

SPECIFICATION

No. 100

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THE J. G. BRILL COMPANY

PHILADELPHIA, PA.

American Car Company
G. C. Kuhlman Car Co.
Wason Manfg. Company

ST. LOUIS, MO.
CLEVELAND, OHIO
SPRINGFIELD, MASS.

THE J. G. BRILL COMPANY'S

SPECIFICATIONS

FOR

SINGLE TRUCK, DOUBLE END, BIRNEY SAFETY CARS.

IN GENERAL Cars to have straight sides, round ends, arched roof, top sash stationary, lower sash to raise, platform floor to be on same plane as body floor, folding doors and steps, two motor electrical equipment and air brakes with safety features.

GENERAL DIMENSIONS

Length over all.....	28' 0 $\frac{1}{2}$ "
Length over dashers.....	26' 9 $\frac{1}{2}$ "
Length of platforms over dashers.....	4' 6"
Length over body corner posts.....	17' 9 $\frac{1}{2}$ "
Width over sheathing.....	7' 8"
Width over all.....	7' 10-5/8"
From rail to top of roof boards.....	9' 9-5/8"
From rail to top of floor (with 24" wheels).....	2' 3-15/16"
Seat spacing.....	2' 4 $\frac{1}{2}$ "
Post spacing.....	2' 4 $\frac{1}{2}$ "
From floor to top of window rest.....	2' 0-3/4"
From floor to bottom of top sash.....	4' 2 $\frac{1}{4}$ "
From floor to underside of arch in bulkhead.....	6' 9-3/8"
Width of exit and entrance doors in the clear... 2'	5 $\frac{1}{2}$ "
From rail to top of trolley board (with 24" wheel).....	10' 7"

INSPECTION The Purchaser's representative shall be at liberty to inspect workmanship and material at all times. He shall have the right to reject all material and workmanship, which in his judgment is not first class in every respect to make a car that is first class according to the specifications.

MATERIALS: All material entering into the construction of these cars must be first class in every respect. All timber shall be thoroughly air seasoned, free from sap, bad checks, rot, wind shakes, or knots, which will decrease its strength or affect its appearance. Timber must be live as no dead or brashy timber will be allowed in the construction. All iron and steel, rods, rivets, bolts and screws shall be first class, free from all defects and be able to withstand the usual tests. All sheet steel used in the construction shall be free from buckles, hammer marks, etc. All paint material must be the best and not adulterated in any way. All malleable iron and bronze is to be the best. All steel castings to be first class; all brake levers to be of steel; glass to be the best D. S. A. A.

WORKMANSHIP: Workmanship must be first class in every respect. All tenons to be coated with white lead and oil where they are not glued. Tenons must be made a hard driving fit. Rivets must be put in hot; heads must be uniform. All joints to be tight whether covered or not. Where wood and wood are placed together, both shall be coated with white lead. Where wood and iron or steel are placed together, the wood shall be coated with white lead and the metal with peroxide of iron. Where metal is placed against metal, both are to be coated with peroxide of iron paint. All bolts and rods passing through wood shall be coated with white lead. All hidden work is to receive one heavy coat of paint; the metal to be coated with peroxide of iron and the wood with white lead and linseed oil. Tongues and grooves must not be broken on the flooring. All steel and iron is to be sand blasted and primed as soon as possible.

DIMENSIONS OF MATERIAL:

Side sill angles 3" X 3" X 3/16"
Cross sills 3" 4# channel iron and 5.25# channels.
Truck sills to suit truck.
Seat rest angles 1-1/4" X 1-1/4" X 1/8".
Window rests of #16 sheet steel.
Centre platform sills at ends 3" 4# channel.
Platform knees 6" 8# channel iron.
Flooring under seats 13/16" X 3 1/4" T. & G. yellow pine.
Flooring in aisle 13/16" X 3 1/4" T. & G. hard maple, which is to be grooved out to form floor strips.
Crown pieces of oak 1-1/8" X 14"
Head pieces of ash or oak of the "built up" type.
Vestibule top plates, hood rims, hood carlines, posts and ribs of ash or oak.
Roof carline furring to be of poplar.
Vestibule window rests to be of ash or oak.
Roof boards to be of 5/16" poplar or cypress and No. 8-18 oz. canvas.
Letter boards to be of #20 sheet steel.
Canvas moulding to be of poplar.
Corner and side posts to be of Carnegie Tee No. 18, 1 1/2" X 1 1/2" X 3/16", reinforced with oak or ash.
Side plates to be of #16 sheet steel.
Dashers to be of #13 sheet steel.
Buffer shields to be of #13 sheet steel.
Belt rails to be of 1/4" X 1-3/4" steel.
Gusset plates to be 1/8" and 3/16".
Sash, doors and inside finish to be of cherry.

CONSTRUCTION: Side sill angles to be in one continuous piece from body corner post to vestibule corner post.

Cross sills are to be joined to the side sill angles and reinforced at truck bearings with 2" X 3" X 5/16" angles.

Seat angles and window rest plates are to be fitted to posts and riveted to same.

Cross sills are to be joined to side sill with gusset plates riveted.

Crown pieces are to be bolted to sills.

Floor is to be fastened to cross sill fillers and crown pieces with screws.

Head pieces are to be fastened to tee iron corner post with screws.

CONSTRUCTION: Vestibule posts, ribs, top plates, hood rims, carlines and window rests to be standard construction.

The body window rests are to be riveted to belt rail and tee posts and all joints covered with No. 26 copper, which is to be soldered to posts to make water tight joints.

Roof boards are to be T. & G. and V joints, to be fastened to carlines with nails, which are to be countersunk, and to be dressed to a smooth even surface, painted and all nail holes puttied. Canvas to be put on while paint on roof is wet, properly stretched and fastened in place with tacks and suitable moulding. A strip of scrim 14-1/2" wide to be glued on top of roof boards at space between rafters. Canvas to be in one piece the full length of car over hoods.

Letter boards are to be in not more than three lengths; to be joined together with splice plates, riveted to tee posts and bent over top sash frame and fastened to same with screws. Canvas moulding is to be fastened with screws from the inside.

Side posts are to be in one continuous piece, extending from side sill to side sill and fastened to same with rivets.

Two pieces of poplar 1-3/8" X 1-5/8" and 11/16" X 1-3/8" to be bolted on each side for fastening roof boards and 3/16" cherry moulding on the bottom to cover joints.

The corner post tees are to extend in one continuous piece from side sill angle to side sill angle and joined to same with rivets and fastened to posts and head pieces with screws

The side panels are to be in not more than three pieces; to be joined together with No. 16 sheet steel, 3-1/2" wide on both sides riveted; to be riveted to side sills, window rest, seat rest angles and to iron posts and bolted and screwed to wood vestibule corner post.

Belt rail to be in one continuous piece from vestibule post to corner post and to be riveted to window rest and steel side plate and bolted to vestibule corner posts.

The dashers shall be in one piece, to be screwed to the crown piece with round head screws and fastened to posts, window rest and ribs with countersunk head screws. Edges shall be covered with 1/8" X 7/8" bevelled edged battens, fastened in place with oval head screws.

Buffer shields to be made of No. 13 sheet steel and installed at each end of car.

The top sash shall be in one continuous length; to be fastened to letter boards with screws; to be dapped over posts and fastened in place with screws. Glass to match up with glass in lower sash.

Rails to be 3/4"; stiles 5/8"

Lower sash 5/8"; standard.

Doors 1-1/16" standard.

All parts of the equipment to be made and put together in the best workmanlike manner.

PLATFORMS AND VESTIBULES: Platforms are to have a folding door on right hand side, to open 29½" in the clear. It is to swing out and against body corner post; to be hung on steel shaft with ball bearings, bolted in place. Hinges joining doors are to be bolted in place. Edge of door and door post to be provided with 1" rubber tubing the full length. Doors are to be operated by air but pull is to be provided so they can be operated by hand if desired.

PLATFORM AND VESTIBULES:

The steps are to be made of 1-1/4" X 10" oak and hung on malleable iron hinges with balance springs. They are to be arranged to work automatically with doors. Builder is to furnish all mechanism for operating all doors, as well as install same. Feralum safety treads 3" wide are to be set in flush with floor and step and bolted in place. Safety tread is to be the full width of door opening and step.

There shall be three front windows in vestibules; single sash arranged to drop into pocket which is to be made of #22 sheet steel. These sashes are to be provided with ratchet bars so they can be kept open at different points. All necessary springs, lifts, etc., to be furnished and installed.

The left hand windows are to be the same as the body windows in all particulars.

All vestibule posts, ribs, rails and plates are to be made of ash or oak.

Letter board to be made of #20 sheet steel to match up with the body letter board.

A dividing rail or stanchion is to be placed on each platform, to be properly supported and to have a stanchion for supporting fare box and opening for motorman; all to be made of 1" pipe.

A wooden gutter laid in white lead to extend across the doorway and one across the three vestibule sashes at each end of car.

BULKHEAD: The bulkhead is to be of the open type, supported on 1" pipe, with cross pipe on line with window rest, to be made of pipe and to be securely fastened to head piece, floor and corner posts.

ROOF: Roof is to be of the arched type, constructed as stated above. The hoods are to be an extension of the roof, to have the necessary carlines, hood rims, top plates, etc., and to be installed in the same manner as the body roof.

BUFFER: To be made of 3" 4# channel iron, full width and around corners. Buffer shield to be made of #13 sheet steel.

DRAW BARS & POCKETS: The draw bar is to be made of 1-1/4" diameter steel and to be 3 ft. long, flattened at each end, and to have hole for 7/8" pin, which is to be fastened to draw bar pocket with a chain. Hooks are to be placed under car for hanging draw bar when not in use.

WINDOWS: There shall be seven (7) windows on each side of car, exclusive of the one on left hand side of vestibule; double sash, top sash stationary, bottom sash arranged to raise 25" in the clear; to be provided with sash lock and rack on right hand side, compression springs on both sides and necessary lift.

Vestibule windows to be as stated above.

GLASS: Glass in lower panel of vestibule doors to be clear wire glass; all other to be D.S.A.A. glass, all to be set in felt and putty and held in place by mouldings fastened with screws.

CURTAINS: Curtains to be provided for all side windows; to be made of Pantasote, pattern K-2, color #86. Curtain Supply Company's short tip protected groove pinch handle fixtures and REX all metal rollers. Curtains to be arranged so they cannot be lowered more than 8-3/4" above window rest. Rollers to be hid in curtain moulding or back of advertising rack.

One Khaki duck curtain to be installed on each bulkhead to keep light from motorman, arranged to slide on a rod at the top, enclosing him at the rear and right hand side and to be folded back against body corner post when not in use.

ADVERTISING RACK: To be made of No. 28 galvanized iron, to be fastened in place with screws arranged for 11" cards, with wood mouldings top and bottom.

FINISH: All doors, sash, mouldings, etc to be made of cherry.

TRIMMINGS: All trimmings to be made of bronze.

FOOT GONGS: One 12" Brill Dedenda foot gong to be placed under each platform.

ELECTRIC BELLS: "Faraday" or "Consolidated" system of bells to be used. Resistance unit to be placed in box on platform. Fuse box to be placed in cabinet on platform. Push buttons to be located at each side post at such a height that a seated passenger will have to rise to operate same; also button on each platform. One buzzer to be located on each platform. All bell wiring to be done with No. 16 rubber covered wire and no staples used. Wire to be concealed under wood mouldings.

HEATERS: Builder to furnish and install eight (8) truss plank electric heaters, with the necessary switches, cut outs, etc. Heaters to be wired four to a circuit. Heater wires to be run in conduit.

WINDOW GUARDS: Five bar window guards to be placed at all side windows, to be of the hinged type and arranged to drop. Guards to be made of iron bars. Brackets and hinges to be made of malleable iron. Guards to be in two sections at each side of car.

VENTILATORS: Eight (8) Brill exhaust ventilators to be placed in roof and to be provided with ceiling register with movable shutter.

SEATS: There are to be seven (7) Brill "WAYLO" type reversible cross seats, hinged cushion, on each side of car. Seats are to be made of steel pressings, cherry wood slats. They are to be bolted to floor and seat rest angle. Cushion to be 16 $\frac{3}{4}$ " wide and 30" long. Back to be 16" wide and 29-1/8" long. They are to be set out from the wall 2 $\frac{7}{8}$ "; to be provided with bronze grab handles.

A seat of the same material is to be placed on each platform, to be hinged and to be arranged to fold up when not in use.

One motorman's seat is to be placed on each platform of same design as interior seats, except arranged with a higher cushion which raises and lowers when the seat back is reversed.

Minimum height of cushion when occupied by passengers 19-3/8 ins.

Maximum height of cushion when occupied by motorman 20-3/4 ins.

HEADLIGHT: One Crouse Hinds incandescent headlight is to be placed in each dasher.

GRAB HANDLES & DIVIDING RAILS: Grab handles of pipe to be placed on platforms on each side of door opening and fastened in place with bolts and screws.

FARE BOX & REGISTER: Fare box to be furnished by Purchaser and installed by Builder.

Foot operated register mechanism to be furnished and installed by Builder.

Register to be furnished by Purchaser and installed by Builder.

TROLLEY CATCHERS: Ohio Brass Company's or Keystone Trolley catcher to be furnished and installed by Builder above headlight on each end of car.

TROLLEY BOARDS: Trolley boards 1-1/8" X 5" yellow pine extending from corner post to corner post, to be supported on 1 $\frac{1}{4}$ " oak or ash ribs. Central portion to be raised 7-1/8" above the trolley boards and constructed of 1-1/8" X 6" longitudinals (two) and 1 $\frac{1}{2}$ " X 6" uprights (4) braced with 1 $\frac{1}{2}$ " X 1/4" plates (two). Total height from top of roof 9-3/8".

Standard roof mats, grab handles, motorman's steps and trolley hooks to be furnished and installed by Builder on diagonal corners of car. Two trolley bases and poles per car to be provided by Builder and trolley pole to be 13 ft. long.

DESTINATION SIGNS: One illuminated sign of latest type to be furnished and installed by Builder over right hand vestibule window at each end of car.

SAND BOXES: Four sand boxes to be placed under seats, two at each end of car; to be made of galvanized iron; to have Ohio Brass Co's sanding valves. Hose, pipe, etc. to be furnished and installed by Builder.

FENDERS: H. B. type of life guard to be furnished and installed by Builder, to be their standard wheel guard type, at each end of car.

HAND BRAKES: One brake staff made of steel shaft to be installed on each platform; to have the necessary ratchet wheel, dog, and floor plate at bottom and 12" standard drop handle on top, which is to be made of malleable iron. Connections to truck levers to be standard.

AIR BRAKES: Air brakes and safety equipment to be furnished and installed by the Builder to the satisfaction of the Air Brake Manufacturer and the Purchaser. Builder will furnish all pipe, fittings, levers, rods and brackets. As far as possible all air brake pipes to be installed inside of car. Builder will furnish and install all pipe, fittings and brackets for the operation of brakes, doors, controller handles and circuit breakers. Pipes to be hammered and blown out before connecting to valves.

LIGHT WIRING: Light wiring and fixtures to be furnished and installed by Builder. Builder shall furnish and install metal shades for keeping vestibule lights from bothering the motorman. Light wiring diagram will be furnished by Builder to Purchaser for approval. Wires to be installed in wood mouldings.

Six metal shades to be provided per car, two at each end of car over door lights and one over light at each end of car inside of bulkhead, on door side.

TAIL & MARKER LIGHTS: Two 4" semaphore lenses shall be provided at each end of car, and to have slide for three different colored glasses and rack for holding same; to be furnished and installed by Builder.

ELECTRICAL EQUIPMENT: Two motor equipment with K-63 double end control to be furnished and installed by Builder. Equipment to include solid gears, pressed on axles without keys; pinions; gear cases; axle linings; axle collars; circuit breaker; lightning arrester; trolley rheostat; cables; lighting material and fixtures and all necessary switches and attachments to make equipments complete. Builder to install equipment in accordance with best practice and to furnish and install all necessary junction boxes, hangers, and conduit for cables. All motor and control cables to be installed in conduit.

PAINTING: Cars to be painted in accordance with the Brill standard enamel system. Purchaser will furnish complete data including numbering, lettering and shades to be used.

MISCELLANEOUS: All of this equipment to be as light as possible to do the work; the material will be the best the market affords and workmanship will be first class in every respect.

DELIVERY: Cars to be delivered F. O. B. Car Builder's works and cars to be covered with canvas for shipment and motor traps to be secured on the inside and all doors fastened. Purchaser to return canvas cover to Builder.

TRUCKS: Brill Special Safety Car Truck, No. 79 E-1 with friction bearings. Wheel base 8 ft. 0"; track gauge and wheel gauge to suit conditions. Wheels cast chilled charcoal iron 24" in diameter; tread 2½" wide; flange 5/8" deep and 1" thick.

Axles to be of hammered steel; 3" X 6" journal; 3-15/16" in diameter at wheel seat; 4" at gear seat; 3 3/4" in diameter at motor bearing; 48" between wheel hubs.

Brakes to be standard; levers to be of steel; with case hardened bushings; brake rods to be B.B. double refined iron. All parts of the truck to be made as light as possible and guaranteed to be strong enough to handle car with maximum passenger load of 90 passengers.

Car Builder to furnish and install 1/4" rubber cloth or leather belting between body and truck connections.

SUPPLEMENT TO STANDARD SPECIFICATION #100.

Purchaser has the option of including the following SPECIAL-TIES at the prices given for each.

HEATERS: Standard Specification includes the supply of eight (8) electric double coil truss plank heaters. This heating equipment has been found insufficient in the colder climates and in such cases four (4) additional heaters have been added to the standard equipment. The additional cost for the extra complement of heaters will be \$30.00 per car and the additional four heaters add approximately 60 lbs. to the weight of car.

AGASOTE WAINSCOATING: For the reasons set forth under "HEATERS", where the extra complement of heaters are required, we recommend the inside side wall of car lined with Agasote, 1/4 inch thick located 1/2 inch away from side wall, extending from seat rail angles to underside of window sill capping. Additional cost \$25.00 per car and this agasote wainscoating adds 125 pounds of weight to the car.

HEADLINING: The Standard car is without headlining, having the underside of roof boards brought up in white enamel finish. If agasote headlining is required, the additional cost will be \$50.00 per car and this adds approximately 165 pounds to weight of car.

FLOORING: The Standard car includes single thickness of yellow pine floor, the centre or that portion in aisle within the body of grooved maple. If double floor is desired under cross seats with regulation floor mat strips of maple in aisle space, the additional cost will be \$40.00 per car and the approximate additional weight will be 200 pounds per car.

If floor strips only are required through centre of car, the additional cost will be \$10.00 per car.

WHEELS: The Standard Specification includes cast iron wheels. Where rolled steel wheels are desired, they can be supplied at an additional cost of \$60.00 per car. We carry in stock rolled steel wheels in 24 or 26 inch diameter with 2-1/2 inch or 3 inch tread and 5/8 inch by 1 inch flange.





