

**Type 27 Acid Tank Cars**  
**American Car & Foundry Co.**  
**Focus on ICC-103A / 103B**

**Railroad Prototype Modelers Seminar**  
**August 8-9, 2014**  
**Collinsville, Illinois**

# **Photo Contributor Acknowledgement**

- **Sources of builder's photos**
    - **ACF Industries, Hawkins/Wider/Long collection and many courtesy of Ed Kaminski (unless otherwise noted)**
    - **ACF Collection of the St. Louis Mercantile Library, Barriger National Railroad Library**
  - **Bob Liljestrand of Bob's Photo**
  - **George Sisk, Charles E. Winters collection**
  - **Artist renderings by Ken Soroos**
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# **Standard Type 27 General Design Common Features of Acid Tank Cars**

- Underframe general design: 2 – 13" channel center sills with riveted top plate, 4 – 7" channel side sills (bolsters to end sills), 2 – 9" channel end sills to form the structure.
  - Underframe width of 9'-3" for cars 10,000 gal. or smaller.
  - Wood running boards ( $1\frac{7}{8}$ " x  $11\frac{3}{4}$ " wide) and side dome platforms (often  $1\frac{7}{8}$ " x  $7\frac{1}{2}$ " wide x 4' or longer).
  - Standard underframe lengths (some changed over time).
  - Standard tank designs with 3 courses, 2 courses for small capacity cars.
  - Standard tank diameters and lengths for common sizes (6,000 to 10,000 gallon @ 1,000 gallon increments).
  - Hand rails  $1\frac{1}{4}$ " O.D. pipe.
  - 30" diameter domes on most 103A/103B acid cars.
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# **“Standard” Type 27 General Design Variations Found on Acid Tank Cars**

- 1. Brake arrangements (KC until 8/33, AB after 8/33 on new cars, variations of AB brakes with 3 different designs used on acid cars).**
  - 2. Some acid cars insulated, most uninsulated.**
  - 3. Number of tank anchors/bands (2 or 4).**
  - 4. Tank saddles & anchor design.**
  - 5. Hand brakes (Superior, Ajax, ACF Geared starting in Jan. 1937).**
  - 6. Dome arrangements (venting hardware), dome height variances, grabs.**
  - 7. Dome platform arrangements (side platforms, full platforms).**
  - 8. Side ladders (height and fabrication differences).**
  - 9. Hand holds on side of tank at end (grab type, bracket type).**
  - 10. Hand rail brackets.**
  - 11. Double-wide side running boards on some cars.**
  - 12. Mud guards on some cars (wood or steel).**
  - 13. Draft gear (4 main types, various model numbers; end stencils).**
  - 14. Uncoupling mechanism (top or bottom operated)**
  - 15. Heater pipes (most acid tank cars do not have them).**
  - 16. Trucks (AAR designs, spring planks/spring plankless, National Type B).**
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# **Type 27 ICC-103A / 103-B Tank Capacities & Dimensions**

**Sizes range from 2,300 to 12,000 gallons**  
**Note: Uncommon sizes not included in list.**

<b>Capacity (Gallons)</b>	<b>Tank Diameter</b>	<b>Tank Length</b>	<b>Underframe Length (End Sills)</b>
<b>4,000</b>	<b>63<math>\frac{1}{4}</math>"</b>	<b>23'-9"</b>	<b>28'-6<math>\frac{3}{8}</math>"</b>
<b>6,000</b>	<b>72<math>\frac{3}{8}</math>"</b>	<b>27'-6"</b>	<b>32'-1<math>\frac{5}{8}</math>"</b>
<b>7,000</b>	<b>78"</b>	<b>27'-6"</b>	<b>31'-9<math>\frac{3}{8}</math>" (earliest)</b>
<b>"</b>	<b>"</b>	<b>"</b>	<b>32'-1<math>\frac{5}{8}</math>" (common)</b>
<b>"</b>	<b>"</b>	<b>"</b>	<b>33'-1<math>\frac{1}{8}</math>" (4 MCHX)</b>
<b>8,000</b>	<b>78"</b>	<b>31'-6"</b>	<b>36'-2<math>\frac{3}{8}</math>"</b>
<b>10,000</b>	<b>87<math>\frac{1}{4}</math>"</b>	<b>31'-6"</b>	<b>36'-2<math>\frac{3}{8}</math>"</b>

## **Type 27 ICC-103A/103-B, AAR-201A35W Descriptions**

**ICC-103A – Riveted steel type tank, similar to Class 103. Safety valves prohibited, but vent at least 2 in. in diameter with frangible disc required, rupture ensured at not over 30 lb. pressure. Expansion dome at least 1 percent.**

**ICC-103B – Riveted steel type tank, similar to 103A. Interior lined with acid-resisting rubber.**

**AAR-201A35W – Aluminum tank, fusion-welded type. Tanks tested to a pressure of 35 lb. Safety valves set at 26 lb. if applied.**

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## **Type 27 ICC-103AW/103-BW**

**ICC-103AW and ICC-103BW – same as 103A and 103B except welded.**



# **Types of Acids Used in ACF Type 27 Acid Tank Cars**

**Muriatic Acid – a form of Hydrochloric acid, used for cleaning masonry surfaces, an industrial and home cleaning agent, leather processing, applications in the food industry.**

**Sulphuric Acid – an important industrial chemical widely used in the production of phosphates and fertilizers, the manufacture of other acids and chemicals, batteries, metal cleaning and processing, catalyst for refining crude oil, paints & pigments.**

**Glacial Acetic Acid – the undiluted form of acetic acid, used for household vinegar, a food additive, an acidity regulator, a descaling agent, solvents.**

**Aluminum Liquor – removes impurities and stains from aluminum alloys.**

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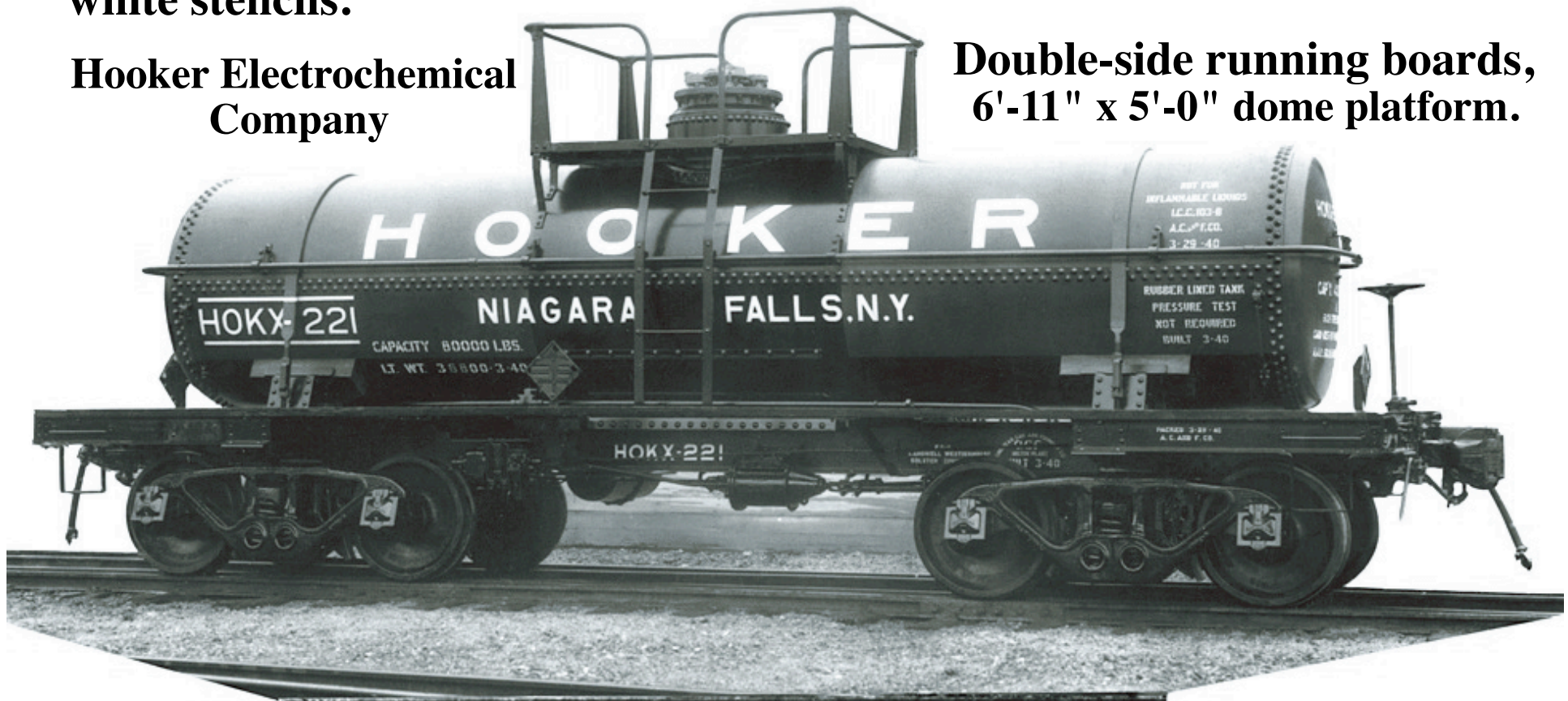


# Lot 2030, HOKX 221-222, 3-40 4,000 Gallons, ICC-103B (2-course)

Black center section, u/f, trucks; “Plyolite Red” balance of tank;  
white stencils.

Hooker Electrochemical  
Company

Double-side running boards,  
6'-11" x 5'-0" dome platform.



Hooker Electrochemical Company      March 29, 1940  
A. C. And F. Co.      Lot #2030      Neg. #171789-A-1

# Lot 1598, PSMX 184, 1-37 4,000 Gallons, ICC-103A

Black, white stencils.

Pennsylvania Salt Mfg. Co.

4' wide dome platform.



Pennsylvania Salt Mfg. Co. Jan. 11, 1937  
A. C. And F. Co. Lot #1598 Neg. #171504-A-1

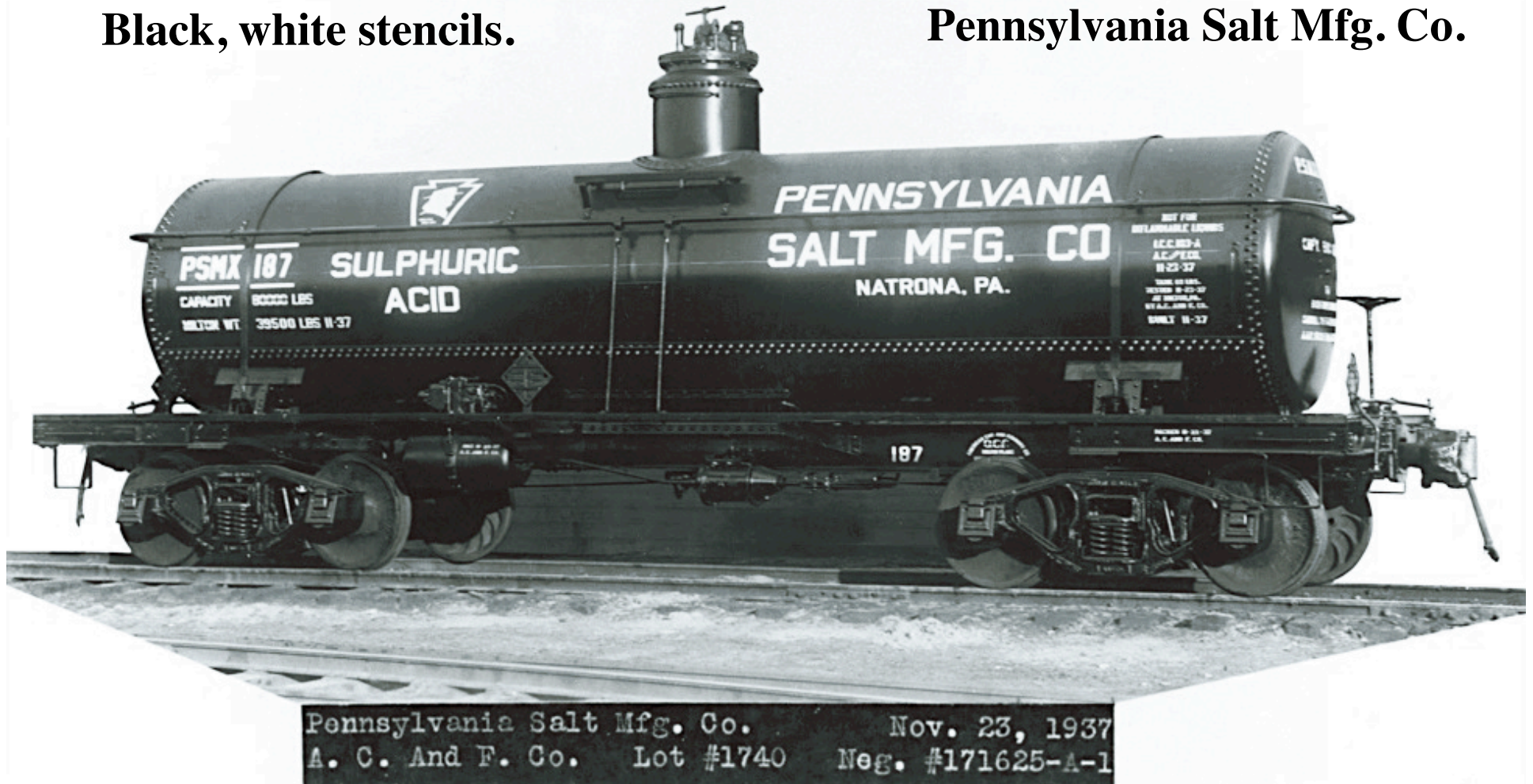
ACF Collection, St. Louis Mercantile Library.



# Lot 1740, PSMX 187-188, 11-37 6,000 Gallons, ICC-103A (3-course)

Black, white stencils.

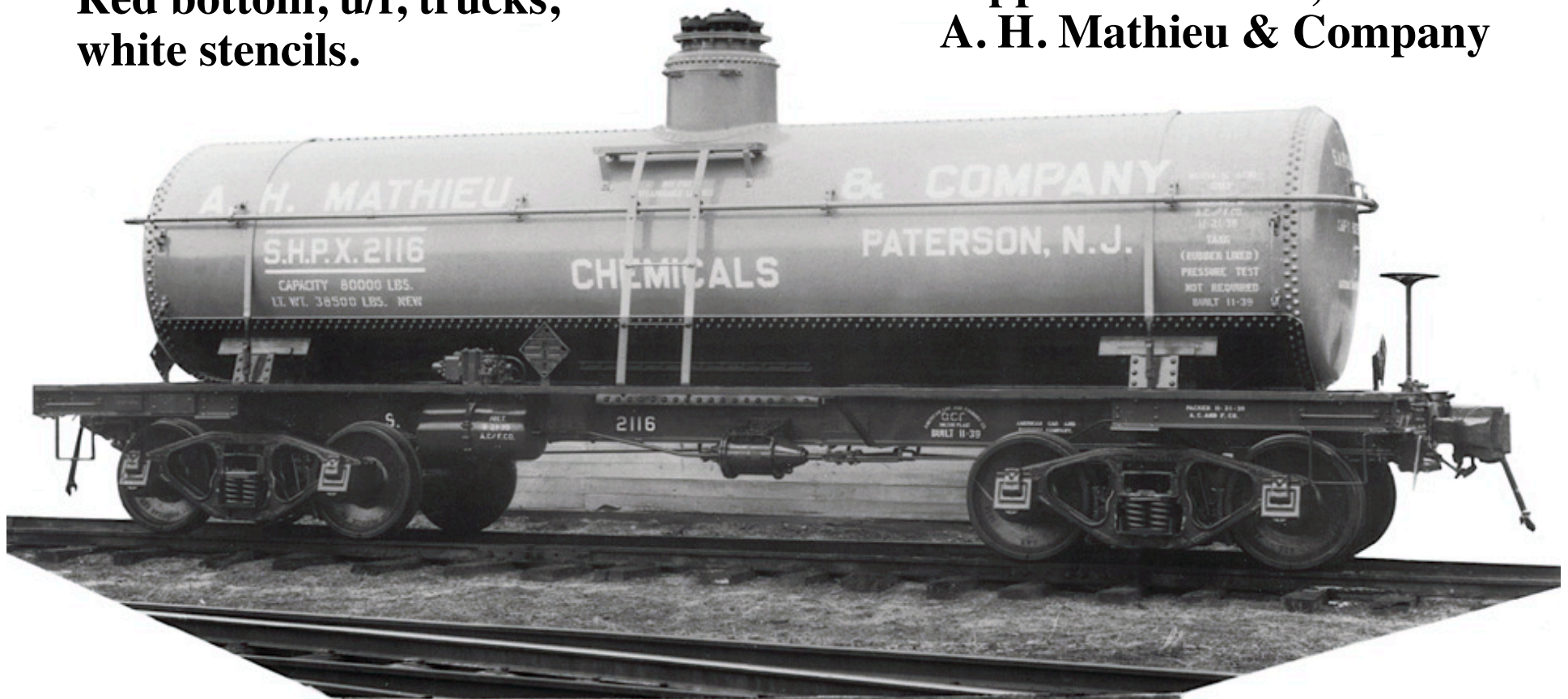
Pennsylvania Salt Mfg. Co.



# Lot 1942, SHPX 2116, 1-39 6,000 Gallons, ICC-103B

Blue top of tank, heads;  
Red bottom, u/f, trucks,  
white stencils.

Shippers' Car Line, leased to  
A. H. Mathieu & Company



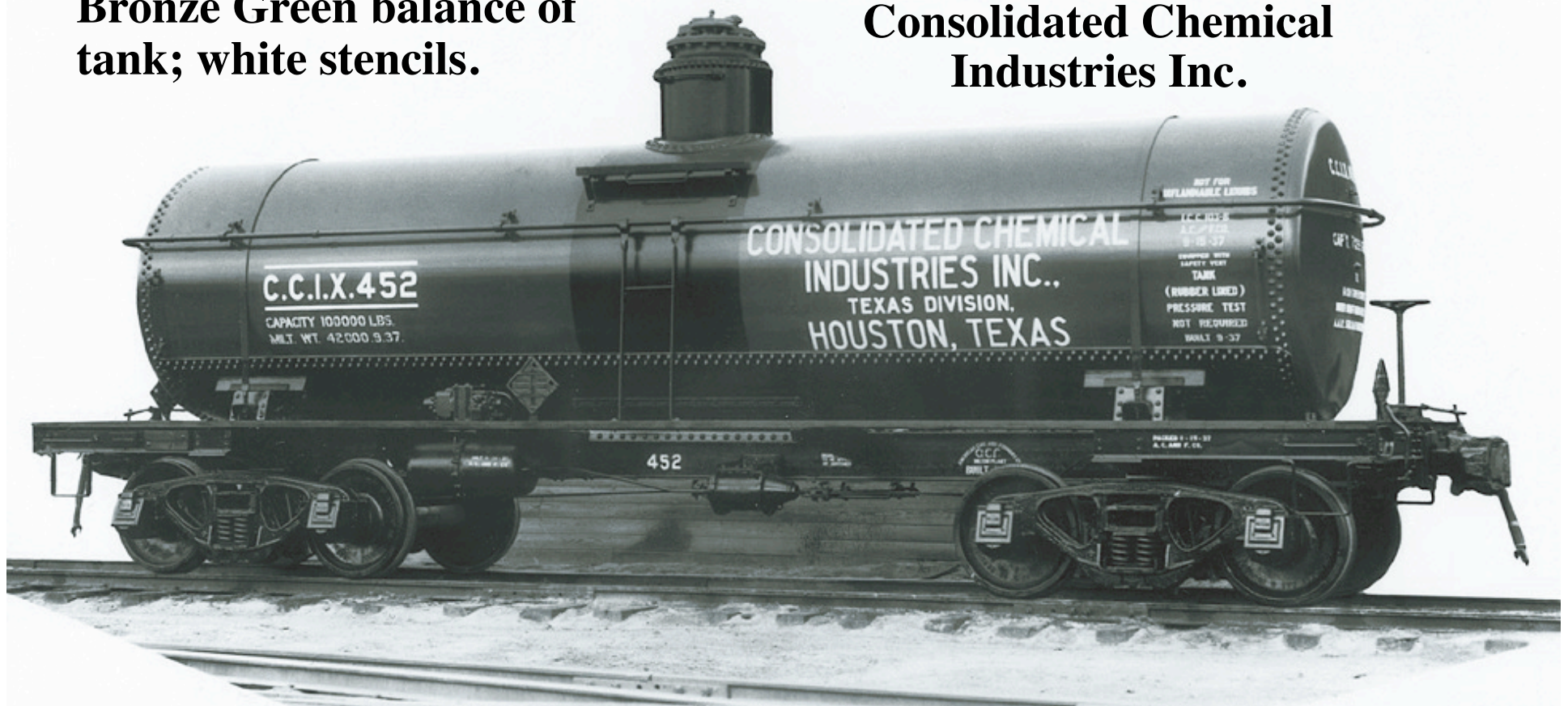
American Car And Foundry Co. November 21, 1939  
A. C. And F. Co. Lot #1942 Neg. #171738-A-1



# Lot 1756, CCIX 450-453, 9-37 7,000 Gallons, ICC-103B (3-course)

Black 4' wide center section, tank bottom, u/f, trucks;  
Bronze Green balance of  
tank; white stencils.

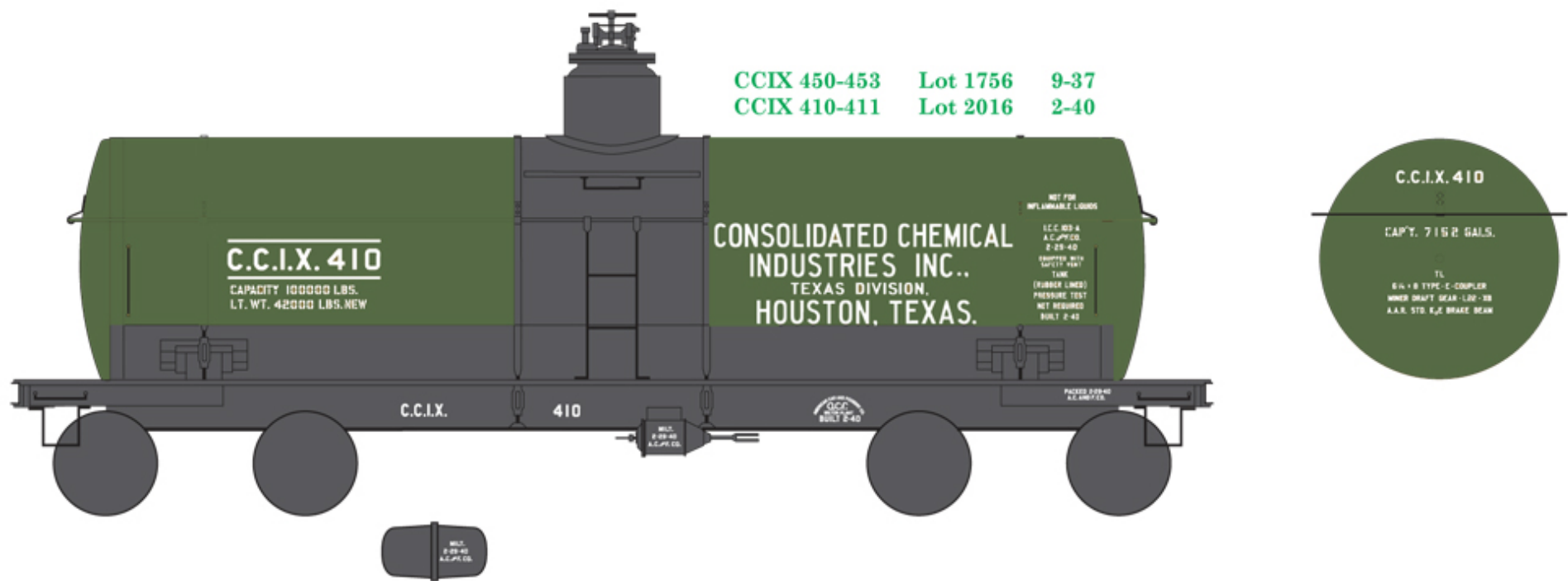
Consolidated Chemical  
Industries Inc.



Consolidated Chemical Ind., Inc.      Sept. 15, 1937  
A. C. And F. Co.      Lot #1756      Neg. #171606-A-1

# Artist Rendering of Lots 1756 / 2016

## Built 9-37 / 2-40, 7,000 Gallons, ICC-103B



# Lot 1781, CCIX 172 / 174, 12-37 7,000 Gallons, ICC-103A

Gray center section; Barn Red balance of tank top, heads;  
black bottom of tank, u/f,  
trucks; white stencils.

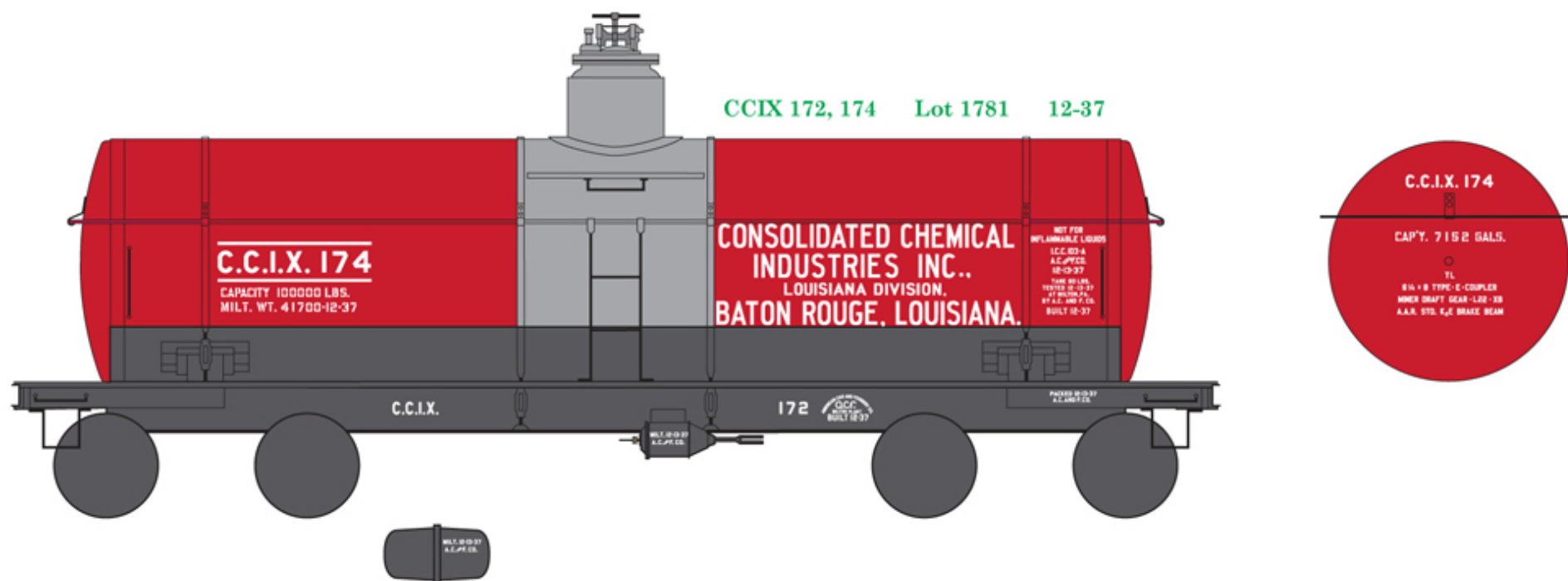
Consolidated Chemical  
Industries Inc.



Consolidated Chemical Ind., Inc. Dec. 16, 1937  
A. C. And F. Co. Lot #1781 Neg. #171632-A-1



# Artist Rendering of Lot 1781, CCIX 172/174, Built 12-37, 7,000 Gallons, ICC-103A





# Lot 1826, CCIX 162-163, 8-38 7,000 Gallons, ICC-103A

Gray center section; Vermillion balance of tank top, heads;  
Bronze Green bottom, u/f,  
trucks; white stencils.

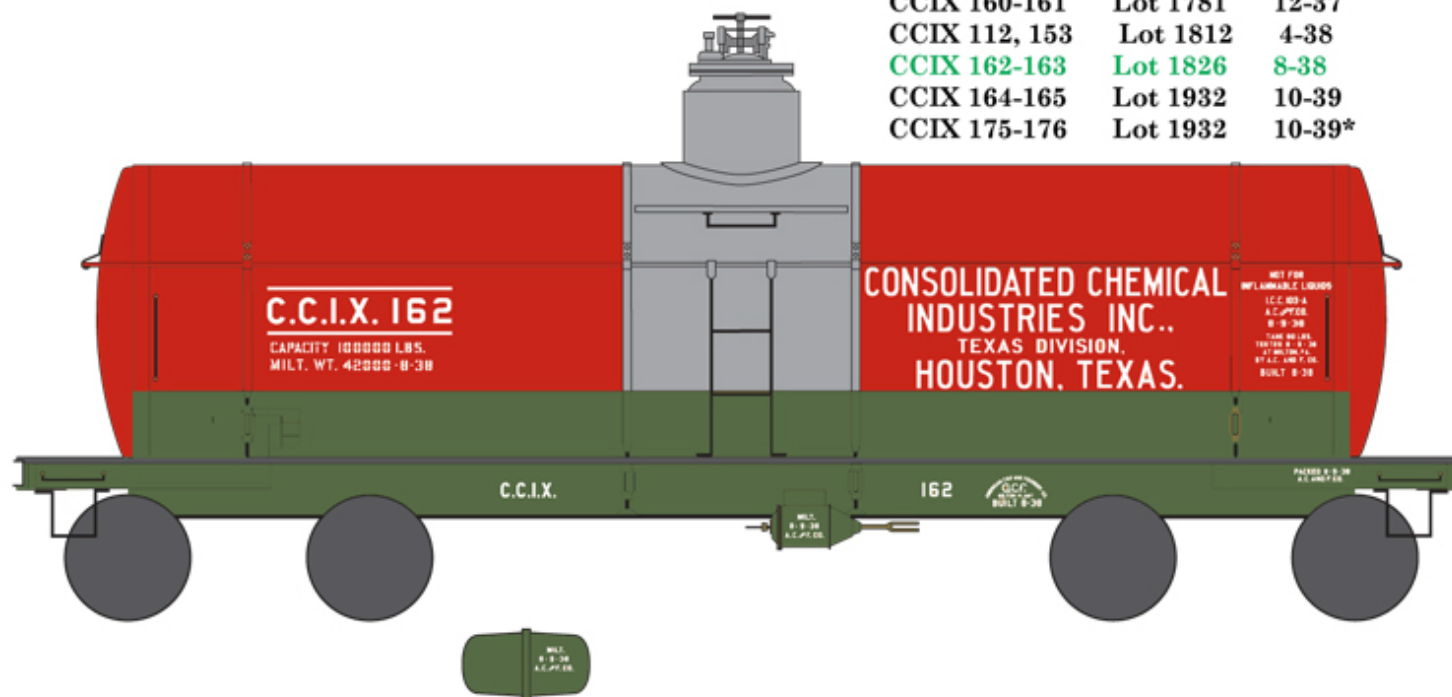
Consolidated Chemical  
Industries Inc.



Consolidated Chemical Industries, Inc. August 9, 1938  
A. C. And F. Co. Lot #1826 Neg. #171664-A-1

# Artist Rendering of Lot 1826 and others, 7,000 Gallons, ICC-103A

CCIX 160-161	Lot 1781	12-37
CCIX 112, 153	Lot 1812	4-38
CCIX 162-163	Lot 1826	8-38
CCIX 164-165	Lot 1932	10-39
CCIX 175-176	Lot 1932	10-39*



# Lot 2992, CCIX 455-458, 6-47 (tank) 7,000 Gallons, ICC-103BW

Black, white stencils.

Note new style grabs,  
36" dia. dome.

New welded tank on old  
GATC u/f, 6-29, KC brakes.



Consolidated Chemical Industries, Inc. June 7, 1947  
A. C. And F. Co. Lot 2992 Neg. No. 172205-A-I



# Lot 1050, DUPX 1134, 12-29 7,000 Gallons, ICC-103A

Black, white stencils.  
White & red  
Du Pont trademark.

7'-8½" x 4'-7" dome platform.



Lot 1050