



Grand Prix Track Plans

by Doug Lotz

Grand Prix Track Plans

Track Size

1. The track size is 14.75" x 35'
2. Racing distance is 32'.
3. If a different plywood is used; then increase the width to 15.75" and modify the corresponding dimensions as laid out in these plans.

Cost of Track

1. Track should be able to be built for less than \$200 — includes paint and hardware.
2. The cost of the hardware may easier cost more than the wood.
3. Buying tips
 - a. Buy the T-nuts and bolts at a fastener speciality store — much cheaper. — Merit Fasteners in Longwood.
The T-nuts were \$3 per 100 instead of \$.25 ea. at Ace Hardware.
 - b. Wood screws, washers are much cheaper by the box instead of by the piece at Ace.
 - c. The chain bolt may be a little hard to find. You may have to go to several different hardware stores in order to find one.

Number of Sections

1. There are 7 sections that make up this track. This is primarily because of the size of the plywood that was available.
2. Each section needs to be numbered with Number 1 being the start of the track. Even though some of the sections should be interchangeable, this insures that the lanes will be properly aligned. The numbers may be placed on the Joint Plates.

Lane Width

1. The Awana lane width is 1.375".
2. All other tracks are 1.625". This is what these plans use.
3. The track that can be ordered through the Awana Catalog and Piantiosi Oar Company use 1.625".

Plywood

1. It is strongly recommended that you use good plywood. If you are going to take the time to make a track, make sure that it will last.
2. The recommended plywood is Baltic Birch. This is available from:
Parker Lumber Company, Maitland, FL
(Just north of the Maitland overpass on 17-92
They need a day or two of advance notice so that they can have it in stock.
This plywood comes in 5' x 5' sheets.
Baltic Birch is solid hardwood in all of the plies and has more plies than normal plywood.
3. If you use the normal 4' x 8' sheet of plywood the sections may be longer.
4. Home Depot and Lowes have a plywood called Paraply or Guatambu. Do not use this plywood even though it looks good, has more plies, and is solid throughout. The glue that is used is not waterproof and there is a tendency at times for the plies to separate.

5. The cost of Baltic Birch vs. any other is about the same.
 - a. .25" approx. \$16
 - b. .375" approx. \$23
 - c. .75" approx. \$32

Finishing

1. It is criminal to paint pretty wood (personal opinion).
2. However, for longevity, and easy cleaning a good finish is essential.
 - a. Use a clear finish.
 - b. The lanes may be painted. Make sure the colors are in the right order — Red, Blue, Green, Yellow.
 - c. If you put a finish on the top it is mandatory to put a finish on the bottom (at least 2 coats) — prevents warping.
 - d. For the racing surface use at least 5 coats of polyurethane.
Note: there is a polyurethane that is made for floors. This has a hard finish and is made to take abuse. This may only take 2 coats.
 - e. The track can be in pieces to make the finishing process easier.
3. Sanding
 - a. Sand the lane strips using grits up to 1500. This sand paper is available at Ace.
 - b. Sand between coats of finish.

Electronic Finish Lines

1. Recommended: Microwizard Finish Lines. They have a variety of options depending on your budget. They are cheaper and faster than the finish lines from Awana.
2. These finish lines are easy to install and reliable.
3. www.microwizard.com
They are located in Hazard, KY
4. You will need to select and have in hand the finish line before making the slot for the frame on the bottom of the track.

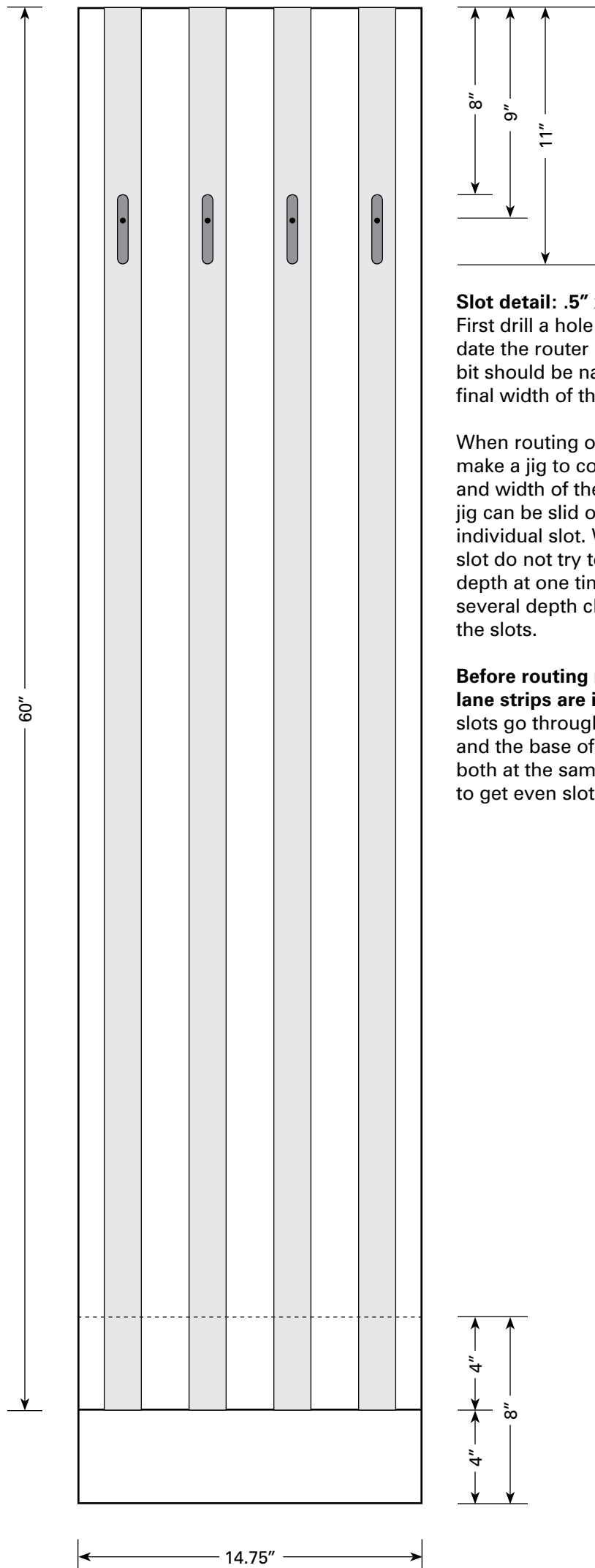
Assembly

1. Assembly should take approx. 15 minutes.
2. Put all the sections in order flat on the floor. The joints should be butted up against each other.
3. Have one person put the bolt in the holes. No need for that person to screw them.
4. A second person comes along with an electric (preferably cordless) drill to screw in the bolts.
5. Use a #3 Phillips bit and a low torque setting.
6. After the sections are bolted together, have 1 person lift the starting end and another person lift at the first joint. Lift just high enough for the legs to fold out.
7. Put into place the leg cross bar support.
8. Install the finish line.

Storage

1. When stored, stack of sections will be about 1'.
2. Place foam rubber padding between sections.

Section 1 — Top View



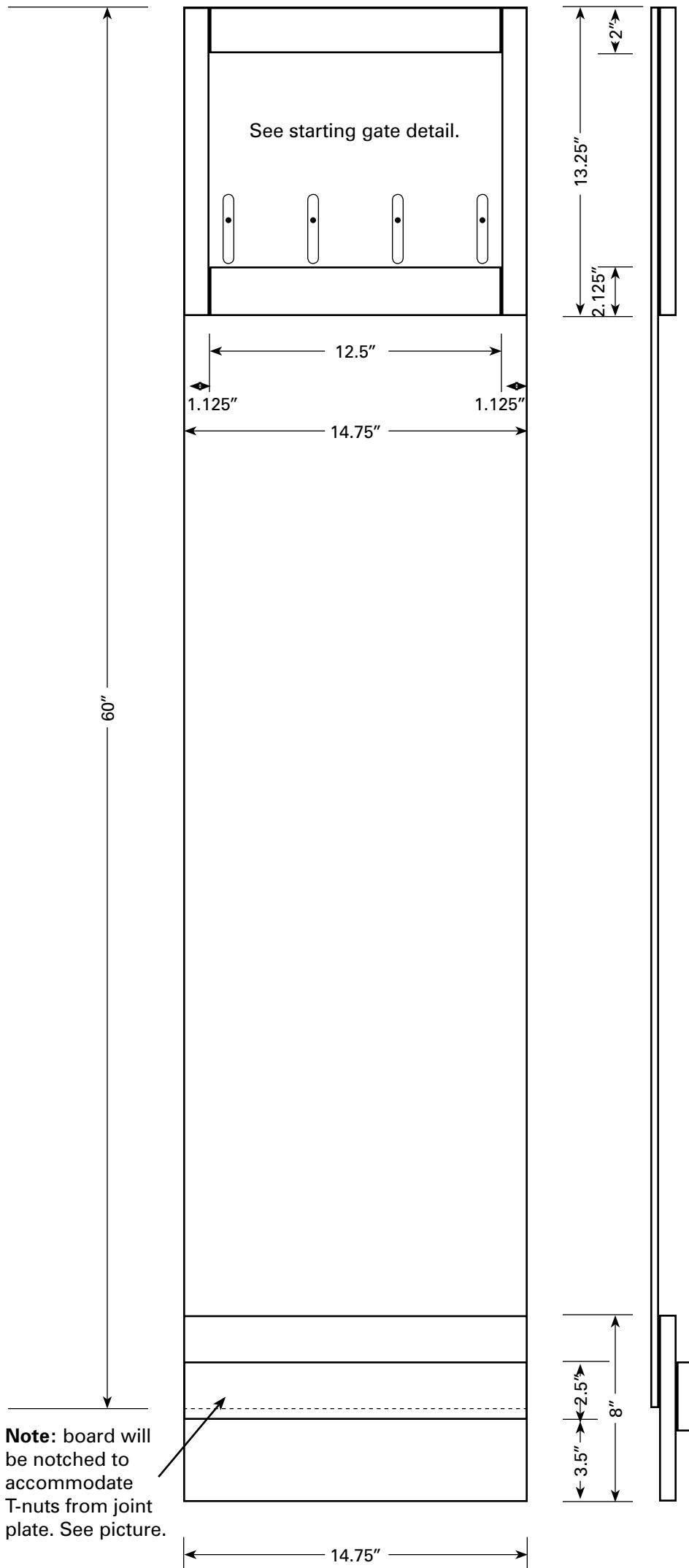
Slot detail: .5" x 3"

First drill a hole to accommodate the router bit. The router bit should be narrower than the final width of the slot.

When routing out it is best to make a jig to control the length and width of the slot. The jig can be slid over for each individual slot. When cutting a slot do not try to cut the entire depth at one time. It will take several depth changes to cut the slots.

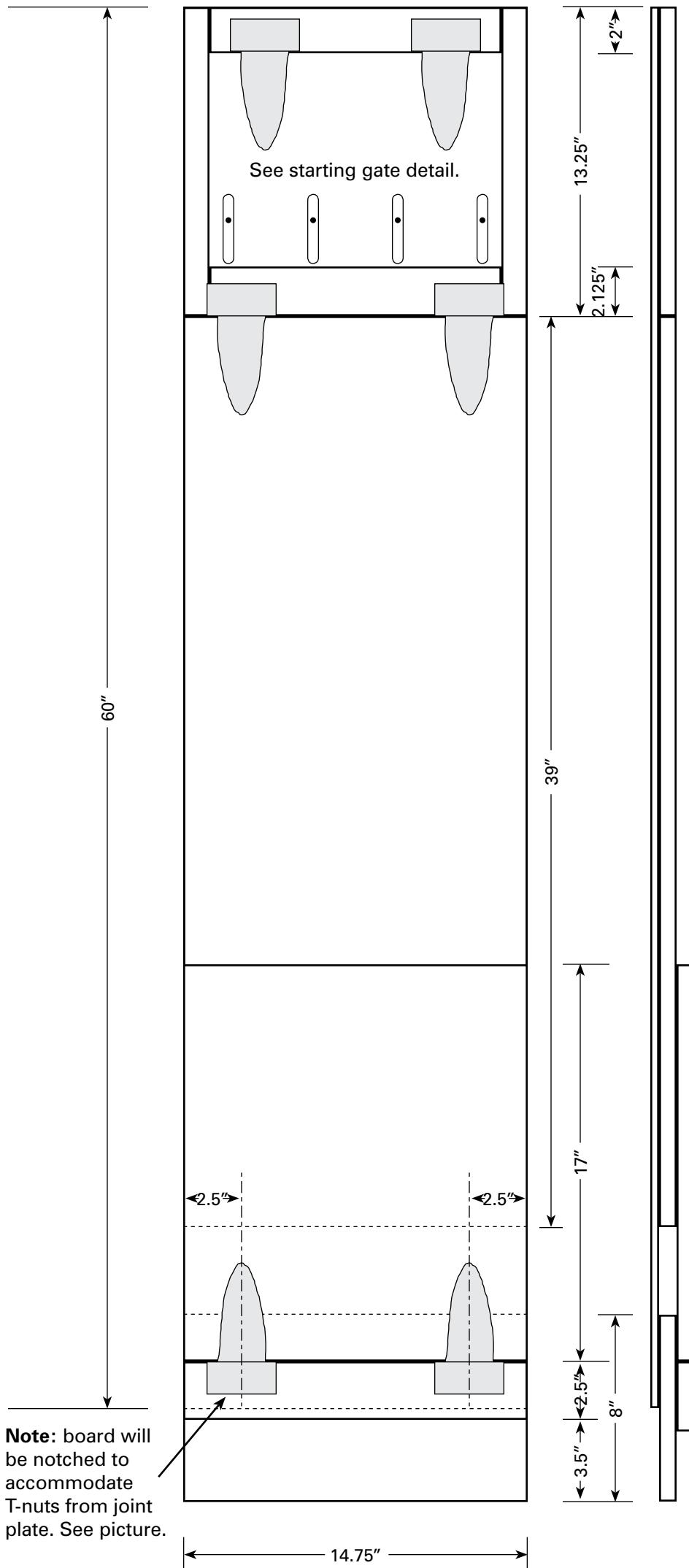
Before routing make sure that lane strips are in place. The slots go through the lane strips and the base of the track. Route both at the same time in order to get even slots.

Section 1 — Bottom View — legs not shown



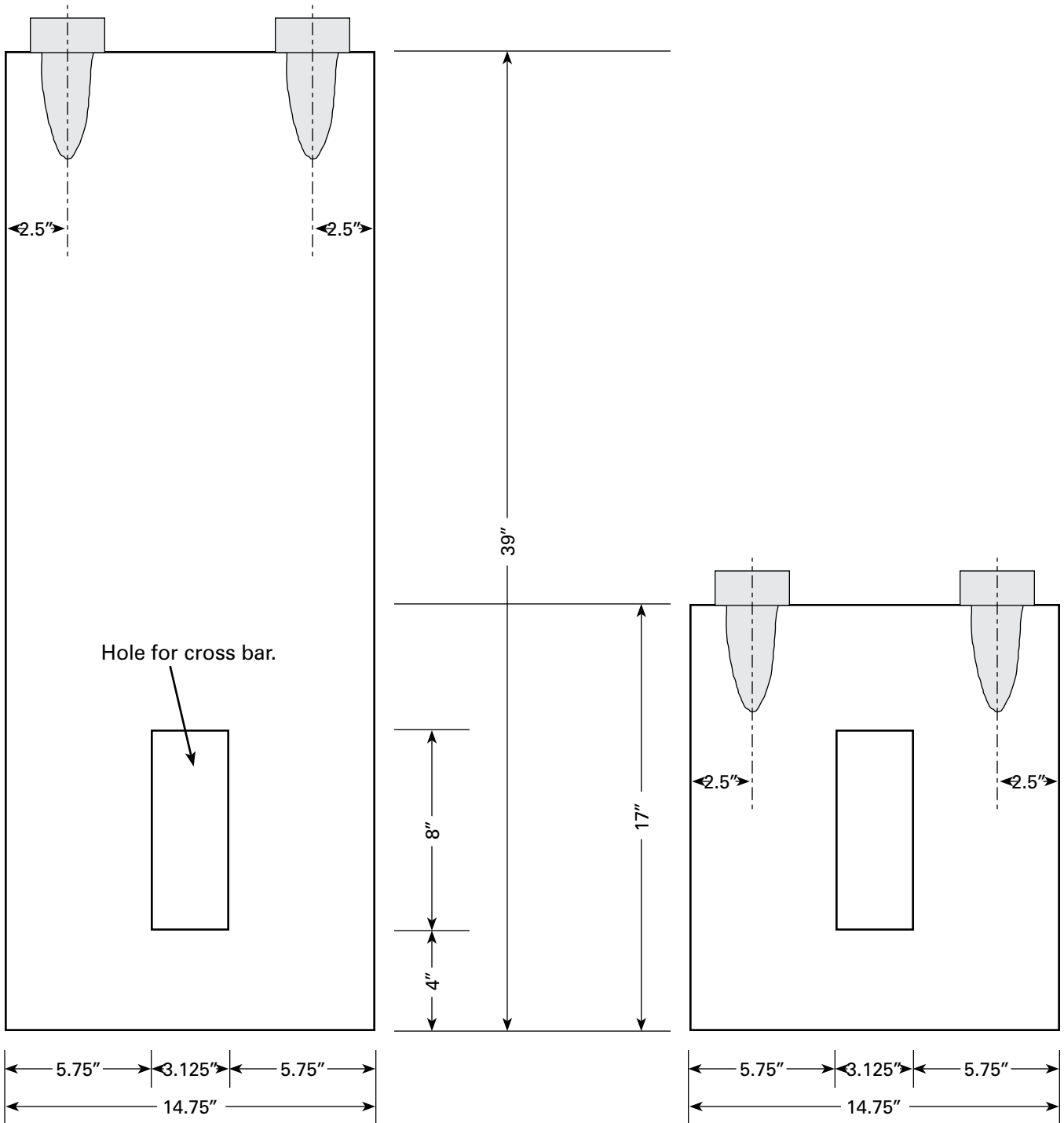
Section 1 — Side View — legs not shown

Section 1 — Bottom View — with legs

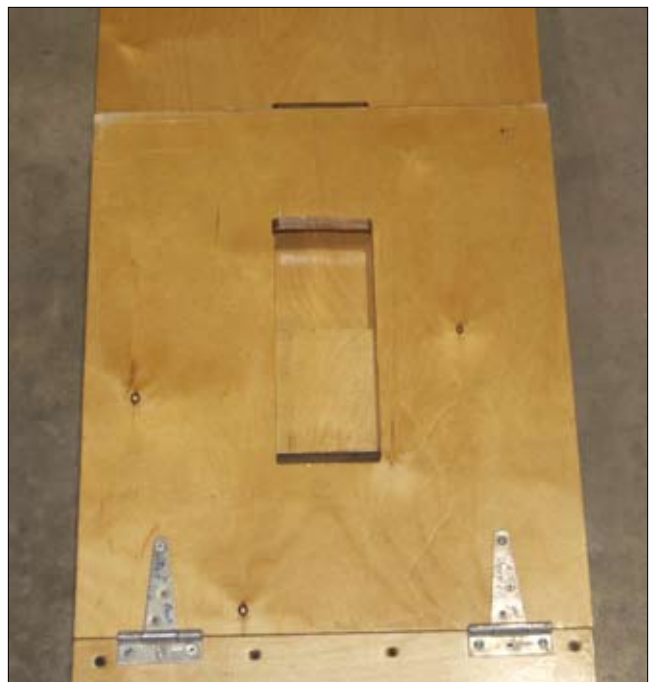


Section 1 — Side View — with legs

Section 1 — Legs

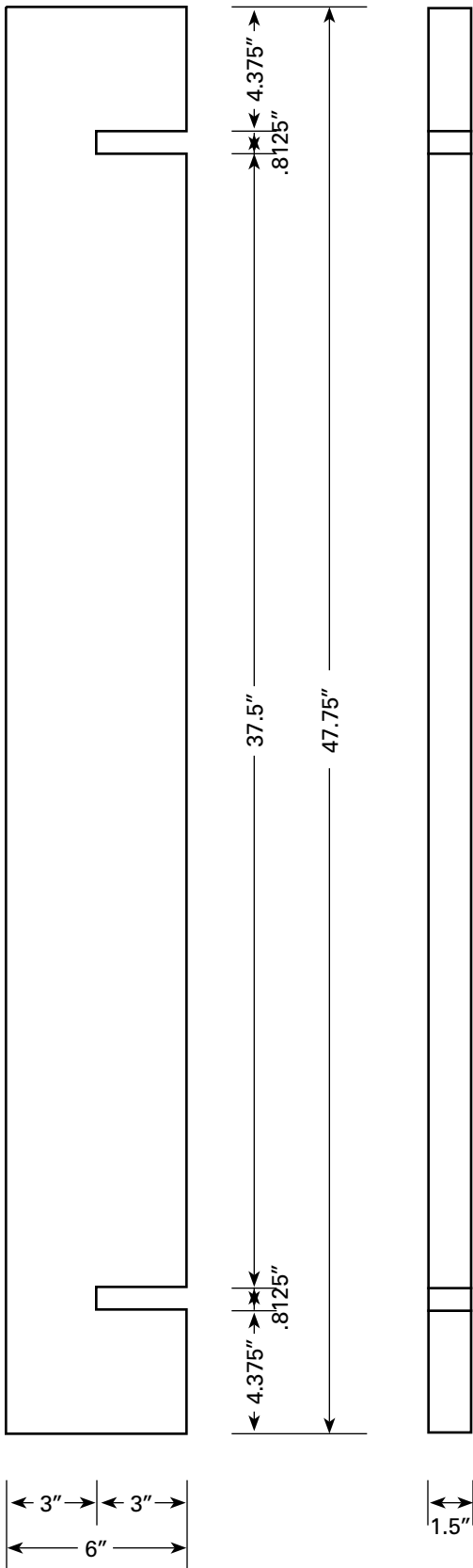


Section 1 — bottom view — short leg



Section 1 — bottom view — short leg

Section 1 — Leg Cross bar — side and edge views



Note:
Notches are to fit the legs. The notches will be a bit larger than .75" to make it easier to slide on and off the legs.

The cross bar squares the legs and steadies Section 1.

The cross bar is made from gluing 2 pieces of .75" plywood together.



Section 1 — bottom view



Section 1 — bottom view — short leg

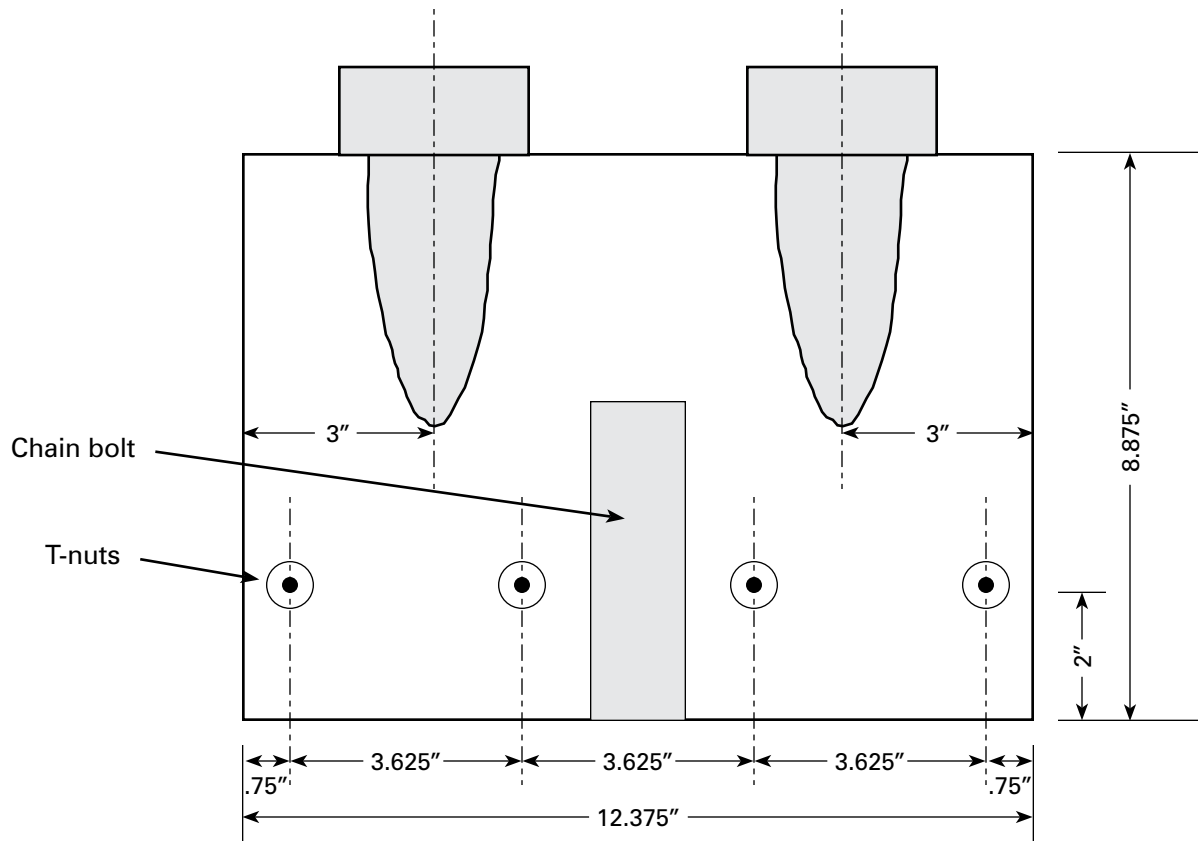


Section 1 — bottom view — legs folded — note: longer leg should be down first.



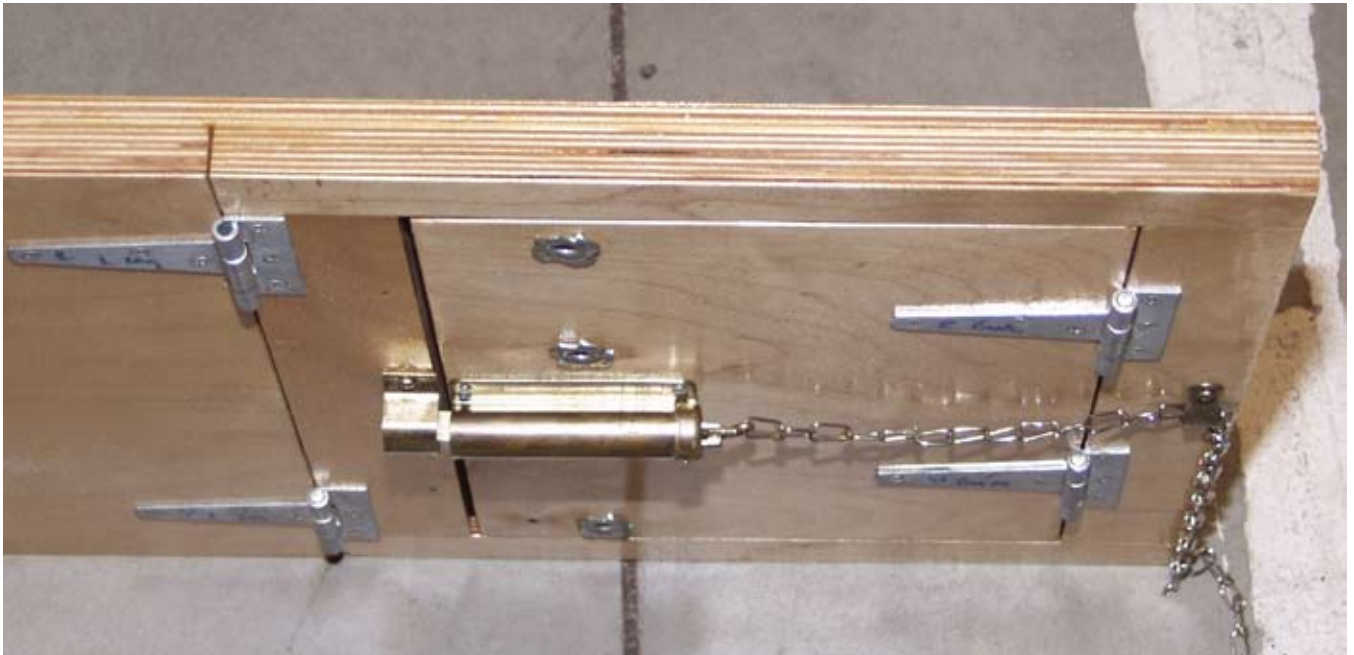
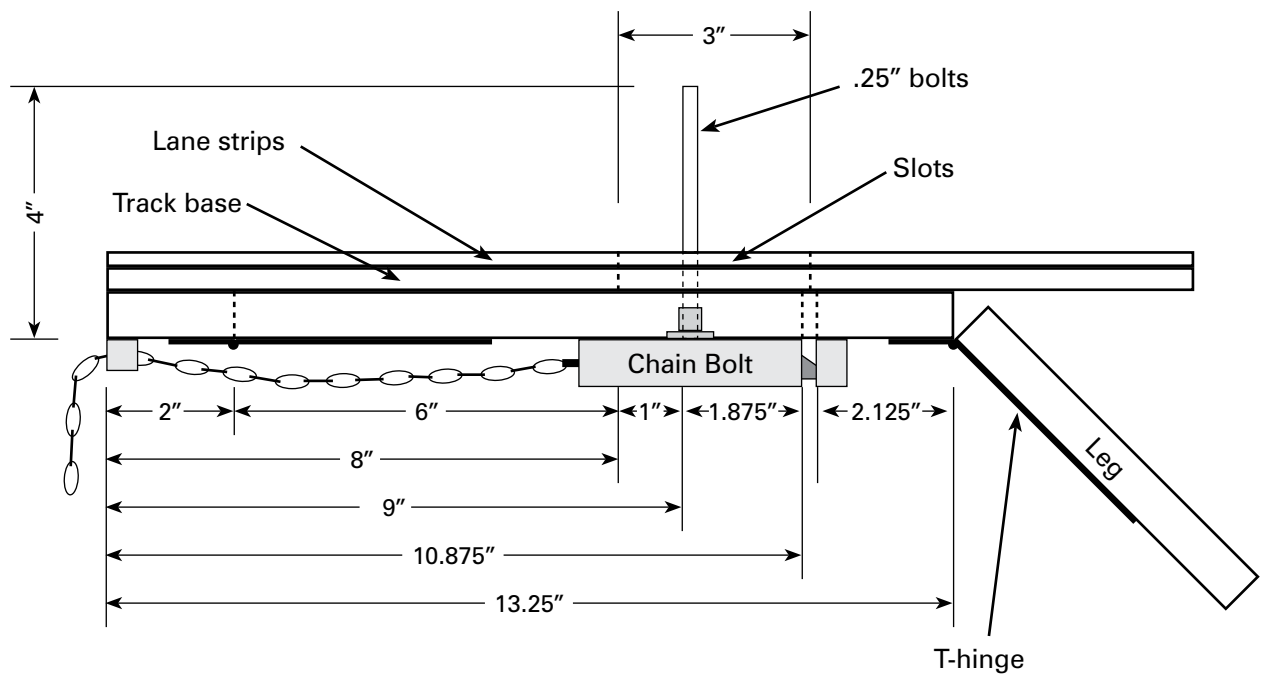
Section 1 — setup for racing — side view

Section 1 — Starting Gate — bottom view



Section 1 — bottom view — starting gate

Section 1 — Starting Area — side view

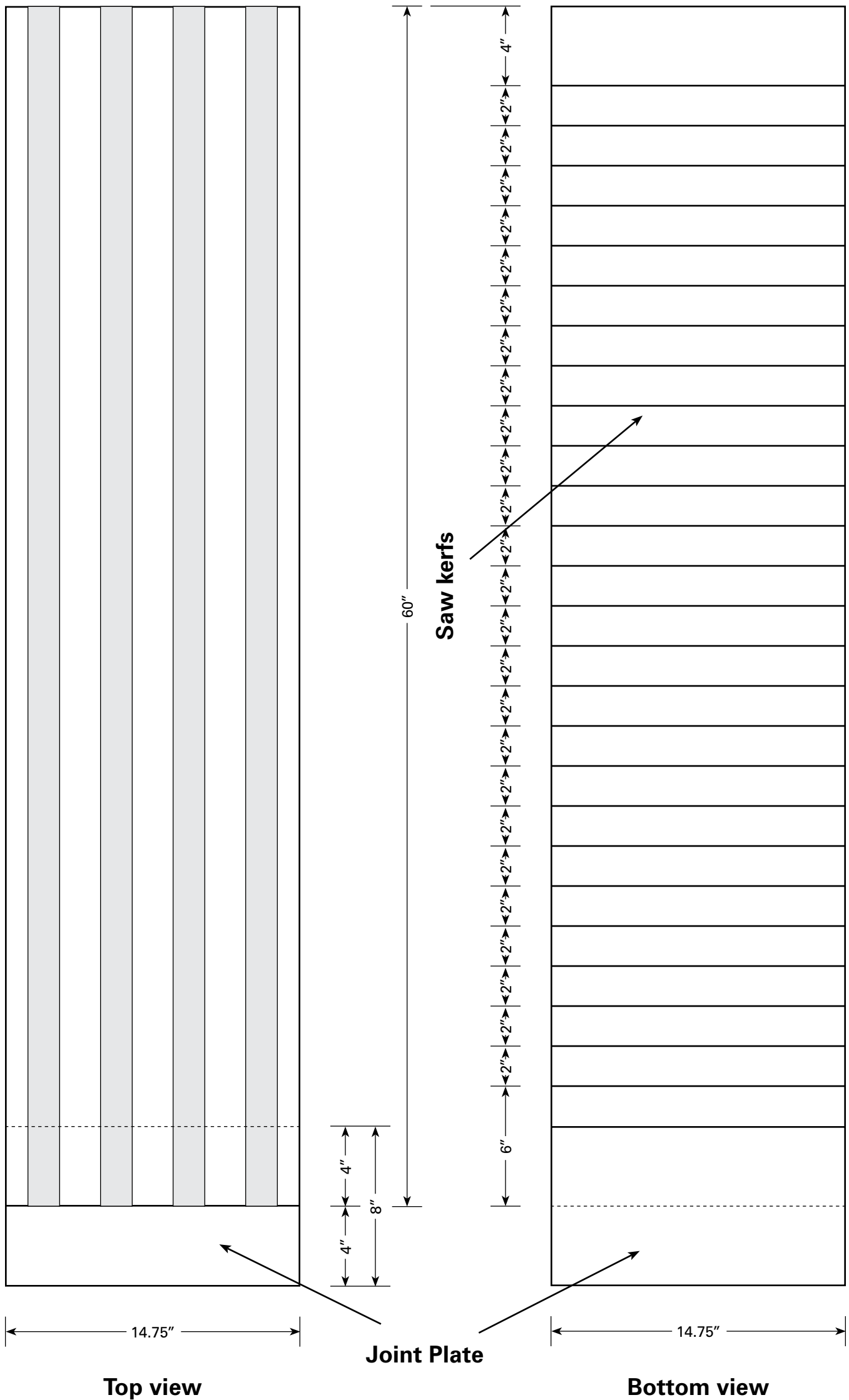


Section 1 — side view — starting gate



Section 1 — top view — starting gate

Section 2 — Top and Bottom Views



Section 2



Section 2 — bottom view — showing kerfs



Section 2 —side view — set up

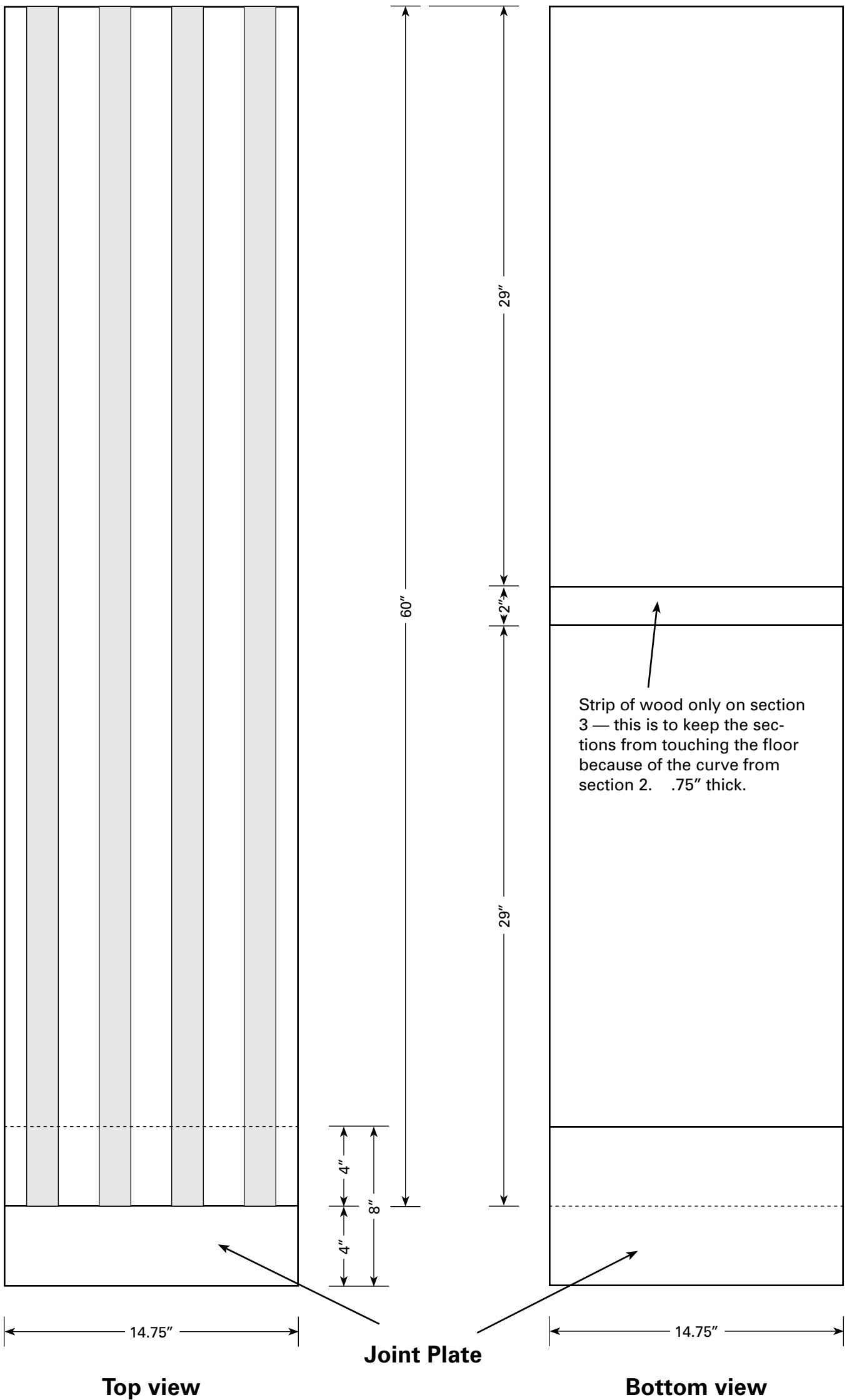
Saw Kerfs:

Saw kerfs are .125" deep and spaced 2" apart.

The purpose of the kerfs is to provide a curve to the track when it is set up — a transition from section 1 to floor level.

It is essential that the kerfs be evenly spaced to provide an even curve.

Sections 3 to 6 — Top and Bottom Views



Sections 3 to 6 — Bottom Views



Section 3 — bottom view



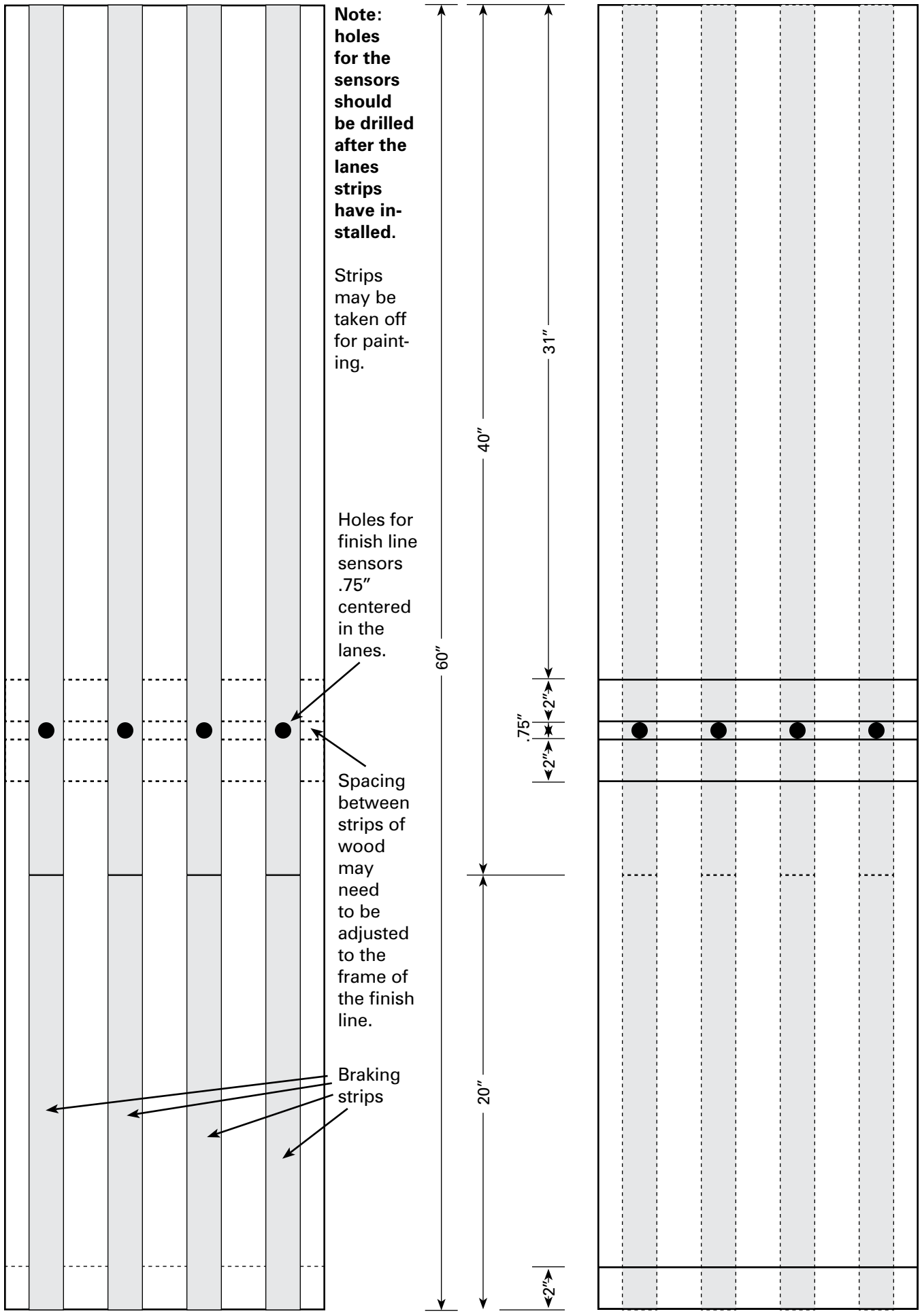
Section 4 — bottom view

Sections 3 to 6 — Top Views



Sections 5 and 6

Section 7 — Top and Bottom Views



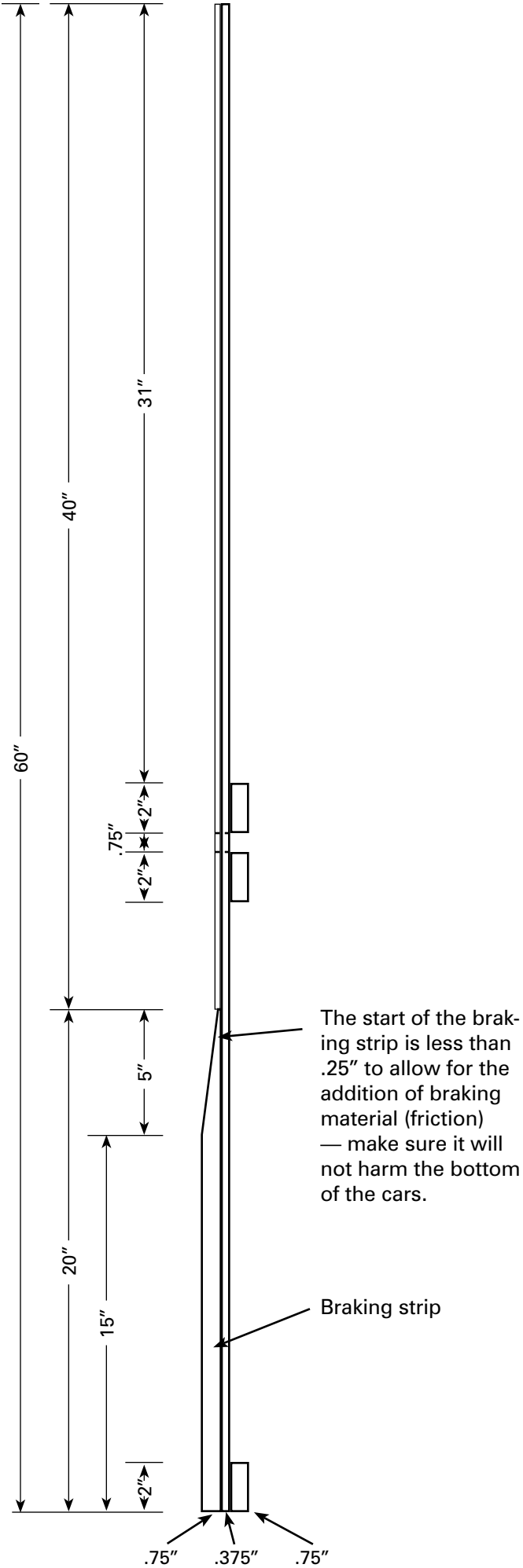
14.75"

Top view

14.75"

Bottom view

Section 7 — Side View



Section 7 — brake section — top view



Section 7 — end of track — bottom view



Section 7 — slot for finish line

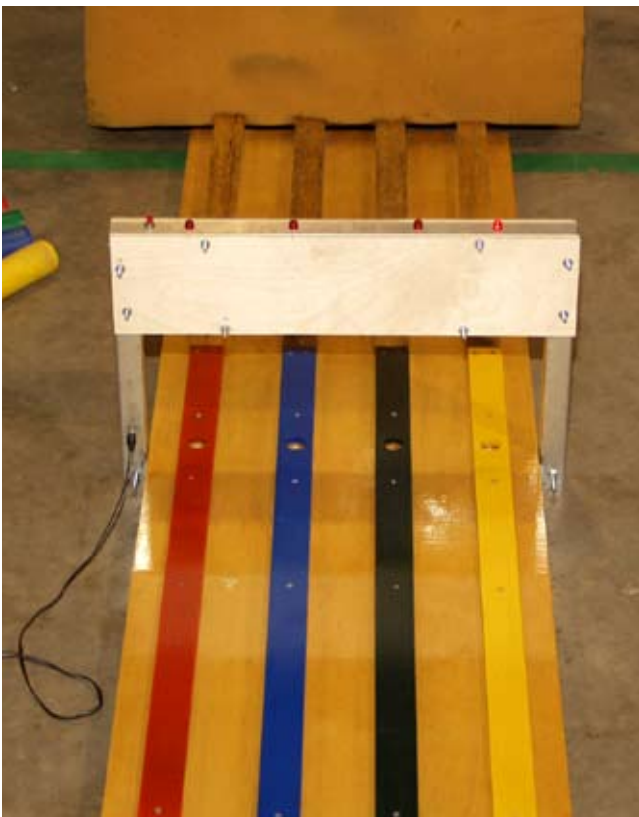
Section 7



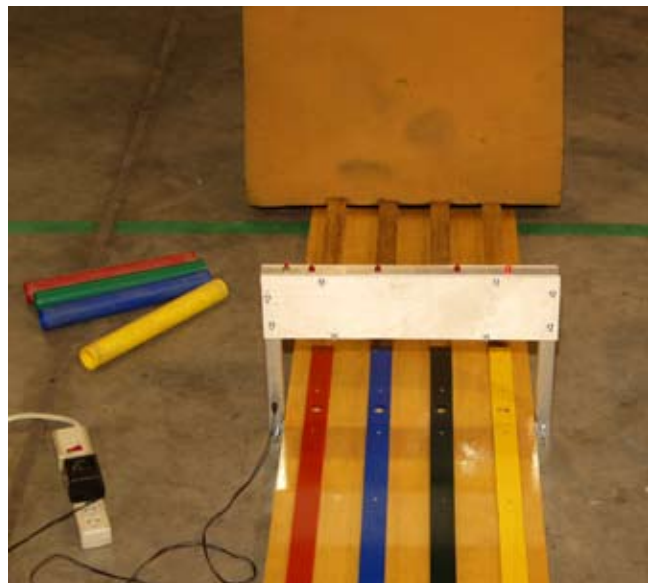
Section 7 — bottom view



Section 7 — brake section — top view



Section 7 — finish line



Section 7 — finish line

Section 7



Section 7 — finish line and end of track

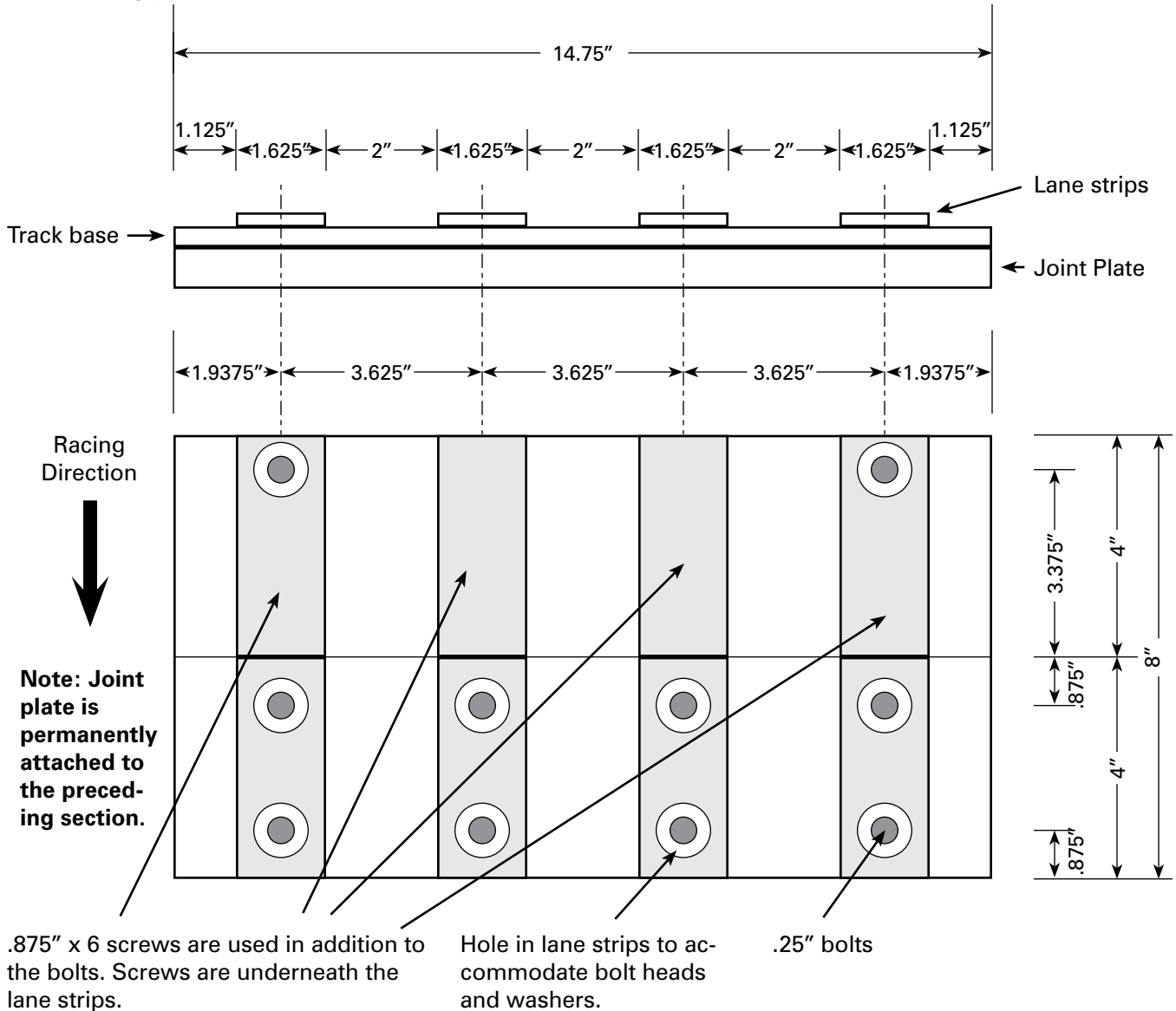


Section 7 — end of track — set up

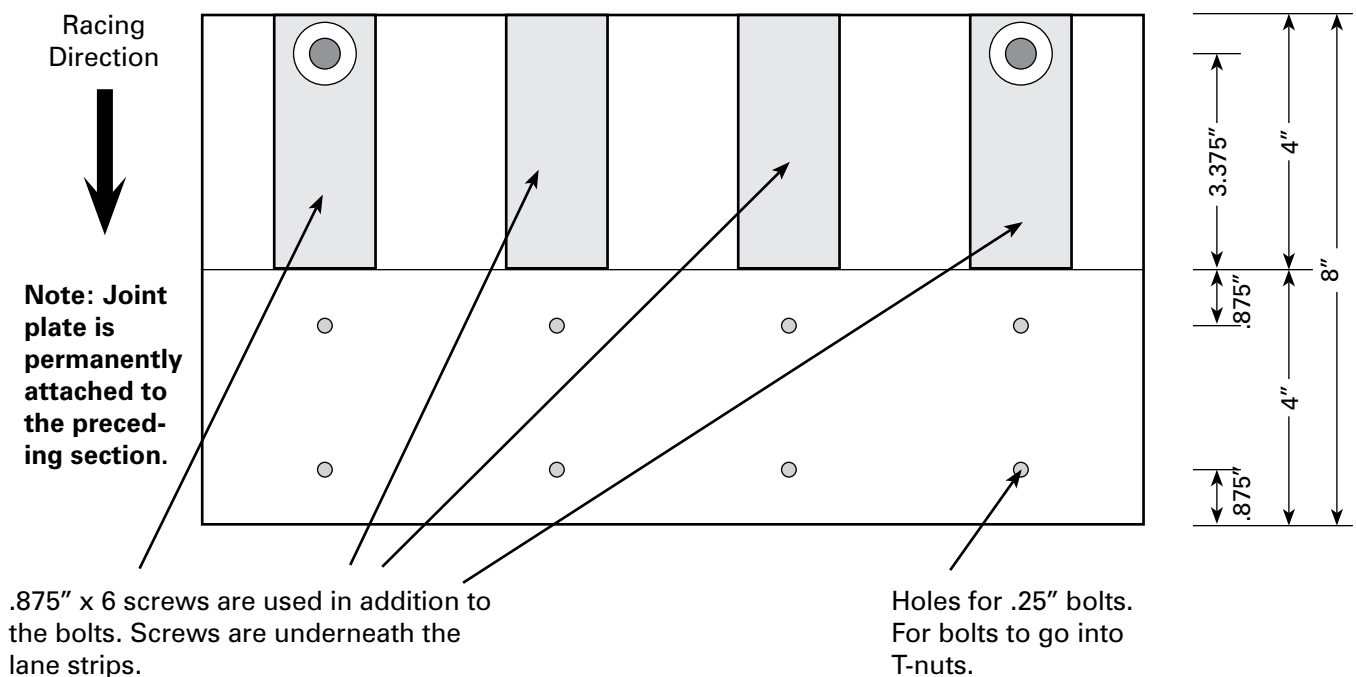
Joins

End View of Track Width and Lane Spacing

Center of lane measurements will be needed to order electronic finish line. Also needed for placement of T-nuts, starting posts, slots, and screws.

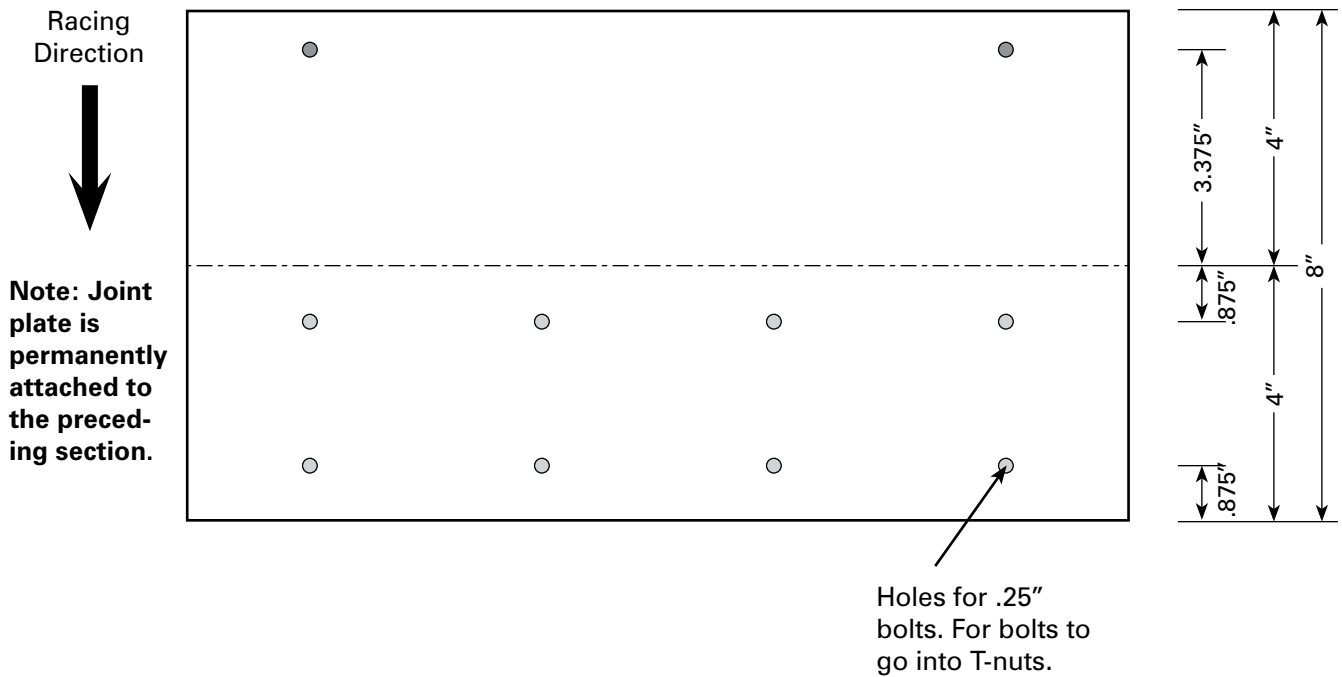


Joint Plate — assembled — top view

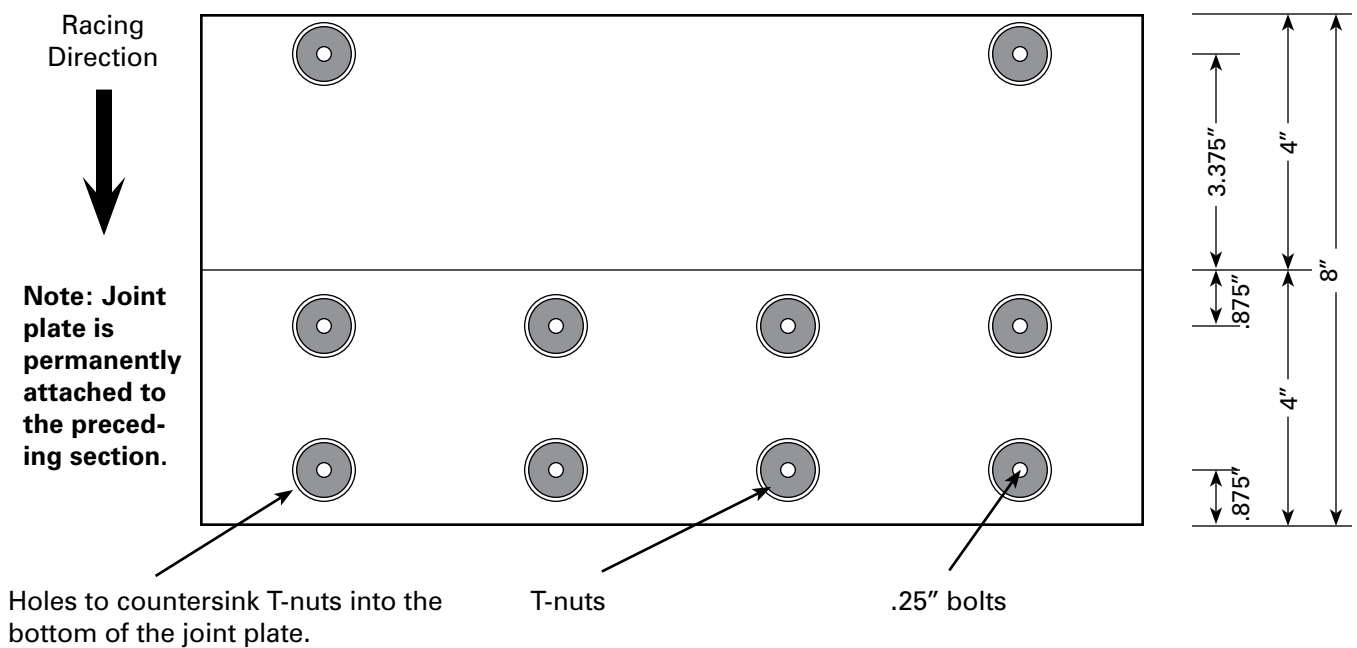


Joint Plate — without following section — top view

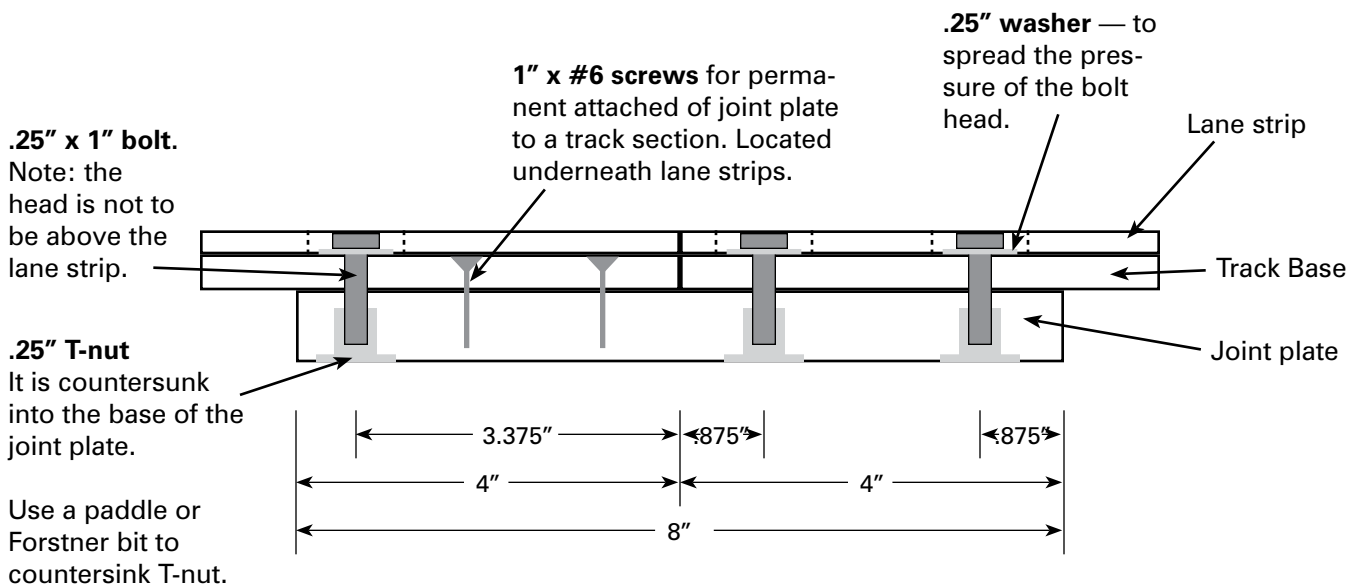
Joints



Joint Plate — no lane strips — top view



Joint Plate — bottom view



Joint — side view

Joints



Joint — top view



Joint Plate — bottom view

Joint Plates

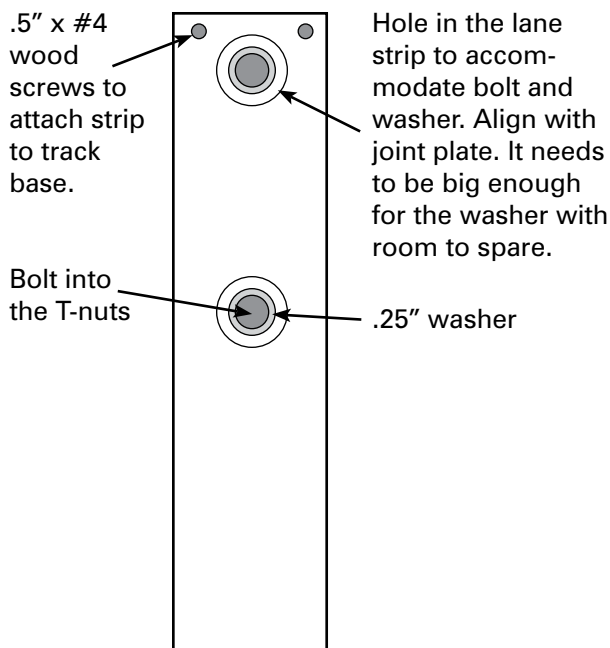
The joints are one of the most critical part of the entire track. If they are properly made they will greatly enhance the speed and accuracy of setting up the track. The following are some suggestions for making the joint plates.

1. As much as possible make each of the plates identical. Ideally they should be interchangeable.
2. Make a jig or a master joint plate. This will be used to locate and drill all of the necessary holes in the plates.
3. You will want to number each joint plate according to which section they will be attached to.
4. Mark the center line of the joint plate.
5. At first only drill .25" holes. When drilling these holes use a drill press for accuracy, especially vertically.
6. Using a paddle bit or Forstner bit countersink for the flanges of the T-nuts in the base of the joint plate. You do not want the metal to be scrapping on the floor. Use a drill press.
7. Drill the holes for the barrels of the T-nuts. Do not drill all the way through. You want the top of the hole to still be .25". This is to be a guide for drilling the sections. Use a drill press.
8. Clamp a plate to the end of Section 1 using the center line for alignment.
9. Drill the 2 .25" holes.
10. Unclamp the plate.
11. Hammer in the 2 T-nuts into that half of the joint plate.
12. Bolt the plate to the end of Section 1.
13. Butt the beginning of Section 2 to the end of Section 1. Clamp/nail/screw (temporarily into place) If you clamp or screw make sure it is in an area to be covered by a lane strip.)
14. Drill the 8 .25" holes into the beginning of Section 2.
15. Unclamp/unscrew etc. Section 2
16. Unbolt the plate from Section 1.
17. Hammer in the 8 T-nuts into the plate.
18. At this stage you may rebolt the plate to Section 1 and in addition to the bolts, use screws to permanently attach the plate. This may also be done (recommended) after all the painting is done and you are doing final assembly. The purpose of the 2 bolts is for alignment — being able to disassemble the track completely and reassemble accurately.
18. Repeat for all remaining sections.

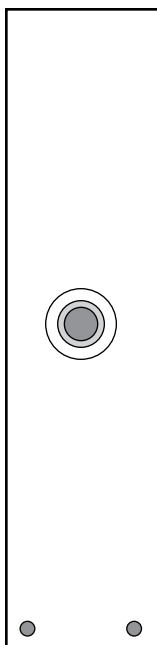
Note: at the end of Section 1 the support piece for the lower leg will have to be drilled/shaped to accommodate the T-nuts.

NOTE: Do NOT try to save time and money by reducing the number of T-nuts on the downward side from 8 to four. This has be tried. What happens is that with the flex in the track as it is being set up and later taken apart, the bolts will cross thread and cause major problems. On my current track I had to retrofit to 8 T-nuts. Since the retrofit, there has been no problems.

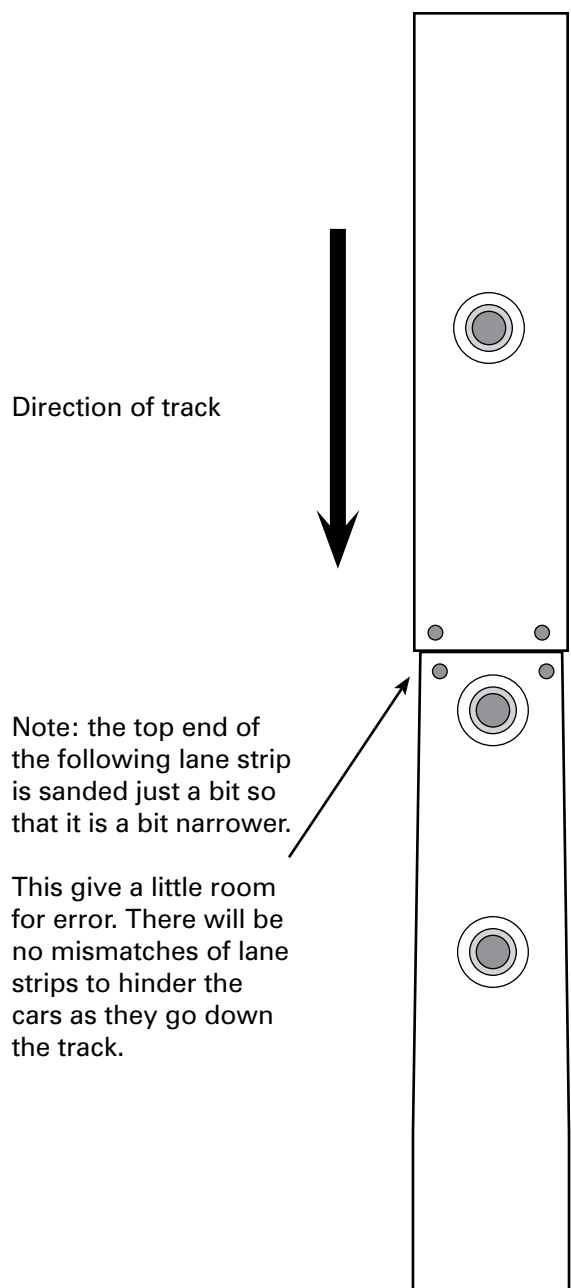
Lane Strips



Top end of lane strip



Bottom end of lane strip



Laying Track

As much as possible all lane tracks should be identical. The ideal is to have a car run on each lane at identical times.

1. Drill holes in all of the lane strips for .5" x #4 wood screws. The screws will need to be countersunk. You can get special bits that will allow you to drill and countersink at the same time. Use a drill press for this process.
 - a. There will be two screws at each end of each strip.
 - b. The screws will be approximately 15" apart down the strip.
 - c. It is essential that the screws be evenly spaced across the width of the track i.e. the placement of the screws will be the same for each lane strip.

- d. A screw will need to be put at the top and bottom of each slot at the starting gate area.
2. Sand the top edges of a following strip slightly narrower — see illustration.
3. Sand all edges of the strips — if possible use grits up to 1500.
4. Number each strip as it is put down — for example — "2 Red" — for Section 2 Red lane. This can be done on the bottom of each track.
5. Make a spacer strip of 1.125" x 60+".
6. Make a spacer strip the width of the space between two track x 60+" long ("Lane Spacer.").
7. Clamp the spacer strip to the edge of Section 1.
4. Screw the strip to the base.
9. Put the lane spacer into place.
10. Screw down the second strip.
11. Continue until all 4 strips are screwed to Sec. 1.
12. Bolt Section 2 to Section 1.
13. Repeat steps 7 to 12 until all sections are done.
14. Make sure that the ends of the strips match up with the lane strips of the neighboring sections.

Materials list

Quant.	Size	Description	Purpose
Wood Basic Buys			
1	5'x5'x.25"	Baltic Birch Plywood	Lane strips
2	5'x5'x.375"	Baltic Birch Plywood	Track bases
1	5'x5'x.75"	Baltic Birch Plywood	Legs/Joint Plates/Misc pieces.

Wood Pieces

24	1.625" x 60" x .25"		Lane strips — Sections 1-6
4	1.625 x 40" x .25"		Lane strips — Section 7
7	14.75" x 60" x .375"		Track bases — Sections
6	14.75" x 8" x .75"		Joint Plates
2	1.125" x 13.25" x .75"		Sec. 1 — starting area support
1	2" x 12.5" x .75"		Sec. 1 — cross piece — starting area
1	2.125" x 12.5" x .75"		Sec. 1 — cross piece — Front leg support
1	2.5" x 14.75" x .75"		Sec. 1 — cross piece — Short leg support
1	14.75" x 39" x .75"		Sec. 1 — Front leg
1	14.75" x 17" x .75"		Sec. 1 — Short leg
2	6" x 47.75" x .75"		Sec. 1 — Leg support (2 pieces glued together)
1	12.375" x 8.875" x .75"		Sec. 1 — Starting gate
4	2" x 14.75" x .75"		Sec. 3 & 7 — Cross pieces
4	1.625"x20" x .75"		Sec. 7 — Braking strips

Hardware

4+	.25" x 4"	Bolts	Starting posts (cut heads off) Good to have extras
200	.5" x #4	Wood screws	Lane strips
100	1" x #6	Wood screws	Joint plates
64	.25" x .5" 4 flange	T-nuts	Joint Plates and Starting Gate
100	.25" x 1"	Philips head Bolts	for joints
100	.25"	Washers	for Joints
6	3" x 5" (approx.)	T-Hinges	Legs and Starting Gate
1		Chain bolt	Starting Gate