

Contents

Introduction What is a right-sized layout?	4
Chapter 1 The Right-Sized Layout Determining the right-sized layout for you.	5
Chapter 2 Track planning Factors to consider when designing your track plan.	15
Chapter 3 Layout construction Efficient use of space, benchwork, and layout room aesthetics	27
Chapter 4 Prototype inspired track plans Looking to the prototype for layout design ideas.	39
Chapter 5 Prototype operations Prototype rules and procedures that can be applied to model railroading.	58
Chapter 6 Detailing operations Adopting prototype practices can enhance your operating session.	72
Chapter 7 Operating session paperwork You need to know where the trains are supposed to go, and what to do when they get there.	88
Chapter 8 Conducting operating sessions Making your guests feel comfortable and welcome on your layout.	104



1

CHAPTER ONE

The right-sized layout

The biggest decisions model railroaders face when they choose to build a layout is determining its operational design and size. What is the “right-sized” layout for you is a very personal choice. Each model railroader has his or her own goals and objectives, which has an impact on layout design and the space it will require.

Determining the right-sized layout for you

John Farrington’s Railserve layout, above, based on a prototype in Pennsylvania, fits nicely in a spare room in his apartment. The layout is L-shaped with the longest leg being 11 feet along one wall, and a new 5-foot extension added to one end. The layout has provided an opportunity for John to try new modeling techniques and improve his already exceptional modeling skills. *John Farrington*



2

Long trains and sweeping scenery dominate Mike Armstrong’s Rock Island Railroad layout. The layout represents the upper Midwest from St. Paul, Minn., to Kansas City, Kan., in the 1960s. The track plan is prototypical with large areas of beautiful rural scenery. With his large radius super-elevated curves, Mike can easily run 30 car trains on his layout.

Mike Armstrong



17

Using an easement allows the train to gently enter the curve coming up to the bridge on Joe Atkinson's layout. By incorporating easements into the curves on your layout it improves reliability and enhances the smooth operations of your trains as they enter and exit the curves. Joe Atkinson

Laying out an easement or transition curve

Railroads use a mathematically generated "cubic spiral" as the transition curve or easement at the ends of a circular curve. A fair, practical approximation can be generated by the procedure below:

Line of track should fall halfway between circle and tangent at midpoint "M." Make this adjustment by increase or decrease of slack in length of stick, not by local force (no fastening near "M" until stick has assumed its own correct position).

To lay out an easement by the "batten" method:

1. Extend the circular curve well past the point where it is closest to the straight track.
2. Strike a second arc with radius R+X, obtaining the "offset" value "X" from the table at left.
3. Draw center line of straight track tangent to this outer arc.
4. Lay off distance L/2 on each side of point of tangency.
5. Clamp batten along tangent up to "TS" point.
6. Clamp other end of batten along radius "R" curve, starting at "SC" point, allowing it to assume natural curve between "TS," "M," and "SC." This is your easement. A template traced from it may also be used for any other points where a curve of this radius is joining a tangent.

SUGGESTED EASEMENT DIVISIONS FOR AVERAGE CONDITIONS

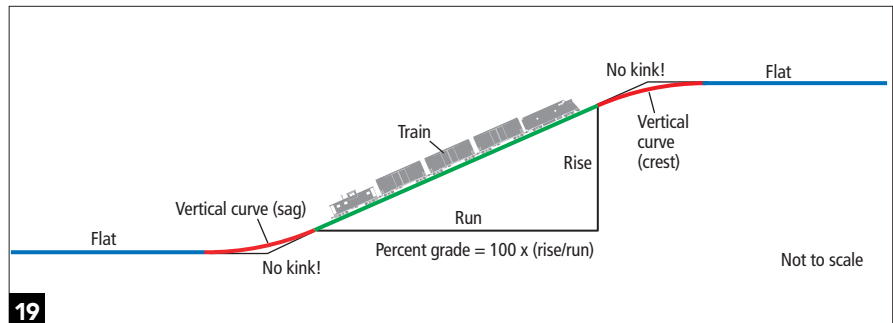
		N	HO	S	O
Sharp curves	R	9¾"	18"	24"	32"
	X	¾"	¾"	7/16"	½"
	L	6"	12"	16"	20"
Conventional curves	R	13"	24"	32"	42"
	X	¼"	7/16"	½"	5/8"
	L	8"	16"	20"	25"
Broad curves	R	16"	30"	42"	54"
	X	¼"	½"	5/8"	¾"
	L	10"	18"	25"	30"

18

Left: When space is available, longer easements can be used as recommended in National Model Railroad Association (NMRA) Data Sheet D3b.3, with corresponding increase in offset "X."

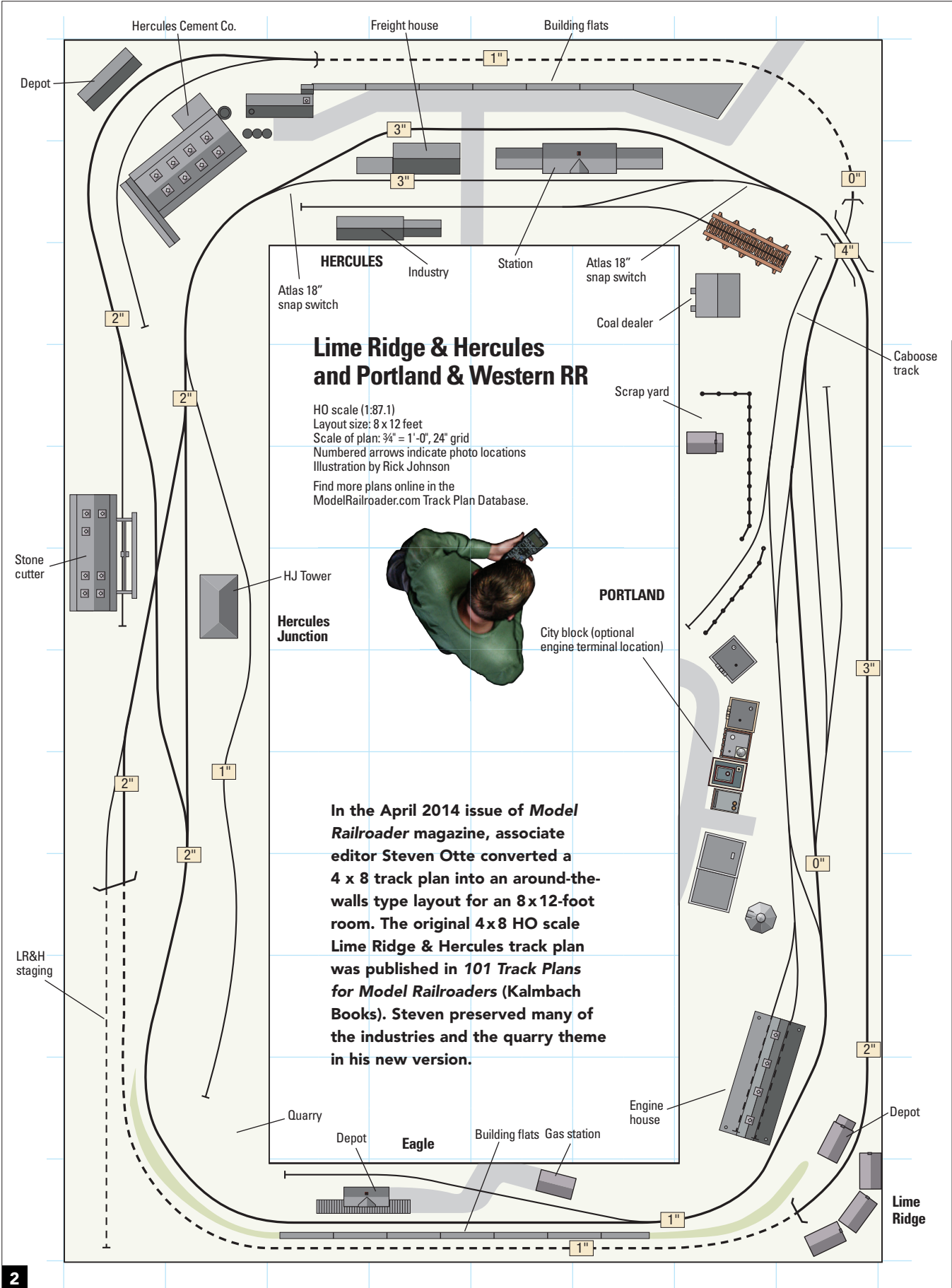
main line freight only, branch line, and freight yards, 15. These are the minimum standards to provide reliable operation. You'll notice if you choose a 24" minimum radius in HO scale a majority of equipment will operate reliably and should be a minimum acceptable standard for most layouts.

How you view the curves on your layout can affect design. If you only view the curves from the inside, the sharpness of the curve is less emphasized and the equipment will look acceptable running through them, 16. If you view the curve from the



19

An article by Van S. Fehr, "Understanding vertical curves," appeared in *Model Railroad Planning 2016*. The article describes procedures for calculating and constructing vertical grades. For good appearance, use vertical curves no shorter than the coupler-to-coupler length of the longest equipment and twice as long if possible.



Lime Ridge & Hercules and Portland & Western RR

HO scale (1:87.1)
 Layout size: 8 x 12 feet
 Scale of plan: 3/4" = 1'-0", 24" grid
 Numbered arrows indicate photo locations
 Illustration by Rick Johnson
 Find more plans online in the
 ModelRailroader.com Track Plan Database.

In the April 2014 issue of *Model Railroader* magazine, associate editor Steven Otte converted a 4 x 8 track plan into an around-the-walls type layout for an 8 x 12-foot room. The original 4 x 8 HO scale Lime Ridge & Hercules track plan was published in *101 Track Plans for Model Railroaders* (Kalmbach Books). Steven preserved many of the industries and the quarry theme in his new version.



CHAPTER SIX

Detailing operations

Adopting prototype practices can enhance your operating session

The GNRR North Local arrives at Dow chemical on Tom's layout to switch the cars there. After opening the gate to the facility, the conductor will remove the derailed and then line the turnout to the industry siding. The blue signal can only be removed by the person, group, or craft that applied it, so the crew will have to wait until it is removed by industry personnel (the layout owner) before coupling to the tank cars. In this case, the blue signal is used to protect tank cars from being moved that have hoses hooked up for unloading. Following the prototype procedures adds time to an ops session.

When modelers think about details, they usually imagine adding extra detail parts to locomotives, rolling stock, or structures, or incorporating scenery details that improve the look of our models. But details can also be operational and used to enrich an operating session by replicating those same situations and items that the prototype deals with on a daily basis. There are numerous operational details that can be added to your layout. Let's look at each one and explain how it can be integrated into your operating sessions to elevate them to a higher level of realism.