



In this territory where second main track was removed, as shown in this picture, the roadway was graded smooth for use by trucks.

New CTC on remaining single main track, as viewed in the picture below, provides adequate capacity and reduces track costs approximately \$2300 per mile annually.

BAR Takes Up Second Track

... and Installs CTC

BY INSTALLING a modern signal system, including centralized traffic control on 15.5 miles of single track, between Northern Maine Junction, and South La Grange, Me., the Bangor & Aroostook has been able to remove second main track in this territory.

Northern Maine Junction is 5.7 miles from Bangor. South La Grange 24.6 miles north of Northern Maine Junction, is a junction of two lines, one runs via Derby to Packard, 32.3 miles, and on north; and the second line runs from South La Grange straight north 28.1 miles through Adams to Packard, where it connects with the other line. The line via Adams is a low grade and is, therefore, used by the through freights. The switches and cross-overs at South La Grange, in the junction of these two lines with the double track from there south, were previously included in a mechanical interlocking with a leverman on duty round the clock.

For many years, double track has been in service on the 24.6 miles between Northern Maine Junction and South La Grange. Because of



NORTHERN MAINE
JUNCTION
MP 29.5

TRACK No. 2

TRACK No. 1

MP
36.5

MP
38

SS
No.5
SWITCH

8,000'

8,500'

8,500'

8,500'

8,500'

changes in traffic and the use of diesel locomotives, the number of trains operated daily has gradually been reduced to four passenger trains, and about eleven freight trains daily. A study showed that these trains could be operated efficiently on one main track, if centralized traffic control were installed to include the junction switches and crossovers at South La Grange and the switches at the new ends of single track, as well as to authorize train movements by signal indication. A further advantage would be increased safety; no automatic signaling having been in service on the double track.

The new end of double track at the south end is at MP 36.5, which is actually 7.0 miles north of Northern Maine Junction, thus leaving a section of two tracks on which trains can make meets. A spring switch was installed at this switch No. 5, which is normally lined so that southbound trains on the single track are routed to the track

marked No. 1. Thus No. 2 track from Northern Maine Junction to the switch No. 5 can be used to hold a train for a meet with a southbound train. If no meet is to be made, a northbound train on track No. 2 can be directed to trail out through the spring switch and proceed north on the single track.

At South La Grange, a new power-operated crossover was installed at M.P. 54. This crossover is in reality the junction between the line going to the left through Derby and the line to the right and north through Adams. From this power crossover, a second main track was left in place for 2 miles extending south to a new switch No. 6, at which a spring switch was installed. This switch is normally set to route northbound trains on the track No. 1. Southbound trains on track No. 2 trail out through this spring switch to the single track. Thus this 2 miles of the previous northbound main can be used to hold freight trains for meets.

The dispatcher can send out a control to cause northbound signal No. 10 at the switch No. 6, MP 52, to display the aspect red-over-flashing red. This aspect indicates that an approaching northbound train is to stop short of this signal; that the head brakeman is to throw the hand-operated switch stand; and then the signal aspect changes to red-over-yellow, to direct the train to pull in on track marked Track No. 2.

Savings on Track Removed

The section on which previous second track has been removed is 15.5 miles long, between switches No. 5 and No. 6. The rail is 100 lb. which has been in service since 1930. The estimated value of rail, joint bars, plates, spikes, and ties recovered, is approximately \$10,900 per mile, totaling \$168,950. The cost of recovering this material is approximately \$21,900, thus leaving a net \$147,050.

On the average, the reduced cost of maintaining the one single track, compared with the two previous main tracks is estimated to save about \$2,320 per mile annually, totaling \$36,000 each year.

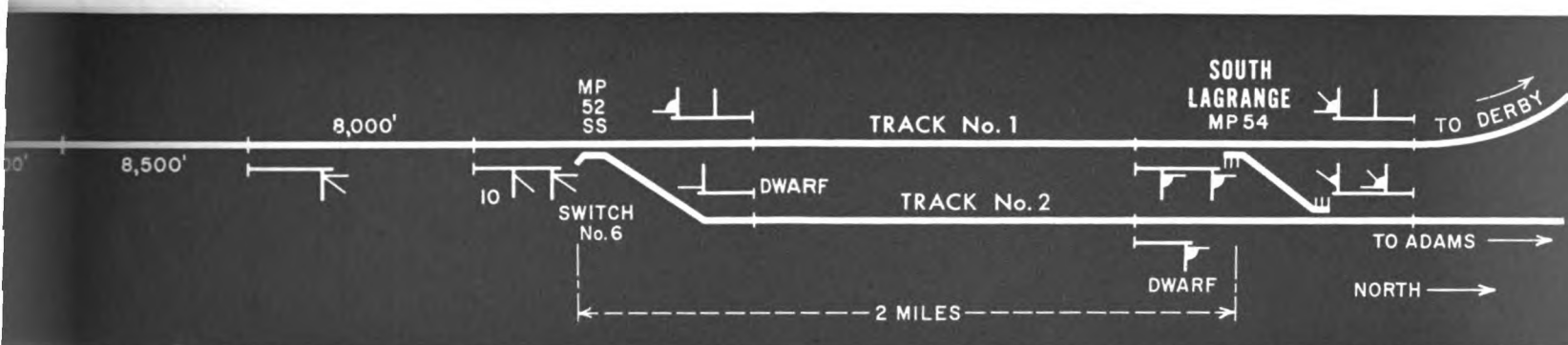
The track changes, including the new No. 16 crossover at South La Grange, and the two No. 16 turnouts at the spring switches, cost \$39,600. The centralized traffic control system complete, cost about \$168,900 for materials and \$22,100 for construction work. Considered as a whole the project makes an annual saving which is equivalent to approximately 36 per cent on the net investment.

The previous mechanical interlocking at South La Grange was removed, thus no leverman is required there now. The new CTC is controlled by a machine in the Dispatching office at Northern Maine Junction.

The major items of signal equipment for this project were furnished by the General Railway Signal



Spring switch has mechanical facing-point lock



Company. The signals are the searchlight type. The switch machines on the crossover are the model 5-D with 24-volt d.c. motors. The two spring switches are equipped with Type A automatic facing-point locks.

Signal Control Through Track

The track circuits on the single track are the Trakode system, which accomplish the control of signals without the use of line wire. This Trakode system is explained in detail in an article in two parts published in the May and the August issues of this magazine.

The new line wires for the CTC line code circuit are No. 10 Copper-weld with polyethylene covering. These wires are transposed every half mile. The two line wires for the a.c. power distribution are No. 9

copper with polyethylene covering. The storage batteries on this installation are the Manchex EMP type made by the Electric Storage Battery Company. The insulated wire and cables were made by the Simplex Wire & Cable Co.

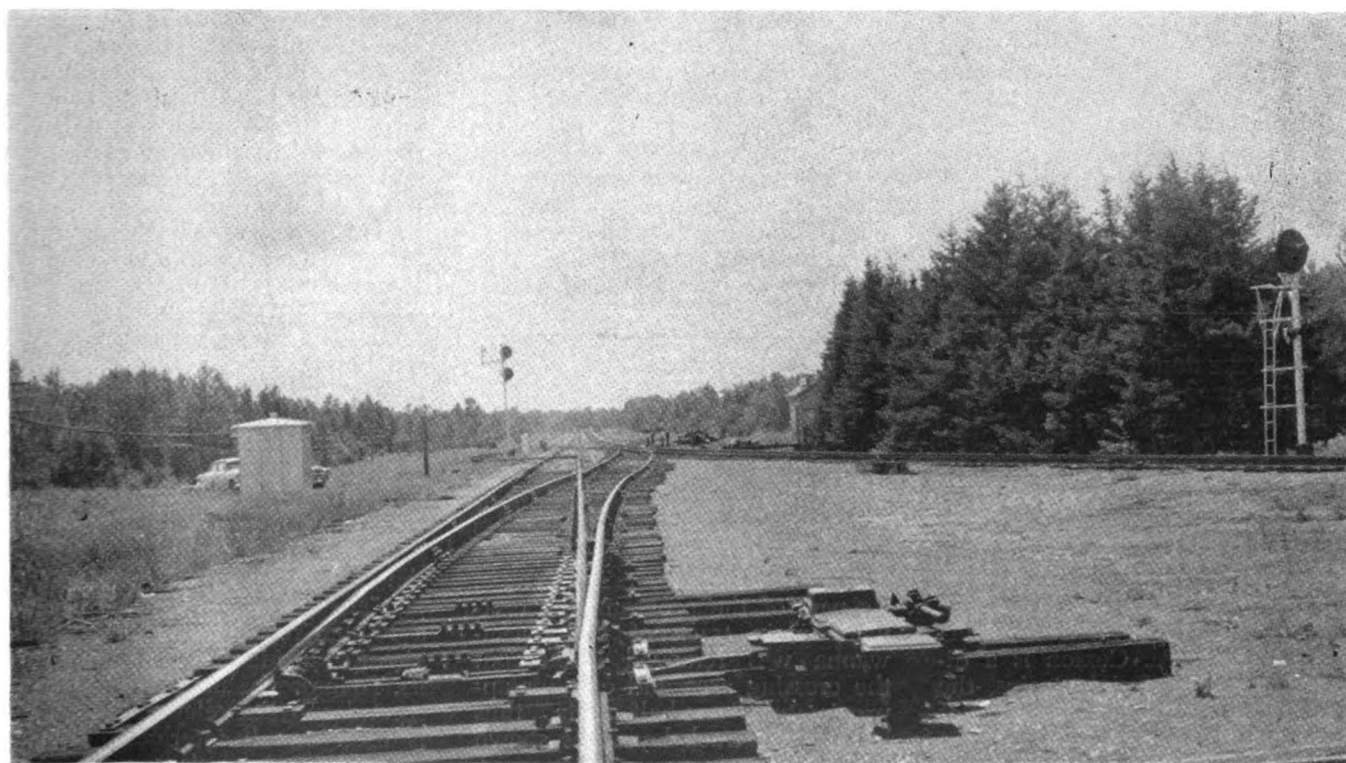
As soon as system was in operation, track forces stripped the rail and fastenings, and picked them up. This rail is now being relaid on lesser used lines. The old ties were removed, and the roadway was graded smooth, suitable for use by trucks and other highway vehicles. Each track crew was provided with a long-body 1-ton pickup truck. Formerly there were three track maintenance sections. The middle section was split in half, giving the south half to the south crew, and the north half to the north crew. The personnel on the two crews was increased slightly. The signal

maintainer has an open body 1/2-ton truck with canopy cover.

Three steel bridges, 75 ft., 55 ft., 42 ft. were removed on the one track. To permit track maintenance trucks to cross, planking is laid on the ties on the remaining track. In using such planking, no greater hazard is involved than using any highway-railroad grade crossing of equal length. The track is tangent both ways for more than 1/2 mile, thus giving an unobstructed view of any approaching trains.

Constructed by Railroad Forces

This project was planned and constructed by Bangor & Aroostook forces under the jurisdiction of Robley H. Morrison, Chief Engineer, and under the direction of T. W. Cudhea, Superintendent Signals & Communications.



The power crossover at South La Grange is the junction between the two lines to the north