

handle the standard sizes of plates and shapes used in boiler and tank practice. This studied arrangement is especially apparent around the group of machines 144, 143 and 162, where standard boiler plates may be readily flanged, rolled, punched or sheared without interference.

In addition to the equipment enumerated in the foregoing for both locomotive and boiler shops, there is considerable equipment of a miscellaneous nature. This includes such items as 6 each of 50, 40, 35 and 25-ton jacks, 90 bench vises, 18 heavy trucks, taps, dies, etc., chisels, pinch bars, sledges, box wrenches, surface blocks and oil burners.

THE FORGE SHOP is the first building north of the locomotive shop building as indicated in fig. 1. The interior arrangement of the tools and machines in this building is clearly shown in fig. 3. It is 260 by 100 ft., spanned by a single truss providing unhampered space for the location of the equipment.

The front of the building is to the left in fig. 3. On entering, the spring department is to the right in the southwest corner of the building. It is equipped to handle spring work for both locomotive and car departments, and has the following machines:

F43 Hydraulic squeezer.

Their locations are indicated in the illustration. F35 is a hydraulic bulldozer, with accompanying furnace, and F39 is a 3½-in. forging machine. The balance of large equipment is:

F38 Cutting-off and centering machine.

F42 Emery grinder.

F41 1½-in. Bolt machine.

F40 Hydraulic bar shear.

The balance of the floor space is for the storage of stock, dies, etc.

A small industrial track with necessary turntables, covers the building. At the front there is a foreman's office, while in a small two-story addition from the south side are the locker and toilet rooms.

The steam to the hammers, exhaust, oil and hydraulic piping are carried in concrete ducts through the shop to the various machines. The building is heated by indirect radiation from coils along the walls under the windows.

FORGE STORES AND SCRAP BINS are housed in a frame structure 30 by 220 ft., extending to the rear of the forge shop. The east 100 ft., i.e., the section furthest to the rear, is built with a roofed platform raised 4 ft. above the grades for the convenient handling of material to and from cars. This platform is divided

T2 12-in. Railway frog slotter.

T3 Cold cut-off saw.

T4 14-in. Double emery.

T8 Frog and switch planer (m.d.)

T12 Rail bender for rails up to 100 lbs. (m.d.)

T11 Bulldozer with crane (m.d.)

T5 200-lb. Strap hammer with crane.

T7 125-lb. Strap hammer with crane.

T9 25-in. Throat punch and shears (m.d.)

T15 36-in. Planer (m.d.)

T13 36-in. Radial drill (m.d.)

T14 36-in. Radial drill (m.d.)

T24 Cut-off saw (m.d.)

T23 3-spdl. Drill (m.d.)

T22 36-in. Planer (m.d.)

T21 Milling machine.

T16 16-in. Shaper.

T17 14-in. Bolt lathe.

T18 18-in. Engine lathe with taper attachments.

T20 6 x 36-in. Grindstone.

T19 24-in. Drill.

In addition to this equipment there is the usual miscellaneous material, including blower and motor, anvils and stands, sledges, set of blacksmith's tools, forges and furnaces.

The toilet and locker room is located in the southeast corner of the building, surrounded by an 8-ft. cement wall re-

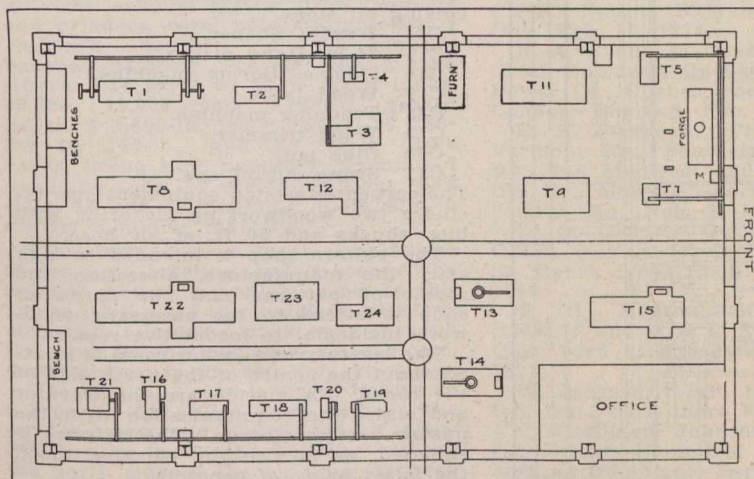


Fig. 4. Plan and Tool Layout of Frog and Track Shop.

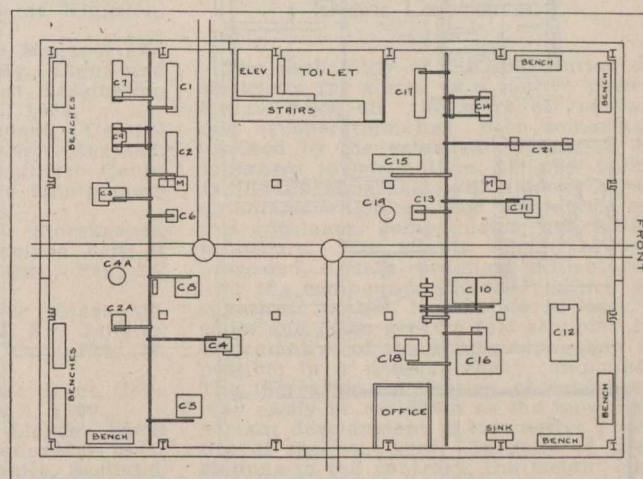


Fig. 5. Plan and Tool Layout of Locomotive Carpenter and Pattern Shop.

F44 Hydraulic spring bander.

F45 Hydraulic punch.

F46 Hydraulic band remover.

F47 Combined nipper and trimmer.

F48 Tapering rolls.

The necessary furnaces, baths and racks are also provided as noted, and the whole is conveniently arranged. Ample floor space is provided to the north for the storage of the raw and finished product.

Further down the shop on the same side, there is a row of 13 double forges set at an angle as dictated by good practice. Adjacent to these is a row of six hammers, as follows:

F27 200-lb. Hammer.

F28 1250-lb. Hammer.

F29 1500-lb. Hammer.

F30 3000-lb. Hammer.

F31 3300-lb. Hammer.

F32 200-lb. Hammer.

It is here that the medium weight work is handled. In this section of the shop there is also a frame fire and necessary face plate, as well as these two machines:

F36 Vertical hydraulic shear.

F37 Alligator shear (m.d.)

The north side of the shop cares for the heavy work at the rear, where the following two machines:

F34 3500-lb. Hammer.

F34 5000-lb. Hammer.

with accompanying furnaces handle the heavier billets. All the steam hammers and large fires are provided with jib cranes for the handling of the work.

into bins for sorting and storage of scrap. The section not raised is completely enclosed with plank lining inside and drop siding outside, and forms storage for coke, coal and iron stock. The iron stockroom is arranged with an extensive rack system for storing the different stock sizes for use in the forge shop. The coal and coke storage bins are arranged with roof hatches in order that cars may be unloaded by a clam shell and crane from the car and the coal or coke dropped through the roof. Industrial tracks connecting with those in the forge shop provide easy access for the entrance of materials and supplies.

FROG AND TRACK SHOP.—This department is located in a building some distance to the rear of the forge stores and scrap bins. The building is 60 by 100 ft., with a 24-ft. clearance between floor and truss, and is spanned by a 10-ton electric travelling crane for the handling of the work. The shop was designed having in view the looking after of all repairs to frogs, switches, interlocking plants, and general track machine work. Fig. 4 shows the layout.

All the heavier motor-driven equipment occupies the body of the building, while the lighter, group-driven machinery is ranged along the walls. The whole is served by a continuation of the industrial trackage before referred to, with necessary turntables for spur tracks. The machinery equipment is as follows:

T1 18-in. Double head traverse shaper.

inforced by expanded metal, thus allowing the crane to pass over it. The shop floor as in the other shops is formed of 3-in. wood spiked to sleepers bedded in bituminous concrete. Direct radiation from coils ranged along the walls is used to heat this building, owing to its comparatively small size.

THE CRUDE OIL STORAGE building is a 25 by 60 ft. concrete structure close beside the frog and track shop, and owing to the nature of its contents, is built mostly underground, the floor being 8 ft. below the grade, with the side walls projecting only 2½ ft. above the ground. A concrete roof carried on steel beams closes in the building, making it thoroughly fireproof.

Inside, on concrete foundations, there are four iron storage tanks, each with a capacity of about 8,000 gals. of crude oil. Compressed air connections are made to these tanks and the oil is forced out and distributed to the various buildings requiring it.

The tanks are so arranged that the pressure can be cut off and the tanks filled by gravity from tank cars standing on sidings alongside the building. Piping connections to the outside of the building, fitted with lock-up valves, are supplied for this purpose.

THE STORE HOUSE building is located at the southern end of the midway, directly across from the locomotive erecting shop. It consists of a large reinforced concrete platform 4 ft. above grade in order to have car and platform on the