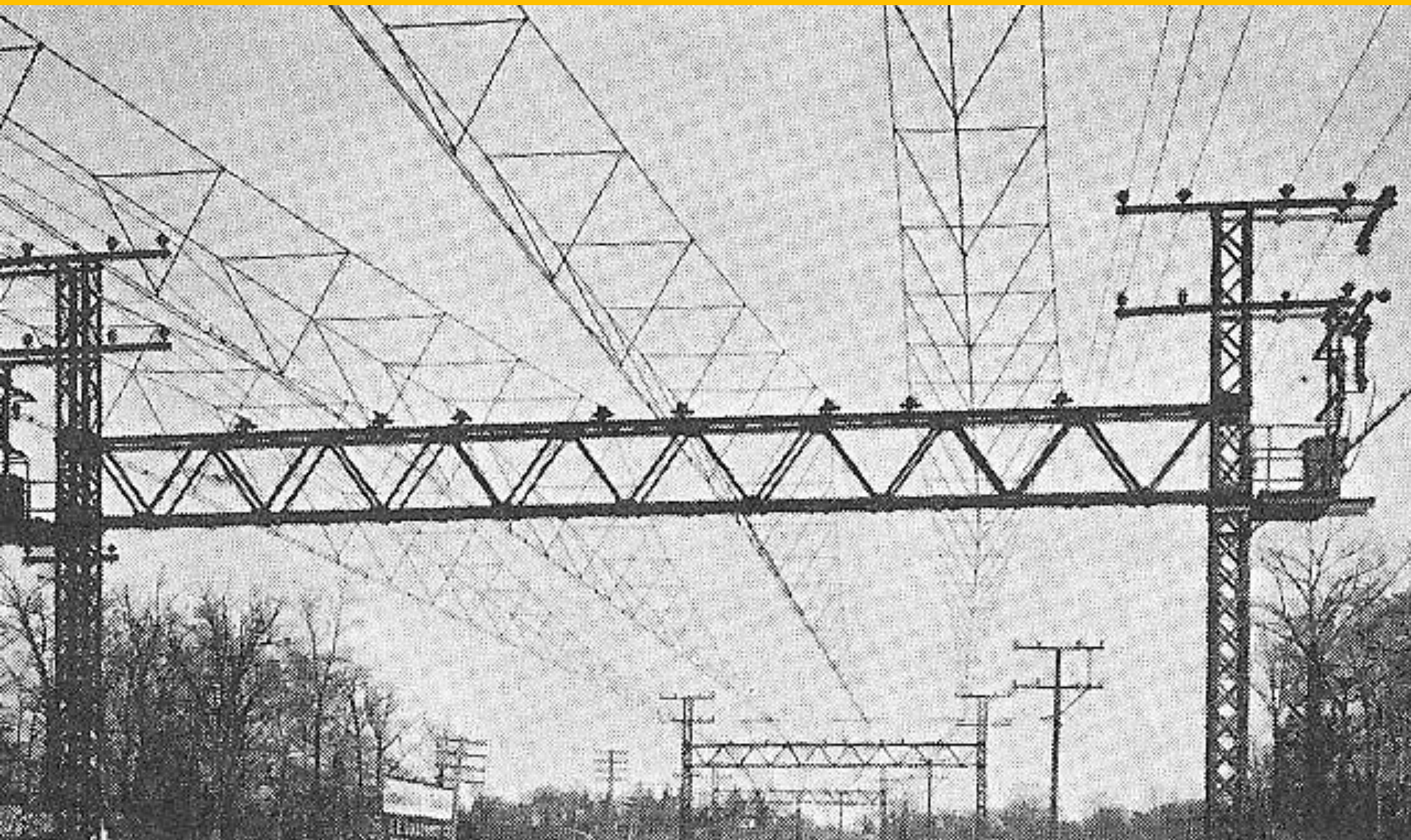
AB 736, Bridgeport, CT.

EP-2 Passing under Anchor Bridge AB 736, Bridgeport,CT

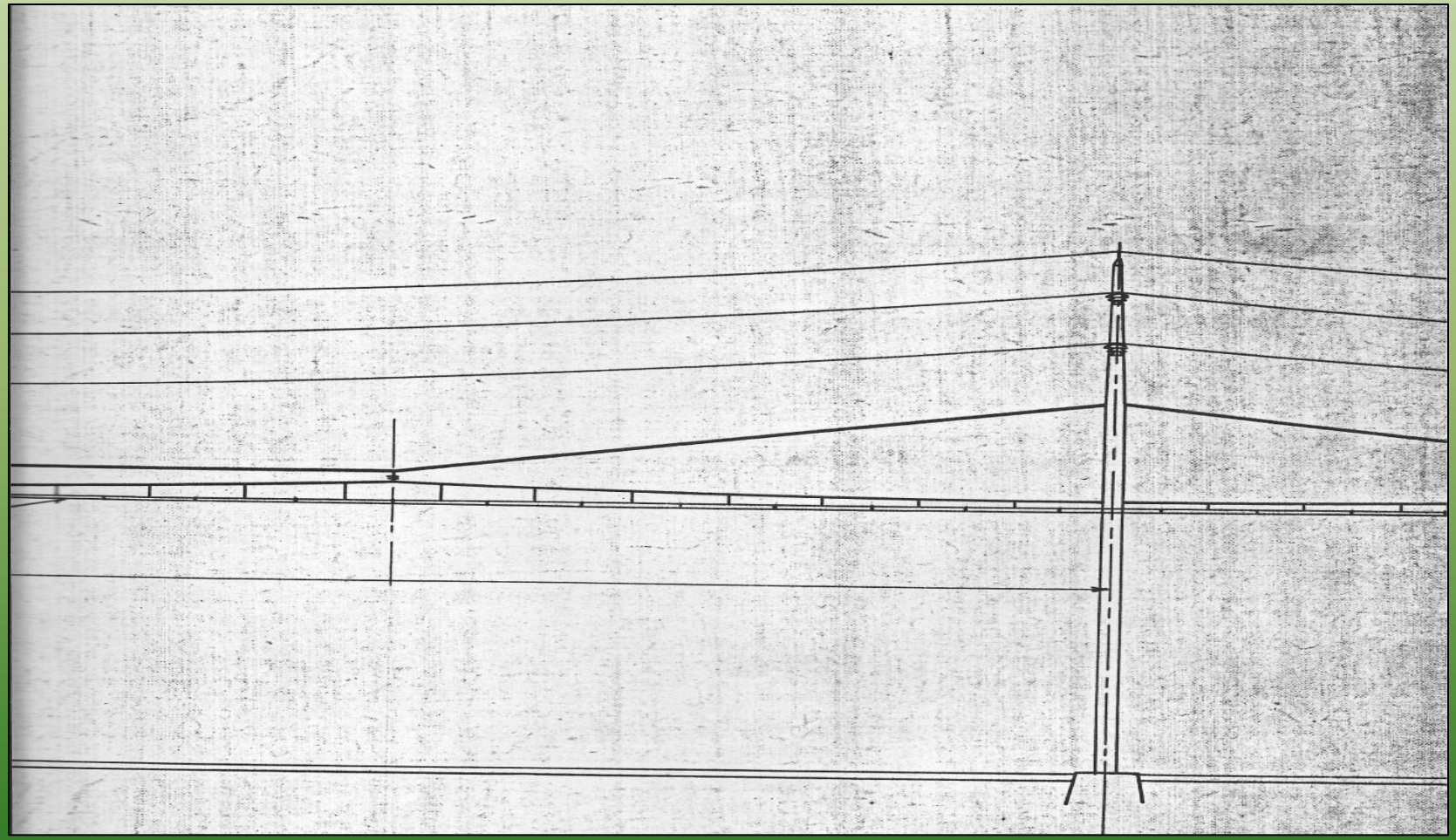
Home Signals mounted on catenary bridge. Note the blades are left-handed.



1907 installation; triangular catenary. Woodlawn, NY to Glenbrook, CT



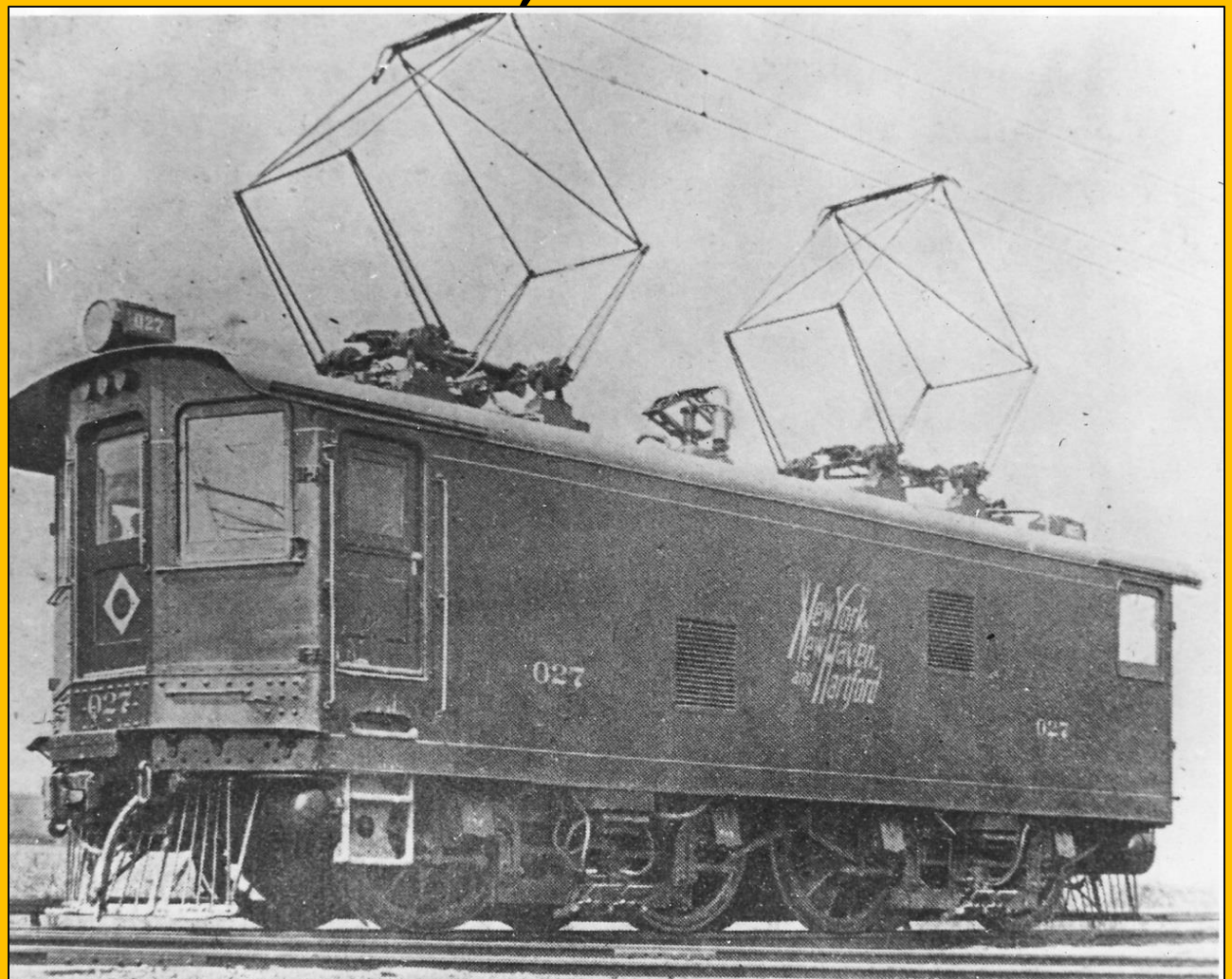
Floating beam suspension installed 1914; Glenbrook,CT to New Haven,CT



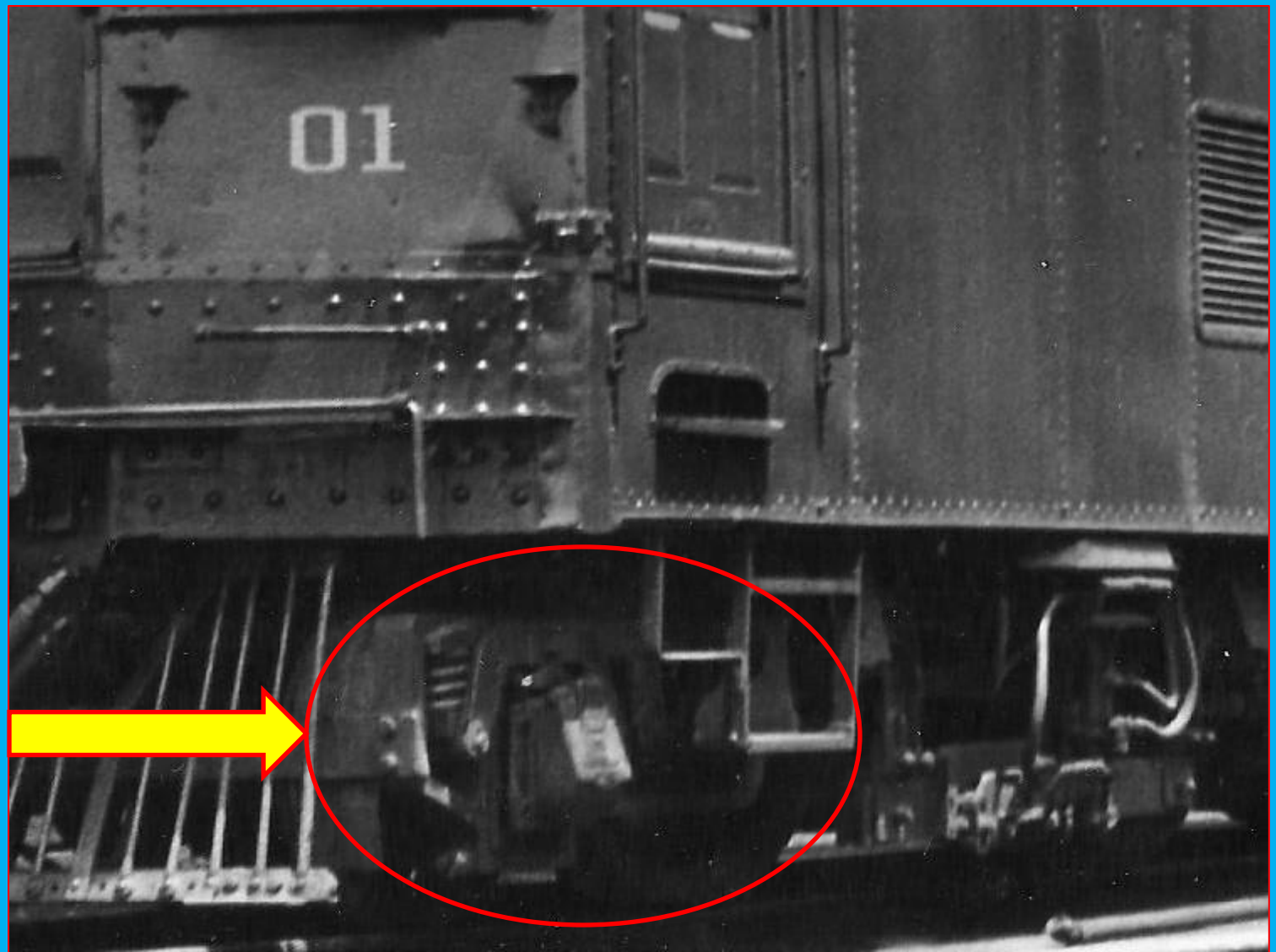
Floating Beam in HO Scale

PASSENGER MOTORS

EP-1, 01-041 built 1906 B-W, in service thru 1947; 1-B-B-1 1,016HP 204,000lbs



EP-1 with pony truck added after engines had a tendency to “nose.”

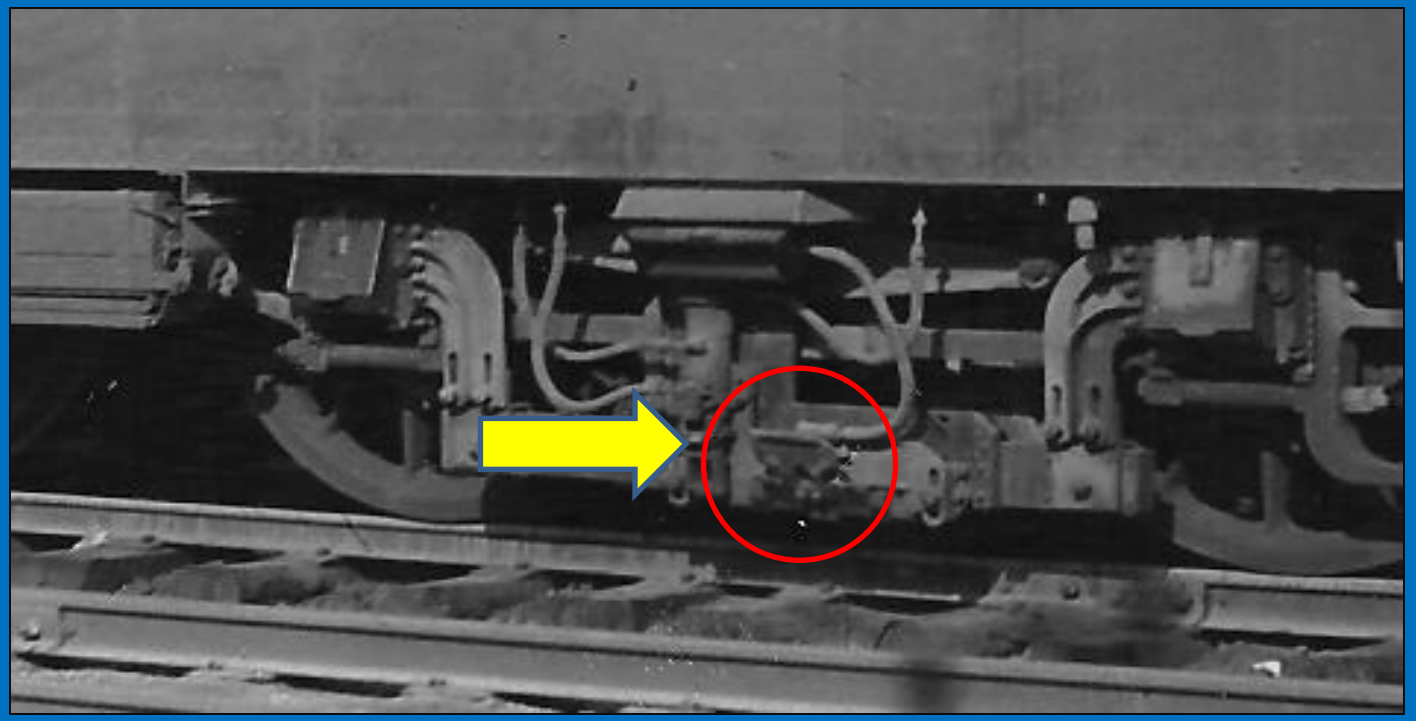


EP-1 with pony truck

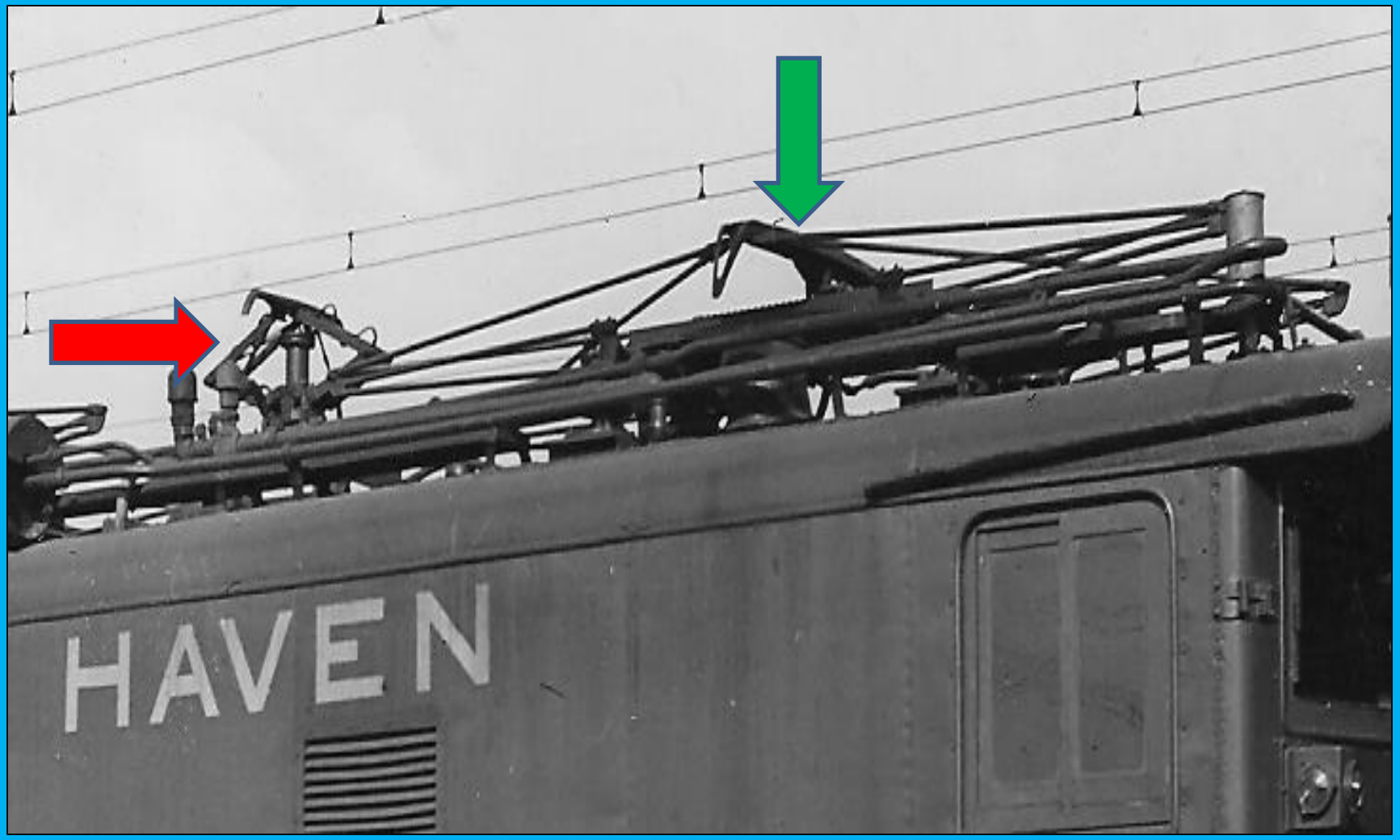
HO Scale EP-1.

EP-1 019.

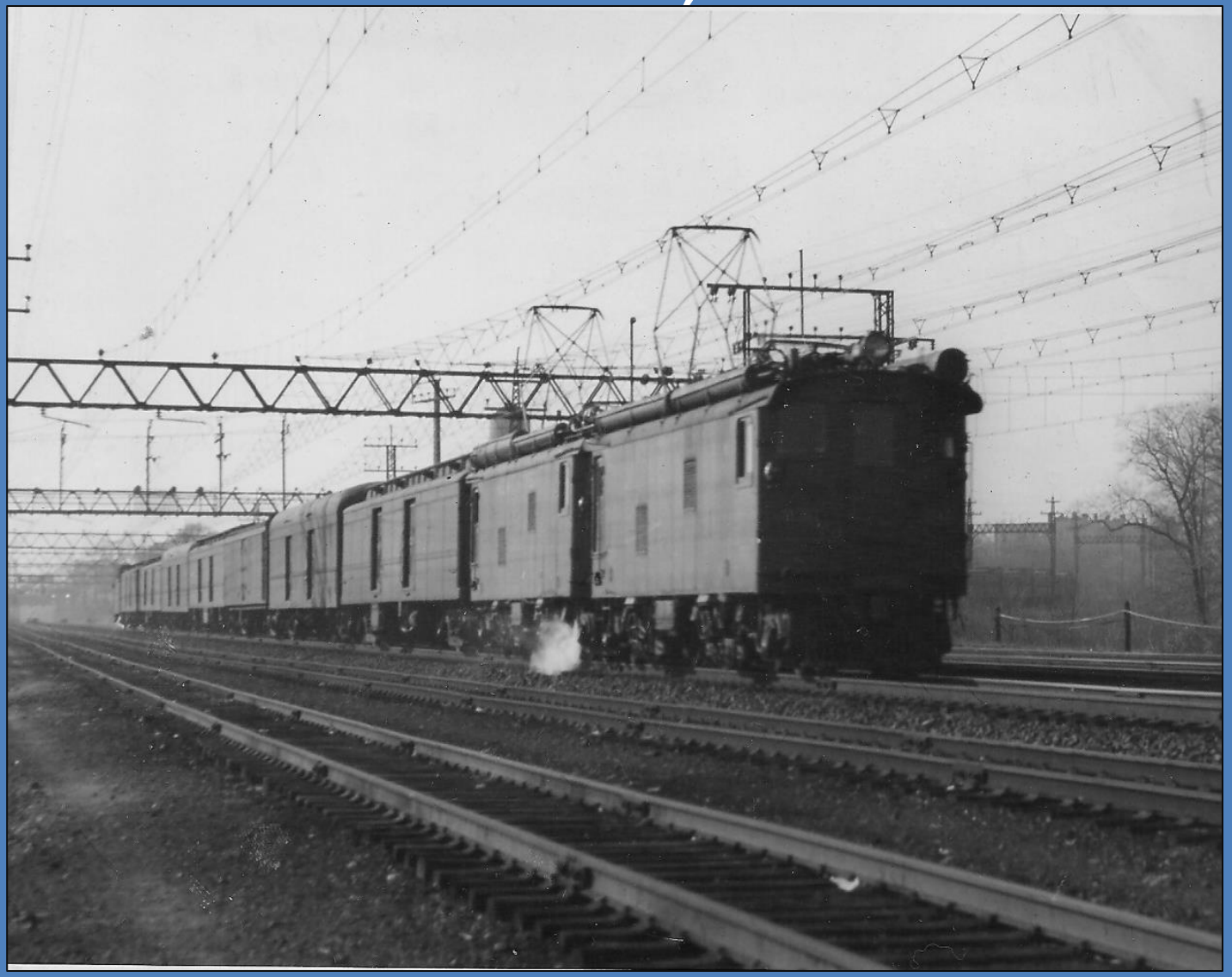
Third rail DC pick-up shoes for operation over NYC between Woodlawn,NY and GCT.



DC pantograph and AC pantograph



EP-1s MU'd
New Rochelle, NY 1937



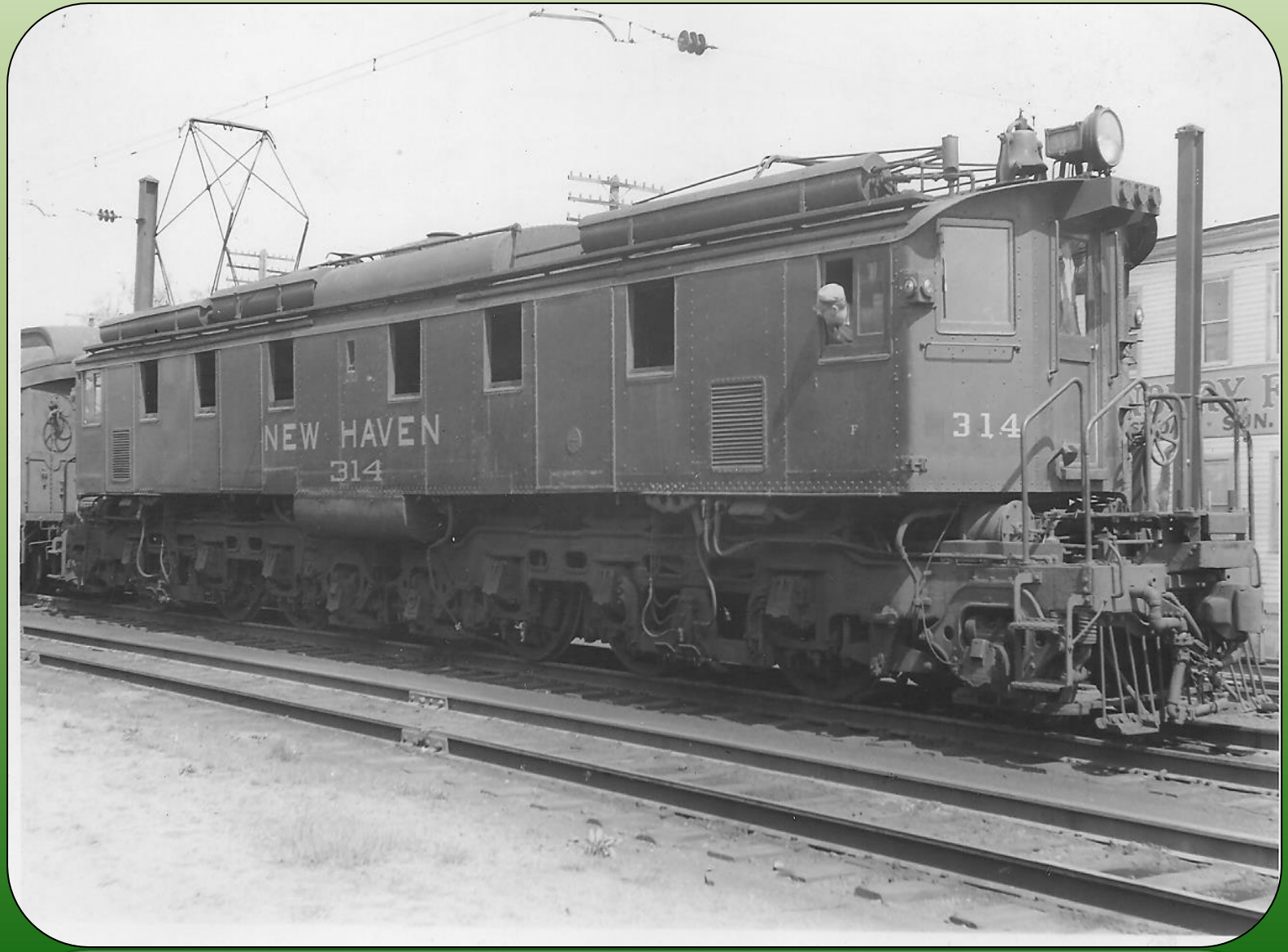
EP-2, 0300-0326

Baldwin-Westinghouse built

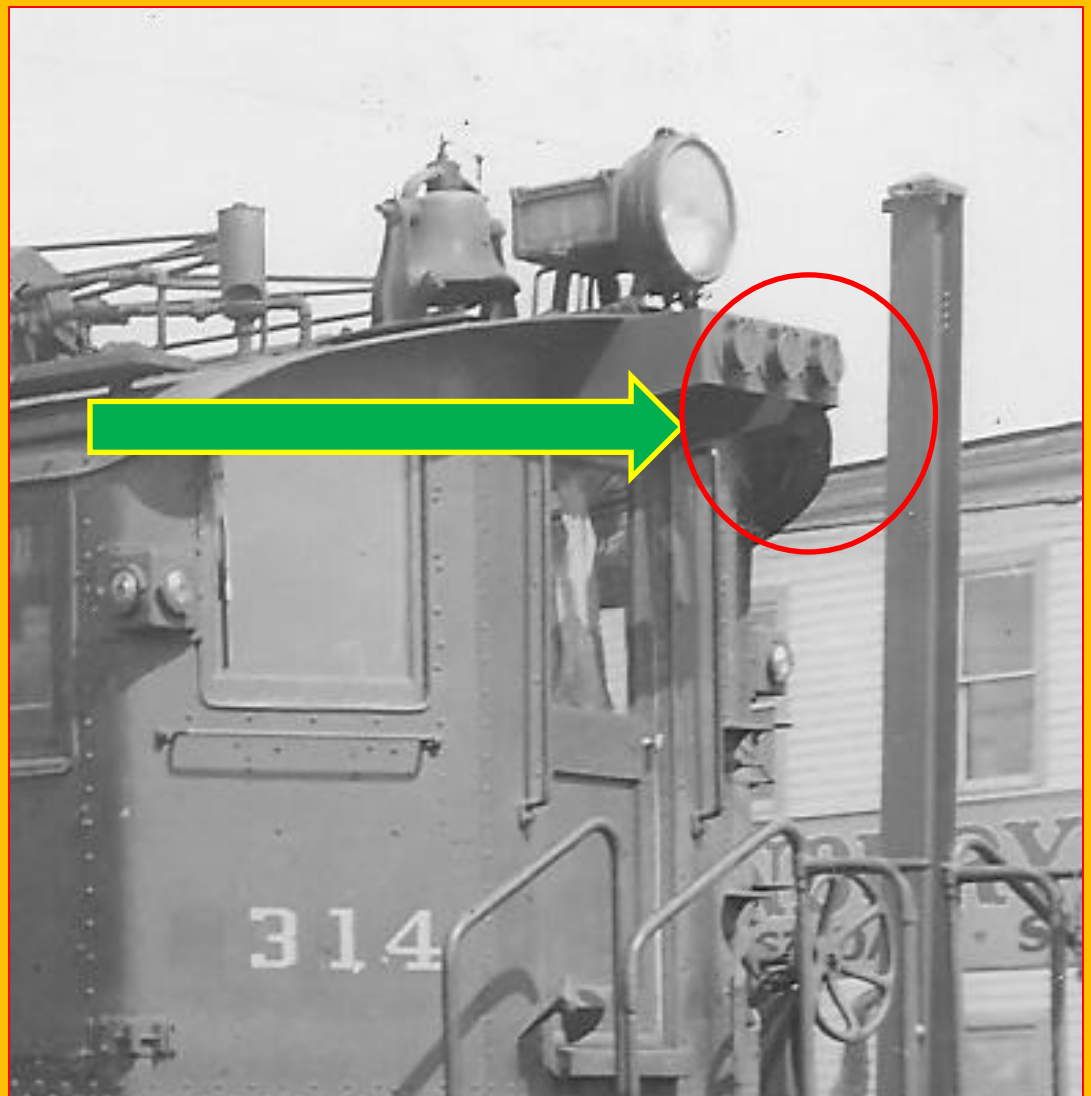
1917-1927 1-C-1+1-C-1

2,052 HP 358,000lbs

EP-2 314, Danbury, CT 1956



MU receptacles added to motors 0305-0314 in 1930



Standard color scheme applied to motors in 1950; #13 Pullman Green and DuLux Gold striping, lettering

HO Scale EP-2.

0322 in Pullman Green, DuLux Gold

Former 0322 in McGinnis colors

HO Scale EP-2 322.

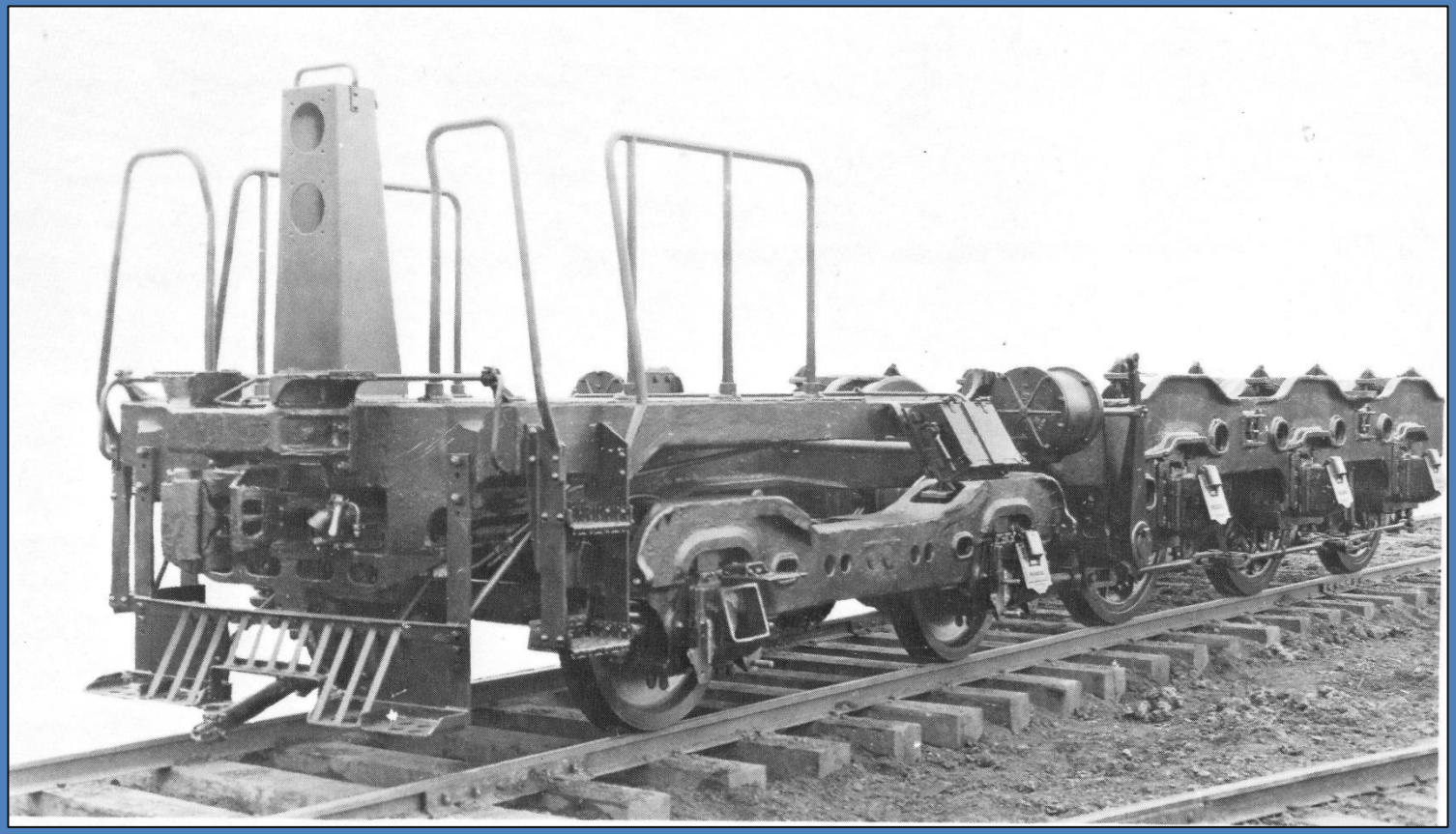
2 – C + C – 2 Wheel Arrangement

EP-3 0350-0359 GE 1931
2-C+C-2 2,740HP 403,000lbs
Prototype for PRR's GG1.

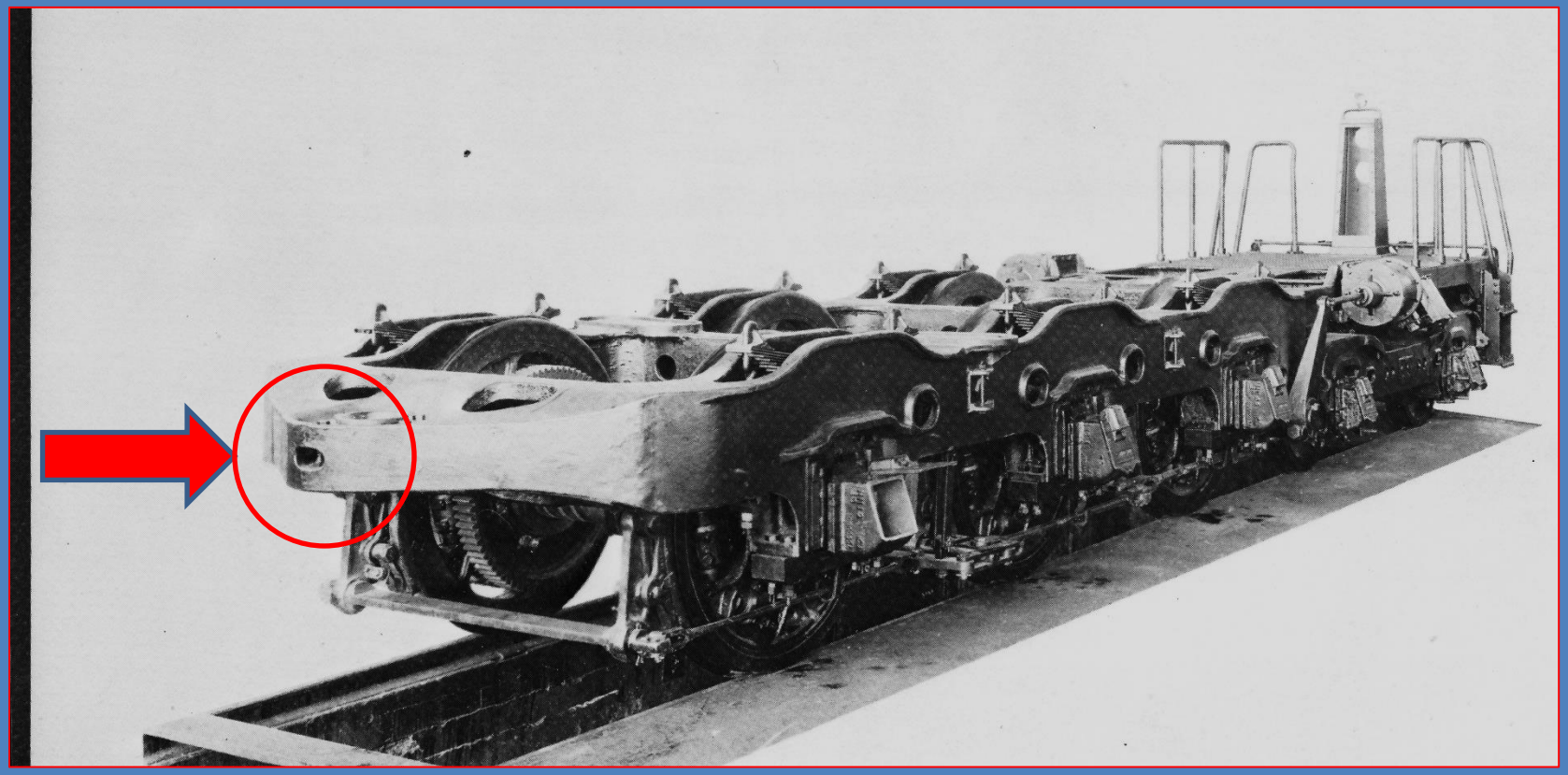
0355 on display, Mt. Vernon, NY
May 3, 1938

HO Scale EP-3.

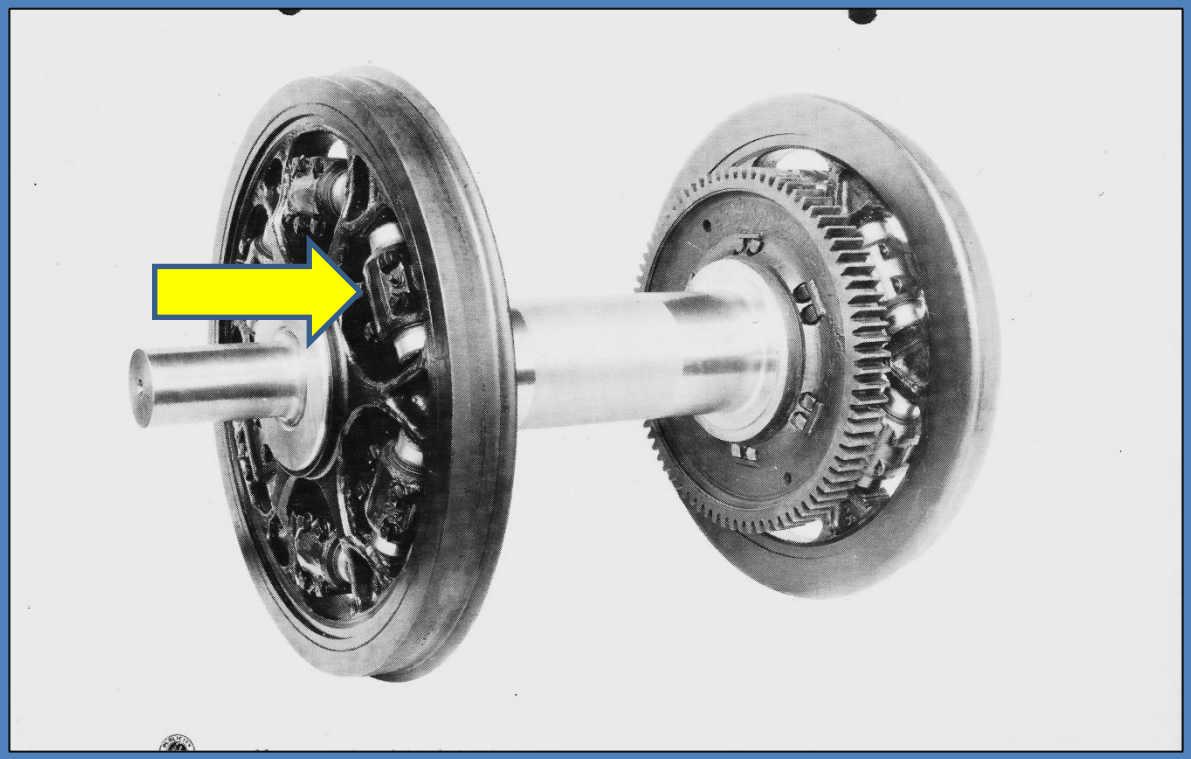
EP-3 pony and engine trucks



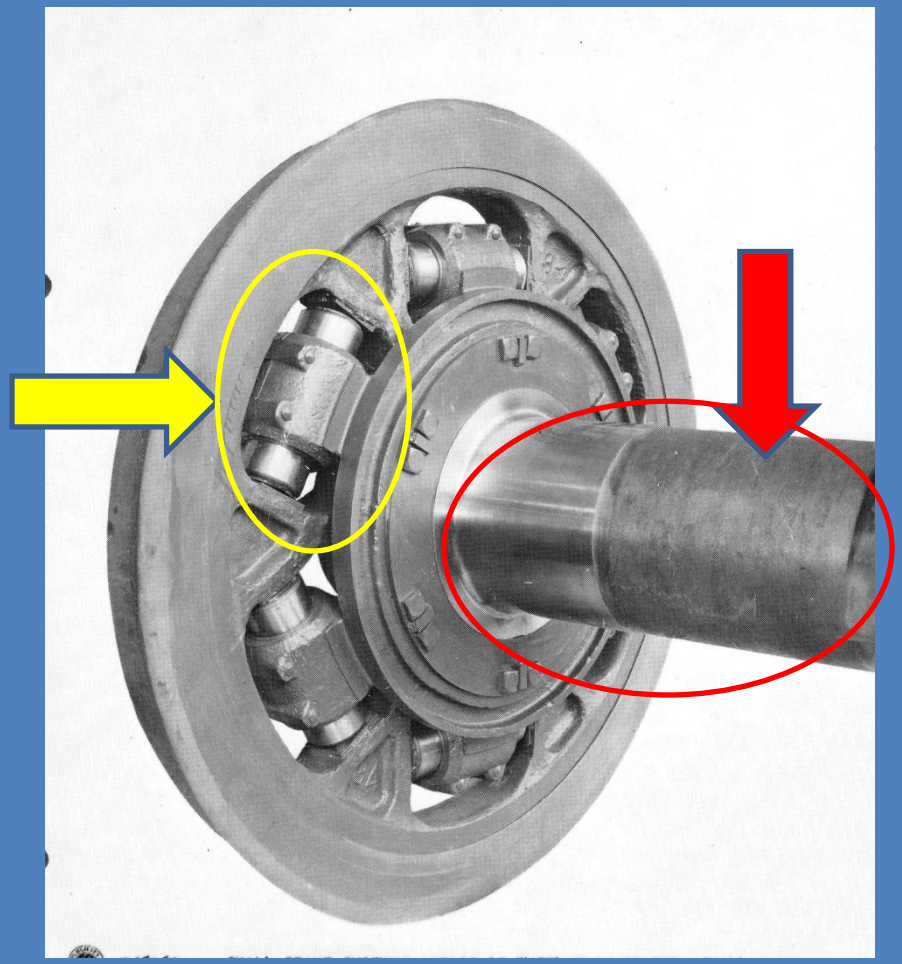
Articulated joint on engine truck



Drivers showing spider cups

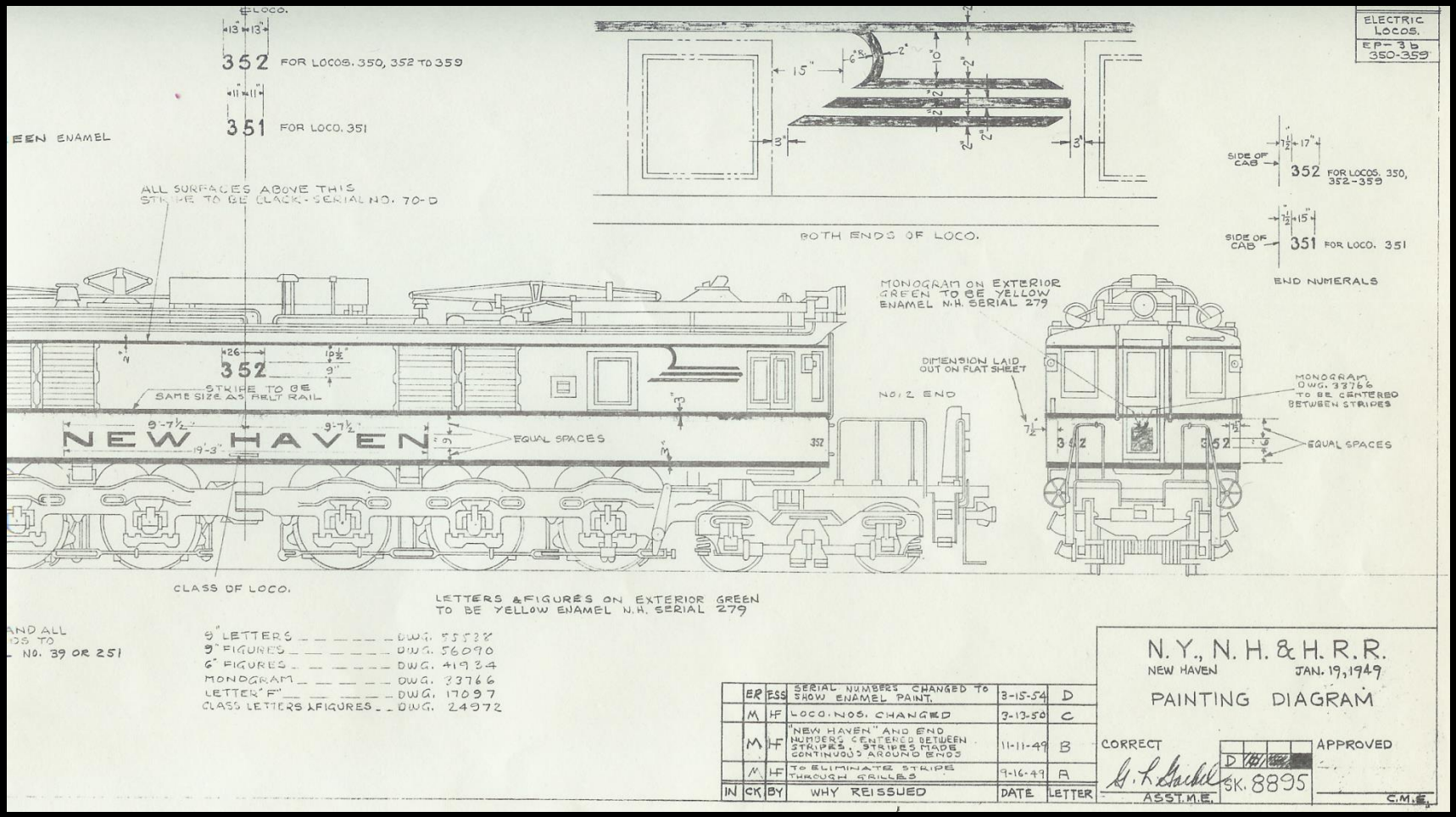


Inside of driver showing **quill** and **spider** cups

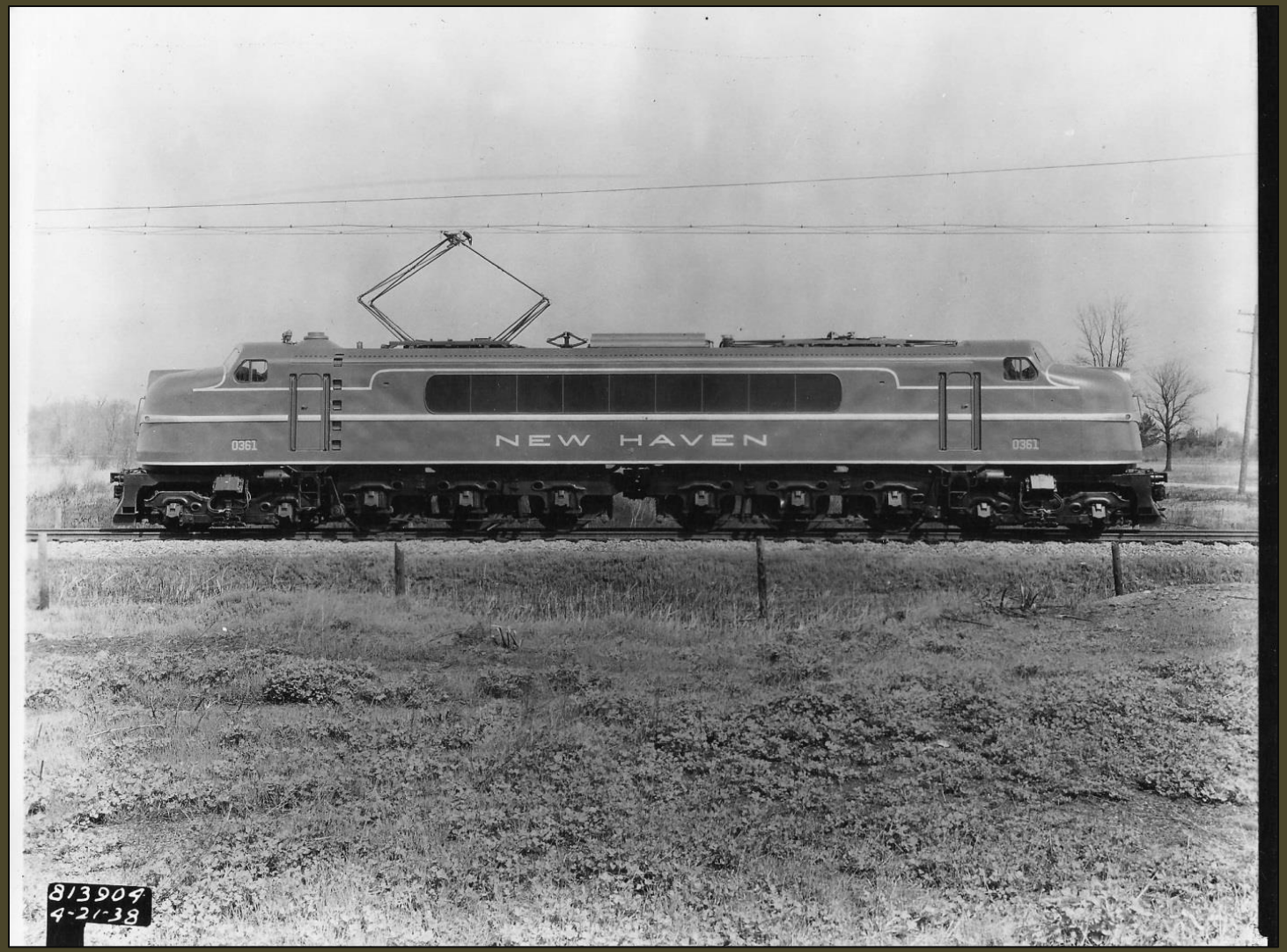


No. 354 operating on 3rd rail on NYC trackage.

NYNH&H Painting and Lettering Guide for the EP-3s; 1949.



EP-4 0361 at GE, 4-21-38
2-C+C-2 3600HP, 432,000lbs.



EP-4 0361 on display at Mt. Vernon, NY 1938.

EP-4 0363
Note 3rd rail shoes on pony truck.

EP-4 364 in “Cat’s Whiskers.”

HO Scale EP-4.

EP-5 370 GE builders photo 1954
C-C 4000HP 350,500lbs.
Last motors built for the NH

5015730-A
Erie Works File

G-E Rectifier Locomotive, 174 Ton, 56 1/2 In. Gage, Classification C-C-348/348-6GE752 Motors - 4000 Hp, 11000 Volt AC, 600 Volt DC, Serial No. 31931-31940. Built for New York, New Haven and Hartford R.R., Req. NH-17100. Oblique View of No. 1 End, A Side.

Rated Weight: 174 Tons
Rated Voltage: 11000 Volts, 25 Cycle, Single Phase, AC and 600 Volts DC
Tractive Effort at 25% Adh.: 87,000 Lb
Continuous Tractive Effort Rating: 34,100 lb
Speed at Continuous Rating: 44 MPH
Power at Continuous Rating: 4000 HP
Maximum Speed: 90 MPH
Track Gage: 56 1/2 Inch
Length Inside Knuckles: 68 Ft
Height Over Cab Roof: 12 ft 8-3/8 In.
Height DC Trolley Locked Down: 14 ft 9 in.
Height AC Trolley Locked Down: 14 ft 8-1/4 in.
Width over Cab Sheets: 9 ft 11-1/8 in.
Width Overall: 10 ft 5-5/8 in.
Total Wheel Base: 52 ft 6 in.
Rigid Wheel Base: 15 ft 0 in.
Length Between Center Plates: 44 ft 0 in.
Wheels: 40 in. dia., solid rolled steel, AAR contour, 2 1/2 in. thick rims

Couplers: 34 in. above rail, AAR Type H - Tightlock
Clearance Motor Gear Case to Rail: 4 1/2 in.
Minimum Curve: 288 ft or 20 deg
Train Heat:
Boiler Steam Capacity - 5000 lb/hr
Water Supply - 1800 gal.
Fuel Supply - 500 gal.
Sand Supply: 20 cu ft
Journal Bearings: Roller type
Brakes: Air, standard 24RL
Air Compressor: 1- 200 CFM, motor driven
Air Reservoir Capacity: 75,000 cu in.
Control: Double end - single unit
Motors: 6- GE-752-F1 blown
Motor Connections:
3S2P, 2S3P - AC Zone
2S3P, 6P - In DC Zone
Main Transformer: Type FOA-25-4900-11000-2558-768/768 DDLRA
Propulsion Rectifiers: 12- Ignitron Type
Aux. Rectifiers: 4- Ignitron Type

Motor Gen. Set: 1- GMG-164A1
Equip. Blowers: 2- GY-44A
Resistor Blowers: 2- GY-44B
Main Reactors: 2, 1- Arc back current limit and 1- smoothing
Aux. Reactors: 4, 1- Arc-back current limit and 3- smoothing
Battery: 32 cell lead acid type
AC Pantographs: 2- W Type S-546
DC Pantograph: 1- W Type US-119
DC Third Rail Shoes: 4- Located on trucks
Cab Signal: G.R.S. Four Indication Code Type
Cab Heaters & Defrosters: 2 each in each cab
Speedometer: 1 each cab, axle gen. type
Sanders: Air operated
Bell: Cast steel with air operated ringer
Horns: Air operated
Headlights: 2- 250 watt
Water Cooler: 1- Mink-Dayton

EP-5 370 at GE with L-R Herbert Matter, Florence Knolls, Lucille and Pat McGinnis

EP-5 373 on PRR train in Stamford, CT 1955

372 in experimental scheme
It Lost!!

ial photos are known to exist

EP-5 379 repainted with small nose “NH” and side screens.

Test Scheme vs In-Service

372 in test scheme

379 in chosen scheme

HO EP-5 No. 379.

EP-5 375; Penn Station NY
Note the GG1 in background.

EP-5 376 in Penn Station, NYC.

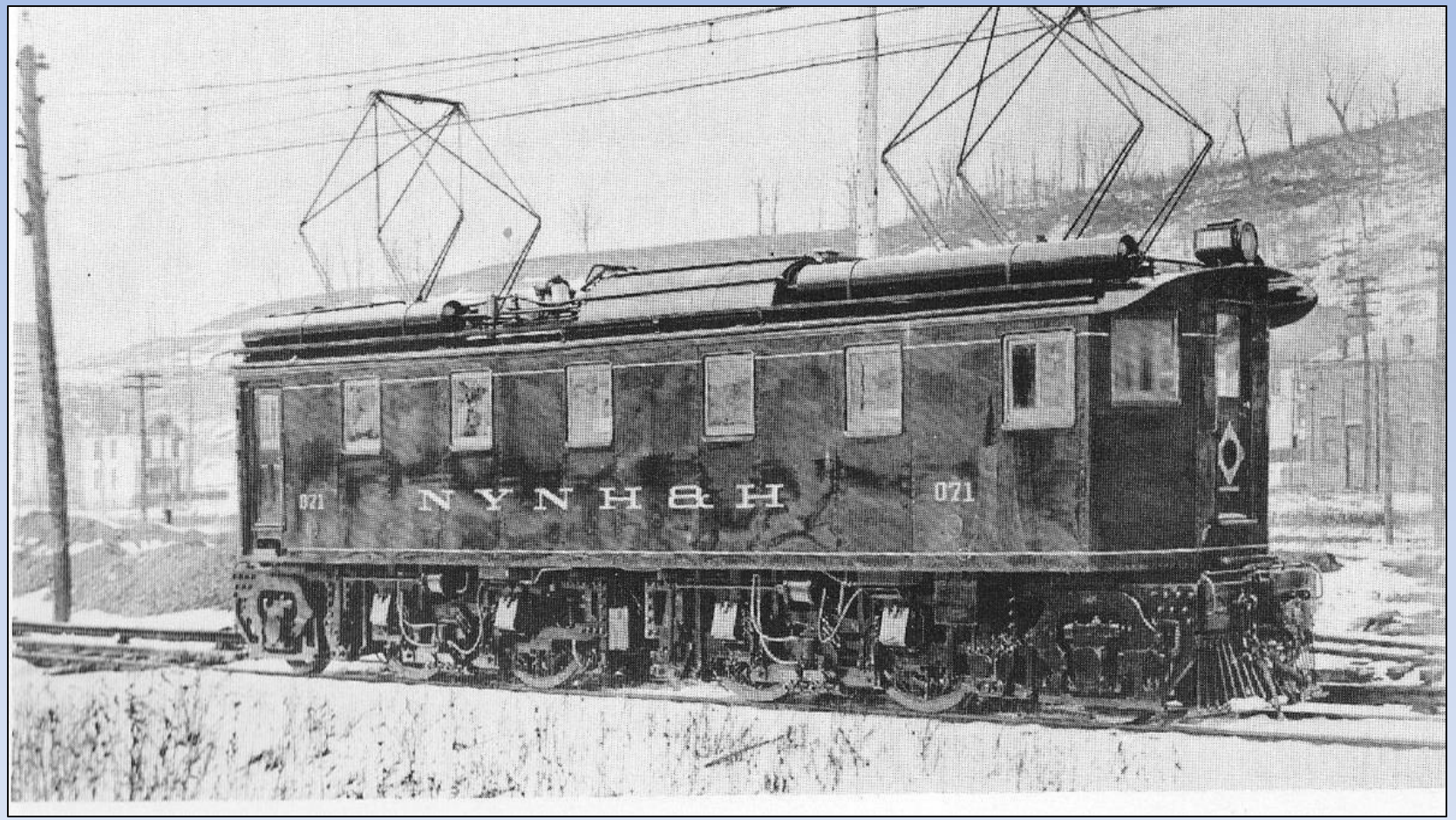
EP-5 on Hell Gate Bridge enroute to New Haven.

EP-5 377 running on NYC 3rd rail

The New Haven operated in all types of weather; Feb. 1968.

New Haven Freight Motors

EF-1, Baldwin-Westinghouse 1912-1913 1336HP 1-B+B-1

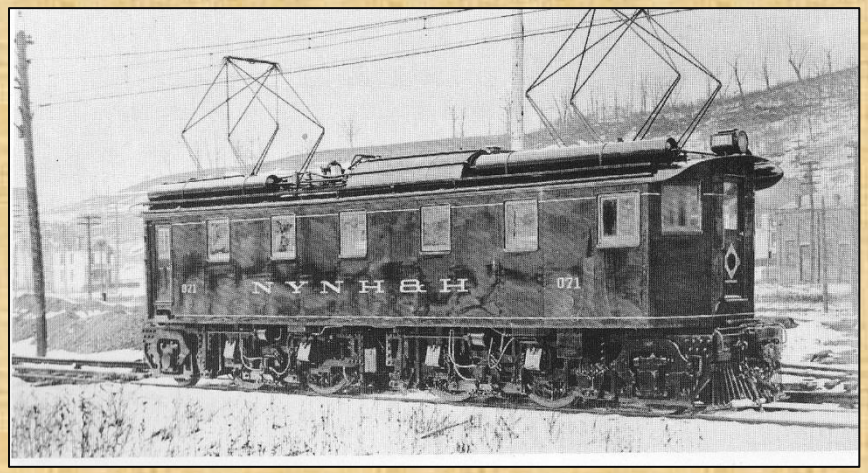


HO Scale EF-1 071.

071 re-built

COMPARISONS OF THE 071

071 AS BUILT FOR PASS. SERVICE



RE-BUILT FOR FREIGHT SERVICE

EF-1 0102 Danbury, CT

EF-1s roll thru Devon,CT

Same location on my HO layout

12”=1’

3.5mm=1’

EF-1s in Cedar Hill Yard

EF-1 099 in Passenger Service

EF-1 097 wrecked at Westport, CT 9-27-35

EF-2, 0112-0116; Alco-GE 1926
1-B-B-1, 1260HP 281,400lbs.

AMERICAN LOCOMOTIVE COMPANY
NEW YORK
Class 2442 E 281

GENERAL ELECTRIC COMPANY
SCHENECTADY, N. Y.
Road Number, 0112

BUILT FOR THE NEW YORK NEW HAVEN & HARTFORD.

WEIGHTS IN WORKING ORDER—POUNDS.								GAUGE OF TRACK
Total	Driving Wheels	Leading Wheels	No. 1 Truck	No. 2 Truck	Trailing Truck	Electrical Equipment	Mechanical Equipment	
281400	219200	31100	109600	109600	31100	147400	134400	4′-8½″

CAPACITY				WHEEL BASE			WHEEL DIAM.	
FULL LOAD—Continuous Rating		Starting Tractive Effort	Factor of Adhesion	Driving	Rigid	Total	Driving	Leading-Trailing
Tractive Effort	Speed							
24800	20.4 Miles	65800 lbs.	30%	24′-6″	8′-3″	39′-0″	42″	36″

MOTORS							AXLES		
Type	Number	Rating			Gearing	Suspension	Weight Motors Complete	Driving		Lead.-Trailing
		H. P.	Amperes	Volts	Ratio			Journal	Center	Journal
G. E. 286-A	4	1350	135	11000	3.45	Nose	36400	7″ x 14″	8″	6½″ x 14″

ORDER No. S-1507
August, 1926.

HO Scale, EF-2.

HO EF-2 comparison with prototype

EF-2 0114, Stamford, CT

EF-2 0114 Van Nest Shops Sept. 13, 1952

EF-2 0113 Van Nest Shops Jan. 7, 1940

EF-3 “*MONSTER POWER MACHINE*”

B-W 0150-0154, GE 0155-0159

1943; 2-C+C-2 4860HP 492,000lbs

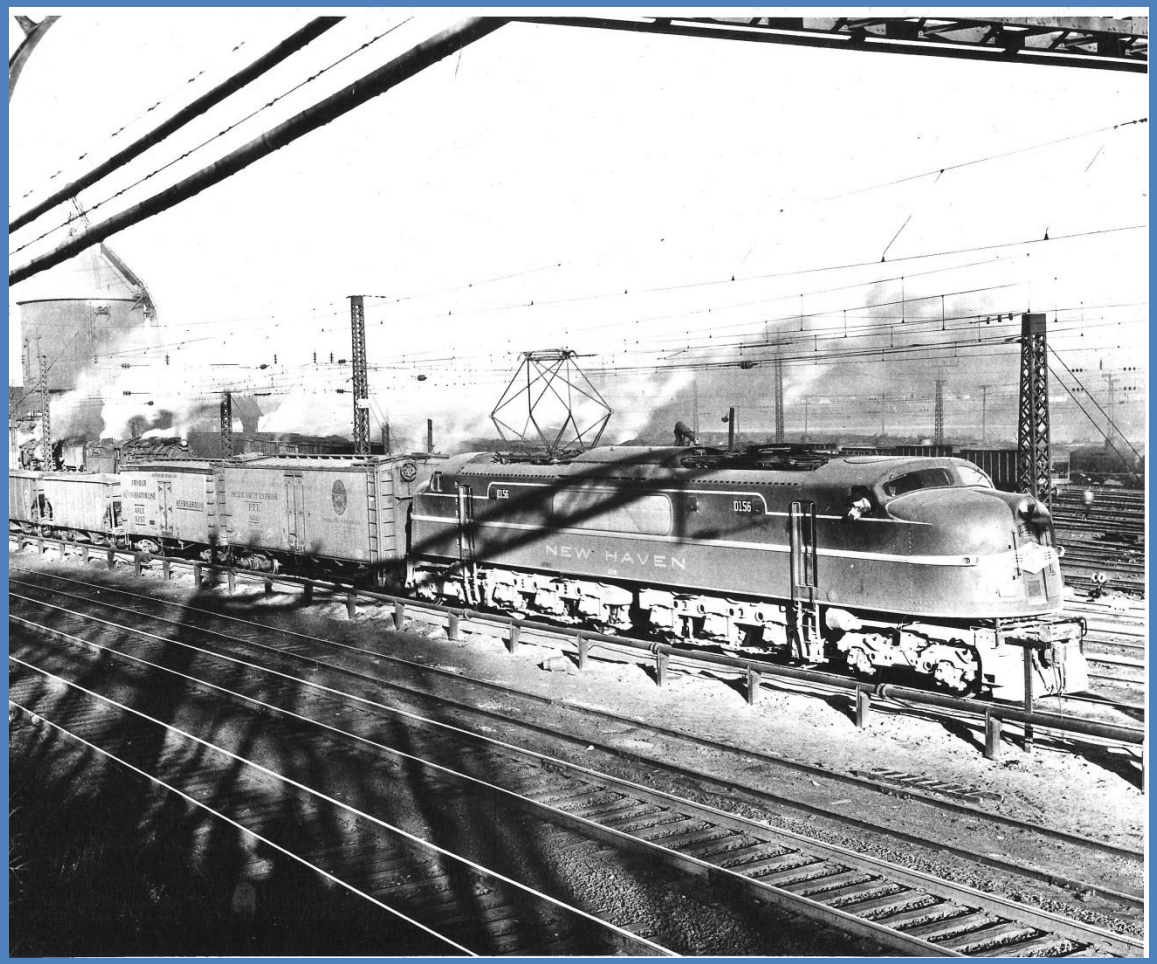
EF-3a 0159 new at GE

EF-3b on the PRR enroute Pennsylvania Station, NYC 1949

HO Scale EF-3b.

EF-3a 158 New Haven,CT
Sept. 11, 1957

0156 departing Cedar Hill Yard for Bay Ridge Yard, Brooklyn



0153 on 113 car freight
Larchmont, NY Nov. 24, 1946

EF-3's out of service
Oak Pt. Yard, March 20, 1960

The EF-4 “Virginians”
Ex VGN, N&W Class EL-C
Last motors purchased by the NH.
Purchased from the N&W Aug. 1963

VGN Class EL-C

EF-4 304 in fresh paint, 1963
Built by GE in 1956 for the VGN as their class EL-C, 3300HP 397,680lbs.

VGN EL-C to NH EF-4

HO Scale EF-4.

EF-4 300, Cedar Hill Yd.

EF-4s in Bay Ridge Yd.
Note Faiveley Pantograph on 303

EF-4s mingling with diesels Cedar Hill Yd.

Cab view from EF-4

EF-4’s on Hell Gate Bridge

EF-4's westbound at Glenbrook, CT ca. 1964

EF-4s under triangular wire

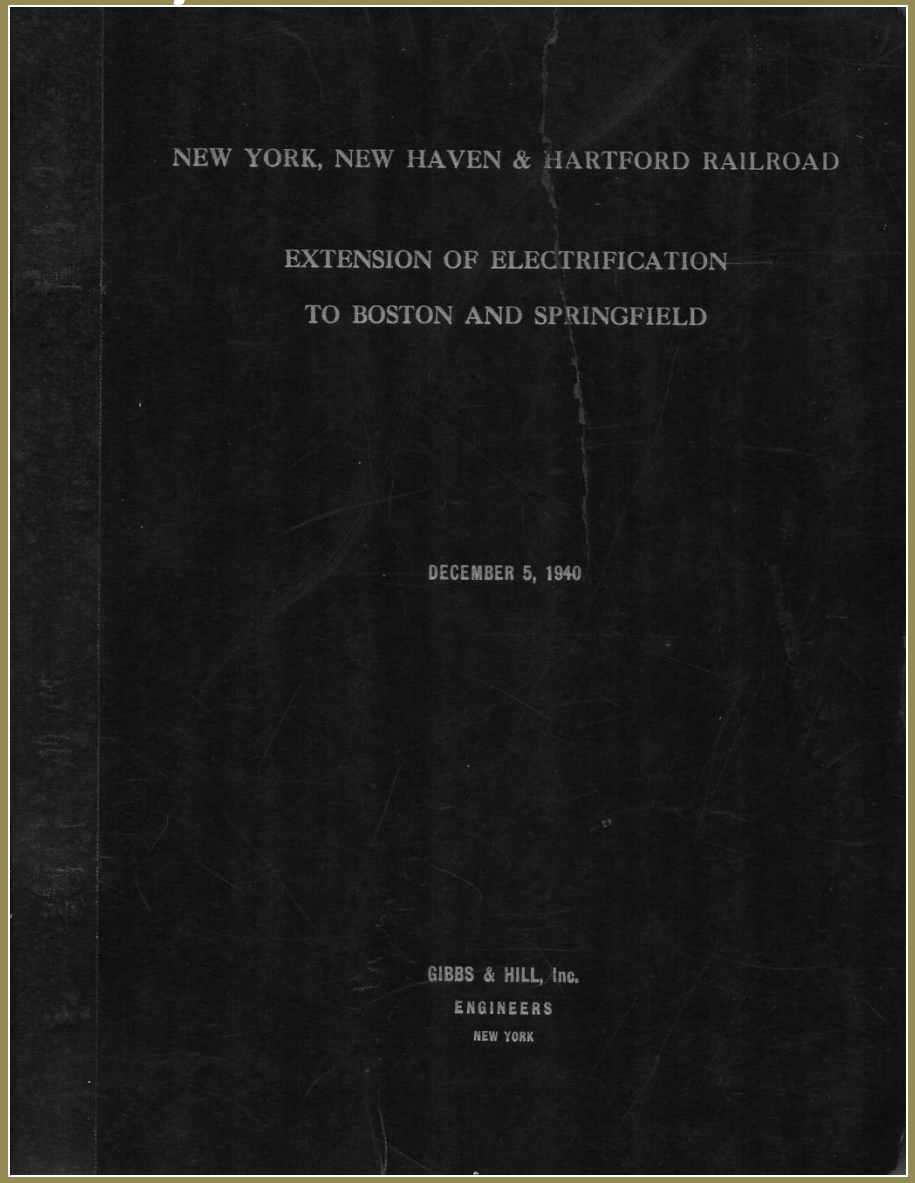
EF-4s in fresh Paint
LIRR Fremont Tower, 1963

THE STATUS OF ELECTRIFICATION IN THE NORTHEAST CORRIDOR. . .

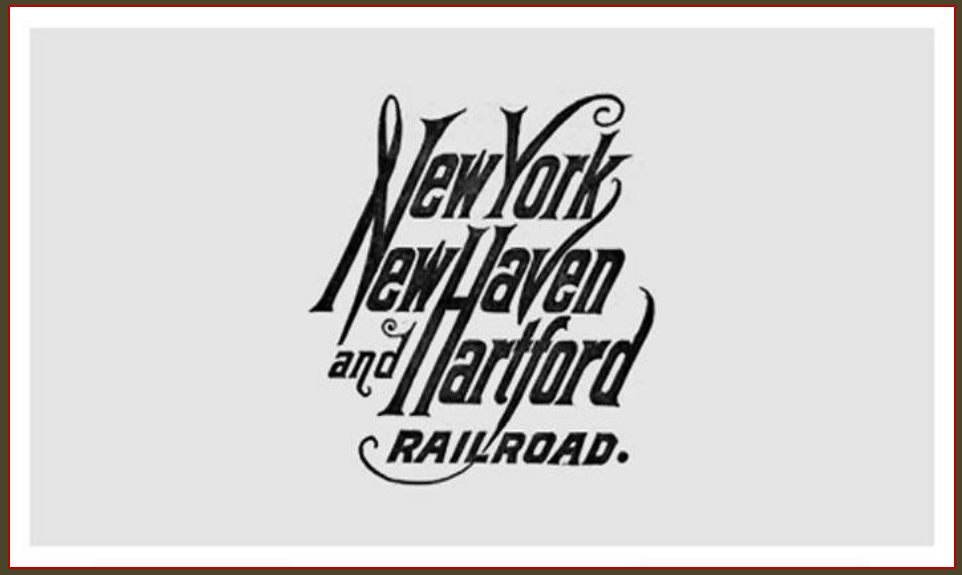
SINGLE PHASE OR PHASE OUT?

- **THE PAST**
- **THE PRESENT**
- **THE FUTURE**

Catenary to Boston in 1940?



Partners in 11,000 Volt Electrification



The Past

PRR GG1 1943

NH EF-3a 1943

NH EP-5, 1954 - 1978

Coverdale & Colpitts Report, 1956.

- In 1956, the New Haven hired the consulting firm of Coverdale & Colpitts in NYC to re-evaluate the electrification. The NH was preparing to order from GM the hybrid FL9 diesel-electric-electric locomotives to eliminate the electrification. In essence, the reported stated that “so long as the wires are up it’s cheaper to use them” and the NH should cancel the order. They didn’t, and perfectly good electrics were sent to the scrap yard!

FL9, Diesel-Electric-Electric Equipped to operate on NYC 3rd rail

Comparison: EP-5 vs FL9

EP-5, *Rated for 20 cars*

FL9, *Rated for 6 cars*

Amtrak E60, 6000HP
1976 - 2003

NH EP-5

Amtrak E-60

Swedish Rc-4 X-995
Prototype for the AEM-7

The AEM7, 1981-2016
Last run June 18, 2016

Prototype and Production

ASEA Rc-4

EMD AEM-7, 1981-2016
6800HP, 101 tons.

Amtrak HHP-8; 1999-2014
8000HP, 98 tons

What was the future, is now the present;

Amtrak Cities Sprinter ACS-64, 8600HP, now in service.

Amtrak ACS-64 in Stratford,CT.
Catenary installed in 1914, engine built 2014


THE END
NEW HAVEN
0306
PULLMAN