

tion for dwarf signals; consequently, we resorted to the expedient of inserting a 1- $\frac{1}{4}$  in. diameter red glass disc in the center of the 5- $\frac{3}{8}$  in. diameter purple roundel. We think this greatly improved our night indications and the enginemen liked the change.

On our first installation of color-light dwarf signals of the searchlight type, we found the stop indication to be very unsatisfactory, especially during the bright daylight. We asked the manufacturers to provide red discs with  $\frac{1}{4}$  in. horizontal purple glass strips through the centers and purple discs with  $\frac{1}{4}$  in. red glass strips through the centers. The discs were mounted so that the  $\frac{1}{4}$  in. strips would be horizontal when the signals were in the stop position. This practice greatly improved the stop indications, as the signal gave the appearance of a red light with a purple halo, or a purple light with a red halo. Either type gave a workable indication.

We do not believe that, in the present state of the art, a satisfactory purple indication can be secured and would prefer a dark red for the stop indication of dwarf signals.



## Night Check of Signal Lights

*"Who in your organization makes a night check of signal lights by riding a locomotive, and how often is this done?"*

### Supervisor Makes Monthly Inspection

H. G. Morgan  
Signal Engineer, Illinois Central  
Chicago

On the Illinois Central the supervisor of signals makes a night check of the semaphore signal lights by riding a locomotive once each month.

### Night Checking Unnecessary with Color-light Signals

F. H. Bagley  
Signal Engineer, Seaboard Air Line  
Norfolk, Va.

As all of our signals are of the color-light type, it is not necessary to ride a locomotive at night to check the indication. We have found a daylight check to be sufficient. Our inspections are not made periodically.

However, they are made much more frequently than the old custom of periodic night checks.

Where color-light signals are used, it is the practice to change lamps periodically so that lamps are burned according to their rated life. Conse-

quently, a reported "light out" failure rarely occurs.

With the modern color-light signal, means are provided for focusing the light in the daytime so that we are assured of good daylight and night indications.



## Maintainers' Tool Houses

*"Do you use a standard plan for maintainers' tool houses? If so please furnish construction plan and details."*

### Standard on the Atlantic Coast Line

C. A. Williams

Assistant Engineer, Signal Dept., A.C.L.  
Wilmington, N.C.

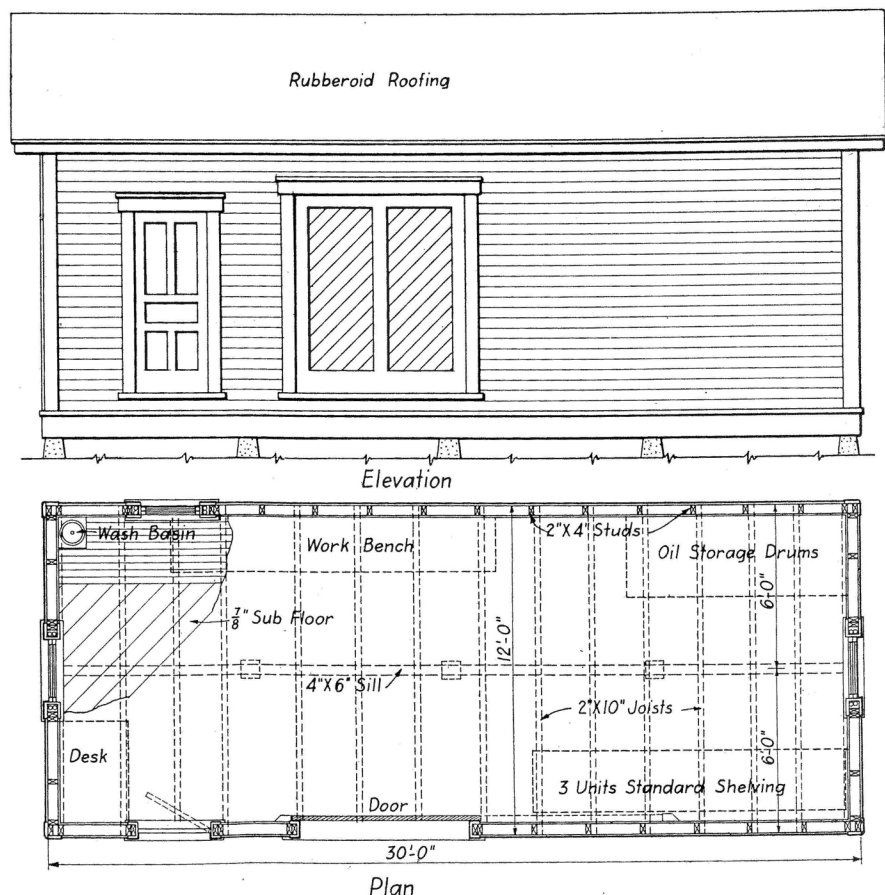
One of the first requisites on a signal maintenance section is a building of such design and size as to properly house all tools and supplies, together with a motor car. Before any such buildings were erected on the Atlantic Coast Line, we made a complete survey of suitable designs and finally decided on the frame-constructed, com-

posite-roofed building, illustrated in the accompanying plans. The house is supported by concrete piers.

The inside furnishings of this tool house include a 5-ft. by 7 $\frac{1}{2}$ -ft. clothes locker, a wash basin, an 8-ft. by 3-ft. oil-drum rack with space for four drums, a desk with pigeon holes and a drawer, drip pan for the motor car, and a 2-ft. by 12-ft. by 2 $\frac{1}{2}$ -ft. work bench. In addition to the above, the house includes three units of all-metal shelving constructed of angles, bolts, special castings and wire netting.

In addition to the design of the building, we standardized on tool and  
(Continued on page 440)

Other answers to this question will appear in subsequent issues. See also page 328 of June issue.



This type of tool house, in use on the Atlantic Coast Line, provides ample space for all storage, motor-car, and office requirements of the maintainer

supply requirements for each section, as shown in the list below, varying somewhat for maintenance sections having only straight automatic signals and those having automatic signals and interlockings.

#### LIST OF TOOLS AND SUPPLIES FOR SIGNAL MAINTENANCE SECTIONS

Items \* not furnished to automatic signal maintainers.

- 1 Lineman's climbing outfit complete
- 1 3/4-in. single block
- 1 3/4-in. double block
- 300 Ft. 3/4-in. hemp rope
- 1 Set come-alongs
- 3 10-qt. water buckets
- 2 Engine-oil cans
- 2 2-gal. oil cans with spouts
- 1 5-gal. oil can without spouts
- 1 60-gal. gasoline tank
- \*1 60-gal. L.T.B. oil tank
- 2 Deitz inspectors lanterns
- 1 White hand lantern
- 1 Red hand lantern
- 2 Red flags
- 24 Torpedoes
- 24 Fuzes
- \*1 Pipe vise
- 1 Combination bench vise
- \*1 Oster bulldog stock and die 1/2 in. to 1 1/2 in. for pipe
- \*1 Drill press for shop
- 1 Bonding drill machine, Hyduty
- 1 Voltammeter Type-S2; amp., 0.03 to 30; volts 3 to 150, 3-range
- 1 14-in. flat file
- 1 16-in. round file
- 1 16-in. stillson wrench
- 1 18-in. stillson wrench
- 1 7/8-in. reamers wrench
- 1 5/8-in. and 3/4-in. "S" end wrenches
- \*1 2-in. Switch adjusting wrench
- \*1 Blacksmith forge complete; maintainers
- 1 2-in. paint brush
- 1 3-in. paint brush
- 1 One qt. gasoline blow torch
- 1 Solder pot
- 1 Ladle
- 4 3/4-in. drill bits
- 4 9/32-in. drill bits
- 1 1 1/4-in. wood bit
- 1 3/8-in. wood bit
- 1 1/2-in. wood bit
- 1 13/16-in. wood bit
- 1 15/16-in. wood bit
- 1 Hand saw No. 8
- 1 3/8-in. socket wrench
- 1 5/8-in. socket wrench
- 1 3/4-in. socket wrench
- \*1 1 1/4-in. pipe cutter
- 1 Pair gas-pliers, 8-in.
- 1 Pair side-cutting pliers, 8 in.
- 1 Tommy bar
- 1 14-in. Monkey wrench
- 1 8-in. Monkey wrench
- 2 No. 1 straight-shank drills
- 1 No. 1409 Billings and Spencer style-S wrenches, 7/16-in. by 1/2-in. opening
- 1 No. 1416 Billings and Spencer style-S wrenches, 9/16-in. by 5/8-in. opening
- 1 G.R.S. Co. (door knob) short wood handle wrench for 1/2-in. face hex nuts
- 1 Long wood handle socket wrench similar to G.R.S. Co., 15194, ex-

- cept for 7/16-in. face hex nuts
- 1 Short wood handle socket wrench similar to G.R.S. Co., door knob except for 7/15-in. face hex nuts
- 2 Contact finger, benders for use on US&S Co., relays
- 1 Alemite grease gun
- 50 1/16-in. by 1/2-in. cotters
- 50 3/32-in. by 1/2-in. cotters
- 50 1/8-in. by 1 1/4-in. cotters
- \*1 1 1/2-in. hot cutter
- \*1 1 3/4-in. bottom fuller
- \*1 3/4-in. top fuller
- \*1 3-in. flatter
- \*1 1 1/4-in. top swage
- \*1 1 1/4-in. bottom swage
- \*1 1 1/4-in. hardee
- 3 Ball-pein hammer handles
- 1 Tool grinder, Keystone
- 1 1-in. wood chisel
- 2 1-in. cold chisels
- 2 Starting punches
- 2 Drift punches
- 1 12-in. hack-saw frame
- 6 12-in. hack-saw blades
- 1 Carpenter brace, 6-in. sweep
- \*1 Anvil, 150 lb.
- \*1 1 1/2-in. Cold cutter
- \*1 3/4-in. Top swage
- \*1 3/4-in. Bottom swage
- \*1 3/4-in. Curved lip tongs
- \*1 1 1/4-in. Curved lip tong
- \*1 2-in. flat tong
- 1 Ratchet (Boilermakers or 12-in. ratchet)
- 2 11/16-in. drill bits with square tapered shanks
- 2 13/16-in. drill bits with square tapered shanks
- 2 9/16-in. drill bits with square tapered shanks
- \*1 10-lb. sledge hammer
- 1 2-lb. ball-pein hand hammer
- 1 3-lb. ball pein hand hammer
- \*1 3/4-in. drill bit with round flat side shank
- \*1 1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, 1-in. drill bits with round flat side shanks. (The above drills for drill presses.)



## Circuits for Crossing Signals

*"Which control system for a highway crossing signal is better, the interlocking-relay type or the neutral stick-relay type, from an operating as well as from an economic standpoint? What is the basis of your judgment?"*

### Favors Neutral Stick Relays

N. B. Coley

Signal Maintainer, Toronto Terminal, Toronto, Ont.

From an economic standpoint the merits of the interlocking-relay versus neutral stick-relay control systems, for highway crossing signals, vary with individual cases. In a sim-

ple installation having no switching moves to protect, the use of either of these systems will result in similar expense. However, in certain complicated installations, such as outlined in the May, 1934, issue of *Railway Signaling*, it is possible to so adjust the operation of the interlocking relay that several neutral relays are eliminated. The saving in such instances would favor the interlocking relay system of control.

When considered from an operating standpoint, however, I believe that the neutral stick-relay system is more reliable, provided these relays are normally energized. There have been cases of highway crossing signals failing to operate due to mechanical trouble in the interlocking relay. It seems reasonable to assume that the more mechanical parts there are in a relay, the greater chance there is of relay trouble. The trend away from the interlocking relay appears in the decision of some roads to abandon their use for signal control circuits. If they are not dependable for wayside signal controls, are they satisfactory for the protection of human lives by the crossing signal?



## Night Intensity of Signal Lamps

*"Is it desirable to reduce the voltage on color-light signals at night in order to secure a strong indication in daylight and not too brilliant an indication at night? How can this be accomplished economically?"*

### Light-Sensitive Relay Useful

F. S. Stallknecht

General Sales Engineer, Thomas A. Edison, Inc., Bloomfield, N.J.

Since some signal engineers believe that it is desirable to reduce the voltage on color-light signals at night while others do not feel that such a procedure is practicable, this is a controversial question.

Where it is considered desirable to do so, a voltage reduction can be reliably accomplished by the use of the Edison sun relay which is regularly equipped with either one front or one back contact depending upon which is specified. The contact on the sun relay is designed to carry a non-inductive load of only 25 watts at a maximum of 20 volts or 3 amp.

For another answer to this question see page 324 of the June issue of *Railway Signaling*.  
(Continued on page 442)