



STACK TALK

SEPTEMBER 2014

The Official News Letter of the Adobe Mountain Railroad
Phoenix Arizona, Operated by the Maricopa Live Steamers
Railroad Heritage Preservation Society,



Here we go again. Thanks to our monsoon rains just 2000 ft. of track picked up and floated away at Pardee Point. In addition we have about 10,000 ft. of ballast missing all over the track. The rain we had did a lot of damage to the ballast. Make sure you look at the status board before you leave the station- which track is open.

The rains have also brought back the weeds. Please look all around your container and get rid of the weeds. September 14 is the start of the run season which means that the safety refresher course for pulling the public will be conducted at Sept. 13 general membership meeting .

Please come and get signed off so you can help pull the public. It will be soon after the general meeting is over. 11 yards of cement was poured all over the park Aug. 30. The fire ban will end Aug. 29. Despite the rain progress is still being made. Bill Lowe is wearing out drill motors as fast as he can build switches and the same for Joe Schnyder and Bob Douglas wearing out picks and shovels putting in bridges and changing rails. Jim Brown is just about done with the signal bridge on the east end of the loading station. There are a ton of people that put their heart and soul into this park that I can't possibly mention all of you in this letter. Thank you all for the hard work and dedication to this club.

Perry McCully

Hi everyone, the 2014 Fall meet is rapidly approaching. We are looking forward to another great meet, and hopefully some good (and cooler) weather as well. As you can see in the flyer, there are a couple of changes and new items this year. We have made some small changes to the menu that we hope will be enjoyed. We are also adding an event in the afternoons, for when it still does get a little warmer, where you can spend some time in the shade of one of our patios or pavilions, and enjoy forum discussions on different topics, including, but not limited to things such as: Steam Locomotive Operations; Ops meets – Some things that worked, and some that didn't, with a few fun facts thrown in; a car building how to; and how to automate a railroad.



As you get ready to do your fall cleaning, please remember that we always can use items for our raffle on **Saturday** night. The raffle is a big fund raiser for the club, so the more enticing items are on the table, the better the raffle is going to be. Our pot luck dinner is always a great crowd and a good time. Please bring an appetizer, side dish, or dessert if you can.

All participants are asked to please register for the meet via our [website](#). This allows us to get accurate counts for meals, have name tags for you, and make sure we have emergency contacts for everyone. I look forward to seeing everyone there, and the always growing assortment of locomotives and rolling stock.

John Bergt
2014 Fall Meet Coordinator



**Maintenance crews are hard at work.
On Club Engines.**

Marty Simmon has left the maintenance crew as he resumes his career as a big rig driver. I want to thank him for all his work and dedication over the years.

Hank Gallo



STEAM LOCOMOTIVES CYLINDER DETAILS

Well here we are again and another summer bites the dust, yup, I'm happy!

This time we're going to look at some of the details that are associated with the cylinder, specifically, taper bolts and bushings.

You will have noticed that until the cylinders were cast in one piece and formed part of the frame, that they were cast in halves. Interestingly enough, if we look at the castings carefully we find they are mirror images of each other. Thus one casting can be used for either the right or left side, handy if one of them gets damaged and a replacement is needed.

Now we want to put the two halves together, so we use fitted bolts and then to secure it to the frame and smokebox we use tapered bolts. This is a good explanation found in "Modern Locomotive Construction", by J.G.A. Meyer, 1892

FRAME BOLTS.

230. The bolts which are used for bolting the different parts of the engine to the frames are, by the majority of locomotive builders, made straight, accurately turned to fit reamed holes, and driven home. Other builders make these bolts tapered, generally $\frac{1}{8}$ inch to the foot—that is, in the length of one foot the diameter is increased $\frac{1}{8}$ inch—and turn them to such dimensions as will allow the bolts to enter the reamed holes to within $\frac{1}{4}$ of an inch from the head of the bolt; through this distance of $\frac{1}{4}$ inch the bolts are driven home. We are inclined to believe that the use of tapered bolts is the best practice, as when these bolts become slack, then by turning a small amount off the under side of head, the bolts can again be driven tightly into the holes. We also believe that tapered bolts will hold the parts more firmly together than straight bolts. Bolts which are very long, as those marked *D D* in Figs. 292 and 295, should always be tapered, which we believe to be the best practice.

THE BALDWIN LOCOMOTIVE WORKS
ENGINEERING DEPARTMENT
PHILADELPHIA, PA.

STANDARD PRACTICE
SHEET M-2D
DATE 4-23-45.

BOLTS- STANDARD TAPER BLOCK

SUPERSEDED TRAC 43722
SHEET 15 7/8 IN. SHEET M-81 1/2 IN. APPROVED *R.S.M.C.*

ALL TAPERED BOLTS FOR CONNECTING RODS, FRAMES, CYLINDERS, ETC., ARE TURNED AND FITTED IN BLOCK GAUGES AS SHOWN BELOW.
THE STANDARD TAPER IS $\frac{1}{16}$ IN 12". THE NOMINAL DIAMETER OF BOLT IS THE DIA. OF THREAD ON END OF BOLT = A.

COUNTERSUNK HEAD BOLTS ARE GAUGED IN DIFFERENT BLOCKS FROM THOSE USED FOR HEXAGONAL HEAD BOLTS OF THE SAME DIAMETER.
THE BLOCK GAUGE FOR A COUNTERSUNK BOLT IS MADE SHORTER AT THE LARGER END BY AN AMOUNT EQUAL TO THE THICKNESS OF THE HEAD OF THE BOLT, SO THAT IT WILL BE OF THE SAME DIAMETER AS THE HEXAGONAL HEAD BOLT AT THE SAME DISTANCE FROM THE SURFACE OF THE OBJECT TO WHICH IT IS APPLIED.
THE SAME REAMER IS USED FOR BOTH HEXAGONAL AND COUNTERSUNK HEAD BOLTS OF THE SAME DIAMETER.
WHEN THE BOLTS OF A STUB STRAP ARE THE SAME DIAMETER, BUT DIFFERENT LENGTHS, ALL THE BOLTS ARE FITTED TO THE BLOCK REQUIRED BY THE SHORTEST BOLT.

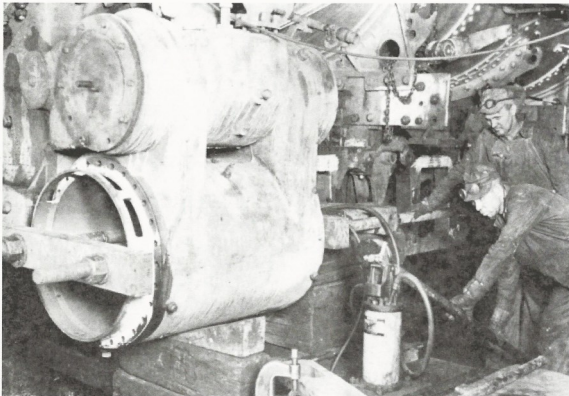
C = A₁ LESS THE AMOUNT OF BOLT TAPER IN A LENGTH EQUAL TO THE THICKNESS OF THE COUNTERSUNK HEAD.

ALL BOLTS OF THE SAME DIAMETER, WITHIN A DETERMINED RANGE ARE FITTED TO THE SAME BLOCK AS FOLLOWS:-

LENGTH OF BOLT - L	A ₁
9" AND UNDER	A + $\frac{3}{64}$
OVER 9" TO 12"	A + $\frac{1}{16}$
12" TO 18"	A + $\frac{3}{32}$
18" TO 24"	A + $\frac{1}{8}$
24" TO 30"	A + $\frac{3}{16}$
30" TO 36"	A + $\frac{1}{4}$

In the early days tapered bolts were driven with a sledge hammer, with the advent of pneumatic hammers things go much better. Try getting one out after it has been in there for 50 years or more-----a chance to learn new words!!

Now we'll look at cylinder and valve bushings (piston valve work here). The bushings are applied to the cylinder and valve bores to provide material for bringing the diameters back to "round" after a period of service. They were also used to change the tractive effort of an engine when modifications were required by the Engineering Dept. This was accomplished by opening out the diameters to a specific dimension. When the bushing thickness falls below a certain point, it is removed and a new one installed. The following page from the BLW Standard Practice shows how liners were designed. This photograph shows the bushing being installed (CP Angus Shop)



THE BALDWIN LOCOMOTIVE WORKS
ENGINEERING DEPARTMENT
PHILADELPHIA, PA.

STANDARD PRACTICE
SHEET 3-9
DATE 7-24-48 5-18-42

CYLINDER BUSHING

SUPERSEDED 12-6-34
3-21-35, 6-10-35, 3-23-35 APPROVED *R.S.M.C.*

BUSHINGS ARE APPLIED TO CAST IRON CYLINDERS, ONLY WHEN SPECIFIED BY CUSTOMER.
CAST STEEL CYLINDERS ARE ALWAYS BUSHED.
BUSHINGS ARE FINISHED ALL OVER.
PRESSURES FOR PRESSED FITS SHOWN ON SHEET ALLOWANCES AND MACHINING SHOWN ON I.F.S. INSTR. 2411-2, PAGES 7, 9, 10.
PATTERNS FOR CAST IRON BUSHINGS ARE MADE 50" LONG REGARDLESS OF DIAMETER, ORDER FINISHED INSIDE AND OUTSIDE DIAMETERS AND FINISHED LENGTH OF BUSHING ON CASTING SHEET.
HUNT SPILLER GUN IRON BUSHINGS ARE ORDERED BY TRACING NUMBER ON PURCHASE SHEET, DIMENSIONS ON TRACING MUST SHOW FINISHED INSIDE AND OUTSIDE DIAMETERS AND ROUGH LENGTH, THE ROUGH LENGTH EQUALS THE FINISHED LENGTH PLUS 2" (FOR CHUCKING). HUNT-SPILLER MFG. CORP. WILL MAKE THE PATTERN.
PORT OPENINGS ARE LAID OUT ON OUTSIDE OF BUSHING, EACH PORT MEASURED FROM CYLINDER CASTING, THE BUSHING IS THEN DRILLED AND APPLIED. PORTS ARE MACHINED IN TO SUIT OPENINGS IN CYLINDER.
METHOD OF MAKING PATTERN SHOWN ON I.F.S. INSTR. 2413-2-B. * OR HUNT-SPILLER PATTERN NUMBER.

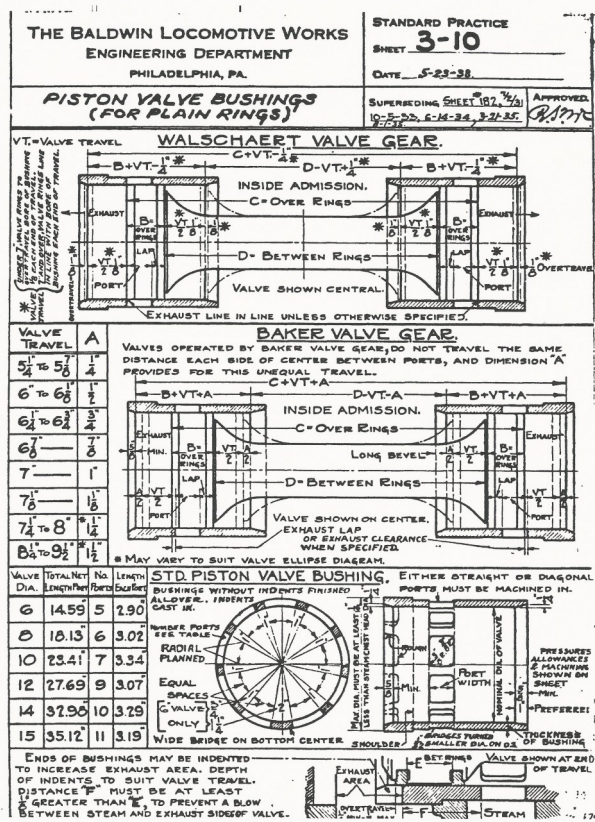
LOCATE PLUGS ON OR NEAR HORIZONTAL CENTER SO THAT THEY ARE NOT IN LINE WITH INDICATOR PLUGS AND END CYLINDER HEAD STUBS.

CYL COCK DRIVING NOT TO CUT INTO RING RUNNING SURFACE. BUSHINGS ARE HELD IN CYLINDER BY TWO TAPERED PLUGS—GENERALLY $\frac{1}{4}$ " PIPE TRAP—FOR TYPES OF PLUG.

D	C	B	A
3	A $\frac{1}{2}$	2	15 7/8 UNDER
1	A $\frac{3}{8}$	5	16 TO 22
5	A $\frac{1}{2}$	4	23 7/8 OVER

* CYLS. INTEGRAL WITH LOCO. BEDS—DRILL $\frac{1}{8}$ " DIA. FOR $\frac{1}{4}$ " PIPE PLUGS.

The same methodology is used regarding valve bushings, again noted by the BLW Standard Practices



With all these drawings and pictures we have expended our allotted space for this trip, so as they say at Lake Woebegone, ——"be will, do good work and stay in touch ———"!

Dave Griner



Cement has been poured in the station for added public safety. Footings for our first and second cantilevered signal bridges were also poured.

Work crews have been out in force repairing track and bridges and re-ballasting the track all over the park.

Much more work will be needed prior to Public Runs and the Fall Meet.



In these pictures, taken near Pardee Point, to the left of the track can be seen the original location of the track before the flood waters lifted and moved the track.



The pictures above taken in the Far Flung Flats area clearly show the large amounts of ballast that has been washed away. Mush damage was also done near Pottsville. The track was repaired in the Pottsville this past week end.



In the pictures below can be seen work progressing on the new Switch Barn. The old Switch barn will become the service area for Club Equipment.





Engineer cards expired on May 31st, so now it is time to take your test

It can be taken online at Maricopalivesteamers.com



Two cantilevered signal bridges are being installed near Theobald. The tracks in this area are close together and there has been some confusion with the ground mounted signals as to which track they were for so it was decided to go to overhead signals.

