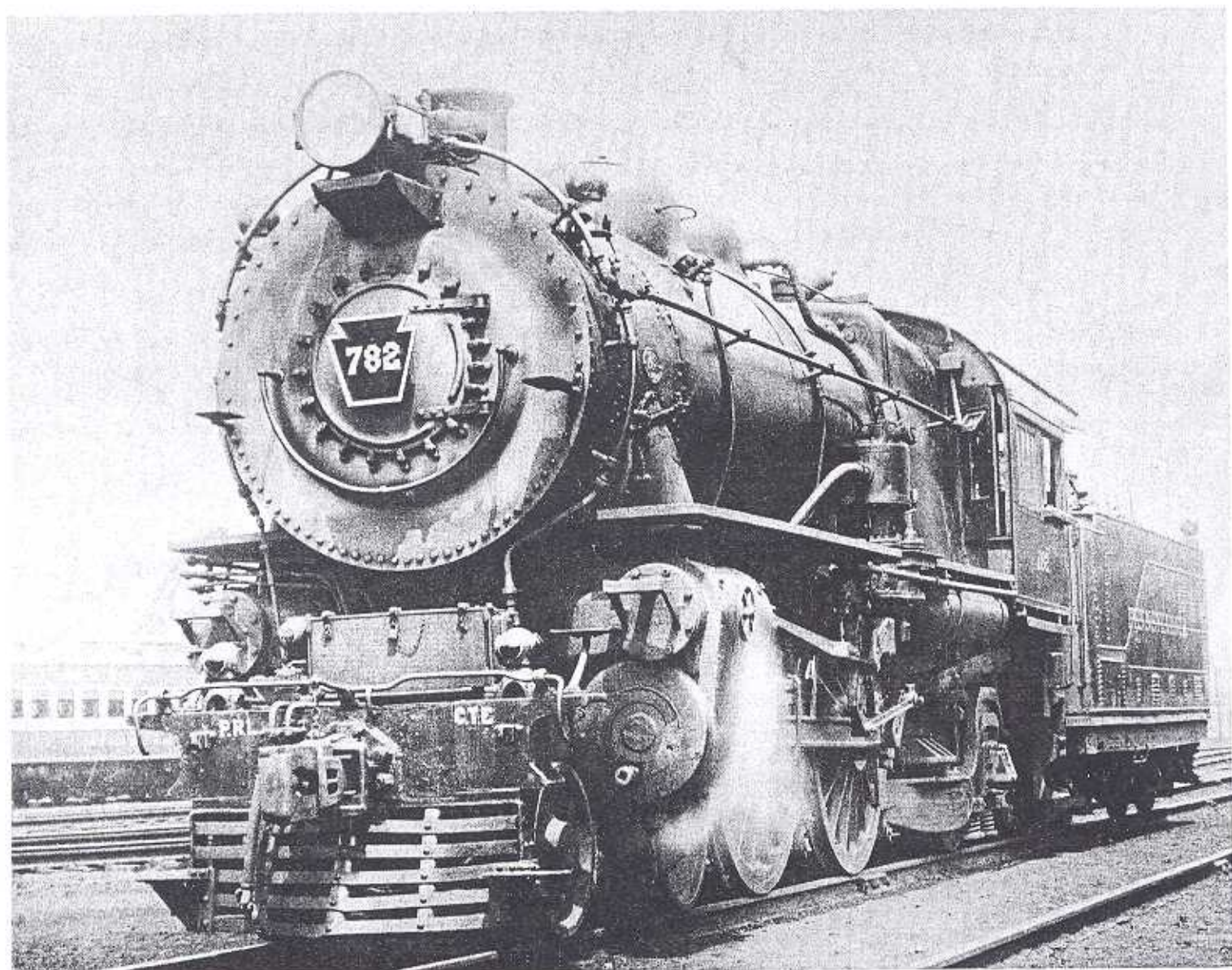


THE PAINTING OF P.R.R. LOCOMOTIVES AND TENDERS

THE PENNSYLVANIA RESEARCH AND INFORMATION ASSOCIATION

SPECIAL PUBLICATION

No. 1

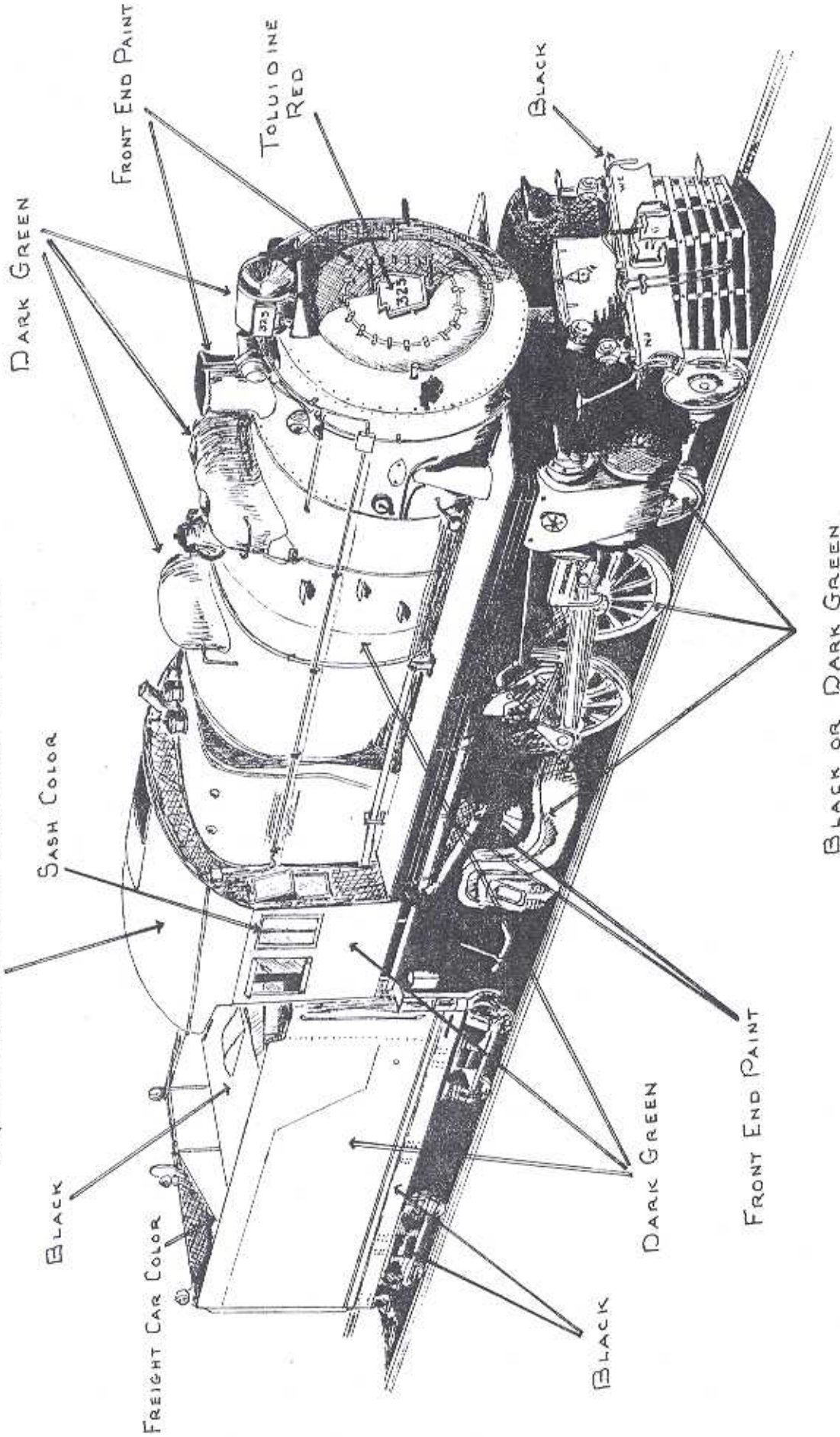


PAINT COLORS FOR P.R.R. LOCOMOTIVES AND TENDERS

As of October 8, 1929

<p>DARK GREEN LOCOMOTIVE FINISH</p> <p>*All Locomotive Wheels *Trailer Truck Frame Pilot Wooden Pilot Beam Cylinder Head and Steam Chest Casings Cylinder Jackets Boiler Jacket, including inside cab Headlight Bell Frame, Sand Box, and Dome Air Reservoirs Running Board Facing Strips Cab Exterior, including doors Valve Motion, (Painted parts) Tender Cistern Exterior: Sides, Back, and Front End (except coal space), also Molding Strip between cistern and frame Tender Frame (wood)</p>	<p>FRONT END PAINT</p> <p>Smokebox Stack Firebox (exposed portion) Ash Pan</p>
<p>BLACK</p> <p>*All Locomotive Wheels *Trailer Truck Frame Steel Pilot Beam Pilot Beam Braces Round Number Plate: Background Engine Truck (except wheels) Frames and Braces Hand Rails Running Boards and Brackets (except facing) Steps Pipes and Fixtures Brake Rigging Deck Plate Tender Frame (steel) Tender Steps Tender Trucks and Wheels Tender Coal Space</p>	<p>FREIGHT CAR COLOR</p> <p>Wood Cab: Roof above rain gutters (repainting when only one coat is applied) Tender: Top of Cistern, including rear of coal space</p>
<p>*Dark Green and Black were optional for locomotive wheels and trailer truck frame.</p>	<p>MIXTURE of THREE Parts FREIGHT CAR COLOR and ONE Part BLACK</p> <p>Wood Cab: Roof above rain gutters (repainting when two coats are applied) Steel Cab: Roof above rain gutters (repainting when only one coat is applied)</p>
	<p>MIXTURE of EQUAL Parts FREIGHT CAR COLOR and BLACK</p> <p>Wood Cab: Roof above rain gutters (new cabs) Steel Cab: Roof above rain gutters (new cabs and repainting when two or three coats are applied)</p>
	<p>SASH COLOR</p> <p>Cab Window Sash (side and rear)</p>
	<p>INTERIOR CAB GREEN</p> <p>Cab Interior, including doors and seat boxes</p>

EQUAL PARTS OF FREIGHT CAR COLOR AND BLACK



<p style="text-align: center;">BUFF LETTERING COLOR</p> <p>Freight & Switching Locomotives:</p> <p style="padding-left: 20px;">All Lettering on locomotive and tender</p> <p style="padding-left: 20px;">Round Number Plate: Numerals and Border</p>	<p style="text-align: center;">WHITE</p> <p>Passenger Locomotives:</p> <p style="padding-left: 20px;">Striping on locomotive wheels, cab, and tender</p>
<p style="text-align: center;">GOLD LEAF</p> <p>Passenger Locomotives:</p> <p style="padding-left: 20px;">All Lettering on locomotive and tender</p> <p style="padding-left: 20px;">Striping on locomotive wheels, cab, and tender</p> <p style="padding-left: 20px;">Round Number Plate: Numerals and Border</p> <p style="padding-left: 20px;">Keystone Number Plate: Numerals and Border</p>	<p style="text-align: center;">CHOCOLATE STRIPING COLOR</p> <p>Passenger Locomotives:</p> <p style="padding-left: 20px;">Striping on tender</p>
	<p style="text-align: center;">TOLUIDINE RED</p> <p>Keystone Number Plate: Background</p>
<p>Gold leaf was used on all keystone number plates, including those on M-1 and M-1a locomotives in freight service.</p>	

DESCRIPTION OF COLORS

DARK GREEN LOCOMOTIVE FINISH was a mixture of green and black which was so dark that it usually appeared black.

FRONT END PAINT was a heat-resistant black graphite paint to which some aluminum powder was added. The shade of this "silvery-black" color varied at different shops and enginehouses.

FREIGHT CAR COLOR was the standard P.R.R. freight car red as used on all freight cars.

SASH COLOR was a brilliant orange-red which was called "Dark Orange" on passenger car window sash. It was a mixture of "Venetian Red", chrome yellow, and white.

INTERIOR CAB GREEN was an ordinary medium green.

BUFF LETTERING COLOR was a very light yellow. It was a mixture of chrome yellow, white, and a small amount of "Indian red".

GOLD LEAF was genuine gold leaf made of real gold.

CHOCOLATE STRIPING COLOR was a light brown. It was a mixture of "Indian red", chrome yellow, and black.

TOLUIDINE RED was a bright scarlet red.

COMMENTS BY THE PR&IA RESEARCH STAFF

The preceding list of paint colors was compiled from information in PRR booklet No. 199-C, "Instructions to be Followed in Painting the Different Parts of New and Repaired Locomotives and Tenders", dated October 8, 1929. For simplification and clarity, it has been arranged according to colors and shows only the final coat, or finishing color, of the various parts.

For parts which are not specified, such as turbo-generator and air compressor, it can be assumed that they are included in a category such as "Pipes and Fixtures", for example. Whether they are painted black or dark green makes very little difference, as these two "colors" are so similar. Certain brass parts were left unpainted, such as: bell, whistle, safety valves, locomotive badge plates, snifting valves, and air pump governor cap. Bells, badge plates, and passenger whistles were usually polished, while safety valves and freight whistles were almost always permitted to oxidize black. Injectors were also brass and were generally left unpainted and allowed to blacken naturally.

The color names in this list are the same as used in the 1929 PRR booklet. However, some of these names were changed over a period of time. For example: Dark Green Locomotive Finish was called "Dark Green PRR Shade" in the 1940's and 1950's; Front End Paint was "Smoke Box Paint" in 1938; and Sash Color was "Exterior Sash Enamel" in 1938. Also, some colors were eliminated at various times. The Sash Enamel was discontinued around 1938, and cab window sash was then painted Dark Green on the outside and Interior Cab Green on the inside. The gold, white, and "chocolate" striping on passenger locomotives and tenders was dropped in July 1918, restored in April 1920, and dropped again in June 1932.

It should be mentioned that these 1929 painting instructions are for new and repaired locomotives in the shops. The cleaning and maintenance instructions for enginehouses specified different paint colors for certain parts when painting was required. For example: Locomotive Maintenance Instructions No. L-54, February 23, 1938, specifies that during the monthly cleaning at boilerwash period, the cab roof above rain gutters must be given one coat of Freight Car Paint if necessary in order to turn the engine out in first class condition. There is no mention of mixing black paint with the red and no mention of wood cabs and steel cabs.

This explains the frequent sightings of cab roofs which had been painted standard freight car red at various enginehouses, while, at the same time, freshly-repaired engines just out of the Altoona Shops were observed with the cab roofs painted a red so dark that it was nearly black. Apparently, the cab roof painting instructions of 1929 for repaired locomotives remained in effect with little or no change for a number of years after 1929.

CAB ROOF COLORS AS OF OCT. 8, 1929		
TYPE OF WORK	WOOD CABS FINISH COLOR	STEEL CABS FINISH COLOR
New Cabs	Cab Roof THIRD Coat	Cab Roof THIRD Coat
Old Paint Removed to Wood or Metal	Cab Roof SECOND Coat	Cab Roof THIRD Coat
Scale & Rough Surface Only Removed	Cab Roof SECOND Coat	Cab Roof THIRD Coat
Cleaning and Repainting Only	Cab Roof PRIMER	Cab Roof THIRD Coat
Cleaning & Blemishes Only Touched UP	Cab Roof PRIMER	Cab Roof SECOND Coat
<u>FINISH COLOR</u>	<u>DESCRIPTION</u>	
Cab Roof PRIMER -----	*Freight Car Color (Red)	
Cab Roof SECOND Coat -	THREE parts Freight Car Color & ONE of Black	
Cab Roof THIRD Coat --	EQUAL parts Freight Car Color & Black	

*It should be remembered that "Freight Car Color" refers to the old light freight car red in use during the 1920's, '30's, and '40's, which was a much lighter shade than that used in more recent years.

Tender tank top and rear of coal space were straight Freight Car Color, with no black added, for all types of repairs and repainting. However, the interior of the coal space was specified Black in 1929. This part was painted red later in the 1930's and also as recently as 1956.

It is interesting to note that three different colors were used on cab roofs, with none solid black. Wood cabs were treated differently from steel cabs, and the colors varied to some extent with different types of repairs. According to these 1929 instructions, steel cab roofs never used straight freight car red as the finish coat, whereas wood cabs used it when undergoing cleaning and repainting only, or for touch-up repairs. The lightest color on steel cab roofs at that time was a mixture of three parts red and one of black, and this accounts for the somewhat dark red so frequently observed on steel cab roofs all over the PRR. Painting the roof was classed as "touch-up" work when the entire cab did not require repainting. In all other types of repairs, steel cab roofs were painted with a mixture of equal parts of red and black, and this was so dark that it usually appeared black to an observer on the ground.

THE PENNSYLVANIA RAILROAD

Locomotive Maintenance Instructions No. L-54

Issued Philadelphia, Penna., February 23, 1938

Instructions for Cleaning of Locomotives and Tenders

1. GENERAL. The Master Mechanic is responsible for the cleanliness of all locomotives and tenders dispatched from terminals under his jurisdiction.

(a) The Master Mechanic will see that all locomotives handled at his terminals are cleaned daily.

2. DAILY CLEANING.

(a) The driving and running gear, trucks of locomotives and tender, frames, and all parts below locomotive running board and tender cistern, etc., shall be washed with pressure spray nozzles, using a mixture of hot water and cleaning oil (minimum temperature 125 degrees F., maximum 175 degrees F.). Consumption of cleaning oil should not exceed four (4) pounds per average engine cleaned. Nozzle pressure should not be less than 120 pounds per square inch, measured at the pump or injector.

(b) Engine terminals handling fifty (50) or more engines per day should be provided with oil reclamation facilities at the washing pits.

(c) Tender cistern and bulkheads, and cab sides, fronts, backs, and windows must be scrubbed with brushes and oil soap. Soap water may be prepared by dissolving oil soap in water in the ratio of eight (8) pounds of soap for each fifty (50) gallons of water, by stirring or by use of a steam jet. The soap water must be thoroughly rinsed off by means of water brushes or jets of clean water promptly after application.

(d) Locomotive jackets must be dry-wiped, using discarded waste, rags, or old burlap bagging. Bells must be polished.

(e) The boiler back-head and cab interior must be dry-wiped.

(f) The smoke box front and barrel, and exposed parts of firebox wrapper and throat sheet shall be sprayed, when necessary, with smoke box paint to which has been added $12\frac{1}{2}$ pounds of aluminum powder per fifty (50) gallons of paint. When spraying is not necessary, the appearance of these parts should be restored by polishing with burlap bagging or brushes. Care must be taken to open up all stay bolts telltale holes after spraying.

3. MONTHLY CLEANING. Once each month at boilerwash period the engine and tender must be inspected for cleanliness and appearance, and the necessary work done to turn the engine and tender out in first class condition.

(a) If pilot beam, cylinder saddle, cylinder jackets, or other parts show an accumulation of paint, the old paint must be removed by scaling

LOCOMOTIVE MAINTENANCE INSTRUCTIONS No. L-54 (Cont.)

or scraping. Black engine paint should be used on these parts if necessary, after they are cleaned.

- (b) Boiler and cylinder jackets, and tender cistern must be dry-wiped.
- (c) Bell and whistle must be polished with standard metal polish.
- (d) Cab roof above rain gutters and rear of tender slope sheet above cistern deck must be given one coat of Freight Car Paint. The surfaces must be thoroughly cleaned with a wire brush before painting.
- (e) Cab window frames must be painted with exterior sash enamel when needed to keep them bright.
- (f) Smoke box and exposed portions of the wrapper and throat sheets must be sprayed with smoke box paint as described under Paragraph 2.
- (g) The stack, smoke-box hand-rails, headlight step, generator piping, generator bracket, steam pipe covers, must be painted black engine paint.
- (h) Boiler back-head and boiler appurtenances inside the cab must be thoroughly hand wiped with cleaning oil.
- (i) Number plate must be repainted, including gold leaf renewed, if necessary.

4. EXTRAORDINARY CLEANING. If the cleaning methods described above do not thoroughly clean the locomotive jacket, cab sides, and tender cistern, as in the case of engines which have laid in storage for some time, or otherwise accumulated excessive dirt, these parts should be cleaned with cleaning compound, Account 47, Reference 540.

(a) The cab exteriors of all electric locomotives must be cleaned with cleaning compound at each periodic inspection.

(b) In case the varnish or paint, or both, or the stenciling of letters or numerals, has perished, new paint, stenciling and varnish must be applied either as a touch-up or a complete re-paint job. When painting tender cisterns, they must be drained and not refilled until the varnish is dry.

5. SUPPLIES. The materials used in these cleaning and painting operations are the following:

Cleaning Oil	Acct. 37,	Ref. 174
Oil Soap	" 36-A,	" 2119
Brass Polish	" 36-A,	" 1837
Smoke Box Paint	" 47,	" 2326
Freight Car Paint	" 47,	" 2392
Aluminum Powder	" 47,	" 2045
Black Engine Paint	" 47,	" 2016
Exterior Sash Enamel	" 47,	" 2437
Cleaning Compound	" 47,	" 540