

AEP



BETHLEHEM STEEL CORPORATION
JOHNSTOWN, PA.
RAILWAY & INDUSTRIAL CARS

Rev. "A" SPECIFICATION 3400-379 & 387

Rev. "A" 1500 100 TON TRIPLE HOPPER CARS

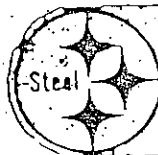
FOR

AMERICAN ELECTRIC POWER SERVICE CORPORATION

SERIES: 1 - 1500

ARRANGEMENT DRAWING P-67524

EXISTING HULKS



for Strength
Economy
Versatility

SPECIFICATION

FOR

100 TON TRIPLE HOPPER CARS

FOR

AMERICAN ELECTRIC POWER SERVICE CORPORATION

I. GENERAL DESCRIPTION

A. General Dimensions

1. Length:

Over Striking Castings -----	50' - 5-1/2"
Over Pulling Faces of Knee Couplers -----	53' - 1"
Over End Sills -----	47' - 9-1/4"
Inside -----	47' - 8-13/16"
Between Truck Centers -----	40' - 6"

2. Width:

Inside -----	9' - 9-1/2"
Over Corner Posts -----	9' - 10-7/16"
Over Side Top Chords -----	10' - 6-5/8"
Over Sill Steps -----	9' - 7-13/16"
Over Side Stakes - Extreme Width -----	10' - 6-11/16"

3. Height:

Rail to Top of Side Top Chords -----	12' - 8-1/2"
Rail to Top of Side Top Chord Integral Shaker Bar - Extreme Height -----	12' - 9"
Rail to Bottom of Center Sill -----	2' - 4-3/8"
Rail to Bottom of End Sill -----	3' - 5-5/16"
Rail to Bottom of Side Sill -----	3' - 5-13/16"
Rail to Working Point on Hopper Chute -----	2' - 3-3/4"
Rail to Center Plate Bearing Surface -----	2' - 1-1/16"
Rail to Center of Coupler -----	2' - 10-1/2"
Of Side Assembly Over Integral Shaker Bar -----	9' - 3-3/16"

I. GENERAL DESCRIPTION (CONTINUED)

A. General Dimensions (Cont'd)

4. Trucks:

Track Gauge -----	4' - 8-1/2"
Wheel Base -----	5' - 10"
Side Bearing Centers -----	4' - 2"
Size of Journals -----	6-1/2" x 12"
Center to Center of Journals -----	6' - 7"
Diameter of Wheels -----	36"

5. Capacity:

Nominal -----	200,000 lbs.
Cubic - Level -----	4000 Cu. Ft.
Cubical Including 10" Average Heap -----	4389 Cu. Ft.

6. Weight:

Car Body (Est.) -----	39,900 lbs.
Two Trucks (Est.) -----	20,700 lbs.
Total -----	60,600 lbs.
Gross Rail Load -----	263,000 lbs.

B. General Remarks

The car described in this specification is a 100 ton all steel open top triple hopper car having six transverse doors designed to operate independently of each other.

Cars must be built in the best, most substantial and workmanlike manner according to the true intent and meaning of these specifications notwithstanding that everything required is not particularly mentioned in the specification. With the following exceptions, cars will conform with all AAR requirements:

1. Center plate diameter to be 15-7/8" over wear ring.
2. Center plate height will be 2' - 1-1/16"
3. Rotary Coupler - not AAR standard
4. Brake pipe cock - location at ends of car not AAR standard

Car will be within AAR Plate "B" and conform to all Office of Safety, Department of Transportation, safety requirements.

Design and construction of car will provide structural capability which will permit unloading by means of rotary unloading devices.

I. GENERAL DESCRIPTION (CONTINUED)

B. General Remarks (Cont'd)

Uncoupled cars with springs solid will negotiate a 164' radius curve without truck interference. Uncoupled cars will negotiate a vertical curve of 275' with 75' deflection and 2" wheel wear. No deviation from drawings or specifications will be permitted without written consent from the American Electric Power Service Corporation or their representative.

C. Patents and Guarantee

Patents, patent rights, patent protection, claims and liabilities and guarantee to be as covered by contract.

D. Materials

Builder shall furnish all material necessary for the completion of these cars, notwithstanding that same is not herein specifically mentioned.

Materials are to be the best of their kind, free from flaws and thoroughly capable of performing the service required.

Material used in the construction of these cars will meet the following specifications unless noted elsewhere in these specifications.

Plates - ASTM A-113 Grade A. Plates in contact with lading except inside brace to side connection and all side stakes shall be in accordance with ASTM A-242 except cold formed items to be A-242 modified to 40,000 psi min. yield.

Shapes - ASTM A 36.

Bars - AISI M-1012

Grab Irons and Handholds - ASTM A-576 Grade C-1015.

Sheets and Strips - ASTM A 569 or 570, hot rolled quality, commercial grade, .20% min. cu.

Door Hinge Pins - AISI C-1017 or C-1018.

Brake Pipe - ASTM A 53.

Steel for rivets shall conform to ASTM Specification A-502, latest revision, or to ASTM Specification A 242. Since cars will not be painted, rivets on sides and ends whose heads on the outside of the car bear against ASTM A 242 steel are to be ASTM A-242 material.

I. GENERAL DESCRIPTION (CONTINUED)

E. Bolts and Nuts

Unless otherwise specified, all bolts and nuts are to be threaded to the coarse thread series in accordance with the Unified Screw Thread Standard Class 2A External and Class 2B Internal Threads for Class 2 Fit of the American Standard for Screw Threads. Bolt heads to be in accordance with American Standard Regular Square unless otherwise noted.

High strength hexagon head steel bolts, ASTM A-449, must be used for securing ride control side bearing, reservoir, cylinder, "ABD" valve, and coupler pin support.

Self-locking cap screws must be used for securing all flanged pipe fittings on reservoir, ABD valve, pipe bracket and brake cylinder.

Bolts for end platforms to be carriage head square neck galvanized with nylon insert lock nut ends of bolts to be chisel checked. Bolts for body side bearings to be #3 high strength piow bolts meeting ASTM Specification A 449.

All bolts to be fitted with lock nuts having full nylon ring inserts unless otherwise noted in these specifications or indicated on drawings. Bolts at brake badge plate, actuator lever, regulator protection plate and door frames to have square nuts. Bolts with regular square nuts are to be riveted over, chisel checked or tack welded to nuts.

F. Welding

Welding shall be done by the electric metallic arc process.

Electrodes for welding to be of the class and type best suited for the kind of steel to be welded and to meet the necessary requirements for strength and impact.

The edges and surfaces to be joined together shall be accurately cut to size and form and shall be cleaned of all oil, grease, paint, water, scale or rust for a reasonable distance from the welding edge to provide a clean welding surface.

Welding symbols shown on drawings are in accordance with American Welding Society Standards.

All slag or flux remaining on any bead of welding shall be removed before laying down the next successive bead. Any cracks that appear on the surface of the bead of welding shall be removed before depositing the next successive bead of welding. Finished welds to have slag and flux deposits removed.

I. GENERAL DESCRIPTION (CONTINUED)

F. Welding (continued)

Welding procedure shall be such that it will meet all phases of inspection covered by AAR Recommended Practice to assure acceptable weld quality.

When using submerged arc welding processes, the welding flux material and electrode material shall be sufficiently controlled to eliminate formation of welding defects in excess of those allowable under AAR Recommended Practice.

Properly controlled low hydrogen welding processes shall be used on all low alloy, high strength steels so as to eliminate hydrogen from the weldment. This applies when welding LAHT steel to LAHT steel or to plain carbon steel.

AAR Recommended Practice shall be followed in grounding work pieces. All journal bearing interfaces of equipment must be protected from arc burn or local severe heating due to welding current by use of additional ground after car is trucked.

All slag or flux to be removed before welding structure is painted.

Where welding is done on the underside of the welding groove, prior to welding second side of the groove, the root of the initial weld must be gouged, chipped or otherwise removed to sound metal before welding is started from the second side to insure complete penetration of the welding applied to the second side.

G. Riveting

Riveting must be done in a thorough and workmanlike manner in every respect.

Holes must match and have full bearing all around for the rivets. Holes must be reamed where necessary and the use of drift pins to enlarge unmatched holes will not be permitted.

Reaming shall be done after pieces are assembled. Pieces must be firmly bolted together so that they are in close contact.

All parts must be securely and tightly clamped or bolted together before riveting and in no case shall the rivets be depended upon to draw the parts together.

It will be permissible for rivets to be driven cold with rolled mushroom type head on driven side; however, when hot rivets are used they shall be heated uniformly to a light cherry red and driven while hot. All rivets must be free from slag, scale and carbon deposit. When driven, they must

I. GENERAL DESCRIPTION (CONTINUED)

G. Riveting (continued)

be tight and completely fill the holes, and have full concentric heads in contact with the surfaces of the member riveted. Rivet heads of the same size rivets must be of uniform size throughout the work.

Loose, burned or otherwise defective rivets must be replaced. In removing rivets, care must be taken not to injure the adjacent metal.

The eight rivets connecting the separable body center plate to the draft sill casting must be ASTM A-502, Grade 2 high strength or Mayari "R".

H. Castings

Castings entering into the construction of these cars shall meet A.A.R. requirements for cast steel or malleable iron castings. Where required, castings must carry in raised letters and figures the customer's pattern classification.

I. Inspection

These cars will be inspected by representatives of the American Electric Power Service Corporation or their designated agents. Access to the works of the builder for the purpose of inspection is to be granted to the authorized representatives of the customer at any time during the construction of these cars. Such necessary facilities and reasonable assistance required for the purpose of complete inspection and tests are to be furnished by the builder.

Two complete sets of drawings and specifications are to be furnished to the customer's representatives for use during construction of these cars.

J. Workmanship

All material and workmanship must be of the best quality and work accurately fitted to gages and templates to insure thorough interchangeability of parts.

All forgings and pressed steel parts entering into the construction of these cars are to be made in accordance with the drawings, but are to permit slight variations which in no way affect the efficiency of the part or the construction of the car as a whole.

K. Builder shall furnish the American Electric Power Service Corporation four sets of 8" x 11" photographs of the following:

I. GENERAL DESCRIPTION (CONTINUED)

K. Photographs (Continued)

1. Trucks
2. Side Elevation of Car - Both Sides
3. Elevation "A" End
4. Elevation "B" End
5. Interior of Car
6. Combination Side & End View "BL" Corner.
7. Top View
8. Several stages of construction - body and truck

L. Lubrication of Truck Center Plate

Each truck center plate is to be thoroughly cleaned and lubricated with a 50-50 mixture by volume of Molybdenum Disulphide Powder suspended in mineral spirits. To be brushed on all contact surfaces of truck center plate bowl to a depth of 1/16".

II. UNDERFRAME

A. Center Sill

One per car, consisting of two CSC 13 x 41.2# channel sections of ASTM A 441 st joined together at toe of upper flange with a continuous weld and welded to cast steel draft sill per AAR Plt. No. 526.

B. Center Sill Separators

Seven per car, 1/2" plate. Six welded to bottom surface of center sill bottom flange, one at each crossbearer, one at center of car, one near each bolster and one between crossbearer and bolster on "A" end of car. One separator located between crossbearer and bolster on "B" end of car welded to top surface of center sill bottom flange.

C. Body Bolster

Two per car, built-up welded design. Each bolster to consist of a 3/8" web plate and an 8" x 1/2" top cover plate, both of ASTM A-572 Grade 50 steel. Web plate riveted to sides at stakes through 4" x 3-1/2" x 3/8" clip angles. Clip angles to be welded to web plate. Bolster web plate to be securely welded to bolster reinforcement plate. Top cover plate to be tipped, 30 degrees to suit slope of floor.

D. Bolster Reinforcement

Two per car, 2 3/4" x 1/2" plate, ASTM A 572 Grade 50, with front edge tapered to 1" - 1" at side sill. To be welded to horizontal flange of side sill and top of draft sill.

II. UNDERFRAME (CONTINUED)

E. Bolster Stiffeners

Four per car, triangular shape gusset of 5/16" plate flanged against and welded to intermediate floor sheet, welded and lockbolted at bottom to center sill web and flanged against and riveted to bolster web plate.

F. Side Bearing Arrangement

Four per car. Each arrangement to consist of a 7/16" tie plate of ASTM A-572 Grade 50 steel riveted and lockbolted to draft sill; a 4" x 5/8" wear plate and 4" wide fillers of proper thickness to obtain required relationship to constant contact side bearing wear plates, to be held in place by two 3/4" diameter high strength plow bolts. Two web plates, 5/16" thick, to extend from side bearing tie plate to underside of the bolster reinforcement plate and from web of draft sill to a 7/16" thick channel shaped strut with a 7/16" thick filler, forming a box section. A 5" x 7/16", steel gusset is to be applied adjacent to each bolt. Webs, strut, strut filler and gusset to be of ASTM A-572 Grade 50 steel. Bolster reinforcement plate to be stiffened on each side of bolster web above side bearing with 5" x 3/8" flats.

G. Diagonal Brace Assembly

Four per car, each to consist of 5" x 3-1/2" x 3/8" angle welded to corner casting and bolster reinforcement plate.

H. End Sill

Two per car, 5" x 3-1/2" x 5/16" angle ASTM A-441 applied with 5" leg vertical. End sill is to be welded to top of draft sill and riveted and welded to the corner casting.

I. Crossbearer

Two per car, W16 x 36#, riveted to sides at stakes through 3-1/2" x 1/2" connection plates. Connection plates to be welded to beam. Crossbearer bottom flange to be welded to crossbearer and center sill gusset. Each side of top flange to be bent 30 degrees to suit slope of floor. Crossbearer beam material specification: C-.12 Max; Mn-.60 max. P-.045 max. S-.05 max.

J. Crossbearer to Center Sill Gusset

Eight per car, triangular shape gusset of 5/16" plate flanged against and welded to crossridge floor sheet, welded to web of center sill and crossbearer beam.

III. DRAFT GEAR AND ATTACHMENTS

A. Draft Sills

Two per car, cast steel, Grade "B", 4' - 11-3/4" overhang, having bolster center brace, front and rear draft lugs and striker cast integral. Draft sill to be arranged for type "F" couplers and furnished with coupler carrier

III. DRAFT GEAR AND ATTACHMENTS (CONTINUED)

A. Draft Sills (continued)

castings assembled with retainer plates attached to draft sill with 3/4" diameter lockbolts. Coupler carrier wear plates, AISI C-1093, of the proper thickness to obtain desired coupler height to be furnished and welded to carrier casting by car builder.

B. Body Center Plate

Two per car AAR M-201 Grade C with contact bearing surfaces hardened to a brinell of 321 min. to 378 max. 15-7/8" diameter bowl with 1" thick flange, total depth 3-1/4". Vertical side wall of bowl to be machined 90 degrees to the horizontal bearing surface or cast with a 3/4" degree max. draft. Top and bottom surfaces finished to 250 micro inches or less over 90% of the bearing area. Applied to draft sill with 6-7/8" diameter ASTM A-502 Grade 2 high strength or Mayari "R" rivets and 4-7/8" diameter lockbolts.

C. King Pin

Two per car, 2" diameter by 15" long.

D. Draft Gears

Two per car, meeting A.A.R. Specification M-901-E latest revision for 2 1/2-5/8" pocket.

E. Draft Gear Followers

Followers for ASP rotary and fixed couplers furnished with yoke. Followers for National fixed couplers furnished with yoke. Followers for National rotary couplers to be AISI C-1045 steel heat treated to 241-311 BHN, AAR Catalogue No. Y-44.

F. Draft Gear Carrier

Two per car, 8" x 5/8" plate to be offset to suit coupler yoke.

G. Draft Gear Safety Plate

Two per car, 8" x 5/8" flat plates attached to flanges of draft sill forward of standard carrier.

H. Couplers

Two per car, high tensile cast steel Type "Y". Coupler on "A" end of car to be for rotary operation. Coupler on "B" end of car to be nonrotary operation. Ten cars to be equipped with a rotary type "Y" coupler on both ends of the car. Rotary couplers to have "ball" type locklift assembly.

I. Coupler Yokes

Two per car, high tensile cast steel quenched and tempered suitable for use with couplers described above.

III. DRAFT GEAR AND ATTACHMENTS (CONTINUED)

J. Coupler Release

Non-rotary end of car to have two uncoupling rods so car may be uncoupled from either side.

Rotary end uncoupling rod to be single "bail" type.

Ten cars with rotary couplers on both ends to have double "bail" rods. These cars can be uncoupled from either side of car on both ends.

K. Pin and Yoke Support

To be a casting at National rotary end only and a MC10 x 28.5# channel at both the non-rotary and ASF rotary ends. Support channel at non-rotary end to have two 3" x 3/8" fillers and a 8" x 1/4" x 0' - 10" wear plate of AISI C-1095 steel applied. Support for ASF rotary end to have two 3" x 7/8" fillers and a 8" x 1/4" x 0' - 11" wear plate of AISI C-1095 steel applied. Supports to be secured to draft sill casting with 1" diameter high strength bolts.

IV. SIDES

A. Side Sill

Two per car, 5" x 3-1/2" x 5/16" rolled angle extending full length of car to be ASTM A 441 steel.

B. Top Chord

Two per car, bulb angle 5" x 4-1/2" x 21.45# with integral shaker bar extending from corner post to corner post to be ASTM A-441 steel. To be attached to side sheets with 3/4" rivets.

C. Side Sheets

Six per car, 7/32" plate. Center sheet to extend from bolster post to bolster post having vertical indentures above floor sheets pressed outward between side stakes. Indentations to be 1/2" to 3/4" deep measured from straight edge on inside of side sheet. End sheet to extend from bolster post to corner post.

D. Side Stakes

Twenty-six per car, hat shaped pressing of 1/4" steel applied at each bolster, crossbearer and at three locations between each of these. Stakes at bolster must bear against horizontal flange of side sill. All other stakes must bear against web of top chord.

IV. SIDES (CONTINUED)

E. Side Ladder Stile

Four per car, 2-1/2" x 1/2" bar riveted to side sill and end side sheet.

F. Inside Brace

Fabricated design, 4 per car. To be 5" x 3" x 3/8" tubing of ASTM A-500 Grade 50 steel with a 5/8" plate welded to one end and a forged crossridge foot welded to opposite end. To be riveted to side at crossridge stake and to crossbearer beam through floor sheet.

V. ENDS

A. Corner Posts

Four per car, 3-1/2" x 3-1/2" x 1/4" rolled angles.

B. Corner Cap

Four per car, Schaefer drop forged welded to web of side and end top chords.

C. End Post

Four per car, 5" x 3-1/2" x 1/4" angle, with 5" leg pressed to form zee shape section.

D. End Sheet

Two per car, 7/32" plate extending continuously from corner post to corner post.

E. End Top Chord

Two per car, bulb angle 5" x 4-1/2" x 19.1 pounds extending continuously from corner post to corner post to be ASTM A-441 steel.

F. End Ladder Stile

Three per car, 2-1/2" x 1/2" bar.
One per car 3" x 3" x 1/4" angle at "BD" corner also serving as H.B. support.

G. Corner Castings

Four per car, cast steel Grade B with roping staple and uncoupling bracket cast integral.

VI. FLOORS

A. End Floor Sheet

Two per car, 1/4" plate flanged and welded to side sheet. Lower edge of plate to weld to bolster top cover plate, upper edge flanged and riveted to end sheet forming an angle of 42 degrees and 12 minutes with the rail. Floor to be stiffened by a 5" x 3-1/2" x 3/8" angle riveted to underside of floor.

B. Intermediate Floor Sheet

Two per car, 1/4" plate flanged and welded to side sheets. Upper edge welded to bolster top cover plate, lower edge to be offset under hopper chute. Intermediate floor forms an angle of 30 degrees with the rail.

C. Crossridge Sheet

Two per car, 1/4" plate flanged against and welded to side sheets. To extend between door frames and/or hopper chutes forming an angle of 30 degrees with the rail. Crossridge sheet at hopper chute to be offset to form a lap joint with the chute. Crossridge sheets to weld to hopper frames.

D. Hopper Chute

Six per car, one piece 1/4" plate riveted to side sheet at side sill and to web of center sill. Datum point to be 1' - 3-3/4" above rail. To lap intermediate floor or crossridge sheet and weld thereto. Hopper chute to weld to hopper door frame.

E. Longitudinal Hood

Three per car, 1/4" plate extending between crossridges and between crossridge and intermediate floor and to be welded thereto. To be riveted to center sill web.

VII. DOOR FRAMES AND FIXTURES

A. Door Frames

Six per car, cast steel having a door opening of 25-1/2" x 35-1/2" with hinge butts cast integral. To be welded to hopper chutes and welded to crossridge sheets. To be suitable for use with Wine single hopper cam locks.

B. Doors

Six per car, single operating type of 5/16" plate. To be rectangular flanged pan shape.

C. Door Hinges

Twelve per car, cast steel riveted to door.

E.

VII. DOOR FRAMES AND FIXTURES (CONTINUED)

D. Hinge Pins

Twelve per car, 1" diameter head type with 3/16" locktite cotter.

E. Door Locks

Six sets per car, for single operating doors, to be Wine ⁴/₈" single hopper cam type. Prior to shipment doors to be closed and door locks to be made inoperative by applying a squarehead bolt and nut through the locking pawl.

VIII. SAFETY APPLIANCES

A. Grab Irons - Ladder Irons

To be made of 3/4" diameter stock secured with 5/8" diameter rivets and located in accordance with Department of Transportation requirements. Handholds over 36" in length to be 1" diameter.

B. Ladders

Eight per car, two on each side and two on each end formed by applying ladder rungs between corner posts and the respective stiles.

C. Sill Step

Four per car, made from 1-3/4" x 1/2" bar. Each step to have one additional tread.

D. End Platform

Two per car, one piece perforated plate type 8-1/8" x 62" long supported by four braces.

IX. MISCELLANEOUS

A. Defect Card Holder

One per car attached to bolster web "BL" corner of car by welding.

B. Route Card Board

Two per car, soft wood, route card board bracket to be welded to side sheet at "BR" and "AL" corners of car.

C. Jacking Pads

Not required. Bolster post to bear against bottom flange of side sill forming support for jacking at centerline of bolster.

X. BRAKES

A. Air Brake Equipment

To be Schedule ABD-1012 freight brake equipment consisting of the following parts:

- 1 - ABD Valve
- 1 - 10" x 12" ABU-1 Brake Cylinder
- 1 - Combined Auxiliary and Emergency Reservoir
- 1 - Combined Dirt Collector and Cutout Cock
- 1 - Branch Pipe Special 1" Straight Welded Fitting
- 2 - Straight Cocks 1-1/4"
- 2 - Hoses 1-3/8" x 33"
- 1 - Release Control Retaining Valve

All fittings for the above equipment to be socket welded type.

B. Brake Pipe

All air brake piping to be extra heavy pipe. Trainline to be secured with Wright pipe clamps. Retainer line to be 3/8", branch pipe 1", and 3/4" pipe between AB valve and reservoir and AB valve and cylinder. After bending and before application to air brake equipment, pipe must be thoroughly blown out to remove all scale and other foreign matter. Pipe joint compound to be applied to male threads only. All pipe work when complete is to be tested with soap suds with 110 pounds of air pressure. Trainline joints to be welded except at nipple at straight cock. Straight cocks to be located on "BR" and "AR" corners. Air brake pipe does not cross through the center sill.

Car with rotary coupler on both ends to have straight cocks applied to the "BL" and "AR" corners of car.

C. Straight Cock Support Assembly

Two per car, welded to the underside of the end sill. To be designed to locate straight cock 1' - 6" from center of car, 2' - 10-1/2" above the rail, except "BL" corner of special car which will have straight cock located 1' - 8-1/2" from center of car and 3' - 3-15/16" above the rail.

D. ABD Valve Support

One per car, 3/8" U-shape plate welded to top of draft sill.

E. Cylinder Support

One per car, 1/2" flanged U-shape plate welded to top of bolster reinforcement plate.

auxiliary end of reservoir to be 3/8" plate riveted
side sill angle and stiffened with a 5/16" gusset.
d of reservoir to be a 2-1/2" x 1/2" bar riveted to
to bolster reinforcement plate and stiffened with a

1/2" diameter rods with formed eye on end, supported
face with 2" x 1/4" clip.

Body

plate welded to bottom flange of center sill.

s

flat.

ts

1" x 3/4" bars except 1" x 1" bar at actuator lever fulcrum,
flange of center sill.

ad stainless steel indicating drilling of levers. To
b of bolster beam at "BL" corner of car with two 1/2"
th 1/2" diameter washers and square nuts. Bolts to
or nut to be welded to Bolts.

ole acting automatic type located in center rod below
ston travel to be maintained at 7".

braking force must not be less than 6.5% of the gross
t more than 30% of the lightweight of car. Rods, levers
assigned to withstand 90 psi cylinder pressure without
stress limitations. Total measured hand brake force
as than 11 percent of the gross rail load.

3/8" diameter by 2' - 2-1/4" long with single hole jaw.

X. BRAKES (CONTINUED)

O. Brake Pins

Pins to be "Excello" hardened and ground, 1-3/32" diameter except pins at brake regulator 1-7/32" diameter. Pins to be equipped with 5/16" "locktite" A-5 cotters.

P. Retainer Valve Support

One per car, 1/4" angle shaped bracket welded to diagonal brace at "BR" corner of car.

Q. Heat Shield

One per car, formed 1/8" sheet, bolted to four 2" x 3/8" supports welded to web of center sill.

XI. HAND BRAKE

A. Upper Unit

One per car, AAR approved, vertical wheel non-spin type with short release handle to operate in harmony with the air brake and to produce braking power in accordance with AAR requirements. To be bolted to mounting plate which is riveted and welded between end post and end under sill.

B. Sneave Wheel

One per car, to be AAR 8" mean diameter type.

C. Horizontal Hand Brake Chain

One per car, 9/16" BBB Chain

D. Sneave Wheel Bracket

1/2" pressed plate, welded to end sill.

XII. TRUCKS

A. General Description

Trucks to be 100 ton capacity, arranged for 4' - 8-1/2" track gauge, 5' - 10" wheel base, 36" diameter wheels, 3-11/16" spring travel, 6-1/2" x 12" roller bearings with grease fittings. Unit type brake beams, 2" - 1-1/16" center plate height, ASF Ride Control Snubbing and Stucki HS-6 snubbers. ASF constant contact type side bearings located 2' - 1" each side of center of truck.

XII. TRUCKS (CONTINUED)

B. Side Frames

Four per car, cast steel, Grade "B" or Grade "C" in Grade "B" sections, narrow pedestal type. Side frame wear plates to be lock bolted and welded to side frames by foundry and to be free of paint and foreign matter.

C. Bolsters

Two per car, cast steel, Grade "C" in Grade "B" sections. Center plate bowl to be 16" diameter with 1/4" vertical wear ring of type 304 stainless steel or manganese steel and 1/4" manganese drop-in type horizontal wear liner, 1-3/4" rim height above horizontal wear liner. Bolsters arranged for Stucki hydraulic snubbers.

D. Snubbers

Eight per car to be Ride Control with increased column pressure built-in type for 100 ton trucks with 3-11/16" spring travel.

E. Side Frame Pedestal Jaw Adapters

Eight per car, AAR Spec. M-924 LR. Crown and thrust shoulders to be hardened.

F. Roller Bearings

Eight per car, 6-1/2" x 12" heavy duty type with grease fittings.

G. Springs

Each car set to include 24 D5 outer coils, 32 D5 inner coils having 3-11/16" travel as shown on AAR Manual page D-73-1971 and 24 inner coil overload springs 2" O.D. 3/8" diameter wire 9-7/16" free height.

H. Separable Snubbers

Four per car, to be A. Stucki Company's HS-6 hydraulic snubber located in spring basket.

I. Brake Beams

Four per car, AAR approved #18 Unit type with heads to reject cast iron shoes.

"B" J. Side Bearings

Four per car, ASF Ride Control constant contact type. To be fastened to truck bolster at 4' - 2" centers with welding and high strength 7/8" Dia. bolts with high strength washers and heavy full nylon insert lock nuts.

XII. TRUCKS (CONTINUED)

K. Brake Shoes

Eight per car, 2" thick composition.

L. Brake Shoe Keys

Eight per car, spring steel type.

M. Brake Beam Wear Plates

Eight per car, AAR standard unit type D-30-1965.

N. Brake Levers

Four per car, 8" x 14" drilling with brake pin holes 1-1/8" diameter. Levers bent 8-1/2 degrees 4" above center hole.

O. Bottom Rods

Two per car, forged steel three hole jaw type, 38" between centers of inside holes. To pass below bolster.

P. Narrow Pedestal Frame Keys

Eight per car, MF two piece welded design, lockbolted to side frame with the use of flanged collars.

Q. Wheels

Eight per car, AAR standard H-36. AAR Specification M-107 latest revision, Class "C". Minimum rim thickness of 1-5/8".

R. Axles

Four per car, AAR standard with 6-1/2" x 12" journals. AAR design D-11-71 AAR Specification M-101 L.R.. Grade "F".

S. Wheel Mounting

Mounting pressure to be in upper half of AAR pressure range. Tolerance of 20% of the days production may be 5 tons under.

T. Bottom Rod Guards

Four per car, single loop type for offset bottom rod.

XIII. PAINTING AND STENCILING

A. Body

1. Laps and Joints

All riveted laps and joints except those which will be welded later to be given a coat of zinc chromate primer.

XIII. PAINTING AND STENCILING (CONTINUED)

A. Body (Cont'd.)

2. Inaccessible Surfaces

With the exception of the side stakes, all surfaces of underframe and body of car inaccessible after assembly including inside of draft gear pocket to be given a coat of zinc chromate primer before assembly.

3. Cleaning

Exterior of car body, including sides, ends and end floor sheets to be grit blasted to a finish as described in Steel Structures Painting Council Surface Preparation Specification SSPC-SP-6-63 for No. 6 Commercial Blast Cleaning. Balance of exterior of car to be grit blasted to a finish as described in Steel Structures Painting Council Surface Preparation Specification SSPC-SP 7-63 for No. 7 Brush-Off Blast Cleaning.

Air brake equipment, hand brake, couplers, draft gears, slack adjuster and door locks must be thoroughly protected to prevent damage by grit blasting. Trucks must be removed prior to blasting. Car body must be thoroughly blown clean to remove all residual grit prior to replacing trucks.

"B"

4. Painting

Exterior of sides, except as noted for stenciling, ends, end floor sheets, and portion of car from bolster to end of car are not to be painted. Entire underframe between bolsters including the inside of center sill, side of bolster web plate toward center of car, outside surface of slope floor between bolsters, outside surface of hopper chutes, hopper doors, inside surface of sides below floor and underneath surface of horizontal leg of side sill to receive one coat of No. 1 black car cement. End side sheets from bolster stake to corner post and end sheets to be primed and painted yellow on the end of the car that has rotary coupler. Corner posts and end posts are also to be painted yellow from top chord to bottom of end sheet.

The No. 1 car cement to be applied with a minimum dry film thickness of 4 mils.

The primer to be applied with a dry film thickness of 1 mil and the high visibility yellow finish paint to be 2 mils, making a total minimum dry film thickness of 3 mils.

5. Weighting and Stenciling

Lightweighting and stenciling of cars to be in accordance with Interchange Rule 70.

XIII. PAINING AND STENCILING (CONTINUED)

A. Body (Cont'd.)

"B" 5. Weighing and Stenciling (Cont'd.)

One side panel adjacent to and inboard of the bolster stake on "AR" and "BL" corners of car and two panels adjacent to and inboard of the bolster stake on "AL" and "BR" corners of car to be painted black from side stake to side stake and from top chord to side sill angle. The two painted panels on the left facing the car will carry the reporting marks, series numbers, nominal capacity, light-weight, overall car dimensions, new date and the AAR Mechanical designation. The one painted panel on the right will carry the consolidated stencil; one above the other and the ACI label.

The black direct-to-metal paint will be applied to a minimum dry film thickness of 3 mils.

Black stencil paint is to be applied to the yellow end of the car.

White stencil paint is to be applied to all black panels or unpainted surfaces with exception of the reporting mark and road numbers on sides of car which are to be white "Codit" reflective paint. With exception of the consolidated lub stencil which must be in white stencil paint, the shop has the option to use all white "Codit" on these surfaces.

"B" 6. Delineators

Seven delineators, equally spaced on each side sill, and two on each end sill to be approximately 5" x 8" in size and applied with white "Codit" reflective paint.

7. ACI Labels

To be in accordance with AAR requirements and applied directly to side sheets.

B. Trucks

Trucks are not to be painted except for light coat of paint applied to side frames and bolsters by foundry.

SPECIALTY LIST - BODY

ITEM	MANUFACTURER
ACI Labels	Info Incorporated
Rev. A Air Brakes and Fittings Rev. A	1150 C/S Westinghouse Air Brake Company 350 C/S New York Air Brake Company
Bolster Center Filler	Integral Part of Draft Mill
Brake Badge Plate - Stainless Steel	Roemer Industries, Inc.
Brake Levers (except Cylinder Lever)	Schaefer Equipment Company
Brake Pins	Excalle Corporation
Brake Regulator	Ellicon National
Brake Rod Jaws	Schaefer Equipment Company
Car Cement	Car Shop Stock
Rev. A Center Plate Rev. A	600 C/S P&L 900 C/S Buckeye
Center Plate Lubricant	Molybdenum Disulphide (Car Shop Stock)
Chain - Hand Brake	Campbell Chain Company
Corner Castings	Union Specialty
Corner Caps	Schaefer Equipment Company
Cotter Pins - Standard	Standard Horse Nail Corporation - Car Sto Gustin-Bacon Manufacturing Company
Coupler Release	Standard Railway Equipment Division Stanray Corporation
Rev. A Coupler Yokes Rev. A	1100 C/S National Castings Division 400 C/S ASF
Rev. A Couplers Rev. A	1100 C/S National Castings Division 400 C/S ASF

SPECIALTY LIST - BODY (CONTINUED)

ITEM	MANUFACTURER
Dead Lever Clevis Bracket	Pittsburgh Forgings Company
Defect Card Holder	Western Railway Appliance Company
Door Frames	Wine Railway Appliance - Unitcast Div Midland-Ross Corporation
Door Hinges	Wine Railway Appliance - Unitcast Div Midland-Ross Corporation
Door Locks	Wine Railway Appliance - Unitcast Div Midland-Ross Corporation
Rev. "A" Draft Gears - Mark 50	4250 C/S Cardwell - Westinghouse Comp
Rev. "A"	250 C/S W. H. Miner
Rev. "A" Draft Sills	600 C/S P&L
Rev. "A"	900 C/S Buckeye Steel Castings
End Platforms	Morton Manufacturing Company
Rev. "A" Hand Brakes	800 C/S Elleon-National, Incorporated
Rev. "A"	400 C/S Miner
Rev. "A" Inside Brace Foot	300 C/S MacLean-Fogg
Lock Bolt Fasteners	Schaefer Equipment Company
Lock Bolt Fasteners	Huck Manufacturing Company
Lock Nuts - Full Ring Nylon Inserts	Bethlehem Steel Corporation
Lock Nuts - Galvanized Speed Lock	Abbott Screw and Manufacturing Compe
Lumber - Route Card Board	MacLean Fogg Lock Nut Company
Paint - Stencil - Brown	Car Shop Stock
- Yellow	
- Black	
- Primer	
- Lap & Joint Primer	
Pipe Clamps - "Wright" Welded Type	Illinois Railway Equipment Company
Pipe Couplings	Penstan Supply Inc.

SPECIALTY LIST - BODY (CONTINUED)

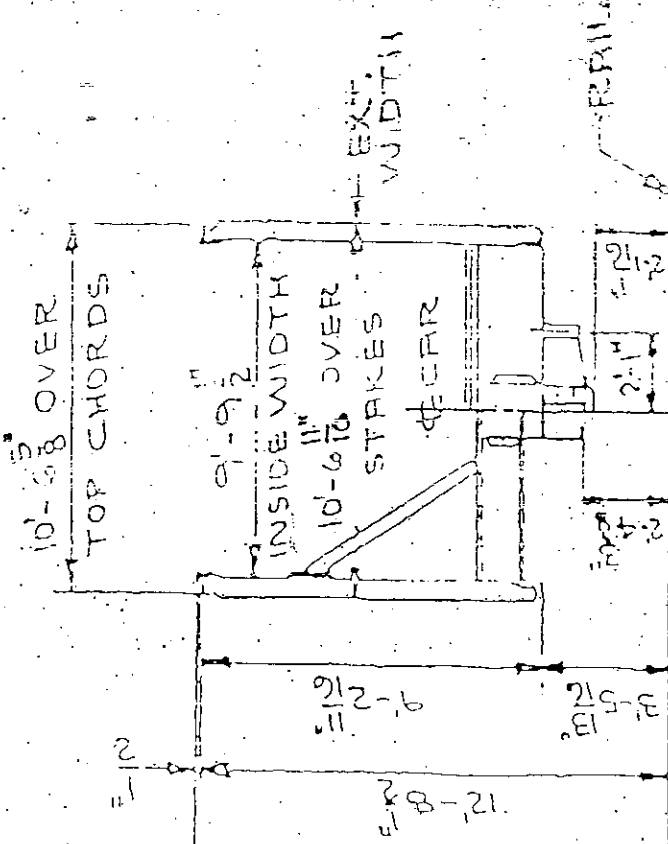
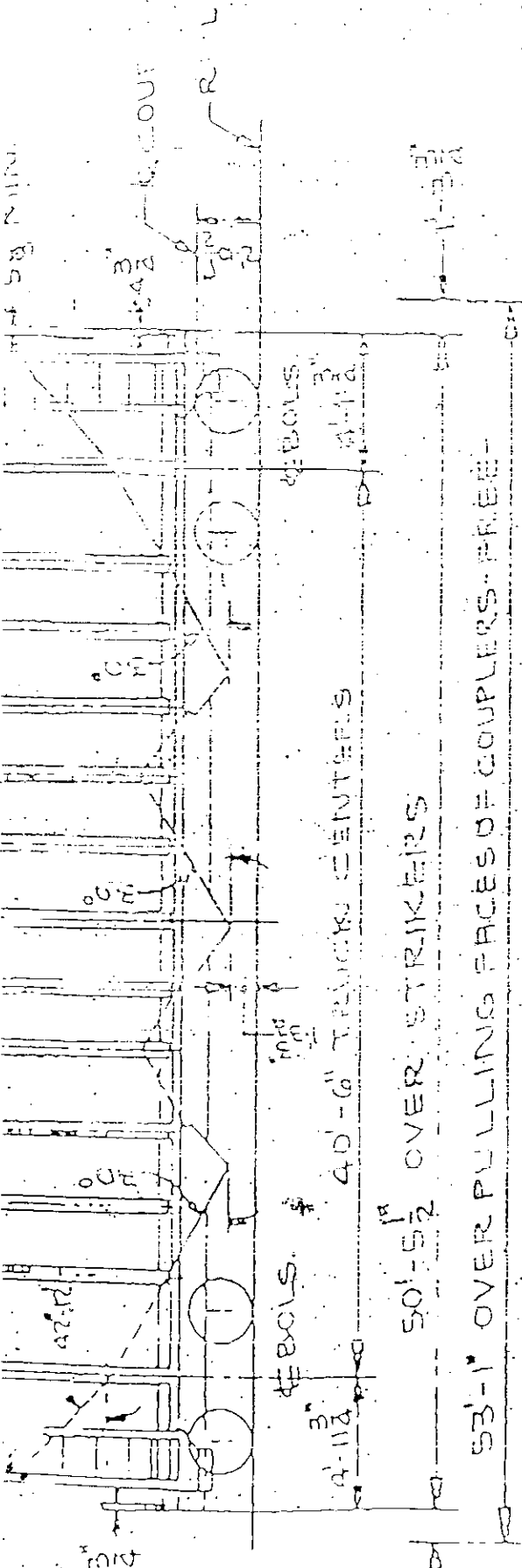
ITEM	MANUFACTURER
Pipe Joint Compound	Car Shop Stock
Push Rods	Schaefer Equipment Company
Side Bearing Wear Plate	Henry Miller
Striker	Integral with Draft Sill
Structural Tubing	Welded Tube Company
Welding Flux	Car Shop Stock
Welding Rods	Car Shop Stock
Welding Rings	Pittsburgh Gage and Supply Company
Welding Studs	KSM Division - Omark Industries, Inc. (Car Shop Stock)
Rev "A" Yoke Support - Front Rev "A"	1100 C/S National Castings Division 400 C/S ASP (fabricated by car build)
Bolt Angle with Integral Shaker Bar	Inland Steel Company

NOTE: All body material not listed above to be of Bethlehem Steel Corporation's manufacture.

SPECIALTY LIST - TRUCK

ITEM	MANUFACTURER
Bolsters	250 C/S American Steel Foundries
Rev. "A"	550 C/S Dresser
	700 C/S Scullin Steel
Bottom Rod Guards	Chicago Railway Equipment Division Co.
Brake Beam Wear Plates	Unit Truck Corporation
Rev. "A" Brake Beams - #18 Unit Type	750 C/S Chicago Railway Equipment
Rev. "A"	750 C/S David Brake Beam
Brake Pins	Excello Corporation
Brake Shoe Keys	Abex Corporation
Rev. "A" Brake Shoes	1250 C/S Abex Corporation
Rev. "A"	250 C/S Griffin Wheel Works
	Gustin-Bacon Manufacturing Company
Cotters - Locktite	
Levers - Truck	Schaefer Equipment Company
Lock Nuts	Abbott Screw and Manufacturing Company
pedestal Retainer Keys	MacLean Fogg Lock Nut Company
Rev. "A" Roller Bearings	1000 C/S The Timken Company
Rev. "A"	500 C/S Brando
Rev. "A" Roller Bearing Adapters	900 C/S Dayton Malleable Iron Company
Rev. "A"	300 C/S R. H. Little
Rev. "A"	300 C/S Albion
Side Bearings - ASF Ride Control	American Steel Foundries
Side Frames	250 C/S American Steel Foundries
Rev. "A"	550 C/S Dresser
	700 C/S Scullin
Snubbing - Supplemental - HS-6 Hydraulic	A. Stucki Company
Rev. "A" Springs	700 C/S Union Spring Company
Rev. "A"	300 C/S Henry Miller
Rev. "A"	300 C/S Crucible
Rev. "A"	200 C/S Alco
Truck Lever Connections	Schaefer Equipment Company

NOTE: All truck material not listed above to be of Bethlehem Steel Corporation's manufacture.



SECTION AT X-RIDGE
SECTION AT BOLSTER

CAPACITY

LEVEL 4000 CU.F
10' HGT. HOPPER 4388 CU.F

BEYERLEIGH STEEL CORPORATION
RAILWAY AND INDUSTRIAL CAR
EXCLUDING BUFF AND JOINTS

100 TON TRIPLE HOPPER CAR

DATE: 1930

3400 3199