Copyright © 2000 by Michael Frieders

G-Scale at the National Toy Train Museum
- A Change in Operating Concept -

Second in a Series of Articles

By Mike Frieders

This is the second of a series of articles about the G-Scale layout at the National Toy Train Museum in Strasburg, Pa. This article will describe the changes we made to the operating concept of the layout in order to minimize the wear and tear on the layout and running stock.

The layout features three operating lines. There is a point to point trolley line with catenary that runs along the entire length and width of the layout at the outer edge. The main line operates at the same level as the trolley line, and has a meandering route that includes two tunnels. The upper line is a small oval on an elevated portion of the layout. From the time that the layout was built, all three operating lines had been run continuously for 7 to 8 hours each day, all year long. The locomotives were in poor condition. The rail profile of the upper line was gone, and the area was littered with very fine lengths of brass shaved from the track by the locomotives. Plastic wheels had taken their toll everywhere, leaving large piles of plastic dust between rail joints, and plastic dust on everything else. It was clearly time for a change!

The solution to this problem was simple. I proposed a new operating concept that features stop blocks in each operating line. The stop block operating concept splits each line into two power blocks, the stop block and the run block. Each stop block is just long enough for all of the locomotive power pickups fit within the block. In the case of the main line where heavier locomotives run I added some room to account for possible sliding of the locomotive when it stops. The rest of each operating line constitutes the run block for that line. Power is

Copyright © 2000 by Michael Frieders

maintained in the run blocks whenever the layout is turned on. Power in the stop blocks is normally off.

Each stop block is connected to a push button operated by the museum's visitors, and to an LGB 53750 EPL Timer. When the visitor pushes the button for a particular operating line, that line's EPL timer feeds power to the stop block for a preset time period that typically allows the train to travel the line two to three times. Once the stop block timer "times out", there is no longer any power in the stop block, so the train stops the next time it enters the block. The train is guaranteed to reach the stop block because the power in the run block is on all the time.

Placement of each stop block required careful consideration. We wanted each of the trains to stop at the station. The location of the stop block depends on the length of the train and the direction the train runs in. The trains on the trolley and upper lines are short, so the stop block was placed just past the station in the direction of the running train. A longer train runs on the main line, so the stop block was located such that the passenger coaches were stopped at the station platform. The location of all three stop blocks is dependent on the fact that all three trains always run in the same direction. The stop block concept will still work if the trains are reversed, but the trains will no longer be stopped at the station.

The actual installation of the stop blocks required some problem solving. The trolley and upper line stop blocks are each comprised of two LGB 10153 (1015U) track sections back to back. That provides just the right spacing between the gaps for a trolley and most other small locomotives like the LGB Chloe or Stainz. On the main line, one LGB 10153 was installed near the station, and a gap was cut in the track at the other end of the stop block.

Since the existing track on the upper line had to be replaced, it was easy to incorporate the stop block into the completely new track that we laid. The existing upper line track was removed, and the chicken grit rock ballast was swept up and discarded. New track was laid, with the stop block, and then new ballast was applied.

Copyright © 2000 by Michael Frieders

Installing new track sections on the trolley and main lines required a great deal more care and deliberation. Each line was already ballasted with chicken grit rock. It was necessary to devise a way to both remove and replace the stop block track sections without getting a single bit of ballast under any of the other existing track. If ballast were to get between the track and the table, then more than likely the entire line would have to be pulled up and relaid, a considerable effort. So, the problem to be solved was how to remove the existing track section, usually an LGB 1000 straight section, and replace it with the two LGB 10153 sections.

The solution was to carefully pry the rail joiners off of the section to be removed, so the section could be removed without disturbing the track it was joined to. The next step was to remove the rail joiners and ballast completely. Now the new stop block sections could be dropped into place, but how would they be joined to the existing track? Hillman rail clamps to the rescue! We used Hillman rail clamps to join old and new sections, because the clamps disassemble into two pieces that are clamped across the rails with cap screws. Once the new section was dropped into place, the Hillman clamps were placed on each side of the joint and screwed together, creating a very strong rail joiner. I'm very happy to report that this plan was successful on both the trolley and main lines, without a single bit of ballast getting under the track. It did take a lot of hands to hold the track in place to be sure that didn't happen.

The main line stop block presented an interesting failure mode on the very last day of the first year's operating season. The stop block had power whether the EPL timer was on or off. After checking the wiring, and finding nothing wrong, I went looking for other problems. Recall that the second gap in the main line was just a saw cut in the track further down the track. Over the operating season, as the main line engine repeatedly came to a sliding stop in the stop block it eventually pushed the rail across the saw cut gap so that the rail was now making contact with the run block again. Power all the time in the stop block! We pushed the rail back, recreating the gap, but this time we filled in the gap with a small piece of plastic. The rail won't move again.

The stop block concept was so successful on the G Scale Layout that it was carried over, complete with EPL Timers, to the Standard Gauge Layout this year. Wear and tear on the track and locomotives was reduced by about 70%. Using metal wheels on all of the rolling stock has helped to keep both the track and layout much cleaner. We are now getting two years of running time from the locomotives before they get an overhaul from LGB in San Diego.

In the following articles I'll cover several other areas of layout improvement. Future articles will describe the control panel, layout wiring, structure lighting, trolley shuttle control circuit, signal wiring and control, Christmas decorations, and maintenance. Watch this space for more next month!!