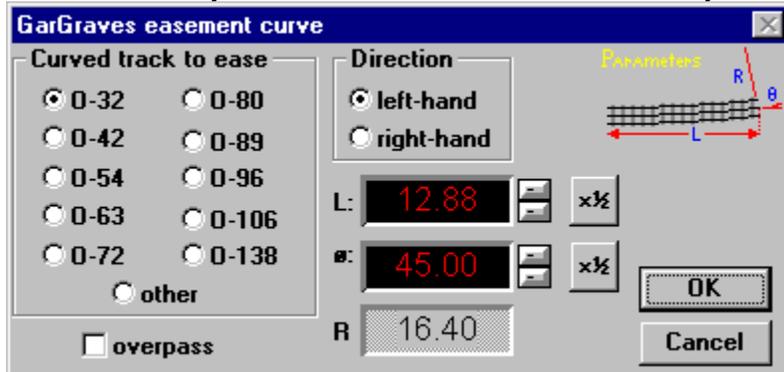


## Easement curve track

An easement curve is a section of track designed to take a straight run of track smoothly into a curved section of track, gradually increasing the curvature over a specified distance until the curvature (or radius of curvature) of the curved section is reached. This allows fast moving trains to gradually 'feel' the curve rather than simply slam into it, as is typical in most toy train layouts.

RR-Track track libraries that contain support for flexible track allow you to create an easement curve by choosing the Easement... track item, usually found under the track submenu that contains curved track sections. When you choose to create an easement curve, you will see a dialog like that below:



The set of radio buttons in the group **Curved track to ease** show which of the track library's component curves you are easing. The radio buttons just above the panel readouts let you choose whether the easement is a left-hand or right-hand one (there is a difference here, unlike for constant radius curves). The panel readouts near the center show the length and arc of the easement curve (the length is along the straight section of track while the arc is the arc angle (in degrees) that the easement has to bend through. The readout showing the radius is the final radius of curvature of the easement (this is the end the curved section you are easing attaches to; the straight section attaches to the other end. These parameters are shown graphically in the upper right of the dialog). You can use the up/down spin buttons to change the length and arc, and you can choose the x1/2 buttons to change the length and arc to half of their maximum values (useful for quickly producing an easement for half of the curved section --- this comes into play when you are easing 90° and 180° curves).

### To create an easement curve:

1. Pull down the **Track** menu and choose **Easement...** The **Easement Curve dialog**, as shown above, appears.
2. Choose the manufacturer's curve that you wish to ease. This automatically chooses an final radius of curvature and an arc equal to that of the curve you have chosen to ease.
3. Using the up/down spin buttons for the **Length** and **Arc**, set both of these quantities to those that you require. You cannot create a single easement curve longer than the length of the flexible track section in the track library you are using (this is 36.0 inches for GarGraves, 1.5m for LGB).
4. Choose the direction of the easement (left or right) and the press **OK**. If you decide you don't want to create an easement curve, press **Cancel**. RR-Track calculates the required shape of the easement curve, and places it under the cursor for you to add to the layout.

Once RR-Track has created an easement curve for you, it still remains for you to create the easement section using flexible track. To help you in this endeavor, RR-Track will display the center-line offsets for the particular easement curve. This is done through the *Track Properties Inspector*, which you access by positioning the cursor over the easement and pressing the right mouse button .

### To access easement curve shape information:

1. Position the cursor over the easement of choice and click the right mouse button. The **Track Properties dialog** appears.
2. Press the **Details...** button on the Track Properties dialog. The **Extended Track**

Properties dialog appears.

3. Press the Easement.. button on the track properties dialog. A small dialog appears which gives a list of horizontal and vertical positions which are successive centerline coordinates for the easement curve starting at the end which connects to the straight track, and ending at the end which connects to the curve you are easing.
4. Press the Clipboard button if you want RR-Track to place this position information on the Windows clipboard for pasting into other applications, such as NotePad, WordPad, or your favorite text processor. This sequence of position pairs denotes the centerline of the easement curve; when plotted on a suitable surface this 'curve' serves as a guide for bending and cutting your flexible track.

Remember, RR-Track can calculate any easement curve you want, but it is still up to you to create that curve on your layout.

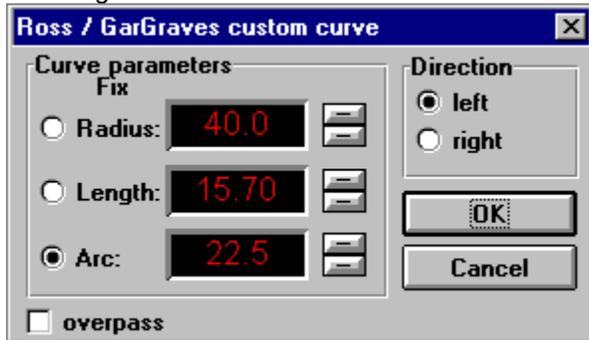
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**Note:** The starting values for the length and arc of the easement curve are the equivalent ones for the stock curve you are matching. If you use these initial length and arc values for your easement, RR-Track will go ahead and calculate the easement curve, but you should bear in mind you won't be 'easing' the real curve very much, because there is only a limited amount of easing that can be carried out in the same physical distance. As a rule of thumb, you should specify no more than 1/2 of the arc of the stock curve you are easing, but use a length that is about that of the stock curve, in other words, give yourself about twice the distance to ease the curve. You should bear in mind that easing a curve will require more space on your layout than for the equivalent non-eased curve. See the diagram below for an illustration of these remarks.

## Custom constant radius curved track

Unfortunately, not all of your layout's demands for curved track can necessarily be met using stock curved track, cut down to a new arc or otherwise. For these cases you will have to resort to bending your own curved track. Custom constant radius curves are only available in track libraries whose manufacturer's produce flexible track.

The custom curve dialog, used for bending flexible track to a constant radius curve, consists of controls for specifying the length, radius, and arc angle of the curve, as well as whether you want the bend to the left or right.



The three windows showing the radius, length, and arc angle are changed by using the up/down buttons to their immediate right. You can fix any one of these three, and vary the other two, as needed to establish the proper curve (only two of the three are needed to specify the curve).

### Detailed procedure:

1. Pull down the [Track](#) menu and choose [Curves|Custom curve](#). The *Custom Radius Curve* dialog appears.
2. Using the up/dn spin buttons, set the radius, arc, and length to values that you need. You can fix any one of these with the radio buttons on the left and then vary the other two. Note that only two of these three quantities are required to specify a constant radius curve.
3. When you are done, press the **OK** button; if you decide you do not want a custom constant radius curve, press **Cancel**. When you press OK, RR-Track creates a piece of sectional track with the specified arc and radius and places it under the cursor for positioning just as for any other piece of sectional track.

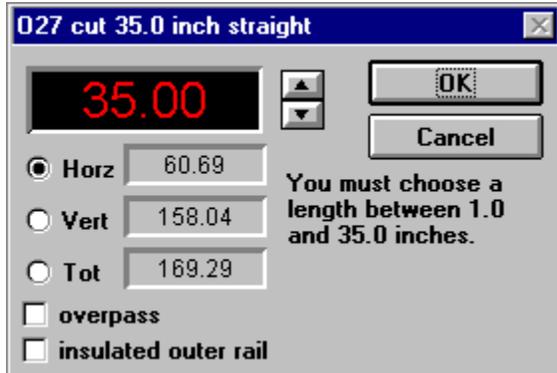
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**Example:** you may know that you need a curve subtending  $15^\circ$ , while the length and radius are free parameters. Unfix the arc angle entry (by fixing one of the others), set it to  $15^\circ$ , and then fix it, freezing the angle at this value. You can then trade off between length and radius to get the curve you want.

**Note:** if you reached this dialog as a result of a track end measurement, the radius, length, and arc parameters are preloaded with those compatible with the measurement.

## Cut-to-length straight track

When none of the stock straight track lengths will do the job, and you either choose the [cut-to-length...](#) menu item from the straight track menu or complete a distance measurement between track ends and choose cut one, you will see a dialog like the one below:



The custom straight dialog, used for cutting all straight track, consists of controls which show the horizontal, vertical, and total lengths of the last ruler measurement, and a large readout which shows the selected length. There are also check boxes which you can use to set overpass and insulated outside rail characteristics (three rail libraries only), and **OK** and **Cancel** buttons.

To get a custom length of track, you can choose among the three lengths shown in the list or type in the length you need by pressing the appropriate radio button. The three numbers in the list are the horizontal and vertical components of the last measurement, and the total. You can also set any length within the allowed range for that library by using the up/down spin buttons to the right of the top most readout. After you specify the length and any other parameters, press the **OK** button. RR-Track makes a straight section of the appropriate library, and puts it under the cursor just as for any other track section. If you decide you don't want to create a custom straight section, just press the **Cancel** button.

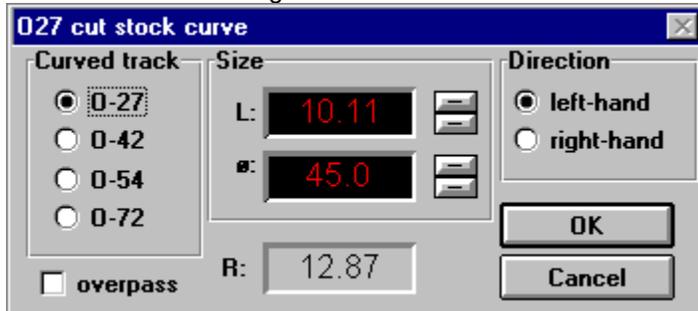
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**Note:** if you have created a custom length straight section as a result of a track end measurement, and do not choose an incompatible length or set of track junctions that do not produce a fit, RR-Track automatically places the custom straight section in your layout at the measurement points rather than under the cursor for manual positioning.

## Cut stock curved track

Sometimes when designing a train layout using sectional curved track, none of the standard sections on the menu has the proper arc to meet your needs. On these occasions, in track libraries where stock track sections may be cut up as needed (generally those that do not have integral ballast such as Kato UniTrack or those with special end connectors), you can choose to cut a stock sectional curve to a smaller arc.

When you choose the cut stock curve item in the curved track submenu, you will see the cut curve dialog. This dialog consists of radio buttons for setting the starting track type, radio buttons for setting the curve direction (left and right), readouts for the arc angle and the length, and spin buttons which are used to set the new arc and/or length.



The windows showing the length and arc angle are changed by using the up/down buttons to their immediate right. Only one of these specifies the curve, since the radius has been fixed when you select the starting track section using the radio buttons on the left side. You can vary either the angle or the length as necessary for specifying the cut curve. When you are satisfied, press the **OK** button. RR-Track creates the curve and places it under the cursor for positioning. If you don't want to create a custom cut track section, press the **Cancel** button.

### Detailed procedure:

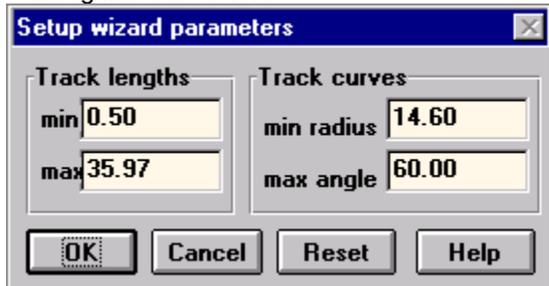
1. Select cut stock curve from the curved track menu. The [Cut Stock Curve dialog](#) appears.
2. Choose the manufacturer's curve that you want to cut up from the list at left. The size readouts are set to the maximum length and arc for that piece of track. The radius readout, at bottom center, shows the centerline radius (in inches) of that stock curve.
3. Using the up/dn spin buttons, either set the arc you want, or the length (both are updated as either is changed). You can select either a left- or right-hand curve as needed using the radio buttons at the upper right.
4. When you have set the arc and/or length that you need, press the **OK** button. If you decide not to chop up a curve, then press **Cancel**. If you press OK, RR-Track creates the necessary track section and places it under the cursor.

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**Note:** if you reached this dialog as a result of a track end measurement, then the stock curve to cut, as well as the arc to cut, will be predetermined from the measurement. RR-Track will choose the largest radius stock curve that can be accommodated by the two track ends. If the subsequent track section fits 'smoothly' between the measurement points, the track is automatically placed in the layout. Otherwise, the new track section is placed under the cursor as for any other newly added track section.

## Setting track wizard parameters

Track libraries that support wizards have a menu entry, Setup Wizard, that is used to set the parameters that constrain the choices the wizard can make when creating track for you. Track wizards are helpers in track libraries that will create custom combinations of straight track, constant radius curved track, cut stock curved track, and general curved track from information obtained when making a measurement between track ends. When you pull down the Track menu and choose Setup Wizard, you will see a dialog like that at left:



There are four fields which are the current values of parameters that the track wizard uses to make decisions about which type of track sections to use. The two fields at the left contain the minimum and maximum lengths for straight track. These are default set at 0.5 inches and the length of a piece of standard flexible track. The two fields at the right contain the minimum radius of a curve, and the maximum angle a custom curve can subtend.

**Length:** you may enter any values you like here, but they cannot be negative, and the maximum value must be greater than the minimum value. If you want to, you can tell RR-Track that it may use a maximum length for straight track that is greater than that of a standard piece of flexible track.

**Radius and Arc:** you may set any values you like here as well. The default minimum radius is that of the sharpest standard curve in the library, while the default maximum arc is 45°. You can enter any non-negative value you like for the radius. You can enter any value up to 90° for the maximum arc for a curve.

You move the cursor to any field you want to change and type in the new value. Press OK to make this change permanent (the track library will write the new values to its initialization file), or press Cancel if you don't want to make changes. Press Reset to return the values to the default values for that library. All dimensions are in inches, while all angles are in degrees.

**Note:** the maximum length of a straight track section also is the maximum length allowed for a constant radius curve and a general curve. The minimum radius is also the minimum radius for general curves as well as straight curves. The maximum arc covers both constant radius curves and general curves. It is usually a good idea to restrict the general curves the wizard creates to subtended arcs of less than 45°. Cut stock and radius curve fills are good up to 170° or so, but are usually restricted to 135°.

Some track libraries, notably those with both flexible track and stock straight track, allow you to choose which type of track you want to use for straight fills.

Track lengths		Track curves	
min	1.00	min radius	23.62
max	59.04	max angle	60.09
<input type="radio"/>	use 1500mm	max angle stock	135.10
<input checked="" type="radio"/>	use 300mm		

Buttons: OK, Cancel, Reset, Help

The radio buttons at the middle left, below the track lengths group, are used to select the type of constant length filler straight section (in this case, for LGB, either 1500mm flex track or 300mm #1000 straight track). There are two maximum angle controls: max angle sets the maximum angle, in degrees, for general curves, while max angle stock sets the maximum angle for constant radius and cut stock curve fills.

## **General curves**

A general curve is a piece of flexible track with a non-constant radius of curvature (i.e. the curvature of the track changes as you move down the track). A restricted example is an easement curve, which mates a constant radius curve on one end with a straight track on the other. General curves may curve in both directions, if necessary to couple with the track end points.

## **RR-Track** track library specific dialogs

There are several types and varieties of track that require further information from you than may be gathered from selecting a menu item. These include custom cut straight sections, custom cut stock curve sections, custom radius curves, easement curves, and general curves. Choose the type of custom track section from the list below for more information.

[cut-to-length straight track](#)

[cut stock curved track](#)

[custom radius curved track](#)

[easement curves](#)

[setting wizard parameters](#)

[general curves](#)

