

# Layout Design from the Prototype -- NMRA 2008

by Byron Henderson

Because of the limitations of space, time, money, and complexity, there are always compromises inherent in designing a layout based on a prototype. Expect for the smallest shortlines or backwoods branches, it is not a matter of simply scaling down the real railroad's trackage to fit the available space.

## Choosing a prototype

Sometimes there is no choice -- we may be smitten with a particular railroad, place, and era and feel compelled to model only that. (Obsessions *can* be fun!) In other cases, interest in a particular railroad, locale, type of scenery or style of operations may suggest a general area and concept. At this point, research begins.

## Research and data sources

A wide variety of research sources is available in traditional paper formats in research and other libraries and on the Internet. Some of the most useful include (watch for line-wrap on the URLs):

- Historical societies for particular railroads
- Regional, city or state historical societies
- Libraries in the selected region
- ICC Valuation maps

[http://www.archives.gov/publications/prologue/spring\\_1997\\_railroad\\_records\\_1.html](http://www.archives.gov/publications/prologue/spring_1997_railroad_records_1.html)

- Sanborn industry maps

available free through some libraries, or for a fee at:

<http://www.sanborn.com/Services/Traditional/Traditional.htm>

- Track charts and CLIC/SPINS/ZTS maps (produced by the railroads themselves)

## The design process

As with any layout design, the first step is defining the concept. What elements of the selected prototype are most appealing? What is the primary goal of the layout: operations; model-railfanning; a framework for TT&TO or other operating schemes; simulation of real-life RR employee roles, etc.?

With some of these ideas in mind, the designer may "frame" the layout design by defining the boundaries of the modeled areas. How long a prototype distance? How many towns/locations? What kinds of facilities? Strictly location-by-location or "compressively selected": choosing only the most modelgenic locales, even if it means changing order or leaving out some sites? Then it's time to be realistic.

## Design algebra

With some idea of the scope of the prototype to be modeled in mind, the choices begin. Is your priority in having a layout that "looks like" or "works like" the prototype in terms of fidelity. Having both is possible, but requires more resources in the form of space, time,

money, and complexity. In addition, there will likely be a need for additional model layout realities in the form of staging yards, access space, crossovers, or other elements necessary for the proper operation of the layout. Fidelity, scope, and functional layout realities always find their balance with the available resources -- sometimes with unexpected results!

## Lather, rinse, repeat

Now it is often necessary to iterate on this process a few times. Redefining the "framing" of how much of the prototype to include (lessening scope), making compromises on the degree of "looks like" or "works like" fidelity, compressing key scenes, structures, etc.

## Looking for opportunities

Part of this iterative process is looking for prototype elements that happen to fit well in the space available. For example, a recent design of mine includes ATSF's Amarillo, TX Yard. This yard has a distinctive curve just to the east that provides a very good fit in a corner (of which layout spaces have many). Looking for the right spot in the room for this distinctive curve helped reduce the number of unsatisfactory alternatives very quickly and maximized the use of the space.

In another case, the Hoboken Shore railroad of New Jersey endured a very sharp curve around Castle Point, a natural rock outcropping. This became a very atmospheric location for a turnback curve. Fitting this into the room allowed for a very recognizable and prototype scene while mitigating the often troublesome layout space imposition of turnback curves.

## Capturing the signature scene

Often there is a small set of locations or features of the real railroad that can unambiguously define and communicate the prototype in the layout. "The Loop" at Tehachapi is an example among many. But much smaller elements can also tell the story of the prototype represented by your layout: a crossing with a competitive line, a distinctive station or industry structure, an unusual and unique track configuration. Taking care to include these elements first in your layout planning and *then* building from these "cornerstones" helps insure that your story is not lost in less-characteristic details.

## Prototype vs. Layout Design Elements

A major recent focus in design thinking is the idea of Layout Design Elements (LDEs): defined as segments of real railroads that may be dropped into a layout design. While it is true that most designers will be better off with one of these as a starting point, indiscriminately plopping down LDEs and connecting them together may result in unexpected operating

problems if key elements, such as a distant runaround, are inadvertently left out.

For this reason can be helpful to make distinctions between the elements of the prototype (e.g., a yard, a station, a junction) and the Functional Layout Requirements that might be necessary for a satisfying layout (such as staging, crossovers, runarounds, et al).

With signature prototype elements and functional requirements identified, the process of compression and compromise may begin. Care in selecting the segment of railroad to use as inspiration may offer much of the personality in a more compact physical plant. Subsidiaries or secondary lines may offer most of the desired elements of a big time railroad in less space, for example.

### Potential pitfalls

Some ideas that seem logical can be a problem in layout design from the prototype. While it seems straightforward to apply the same degree of selective compression throughout, this can stunt interesting areas at the expense of less engaging scenes. Modulating the degree of compression is more challenging, but results in better layouts.

It's worth noting that model railroaders tend to operate much higher densities of traffic on their model layouts than were supported by the real railroad. If the real-life town never had more than one train in town at a time and the demands of the op session lead to three at once, the "pure prototype" track configuration may not support the desired operation. This is a case where a track or two beyond the prototype design may be necessary.

Similarly, the oft-stated suggestion to model a stretch of railroad from division-point yard to division-point yard is impractical for all but the larger spaces and particular prototypes.

### Stage where you can, build where you must

In fact, yards are one of the major challenges in adapting many prototype railroads to a satisfying layout. Depending on era and locale, division-point yards are very large and can severely tax layout resources in terms of space, time, and complexity. It's often a better idea to use staging to represent the division point yards and focus on smaller yards such as branch, junction, and industry yards that are of a more "model-able" scope

### And there comes a time to cut some wood

One of the major challenges of prototype-based designs is that there is always one more piece of data that could be found. Waiting until every question is answered is unproductive if the goal is to build a layout and not put a deeper dent in the armchair. "Good enough" applies to data-gathering, too!

Although freelanced and proto-freelanced layouts can also be engaging and inspiring, prototype designs continue to be the goal for many designers. Making use of a broad range of data sources provides understanding in depth, which open possibilities. But realistic assessment of the compromises inherent in the "design algebra", and a willingness to make informed decisions when not all possible data is at hand mean enjoying the fruits of your labor that much sooner.

### References

Layout Design SIG -- [www.ldsig.org](http://www.ldsig.org) or [www.ldsig.net](http://www.ldsig.net)

LDSIG Member Services; 668 Snyder Hill Road; Lititz, PA 17543

Operations SIG -- [www.opsig.org](http://www.opsig.org)  
OpSIG; PO Box 67; Wood Dale, IL 60191

### Articles (alphabetical by author)

"Choices: looking back at 20 years on the Yosemite Valley" by Jack Burgess; *Model Railroader*, January 2000.

"Blueprint for a Model Railroad" by Paul Dolkos; *Model Railroad Planning*, 2005

"Research in the Information Age" by Henry Freeman; *Model Railroad Planning*, 2001

"Prototype Track/Industry Maps as a Design Resource" by Byron Henderson; *Layout Design Journal* # 26; March 2001. Published by Layout Design SIG (see above). Also online at: [www.layoutvision.com](http://www.layoutvision.com)

"From Surf Line to San Diego" by Keith Jordan; *Model Railroad Planning*, 2001

"The Third Subdivision of Nickel Plate's St. Louis Line" by Tony Koester; *Model Railroader*; September and October 2000.

"Special Freight Yards Issue" by various authors; *Layout Design Journal* #7, June 1992. Published by LD SIG (see above).

### Books (alphabetical by author)

*Track Planning for Realistic Operation* by John Armstrong (Kalmbach, 1998)

*Creative Layout Design* by John Armstrong (Kalmbach, 1978 -- out of print)

*Realistic Model Railroad Building Blocks* by Tony Koester (Kalmbach, 2005)

For more information ...

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