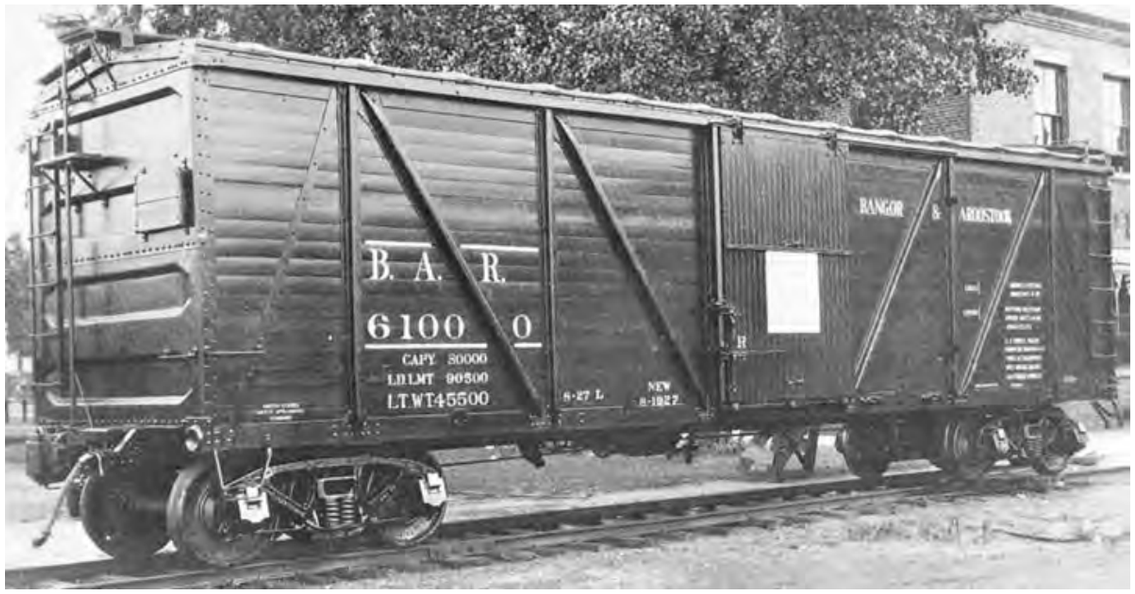
1937

1932



XM-1

Round -roof

Mid-Century Boxcars and Boxcar Models

X-29

1944

USRA single sheathed

USRA Steel Rebuild

Variations on a Standard

Most Cars have Commercially Available Models

- Ready to run models
- Easy to assemble styrene kits
- Craftsman (resin) kits - primarily wood boxcars
- Detail parts to modify kits
- Kitbash models from available parts

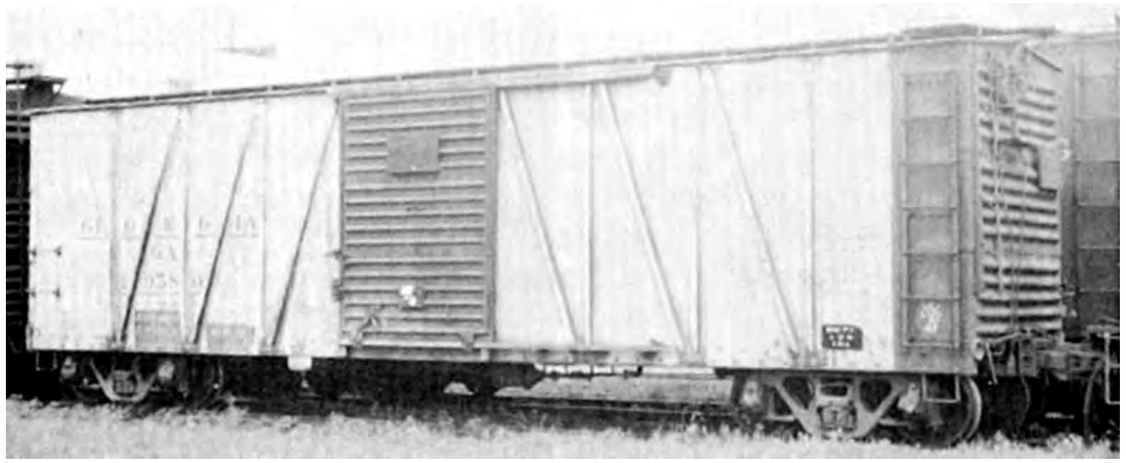
FIRST LOOK
casual observation

- Vary the profile of cars in a consist
- What type and mix of cars would be found in consist

SECOND LOOK
Examine details

- Separate grad bars and ladders
- Detail underbody to establish a profile
- Accurate roofwalks and brake wheels

REPEATED VIEWINGS
Maintaining Interest



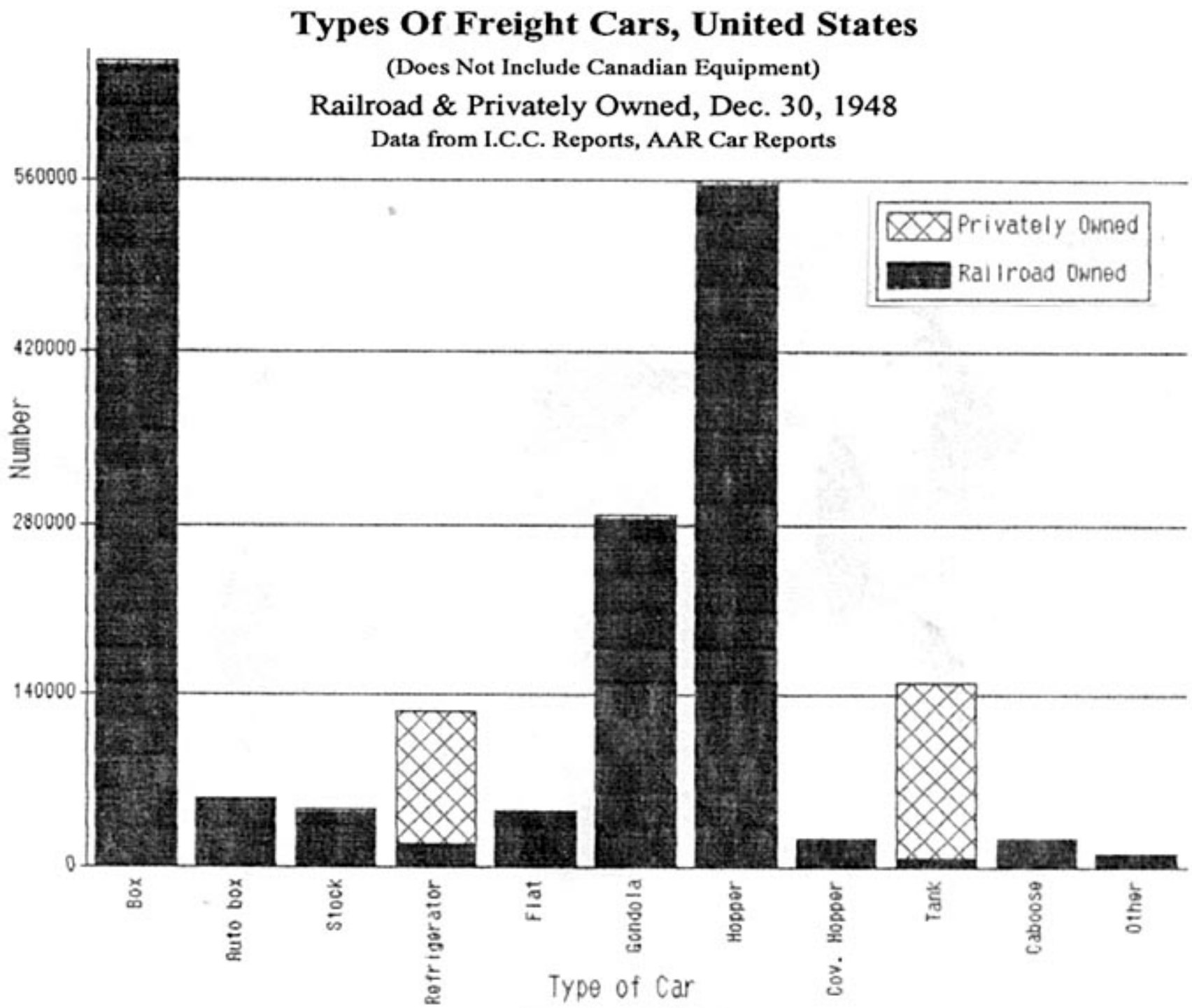
- Prototypical Features and Details
- accurate mix of primary components
- Period paint schemes

My Choices to build a collection

- Clinchfield Railroad in 1950
- Focus on cars likely to be found on the Clinchfield, such as southeast roads
- What is the mix of car types
- Period paint schemes and graphics
- Level of weathering

WEBSITES

- NEB&W Railroad Heritage Website - $5/mo
  nebwrailroad.com
- Trainlife trainlife.com/pages/the-magazine-library
- Steam Era Freight Cars www.steamerafreightcars.com
- Protocraft protocraft.com
- Sunshine Models HO scale resin freight car kits sunshinekits.com
- 1937 AAR Standard Design Boxcar Survey
  www.ttnut.com/1937-aar-standard-design-boxcar


Types Of Freight Cars, United States
(Does Not Include Canadian Equipment)
Railroad & Privately Owned, Dec. 30, 1948
Data from I.C.C. Reports, AAR Car Reports
Privately Owned
Railroad Owned
Number
560000
420000
280000
140000
0
Box
Auto box
Stock
Refrigerator
Flat
Gondola
Hopper
Cov. Hopper
Tank
Caboose
Other
Type of Car

Class 1 Railroad Cars

1949

- 488,871 all steel box cars
  (68% of all box cars)

- 223,188 wood and composite box cars with steel underframes (31%)

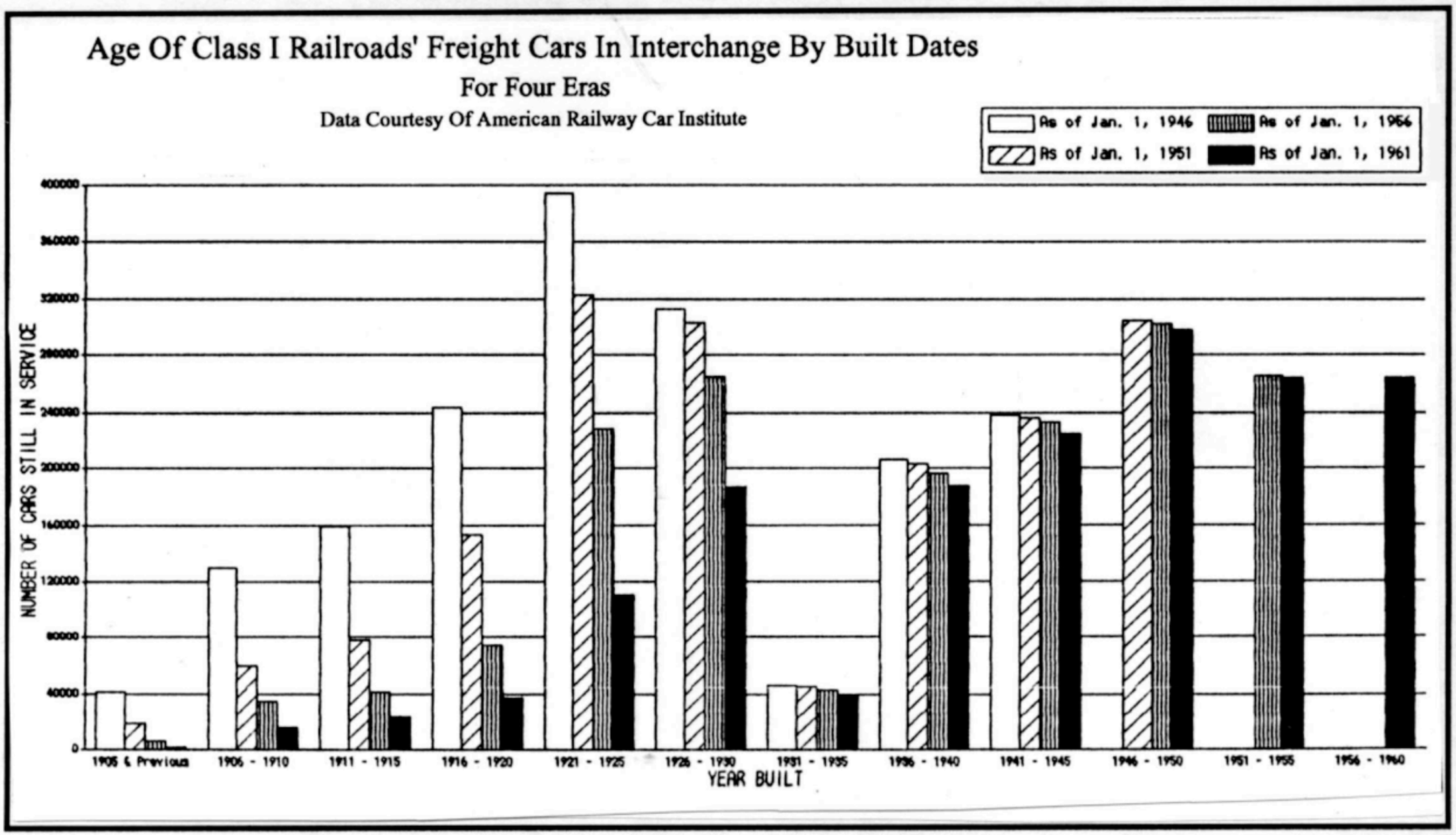
- 7,290 "other" box cars (I guess aluminum, but that seems like an awfully lot) (1%)

- 60,000 box cars were 36 feet long. (10% of all boxcars)

Age Of Class I Railroads' Freight Cars In Interchange By Built Dates

For Four Eras

Data Courtesy Of American Railway Car Institute



Railroads with more than 10,000 cars

- Pennsylvania - 214,799 revenue freight cars
- New York Central - 129,369 cars
- Baltimore & Ohio - 102,190 cars
- Canadian National - 90,733 cars
- Canadian Pacific - 82,397 cars
- Chesapeake & Ohio - 80,881 cars
- Atchison, Topeka & Santa Fe - 78,904 cars
- Louisville & Nashville - 68,319 cars
- Norfolk & Western - 60,178 cars
- Milwaukee Road - 57,475 cars
- Illinois Central - 56,516 cars
- Southern - 55,368 cars
- Southern Pacific - 51,042 cars
- Chicago Burlington & Quincy - 49,499 cars
- Union Pacific - 46,608 cars
- Chicago & North Western - 46,227 cars
- (Union Tank Car - tanks) - 42,316 cars
- (General American Transportation - tanks) - 41,521 cars
- Great Northern - 40,480 cars
- (Pacific Fruit Express - reefers) - 37,635 cars
- Northern Pacific - 35,787 cars
- Missouri Pacific - 35,022 cars
- Reading - 32,032 cars
- Chicago, Rock Island & Pacific - 27,997 cars
- St. Louis - San Francisco - 26,760 cars
- Erie - 26,451 cars
- Atlantic Coast Line - 25,696 cars
- Seaboard Air Line - 23,024 cars
- Pittsburgh & Lake Erie - 21,141 cars
- Wabash - 17,243 cars
- Lehigh Valley - 17,028 cars
- Delaware Lackawanna & Western - 16,568 cars
- Virginian - 15,812 cars
- Nickel Plate Road - 15,139 cars
- Nacionales de Mexico - 14,955 cars
- Wheeling & Lake Erie - 13,775 cars
- Soo Line - 13,611 cars
- Bessemer & Lake Erie - 13,310 cars
- Western Maryland - 13,132 cars
- Duluth, Missabe & Iron Range - 12,741 cars
- Texas & New Orleans - 12,546 cars
- Pere Marquette - 12,228 cars
- Denver & Rio Grande Western - 12,390 cars
- (Fruit Growers Express - reefers) - 12,039 cars
- Grand Trunk Western - 11,985 cars
- (American Refrigerator Transit - reefers) - 11,507 cars
- Elgin, Joliet & Eastern - 11,244 cars
- Gulf, Mobile & Ohio - 10,589 cars
- Delaware & Hudson - 11,108 cars
- (Merchants Despatch Transportation - reefers) - 10,455 cars
- (Shippers' Car Line - tanks) - 9,860 cars *Selected Railroads*

Railroads with less than 10,000 cars

- Missouri-Kansas-Texas - 8,616 cars
- New York, New Haven & Hartford - 8,447 cars
- Central of Georgia - 8,362 cars
- Central of Pennsylvania - 7,729 cars
- Nashville, Chattanooga & St. Louis - 7,378 cars
- Clinchfield - 6,961 cars
- Texas & Pacific - 6,573 cars
- Pittsburgh, McK&Y - 6,476 cars
- Chicago, St. Paul, Minneapolis & Omaha - 6,167 cars
- Chicago & Eastern Illinois - 5,729 cars
- Boston & Maine - 5,701 cars
- (Armour - mostly 36 foot meat reefers) - 5,132 cars
- Union - 4,947 cars
- St. Louis Southwestern - 4,930 cars
- Chicago Great Western - 4,892 cars
- Western Pacific - 4,815 cars
- Kansas City Southern - 4,596 cars
- Maine Central - 4,526 cars
- Central of New Jersey - 4,341 cars
- International-Great Northern - 4,246 cars
- Minneapolis & St. Louis - 3,731 cars
- Pittsburgh & West Virginia - 3,624 cars
- St. Louis, Brownsville & Mexico - 3,352 cars
- Lehigh & New England - 3,165 cars
- Bangor & Aroostook - 2,847 cars
- Interstate - 2,810 cars
- Chicago, Indianapolis & Louisville - 2,645 cars
- Lake Superior & Ishpeming - 2,616 cars
- Louisiana & Arkansas - 2,615 cars
- Chicago & Illinois - 2,343 cars
- Spokane, Portland & Seattle - 2,121 cars
- Boston & Albany - 1,986 cars
- Montour - 1,983 cars
- Illinois Terminal - 1,975 cars
- Duluth, South Shore & Atlantic - 1,607 cars
- (Wilson - meat reefers) - 1,516 cars
- Norfolk & Southern - 1,459 cars
- Ontario Northland - 1,438 cars
- Georgia - 1,418 cars
- (Railway Express - 50 foot express reefers) - 1,282 cars
- Central Vermont - 1,269 cars
- New Orleans, Texas & Mexico - 1,258 cars
- Toronto, Hamilton & Buffalo - 1,147 cars
- Rutland - 1,098 cars
- Ann Arbor - 995 cars
- Missouri-Illinois - 806 cars
- Akron, Canton & Youngstown - 689 cars
- Pittsburg & Shawmut - 658 cars
- New York, Ontario & Western - 387 cars
- Georgia & Florida - 335 cars
- (General American Pfaudler - milk cars) - 313 cars
- Michigan Central - 263 cars
- Clarendon & Pittsford - 141 cars
- Lehigh & Hudson River - 113 cars
- Muncie & Western - 100 cars
- New York, Susquehanna & Western - 74 cars
- Long Island - 68 cars
- Lake Champlain & Moriah - 59 cars
- Manufacturers - 50 cars
- (Borden's Farm Products - milk cars) - 41 cars
- Ashley, Drew & Northern - 29 cars
- Maryland & Pennsylvania - 20 cars
- (Whiting Milk - milk cars) - 4 cars

Design Factors

- Weight of Car vs Cargo (payload)
  - lighter cars required less traction capacity for locomotive.
- Height/Width ratio for structural stability
  - early designs limited to 8’-7”
  - later designs achieve 10’-6”

Design Factors

- Clearance
  - some roads, primarily western, wanted large cars
  - other roads, primarily eastern, wanted smaller cars to navigate tight clearance on existing infrastructure

Design Factor

- Maintenance
  - some roads, primarily northern, needed to protected car structure from elements and favored double sheathed cars
  - some roads, primarily southern, did not need to protect structure and preferred the lighter weight cars.

Design Factors

- Material Availability, technology, wartime shortages
- Auto-rack loaders required a clear inside height of 10’-6”
- 6” of height adds 185 cubic feet to a 40’car

Car Construction

pre-1932

- Structurally, early boxcars were flatcars with sides and a roof
- The underbody provided most of the car's strength
- Sides eventually helped to strengthen the under-frame by acting as deep trusses
  - The door opening weakens truss

Car Construction

pre-1932

- The sheathing material encloses the car and protects goods.
  - Does not provide any structural strength
- Car frames could be:
  - single sheathed
  - double sheathed
  - stock cars with slats
  - refrigerator with insulation

Car Construction

post 1932

- The car is redesigned so that the sides, under-frame, roof, and ends work together to strengthen the car
- Structurally, the car is a tube.
- The steel sheathing is an integral part of the structure
- Lighter, stronger, larger cars

Standarization

- USRA adopted wartime standard cars
- economy of construction, easy to maintain
- individual craftsman to mass production
- mass production favored limited variations
- After WW1 standard int car height of 8'-7" was established, no ext height established

Obstacles to Standarization

- Individual railroads wanted control design
  - variations, idiosyncrasies, permutations
- USRA (NYC) vs ARA (Pennsy) Rivalry
- ROW Clearance variations
- Many Railroads had established relationships with or owned part manufacturers

Classifications

NEB&W Model Railroad website

Wood Cars

Shorty Single-Sheathed Box Cars

40-Foot Single-Sheathed Box Cars
- Bettendorf 9-Panel Howe-Truss Single-Sheathed Box Cars
- USRA Single-Sheathed Box Cars
- Tall 9-Panel Howe-Truss Single-Sheathed Box Cars
- 7-Panel Howe-Truss Box Cars
  - Sawtooth Fowler Box Cars
- ARA Howe-Truss Cars
- 40-Foot Fowler Box Cars
- 7-Panel Howe-Truss Mather Box Cars
- Tall 40-Foot Howe-Truss SS Cars
- Tall 7-Panel Howe-Truss Cars
- Tall 8-Panel Howe-Truss Cars
- Tall 9-Panel Howe-Truss Cars
- Tall 11-Panel Howe Truss Cars
- Tall 40-Foot Pratt-Truss SS Cars
- 7-Panel Pratt-Truss ARA Single-Sheathed Box Cars
- Tall 40-Foot Pratt-Truss SS Cars
- 8-Panel Pratt-Truss Cars
- 9-Panel Pratt-Truss Cars
- Other SS Box Cars
  - Santa Fe "Sectional" Cars
  - Pennsy "Zig-Zag" X23 Box Cars
  - General Roster of "Other" Single-Sheathed Box Cars

50-Foot Single-Sheathed Box Cars
- 50-Foot 9-Panel Howe-Truss Cars
- 50-Foot 10-Panel Howe-Truss Cars
- 50-Foot 11-Panel Howe-Truss Cars
- 50-Foot Pratt-Truss Box Cars
- 50-Foot Single-Sheathed All-Steel Box Cars

Steel Cars

40-Foot All-Steel Box Cars
- Pioneering Steel Boxcars
- X29 Types
- USRA Steel Clones
- 1932 ARA/AAR Box Cars
- 1937 AAR Box Cars
- Round-Roofs
- Experimental Welded Cars
  - B&O Wagontop Box Cars
  - Milwaukee Ribbed-Side Box Cars
  - Pullman-Standard PS-Zeros
  - Steam-Era Exterior-Post Box Cars
- Rebuilt Box Cars
- 1944 AAR Box Cars
- PS-1's
- Plug Door Box Cars

50-Foot Steel Box Cars
- Overview & General Roster
- Cars with Dreadnaught Ends
- Round-Roof Box Cars
- Milwaukee Ribbed-Side Box Cars
- 50-Foot Steel Rebuilt Box Cars
- Cars with Improved Dreadnaught Ends
- 50-Foot PS-1's
- Other 50-Foot Steel Box Cars
- 50-Foot Exterior-Post Box Cars

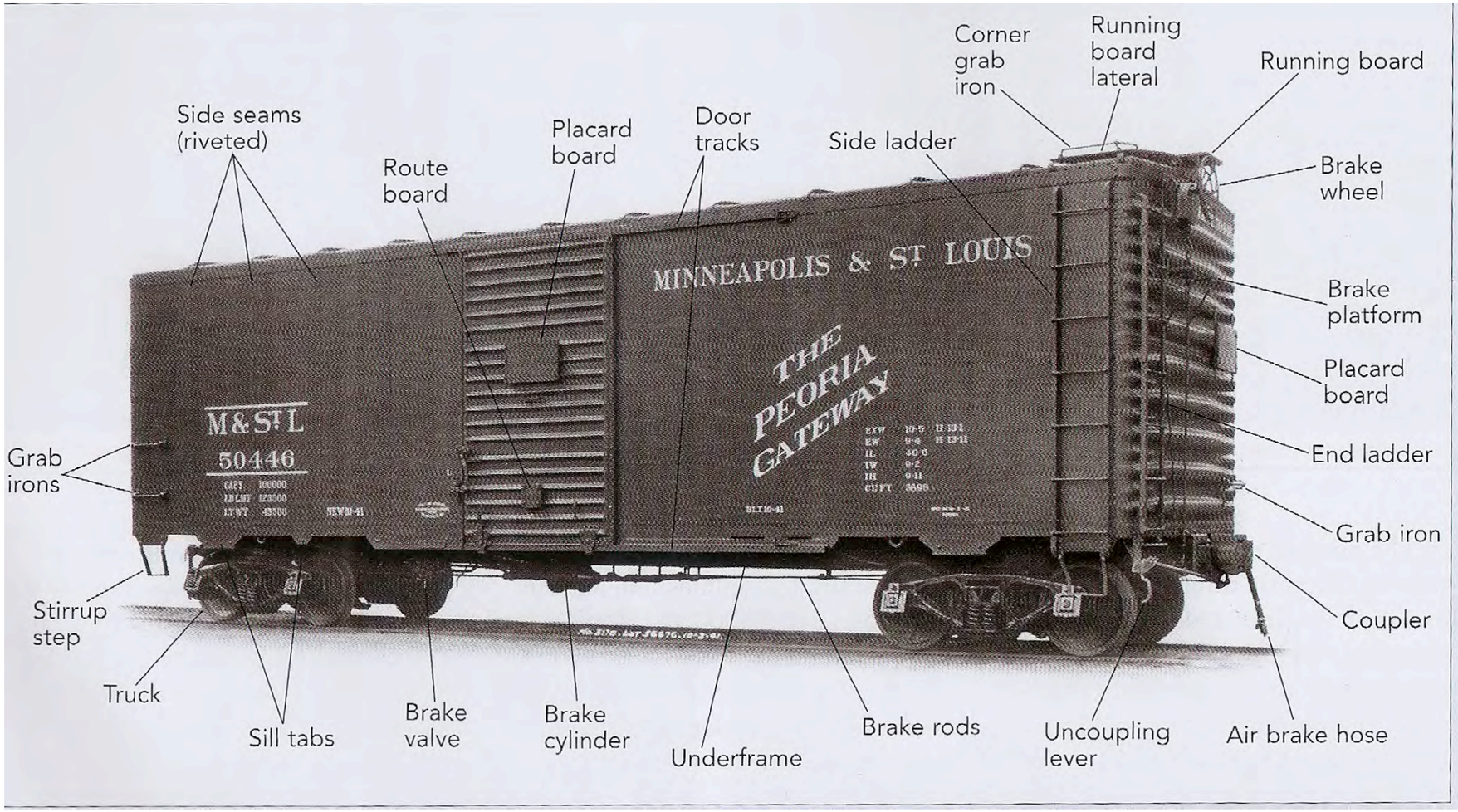
55-Foot All-Door Box Cars

60-Foot Steel Box Cars

80-Foot Steel Hi-Cube Box Cars

Primary Identifiers - Basic Components

Car Classification



Size - l x w x h

Sides

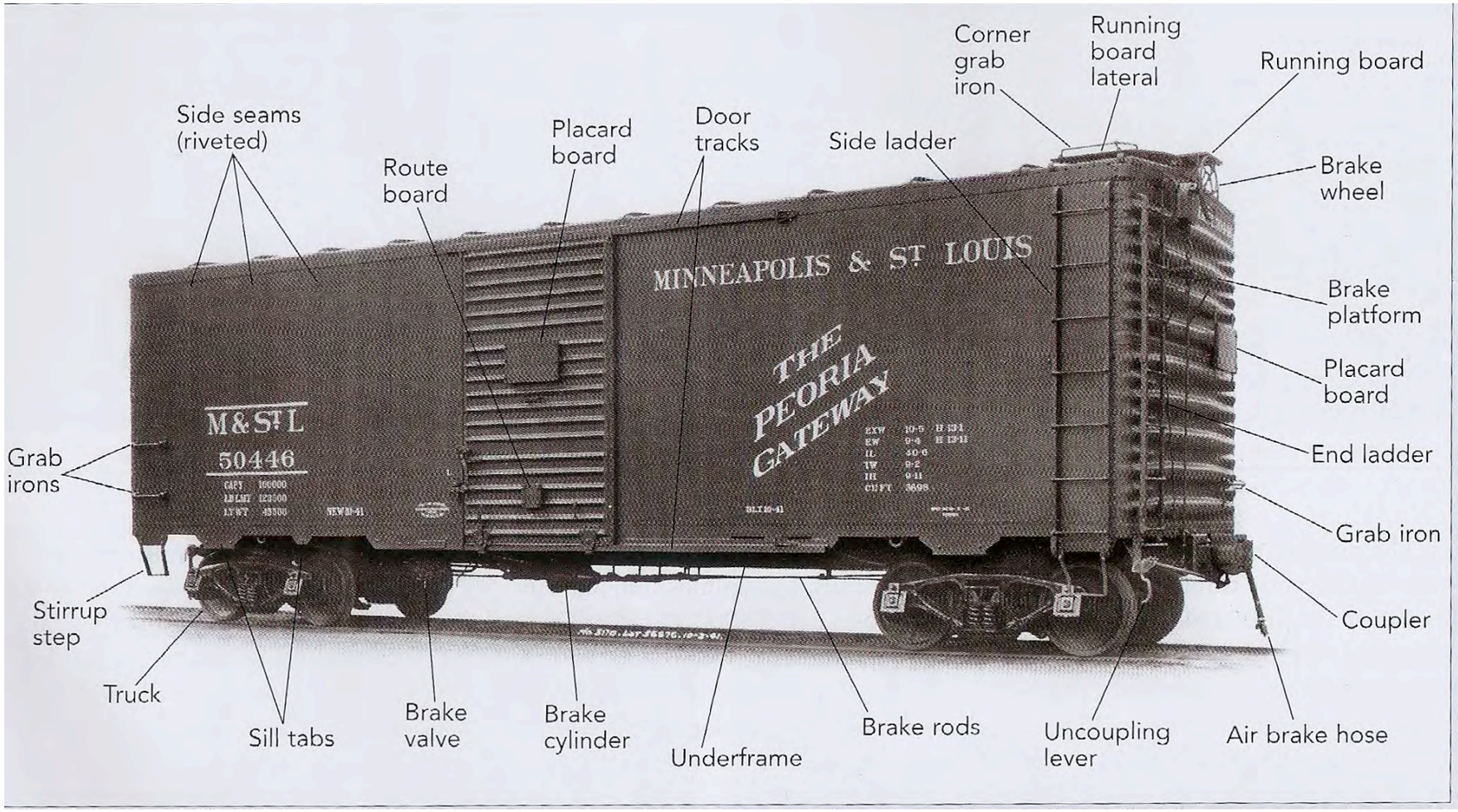
Roof

Ends

Underframe

Secondary Identifiers - Standard Accessories

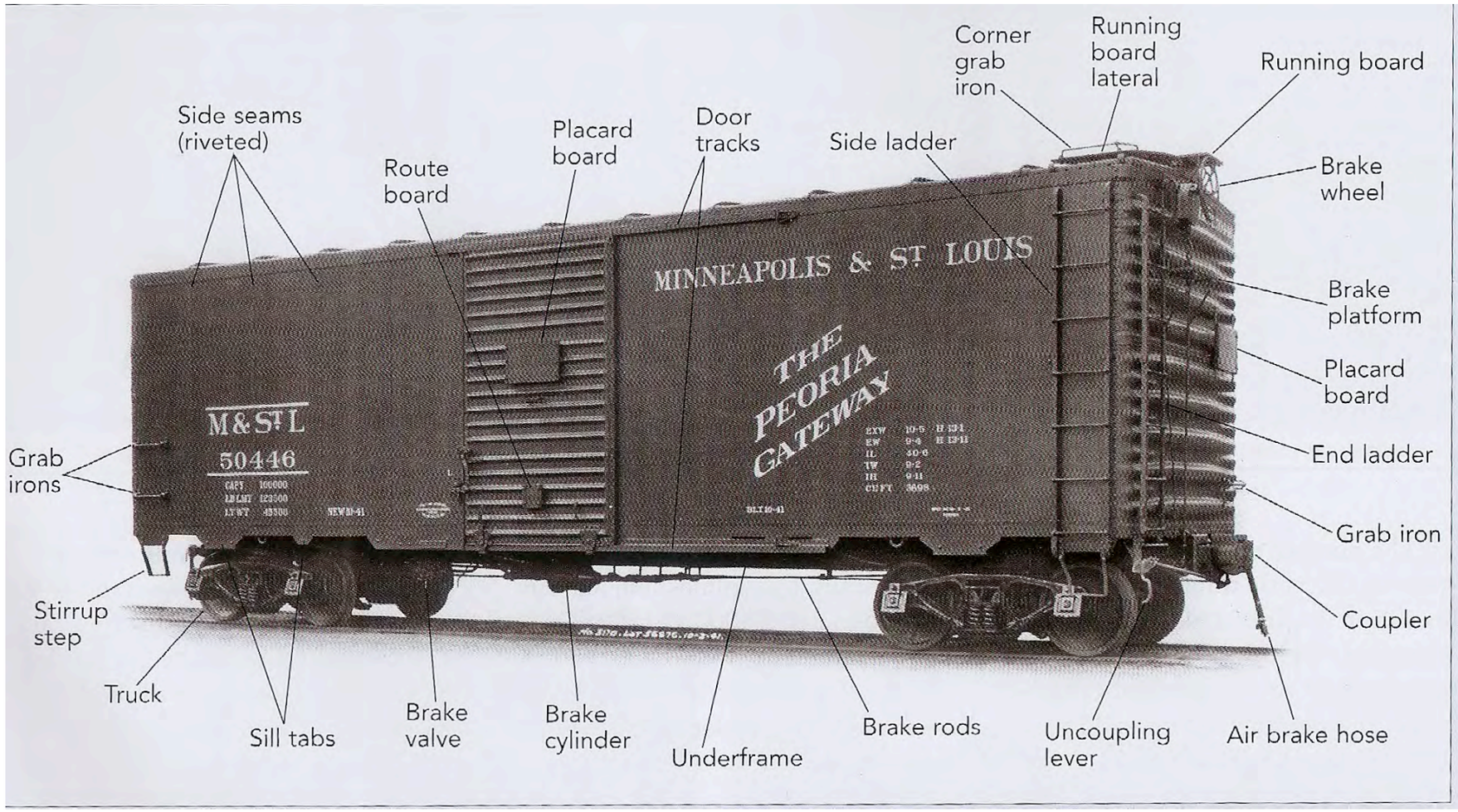
Data from Standard Car Rooster



Door Type
Ladder
Running Board
Brake Type
Stirrup Step

Terciary Identifier - Unique Details

Requires Additional Reasearch



Placard placement
Sill Profile
End (lumber door)
Door Track

1937 ARA Boxcar

- Widely produced, steel boxcar - 87,216 cars
- 1932 innovative design with standardized components
- 10’-0” int height, 40’-6” int height, 9’-2” width
- 41’-9” ext length,
- Some double door and 50’ long
- Models - IMWX, Red Caboose, Intermountain

- Steel Rivited sides
- 4/5 Dreadnaught ends - some variations
- Murphy rectangular roofs - some variations
- Youngstown corrugated doors - 6’ wide
- 50 ton AAR trucks

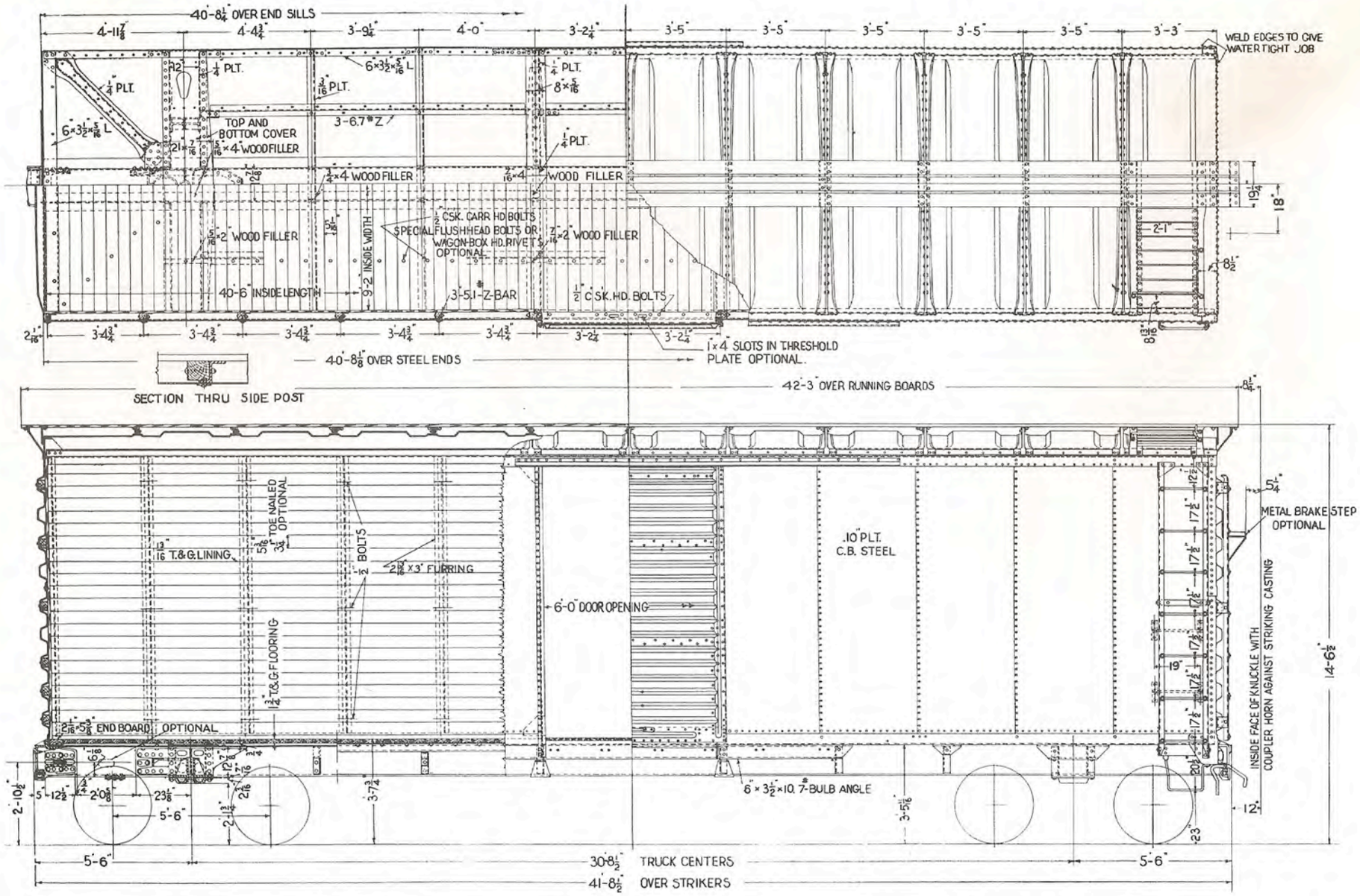
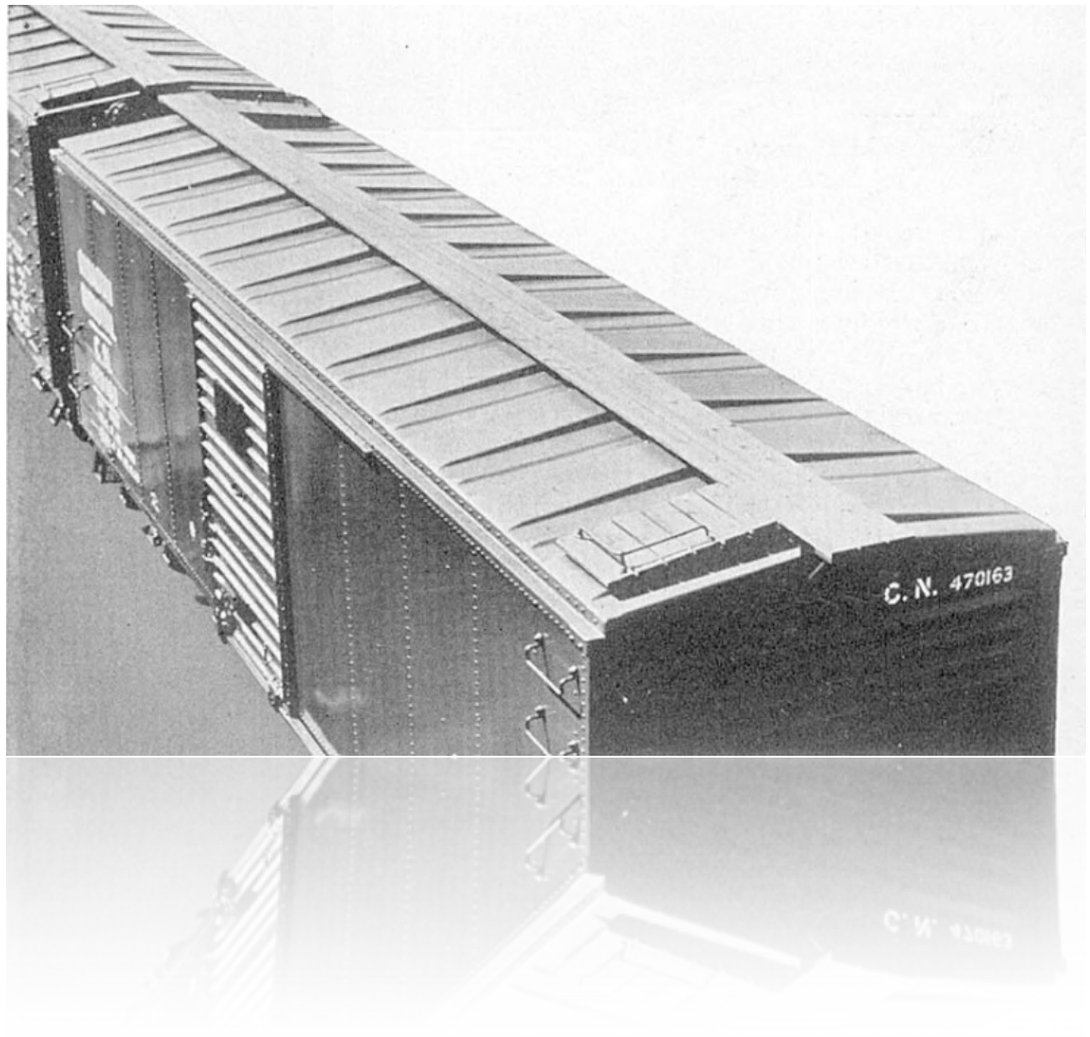


Fig. 2.103—A. A. R. 1937 design standard 40-ton and 50-ton steel-sheathed wood-lined box cars. Inside dimensions: 40 ft. 6 in. long, 9 ft. 2 in. wide, 10 ft. 0 in. high at eaves. Equipped with proprietary doors, ends and roof

The A. A. R. Committee on Car Construction approved an optional increase in inside height to 10 ft. 6 in. October, 1941
(From A. A. R. Supplement to Manual, Plate 1501—For end elevation and cross sections see Fig. 2.101)

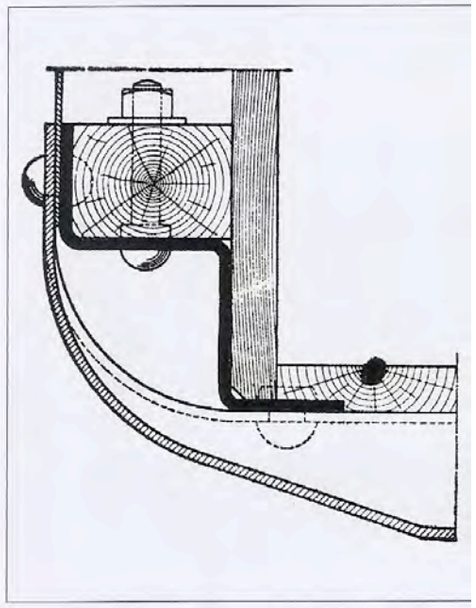
wall ribs with underframe struts

train shed cyclopedia No. 17



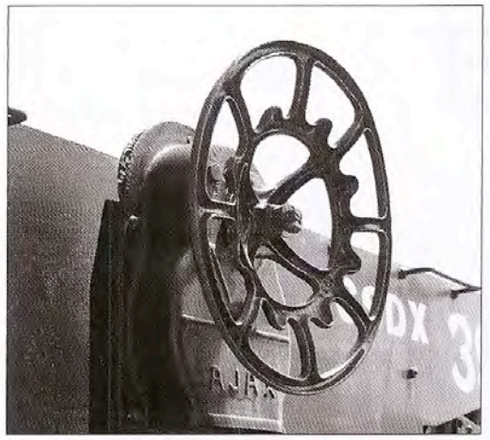
Hutchins Roof
(Standard Railway Equipment)

Viking Roof

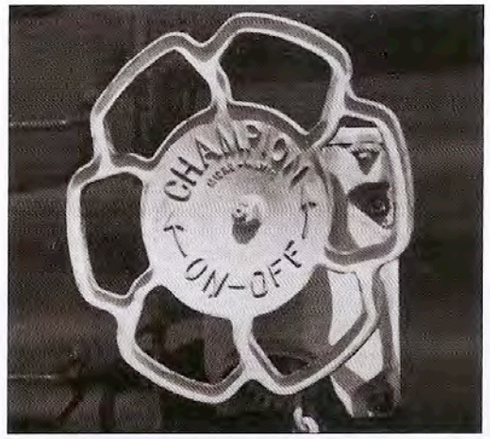


A steel corner post shaped like a W (in heavy black) allows the end (at right) to curve around it to the side to create a stronger assembly. *Standard Railway Equipment Co.*

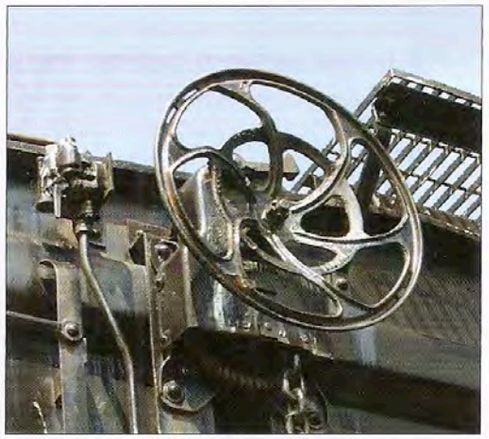
square and “W” corner



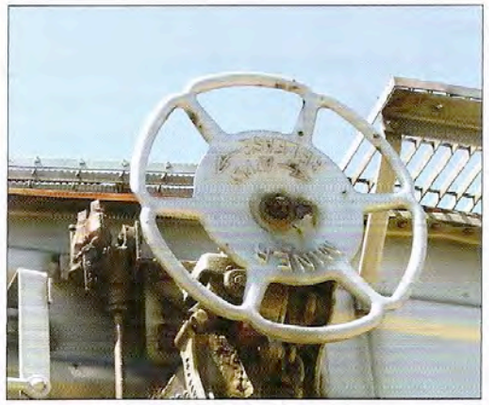
Ajax hand brakes were most common and featured distinctive brake wheels having nubs around an inner circle.



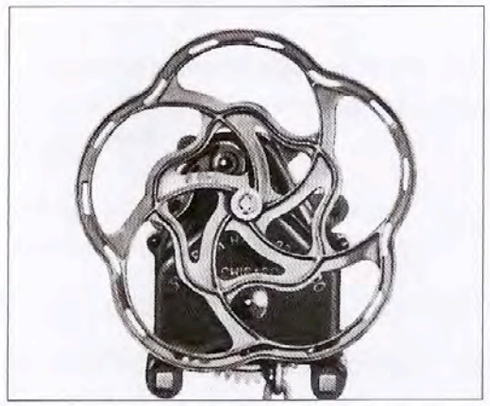
Champion wheels were spoked in a spiral pattern with indentations and a solid, concave disk in the center. *Trains magazine collection*



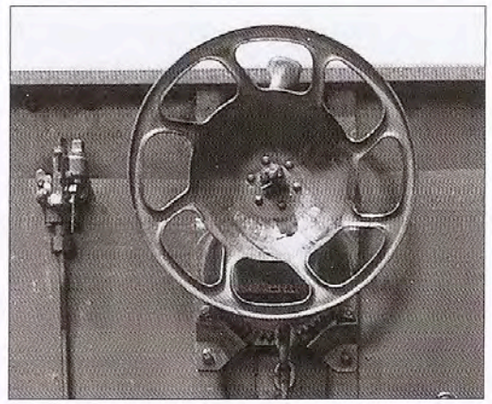
Equipco brake wheels had six spiral spokes coming from the center with an inner ring.



Miner wheels had a center disk and a simple six-spoke pattern with indentations on the outside of the wheel at the spokes.



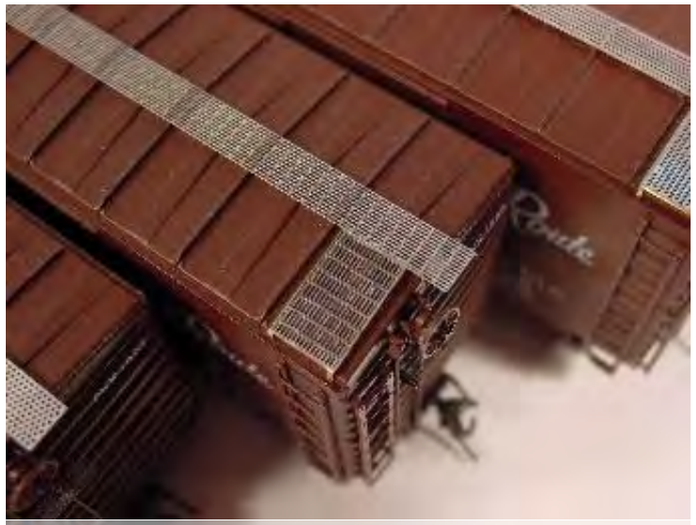
Superior brake wheels had an intricate five-spoke spiral pattern comprising the inner and outer wheels. *Superior*



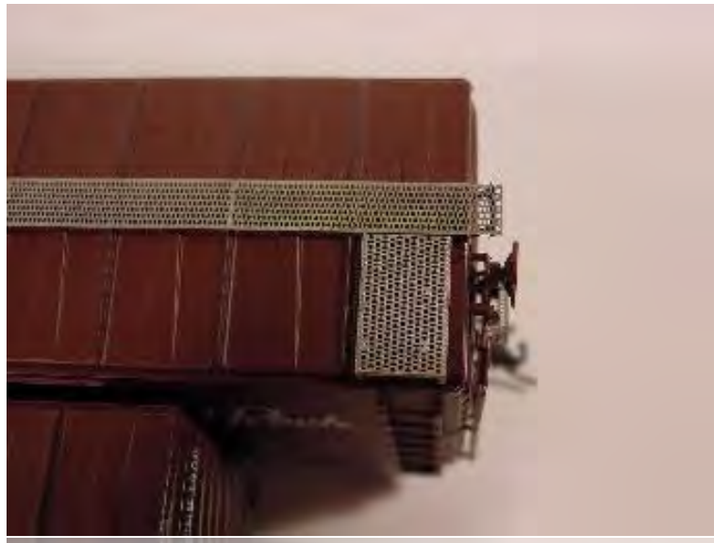
Universal wheels had a solid disk center with eight spiral spokes going to a smooth outer wheel. *Trains magazine collection*

Brake wheels (Kadee)

Morton round



Ajax slotted



Gypsum diamond

Roof walks - Plano Products

Steam Era Freight Cars Web
1937 AAR Box Cars - As Built Roster

Railroad	Class	Builder	Lot No.	Quantity	Series Start	Series End	Built	Brake Wheel	Running Board	End	Notes
SP	B-50-21	P-S	5672	250	82990	83239	1941-2	Equipco	Apex Tri-Lok	W	
SP	B-50-20	GATC		500	83240	83739	1940-1	Equipco	Apex Tri-Lok	W	Superior 7-panel doors
SP	B-50-20	PSC		500	83740	84239	1940-1	Equipco	Apex Tri-Lok	W	
SP	B-50-20	Bethlehem	DF 11	500	84240	84739	1940-1	Equipco	Apex Tri-Lok	W	
SP	B-50-23	P-S	5701	344	95520	95863	5/1942	Klasing	Apex Tri-Lok	W	344 out of an original order for 700
SP	B-50-23	ACF	2379	700	96220	96919	3/1942	Equipco	1st 500-US Gypsum; rest Apex Tri-Lok	W	96220-96819 - Superior 7-panel doors; Barber S-2 trucks
SP	B-50-23	PSC		700	96920	97619	1942	ORME	Apex Tri-Lok	W	Barber S-2 trucks
T&NO	B-50-21	GATC		500	54100	54599	1941-2	Equipco	Apex Tri-Lok	W	Superior 7-panel doors
T&NO	B-50-21	P-S	5672	250	54600	54849	1941-2	Equipco	Apex Tri-Lok	W	
T&P		P-S	5581	500	40000	40499	1937	Ajax	Wood	Sq	In 1950's many cars received 5-panel Superior doors and Apex Tri-Lok running boards
T&P		Mt. V		500	40500	40999	1937	Universal	Wood	Sq	In 1950's many cars received 5-panel Superior doors and Apex Tri-Lok running boards
TC		P-S	5655	100	7900	7999	4/1941	Miner	Wood	W	Flat panel roof; Creco 7-panel doors
TRBX		ACF	2638	1	300	300	7/1943	Superior	Apex Tri-Lok	W	Timken
UP	B-50-19	UP-Omaha		688	182812	183499	1936-7	U, M & A	Wood	Sq	
UP	B-50-19	UP-Grand Island		500	183500	183999	1936-7	U, M & A	Wood	Sq	
UP	B-50-21	UP-Omaha		900	184000	184899	1937-8	Note 4	Wood	Sq	Welded underframe-Ryan Car
UP	B-50-21	UP-Albina		900	184900	185799	1937-8	Ajax	Wood	Sq	Welded underframe-Ryan Car
UP	B-50-21	UP-Omaha		100	185800	185899	1938	Ajax	Wood	Sq	Welded underframe-Ryan Car; welded ends
UP	B-50-22	Bethlehem		50	185900	185949	1938	Ajax	Wood	Sq	Welded underframe-Bethlehem Steel; ACR*
UP	B-50-23	UP-Omaha		50	185950	185999	1938	Ajax	Wood	Sq	Welded underframe-Pullman-Standard; ACR*
UP	B-50-24	UP-Omaha		500	187000	187499	1939	Note 5	Wood	W	Welded underframe-Mt. Vernon; ACR*
UP	B-50-24	UP-Grand Island		700	187500	188199	1939	Note 5	Wood	W	Welded underframe-Mt. Vernon; ACR*
UP	B-50-27	UP-Grand Island		600	190000	190599	1940	Note 6	Wood	W	Welded underframe-Mt. Vernon; ACR*
UP	B-50-27	UP-Omaha		100	190600	190699	1940	Note 6	Wood	W	Welded underframe-Mt. Vernon; ACR*
USN		P-S	5726	100	1	100	1942				
USN		ACF	2512	1	X100	X100	4/1942	Superior		W	
USNAD		ACF	1940	2	12	13	1940		Wood	Sq	Viking roof
VGN	BX-12	PSC	155	100	63000	63099	6-7/1941	Universal	Morton	W	
W of A		P-S	5685	60	17300	17359	1941	Miner	Apex Tri-Lok	W	Aluminum/Black
WLE		RSC		250	23000	23249	9/1944	Ajax	Wood	W	Flat panel roof
WLE		RSC		250	23250	23499	1/1944	Ajax	Wood	W	Flat panel roof; Superior doors
WLE		ACF	2137	200	24000	24199	1/1941	Equipco	Wood	ACF 4/4 Dartnot	Pullman flat roof
WLE		P-S	5649	302	24200	24501	1/1941	Equipco	Wood	P-S 4/5 Dartnot	
WM		GATC	2954	100	28201	28300	9/1945	Ajax			9'11" IH; 7' door; Duryea underframe
WP		Mt. V		200	20001	20200	3/1937	Equipco	Wood	Sq	9'6" IH

Note 1 - Two small end doors and four roof hatches for access to cryogenic tanks and maintenance
Note 2
Note 3 - Miner - 31000-31449, 31500-31649, 32500-32899; Klasing - 31450-31499, 31650-31699; Ajax - 31700-32499, 32900-32999
Note 4 - 184000-184199 - Universal; 184200-184299 - Klasing; 184300-184399 - Universal; 184400-184899 - Equipco
Note 5 - Ajax, Equipco, Klasing, Miner, Superior, Universal, Ureco
Note 6 - Ajax, Equipco, Universal, Ureco
*ACR - Alternate Center Rivets

Gould/Tidy - Grandt line.
- IMWX → Red Caboose - Intermountain

References:
"Southern Pacific's AAR Boxcars", Anthony Thompson, Richard Hendrickson & Steve Peery, *Railroad Model Craftsman*, February 1993, pp. 96-101
"1937 AAR Box Cars Built by ACF", Ed Hawkins, *RailModel Journal*, July 1991, pp. 42-6.

Compiled by Ed Hawkins Ted Culotta

Updated 08/13/2002
Version 1.10

All cars listed

total 87,216 cars

4/5 Dreadnaught ends

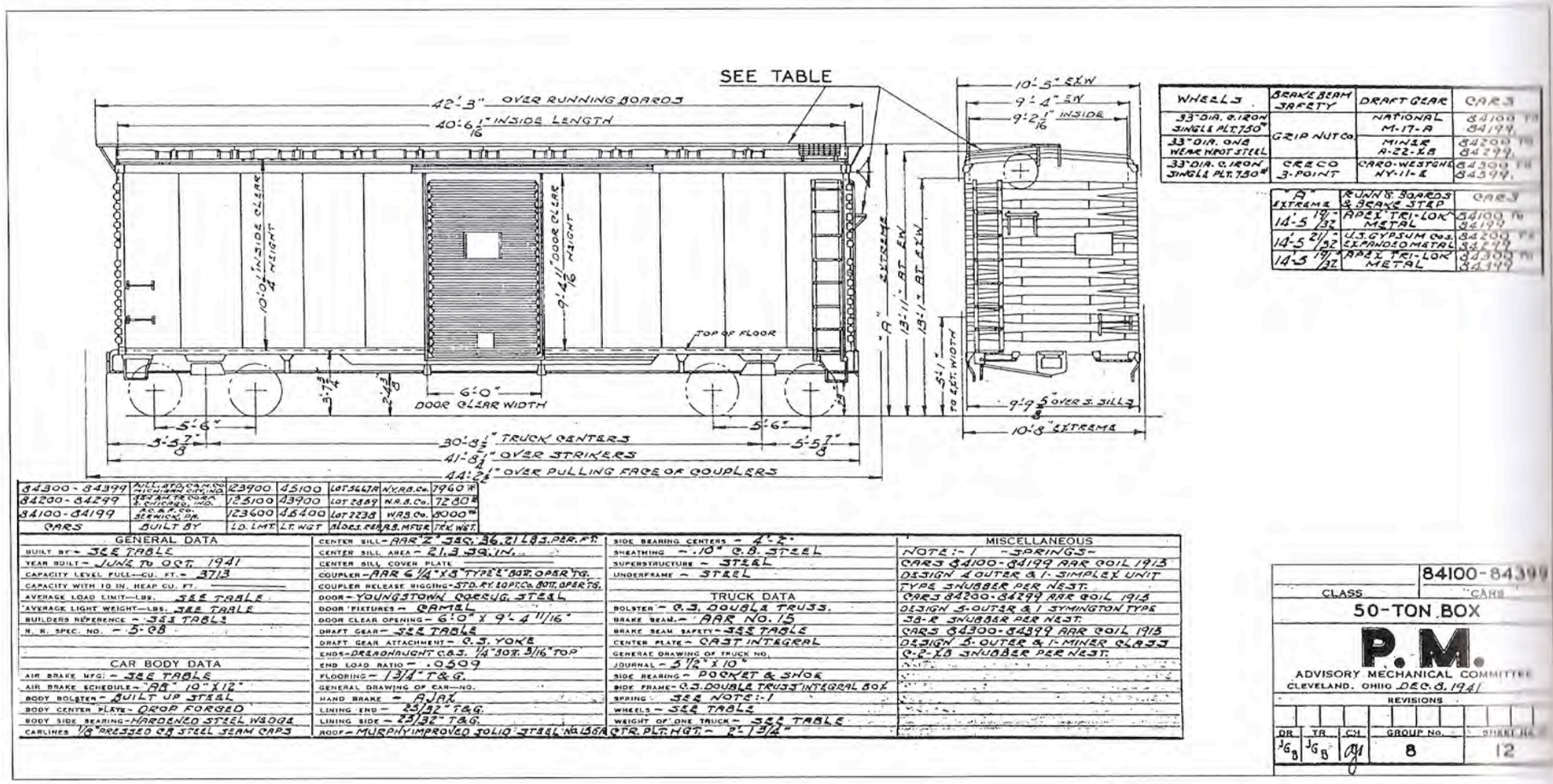
10'-0" - interior height
youngstown corrugated doors
murphy rectangular roofs
50 ton AAR truck cast side frame
Jyder is standard AAR.

PERE MARQUETTE

84100 - 84399

The 300 cars of this series represented the last 40-foot box cars purchased by the Pere Marquette. These AAR 1937-design box cars were nearly identical to the cars in the 83500-83999 series. The order was split evenly into 100-car lots, each from a different builder, and therefore varying slightly as to details. Car Nos. 84100-84199 came from AC&F and had Westinghouse air brakes and National draft gear. Car Nos. 84200-84299 were built by General American with Westinghouse air brakes and Miner draft gear. The final 100 cars came from Pullman-Standard, with New York air brakes and Westinghouse draft gear. All cars had Youngstown steel doors and Ajax power hand brakes.

ABOVE: This in-service photo of PM No. 84207 represents the cars built by GATC from series 84200-84299. These cars received US Gypsum metal running boards and brake steps.



WHEELS	BRAKE BEAM SAFETY	DRAFT GEAR	CARS
33" DIA. C. IRON SINGLE PLT. 750#	GRIP NUT CO.	NATIONAL M-17-A	84100 TO 84199
33" DIA. ONB WEAR HPOT STEEL		MINER A-22-XB	84200 TO 84299
33" DIA. C. IRON SINGLE PLT. 750#	CRECO 3-POINT	CARD-WESTGHO NY-11-E	84300 TO 84399

"A" EXTREME	RUNN'G BOARDS & BRAKE STEP	CARS
14'-5 19/32"	APEX TRI-LOK METAL	84100 TO 84199
14'-5 21/32"	U.S. GYPSUM CO. EXPANDED METAL	84200 TO 84299
14'-5 19/32"	APEX TRI-LOK METAL	84300 TO 84399

CARS	BUILT BY	LD. LMT.	LT. WGT	BLDRS. CO.	P.S. MFGR	TRK. WGT.
84300 - 84399	PULLMAN-STANDARD MICHIGAN CITY, IND.	123900	45100	LOT 3467A	N.Y.B.Co.	79600#
84200 - 84299	AMERICAN FOUNDRY & EQUIPT. CO. ST. LOUIS, MO.	123100	43900	LOT 2389	W.B.S. Co.	72800#
84100 - 84199	A.C.F. Co. BERWICK, PA.	123600	46400	LOT 2238	W.B.S. Co.	80000#

GENERAL DATA

BUILT BY - SEE TABLE
YEAR BUILT - JUNE TO OCT. 1941
CAPACITY LEVEL FULL—CU. FT. - 3713
CAPACITY WITH 10 IN. HEAP CU. FT. -
AVERAGE LOAD LIMIT—LBS. SEE TABLE
AVERAGE LIGHT WEIGHT—LBS. SEE TABLE
BUILDERS REFERENCE - SEE TABLE
R. R. SPEC. NO. - 3-68

CAR BODY DATA

AIR BRAKE MFG. - SEE TABLE
AIR BRAKE SCHEDULE - "AB" 10" X 12"
BODY BOLSTER - BUILT UP STEEL
BODY CENTER PLATE - DROP FORGED
BODY SIDE BEARING - HARDENED STEEL WEDGE
CARLINES 1/8" PRESSED OB STEEL SEAM CAPS

CENTER SILL - AAR "Z" SEC. 36.21 LBS. PER. FT.
CENTER SILL AREA - 21.3 SQ. IN.
CENTER SILL COVER PLATE
COUPLER - AAR 6 1/4" X 8" TYPE "E" BOTT. OPER'TG.
COUPLER RELEASE RIGGING - STD. RY. EQP'T. CO. BOTT. OPER'TG.
DOOR - YOUNGSTOWN CORRUG. STEEL
DOOR FIXTURES - CAMEL
DOOR CLEAR OPENING - 6'-0" X 9'-4 11/16"
DRAFT GEAR - SEE TABLE
DRAFT GEAR ATTACHMENT - C.S. YOKE
ENDS - DREADNAUGHT C.S. 1/4" BOT. 3/16" TOP
END LOAD RATIO - .0509
FLOORING - 1 3/4" T&G.
GENERAL DRAWING OF CAR—NO.
HAND BRAKE - AJAX
LINING END - 23/32" T&G.
LINING SIDE - 23/32" T&G.
ROOF - MURPHY IMPROVED SOLID STEEL NO. 156A

SIDE BEARING CENTERS - 4'-2"
SHEATHING - .10" C.R. STEEL
SUPERSTRUCTURE - STEEL
UNDERFRAME - STEEL

TRUCK DATA

BOLSTER - C.S. DOUBLE TRUSS.
BRAKE BEAM - AAR NO. 15
BRAKE BEAM SAFETY - SEE TABLE
CENTER PLATE - CAST INTEGRAL
GENERAL DRAWING OF TRUCK NO.
JOURNAL - 5 1/2" X 10"
SIDE BEARING - POCKET & SHOE
SIDE FRAME - C.S. DOUBLE TRUSS INTEGRAL BOX
SPRING - SEE NOTE: 1
WHEELS - SEE TABLE
WEIGHT OF ONE TRUCK - SEE TABLE
CTR. PLT. HGT. - 2'-1 3/4"

MISCELLANEOUS

NOTE: 1 - SPRINGS -
CARS 84100-84199 AAR COIL 1913
DESIGN 4 OUTER & 1 - SIMPLEX UNIT
TYPE SNUBBER PER NEST.
CARS 84200-84299 AAR COIL 1913
DESIGN 5 OUTER & 1 SYMINGTON TYPE
38-R SNUBBER PER NEST.
CARS 84300-84399 AAR COIL 1913
DESIGN 5 OUTER & 1 - MINER CLASS
C-2-XB SNUBBER PER NEST.

CLASS: 50-TON BOX
CARS: 84100-84399

P. M.
ADVISORY MECHANICAL COMMITTEE
CLEVELAND, OHIO DEC. 8, 1941

REVISIONS

DR	TR	CH	GROUP No.	SHEET No.
JGB	JGB	AJ	8	12

Freight Car Diagrams

FREIGHT EQUIPMENT—Continued.
DIMENSIONS

Item Numbers.	A. A. R. Mech. Designation.	Markings and Kind of Cars.	Numbers.	Inside. Length.	Inside. Width.	Inside. Height.	Outside. Length.	Outside. Width. At Eaves or Top of Sides or Platform.	Outside. Width. Extreme Width	Outside. Height from Rail. To Extreme Width.	Outside. Height from Rail. To Eaves or Top of Sides or Platform.	Outside. Height from Rail. To Top of Running Board.	Outside. Height from Rail. To Extreme Height.	Doors. Side. Width of Opening.	Doors. Side. Height of Opening.	Doors. End. Width of Opening.	Doors. End. Height of Opening.	Capacity. Cubic Feet Level Full.	Capacity. Pounds or Gallons Note H.	Number of Cars.
				ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.			
17	XM	Box—Steel	7000 to 7649	40 6	8 9	9 4	41 9	9 6	10 4	3 5	12 9	13 10	14 4	6 --	8 --	-----	-----	3307	100000	638
18	XM	Box—Steel	8000 to 9499	40 6	8 9	8 7	42 3	9 6	10 2	3 7	12 5	13 4	13 9	6 --	8 1	-----	-----	3053	100000	1489
19	XM	Box—End Doors—Steel	9500 to 9999	40 6	8 9	8 7	42 3	9 6	10 2	3 7	12 5	13 4	13 9	12 --	8 1	8 9	8 --	3053	100000	493
20	XM	Box—Steel	10000 to 11999	40 6	9 2	10 0	41 9	-- --	10 8	5 1	-- --	14 6	-- --	6 0	9 4	-----	-----	3713	100000	1980
21	XM	Box—Steel	12000 to 12168	40 6	8 6	8 8	42 6	9 8	10 1	5 6	12 5	13 5	14 1	10 6	8 2	-----	-----	2983	80000	166
22	XM	Box—Steel	12392 to 13135	40 6	8 6	8 8	42 6	9 8	10 --	5 2	12 5	13 5	14 1	6 6	8 2	-----	-----	2983	80000	738
23	XM	Box—Steel	13558 to 13828	40 6	8 6	8 8	42 6	9 8	10 1	5 6	12 5	13 5	14 1	10 --	8 2	-----	-----	2983	80000	270
24	XM	Box—Steel	14000 to 14989	40 6	9 2	10 0¼	44 3	9 4	10 5	5 4	13 11	14 6	14 6	6 0	9 5	-----	-----	3713	100000	989
25*	XM	Box—Steel	15000 to 15999	40 6	9 2	10 6	41 4	9 4 10 4	10 8	5 7	14 6 13 8	15 1	15 1	6 0	9 10	-----	-----	3899	100000	1000
26	XM	Box—Steel Frame	82000 to 83999	40 6	8 6	8 8	42 6	9 8	10 --	12 --	12 5	13 5	14 1	10 6	8 2	-----	-----	2987	80000	765
27	XM	Box—Steel Frame	84230 to 84729	36 --	8 6	8 --	37 11	9 7	9 10	11 2	12 4	13 3	14 1	6 --	7 6	-----	-----	2448	80000	321
28	XM	Box—Steel Frame	84730 to 86499	36 --	8 6	8 --	37 11	9 7	9 10	11 2	12 4	13 3	14 1	5 6	7 6	-----	-----	2448	80000	794
29	VM	Box—Ventilated—Steel Frame	86500 to 86999	36 --	8 6	7 10	37 11	9 6	9 9	11 2	12 4	13 4	14 1	5 6	7 6	-----	-----	2421	80000	373
30	XM	Box—Steel Frame	86500 to 86999	36 0	8 6	7 10	37 11	9 6	9 9	11 2	12 4	13 4	14 1	5 6	7 6	-----	-----	2421	80000	118
31	XM	Box—Steel Frame	87000 to 87499	40 6	8 7	8 6	42 3	9 4	10 --	10 4	12 6	13 3	13 11	6 --	8 1	-----	-----	2987	80000	394
32	VM	Box—Ventilated—Steel Frame (Note F)	87000 to 87499	40 6	8 7	8 6	42 3	9 4	10 --	10 4	12 6	13 3	13 11	6 --	8 1	-----	-----	2987	80000	98
---	XAP	Auto—Steel Frame	254551 to 254560	40 6	9 2	10 --	42 6	9 7	10 9	5 2	14 3	14 9	14 11	6 --	9 4	-----	-----	3712	80000	9
---	XAP	Auto—Steel	------ -- 155000	50 6	9 4	10 6	52 2	10 6 9 7	10 8	5 --	13 7 14 3	15 1	15 1	7 --	9 11	-----	-----	4974	100000	1
---	XAP	Auto—Steel Staggered Doors	255600 to 255849	40 6	9 2	10 --	42 3	8 10	10 7	13 4 5 4	14 4	14 9	15 3	12 --	9 5	9 2	9 10	3712	80000	27
---	XMP	Auto—Steel Frame (Note S)	256317 to 256324	40 6	9 2	10 --	42 6	9 7	10 9	5 2	14 3	14 9	14 11	6 --	9 4	-----	-----	3712	80000	8
---	XME	Box—Steel Stagg. Doors	257000 to 257059	40 6	9 2	10 -- 9 5	42 3	8 10	10 9	5 3	14 4	14 9	15 3	12 --	9 5	-----	-----	3712 3602	80000	60
---	XM	Box—Steel, Furniture, Stagg. Doors	271000 to 271249	50 6	9 --	10 --	52 3	8 8	10 7	5 4	14 4	14 9	15 3	12 0	9 5	9 --	9 10	4545	80000	6
---	XM	Box—Steel	282000 to 282499	40 6	8 9	8 7	42 3	8 11	10 5	5 4	12 11	13 4	13 9	6 --	8 1	-----	-----	3053	100000	75
---	XM	Box—Lightweight Welded All Steel	283500 to 284299	40 6	9 2	10 --	41 11	8 8 10 5	10 7	5 9	14 -- 13 --	14 7	14 7	6 --	9 4	-----	-----	3733	100000	1

Official Railway Equipment Registrer
C&O

Published every four years

Modified 1937 ARA Boxcar

- 10’-6” Interior Height, 40’-6” Int length
- 5/5 Dreadnaught ends
- Small Production
- Prototype for Athearn “Bluebox” Boxcar
- Model - Intermountain


ROUTE OF THE ROCKETS
R.I.
20039
Rock
Island

Modified 1937 AAR Box Car List (as built) (5/5 Dreadnaught Ends)

ROAD	SERIES	BUILT	QTY BLT	BUILDER	IH	DOOR SIZE	DOOR TYPE	ROOF	COR-NER	H/B	R/B	SIDE LAD.	END LAD.	PHOTO SOURCE(S)	REMARKS
ITC	6300-6499	11-44	200	ACF 2713	10'6"	6	YSD	P	R	A	A	7	7	ACF,WHITTAKER	
KOG	30006-30008	4-43	3		10'6"	6	YSD	P	R			7	7	WINTERS-1952	
M-I	4250-4299	11-45	50	ACF 2837	10'6"	6	YSD	P	R	A	A	8	8	ACF	
MP	32500-33299	3-42	800	ACF 2341	10'6"	6	YSD	P	R	A	A	8	8	ACF,PEACOCK,BIG4,MG89FEB(27)	
MP	34113-34262	5-42	150	ACF 2419	10'6"	6	YSD	P	R	A	A	8	8	ACF	STRAIGHT SILL BETWEEN BOLSTERS
MP	34263-34287	4-42	25	ACF 2420	10'6"	6	YSD	P	R	A	A	8	8		STRAIGHT SILL BETWEEN BOLSTERS
MP	34300-34599	9-45	300	ACF 2761	10'6"	6	YSD	P	R	A	A	8	8	ACF,BOB'S	
NP	26000-27349	12-41	1350	ACF 2339	10'6"	6	YSD	P	R	U	W	8	8	ACF,TR55SEP(36)	SILL MODIFICATION 1950s
NP	27350-27499	1-42	150	NP(LAUREL)	10'6"	6	YSD	P	R			8	8	WHITTAKER-60	SILL MODIFICATION 1950s
NP	27500-27999	4-42	500	PS 5698	10'6"	6	7P SUP	P	R	A	A	8	8	PS/SI,CB43(119),CB46(116),BURG,	CAR 27577 6P DOOR
NYC	159000-159999	9-44	1000	DESPATCH	10'5"	6	YSD	P	R			7	7	CB46(123),NAC,LORENZ-61, NYC	LOT 734B
NYC	161000-161999	6-44	1000	DESPATCH	10'5"	6	YSD	P	R			7	7	LORENZ(2),BURG,CHIONE,SRR	LOT 745B, BLT 6/44-1/45
RI	20000-20039	12-41	40	PSC 4636F	10'6"	6	YSD	P	R	U	W	7	7	CB46(125),NAC,MM89MAY(60/61),	ALLIED TRUCKS ORIG.,
RI	20040-20049	-41	10	PSC	10'6"	6	YSD	P	R	U	W	7	7		ALLIED TRUCKS ORIG.,
RI	20050 ONLY	-41	0	PSC	10'6"	6	YSD	P	R	U	W	7	7		EXPRESS, CONVERTED FROM
RI	20051 ONLY	12-41	0	PSC	10'6"	6	YSD	P	R	U	W	7	7	MM89MAY(62)	EXPRESS, CONVERTED FROM
RI	145000-145799	2-40	800	PSC	10'6"	6	YSD	P	R	U	W	7	7	MM89MAY(60),PSC/NAC,COLLIA	
RI	145800-145999	-40	200	PSC	10'6"	6	7P SUP	P	R	U	W	7	7		
RI	146000-146749	11-40	750	PSC	10'6"	6	YSD	P	R	U	W	7	7	NAC,BURG,WHITTAKER,TRRA,	
RI	146750-147549	11-41	800	PSC	10'6"	6	YSD	P	R	U	W	7	7	WINTERS,PEACOCK	
RI	147550-147749	11-41	200	PSC	10'6"	6	7P SUP	P	R	U	W	7	7		
RI	147750-148549	4-42	800	PSC	10'6"	6	YSD	P	R	U	W	7	7	BOB'S(2),BURG-62,MM89MAY(62)	
RI	148550-148799	12-44	250	PSC 4702F	10'6"	6	YSD	P	R	U	A	7	7	BOB'S	DURYEA U/F
RI	148800-149049	2-45	250	PSC 4702F	10'6"	6	YP SUP	P	R	U	G	7	7	CB46(118),NAC,MM89MAY(62)	DURYEA U/F
SOO	42800-43598	7-40	400	PS 5631	10'5"	6	YSD	P	S	K	W	7	7	PS(COLLIAS)	EVEN NOS.
SOO	43600-44098	12-40	250	PS 5645	10'5"	6	YSD	P	S	K	W	7	7	CB46(124),CB43(127),NAC,HERZO	EVEN NOS.
SOO	44100-44498	10-41	200	PS 5688	10'5"	6	YSD	P	S	U	W	7	7	PS/SI,BURG	EVEN NOS.
SOO	136300-136398	12-40	50	PS 5645	10'5"	6	YSD	P	S	K	W	7	7	PS/SI	EVEN NOS., WISC. CENTRAL
SOU	10183-14140	4-42	11	PS 5692	10'6"	6	YSD	P	R	M	W	7	7		11 RANDOM NUMBERS (REPLACEMENT CARS)
SOU	20000-21499	5-42	1500	MV	10'6"	6	YSD	P	R			7	7	BURG-1960,63	
SOU	21500-22799	4-42	1300	PS 5692	10'6"	6	YSD	P	R	U/M	W	7	7	BOB'S	UNIV. H/B FIRST 1,250, MINER LAST 50
SOU	22800-22999	4-42	200	PS 5692	10'6"	6	7P SUP	P	R	M	W	7	7	PS/SI,BURG	#22812 5P SUP (REPLACEMENT)
SSW	33500-33649	3-41	150	SSW	10'6"	6	YSD	P	R	M	A	7	6S	BURG	ALT. RIVETS, BLT 3-6/41
SSW	33650-33699	3-41	50	SSW	10'6"	6	YSD	P	R	M	G	7	6S		ALT. RIVETS, BLT 3-6/41
SSW	33700-33849	12-43	150	SSW	10'6"	6	YSD	P	R	U/K	A	7	6S	WHITTAKER,CRAWFORD(TRRA),BOB'S	ALT. RIVETS, BLT 12/43-2/44
StLB&M	17501-17600	5-42	100	ACF 2419	10'6"	6	YSD	P	R	A	A	8	8	ACF,EAGLE 85/WINTER	STRAIGHT SILL BETWEEN BOLSTERS
StLB&M	18000-18249	10-45	250	ACF 2761	10'6"	6	YSD	P	R	A	G	8	8	ACF	
StLB&M	18250-18449	3-46	200	PS 5823	10'6"	6	YSD	P	R	A	A	8	8	PS/SI	
UP	191000-192999	4-41	2000	UP	10'6"	6	YSD	P	R		W	7	6S	UPFC(100),RJ97MAR.(28)	B-50-32, ALT. RIVETS
UP	193000-193748	6-42	749	UP	10'6"	6	YSD	P	R	A/U	W	7	6S	UPFC(104),NAC,CB46(125),WINTERS,BOB'S	B-50-33, ALT. RIVETS
WAB	86000-86874	-42	875	WAB	10'4"	6	YSD	P	R	M	A	7	6S	WINTERS	STRAIGHT SILL BETWEEN BOLSTERS
WP	20201-20550	1-45	350	MV	10'6"	6	YSD	P	R	A	A	7	7	WHITTAKER(3),CB46(120),BIG4, WP H/L SPR90(9)	

TOTAL QTY BUILT: 44,415 (INCLUDES EJ&E CARS WHICH HAD 8' DOOR OPENING, NOT BUILT TO AAR MODIFIED STANDARD)
BUILD DATE IS EARLIEST DATE HAVING PHOTOGRAPHIC DOCUMENTATION OR DATA FROM FREIGHT CAR DIAGRAM.
NUMBERS IN THE SIDE LADDER AND END LADDER COLUMNS SIGNIFY THE NUMBER OF LADDER RUNGS.
"S" IN THE END LADDER COLUMN SIGNIFIES THAT END LADDERS ARE SHORTER THAN SIDE LADDERS (AT THE BOTTOM).

REFERENCES:
SANTA FE BOX CARS 1869-1953, SFMO VOL. 4
BURLINGTON BULLETIN #7
ILLINOIS CENTRAL HS GREEN DIAMOND, ISSUE #30
MPHS EAGLE SUMMER 1995
UNION PACIFIC FREIGHT CARS BY TERRY METCALFE
RMJ: AUG/OCT/DEC96 AND MAR97

CORNER:
R - ROUND (W-SECTION)
S - SQUARE

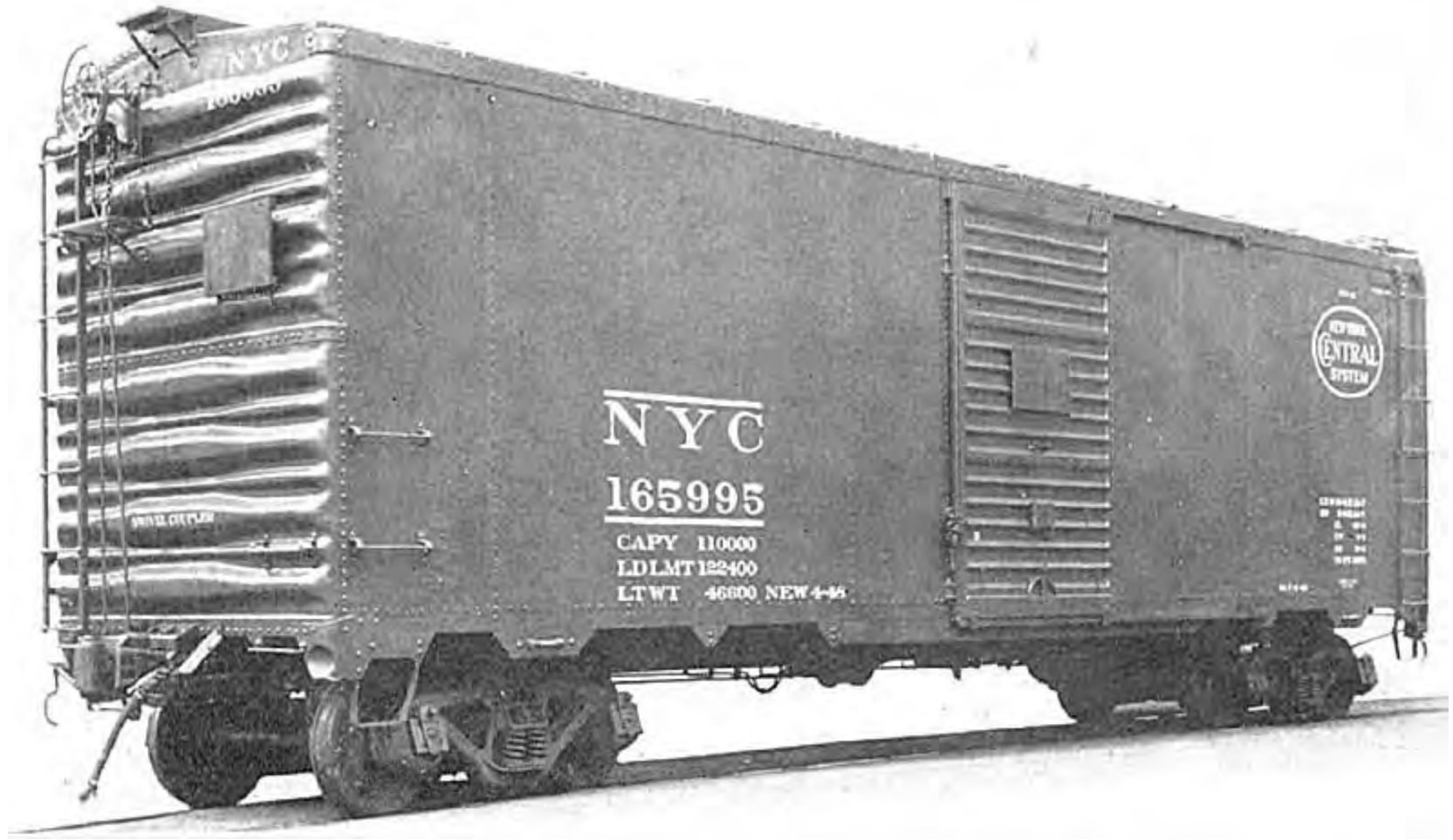
H/B - HAND BRAKES:
A- AJAX
E - EQUIPCO
K - KLASING
M - MINER
S - SUPERIOR
UR - URECO
U - UNIVERSAL

R/B - RUNNING BOARDS:
A - APEX TRI-LIK
G - GYSPSUM
M - MORTON
W - WOOD

ROOF:
P - MURPHY RAISED PANEL
V - VIKING

1944 ARA Boxcar

- Larger, lighter, stronger than “37 car
- 10’-4” and 10’-6” Interior Heights, 40’-6” int length, 9’-2” w
- 10 or 12 panels sides, riveted or welded
- 4/4 Improved Dreadnaught Ends
- 6’, 7’, & 8’ Youngstown or Superior doors
- Straight Raised or Diagonal Panel roofs
- 7 or 8 rung ladders

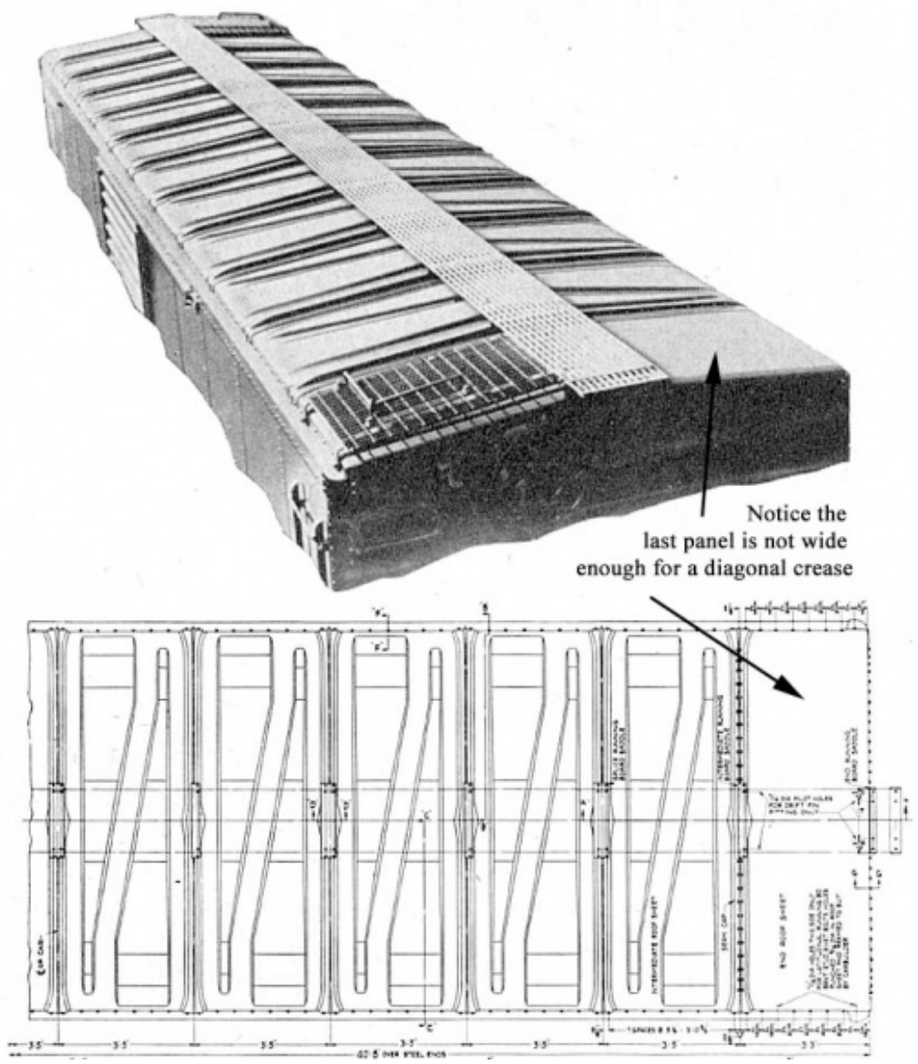


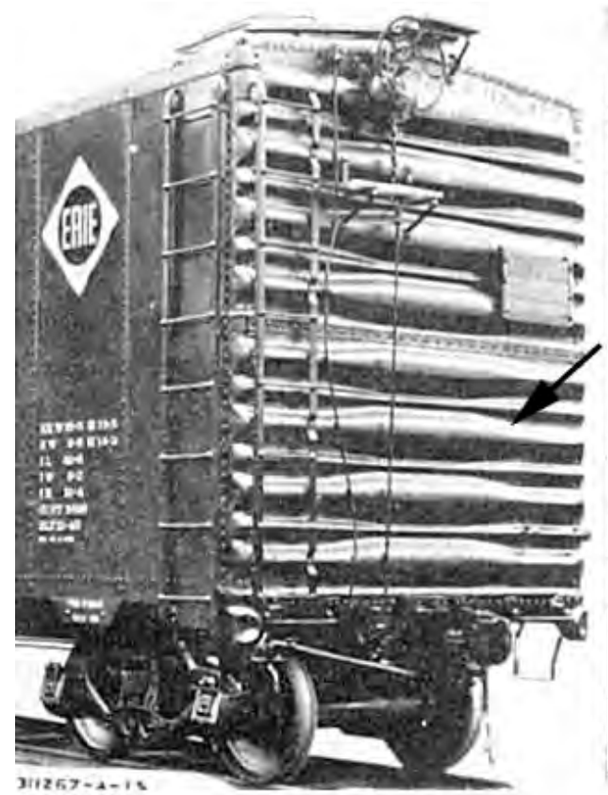
- “Rolling Pin” Dreadnaught corrugation
- Model - Branchline Blueprint series
- Model - C&BT Shops, every possible combination

rib dart is removed

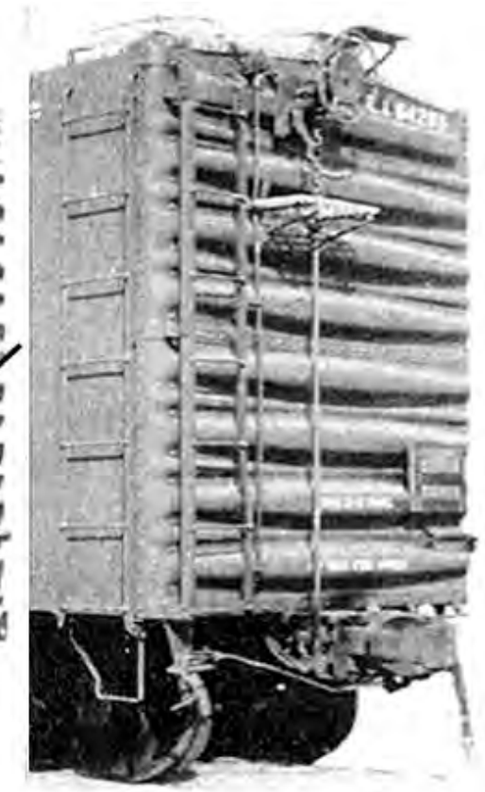
- "Rolling Pin" Dartnaught End
- 4/3/1 configuration - short, square top rib
- 4/4 rib configuration typical

Roof & End Variations





"rolling-pin taper"
1944-'54
(Notice how the major ribs are sort of pinched as they taper down to the corner.)



"Banana-taper"
post-'54
(The major ribs are smoother as they taper down.)

1944 AAR 40' BOX CAR, 10'4"-10'6" IH,
4-4 IMPROVED DREADNAUGHT END

ROAD	SERIES	BUILT	QTY BLT	BUILDER	DOOR SIZE	TYPE DOOR	SIDE PANELS	ROOF	END	LADDER RUNGS	H/B	R/B	PHOTO SOURCE	REMARKS
GM&O	22000-22419	12-47	420	ACF 3141	6	YSD-2A	10	P	1	7	A	G	ACF	
GOC	222-251	9-47	30	PS 5876	6	YSD-2A	10	P	1	7	M	A	PS/SI	GULF OIL CO., NO AB BRAKE SYSTEM
GTW	515000-515499	-48	500	PS 5891	7	YSD-2?	10	P	1	7			BURG	
IC	29000-29499	4-46	500	IC-CENT	6	7P SUP	10	P	2	7	M	NOTE 18	WHITTAKER,MG89APR(45),GRN DIA #30(10)	10'-4" IH
IC	29500-30499	4-47	1000	IC-CENT	6	7P SUP	10	P	2	7	NOTE 19	G	GRUBER,BOB'S	10'-4" IH
IC	30500-31249**	4-48	750	IC-CENT	6	YSD-2	10	D	2	7	U/A	A/M	CB49(339),LORENZ,(#30720)	10'-4" IH
ITC	6500-6849	7-47	350	ACF 3063	6	YSD-2A	10	P	1	7	A	G	ACF,WHITTAKER,BURG,BIG4-2,WINTERS,MG89APR(48),BOB'S	
L&N	15000-15399	9-46	400	ACF 2950	6	YSD-1	10	P	1	7	M	G	ACF	
L&N	15400-15599	5-46	200	ACF 2888	6	YSD-1	10	P	1	7	M	A	ACF	
L&N	15600-15799	5-46	200	ACF 2888	6	7P SUP	10	P	1	7	M	A		
L&N	15800-16799	5-47	1000	MV	6	YSD-2A	10	P	1	7	M	NOTE 20	CB49(92,342),BURG,BOB'S	
MKT	90080 ONLY	11-49	1	PS 5891	7	YSD-1	10	P	1	8	A	A	PS/SI COPY	R&D TEST CAR
NC&STL	19000-19499	9-47	500	PS 5866	6	YSD-2A	10	P	1	7	M	G	PS/SI,HENDERSON(38)	XM35
NKP	5000-5249	8-46	250	PS 5840	7	7P SUP	10	P	1	8	A	A	MM91AUG(30),NAC,COLLIAS	
NKP	5250-5499	9-46	250	PS 5840	7	YSD-1	10	P	1	8	A	A	PS/SI,WHITTAKER,MG 89APR(46)	
NKP	7000-7299	9-45	300	RSC 2559	6	YSD-1	10	P	1	8	A	A	MM90FEB(32),TRRA/MOT	
NKP	7300-7499	10-45	200	RSC 2559	6	7P SUP	10	P	1	8	A	A	CB49(75),MM91AUG(30)	
NP	1000-1009	8-45	0	PS	6	7P SUP	10	P	1	8	A	A	WHITTAKER,RDS	GREEN CAR, RE# 1954
NP	25000-25999	10-47	1000	NP(BR)	6	7P SUP	10	P	1	8	A*	A*	CB49(94),COLLIAS,NPCG(40)	CARS MODIFIED W/STRAIGHT SILL LATE '50s
NP	29000-29499	8-45	500	PS 5807	6	7P SUP	10	P	1	8	A	A	PS/SI	
NP	29500-29999	2-46	500	ACF 2786	6	YSD-1	10	P	1	8	U	NOTE 21	ACF	
NS	27000-27249	8-47	250	PS 5871	6	YSD-2A	10	P	1	7	A	A	PS/SI,BURG	XM5
NYC	162000-163999	9-45	2000	DESPATCH	6	YSD-1	10	P	1	7			LORENZ,WHITTAKER,COLLIAS, BURG,BOB'S	LOT 743-B
NYC	164000-164999	10-47	1000	DESPATCH	6	YSD-2	10	P	1	7		A	LORENZ-61,NYC/COLLIASNYCGCG(75)	LOT 759-B
NYC	165000-165999	4-48	1000	GSC 495	6	YSD-2	10	P	1	7	K		GSC,CB49(74),CB53(74),WINTERS	LOT 763-B
NYC	166000-166999	5-48	1000	ACF 3284	6	NOTE 22	10	P	1	7	NOTE 23	G	ACF	LOT 764-B, #166539 YSD/AJAX
P&WV	1200-1299	12-46	100	ACF 2961	8	YSD-1	10	P	2	8	E	G	ACF,BURG,MG86J/A(7),MM93SEP(32),BOB'S	10'-4" IH
RDG	104000-104699	7-46	700	RDG	8	7P SUP	10	P	1	7	A	A	RDG CG(69)	XMw, DURYEA U/F, NOTE 24
RDG	106000-106799	9-47	800	RDG	8	7P SUP	10	P	1	7	A	A	BURG, HENDERSON BOOK	XMy
RI	25000-25249	4-46	250	PS 5817	6	7P SUP	12	P	1	7	E	G		
RI	25250-25499	4-46	500	PS 5817	6	YSD-3	12	P	1	7	E	G	PS/SI	
SERX	800-805	11-47	6	ACF 3229	6	YSD-2	12W	P	1	7	E	A		LINDE, STRAIGHT SILL BETWEEN BOLSTERS
SERX	930-993	11-47	64	ACF 3229	6	YSD-2	12W	P	1	7	E	A	ACF,RJ93JUL(50)	LINDE, STRAIGHT SILL BETWEEN BOLSTERS
SOU	23000-23241	7-47	242	PS 5855	8	YSD-2A	10	P	1	7	U	M	BURG,BOB'S	
SOU	23242-23268	7-47	27	PS 5855	8	7P SUP	10	P	1	7	U	M		
SOU	23269-23299	7-47	31	PS 5855	8	YSD-2A	10	P	1	7	U	M		
SOU	23300-23472	8-47	173	PS 5855	8	7P SUP	10	P	1	7	U	M	PS/SI	NOTE 25
SOU	23473-23486	8-47	14	PS 5855	8	YSD-2A	10	P	1	7	U	M		NOTE 25
SOU	262040-262049	8-47	10	PS 5855	8	YSD-2A	10	P	1	7	U	M		NOTE 25
SOU	307025-307027	8-47	3	PS 5855	8	YSD-2A	10	P	1	7	U	M		NOTE 25
SOU	330000-330499	10-46	500	PS 5855	8	YSD-2A	10	P	1	7	M	M	WINTERS,SOUCG(37),BOB'S,MM93MAY(41)	NO&NE
SP&S	11000-11249	5-46	250	PS 5826	6	7P SUP	10	P	1	8	A	NOTE 26	BOB'S	
SP&S	11250-11499	5-46	250	PS 5826	6	YSD-1	10	P	1	8	A	NOTE 27	PS/SI(POOR PHOTO),COLLIAS	
TH&B	3000-3299	7-49	300	NSC	6	YSD-1	10	D	2	8	A	A	WHITTAKER,BURG,GRUBER,BOB'S	
TH&B	3300-3599	5-53	300	NSC	6	YSD	10	D	2	8	A	A	WHITTAKER,BURG,WINTERS	
UP	196000-196999	7-46	1000	MV	6	YSD-1	10	P	1	7	NOTE 28	NOTE 29	METCALFE(108-111)	B-50-38, ACR
UP	197000-198499	4-47	1500	PS 5861	6	YSD-2A	10	P	1	7	NOTE 30	NOTE 29	PS/SI(BOTH SIDES),METCALFE(112-115),BOB'S-2	B-50-39, ACR
UP	198500-198999	11-47	500	GATC	6	YSD-2A	10	P	1	7	NOTE 30	NOTE 29	CB49(75)	B-50-39, ACR
WAB	88000-88199	3-47	200	WAB	6	7P SUP	10	P	1	7	M?	A?	WHITTAKER-1966	STRAIGHT SIDE SILL BETWEEN BOLSTERS
WAB	88200-88699	12-48	500	ACF 3226	6	YSD-2	12W	P	1	7	M	A	ACF,LORENZ,WINTERS	
WAB	88700-89524	4-48	825	WAB	6	7P SUP	10	P	1	7	M	A	WHITTAKER,LORENZ,NAC	STRAIGHT SIDE SILL BETWEEN BOLSTERS
WofA	17600-17649	9-47	50	PS 5869	6	YSD-2A	10	P	1	7	M	A	PS/SI,BOB'S-2	
WP	20551-20800	7-47	250	MV 10559	7	YSD-2A	10	P	1	7	A	M	LORENZ,WPHL SPG90(9/10)	BLT 7-8/47

GENERAL:

Date shown is earliest date documented by photograph or other data. Production for some series spanned several months.
Cars are 10'6" Inside Height unless otherwise noted
Sides are of 10-panel or 12-panel riveted construction unless designated by 'W' for welded.
* - The specified appliance has been verfied through photoigraphic evidence, but there may be additional varieties used.
** - IC Series 30500-31999 was built during a transition when 4/4 IDN ends were being changed to R+3/4 IDN ends. An undetermined number of cars came with 4/4 IDN ends (#30740 verified by photo).
IC 31448 had R+3/4 IDN Ends per photographic evidence. Cars in series 30500-31249 used Youngstown (YSD-2) Doors and 31250-31999 had 7-panel Superior doors.
Nine series of CN cars with NSC ends are excluded from this roster (see *RMC* August 1993 for further information)
Five series of CP cars with NSC ends are excluded from this roster (see RMC October 1994 for further information)

REFERENCES:

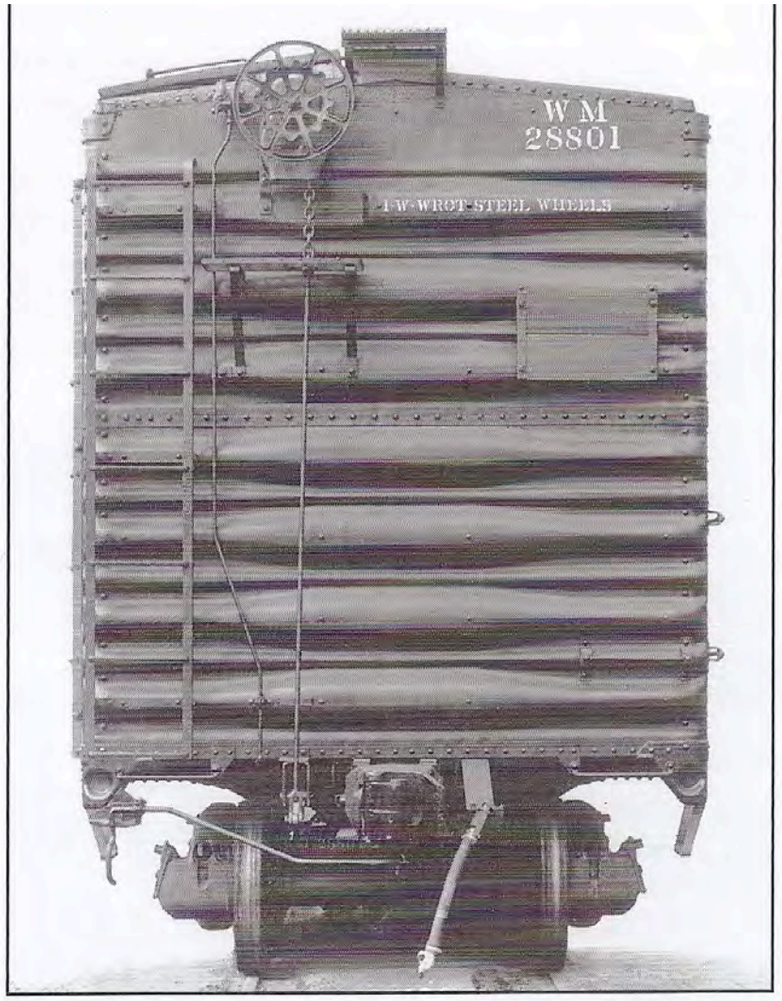
October 1999, November 1999 AND January 2000 *Railmodel Journal*
Railmodel Journal Compendium Book, Box Cars... Book 1, for additional information on cars built by ACF
August 1993, February 1994, AND October 1994 *Railroad Model Craftsman* for articles on Canadian cars
Santa Fe Railway Rolling Stock Reference Series - Volume Four - Santa Fe Box Cars 1869 - 1953 , John Dobyne
Burlington Bulletin, No. 7
Western Pacific Historical Society Headlight , Spring 1990

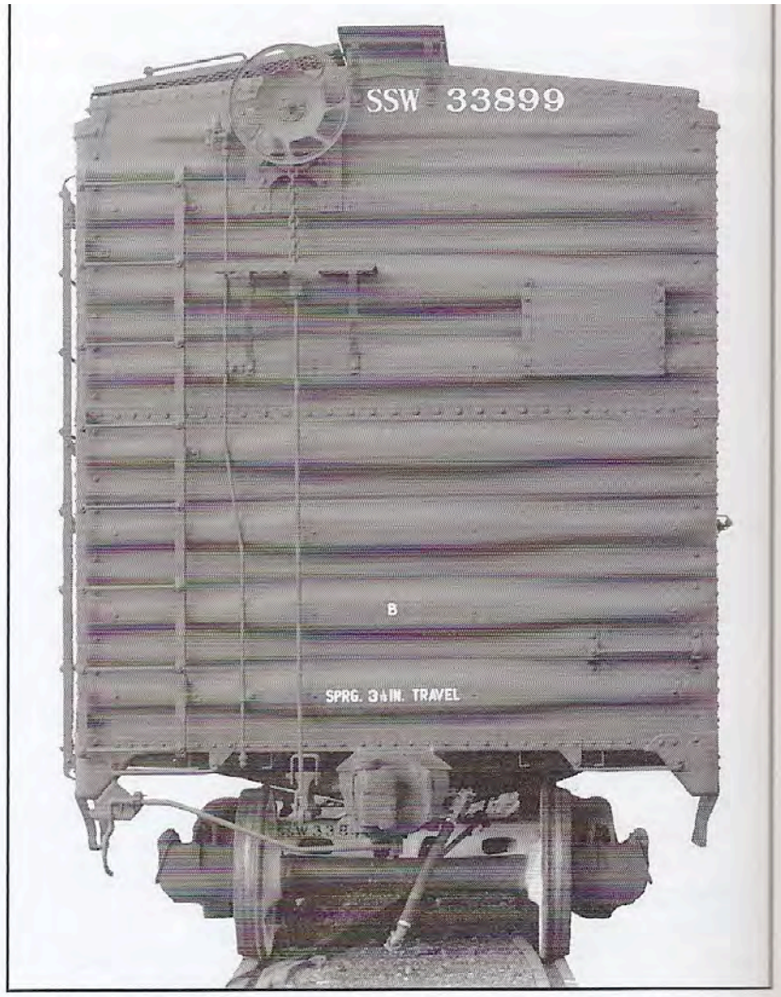
Compiled by Ed Hawkins

Steam Era Freight Cars
www.steamfreightcars.com

Modified 1944 ARA Boxcar

- 10’-0” Interior Height, needed to meet ROW clearances
- NEB&W misidentifies as 1937 type boxcar
- 4/3 Improved Dreadnaught ends, some with stiffner
- No commercial models





Two versions of Improved Dreadnaught Ends used on 10'-0" inside height box cars are shown to illustrate the differences. **Left**: The early-version Improved Dreadnaught End first used in 1945 employed a "rolling pin" main corrugation contour in a 3/4 (top/bottom) configuration and lacked the thin corrugation at the top. The main corrugations of the early ends were for the most part symmetrical about their horizontal and vertical center lines. Bethlehem Steel Co. photo. **Right**: Midway through 1948 Standard Railway Equipment Manufacturing Co. modified the design by adding a thin corrugation near the top to improve rigidity. Also, note the asymmetry of the top main corrugation of the later-version Improved Dreadnaught End. Pullman-Standard photo courtesy of Smithsonian Institution, NMAH/Transportation, Haskell & Barker Collection, Negative 7741. The B&O M-62 and M-66 cars built 1956 and 1958 had ends similar in appearance to that shown on the right, but the taper of the corrugation contour was broadened (see B&O 468399 on page 79).

4/3 Improved Dreadnaught End

4/3 Dreadnaught End w/ Stiffner
(not 4/3/1 end)

From Railway Prototype Cyclopedia # 8

X-29 Boxcar

- Pre-1932 Design w/ standardized steel parts
- Pennsylvania Railroad standard boxcar
  - 29,600 cars in 1949
- 8’-71/2” int height, 40’6” int length, 8’-9” width
- Models - Red Caboose, Intermountain (best)
  Train-Minature, Walthers

Classic Components

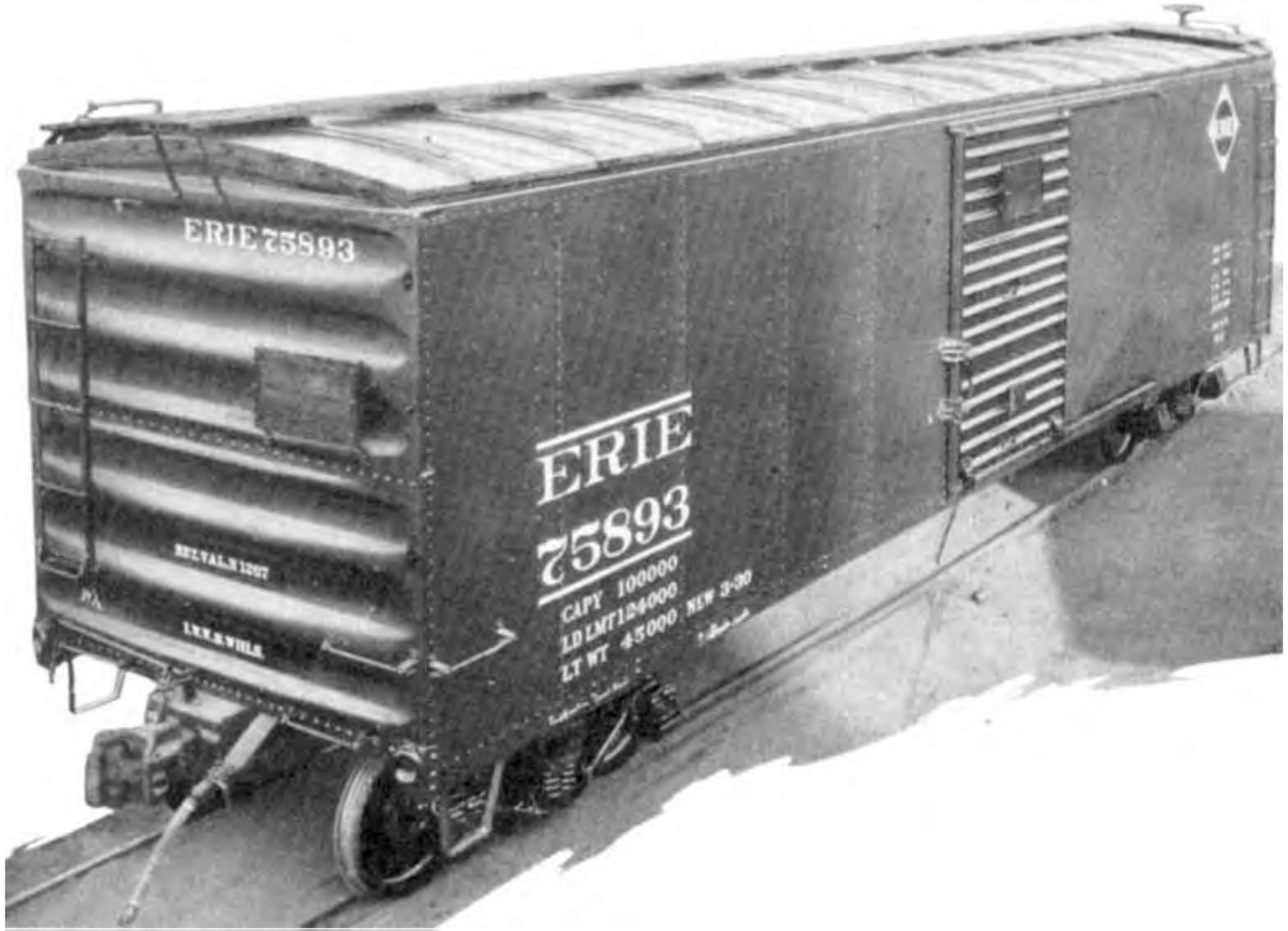
10 panel, riveted, sides

flat plate, riveted ends

flat, lapped, seamed roof

3 panel, creco, door

X-29 w/ Squashed Dreadnaught ends



Radial Roof, Buckeye ends

some roads owned or had long term contracts with parts suppliers

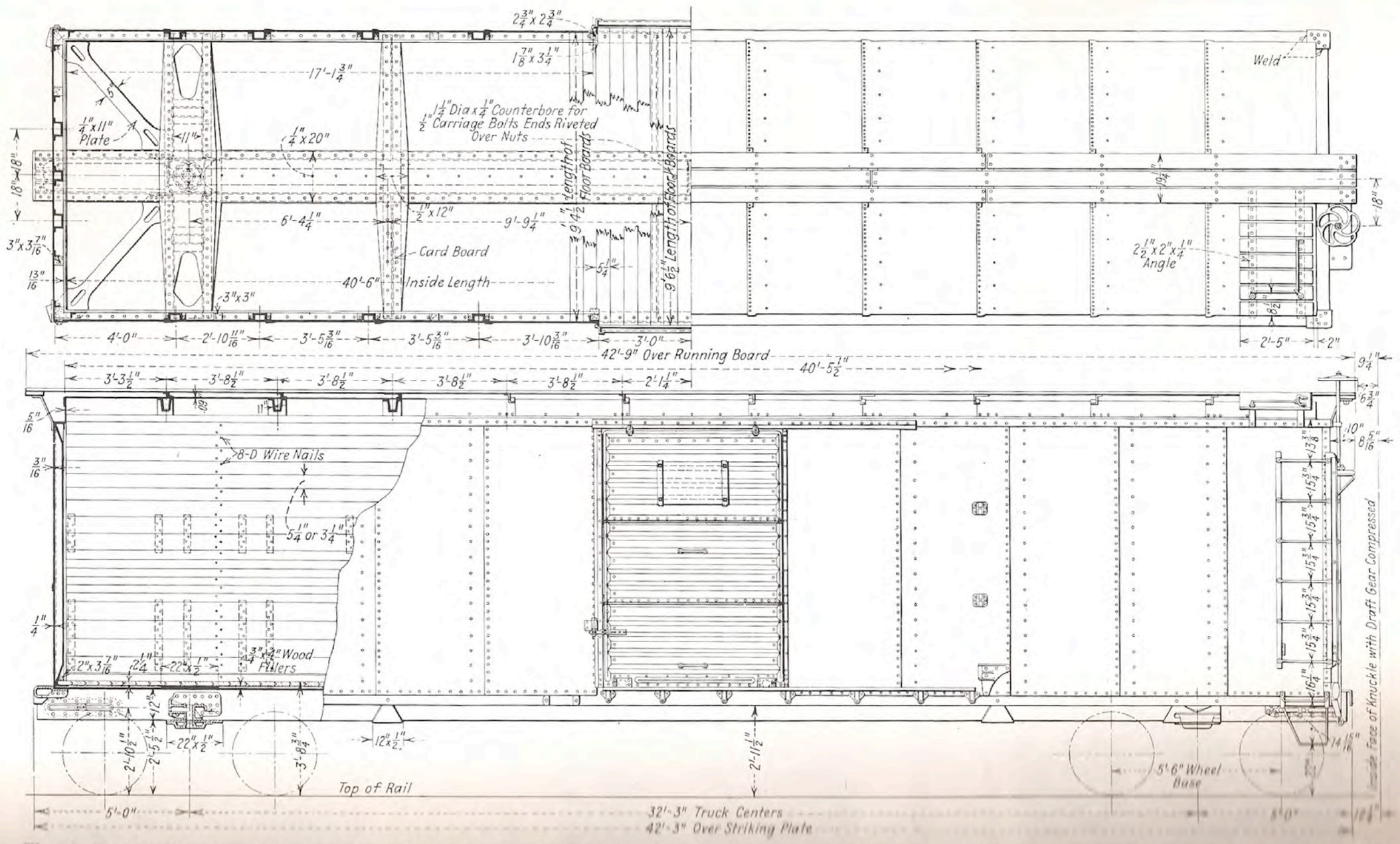


Fig. 13—Plan and Elevation of The Pennsylvania Railroad Double-Sheathed Steel Box Car—Steel Frame and Sheathing with Wood Lining—of 50-Tons Capacity. Road Class X29.

sides act as trussed edge beam

Train Shed Cyclopedia No.3

Steam Era Freight Cars
Red Caboose X29 / ARA 1923 Box Cars
Kit Accuracy List

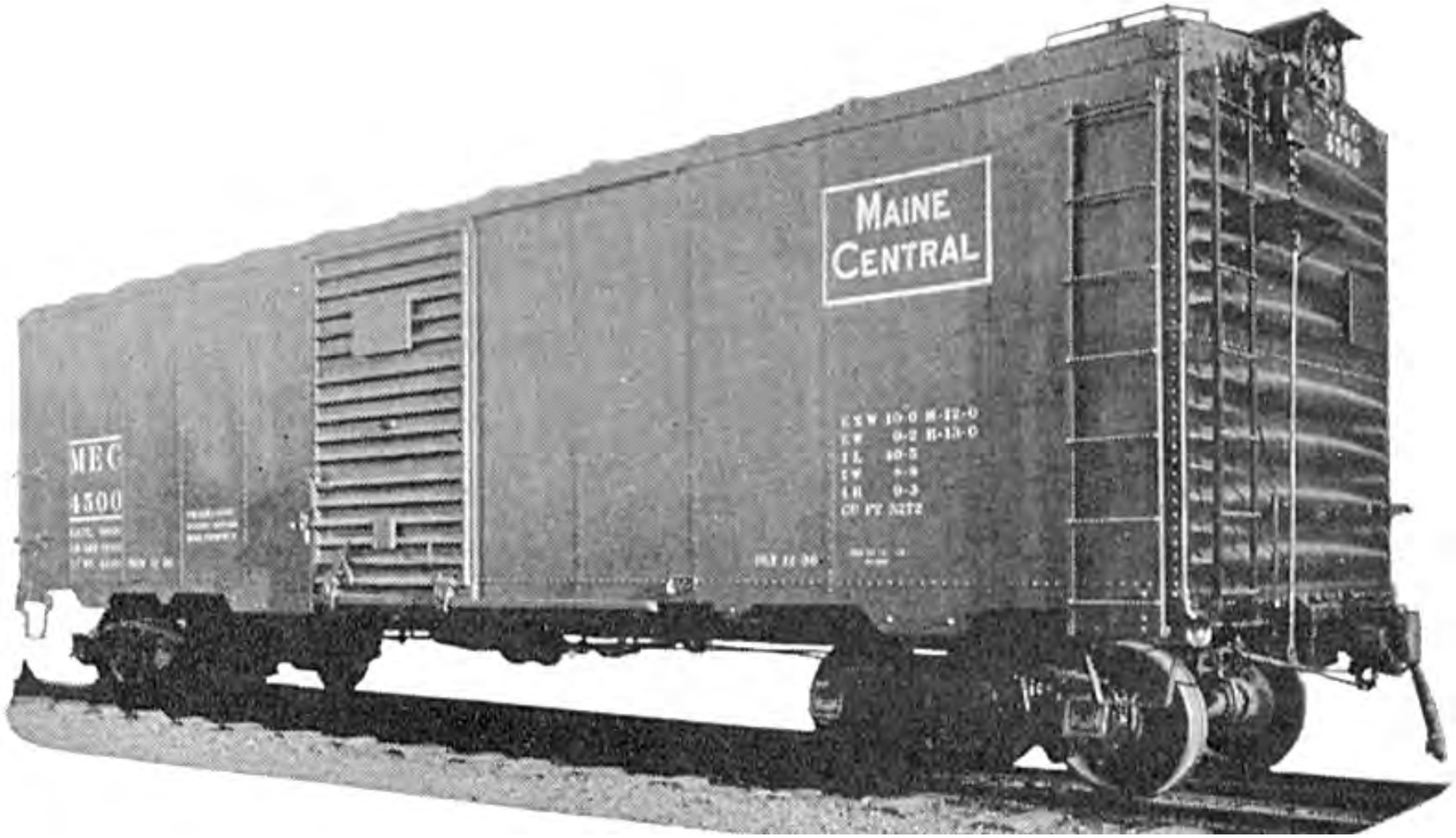
Kit Number	Railroad	Description	Prototype Series	Comments
7001	Undec	1928 style X29 with Dreadnaught ends	100000-103324	Correct for late version X29s
7002	Undec	1924 style X29 with flat riveted ends		
7003	Undec	ARA style with flat riveted ends		
7004	Undec	ARA style with Dreadnaught ends		
7010	PRR	1924 style X29 with flat riveted ends		Correct for early X29s
7012	N&W	BPA Auto Car rebuild	41000-41999	Inaccurate - prototype is 9'3" IH; 41000 is single door rebuild of 1-1/2 door 40000 series; Sunshine kits 26.16 & 26.17
7014	LNE	LNE early cars with Flat riveted ends	8001-8200; 8201-8500	Accurate for 8001-8500;
7016	WLE	WLE clones of early X29s	25000-25999	Accurate
7018	C&O	Modified ARA design	8000-9499	Inaccurate - needs Climax Radial roof, truck centers should be 5'6" & crossbearers should be at door posts - 3'2" from center; 8000 & 9001-9499 - Creco doors; 8001-9000 - Youngstown doors; see MM 5/2001; YC resin kit - F&C planned re-release
7020	B&M	B&M copies of ARA design with flat riveted end		Inaccurate - prototype had Duryea underframe and unique doors; Duryea underframe available from Sunshine and doors from Rutland Car Works
7022	E-L	Erie versions of Modified ARA design		see Erie
7024	PRR	1924 style X29 with flat riveted ends with Shadow Keystone lettering		Correct
7026	PRR	1924 style X29 with flat riveted ends with Merchandise Service lettering		Correct
7028	PRR	1924 style X29 with flat riveted ends with REA lettering		Correct
7030	PRR	1924 style X29 with flat riveted ends with Shadow Keystone lettering and Buy War Bonds		Correct
7032	NKP	Part of NKP acquisition of WLE	25000-25999	Correct
7034	SAL	SAL B-6 Box cars with flat riveted ends	17000-18999	Inaccurate - The SAL's B-6 class were ARA 1932 Box Cars (9'4" IH); Sunshine kits 21.12, 21.13, 21.14, 21.27 & 21.28
7036	MEC	ARA style with flat riveted ends	5000-6003	Inaccurate - as delivered, the MEC's cars had an early Viking roof
7038	DT&I		18000-18149; 20000-21999	Leased from PRR
7040	Erie	Modified ARA design	75000-75999	Different side riveting pattern than all kits; 75000-75499 - Dreadnaught ends, Climax Radial Roof; 75500 - Buckeye ends, Climax Radial Roof; YC resin kit - F&C planned re-release
7042	B&O	M-26A - ARA style with flat riveted ends	268000-271499	Correct - rivets at bolsters???
7044	CNJ	ARA style with flat riveted ends	21000-21799	Inaccurate - prototype had Hutchins Dry Lading roofs
7046	RDG	Reading's 101000-series box cars	101000-102999	Inaccurate - prototype had flat panel roof, USRA steel (like NYC USRA steel box cars) style sides and was 9'3" IH
7048	CGW	CGW style of ARA/X29	85000-87998 (even)	Inaccurate - Door is correct, but CGW had a unique sheathing arrangement
7050	NYC	NYC's 100 ARA Box Cars		Inaccurate???
7052	Ga. Northern			?????
7054	US Army			?????
7056	HPT&D	High Point Thomasville & Denton's Furniture Cars	401-425	Inaccurate - prototype was 10'0" IH with Duryea underframes
7058	West India Fruit Co.			?????
7060	PM	Modified ARA design	82000-82399	Inaccurate - needs Hutchins Dry Lading roof, truck centers should be 5'6" & crossbearers should be at door posts - 3'2" from center; see MM 5/2001; YC resin kit - F&C planned re-release
7064	SAL	SAL's Express versions of B-6		Inaccurate - see #7034
7066	PRR	1928 style X29 with Dreadnaught ends	100000-103324	Accurate
7069	B&O	M-26 - ARA style with flat riveted ends	265000-266999	Correct
7080	B&O	M-26D - ARA style with flat riveted ends	272500-273499	Inaccurate - prototype had Duryea underframes
7072	PRR	1928 style X29 with Dreadnaught ends with REA lettering		Correct
7074	PRR	1928 style X29 with Dreadnaught ends with Circle Keystone and Buy War Bonds		Correct
7076	PRR	1928 style X29 with Dreadnaught ends with Merchandise Service lettering		Correct
7078	PRR	1928 style X29 with Dreadnaught ends with Shadow Keystone herald		Correct
7082	PRR	1928 style X29 with Dreadnaught ends - Battery car		Correct
7086	PRR	1924 style X29 with flat riveted ends with MOW lettering		Correct

C&O 7018
E-L 7022
ERIE 7040
NYC 7050
PM 7060

'54 photo of no. 100305, unknown photographer, from our collection. Note the "patch panels" along the bottom. The X29 design tended to rust out here, a problem overcome with the '32 ARA design.

1932 ARA Boxcar

- Innovative uni-body design where the sides (including sheathing), under-frame, ends and roof work together to strengthen the car. Body acts as a tube.
- Standardized parts, dreadnaught ends introduced
- Small production because of depression and WWII
- 9’-4” Int height, 40’-6” int length, 8’-9” int width
- Model - Atlas Master



Classic Components

10 panel, riveted, sides
Raised, panel, Murphy roof
4/4 Dreadnaught ends
Superior Door

Alternate Components (X-29)

10 panel, single row, riveted, sides
Flat panel, lap seamed, roof
Flat panel, riveted ends
Superior Door
(note: mixed road logos)

1932 ARA Box Car Roster (as built)

ROAD	SERIES	BUILT	QTY	BUILDER	IH	CP	ENDS	ROOF	PHOTO SOURCES	REMARKS
BAR	65000-65499	6-38	500	MCC P9150	9'-2"	S	4/5 DN	P	CB40(130),NAC,COLLIAS,BIG4,WINTERS,WHITTAKER,N ECG(12),BOB'S(3)	RE# 5000-5499(1951)
BAR	65500-65549	2-45	50	MCC W710	9'-2"	R	4/5 DN	P	BOB'S	RE# 5500-5549(1951)
BAR	65550-65649	12-45	100	MCC W895	9'-2"	R	4/5 IDN	P	HENDERSON(6)	RE# 5550-5649(1951)
C&O	1900-1902	9-33	3	PSC	9'-4"	S	4/4 DN	P		ex-ARA #2,4,5; RE# 2800-2802(1952)
C&O	7000-7649	6-8/34	650	PS 5499	9'-4"	S	4/4 DN	R	PS/SI,MM93JAN(41)	Class B5-3
CG	4000-4499	8-37	500	PS 5568	9'-3"	S	4/4 DN	P	PS/SI,HAWKINS,MG88AUG(43),YANKEE CLIPPER SHEET,BOB'S	
CGW	89000-89998	9-34	500	PS 5500	9'-4"	S	7/8 MUR	F	CB40(131),MG88AUG(39),CGW CG(28)	EVEN NOS., 3-PANEL PULLMAN DOORS
CP	225000-225699	4-36	700	CCF	9'-4"	S	4/5 DN	P	MM93MAY(39), CB37(447),MG88AUG(41)	
CRR	5000-5249	8-37	250	GSC 250	9'-4"	S	4/4 DN	P	GSC,WHITTAKER,BURG-61,MG88AUG(44)	FB5
D&H	17626-17725	11-37	100	D&H	9'-4"	S	4/5 DN	P	NAC,BURG,WHITTAKER-62	10-PANEL WELDED SIDES
ERIE	76500-76999	8-34	500	ACF 1329	9'-4"	S	BUCKEYE	V	ACF,MM92OCT,MG88AUG(40)	
I-GN	17001-17300	6-36	300	ACF 1493	9'-4"	S	4/4 DN	P	ACF,MP(MOT)	
L&A	15000-15150	5-37	150	PS 5551A	9'-4"	S	FLAT	F	PS/SI,BURG,MG89MAR(46)	
MEC	4248-4249	7-39	2	MCC P9349	9'-4"	S	4/4 DN	P		RE# 14248-14449
MEC	4250-4499	8-39	252	MCC P9300	9'-4"	S	4/4 DN	P	NAC,WHITTAKER-GRN,CRAWFORD(TRRA)-BC RED,MM92OCT(51)	RE# 14250-14499
MEC	4500-4999	12-36	500	MCC P8750	9'-3"	S	4/4 DN	P	CB37(325),MAGOR(88),NAC,COLLIAS,LORENZ,MG88AU G(43)	
MI	4000-4249	7-39	250	MV 9462	9'-4"	R	4/4 DN	P	MV/COLLIAS,MM85JUN(49),BURG,MM92NOV(44)	
MP	30000-31399	8-36	1400	MV 9113	9'-1"	S	4/4 DN	P	WINTERS,WHITTAKER,COLLIAS,MG88AUG(41),MM92O CT(49),PEACOCK	
MP	31400-31499	-36	100	MV 9145	9'-1"	S	4/4 DN	P		DURYEA U/F
MP	31500-32399	5-37	900	MV 9257	9'-1"	S	4/4 DN	P	MV(COLLIAS),CRAWFORD(TRRA)	
MP	32400-32499	10-37	100	MV 9271	9'-4"	S	4/4 DN	P	WINTERS,MG84N/D(12)	
NC&St.L	18000-18499	6-37	500	PS 5561	9'-4"	S	FLAT	F	PS/SI,WHITTAKER,BIG4,MM93JAN(44),MM93DEC(41),B OB'S	XM30
NKP	13000-13499	7-34	500	PS 5499	9'-4"	S	4/4 DN	R	PS/BIG4,CB40(131),MM92NOV(45)	CARS REBUILT 1950s
NOT&M	17301-17500	11-36	200	MV 9163	9'-4"	S	4/4 DN	P	WHITTAKER,MM92NOV(41)	
NS	25000-25499	11-35	500	PS 5513	9'-3"	S	4/4 DN	V	PS/SI,WHITTAKER,BURG,BOB'S,MM92NOV(44),TR60FE B(8)	Class XM2; BLT 11-35 TO 1-36
NYC	100000	9-33	1	PSC	9'-4"	S	4/4 DN	P	CB40(363)	ex-ARA #1; BOUGHT 11-35
NdeM	60000-60599	5-35	600	PS 5505	9'-4"	S	7/8 MUR	F	PS/SI	3-PANEL PULLMAN DOORS
NdeM	60600-60799	-35	200	GATC?	9'-4"	S	7/8 MUR	F		3-PANEL PULLMAN DOORS
NdeM	60800-60949	9-37	150	PS 5572	9'-4"	S	7/8 MUR	F	PS/SI	3-PANEL PULLMAN DOORS
NdeM	60950-61124	11-37	175	ACF 1717	9'-4"	S	7/8 MUR	F	ACF,MM93JAN(41)	3-PANEL PULLMAN DOORS
NdeM	61125-61299	11-37	175	GATC	9'-4"	S	7/8 MUR	F		3-PANEL PULLMAN DOORS
PRR	36986	9-33	1	PSC	9'-4"	S	4/4	P		ex-ARA #3
SAL	17000-17999	5-34	1000	PS 5502	9'-4"	S	FLAT	F	PS/SI,BURG,MM92OCT(50)-WINTERS,MG87OCT(34)-DAVIS,BOB'S	BLT 5-12/34
SAL	18000-18999	4-37	1000	PS 5551	9'-4"	S	FLAT	F	PS/SI,WHITTAKER,BURG/VOLLRATH,MM92NOV(40)	
SOO	41800-42798	10-36	500	PS 5534	9'-4"	S	4/4 D/N	F	MM93JAN(45),SUNSHINE SHEET	EVEN NOS.
SOO	135800-135998	10-36	100	PS 5534	9'-4"	S	4/4 D/N	F		EVEN NOS.,WISCONSIN CENTRAL
UP	182500	5-36	1	UP	9'-4"	S	4/4 D/N	P	METCALFE (78),SUNSHINE/YANKEE	B-50-18
WM	27001-27500	4-37	50	BSC 8740	9'-3"	S	4/4 D/N	P	LORENZ,WINTERS,WMCG,BIG4,MG88AUG(44),MM93JA N(40)	DURYEA U/F
WM	27501-28000	11-39	500	PSC 95	9'-3"	R	4/4 D/N	P	CB40(128),WINTERS, BURG,LORENZ,BIG4,MM93JAN (45,46),WMCG(21)	DURYEA U/F
WM	28001-28200	3-42	200	PSC 171	9'-3"	R	4/4 D/N	P	BIG4,WMHS-93 CALENDAR	DURYEA U/F
WRT	900-919	1-38	20	PS 5577	9'-4"	S	FLAT	F	PS/SI,COLLIAS	WARRIOR RIVER TERMINAL

TOTAL QTY BUILT - 14,180

See 1932 ARA Box Car Roster (as built) for more information

ALL CARS HAD YOUNGSTOWN STEEL DOORS EXCEPT AS NOTED.
ALL CARS HAD 7-RUNG LADDERS EXCEPT FOR D&H SERIES

REFER TO ARTICLE IN DECEMBER 1993 MAINLINE MODELER

LEGEND FOR ROOFS:
F - FLAT ROOF (AAR WITH 11 CARLINES)
P - RAISED MURPHY PANEL ROOF
R - RADIAL
V - VIKING

BUILDERS
ACF - AMERICAN CAR & FOUNDRY CO.
BSC - BETHLEHEM STEEL CO.
CCF - CANADIAN CAR & FOUNDRY
GATC - GENERAL AMERICAN TRANSPORTATION CORP.
GSC - GREENVILLE STEEL CAR CO.
MCC - MAGOR CAR CORP.
PS - PULLMAN-STANDARD CAR MANUFACTURING CO.
PSC - PRESSED STEEL CAR CO.

Steam Era Freight Cars
www.steamfreightcars.com
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Version 1.1
Edited 02/25/2002

X-29 vs 1932

how to tell them apart

- parts standardization was not achieved
  - x-29 cars built with 1932 parts
  - 1932 cars built with X-29 parts
  - both cars built with misc parts
- Info determines which model Mfg to use

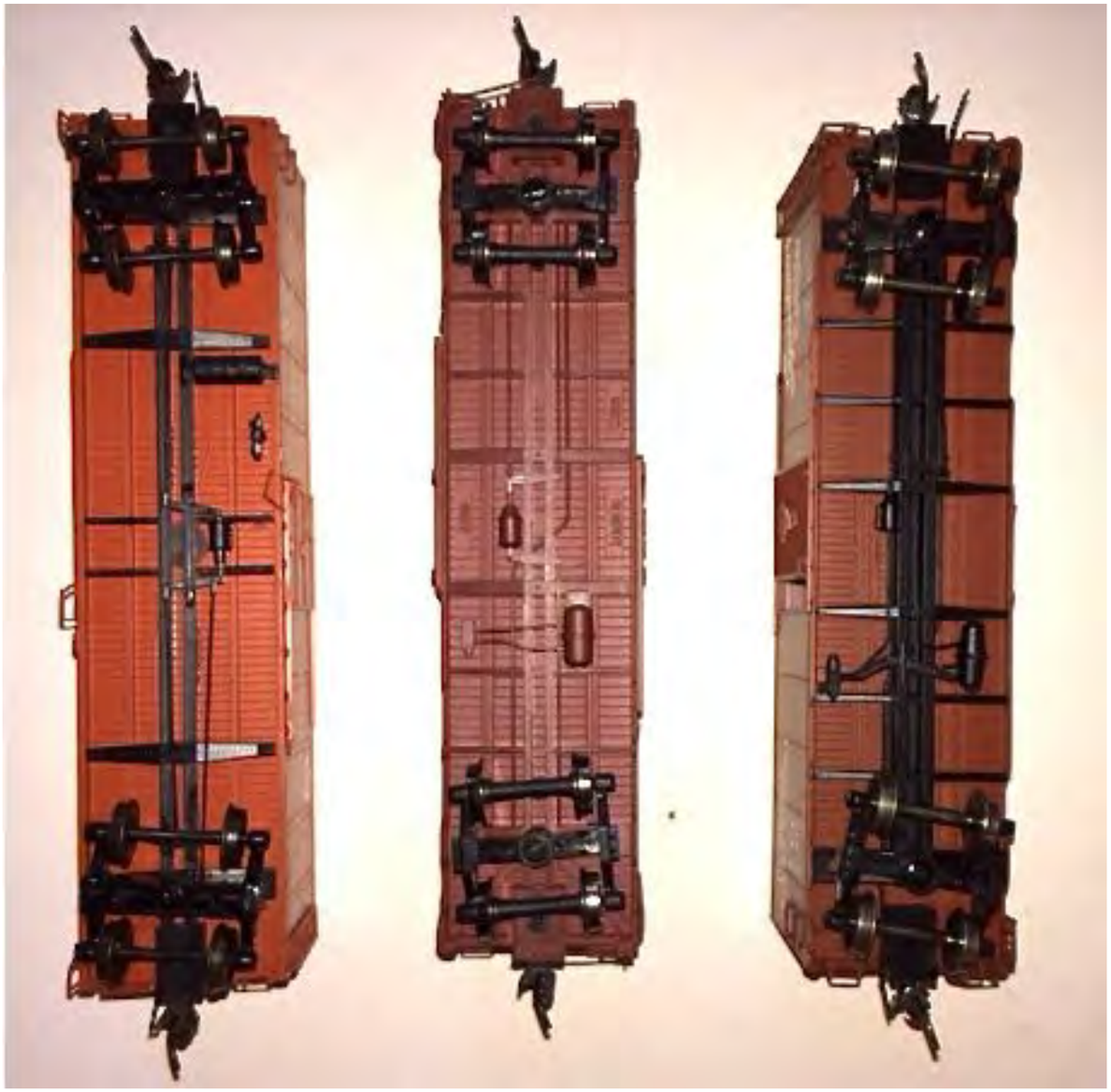
True Indicators

- Interior Height
  - X-29 - 8’-9”
  - 1932 - 9’-4”
- Under-frame

False Indicators

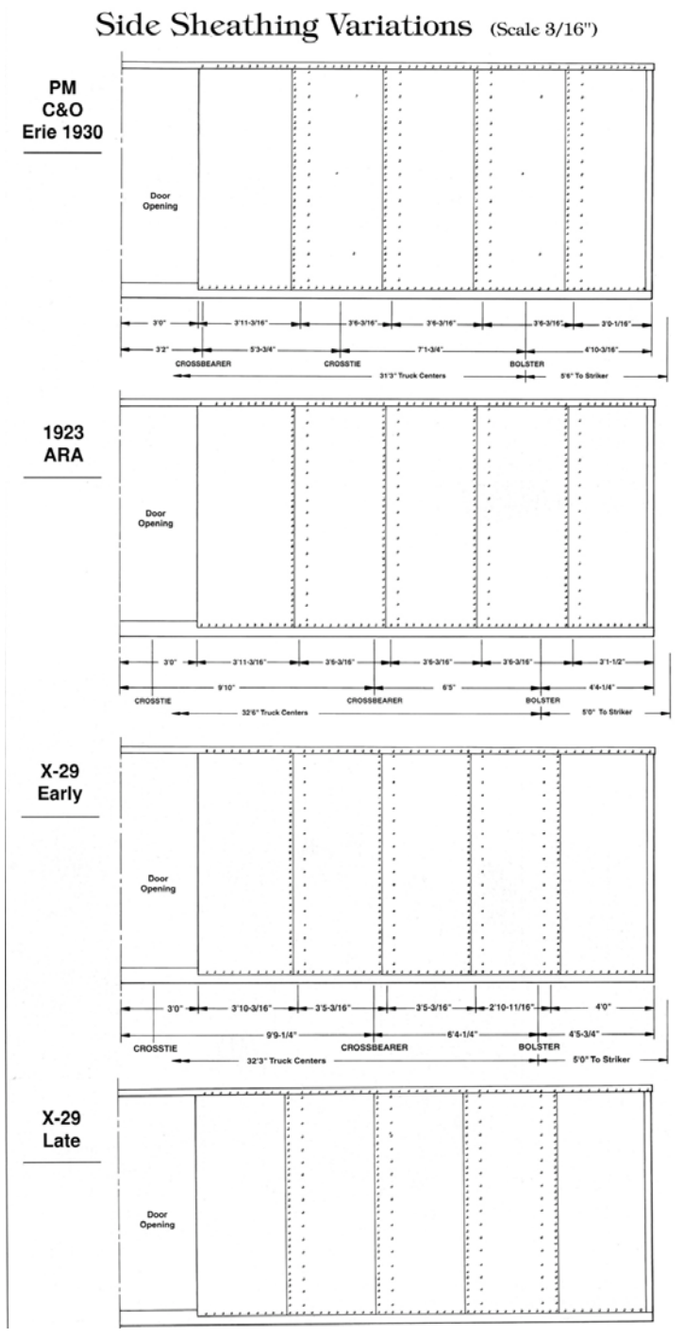
- Rivet pattern
- Component type
- Bottom Plate detail

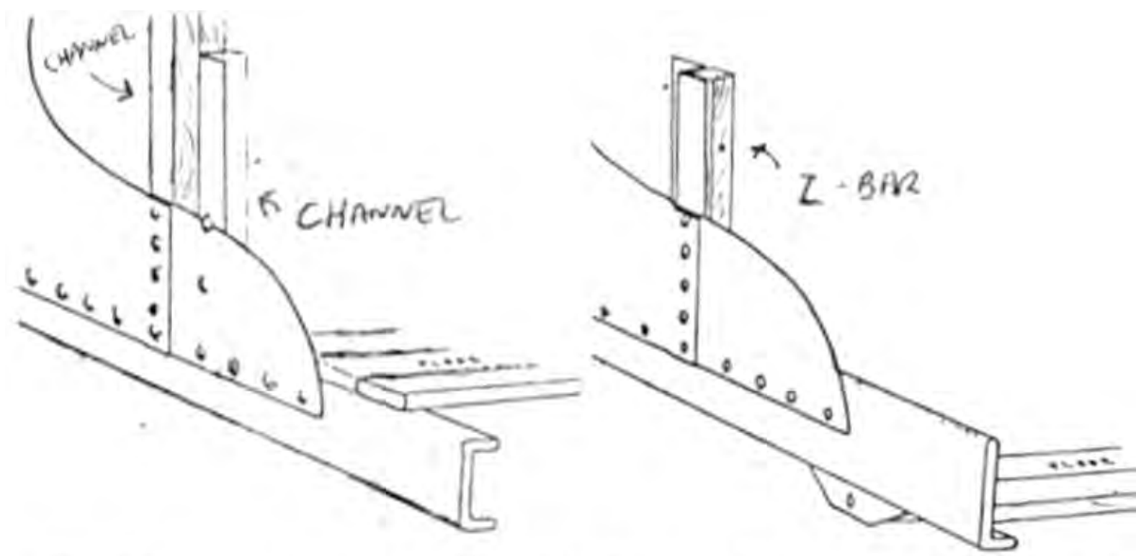
Under-Frames



X-29 1932 1937

Rivet Counting





The difference between the 1923 and 1932 box car design was in the manner of attaching the side sheets. The '23 design had the side sheets attached to the back of a C-channel, and the underframe members ran into the channel, visually leaving a straight line along the bottom of the car. The flooring sat on the upper lip and moisture retained in the wood tended to rust out the thin sheet steel. The studding for the internal wood sheathing was bolted between 2 angles, giving a double row of rivets.

The '32 design had the side sheets attached to the long leg of an angle, with the floor boards out of contact. The underframe pieces were attached via gussets along the bottom of the angle. The wood studding was attached to a single Z-bar at each seam, giving a single row of rivets.

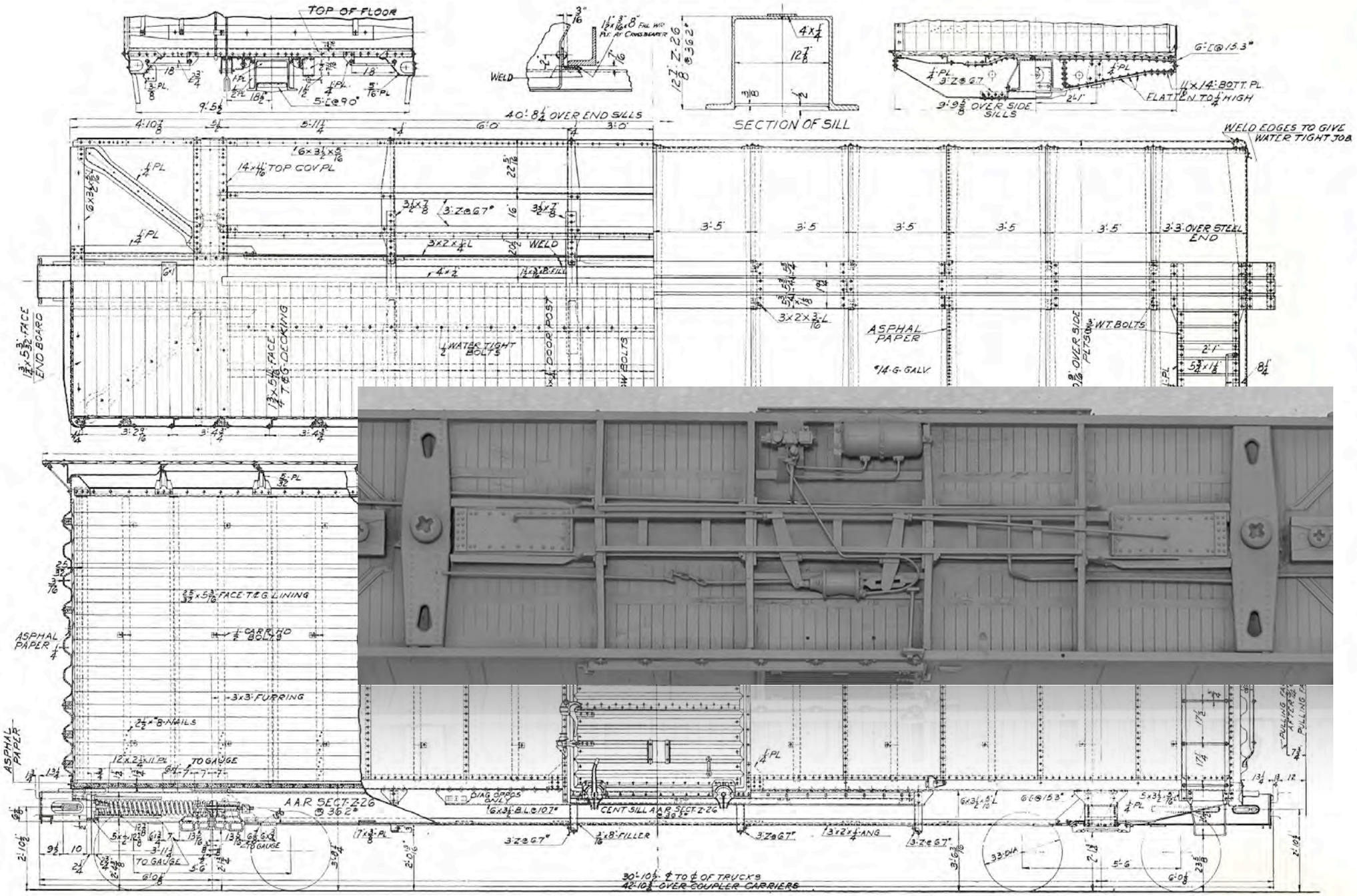


Fig. 3.27—Duryea Underframe with Long-Travel Cushion Gear as applied to a 50-ton, 46 ft. 6 in., box car.
O. C. Duryea Corporation
(For description see Section 10)

Duryea Underframe

car builder's cyclopedia, published by train shed cyclopedia, model - speedwitch media or sunshine models

Duryea Underframe

Extended
Coupler Frame

THE END