

Willoughby Line Yard Design

Strategies for small yard design

I needed a small yard for my double deck layout. Here is a quick account of how I worked out some of the design issues in the yard design for my layout. It is difficult sometimes to adapt a plan on paper to the real 1:1 layout. The biggest problem I have is that the track plan as drawn can look too busy when laid out on the homasote. The resulting effect is the dreaded "parking lot" of track.

A few notes about the Willoughby Yard: The yard is located on the peninsula of the railroad and is in many ways the focal point of the layout. Space allotted to the yard is roughly 11' X 2.5'. While I am not a big fan of yards from a scenic point of view, I needed an area to make and break trains. It is one of the few sections on the layout that is not double decked. The peninsula is divided by a large backdrop. Many trains run point to point from this yard, so I needed engine facilities and some storage tracks. In general, the design target is a small short line yard. I wanted to keep things pretty spare in terms of structures and have a more rural, run down look (weedy sidings etc.)

Research: I spent considerable time studying various treatises on yard design including the Armstrong book and web articles, as well as operating at several layouts with well laid out yards. I had a good idea of what I wanted operationally but getting it all to fit and work well proved to be a bit of a challenge. I wanted to keep my switch minimum at no.6 and the radius min 30". I am aware that one can get by with less in these areas, but I wanted a yard that would operate flawlessly and I felt that the larger sizes would keep the rustic look I was after.

Must Haves: I needed to include the following items in my design: a drill track, a wye for turning heavy metal, a turntable for the small stuff, Tracks to build and break trains (AD tracks), a passing track, a siding for the oil dock, engine ready track, caboose track and storage tracks.

The layout design required that the whole yard be set at an angle to fit the large 180 degree turn back curves at the wall end of the peninsula (see photo). This meant that the space would between the back drop and the mainline would shrink as one moved farther down the aisle towards the wall. Most trains arrive and depart from the left side of the yard (see photo).

Switches and Space: One of the big issues in this design is the amount of space that switches take up. A ladder of no. 6s takes roughly 1 foot per switch. To break out four sidings from the AD track using a traditional ladder takes five feet (roughly half the space allotted). If one includes the space to break out 2 AD tracks from the main, nearly the whole length is taken up with switches.

In light of the switch issue, I decided to use curved switches to pull the AD tracks off the main in the 180 curve leading into the yard. I also decided to have stub ended storage tracks. The next issue was that of getting a workable ladder to the storage tracks. Several options were explored.

The Plan: A well drawn track plan for the yard can be found in this MRH article (Special thanks to Charlie Comstock.):

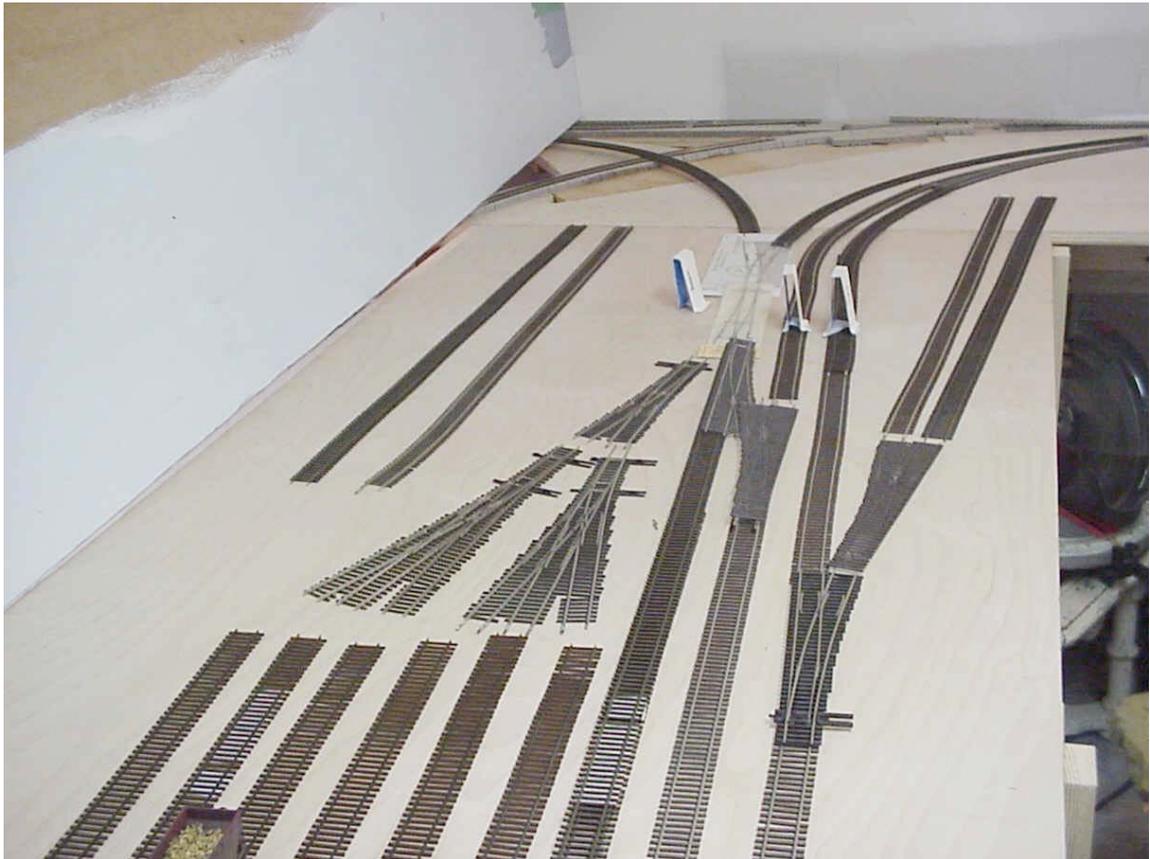
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Basic Yard Overview



This shot shows the basic refined yard layout and design. Notice the big curve against the wall and how it skews the angle of the yard relative to the aisle. This might be considered a disadvantage because it leaves less room for scenery at the far end of the yard but it does serve to break up the straight lines in the room and creates visual interest. The AD tracks and passing track are the group of three tracks on the right side of the yard. The AD ladder is in the curved turnouts at the top. The storage yard ladder is seen upper left. There is room between the yard tracks and the backdrop at right to create some scenery. The wye is also at the upper left as is the oil dock siding. Now lets break down some decisions:

Yard as designed on Paper



This shot shows the yard ladder and crossover as drawn on paper. The top of the yard shows the wye heading out to hidden track to the left and shows the curved AD ladder coming into the yard. The switch to the right heads out to the turntable, caboose tracks. The flex in the upper left is the oil dock. Note that the storage tracks ladder consists of two triple switches. These are the quickest way to split out the most number of tracks in the smallest space. Ultimately, I decided that they look too "industrial" and somewhat out of place in a small rural yard. Note there are six storage tracks.

The “Parking Lot” Effect



In this shot we see a long view of how the yard was initially drawn out. I added cars to the storage tracks to get an idea of how it would look to have them all full of cars. Here is the “parking lot” effect in full splendor.

The Redesign



Here is the redesigned throat and ladder. Notice the triples are gone and a compound ladder has been employed off a wye to get us to four tracks as quickly as possible while still looking somewhat rustic. Notice that the left storage track has been re-designated as an active track as crews will have to pull cars from that track to access the oil dock.

Another View

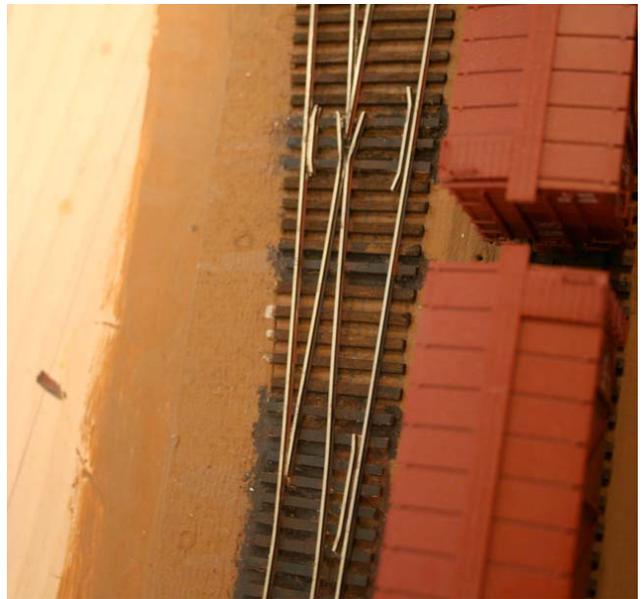
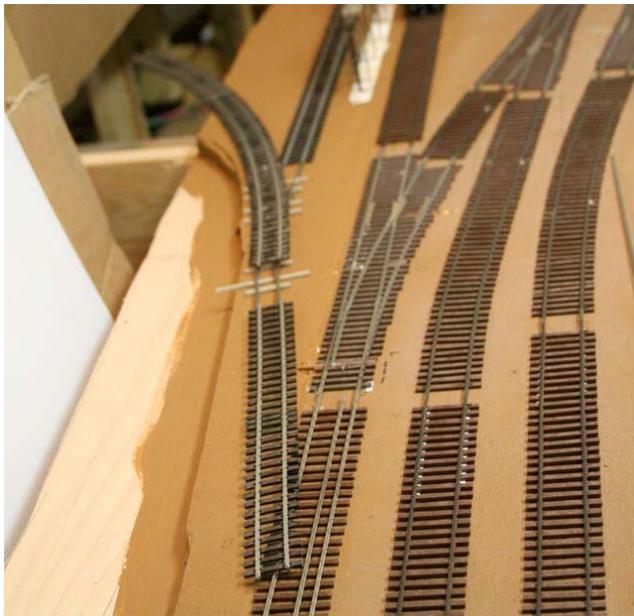


In this shot we see the yard adder from the opposite direction. The 3 A/D tracks are on the left and the yard storage/sorting tracks are on the right. Notice how work can be carried out on the two A/D tracks on the right and the yard without disturbing the passing track through on the far left. A crossover has been added between the far left tracks to make it easier to access the engine facilities (turnout off of the far left track, not yet installed)



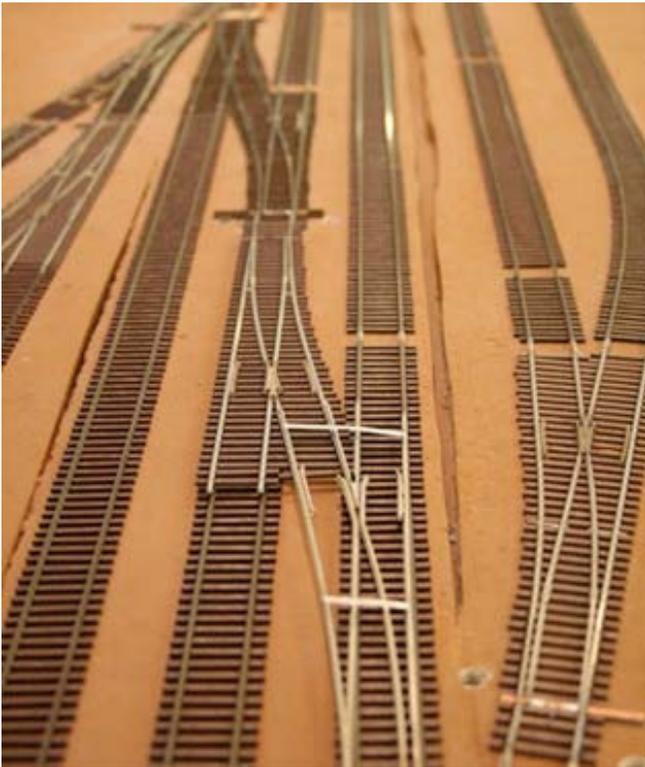
The actual storage tracks are now down to three tracks. Cutting the number of tracks allows for more scenery and less of the parking lot look. Notice that the drill track can be either leg of the wye. The storage track length is such that the drill can hold all of the cars in the AD ladder with out leaving yard limits on the far side of the 180 curve along the wall. Also notice that the drill has access to the two AD tracks to the right via the crossover. The far right track can serve as the passing track while crews use the left leg of the wye to work the AD/storage tracks uninterrupted.

Narrow Gauge Revision



In these shots we see an attempt to integrate some narrow gauge into the scene by making one side of the oil dock narrow gauge and dual gauging the far right track. This is a nod to my local train buddies, all of whom are narrow gaugers in some form or another. The transition track was scratch built. The dual gauge track is primarily cosmetic and has no operation possibilities as there is only one other section on the layout of dual gauge and the points are separated by 180 feet of standard gauge.

A crossover Addition



In these two shots we see another revision to the yard to add a crossover between the passing track and the rest of the yard. The right shot shows two no 6s and left shows the use of a double slip. I decided against the double slip because it looked too "industrial". Note that the pair of crossovers create an "s" curve for trains passing through them both. This has not proven to be a problem. I tested the reliability of the arrangement by backing a 25 car reefer train through the switches without incident. It would not be a desirable set-up for a high speed mainline or for running big fixed wheel steam.



I added another track off of the oil dock to store MOW stuff as I need to keep the storage tracks clear for making and breaking trains.



This shot shows the roundhouse area as well as the hard shell covering the wye. The turntable is scratch built using the Sierra turntable at Jamestown CA as its prototype inspiration.



This long shot shows the addition of the freight shed along the edge of the yard. There will be a slope away from the yard to the backdrop and the installation of trees to hide the gap. I feel that his track arrangement leaves me with a workable yard that will be attractive from a scenic point of view.

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