

5 December 2006
Rev. 22 Dec.
Rev. 13 Jan. 2007

Atlantic Shore Line Railway Locomotive 100
Structural details and changes observed 30 Nov.-13 2006 to Jan. 2007

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Still preliminary and more data can be added.

The following list is a summary of the changes that were observed in 100 and its made 102. (101 was converted into a box motor in 1908). At that time, 101's cab went to 102 making the double-cab with which it spent the remainder of its days. Was it Yankee frugality, not wanting to waste anything or was there a need for more room in the cab? As steeple cabs go, even the single cab had more room than something like our no. 300 or others that I have observed. Would they have done it to 100 if they had another steeple cab?

Anyway, it appears that at that same time 102 lost its metal hoods and had the wooden-topped type as 100 currently has (albeit much rebuilt). We believe 100 was converted at the same time. Both 100 & 102 retained their "ATLANTIC SHORE LINE RAILWAY" and Laconia Car Company logo for some time, at least until 1912 for 102. At that time a simpler paint scheme was adopted. Unfortunately we have only the two photos of 100 with the lettering: the famous 1907 view in the mill and one shortly thereafter (blurry) on a siding near a tip-dump car. All other photos show it only with '100', sometimes in gold and others white.

We have many photos of both 100 and 102 and some of 101 as an express motor but none as a locomotive.

However we would greatly welcome any more with the full lettering along the sills.

Cab Roof

Outside

Arch at outside ends (2) bent wood, 1 1/8 x 1 1/2 in.

Several rotted sections.

Roof boards – 13/16 in. thick. Beveled edges. Some of the wider pieces have a V-groove down the middle to keep the grooves as seen inside, approximately the same width.

Various widths: e.g. 4 1/4, 3 3/8, 4 1/8, 4 3/4 in., etc.

Roof canvas very light, probably no. 12. completely dried out and easily torn, largely coming off anyway.

Inside

Ribs (carlines) – There are 5 ribs, no. 1, 3 and 5 are solid wood. "Dutchman" of 3/4 in. of pine (?) nailed to each side. Covers 36 in. but patches are not continuous length so not very strong.

No. 2 & 4 are compound with steel reinforcing bolted to one side

Roof Boards – beveled inside but still appear to have some variations of width. Replacement of sheathing 4 strips wide and two ribs long. Crudely done. Looks like STM.

Possible stove pipe area – This has been patched over, probably by STM. Over 'bay' 5 (window by right side door) roof boards no. 2, 3, 4,5 from edge have been replaced.

Paint scheme

White (must be STM-applied) Phil Morse noted white paint dripped on hand wheel.

3/4 of ceiling area done (except for no. 2 end, left corner). Covered fascia board where next to ceiling area that was done.

Gray in areas not done by STM-only roof boards and carlines.

Cab outside

Window sill 'bay 5'. Cut and replacement 26 in. long, pine.

Wainscot across fronts. This was always protected so was not ever painted except for about 2 in. at the top of the no. 1 end. This was a light olive gray/green. This may have been an early primer. 13/16 in. thick. Various widths, tongue-and-groove. Beveled edges. Fir or SYP.

No 1. end, face width "rt" to 'left':

1 ½ (cut off), 2 7/16, 2 7/16, 2 3/8, 2 3/8, 3 5/16, 3 5/16, 2 7/16, 2 3/8, 2 3/8, 3 3/8, 2 7/16, 2 5/16, 2 ½, 2 3/8, 2 5/8, 2 9/16, 2 1/8, 2 1/8, 2 3/8, 2 5/16, 2 3/8, 2 5/8, 2 ½, 2 9/16, 2 ½, 2 3/8, 2 3/8, 2 3/8, 2 5/16, 2 5/8, 2 11/16, 2 5/8, 2 11/16, 2 5/8, 2 9/16, 2 (cut off-no groove)

Similar variation on no. 2 end. Narrowest 2 in., widest 2 11/16.

Side wainscoting, some minor variation—hard to measure because of many paint layers.

Portable headlight mounting bar under 'left' front window inside hood

Holes for original headlight wires which was mounted on top of hood, close to window. (No wires remaining but some copper clips run along front of wainscot.

There are other near-vertical holes through wainscot near the bottom which must have carried wires down to below floor.

Cab inside

Wainscot by right-hand door (bay 5) – Was stove area. Lower area of wainscot in this area is charred.

Lloyd and Norman found coal in window pocket area. Screw holes in vertical line on either side of stove area, (Separated by ___ in.) probably for wood screws to hold heat shield. One vertical piece of unpainted crude pine strip (¾ x 2 in.) nailed to wainscot on each side of this 'bay'. Function?

Several small copper wire staples near door frame.

Corner by rt. side door Wire staples coming down corner from window ledge level to floor. These are original but no wire.

Wainscot bay 4. Two extra holes probably for early governor wires.

Cab floor – ceramic tube and wire through floor and rotted nailer, near governor. Attached to ground under car.

Paint scheme

Last YUCo paint appears to be maroon, on fascia boards, window posts and all other cab wood except headlining. Hard to see what original or previous colors are but cream and/or gray show. Good sample of maroon under former round switches on window post fascia.

Electric wiring and cab equipment

Electrical equipment was labeled with rectangular embossed tags, lettering on black background. *e.g.* Air Compressor, Air Compressor fuse, Main Switch, etc. Some tags missing. Original round switch on left side post originally had tag. Same switch on other side did not.

No. 1 controller had been stolen at Terminal. Wiring cut at floorline. Did not interfere with operation of locomotive.

Original K-28 controllers – marks of the bases and the two mounting holes show in the floor.

Electric heaters (one at each end) – rectangular in steel case. Resistance type. Not original. Crude sheet metal piece behind as heat shield. Two wires come out of each, going below floor but no switch in evidence and we could not find where the wires went. Probably wired in series with each other.

Circuit breakers- GE type MR. Power comes directly from trolley base to each breaker. Probably original breakers, but wire from no. 2 end down post between windows 6 and 7 probably

not original. Was re-stapled using original copper straps but larger-headed (shingle) nails. Possible change when car had two poles.

Main feed wire from roof

No. 1 end. One auxiliary feed wire, tapped from main wire, runs to right, cut off, folded back and taped off.

- Second wire now used to run to compressor fuse; then switch.
- 3rd to headlight fuse then resistor

Present cab light(s) circuit is fed from combined switch/fuse on no. 1 end very near roof, center front over window.

Cut-off wire from outside. Not possible to tell function.

No. 1 end trolley feed down window post to, thence under floor to controller, is probably original. Has original-looking nails and copper straps. No. old holes.

Traces of auxiliary circuit from now-missing switch (no. 1 end over windows 1 & 10 (+ door).

Evidence of moderately large rectangular switch near main breaker no. 2 end. Tag now missing. (May have been moved to other area.) Similarly on no. 2 end. Evidence of round switches on post fascia between windows 4 & 5 and 9 and 10. There is evidence of a tag having been on left side but none on rt. Two holes going through post cover. On rt. side wire from compressor switch now comes along fascia from over window 4 (no. 2 end), goes through fascia and down inside of post, coming out of wainscot at governor.

Ceramic tubes – No. 1 end- two white tubes remain (no wires) separated by about 1 ½ in.

Located on post to right of no. 1 sash about 1 ft above floor.

Ceramic tubes, long vacated through post between no. 6 & 7 sash.

Cabinet – Coming through top of cabinet are four ½ in. square head bolts, projecting inside about 2 in. between wood and washer, forming rectangle 4 ½ in. x 15 in. Hinged front door lined with heat shield, evidence of some heat shield paper in back, up about 12 in. from bottom. (Cabinet has no floor but legs rest on floor. (There is a clear print in the flooring.) Between rounded corner (ash) front frame members at floor, are two 2 x 2 in. pieces about 10 in. long screwed to the floor to separate cabinet legs. (perpendicular to wall) Cabinet has horizontal wainscot on side toward door. The bottom of the other side, below the adjacent seat, is open 10 x 14 in. near floor. Was there a resistor in here? Possibly the original arc headlight resistor before it was mounted out in the no. 1 hood?

This cabinet is original because of ash and matching wainscot. Was fastened to floor by many finish nails. Also firmly screwed to wainscot or window and door posts.

Desk on cabinet – add-on. Home made of rough pine. Not fixed to cabinet. Top lifts.

Seat – Later addition. 26 in. ‘long’ x 16 in. deep. Cut from front bench of open car. Actual ‘sitting part’ of the seat is two flat pieces of wood. Original slats long gone. Supported by two turned legs-probably original open car.

Builders plate – Apparently stolen since STM applied white paint in cab. Same type as in 38.

“Laconia Car Company Builders”. Cast bronze. Maroon paint under it now serves as the place marker- somewhat to the left of the no. 1 circuit breaker. There are no traces of its ever having a second.

Vent holes (no. 1 end) outer wainscoting, two per window (6, about 1 in. diam.) Second set inside, about 1 in. higher but same spacing. Chuck Griffith feels these were window defrosters to conduct heat from the traction motor resistors inside. (There are none on the no. 2 end.)

Cab doors

No. 1 (left) hinges had been replaced and moved at some time.

No. 2 (rt.) hinges never moved. Latch plate area rough.

Door retainers, both must have been moved from above door to post beside end window. (Evidence of hole for mounting casting over window.) Why two holes on no. 1 end with three smaller holes below.

Originally mounted above as in Manchester 60 and 38.

Sliding bolt on no. 1 door frame must have been STM

Door knobs and latches are hardware type; probably not the polished bronze that shows up in 1907 photo.

Floor at rt. door. Patch with 1 ½ in. maple. 32 x 16 in. (approx) May have been STM. Maple door sill had plywood shim underneath. Left doorway-flooring deteriorated but no evidence of sill although one shows in 1907 photo.

Other wiring-Old auxiliary ground wires are solid rubber/cotton covered, about no. 10 wire. Not very flexible. Largely supplanted.

Coal stove At present there is no stove and nobody can remember if it was ever in the car since it came to SERY in 1949. Lumps of coal were found inside the wall next to where it was located and the wainscot is charred slightly in the same area. There are two vertical pine (latter-day) strips on either side of the stove location, crudely nailed in place. No sign of coal bin.

The stove can be seen in two photos, one taken from each door. It is a very small pot-belly type about 24 in. tall. Was it removed when the electric heaters were added?

Decking

Cab floor – Various thicknesses averaging 1 7/8 in. x 88 ½ in. Covers 112 ½ in. including spaces.

Tongue-and-groove.

Must have been laid green because there is an average 3/8 in. between each board. Fastened with two 3 ½ in. common nails per board per sill.

Widths vary thus:

(Groove side) No. 1 end: 7 ¼ 5 ¼ 8 ⅛ 7, 8,8,8, 7,8,8,7 ¼ 7 6 ¼ 5 ¼ 5 ⅝ No. 2 end. (tongue cut off)

Laconia must have been interested in maximum use of wood, not symmetry or uniformity.

Platform from cab out with 1 in. overhang on each side sill and end sill.

107 in. wide covering about 123 in. on each deck, including hood.

Wood walkway on each side of cab likely 1 7/8 in. x 6 in. x 10 ft. (approx.)

Sills

Longitudinal

100 Observed in 1907 photo – left outer sill had already developed crack at least 2/3 length.

102 (1909) crack down middle of sill, similar to 100.

Left outer sill totally replaced by STM about 30-40 years ago by Tom Ford. Also removed no. 1 end sill and pilot. Used spruce 6 x 12 in. Three vertical stay rods notched into sill because it was difficult to lift the rods up through roof. Should have been 5 x 12 in.

Right outer sill. Still partially intact but very much deteriorated. New top spliced on each end

(Fastened with ¾ in. sq-hd. bolts.), very likely by YUCo or ASL:

No. 1 end 3 ¼ x 6 in. x 74 in.

No. 2 end 3 ½ x 6 in. x 138 in.

Not certain why the patch was made 6 in. wide instead of 5 in.

Center section had deteriorated and been supplemented by bolting (c. 5 x 8 in.) timber to inside to support cab. This was probably a fairly early repair. We originally thought it was original because of kind of wood but Tom Hughes spotted it was

totally different color than wood around it—stained with red (possibly traditional ‘Saum’s’ preservative. This was imitated by STM sill replacement on left side, but with 4 x 4 in. .

Tenons: No. 2 end all tenons are intact. There are two on each intermediate sill (6) and one on each side sill. Appear to have been hand-cut originally.

Reinforcing steel plates on each sill over the bolster. Have two $\frac{3}{4}$ in. bolts (some are rods with hex nut on top and double-nutted underneath.

Plates over outer sills (2/bolster) are $\frac{1}{4}$ in. x $6\frac{1}{2}$ x 18 in. Two bolts/plate

Plates over inner sills (6/bolster) are $\frac{3}{4}$ in. x 6 x $17\frac{1}{2}$ in. Two bolts/plate

Center plate on no. 1 end had further steel reinforcing plate at kingpin.

Nuts/bolt heads rest on steel plates and countersunk into underside of decking.

Plates are undoubtedly recent (YUCo) since they are somewhat crudely cut with a torch.

May have not have been any there originally but added as reinforcement. Also because they are 6 in. wide; not 5 in.)

Latter-day (probably spruce) nailing strips about 2 in. sq. x 18 in. fastened to some sills because steel reinforcing plates did not permit nails.

End sills, appear to have remained about the same.

Pilot support beam (no. 2 end) likely to have been made from a tie. It was creosoted and found in very good condition on disassembly. Some cracks in the right end probably from shifting car while end sill was down on the truck frame.

Same with coupler backing filler (train line support beam)

Pilots

Original 16 ‘teeth’ plus center and ends

Original 14 ‘teeth’ plus ends (no center ‘tooth’)

Bottom Horizontal board to which teeth are fastened, does not extend beyond teeth, later version, twice as wide (est. 12 in. with nearly 6 in. out beyond ‘teeth’.

All stock for the pilots is 2 in. oak. Top frame and bottom members 2 x 6 in.

Only one top pilot board still extant. (2 x 6 x 33. in.)

We are missing one heavy steel bracket for no. 1 end

Bottom angle for corner of each pilot held up by strap bolts.

Through-rods (2) at couplers. 1 $\frac{1}{4}$ - thread (standard) All have suffered and have been welded.

Truss rods – (2) 16-in. offset. Saddles were originally cast iron with pin that extended up into block at the needle beams. Only one remains. Three have been replaced with a 6-in. length of 1 $\frac{1}{2}$ x 3 in. channel, cut roughly with a torch.

Bolsters & kingpins

No. 1 end: 1 $\frac{3}{4}$ x $27\frac{1}{2}$ in. 2 $\frac{1}{2}$ in. button head, keyway but not used. May not have been able to reach through bottom of truck.

No. 2 end: 1 $\frac{3}{4}$ x 35 in. 3 $\frac{3}{4}$ welded hex welded on to rod, no provision for key

Ground connections – are by means of ordinary steel bolts through the bottom of the bolster. Various ones have been added through the years. (Much electrolytic corrosion around them on the bolster steel.)

Headlight bracket (see also below)

100 (1907 view) On hood, close to center window, on ‘wedge’ platform with plug in middle of platform. May have been hard to reach both from front and/or inside.

102 (1906-1908) On bracket, no ‘wedge’ toward front of rounded hood, original cab.

102 (1909 & 1912-with doubled cab) On bracket close to window, no 'wedge' underneath. Plug on window post to right (from light) of light. (In photo window is down so access may be by opening window and reaching out.) With reconstructed 'angled' end hood.

102 (after early days) Bracket on end of platform as is 100.

100 (est. 1915-20) Rebuilt hood, bracket not visible on hood and we would have to ask the man standing in front of the bracket to move to see if it's behind him at the front of the deck as in latter days.

100 (all later photos) show bracket at end of platforms (socket not visible but was located in a block to right of bracket).

There are traces of original wiring in the upper locations in the front wainscot of the cab.

Hoods

As first built, hoods were covered with light sheet end-one piece extending from wood below front sash down to down to deck with radius at bend. This also folded over side panel about 3 in. Hoods were probably wood-framed.

Hood top/front does not appear that it could be raised because of the way the grab rails are bolted to it. . Ends are wood wainscot same as cab side.

Headlight on 100 (1906-1908) (no. 1 end) on small wedge-shaped 'platform' (flat top) in front of middle window with socket in center front of platform. Used the same metal frame that still exists.

On car 102, (no. 2 end) original period, frame directly on slanted metal top, frame constructed to fit tilt of hood. Socket looks to be on nearby window post. (Must have been moved or design inconsistent from 100.)

Because of mounting of grab handles, original hood could not be raised without unbolting them.

Current hoods:

- No. 1 end, very likely made by Laconia but, because of its angled front and no indication of modifications, very likely was not the original re-worked. Ash frame, mortise-and-tenon joints, held together with flat-head iron screws, as would have been done by the car builder. Hard-to-decipher blue lumber crayon on right side framing against the cab. Very likely ASL asked Laconia to make new ones and installed them in (original) Town House barn. Wainscot is about 3 1/16 in. face with beveled edges, same as on cab.
- No. 2 end, likely home-built by YUCo. Soft wood frame, held together with nailed joints, no mortise-and-tenons. All butt joints. Wainscot wider with bead on edge and center. Slightly different dimensions from no. 1.
- Tops on both are 3/4 in. pine, nailed with points bent over longitudinal boards. Good possibility they were made by STM. SERy covered with black roofing paper (with stones).
- Likely they hinged wood-type were covered with canvas after metal was discarded. Evidence: row of tacks in no. 2 end front wainscot with traces of canvas under them.

Speculation on why metal hoods were abandoned so soon:

Better access was needed to the traction motor resistors which could not be gained via the fixed hood. May also have retained too much heat. Possibility of shock from having the headlight access on the metal sheathing.

It appears that there was also sheet metal all around the cab and covering the entire decks, being bent down about 2 in. over the edge. The metal is indented and somewhat bent where it has been nailed. The metal may have proved slippery and dangerous.

For whatever reason, as attractive as they may be, they had no more than a two-year life so are not significant in the locomotive's life to replicate.

Latter-day hoods

We can speculate, I believe quite accurately, that the change of hoods was done at the same time 101 was converted to the box motor, 1908, giving up its cab to 102, which then had the double-length. Unfortunately we have no photos of 100 with ATLANTIC SHORE LINE RAILWAY on the sill except for the 1907 one and one with a small work car on a siding—fuzzy image.

Side doors:

- 100 (1940s Mill Sq.) No. 2 end ‘left’ has holes; no. 1 end left—no holes.
- 1949 (at STM) no. 2 end. rt. has holes; no. 1 end, rt. has no holes.

Grab handles

These appear in various places over the years.

1907 photo (100): One short (ca 18 in.) bolted across the front of each corner (4); One on each side of each hood, bolted to the front of each corner post and down to the top of the straight part of the hood before it curves down (about 4 ft.) (4) One on each side of the doorway and under the side windows (still in this configuration)

1907 photo (102) none on no. 2 hood. All others as above.

1909 photo (102) later type hoods, double-cab. Long grab handle extending across front. Those on hoods now extended from new long one on full length (5 sash) on side of cab, bent down to end of hood but bolted from side; not top.

100 (teens or 20s view-with tank car) No. 1 end left hood, slanted about 45° from about 10 in. in from front of hood (bolted through side) up to door post about 4 ft. up. None on other side Short ones still seem to be on front.

100 (1940) Two across front of deck about 3 ft. long. Remain this way today.

No. 2 end only one on cab ‘left’. None showing on no. 1 end, cab. “right”.

100 later No. 1 end, cab rt. Shorter one on hood lid, ca 18 in. long. Bolted from top.

100 (1940s, Mill Sq.) No. 2 end, cab right.

Signal light brackets

100 & 102 original configuration, none showing.

102-double-cab. Two, about 1 ft. separation on post left of front center window.

100 later days No. 1 end, on side of door post about 1 ft. from top of door.

100 (1949 on trailer) Bracket on front of right corner post. None show on no. 2 end.

100 (1950) No. 2 end left, no. 1 end. rt. .

100 currently. Bracket on both door posts inside cab about 12 in. down. Plus on motorman’s front door post.

Trolley catcher(s)

1907 view-none used (no visible socket)

“Tank car” view – no socket can be seen. Rope thrown in through a rear window.

None on any Sanford views

One small (Wilson type) mounted in 1949 view at SERy

Later, for whatever reason, large base sockets (Ohio Brass type) were mounted on end sills by STM but should not be used. Current-rope wear marks in upper part of center window opening.

Sand hoppers

Fairly late addition. Do not appear until later Sanford views. (red-and-white scheme in front of carhouse). One sander on controller side of cabs near front of deck. Hopper fabricated out of light sheet metal, joints welded. Supported by two triangular blocks nailed to deck. Covered with wood box—not found.

Earlier photos show large wooden barrels on each end of the car. After discussion with Leo Sullivan we decided these must have been what they had because otherwise, uncertain what kind of sander, if any was with locomotive originally.

Currently both hoppers and their supporting triangular blocks exist but the covering boxes do not. Last seen at Terminal.

Grid resistors

Currently 6 banks of Westinghouse 3-point, 8-in. cast-iron grid plates mounted in sheet-iron frames.

These were under the hood on the no. 1 end and were lag-screwed on two rough-sawn cross-wise planks about 2 in. thick. (one plank is about 3 in. wide and the other about 6 in.) These are obviously a later addition, as lag screw holes also appear in the decking below them.

They must have been raised the 2 in. in order to facilitate running the wires which come up through the floor. Connections are on the bottom side.

Because of their excellent condition, later design and Westinghouse manufacture (100 is a General Electric car), these are not the original type. They were very likely General Electric CG type.

There is a surprisingly small amount of heat shielding on the wood framework—none on the exposed wainscoting on the cab front or inside of the hood. The photos show 100 running often with the side door(s) of the no. 1 hood open.

Bells and whistles

Appear to be unchanged although whistles (10-in. trombone type) are missing. The whistles were on it for the Terminal operation.

100 (c. 1955) has whistle

Currently both missing

Trolley Poles

100 (1907 view) one pole

100 (1940s in Mill sq.) 2 poles

100 (early1950s) two poles.

100 (1954 and at Terminal) one pole

100 currently-one pole

Coal stove and smoke jack

100 (1907 view) none showing but photo may obscure

102 (1909-double-cab) Smoke jack middle of right. Side.

100 in Mill Sq. late1940s smoke jack on right. Pot-belly stove showing in door.

100 (1949 on trailer) still has smoke jack

100 (1954 and at Terminal) no smoke jack.

100 currently-smoke jack missing and roof boards replaced in that location.

100 currently, stove missing. O.R. Cummings does not remember it.

Wheels

Wide (railroad) tread with good flanges. Tread starting to wear slightly concave but it did stay on the track.

100 (1907 view) hard to see if solid or spoked

100 (teens-20s? with tank car. Definitely have 'curved' spokes as in 108

100 (1949 view) Solid steel wheels

100 (currently) Solid steel wheels that have cast ribs in them. These ribs are viewed easier from back

Lettering and numbering

- 100 (1907 view) White letters ATLANTIC SHORE LINE RAILWAY + Laconia Car Co. Logo along sills.
- 100 (early view on siding) Ditto
- 102 (1907-08-single-cab.) Ditto
- 102 (1909 – double-cab). Ditto-fading
- 100 (teens & 20s with tank car. Only ‘100’ may be white or gold
- 100 (1940) ‘100’ white
- 100 (1940s in Mill Sq.) ‘100’ probably in gold, sash probably reddish, cab and sills green
- 100 (1949 on trailer) “100” looks black” Sash look lighter (maroon?)

Other paint comments

- Body exterior The Yk. County Freight treatise says: an early picture ‘suggests’ 100 was green with white trim. At this point, until an analysis has been made, we don’t know if it’s a ‘pullman’, forest or olive green. It’s dark in the photo. We then have to determine exactly which color era we’re going to replicate. The maroon and cream was only on for a brief time.
- 100 (1940) Mill sq. Aluminum pole pockets, coupler, ladder
- 100 (1947) Maroon wainscot, hood sides, white (or cream) sills, pilots, sand boxes, windows, frames and doors.
- 100 latter day as it is now.

Trucks – Originally black. This is still on some parts of the frame. The current gray was very likely added by SERy. (This is flaking off very rapidly.) Most of components are just rusty.

Motors – What little paint remains is a tarry black.

Air Compressor

- 100 (1907 view) Cradle-mounted under ‘left’ side of body behind ladder. Early GE type. Uncertain of the type.
- 102 (1907 view) ditto
- 102 (1909) ditto
- 102 (1912) ditto
- 100 (teens & 20s-with tank car) ditto
- 100 (1940s “red & cream”) Current GE CP30 under no. 2 end hood
- 100 Currently GE CP30

Why then two hoods? Leo Sullivan has suggested there might have been two compressors—one ‘upstairs’ in the hood and the other below. He questioned the capacity of the older compressor to furnish enough air for a train, so two might have been needed. It is difficult to tell from holes in the decking under the no. 1 hood, if a different compressor was ever mounted there.

Trucks

- Equalizer springs (8) – Coil springs – Outer (heavy) and inner (lighter) All there, none broken. Bottoms of some have corroded by where they sat in the spring pocket. All sat on round wood shims at bottom of spring cup.
- Bolster springs (elliptical) appear to have wood shims underneath, possibly added. Some are corroded and may require new leaves.
- Motors and accessories appear to be original.
- Gears - No. 1 axle has split gear (probably original) This axle is the only A.S.L. All others (3) are solid. All in excellent shape. 71 teeth
- Pinions- All in very good condition All 15-tooth But three different manufacturers.
1. 2345 Nuttall (Westinghouse) 121 B. P. F

2. 28387H 1-17 (Jan. 1917) 6764 GE Slightly worn
3. 8385 AUG 25 TOOL STEEL (Gear Company) CINTI (Cincinnati)
4. 28387M223-2269 Made in USA GE

Gear cases heavy cast steel. All in excellent condition but some have been welded.

Journal box lids fastened with various types of sq-hd. bolts. Coil springs around the bolts are of various dimensions.

Journal waste – All bearings are waste packed. Probably is all wool but hard to tell. Most is in lumps that have turned hard and very black.

Axles – All have been turned at various times:

1. A.S.RY. 3007 C.T.K. Journal 3.672 in. x 7 in.
2. Y.U.CO. 11-24-23 3010 Journals 3.728 and 3.674 x 7 in.
3. N15339 7.12.24 Y.U.CO. 6 CAMBRIA OH 23 SPECIAL 3.633 and 3.700 x 7 1/8 in and 7 1/16 in.
4. 32265 CARNAGIE 3 26 TOUGHENED 2016 3102 3.529 and 3.515 x 7 in. 8.8.27 Y.U.CO.

Journal bearings (brasses) - All were originally babbitted but most has worn off.

Several types: 3 3/4 x 7 in. ARA and AARD 45 National and some unmarked

Motor wiring

Originally suspended above motors at point of entry of wires into case by 1 1/4 in. leather straps. All replaced by cotton sash cord.

Motor connectors are brass tube type (Sherman) with steel (iron?) set screws. These have rusted badly.

No. 4 motor field jumper (around axle) connector screws largely rusted away.

Many splices in under-body wiring. All type RHW cotton-braid covered.

Motors

Very likely the original ones GE 80 Form A - Some lead wires have been changed so there is rubber-covered and cotton-rubber insulation. Field coils are set on canvas pads which are not original. Brushes are various sizes- Brushholders are meant to take two brushes 1/2 x 1 7/8 x 2 1/4 . wide-some have that while others have a single 4 in. (est.) brush “block”. Some appear to have been ‘home-made’.

Armature bearings – Extremely badly worn-some over 1/4 in. where 0.015 or less is the recommended clearance. On motor no. 4, to prevent the armature from bottoming on the pole pieces, two 1/8 in. steel shims were placed between the halves of the case to give additional clearance. It is possible that YUCo once did their own babbitting and, toward the end, that person (blacksmith or machinist) had left the company.

Bolts – Most appear to be original and some very likely have never been loosened until now. All those - 1 1/8 x 5 1/2 in. square-head with shoulder are original. Heavy hex nuts and split lock washers. Over time some were replaced with hex-head. At least 13 had heads that became badly corroded because of their location in pockets in the motor casing—corroded to the point that STM has just made new heads.

Brushholders – Two basic types:

1. Cast bronze with wire springs. Some may be original Non-renewable brush box. (8)
2. Malleable iron with renewable brass brush box. Clock springs. Two steel springs & one with phosphor bronze (3)

All in generally good shape, some have holes burned in brush box but springs are all good. One has missing copper ‘hammer’ that pushes on brush. Will have to reproduce.