

Slot Car Track Wiring Guide

(Step-by-Step Instructions)

By
Steve Sawtelle

Copyright © 2006 – 2008 by Slot Car Corner L.L.C.
All Rights Reserved.

This Material May Not Be Copied or Redistributed, In Whole or In Part, In Any Form.

www.slotcarcorner.com

Slot Car Track Wiring Guide

Table of Contents

Table of Contents	2
Disclaimer.....	3
Copyright Notice.....	4
Foreward	5
Acknowledgements	5
 Introduction.....	 6
 Summary of Track Wiring Steps.....	 7
 Step 1: Plan Your Layout	 8
 Step 2: Build and Test Your Layout.....	 9
 Step 3: Finalize Your Track Layout	 9
 Step 4: Develop Your Track Wiring Plan	
Overview	10
Iterations #1 - #5	11 – 15
 Step 5: Execute the Track Wiring Plan	
Overview	16
Installing Power Taps	17 - 27
Terminal Blocks.....	28
General Sequence of Wiring	29
Step-by-Step Wiring	30 - 75
Testing and Troubleshooting.....	76 - 77
Other Recommended Products.....	78

Copyright (c) 2006 - 2008 by Slot Car Corner L.L.C.
All Rights Reserved.

This Material May Not Be Copied or Redistributed, In Whole or In Part, In Any Form.

www.slotcarcorner.com

Slot Car Track Wiring Guide

Disclaimer

While reasonable attempts have been made to verify information provided in this guide, the author does not assume any responsibility for errors, omissions or contrary interpretation of the subject matter contained herein. The author makes no representations or warranties of any kind, express or implied, as to the information, content, materials or products, included in this guide. To the full extent permissible by law, the author disclaims all warranties, express or implied, including but not limited to, implied warranties or merchant ability and fitness for a particular purpose. The author will not be liable for any damages of any kind arising from the use of the material contained herein, including but not limited to direct, indirect, incidental, punitive and consequential damages.

Working with electricity, power tools and hand tools is inherently dangerous and can result in serious injury or death. The user is solely responsible for following applicable safety guidelines and precautions when working with electricity, power tools and hand tools.

Reading, referencing or using any information in this guide beyond this disclaimer, whether the disclaimer is actually read or not, constitutes unconditional acceptance of the above terms and conditions.

Copyright (c) 2006 - 2008 by Slot Car Corner L.L.C.

All Rights Reserved.

This Material May Not Be Copied or Redistributed, In Whole or In Part, In Any Form.

www.slotcarcorner.com

Slot Car Track Wiring Guide

Copyright © Notice

Copyright © 2005 by Steve Sawtelle. All rights reserved. The compilation (meaning the collection, arrangement and assembly) of all content in this book is the exclusive property of Steve Sawtelle and protected by U.S. and international copyright laws. The material in this guide is intended solely for individuals to view in a “read-only” fashion from my website (www.slotcarcorner.com) or to print a single copy for their individual use only. Any other use - including the reproduction, printing, copying, modification, distribution, transmission, republication, or display - of the content (in whole or in part) in any format or media is strictly prohibited.

Federal copyright law prohibits unauthorized reproduction by any means and imposes fines up to \$25,000 for violation.

Trademarks

All trademarks are property of their respective owners.

Copyright (c) 2006 - 2008 by Slot Car Corner L.L.C.

All Rights Reserved.

This Material May Not Be Copied or Redistributed, In Whole or In Part, In Any Form.

www.slotcarcorner.com

Slot Car Track Wiring Guide

Foreward

The "Slot Car Track Wiring Guide" is the result of over 2 years worth of effort. Initially I had planned to offer the guide for sale; however, after considerable debate (mostly with myself...) I have decided instead to make it available to slot car racers everywhere free of charge. This is my way of giving something back to this wonderful hobby - hopefully other slot car racers, especially those just getting started, will find the material in this guide useful. In return for making this guide available free of charge, there are a couple of items I would like you to consider.

First, please consider a voluntary contribution to one of the children's charities listed on my website (http://www.slotcarcorner.com/articles/wiring/track_wiring.asp). Or if you prefer, a children's charity of your choosing. Today's kids are tomorrow's slot car racers - unfortunately, some kids are very ill and need special attention and care. Without our help, they may not live to experience the thrill of racing a slot car. Let's give them that chance! Donate whatever you can afford and if you would drop me a note - you'll make my day.

Second, please consider the track wiring products I offer when making your track wiring purchases. Each of the products I offer has been researched and tested extensively - in many cases, comparable products are not readily available elsewhere. The Slot Car Track Wiring Guide includes links to various products shown in the guide. While not required to complete your wiring project, the track wiring kits and other products I offer will make the task much easier while yielding professional results.

Acknowledgements

First I'd like to thank my wife, Holly-Marie, for being so understanding and supportive as I have pursued various writing endeavors concerning slot cars. Then there is the slot car track and the actual cars (both the one's she has seen and the one's which somehow make it down into the basement without showing up on her radar) – hmmm, time to change the subject... Next, our twins Sarah and Thomas who spend a lot of time hanging out with Dad in the basement helping to build our layout and racing slot cars. I love you all! Thank you to my brother-in-law Andy who just listens politely, rolls his eyes and chuckles when I describe my next "great idea". To the HOST and Shoreline slot car club members who have helped me refine some of my wiring products and provided invaluable feedback (as well as some very exciting racing and just a great bunch of people to hang out with...) – a big thank you. Last, but certainly not least, a special thanks to Brent Carlson (aka "MrBugs") for hosting my website and answering 3,413,739.7 of my dumb electrical questions (many of them 2 or 3 times...). Rest assured Brent, I never run out...

Slot Car Track Wiring Guide

Introduction

Some of you may be thinking, “What more can possibly be said about wiring a plastic slot car track – this topic has been beaten to death!” Well, yes and no. There certainly has been quite a bit written on this subject; however, most of the material follows the same general format. A text narrative briefly describes the process (“Get some wire and connectors at the local electronics store...”) and ends by referring the reader to a track wiring schematic (“Now hookup the wire and connectors using the schematic...”). From this point on, you’re pretty much on your own. If you’re an electrical engineer or licensed electrician, it may be intuitively obvious how to proceed. But what about the rest of us who are “electrically challenged”? You know, those of us who have trouble replacing batteries in a flashlight. To us a track wiring schematic looks very intimidating! And assuming the wiring schematic doesn’t scare you away, just how do you plan and connect all of the wiring components? And besides wire, what other materials are required? And what about all the other details, incidentals, dead ends, and “gotcha’s” that inevitably come up? If you’re getting stressed out just thinking about a track wiring project, take a deep breath and read on.

Let’s digress for just a moment. Remember why you got involved with slot car racing? If you’re like most slot car racers, words like “fun” or “relaxation” come into play somewhere along the line. So given all the challenges and headaches described above, why would the average slot car enthusiast ever consider wiring their track? This is exactly where I found myself a couple of years ago. I wanted to expand my layout and run higher performance cars. The track control sections and power supplies which came with my set weren’t up to the task. I studied the schematics, asked questions, studied the schematics some more, asked more questions and so on. Eventually I did manage to wire my track successfully – in retrospect, the lack of adequate documentation made the whole process a lot more difficult and time consuming than it should have been. Since then I’ve wired quite a few tracks and learned a great deal along the way. This guide was written to remove the shroud of mystery which seems to surround wiring a slot car track. So before going any further, let me assure readers (particularly charter members of the “electrically challenged” club like myself...) that wiring a slot car track is NOT difficult. In fact, I’m going to go out on a limb and suggest that armed with this guide, a track wiring project can be a very rewarding and enjoyable experience!

The “Slot Car Track Wiring Guide” provides very clear, detailed instructions, with LOTS of accompanying pictures and diagrams, which describe one way to wire a plastic slot car track. I say “one way” because like many other things, there is more than one way to skin a cat. However, there are some significant differences when comparing this guide with other track wiring write-ups. The differences have less to do with the actual wiring and more with the overall approach. First and foremost, the “Slot Car Track Wiring Guide” does NOT assume the reader is a licensed electrician or electrical engineer. In fact, the reader need not have any electrical background at all to understand and apply the information presented in this guide. Next, this guide breaks down the entire end-to-end process of wiring a slot car track into a series of manageable steps. Most steps include pictures or diagrams which accompany the detailed instructions describing tasks necessary to complete the step. Finally, this guide has been written to fully complement the various components of my track wiring kit (visit my website at www.slotcarcorner.com for more information). If you haven’t purchased a track wiring kit, don’t panic – this guide will still make your track wiring project much easier. If you have purchased a track wiring kit, you’ll find the various components add a professional touch while saving you a significant amount of time.

Again, wiring a slot car track is not difficult; however, you’ll need to plan carefully and work meticulously – attention to detail is very important. That’s where this guide comes in. Let’s get started!

Slot Car Track Wiring Guide

Summary of Steps Required to Wire a Slot Car Track

The following is a summary of high-level tasks necessary to successfully complete your track wiring project. Each will be discussed in more detail as we proceed through this guide. Each of these tasks should be completed in the order shown. If you have already decided on your layout and set it up, I still recommend reviewing the material in Steps 1, 2 and 3.

1. Plan your layout
2. Build and test your layout
3. Finalize your layout
4. Develop your track wiring plan
 - A. Determine how many power taps will be required
 - B. Identify the location of all wiring components (e.g. power supply, power taps, terminal blocks, driver's stations)
5. Execute the track wiring plan
 - A. Gather all necessary track wiring components
 - B. Install power taps
 - C. Install terminal blocks
 - D. Measure and install wire
 - E. Test wiring incrementally

NOTE:

This guide uses a 2 lane sample layout to illustrate how to wire a 1/32 plastic slot car track. If you have a 3, 4 (or more) lane layout, the same principles apply - you'll just have additional wires and larger terminal blocks with additional screws/posts to attach the wires to.

Slot Car Track Wiring Guide

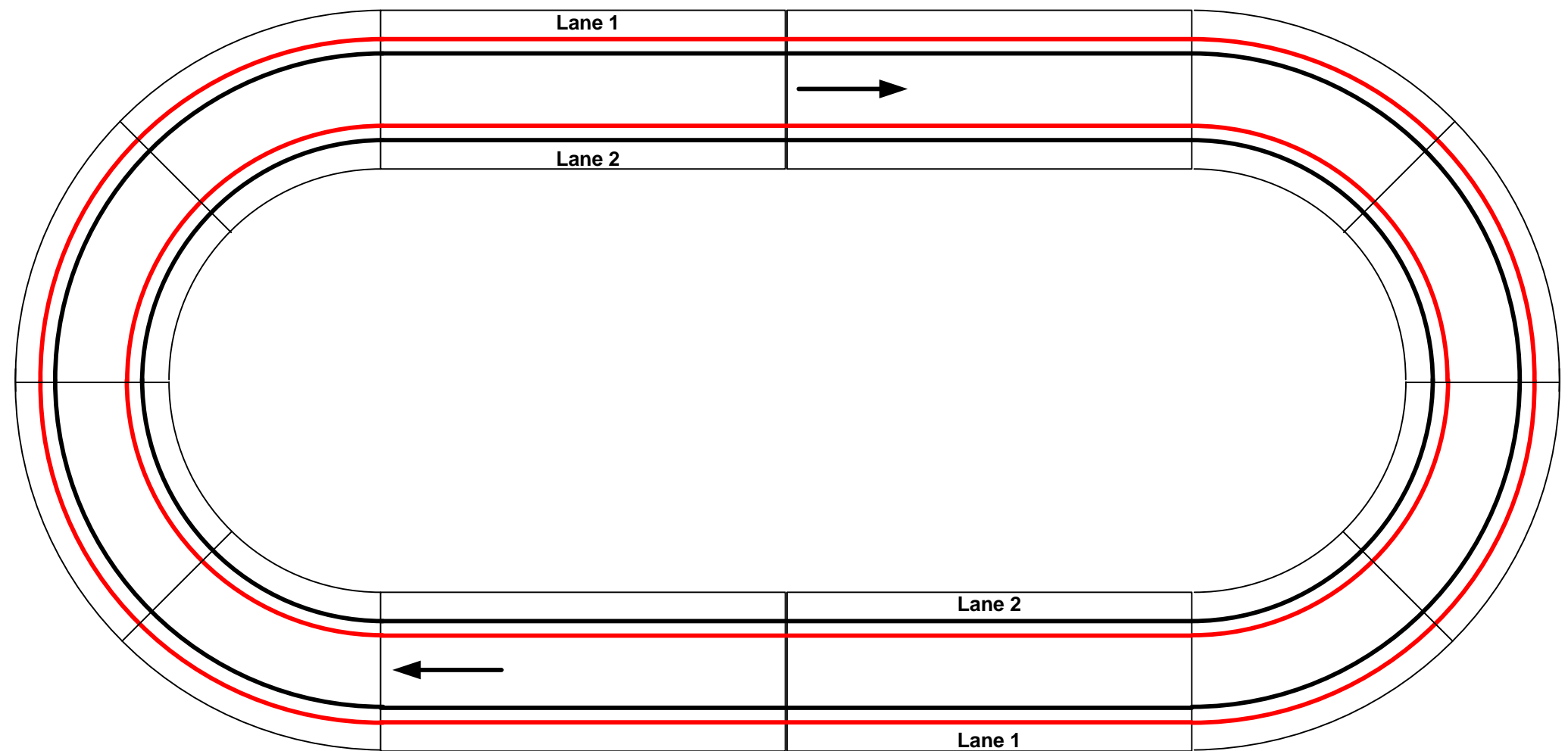
(Planning Your Layout)

Step 1: Plan Your Layout

First, you'll need to decide what your layout is going to look like. Factors influencing your track layout include personal taste (i.e. the type of layout you like to race on), track sections available for the particular brand of track you have (or are planning to buy), types of cars you plan to race, available space, landscaping and budget. As such, you will ultimately need to decide on a layout which balances these variables. While designing a layout which satisfies your specific requirements and constraints is beyond the scope of this guide, there are other resources available to assist you. For example, there are numerous examples of track layouts in the various slot car websites (in fact, many dedicate at least one forum to discussions about track building and layouts). In particular, make sure to visit Rand Fredricksen's (aka "Slotict") excellent website (<http://UX5490.US>) which contains hundreds of examples of layouts organized by the overall size a given layout requires. Of course, you can also design your own layout from scratch or use an existing layout as the starting point for your own design. If you decide to go with one of these latter two approaches, there are several software packages which make all aspects of track layout and design easier. Tracker 2000™ (www.slotrace.com) is one such package which is very popular.

Sample Layout

The track layout to the right shows will be used throughout the remainder of this guide to help the reader better understand how to wire a plastic slot car track. As you view the layout, you may be wondering why anyone would wire such a small track. The short answer is you probably wouldn't; however, the track will serve our purposes quite nicely. The layout is "large" enough to include a couple of power taps yet "small" enough to easily photograph various track wiring steps.



Slot Car Track Wiring Guide

(Planning Your Layout)

Step 2: Build and Test Your Layout

Once you've decided on a layout design, it's time to build the layout. Spending a little extra time on this step will minimize problems once you begin the actual track wiring in a later step. Make sure the track is positioned on the table EXACTLY where you want it. Check that all track connections are clean, snug and secure – especially where the track rail sections meet.

Tip: To ensure a snug connection where the track rails meet, carefully “pinch” the female rail section before inserting the male section. Be careful not to distort the track rail.

Straight sections of the track should be trued up so they are perfectly straight. Make sure to install track borders and check for fit – it may be necessary to adjust the layout positioning on your table and/or trim some of the borders slightly. Make any adjustments to the layout which may be necessary.

Step 3: Finalize Your Track Layout

Once you have built your layout, use the stock power base(s) and power supply to run some of your cars on the layout. If you host races or race informally with other slot car enthusiasts, invite them over to run some laps and provide feedback too. Make sure you are happy with the overall layout before going any further. Once you actually run cars on the layout, you may decide changes to the layout are in order. Depending on the extent of the changes, refer back to Steps 1 and 2 to ensure you haven't overlooked anything. Again, getting the layout right at this stage will make the track wiring project go much easier. Once you are finally satisfied with the layout, you are ready to begin the steps necessary to wire the track.

Slot Car Track Wiring Guide

(Track Wiring Plan – Overview)

Step 4: Develop Your Track Wiring Plan

Using a diagram of your track layout (either computer generated or sketched by hand), it's time to start developing your track wiring plan. You can make the track wiring plan as simple or complex as you want. For our purposes, we'll stick to a basic wiring plan – you can always refine the plan if needed. A basic track wiring plan should identify:

- 1) Where your driver's stations (controllers) will be located. These will generally be located along a straight section of your layout though there are always exceptions. Make sure all driver's stations have a clear, unobstructed view of the entire layout.
- 2) Where your power supply will be located. Make sure there is an electrical power outlet nearby.
- 3) Where your "power taps" will be located. As the size of your layout increases, so too does the number of joints connecting the track sections. The track joints introduce electrical resistance – the further (i.e. more track joints) you are from a power base or power tap, the more sluggish your cars will run. This is especially true of cars with high performance motors. Power taps are special track sections which will help ensure electrical power is distributed evenly around your entire layout. A good rule of thumb is to include a power tap every 10 - 12 track sections. Power taps will generally be made using straight sections of your track (though it is possible to use a curved piece of track if absolutely necessary). You can buy power taps already made up for several popular brands of track (see www.slotcarcorner.com/store/wiring/sport_tap.asp) or make your own. For a more detailed discussion of power taps, refer to the Slot Car Illustrated™ "How-To" article at this link: www.slotcarillustrated.com/HowTo/PowerTaps.html
- 4) Where your "terminal blocks" (sometimes called "terminal barrier strips" or "barrier strips") will be located. As you will see, terminal blocks make it very easy to connect all of the individual pieces of wire required by your track wiring plan. We'll discuss terminal blocks in greater detail a little later in this guide.

Now that we've reviewed the basic components of a Track Wiring Plan, let's develop a basic plan for the sample layout introduced earlier (refer to "Step 1") which will be used throughout the remainder of this guide. You may find it easier to develop your track wiring plan as a series of steps or iterations. Each iteration will add more detail until the wiring plan is complete. The iterations our sample track's wiring plan underwent are described over the next several pages.

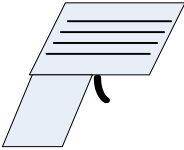
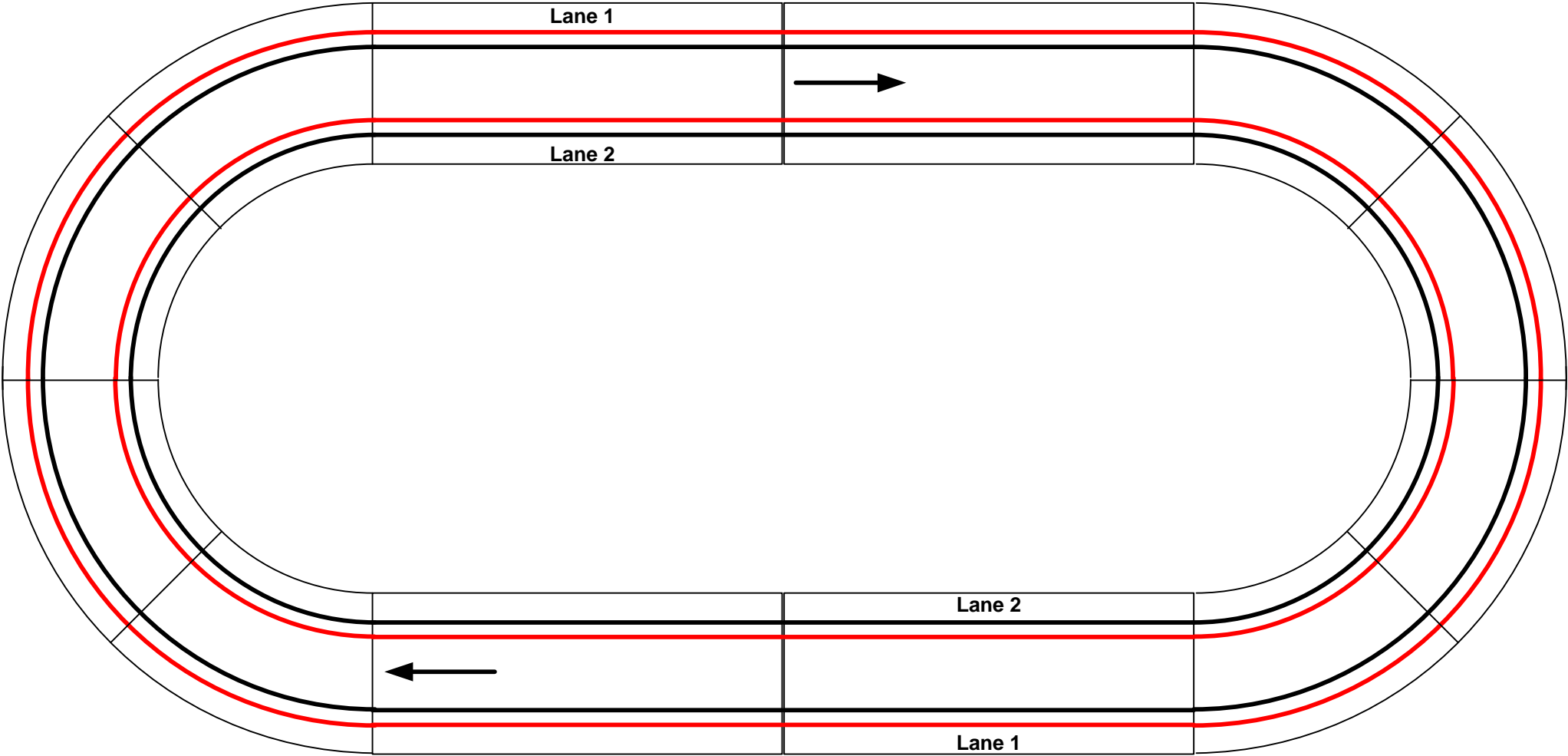
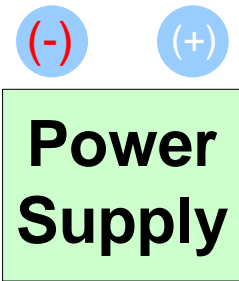
Slot Car Track Wiring Guide

(Track Wiring Plan – Iteration #1)

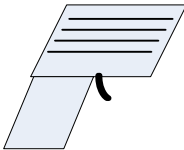
Track Wiring Plan – Iteration #1

Keep the first cut at your track wiring plan simple. Focus on how your track layout will be positioned on your table(s), the location of your driver's stations (controllers) and where you plan to locate your power supply. The diagram shows the first iteration of the track wiring plan for our sample layout.

As you can see, the driver's stations (controllers) will be located along the straight at the bottom of the diagram. The power supply will be located at the left end of the layout.



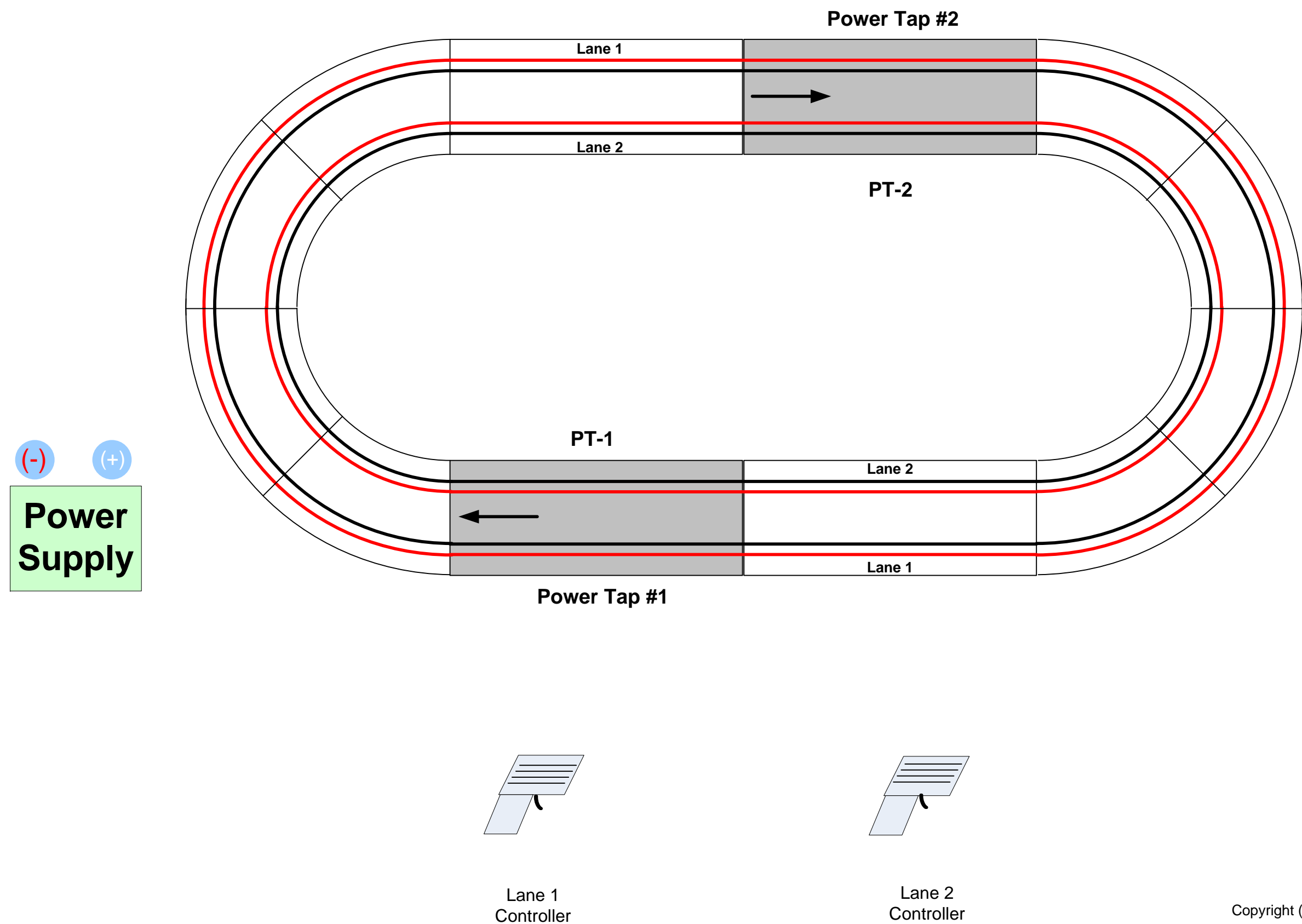
Lane 1
Controller



Lane 2
Controller

Slot Car Track Wiring Guide

(Track Wiring Plan – Iteration #2)

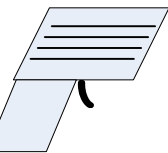


Track Wiring Plan – Iteration #2

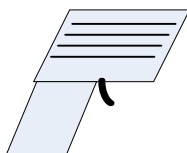
The diagram shows the next iteration of the wiring plan with the “power tap” tracks identified. The sample track will have two (2) power taps – one on each straight as shown. The power taps have been labeled “PT-1” and “PT-2”. Again, your layout may have more power taps – if so, update your wiring plan to designate all track sections where power taps will be located.

Tip: A good rule of thumb is to include a power tap every 10 – 12 track connections.

Note: Using the rule of thumb above, a single power tap would probably suffice for the sample layout; however, a second power tap has been added to better illustrate wiring principles later in this guide.



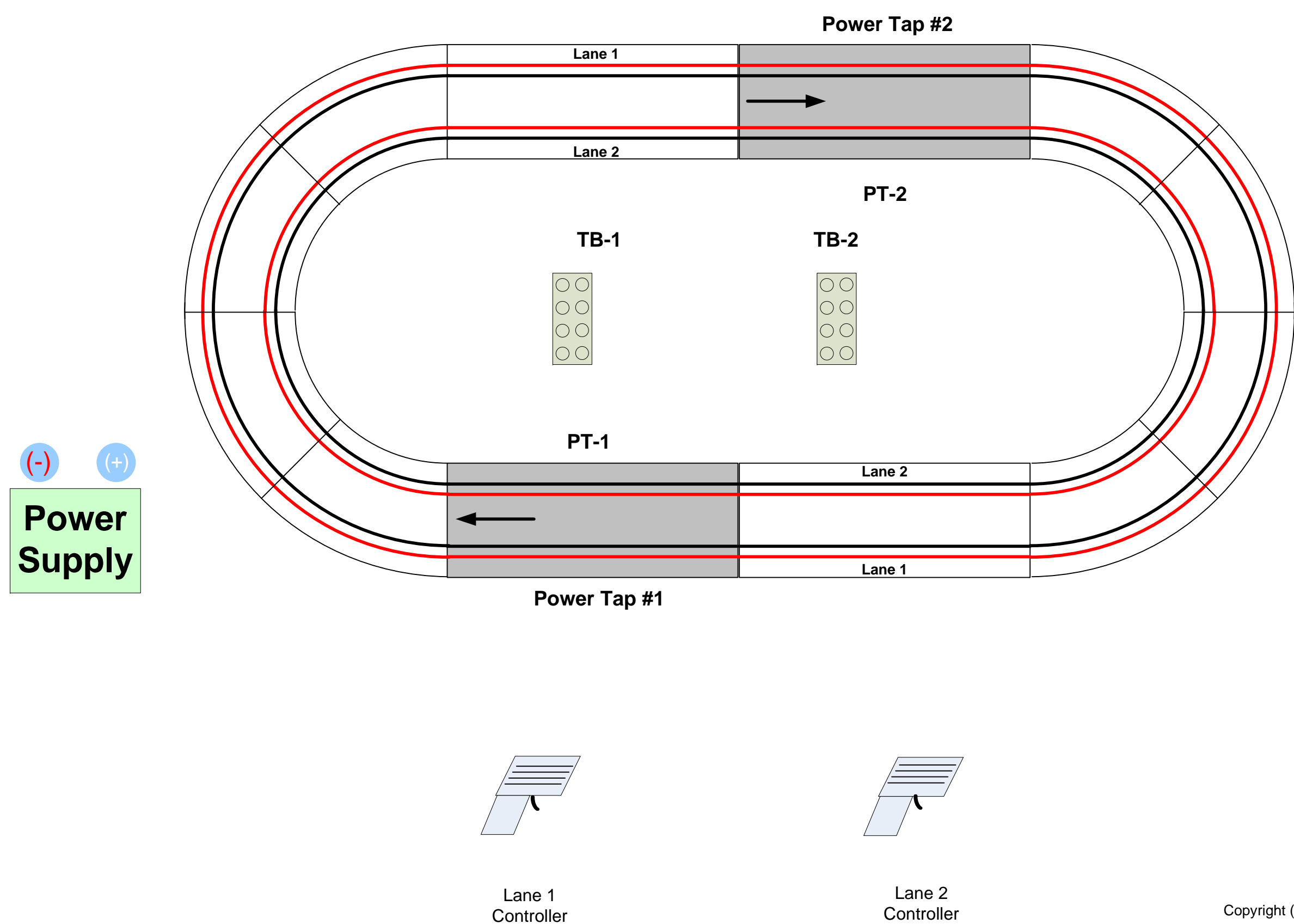
Lane 1
Controller



Lane 2
Controller

Slot Car Track Wiring Guide

(Track Wiring Plan – Iteration #3)



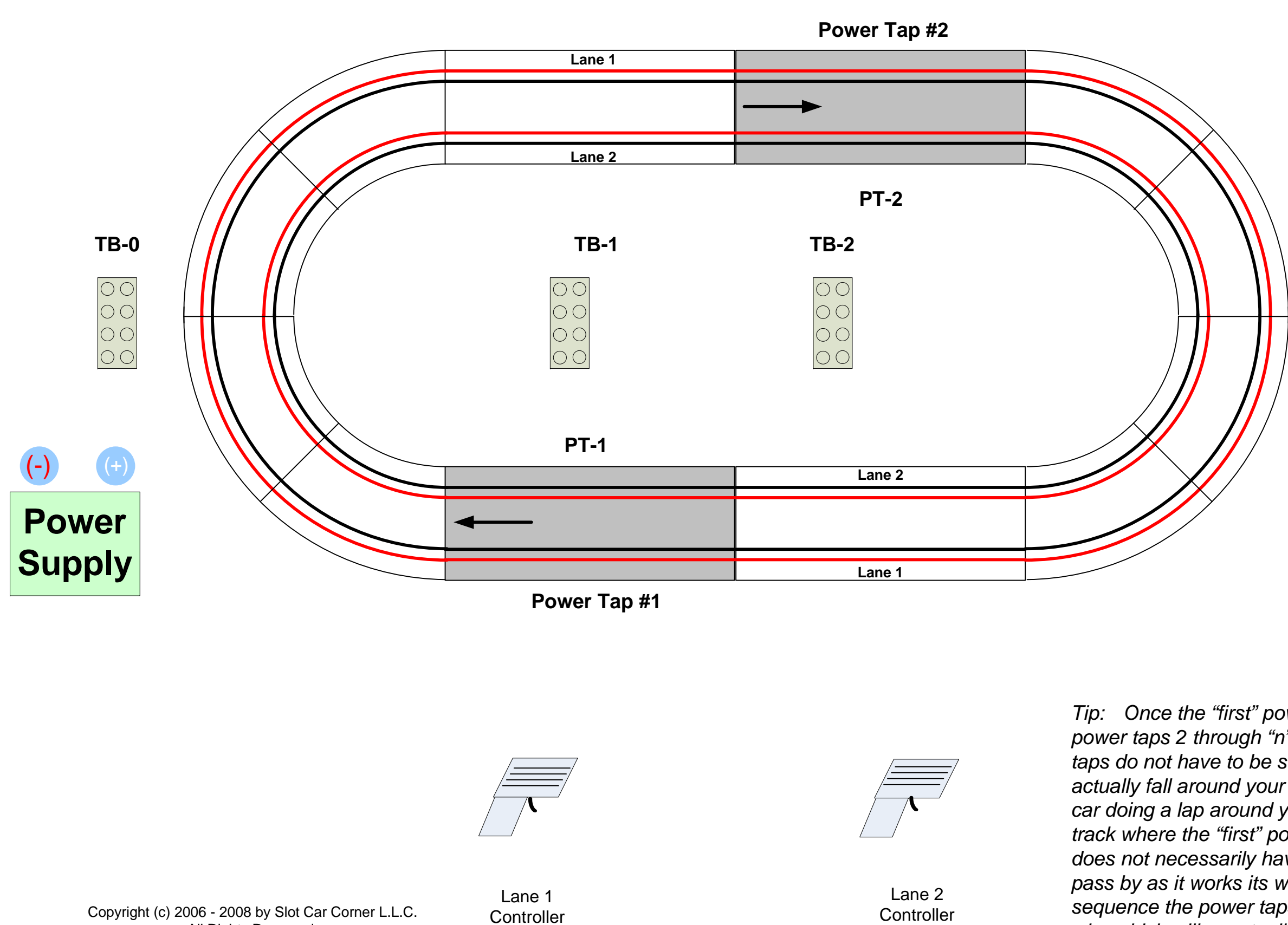
Track Wiring Plan – Iteration #3

Once we get to the actual wiring portion of this project, wire will be run from the power supply and controllers to each of the power taps. The wires attached to the power taps will need to be connected to the wire from the power supply and controllers.

One of the easiest and most flexible ways to make track wiring connections is by using “terminal blocks”. Terminal blocks also make it easier to rework your track wiring if you decide to change or expand your layout at some future date. We’ll discuss terminal blocks in more detail in just a little bit. For now, update your wiring plan to include a terminal block next to each power tap. The diagram shows the wiring plan with terminal blocks added. The terminal blocks have been labeled “TB-1” and “TB-2” to correspond with the corresponding power taps (“PT-1” and “PT-2”).

Slot Car Track Wiring Guide

(Track Wiring Plan – Iteration #4)



Track Wiring Plan – Iteration #4

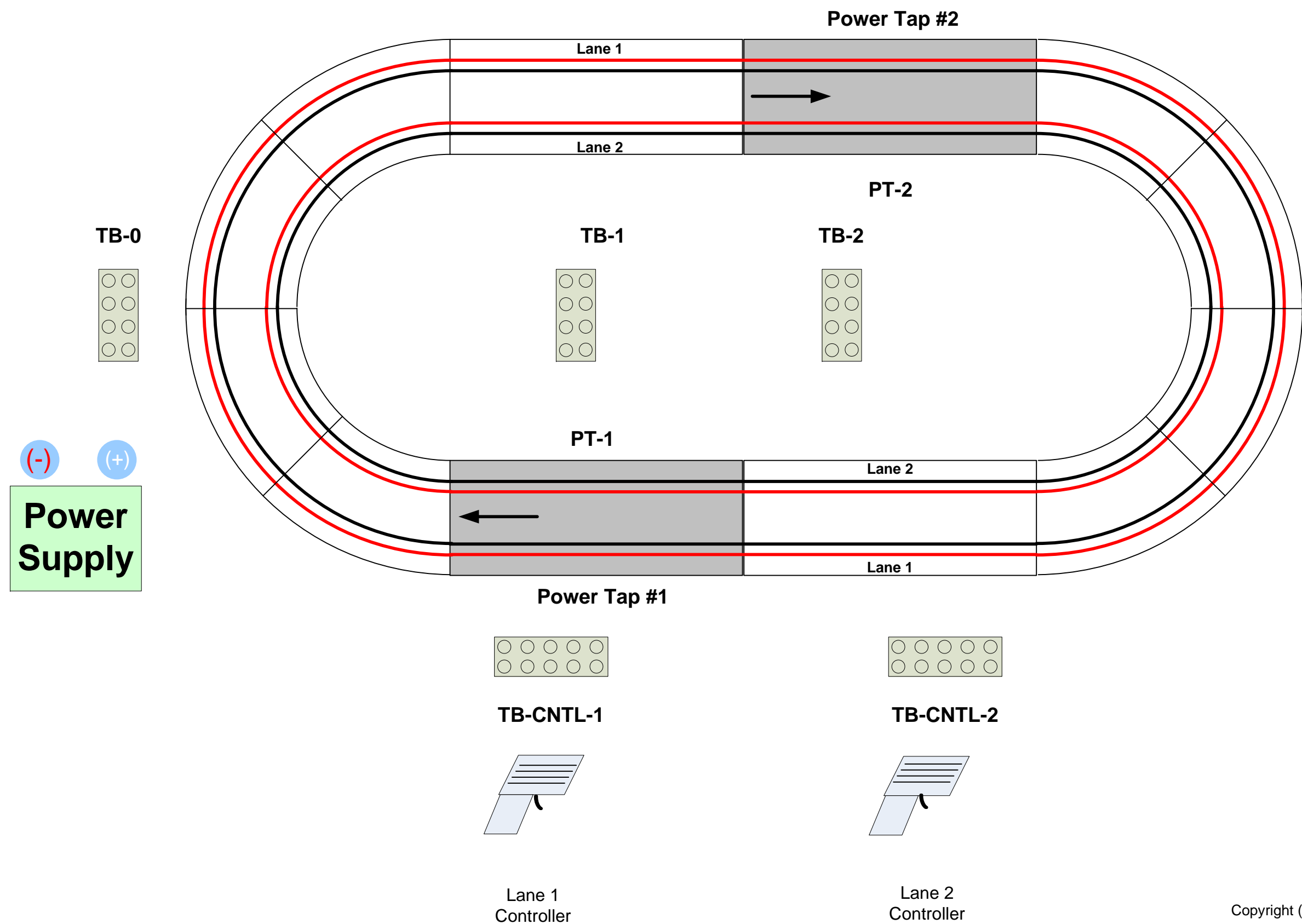
The next iteration of the wiring plan includes one subtle addition. Note an additional terminal block has been added near the power supply. This has been designated “TB-0” (Terminal Block 0). Unlike the other two terminal blocks, there is no associated power tap for “TB-0”. This is intentional. The controllers will eventually be connected between the power supply and the terminal block associated with the first power tap to be connected. Including an additional terminal block near the power supply will make wiring the controller connections easier.

If your wiring plan has more than two power taps, determine which power tap (and associated terminal block) will be connected next and label the associated terminal block “TB-3”. Continue in this fashion until you have designated where in the overall wiring sequence each power tap/terminal block will be connected. It’s a little like “connect the dots” where the dots are your power taps/terminal blocks.

Tip: Once the “first” power tap has been identified, the order of power taps 2 through “n” is completely up to you. The power taps do not have to be sequenced (wired) in the order they actually fall around your track layout. In other words, imagine a car doing a lap around your layout. If you place the car on the track where the “first” power tap (“PT-1”) will be located, PT-2 does not necessarily have to be the next power tap the car will pass by as it works its way around the circuit. A good way to sequence the power taps is to minimize the amount of overall wire which will eventually be needed to connect them all up.

Slot Car Track Wiring Guide

(Track Wiring Plan – Iteration #5)



Track Wiring Plan – Iteration #5

The track wiring plan for the sample layout is just about complete. The last refinement is to add a terminal block for each of the driver's stations (controllers). The diagram shows the two additional terminal blocks (since our sample layout has 2 lanes) just underneath the edge of the table where each driver station will be located. These terminal blocks will make it very easy to connect your controllers. We'll designate these terminal blocks "TB-CNTL-1" and "TB-CNTL-2". TB-CNTL-1 will correspond to the controller for Lane 1 while TB-CNTL-2 will be used to connect the controller for Lane 2.

Slot Car Track Wiring Guide

(Executing the Track Wiring Plan)

Step 5: Execute the Track Wiring Plan

The remainder of this guide provides step-by-step instructions to actually wire your track. The instructions are based on the sample layout introduced earlier; however, it should be very straightforward to apply these instructions to your track layout. Make sure to keep your Track Wiring Plan developed earlier handy.

IMPORTANT!!!

Please take a moment to review the important information which follows.

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
 4. Label ALL wires
 5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

Slot Car Track Wiring Guide

(Installing Power Taps)

Installing Power Taps

Add Layout Registration Marks

Referring to your Track Wiring Plan, take a piece of painter's tape and place a small piece on top of each track section which will serve as a power tap (Note: Don't worry if you're using regular track sections in lieu of actual power taps at this point – simply mark the regular track sections). The picture on the right shows the track sections identified on our Track Wiring Plan as power taps marked with blue painter's tape.

Next, we'll add some "registration" marks around the track. The registration marks will serve a couple of purposes:

- 1) For power taps, the registration marks will allow us to accurately position and drill holes for the wires attached to the power taps.
- 2) When installing the power taps, you will need to "break" (disassemble) the track to drill holes, install the power taps and then reassemble the track. As you do this, your track will shift around slightly. Registration marks will make it much easier to reposition the layout exactly where it was before "breaking" the track. Adding registration marks is easy - here's how to do it.

Use small pieces of painter's tape to make your registration marks on. The painter's tape can be easily removed afterwards. **Carefully lineup the edge of the tape so it butts up against the edge of the track** and place a tick mark on the tape where the track sections meet. The bottom picture shows small pieces of painter's tape and registration marks where track sections meet for the sample layout.



Slot Car Track Wiring Guide

(Installing Power Taps)

Installing Power Taps

Add Layout Registration Marks (Continued)

For power taps, make sure to place short pieces of tape along both sides of the power tap at the midpoint and add a registration mark. You should also place 4 short pieces of tape and registration marks where the power tap section is joined to adjacent track sections (both ends, “inside” and “outside”). The picture below shows this for one of the track sections designated as a power tap on the sample layout.

Tip: For illustration purposes, registration marks have been added to every track joint on the sample layout. For most layouts, making registration marks where every third or fourth set of track sections meet will be sufficient to realign the track if it shifts around while installing the power taps.



Copyright © 2005 by Steve Sawtelle

Slot Car Track Wiring Guide

(Installing Power Taps)

Installing Power Taps (Continued)

Mark and Drill Holes in Table Surface

- 1) Carefully “break” (disassemble) your track and remove the track sections where the power taps will be installed.
- 2) Use a straightedge to draw a line between the registration marks which correspond to the midpoints of the power tap track sections as shown in the top picture. Again, you can either draw the line directly on the table surface (it will be hidden when you re-install the power tap) or on a piece of tape as shown.

Note: The power taps which will be used for the sample track layout have the 4 wires (2 per lane) positioned along the imaginary centerline of the track section. If the power taps you plan to use have the wires located elsewhere, you will need to adjust these instructions to correspond to the position of your power tap wires.

- 3) Next, determine where the holes for each of the power tap wires will be drilled through the table. A simple template will make this job easier and ensure accurate placement of holes. Instructions to make a template for a 2 lane track are provided below (these can be easily adapted to make a 4 lane template if desired).

- a) Use a thin piece of 1/8" or 1/4" thick material such as Masonite™ or plywood (just about any material will work). Start with a piece of material about 3" wide and about 6" longer than your track section is wide. Draw a straight line with a heavy marker lengthwise down the middle of the template as shown in the bottom picture.



Copyright © 2005 by Steve Sawtelle



Copyright © 2005 by Steve Sawtelle

Copyright (c) 2006 - 2008 by Slot Car Corner L.L.C.
All Rights Reserved.

This Material May Not Be Copied or Redistributed, In Whole or In Part, In Any Form.

www.slotcarcorner.com

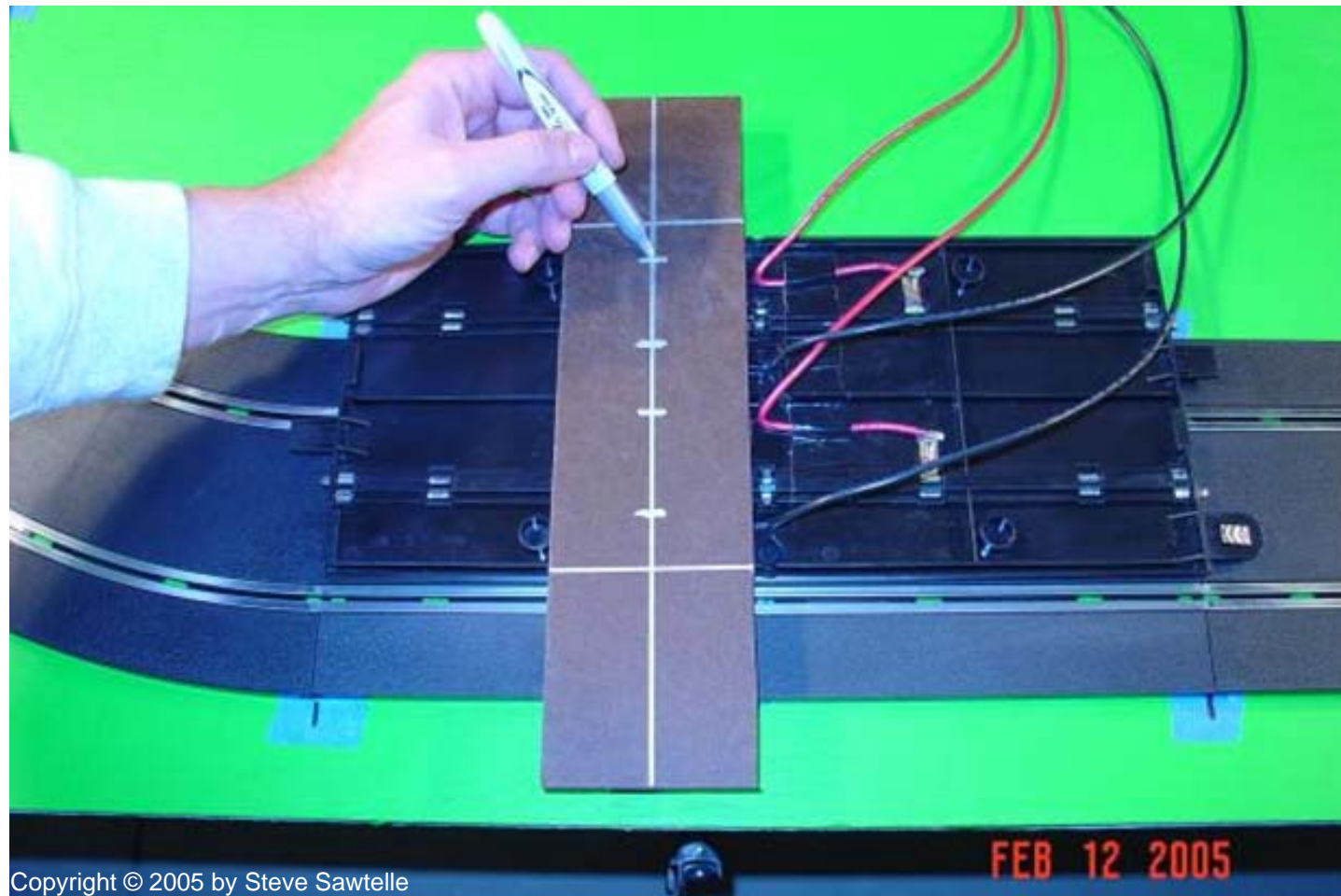
Slot Car Track Wiring Guide

(Installing Power Taps)

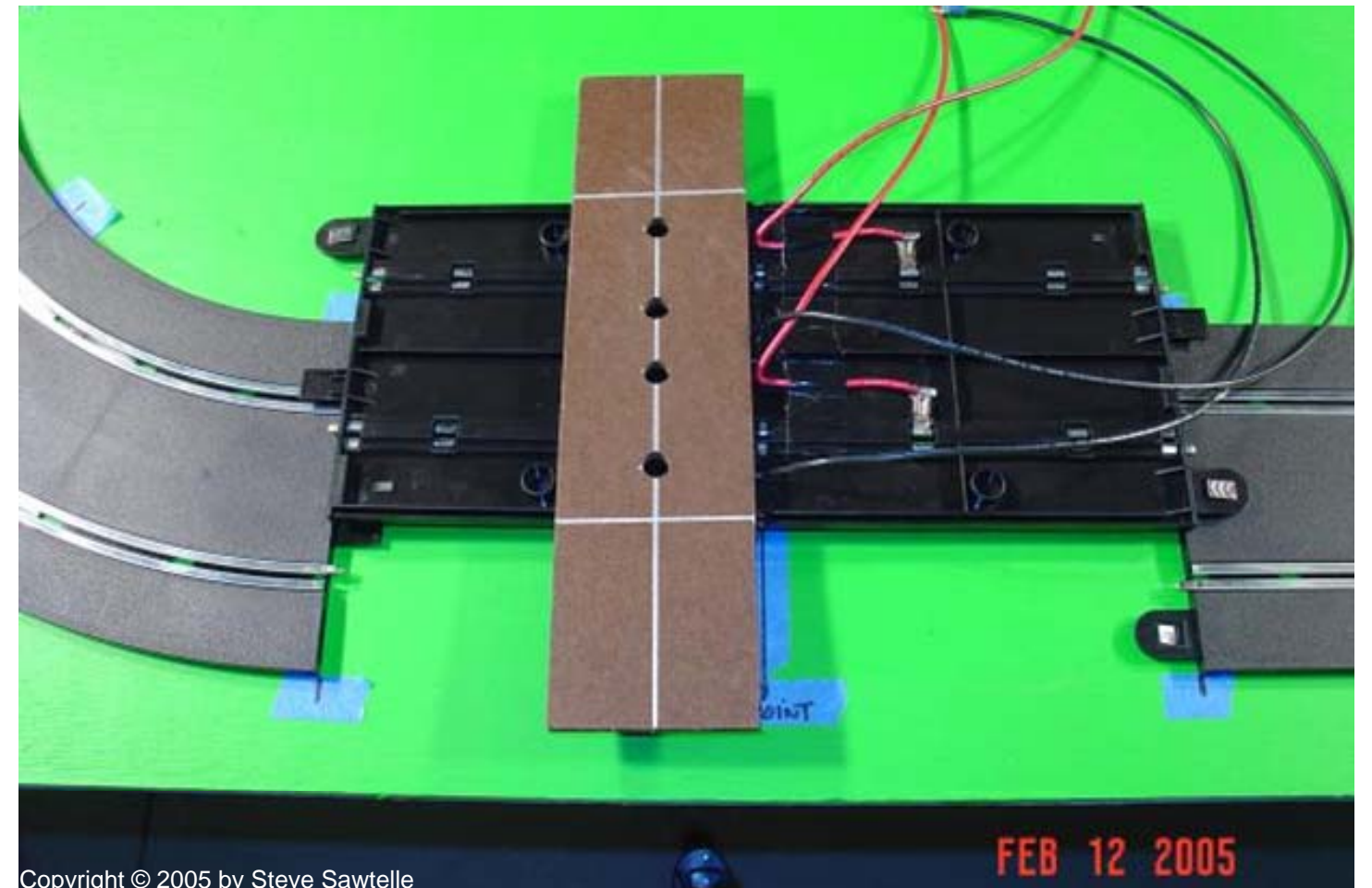
Installing Power Taps (Continued)

Mark and Drill Holes in Table Surface (continued)

- b) Next, place the template next to the wires on the underside of a power tap.
- c) Center the template so roughly equal amounts overhang each side of the track section. Use a marker to mark the relative location of each power tap wire along the centerline drawn earlier on the template. Now take the marker and draw a straight line where both edges of the track pass under the template (refer to left picture).
- d) Drill 4 holes (for a 2 lane template) in the template centered on the marks made along the centerline in the previous step corresponding to the power tap wires. The power taps which will be used for the sample layout have spade connectors attached at the end of each wire. When making your template, make sure to select a drill bit which is large enough to allow the connectors attached to the power tap wires to pass through (a 7/16" bit was used for the template shown). The template should look something like the one shown in the picture on the right (below).



Copyright © 2005 by Steve Sawtelle



Copyright © 2005 by Steve Sawtelle

Slot Car Track Wiring Guide

(Installing Power Taps)

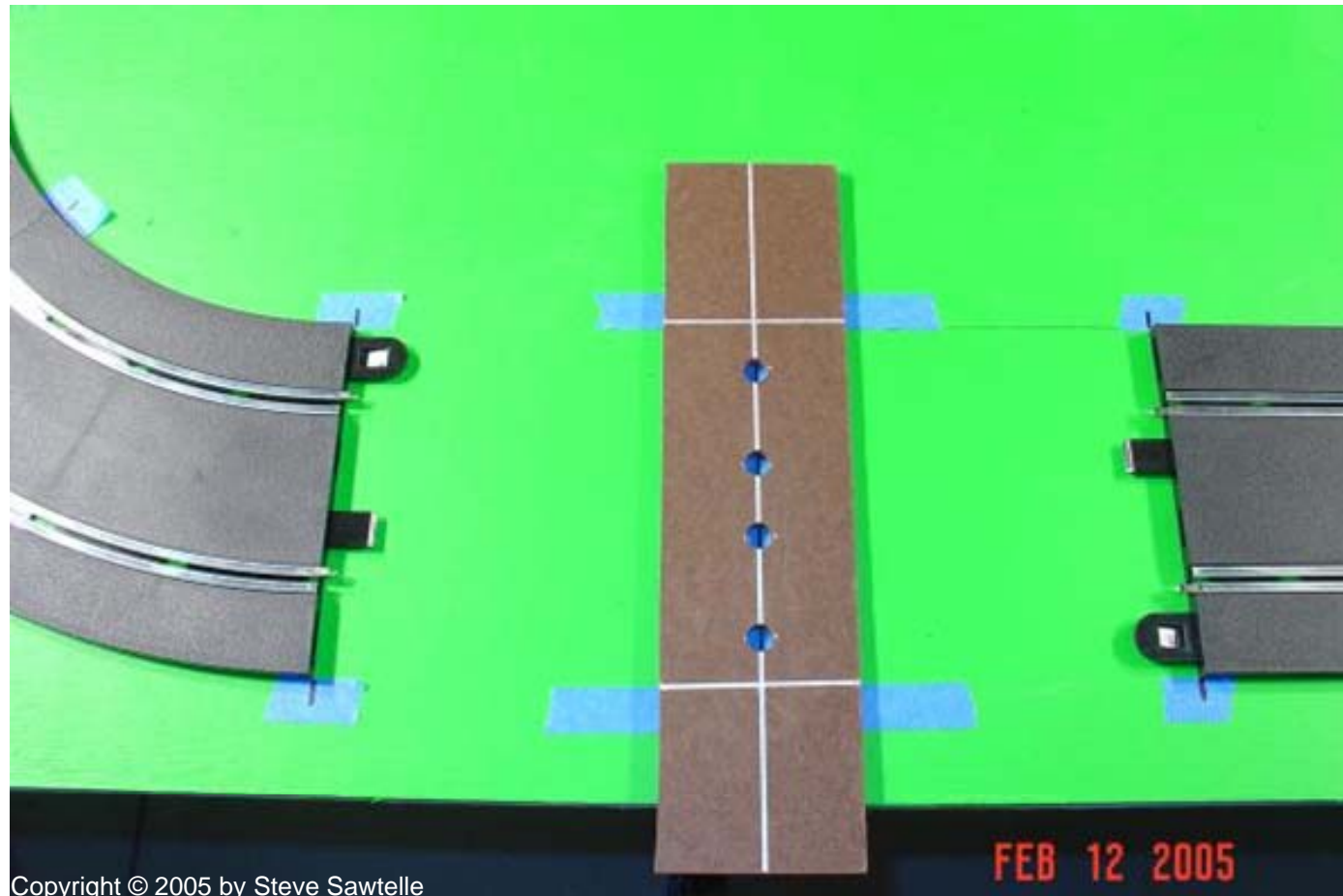
Installing Power Taps (Continued)

Mark and Drill Holes in Table Surface (continued)

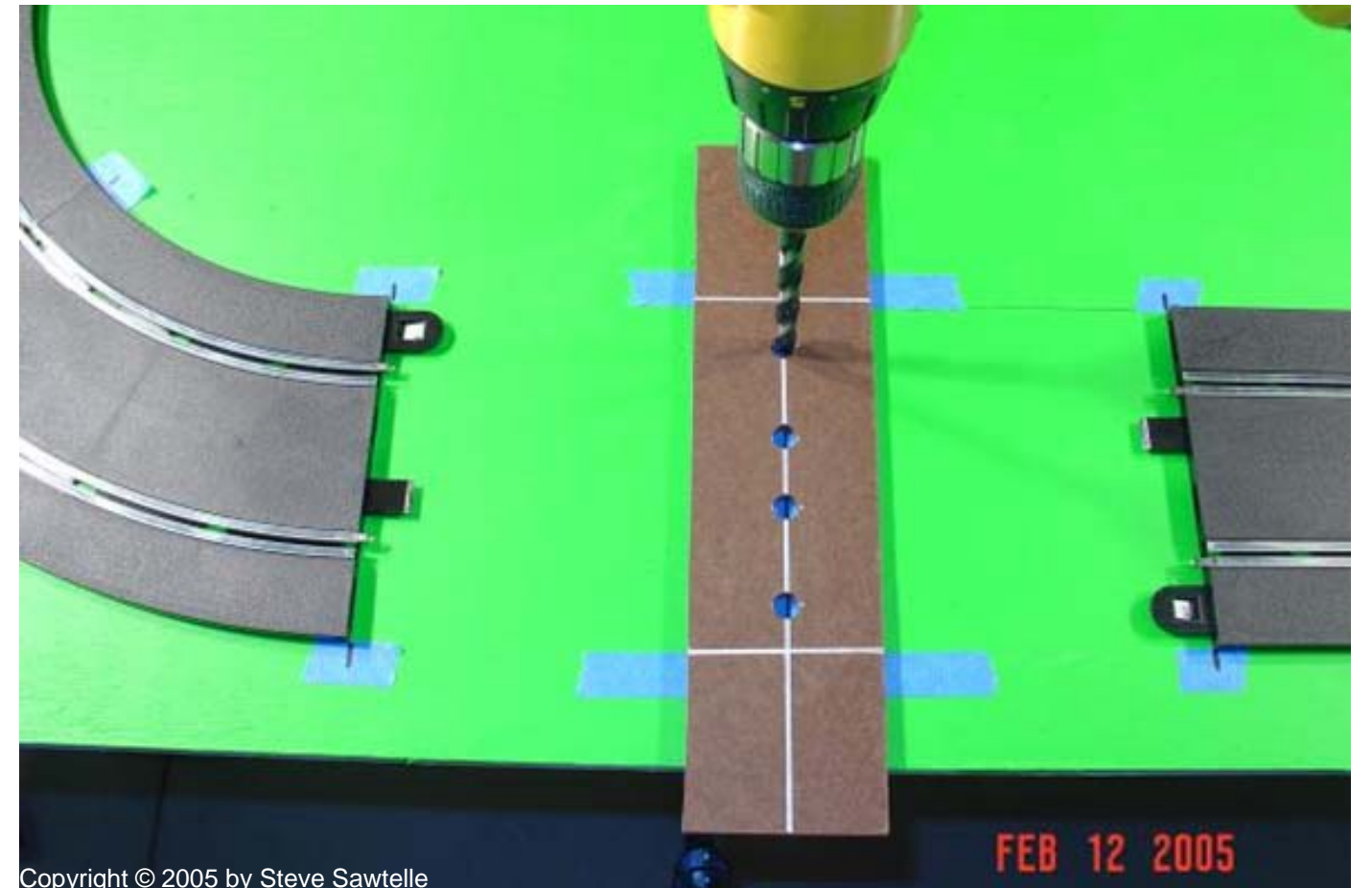
- 4) Carefully position the template along the centerline for the power tap track section which was drawn on the table (or tape) in an earlier step.
- 5) Make sure to also position the template so the lines representing each side of the track lineup with the inside edges of the tape strips used to mark the midpoints (refer to the picture below - left).

Warning: *BEFORE drilling any hole in the table surface, make sure to check UNDER the table to ensure the drill bit will not “hit” anything unexpected. Examples include, but are not limited to, table cross members, electrical wire, your hand and helpers (!).*

- 6) Once properly positioned, hold the template firmly in place with one hand while carefully drilling holes for the power tap wires through the track table as shown in the picture below (right). Repeat these steps for all remaining power taps.



Copyright © 2005 by Steve Sawtelle



Copyright © 2005 by Steve Sawtelle

Slot Car Track Wiring Guide

(Installing Power Taps)

Installing Power Taps (Continued)

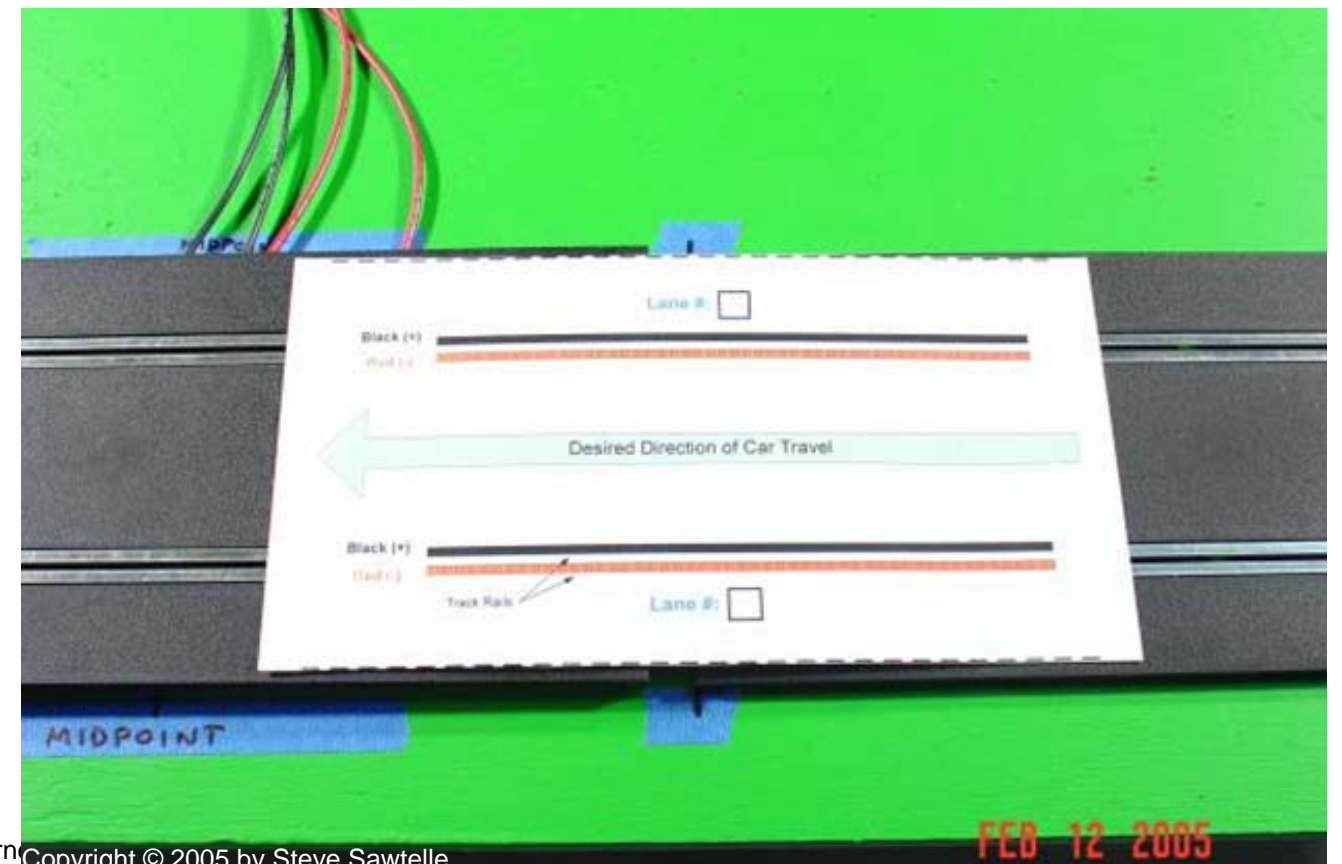
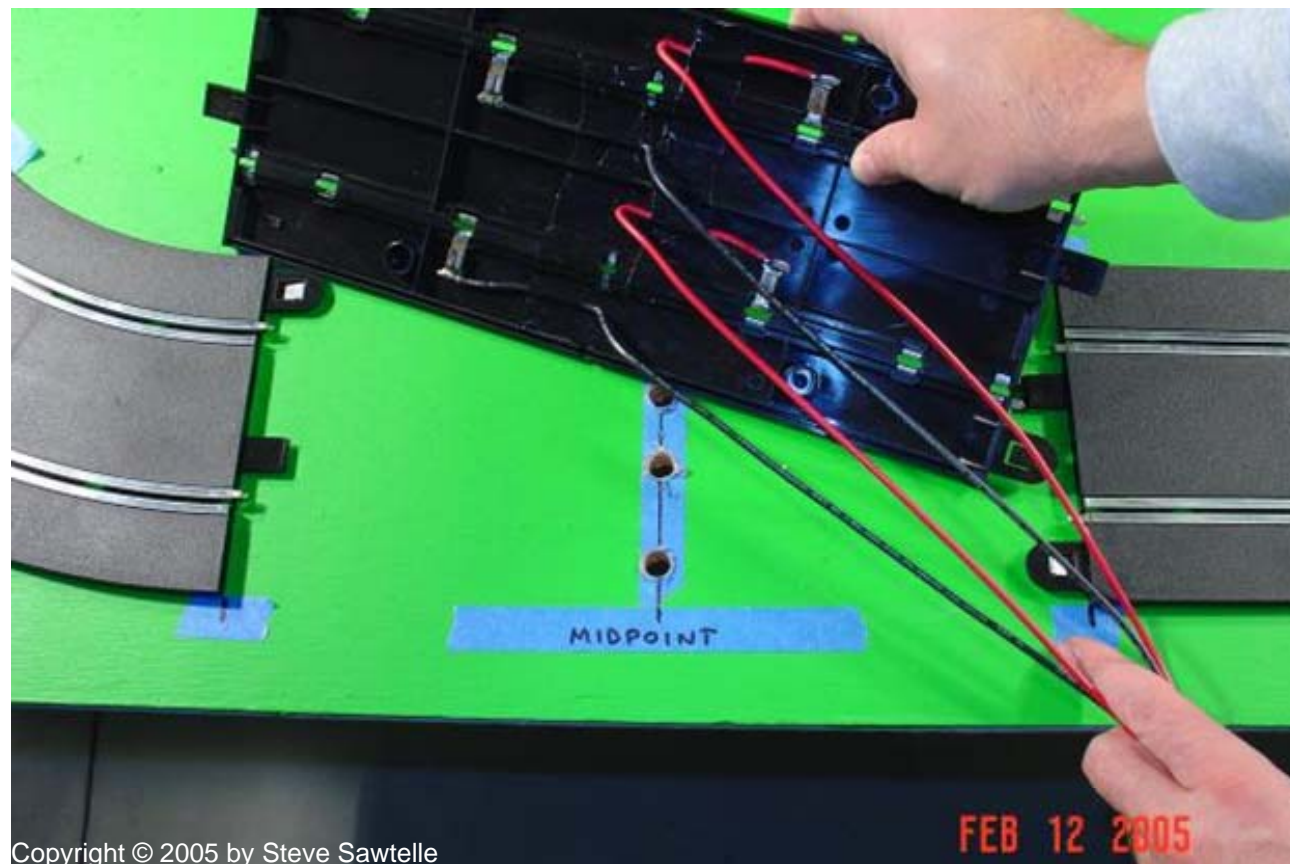
Orient Power Taps for Desired Direction of Car Travel

Take a moment and look at the wires attached to one of your power tap track sections. Assuming black (positive) and red (negative) wires are present, the sequence of wires from front to back (front being closest to you) is either “black-red-black-red” or “red-black-red-black” (refer to picture on left, below). When you reassemble your track with the power taps, it is VERY important to orient each power tap correctly. It might help if we climb into a slot car (use your imagination here) and sit in the driver’s seat. As you lookout the windshield, you see the two track rails which provide power to your car fading into the distance. From a wiring standpoint, we want the rail on the left (driver’s side) to be the negative (connected to red wire) rail; therefore, the right rail (passenger’s side) will be positive (connected to black wire).

Tip: To make this as easy and foolproof as possible, my Track Wiring Kit includes Power Tap Orientation templates (www.slotcarcorner.com/store/wiring/wiring_kit.asp).

To ensure all power taps are oriented properly, follow the steps described below.

- 1) First, place one of the paper templates over your layout’s start/finish area (don’t fasten the template to the track surface just yet). Now orient the paper template so the arrow is pointing in the direction you want the cars to travel around the layout. For the sample layout, the start/finish will be located at the midpoint of the first straight track section on the bottom straightaway and the cars will run in a clockwise direction. Therefore, the arrow representing the desired direction of car travel on the paper template is pointing to the left when placed on the start/finish line of the sample layout (refer to picture on right, below).



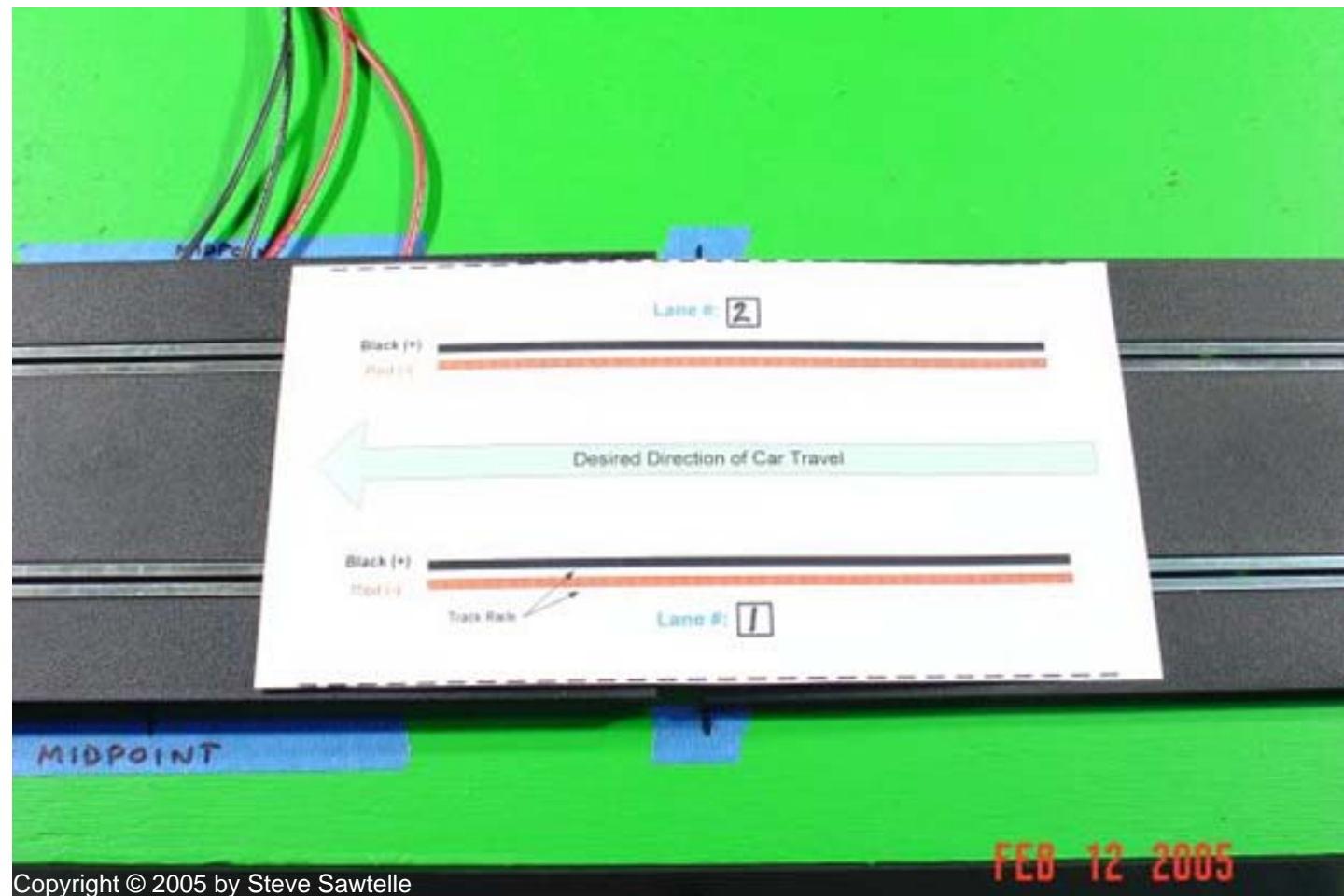
Slot Car Track Wiring Guide

(Installing Power Taps)

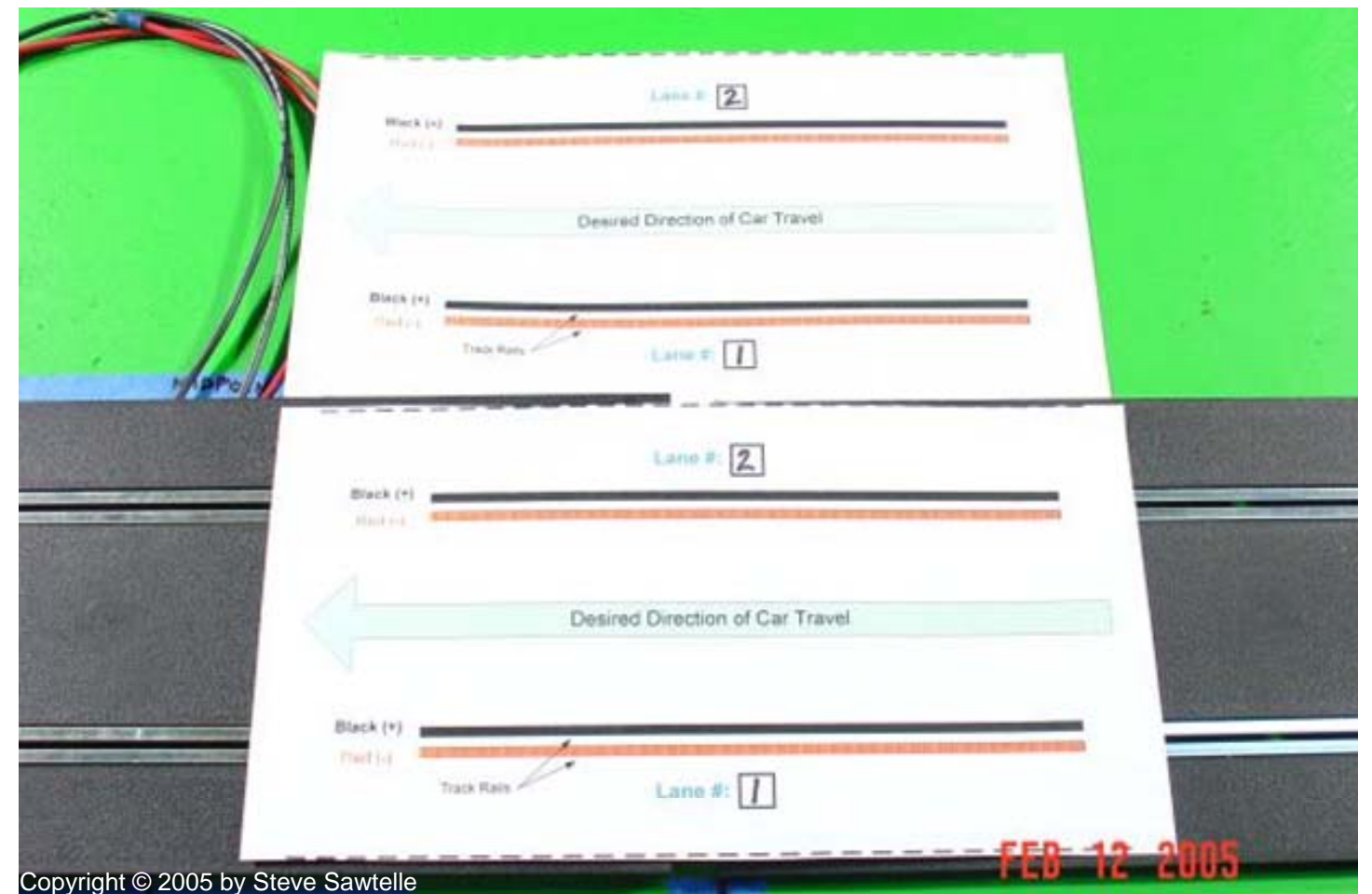
Installing Power Taps (Continued)

Orient Power Taps for Desired Direction of Car Travel (continued)

- 2) Next, designate lane numbers on the paper template you placed on the start/finish track section. Refer to your Track Wiring Plan developed earlier to ensure consistency when assigning lane numbers. For the sample track layout, lane one will be the one on the “bottom” of the template (“outside” lane); lane two will be the top (“inside” lane) as shown in the picture on the left (below).
- 3) Now enter lane numbers on all remaining paper template ENSURING THE DIRECTIONAL ARROW ON ALL TEMPLATES IS ORIENTED THE SAME WAY AS THE TEMPLATE ON THE START/FINISH TRACK SECTION (refer to the picture on the right, below).



Copyright © 2005 by Steve Sawtelle



Copyright © 2005 by Steve Sawtelle

Slot Car Track Wiring Guide

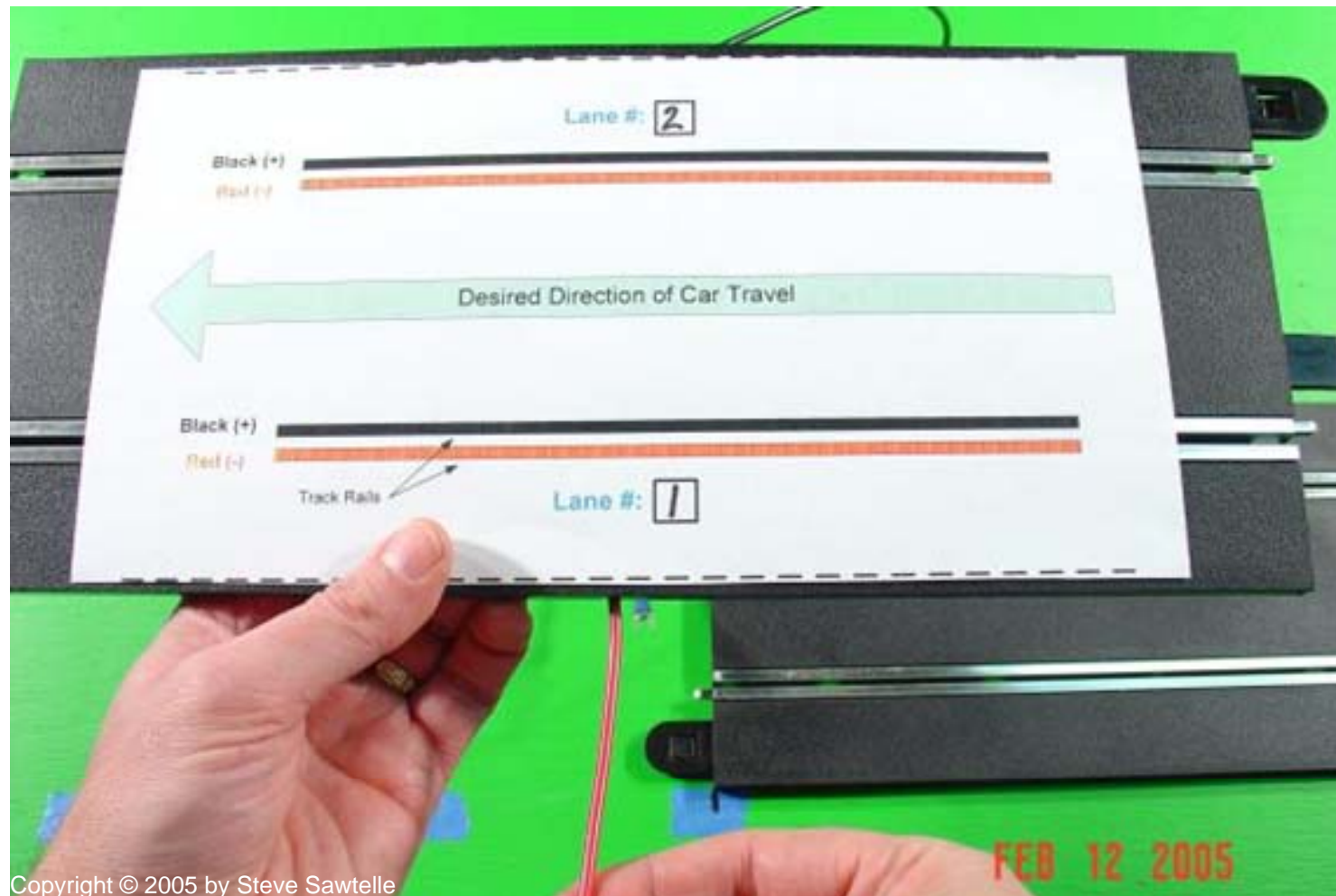
(Installing Power Taps)

Installing Power Taps (Continued)

Orient Power Taps for Desired Direction of Car Travel (continued)

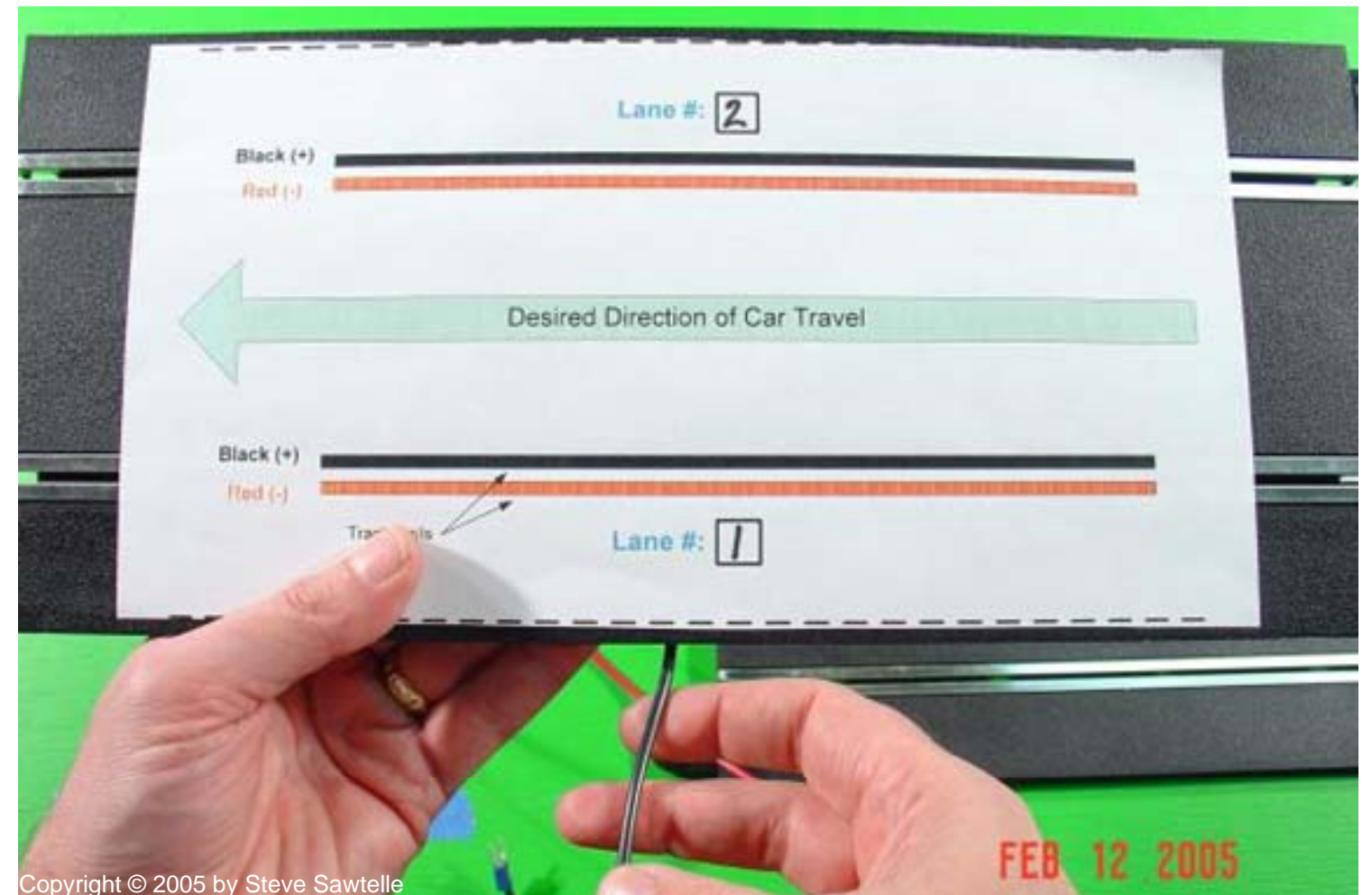
- 4) For each power tap, use a couple of small pieces of painter's tape to temporarily fasten a paper template to the top of the power tap. Before fastening the template, **MAKE ABSOLUTELY SURE** the black and red rail designations on the template correspond to the black and red wires attached to the underside of the power tap (refer to pictures below). It may be necessary to rotate the power tap track section 180 degrees to get the proper orientation.

***** IMPORTANT ***** Before proceeding, take a minute to double check the orientation of the paper template's positive/negative rail designations with the orientation of the power tap's wires to ensure they match. **THIS IS VERY, VERY IMPORTANT!!!**



Correct

(Red wire closest to "bottom" edge of track matches template)



Incorrect

(Black wire closest to "bottom" edge of track does NOT match template)

Slot Car Track Wiring Guide

(Installing Power Taps)

Installing Power Taps (Continued)

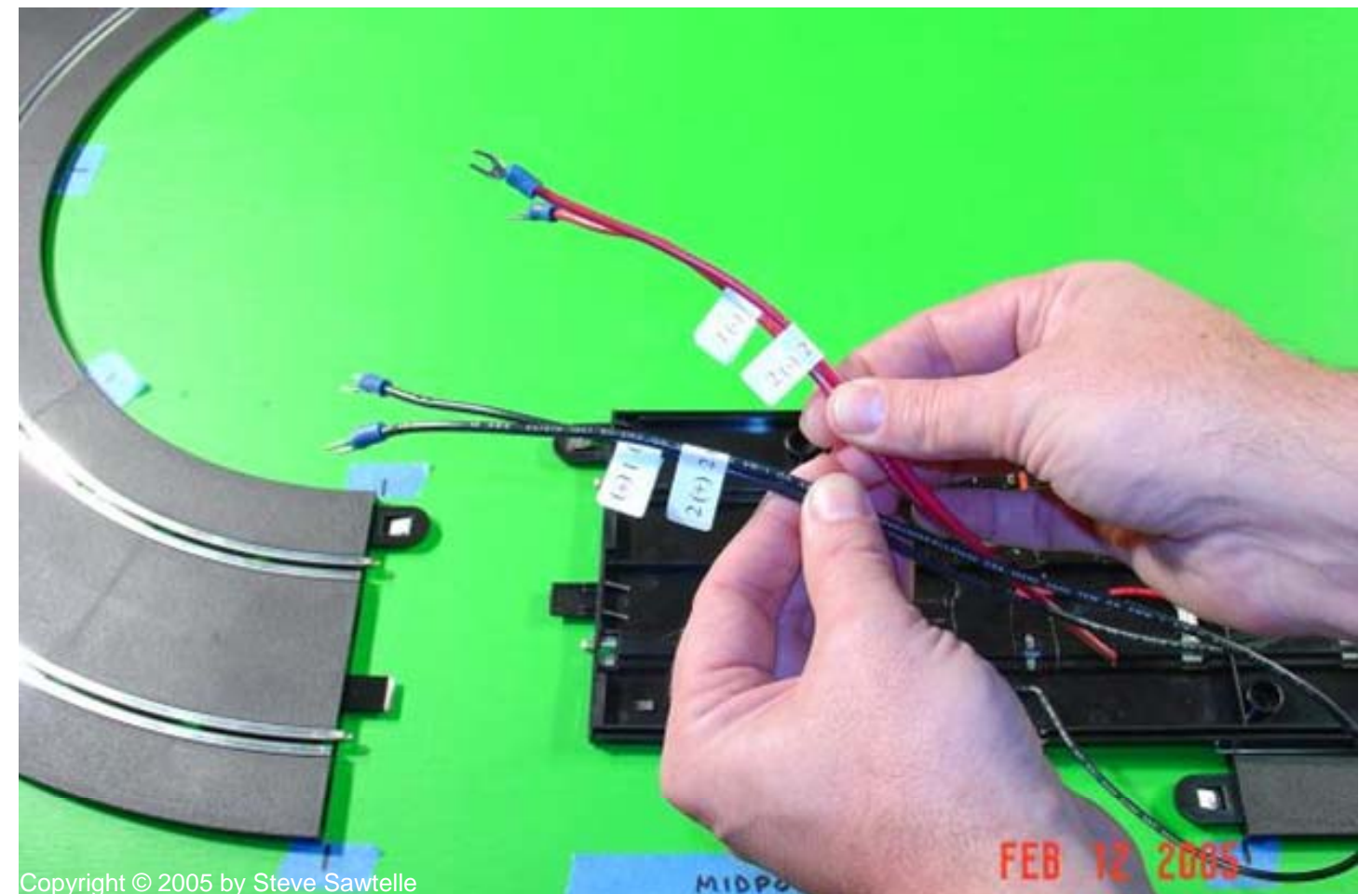
Label Power Tap Wires

Now that you've attached the power tap orientation templates correctly and designated the lane numbers, labeling your power tap wires will be very easy. If you've purchased a Track Wiring Kit from me (www.slotcarcorner.com/store/wiring/wiring_kit.asp), pre-printed labels are included. Otherwise, you can fashion your own labels from small pieces of tape or use small self-adhesive labels which are readily available at Wal-Mart or office supply stores. Attach a label to each power tap wire using the information on the paper template you attached to the power tap as your guide (see pictures below). Make sure your wire labels correspond to the lane designators AND whether the wire is "positive" or "negative". When attaching the labels, be careful not to attach them too close to the spade connectors or they will be in the way when connecting the wires to terminal blocks later in the wiring project. Instead, attach the labels 3 – 4" from the spade connectors.

*Tip: Labeling ALL wires will make your track wiring project go MUCH easier - **DON'T SKIP THIS IMPORTANT STEP!!!** Labeling all wires will also be invaluable down the road should you need to troubleshoot an electrical problem or rearrange/expand your layout.*



Copyright © 2005 by Steve Sawtelle



Copyright © 2005 by Steve Sawtelle

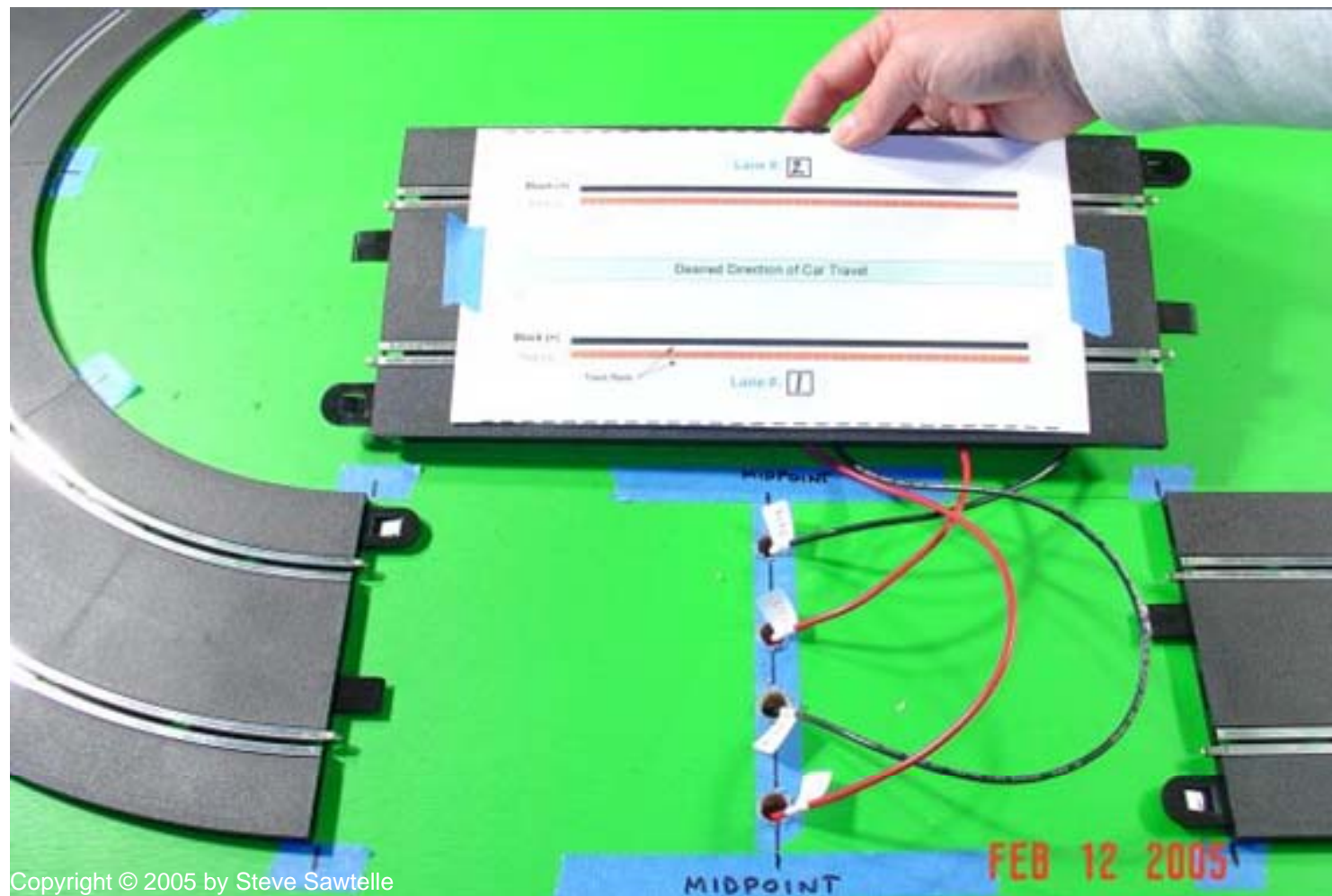
Slot Car Track Wiring Guide

(Installing Power Taps)

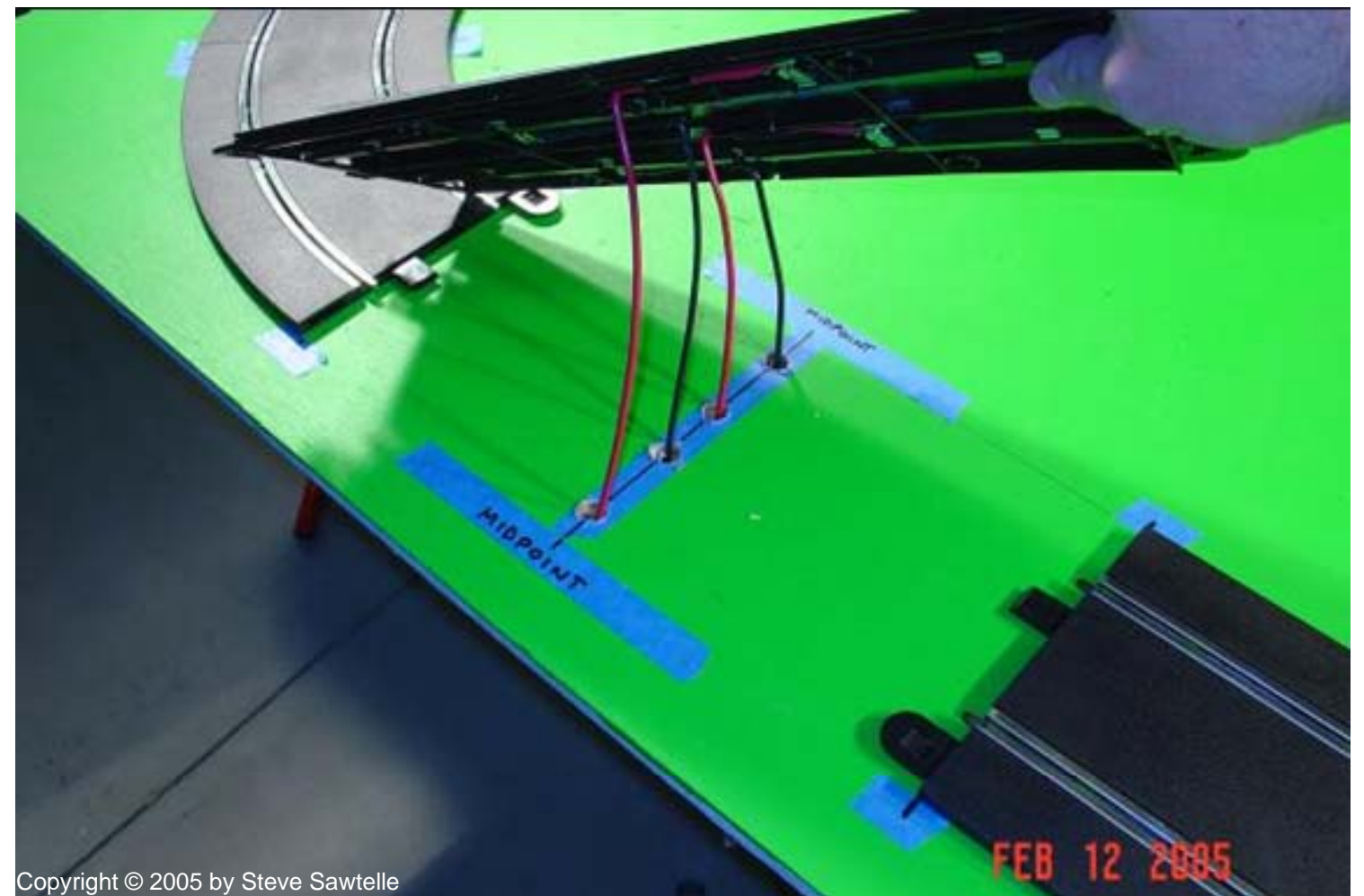
Installing Power Taps (Continued)

Install Power Taps

The power taps are now ready to be installed in your track layout. For each power tap, first ensure the directional arrow on the template is pointing in the right direction. Carefully feed each power tap wire through the holes drilled in the table surface in an earlier step (refer to pictures below). Be careful not to “cross” any wires when inserting them into the holes.



Copyright © 2005 by Steve Sawtelle



Copyright © 2005 by Steve Sawtelle

Slot Car Track Wiring Guide

(Installing Power Taps)

Installing Power Taps (Continued)

Install Power Taps (continued)

Reconnect the adjoining track sections to the power tap. Don't worry about realigning the layout with your registration marks until all power taps have been installed. Repeat the installation process for all remaining power taps paying particular attention to the orientation of the power tap (particularly on longer layouts).

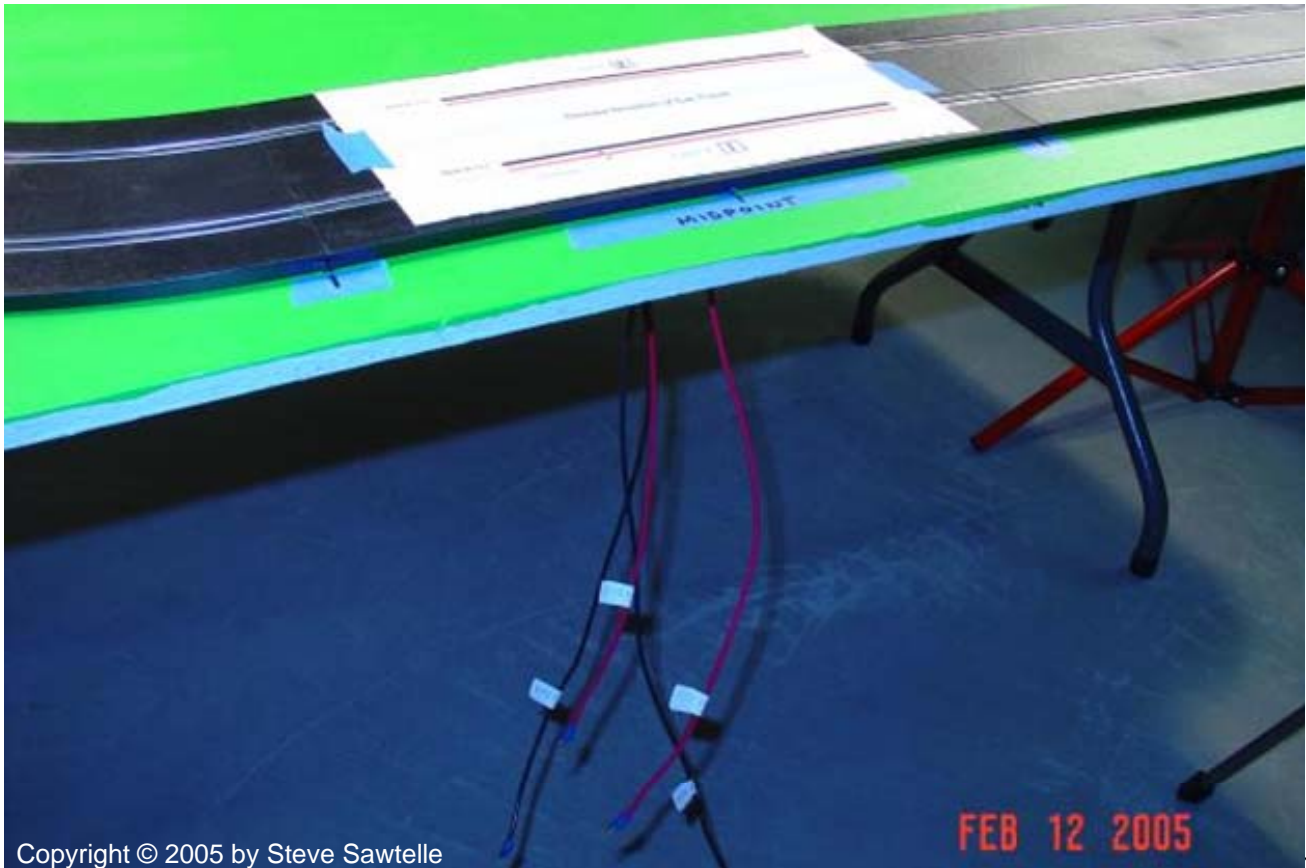
Before proceeding, take a minute to "drive" your layout – either visually or with the aid of your index finger. As you work your way around the layout, double check:

- a) All power tap templates are "pointing" in the right/same direction.
- b) The lane number designators on the templates remain the same for a given lane.
- c) The wires from the power taps dangling under the table match the wiring designations (lane # and "color") on the template attached to the power tap.

Finally, use the registration marks made earlier to adjust the position of your layout on the table surface. Once adjusted, your track should be positioned exactly where it was before you disassembled it to install the power taps.

***** IMPORTANT ***** Make sure none of the spade connectors on the ends of the power tap wires are touching each other! If necessary, wrap the spade connectors with a small piece of the painters tape used earlier. This will prevent a short circuit which can be very difficult to pinpoint one you start connecting the track wiring since you will not be focused on the power tap wires which have not been hooked up yet.

Once all power taps have been installed, you're ready to begin installing the wiring and terminal blocks which will distribute power evenly throughout your layout.



Copyright © 2005 by Steve Sawtelle



Copyright © 2005 by Steve Sawtelle

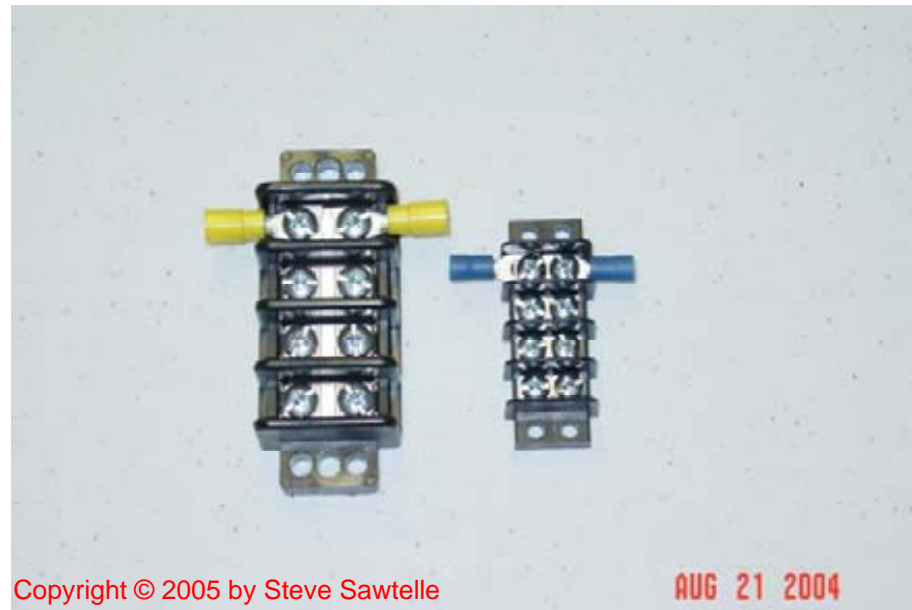
Slot Car Track Wiring Guide

(Terminal Blocks)

A Few Words About Terminal Blocks...

Terminal Blocks

Terminal blocks (sometimes called "terminal barrier strips" or "barrier strips") are one of the most indispensable items to a successful track wiring project yet they get very little attention. After all, what's to discuss? If you've seen one terminal block, you've seen them all, right? Wrong!! The picture below (left) shows two different terminal blocks and the associated spade terminal connectors.



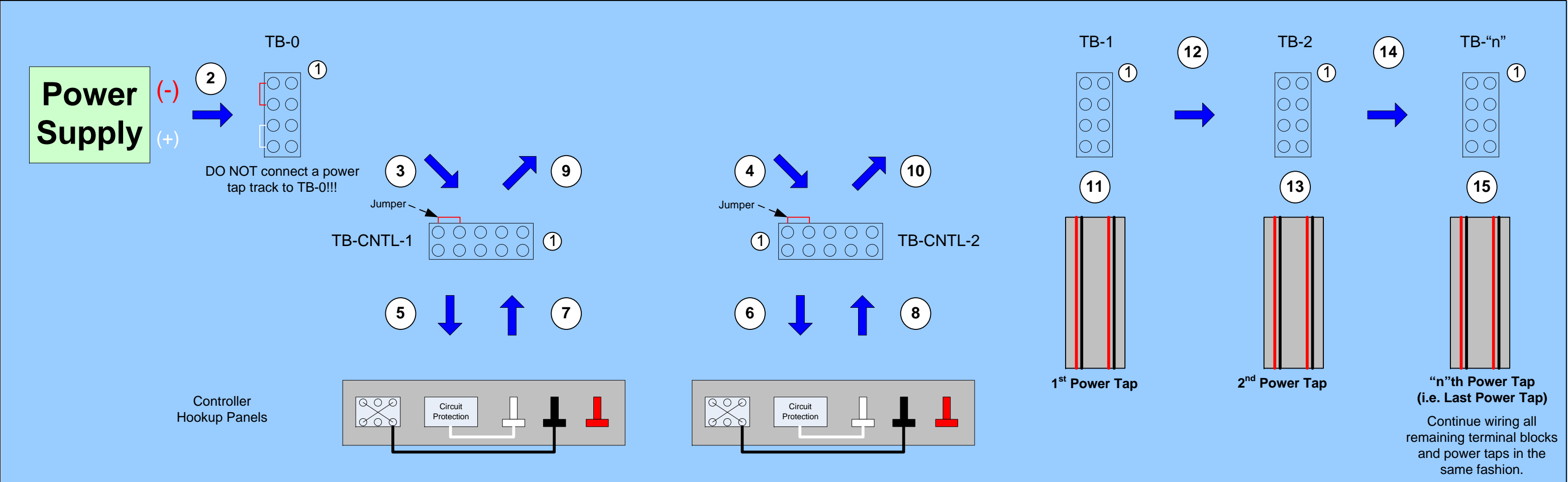
The terminal block on the right is typical of terminal blocks you are likely to find at the local electronics store. This particular terminal block was purchased at Radio Shack (tm). On the left is one of the heavy-duty terminal blocks I offer (www.slotcarcorner.com/store/wiring/term_block.asp). You may be thinking, "OK the one on the left does look beefier but do you really need a heavy-duty terminal block just to wire a slot car track?" The answer is a resounding "Yes!" Simply put, the heavy-duty terminal block shown on the left wins hands down in terms of functionality and ease-of-use. To see why, let's take a closer look.

First, note the spacing between a matching pair of screws (sometimes referred to as "posts" or "terminals"). The wider spacing between each pair of screws on the heavy-duty terminal block will make it much easier to attach spade terminals when making your wiring connections (remember, you'll be doing this while lying on your back working underneath your dark table...). When attaching spade terminals to the smaller terminal block, the ends will interfere with one another (picture above – middle). Extra care must be taken to overlap the ends to ensure the connector is fully seated against the screw/post.

Second, the larger screw posts let you use a much beefier spade terminal which helps ensure the best possible "mechanical" connection. The picture above (right) illustrates this. On the left is a heavy duty spade terminal which is designed to fit the screws/posts on the heavy duty terminal blocks. On the right is a spade connector designed for the smaller terminal block. The heavy duty terminal blocks and spade terminals will result in a better, more consistent mechanical connection than their smaller counterparts.

Track Wiring Diagram (Positive Polarity)

(General Sequence of Wiring Steps)



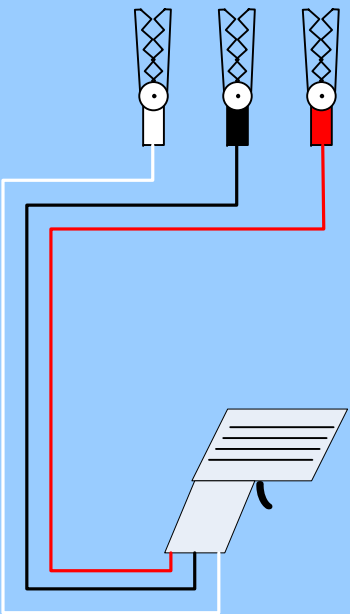
How to Use the Wiring Diagrams:

1. The diagram on this page shows each of the wiring steps required for the sample layout. Steps are denoted by the numbered circles.

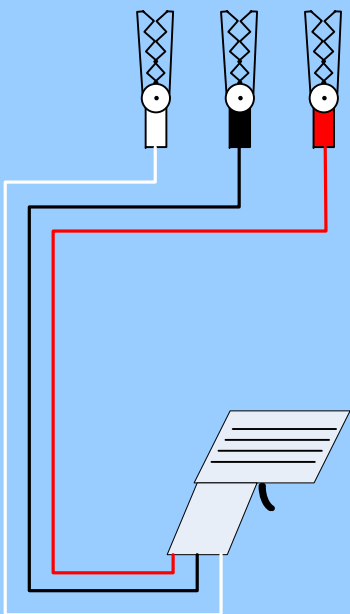
2. The following pages will highlight each of the steps (i.e. "numbered circles") in order. Each page will repeat this diagram and provide instructions to complete a given step.

3. Accompanying pictures showing each wiring step on the actual sample track layout are also provided.

NOTE: For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.



Lane 1
Controller



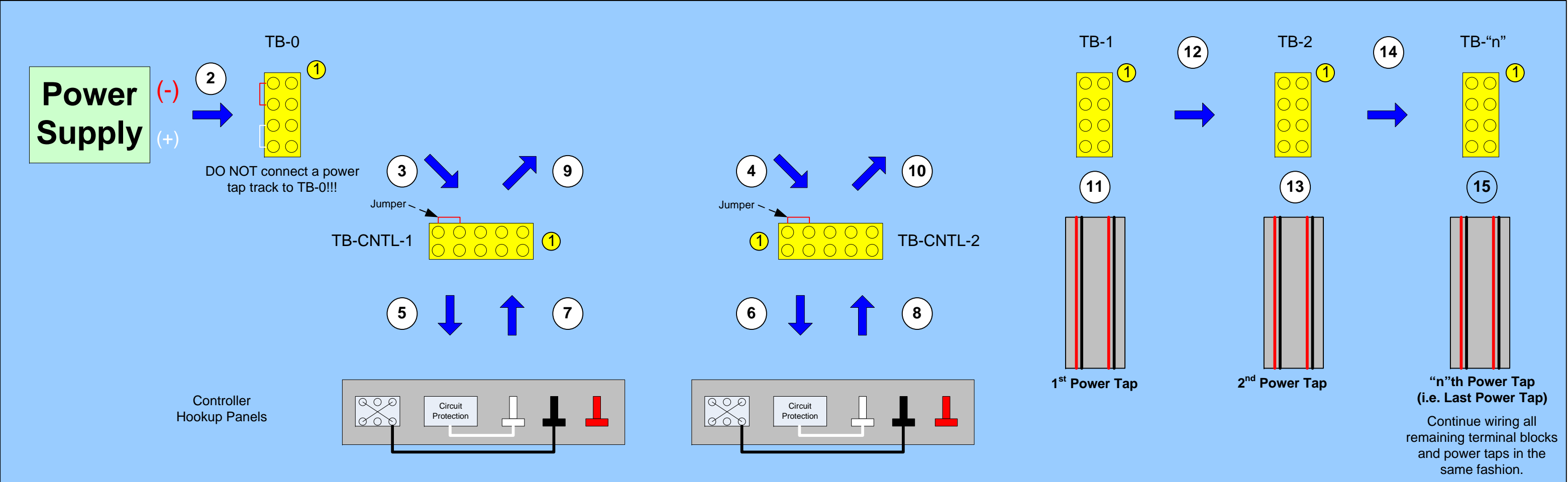
Lane 2
Controller

IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

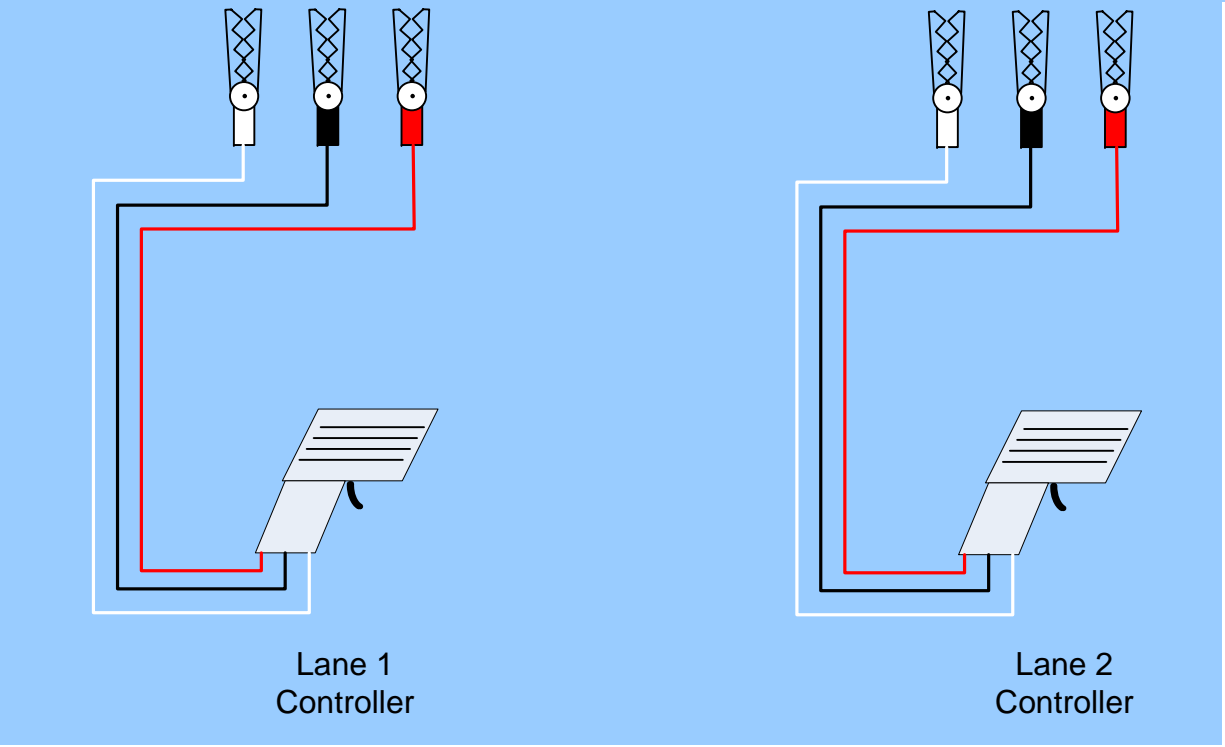
Track Wiring Diagram (Positive Polarity)

(Install Terminal Blocks)



Instructions:

- Using the Track Wiring Plan described earlier, determine where terminal blocks will be located. "TB-0" should generally be located near your power supply. "TB-CNTL-n" should be located near the driver's station area for each lane. "TB-1" through "TB-n" should be located near the corresponding power tap (make sure the wires from the power tap track will reach all screws/posts on the terminal block).
- Place the wiring template (from wiring kit) which corresponds to each terminal block (TB-x or TB-CNTL-x) "between the terminal block and the underside of the track table. Be careful to orient the wiring template properly with respect to other templates. Once the terminal block is fastened to the underside of the track table, the wiring template will also be held securely in place. See pictures on next page.



IMPORTANT!!!

- Seek assistance if you are unclear on ANY details associated with your track wiring project.
- ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- Label ALL wires
- Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
- Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- BEFORE turning on power:
 - Use wire labels and wiring templates to double-check ALL connections
 - Double-check all terminal block screws are tight
- When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

Slot Car Track Wiring Guide

(Installing Terminal Blocks and Wiring Templates)

Installing Terminal Blocks and Wiring Templates

- 1) Using the Track Wiring Plan developed earlier, determine the position of the first terminal block to be mounted (TB-0) to the underside of the table. Refer to picture below (left).
- 2) Find the wiring template (included in my wiring kit – see http://www.slotcarcorner.com/store/wiring/wiring_kit.asp) which corresponds to the terminal block being mounted. Make sure to orient the wiring template properly (the labels on each template will make this very easy to do). Refer to picture below (right).

NOTE: For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.

1a



1b



Slot Car Track Wiring Guide

(Installing Terminal Blocks and Wiring Templates)

Installing Terminal Blocks and Wiring Templates (continued)

- 3) Position the wiring template between the terminal block and table. Refer to picture below (left).
- 4) Fasten the terminal block to the table. Once fastened, the terminal block will hold the wiring template securely in place. Refer to picture below (right).

1c



Copyright © 2005 by Steve Sawtelle

1d



Copyright © 2005 by Steve Sawtelle

STEP 1

Slot Car Track Wiring Guide (Installing Terminal Blocks and Wiring Templates)

Installing Terminal Blocks and Wiring Templates (continued)

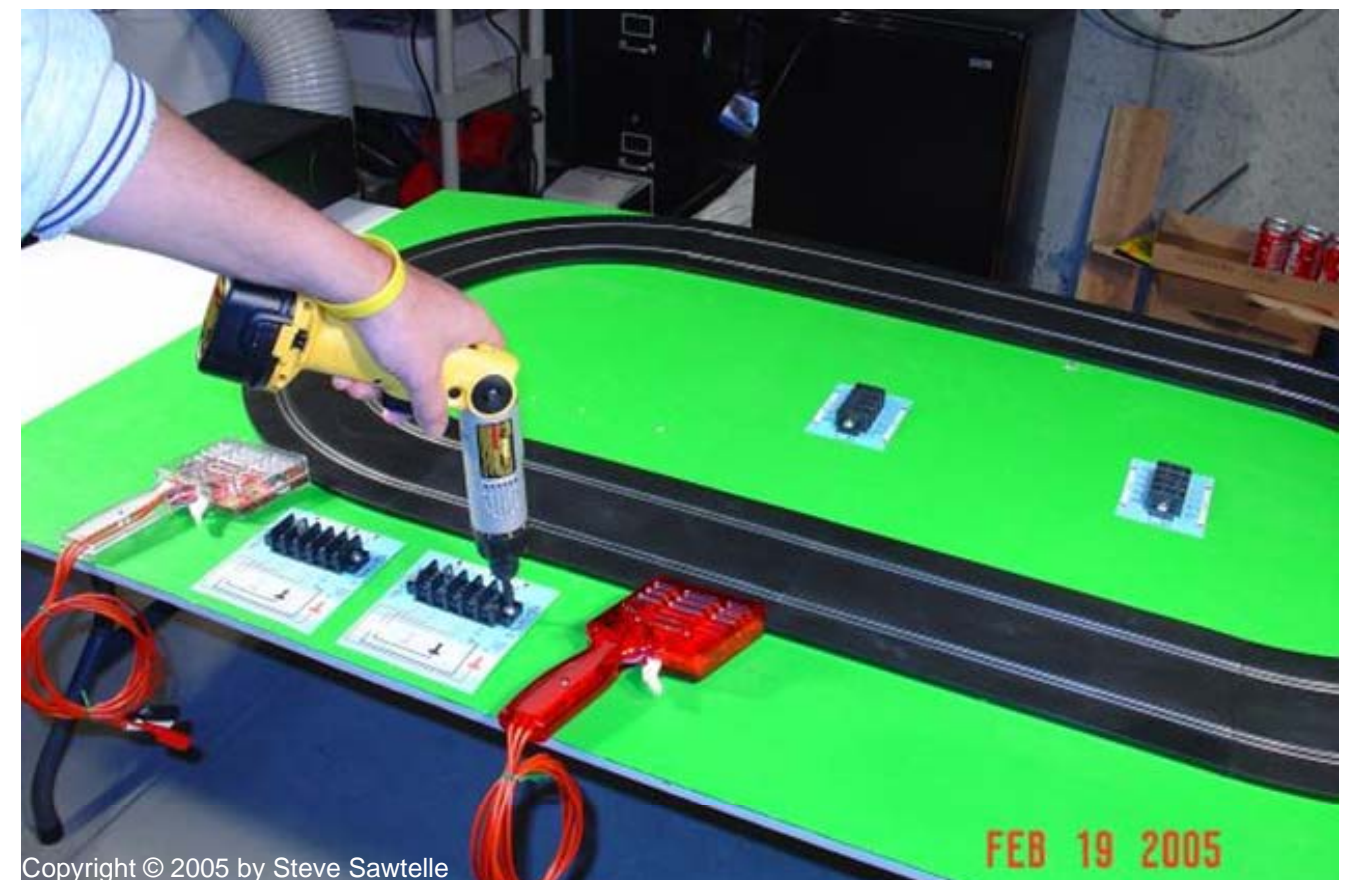
- 5) Using the Track Wiring Plan, repeat previous steps for remaining terminal blocks and associated wiring templates which will eventually be used to connect track power taps. Refer to picture below (left).
- 6) Install terminal blocks and associated wiring template which will eventually be used to connect controller hookup panels. Refer to picture below (right).

NOTE: For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.

1e

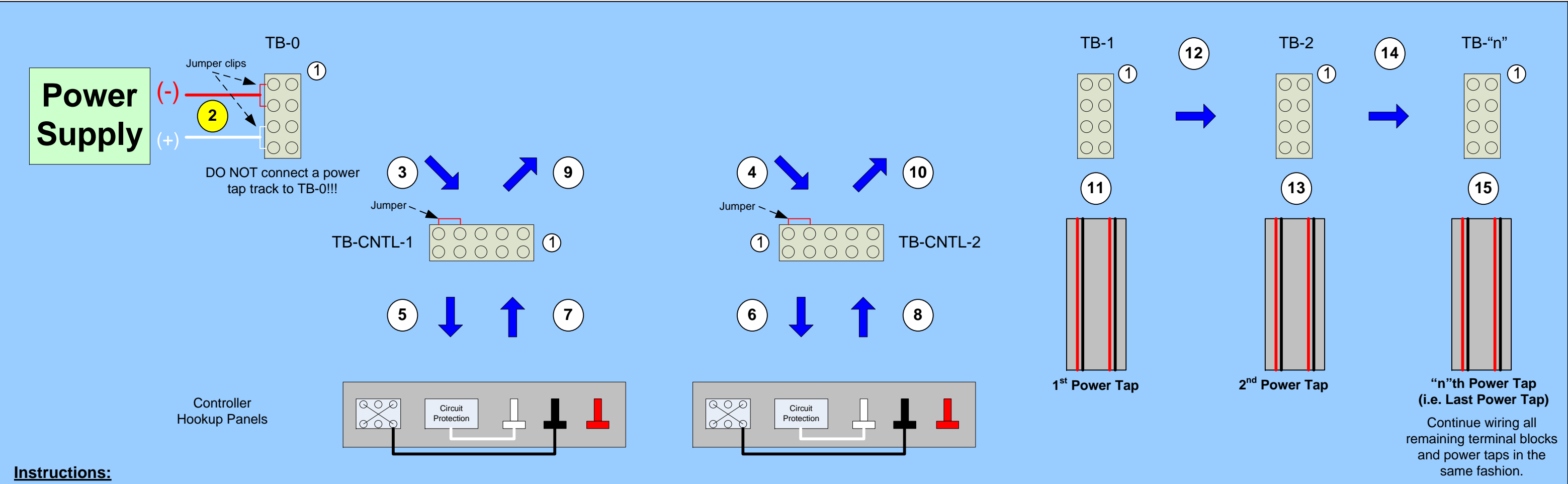


1f



Track Wiring Diagram (Positive Polarity)

(Power Supply to TB-0)



Instructions:

1. Measure the distance between the positive/negative "posts" on the power supply and the first terminal block ("TB-0").
2. Cut wire to the required length.
3. Strip 5/16" of sheathing from both ends of each wire. Crimp AND solder heavy duty spade terminals to all wire ends.
4. Label the wires.
 - a. "Red" wire – "Power Supply (-)"
 - b. "White" wire – "Power Supply (+)"
5. Connect wires using the wiring template for TB-0. Screws/posts should be snug – be careful not to over tighten them.

Note: When attaching a wire to a set of screws/posts connected by one or more jumpers, you can make the connection using any of the screws/posts associated with the "color" wire you are connecting (refer to the wiring template).

IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

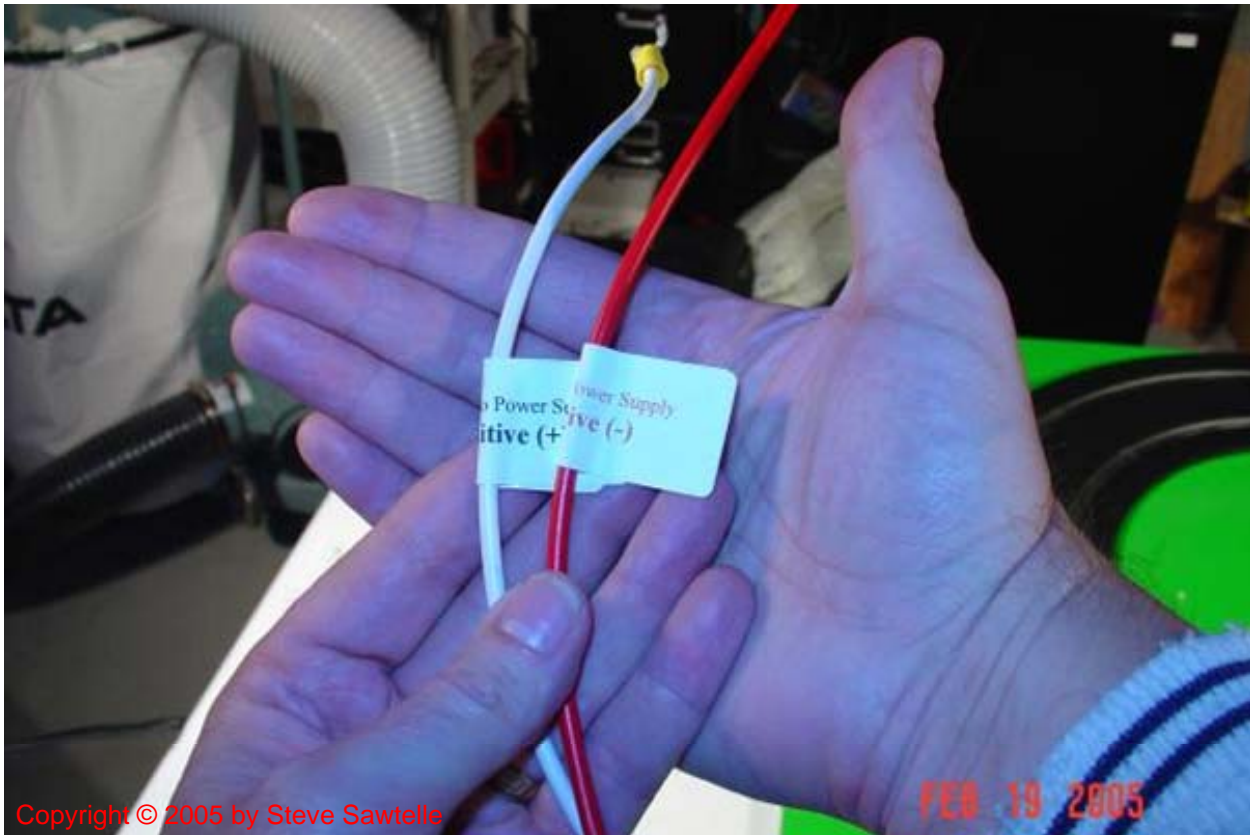
STEP 2

Track Wiring Diagram (Positive Polarity) (Power Supply to TB-0)

2a



2b

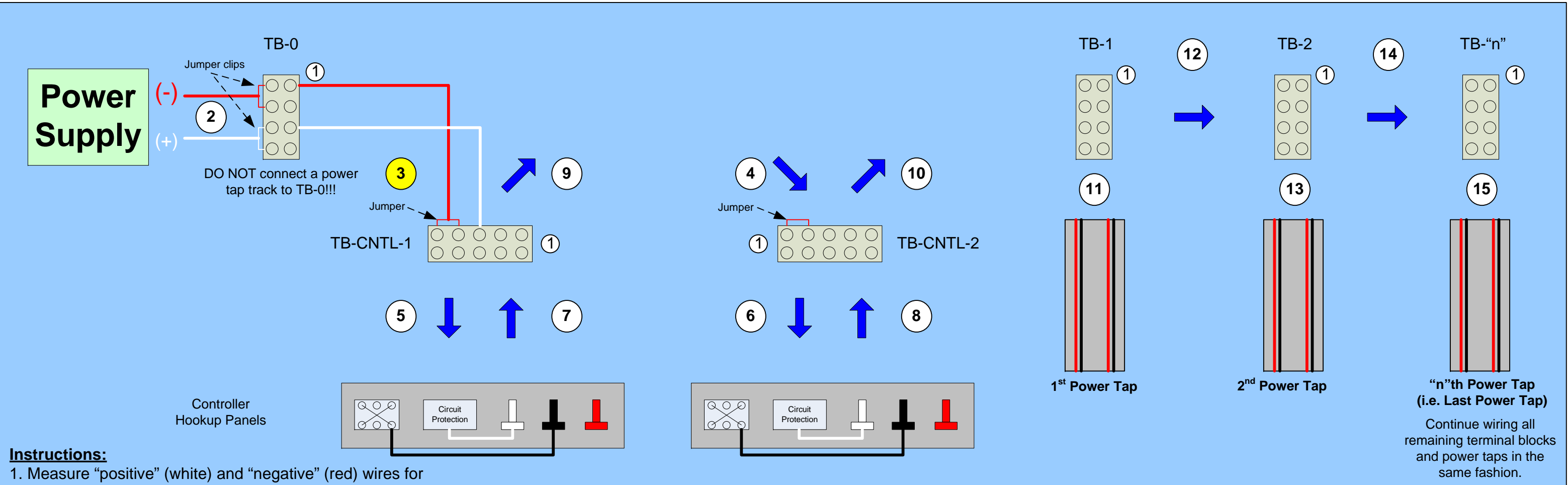


2c



Please Note:
1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

Track Wiring Diagram (Positive Polarity) (TB-0 to TB-CNTL-1)



Instructions:

- 1. Measure “positive” (white) and “negative” (red) wires for the Lane 1 connection between TB-0 and TB-CNTL-1 as shown.
- 2. Cut wire to the required length.
- 3. Strip 5/16" of sheathing from both ends of each wire. Crimp AND solder heavy duty spade terminals to all wire ends.
- 4. Label all wires:
 - a. “White” Lane 1 = “1 (+)”
 - b. “Red” Lane 1 = “1 (-)”
- 5. Use the wiring templates for TB-0 and TB-CNTL-1 to connect the wires to the designated screws/posts. Screws/posts should be snug - be careful not to over tighten.

Note: When attaching a wire to a set of screws/posts connected by one or more jumpers, you can make the connection using any of the screws/posts associated with the “color” wire you are connecting (refer to the wiring template)..

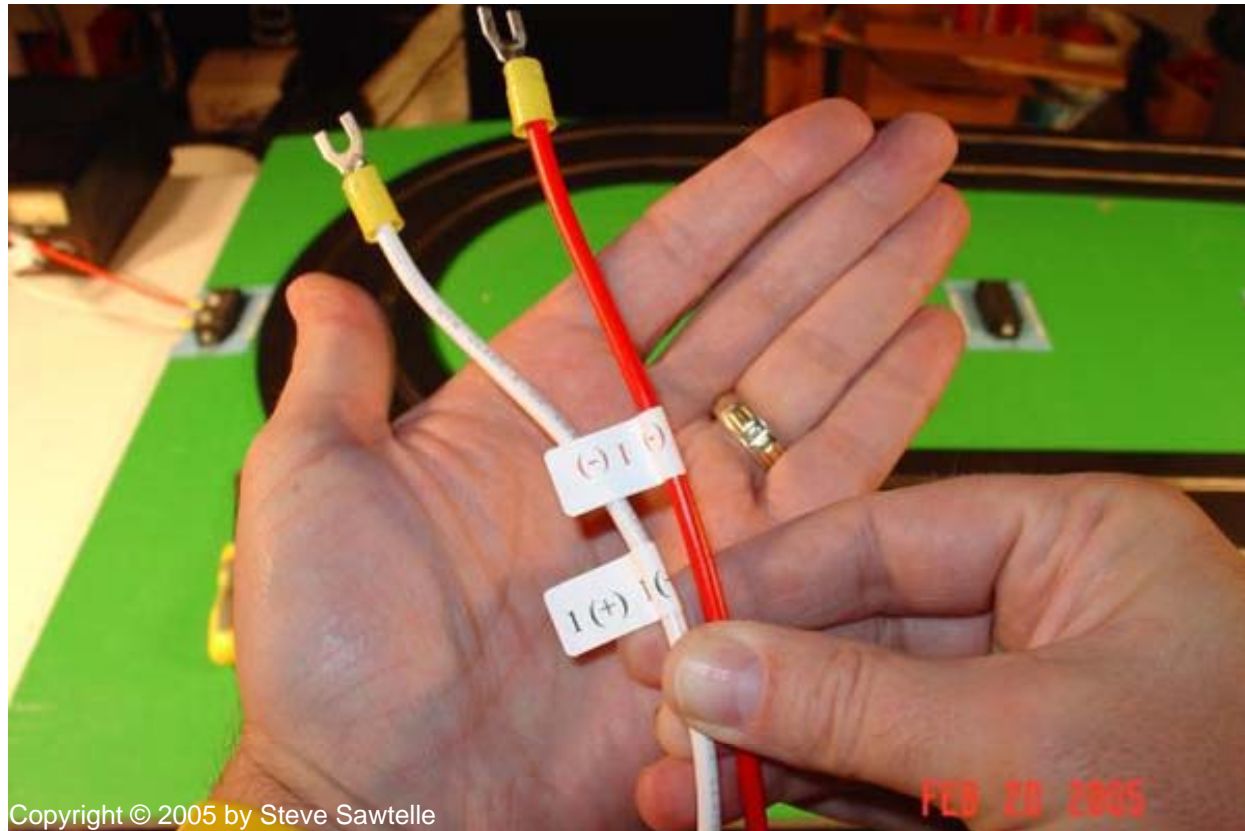
IMPORTANT!!!

- 1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
- 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- 4. Label ALL wires
- 5. Use wiring templates for all terminal blocks (designated as “TB-xxx” in diagram)
- 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- 7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
- 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is “tripped” (or “blown”). Correct the problem BEFORE turning power back on again.

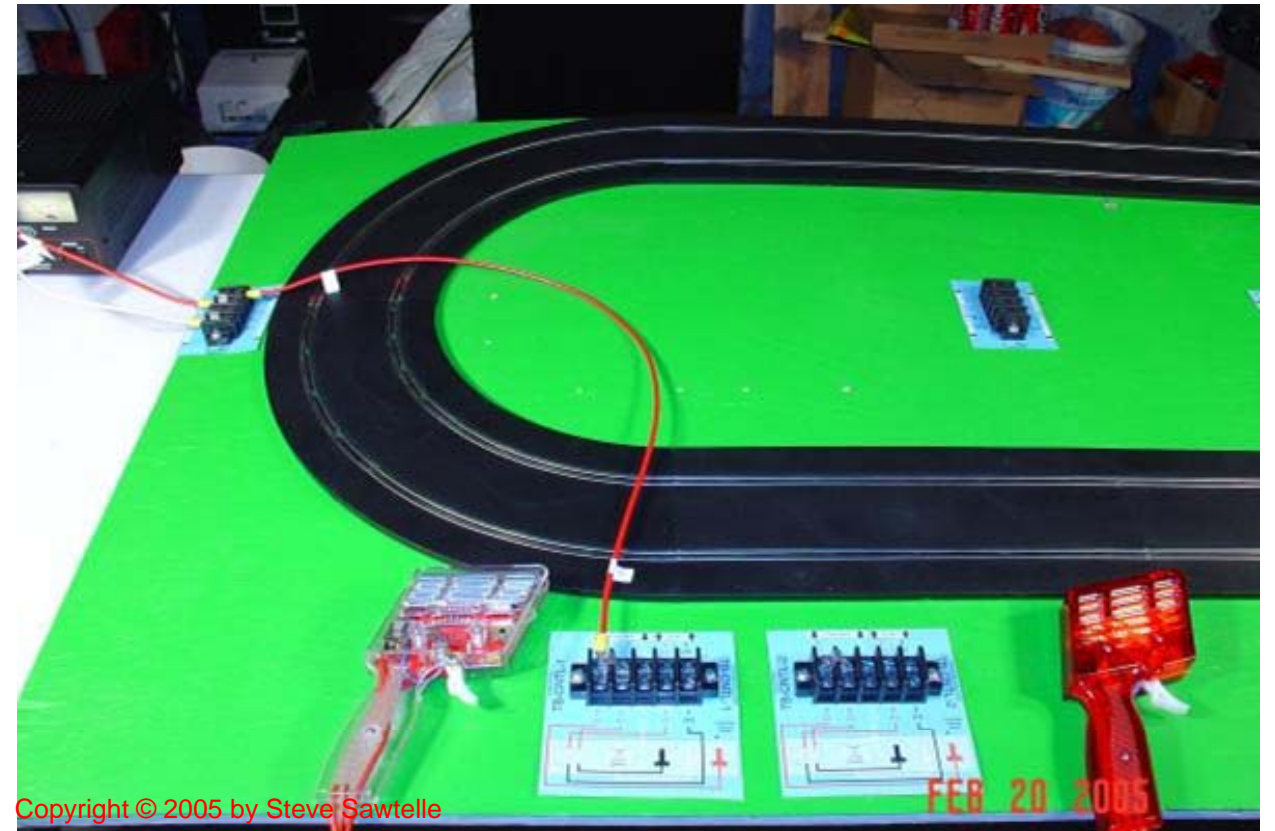
STEP 3

Track Wiring Diagram (Positive Polarity) (TB-0 to TB-CNTL-1)

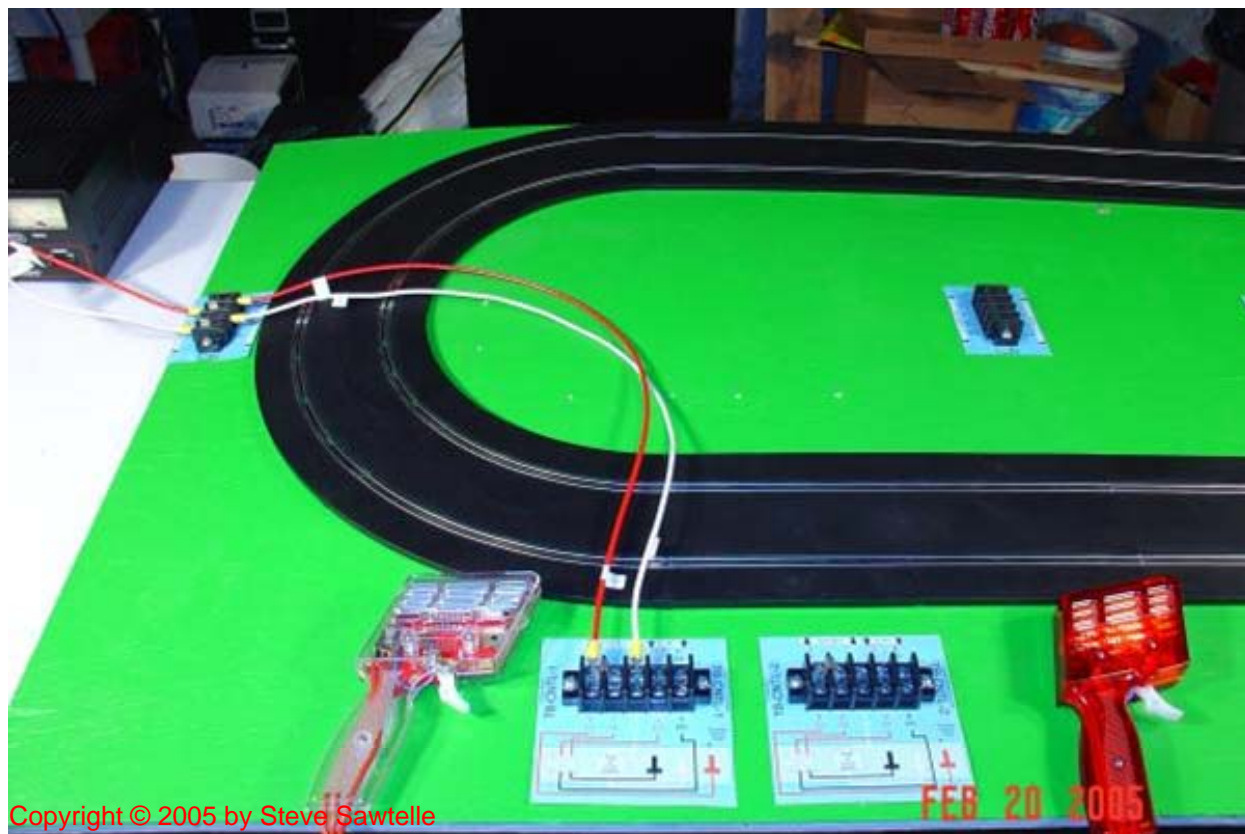
3a



3b



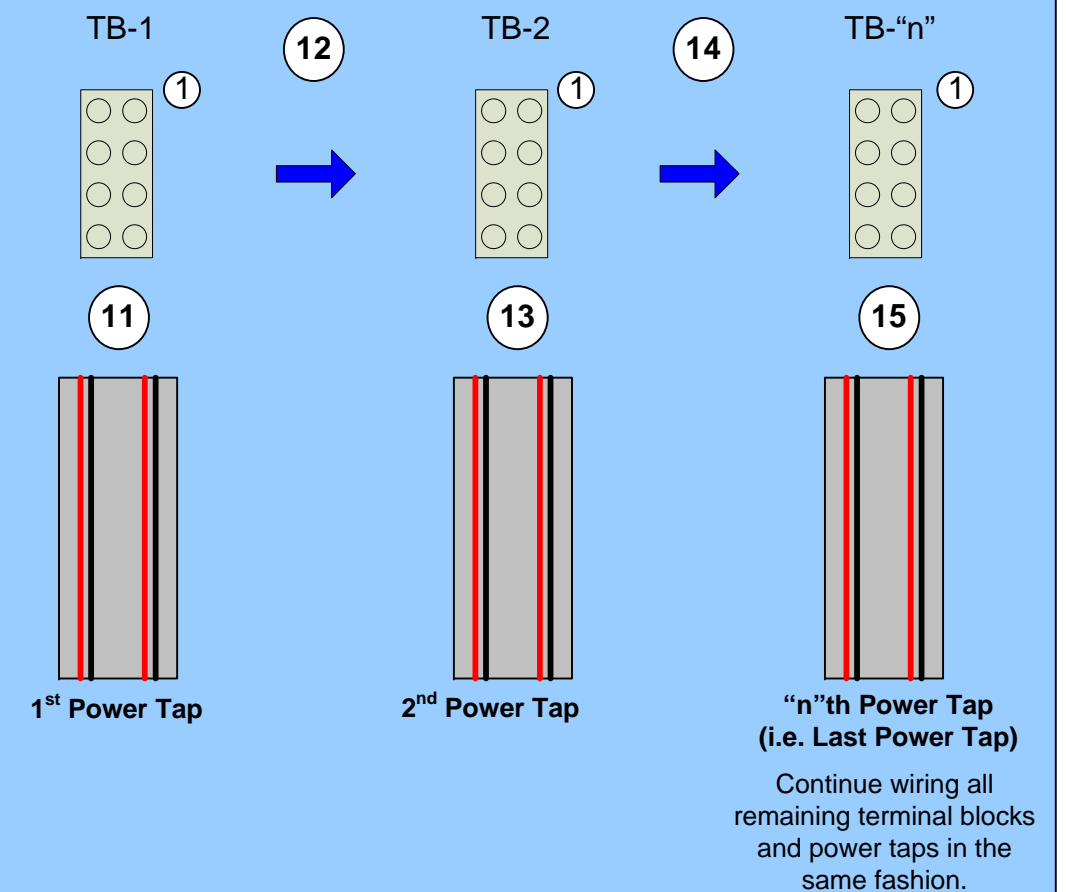
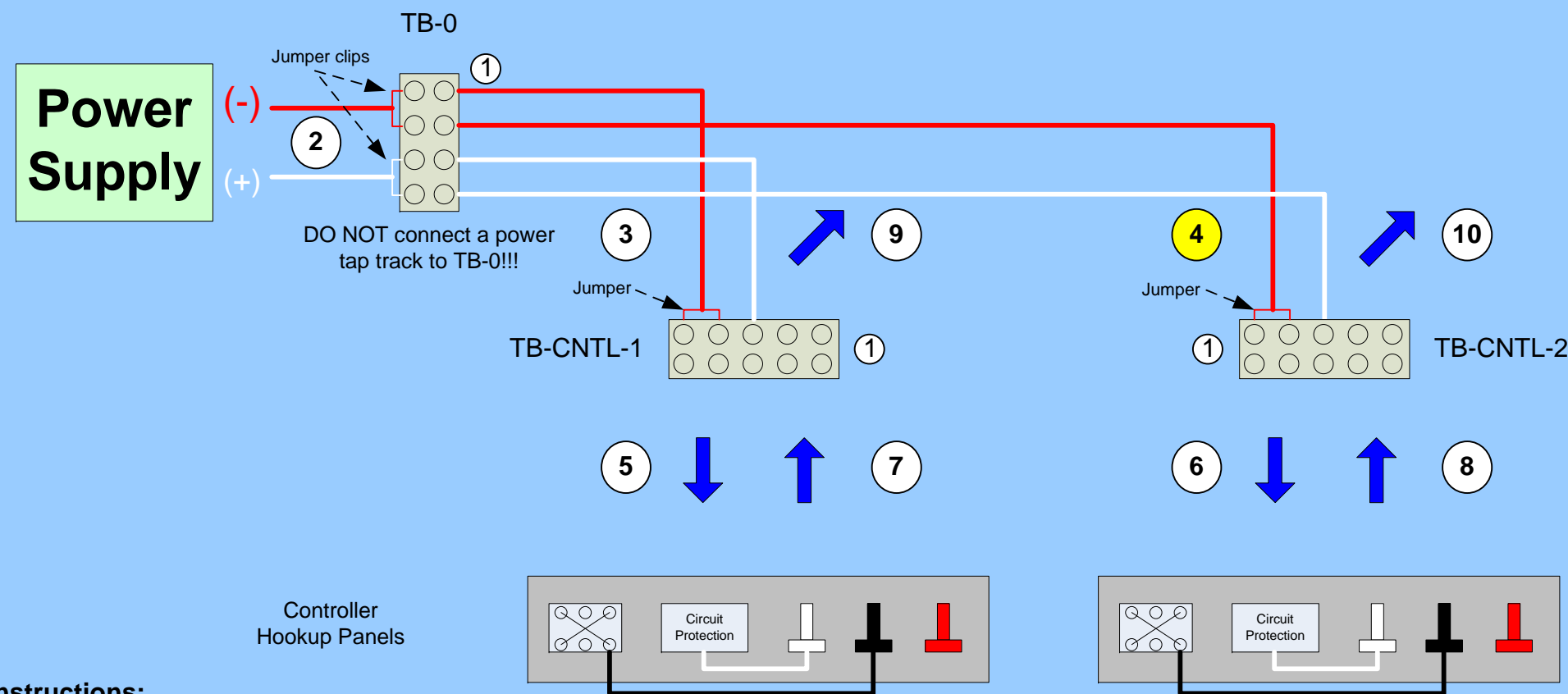
3c



Please Note:

1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

Track Wiring Diagram (Positive Polarity) (TB-0 to TB-CNTL-2)

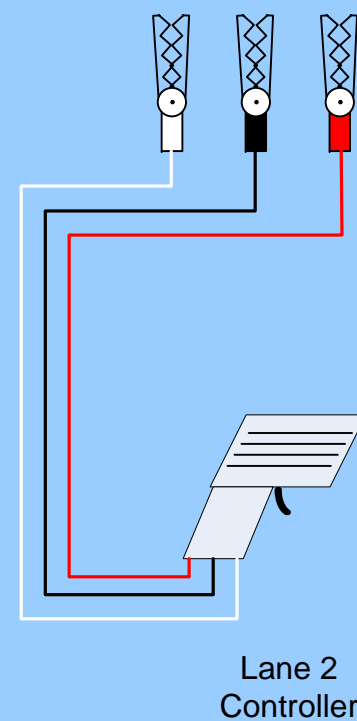
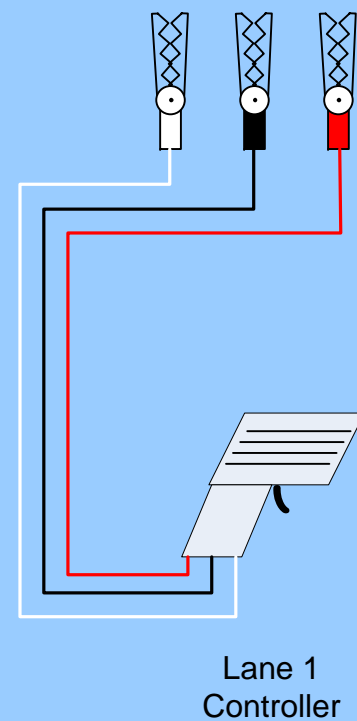


Instructions:

1. Measure “positive” (white) and “negative” (red) wires for the Lane 2 connection between TB-0 and TB-CNTL-2 as shown.
2. Cut wire to the required length.
3. Strip 5/16" of sheathing from both ends of each wire. Crimp AND solder heavy duty spade terminals to all wire ends.
4. Label all wires:
 - a. “White” Lane 2 = “2 (+)”
 - b. “Red” Lane 2 = “2 (-)”

5. Use the wiring templates for TB-0 and TB-CNTL-2 to connect the wires to the designated screws/posts. Screws/posts should be snug -be careful not to over tighten.

Note: When attaching a wire to a set of screws/posts connected by one or more jumpers, you can make the connection using any of the screws/posts associated with the “color” wire you are connecting (refer to the wiring template).



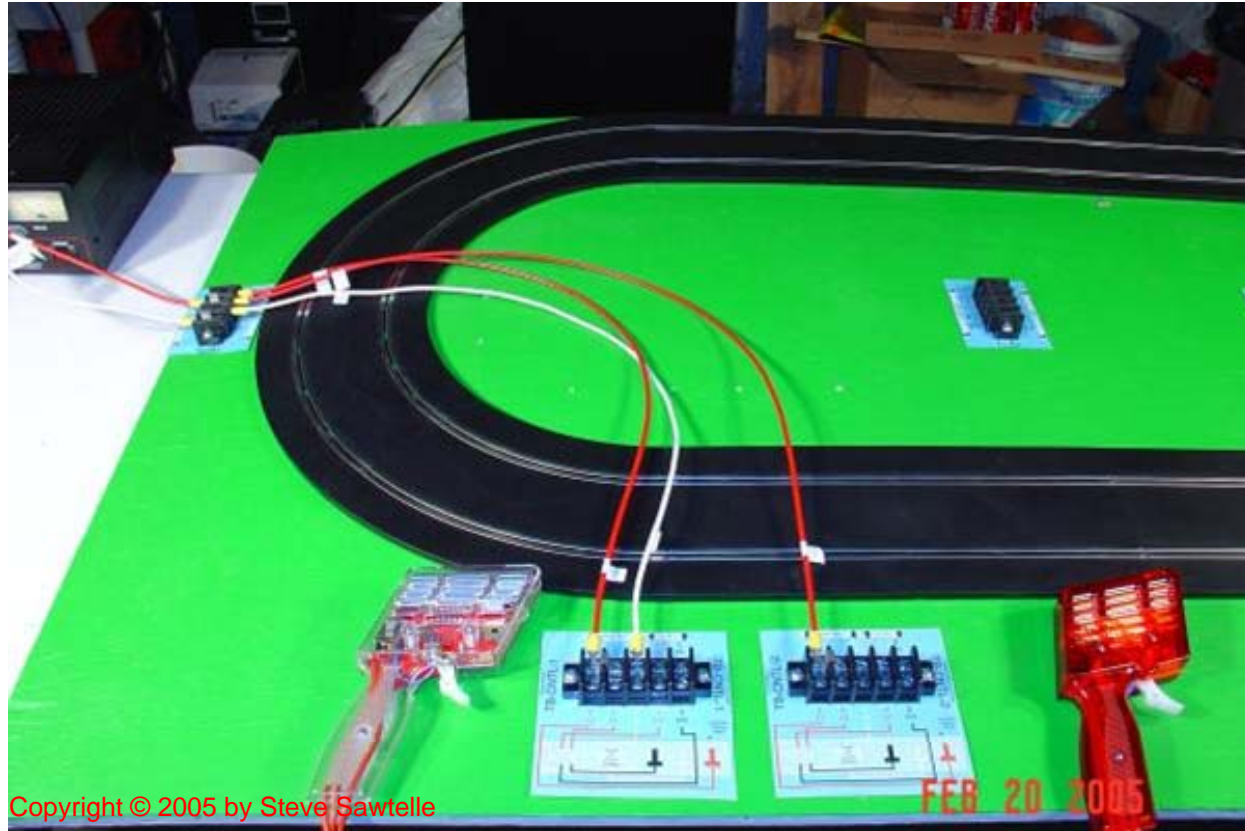
IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

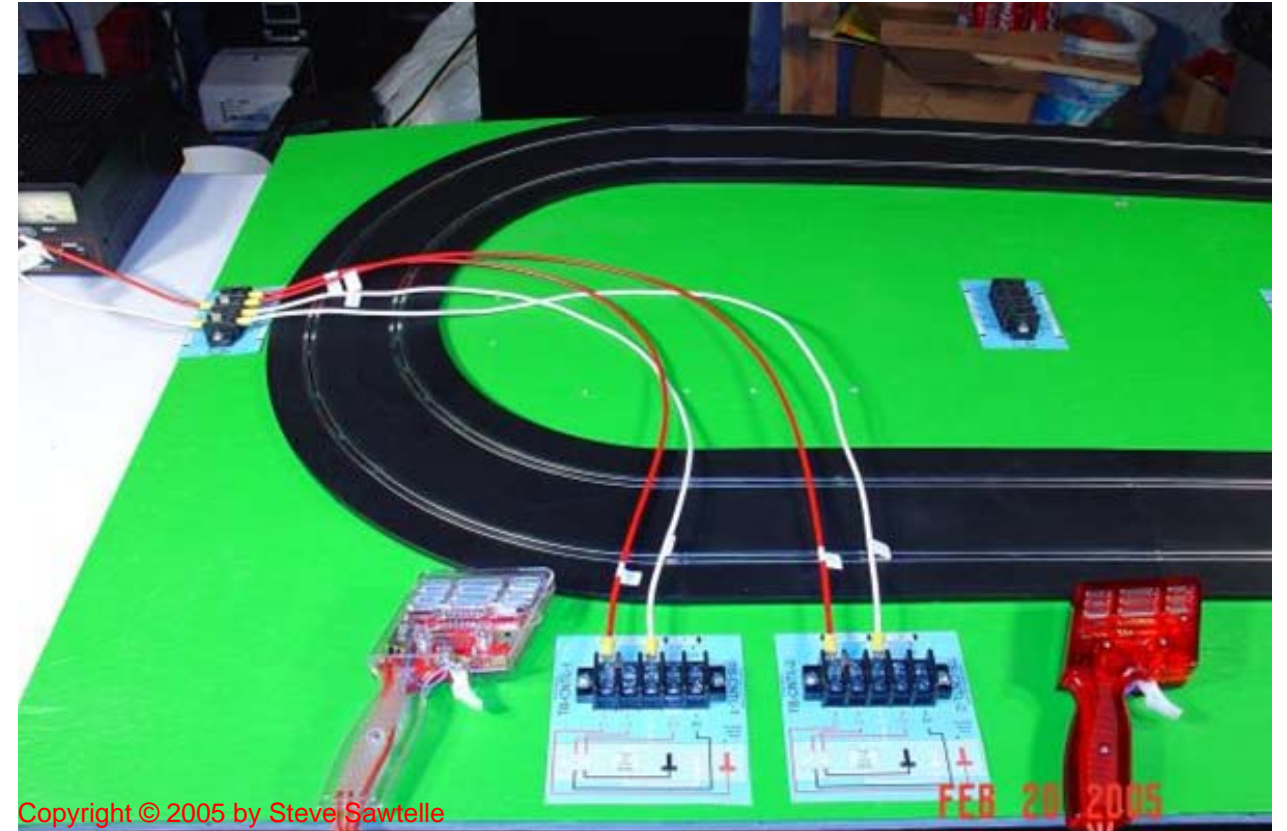
STEP 4

Track Wiring Diagram (Positive Polarity) (TB-0 to TB-CNTL-2)

4a



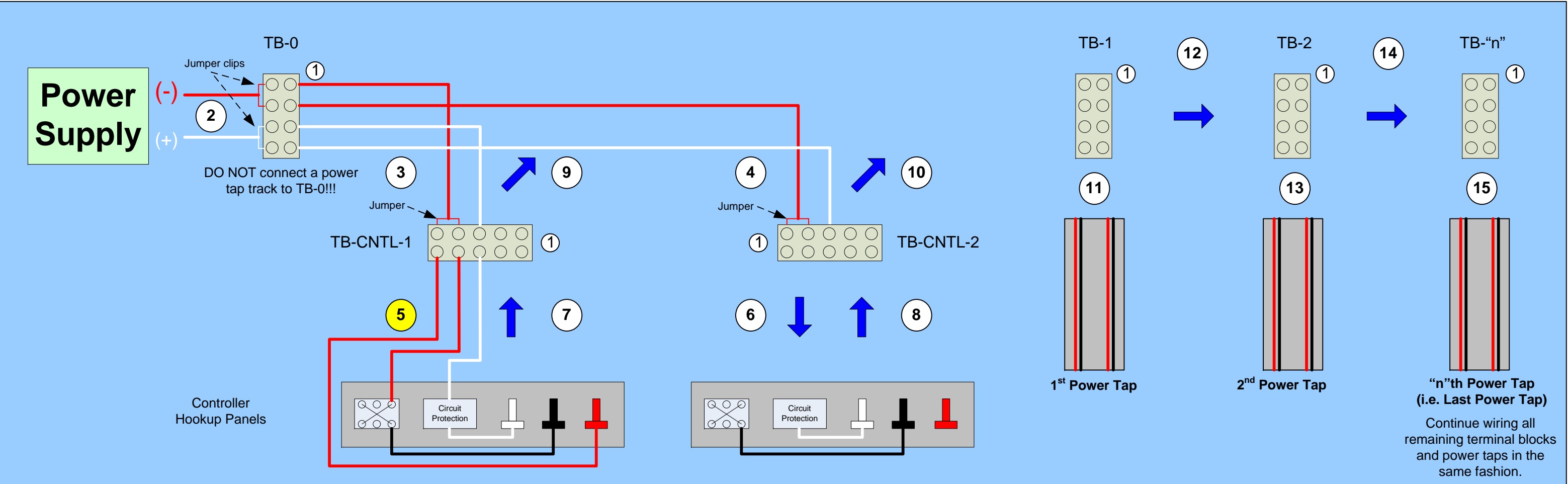
4b



Please Note:

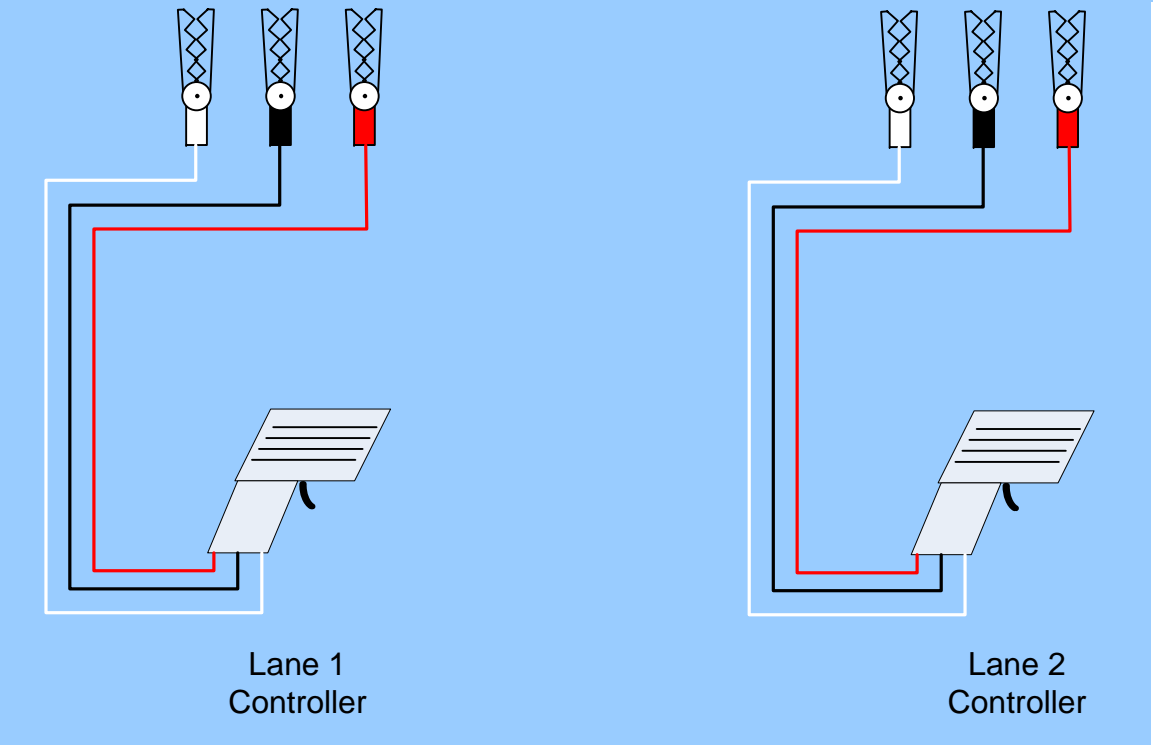
1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

Track Wiring Diagram (Positive Polarity) (TB-CNTL-1 to Lane 1 Hookup Panel)



Instructions:

1. If you purchased a controller hookup panel and 5 position terminal block from me, the terminal block will be pre-wired to the hookup panel. Skip to Step 9.
2. The diagram shows the proper connections for a standard controller hookup with a lane reversing switch. If your controller hookup panel is wired differently, you may need to make the connections shown in Step 5 differently.
3. Label all wires.
4. Use the wiring template for TB-CNTL-1 as a guide to determine how to connect your controller hookup panel.



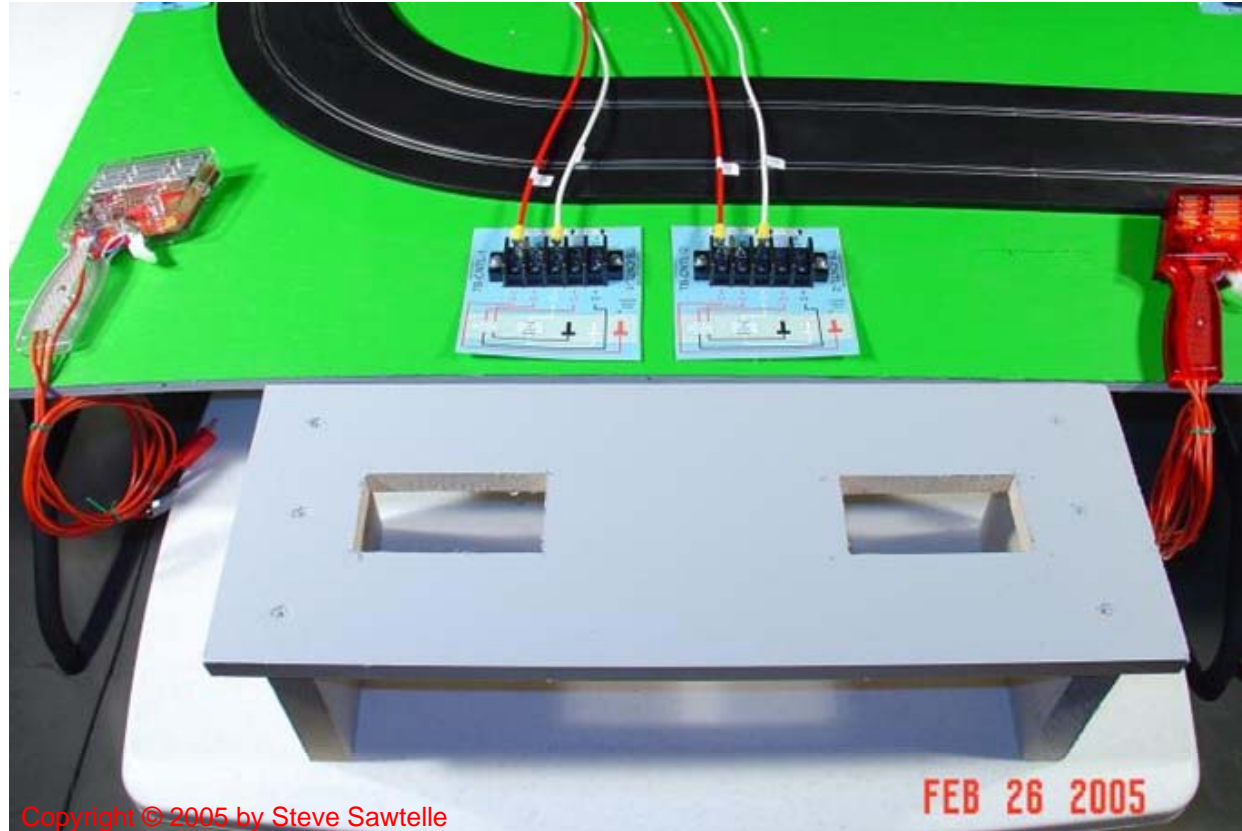
IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

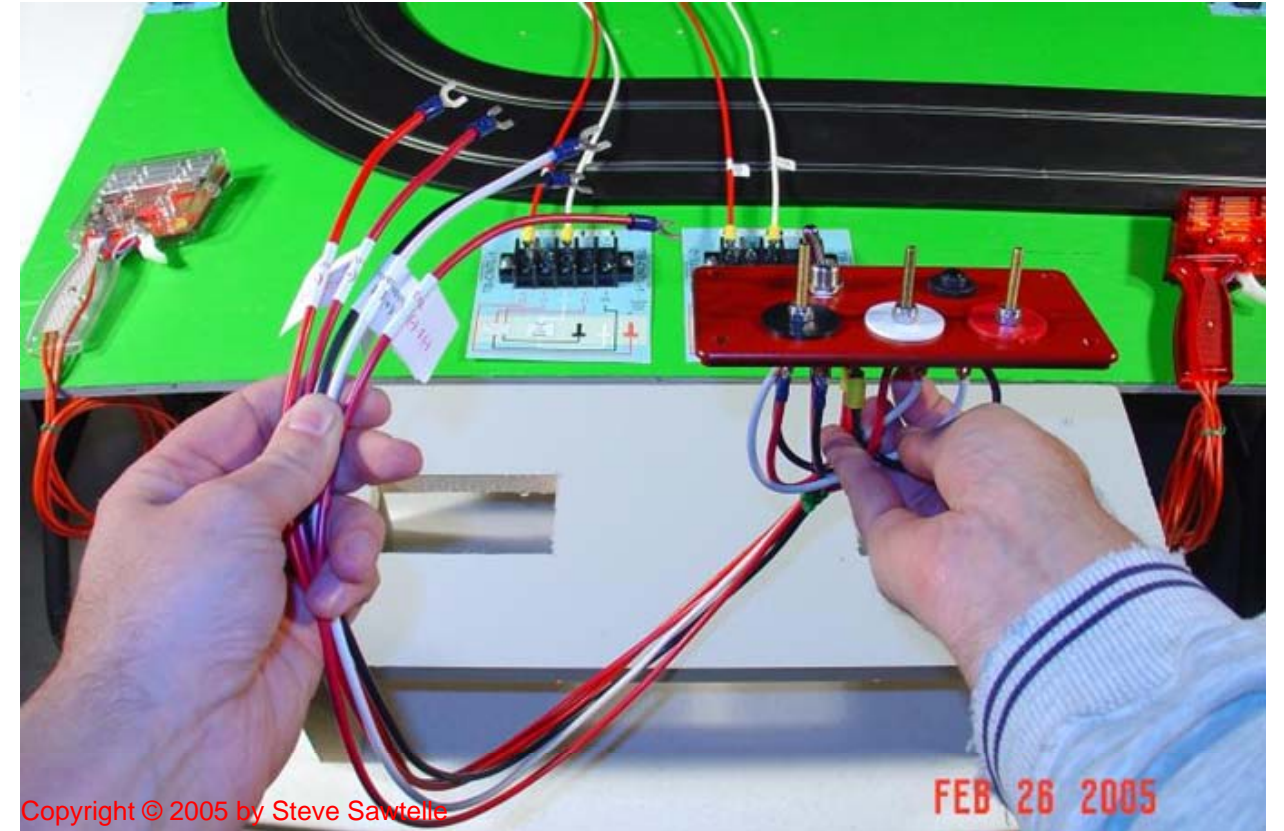
STEP 5

Track Wiring Diagram (Positive Polarity) (TB-CNTL-1 to Lane 1 Hookup Panel)

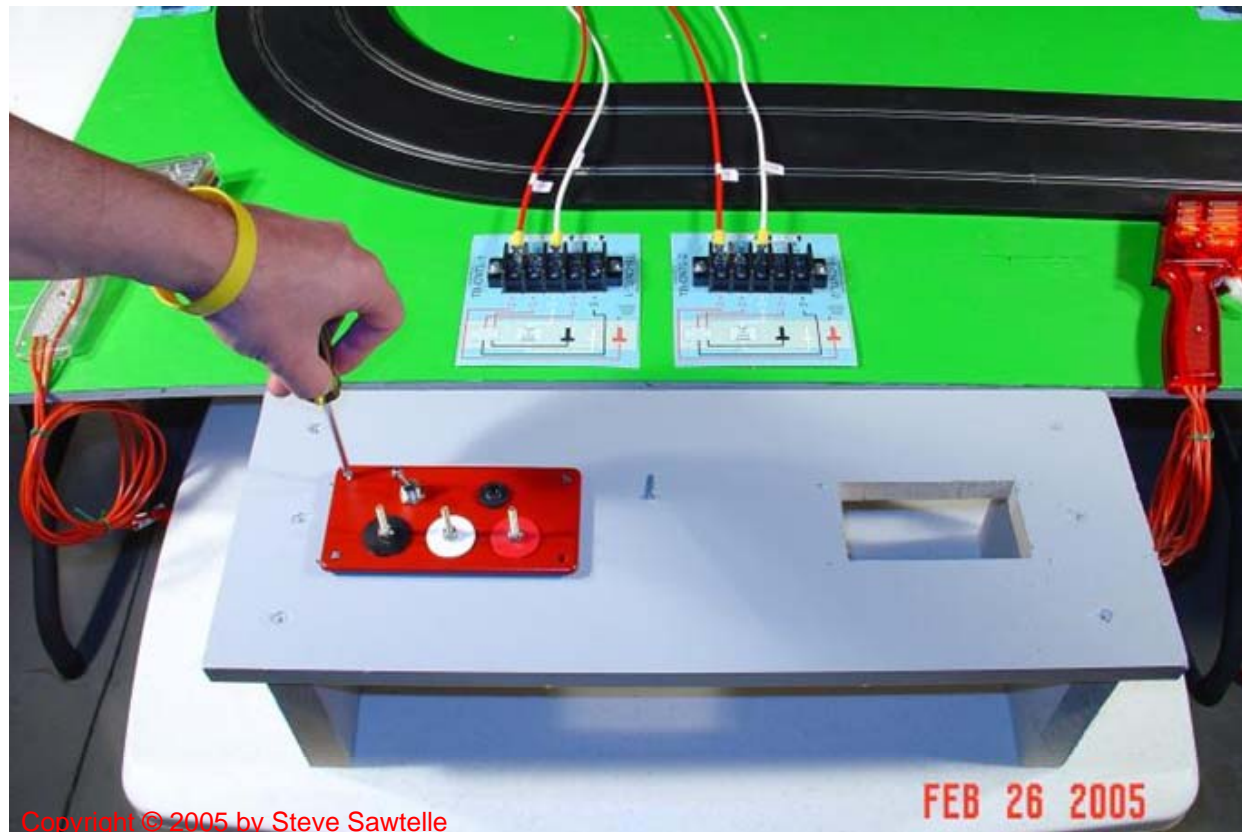
5a



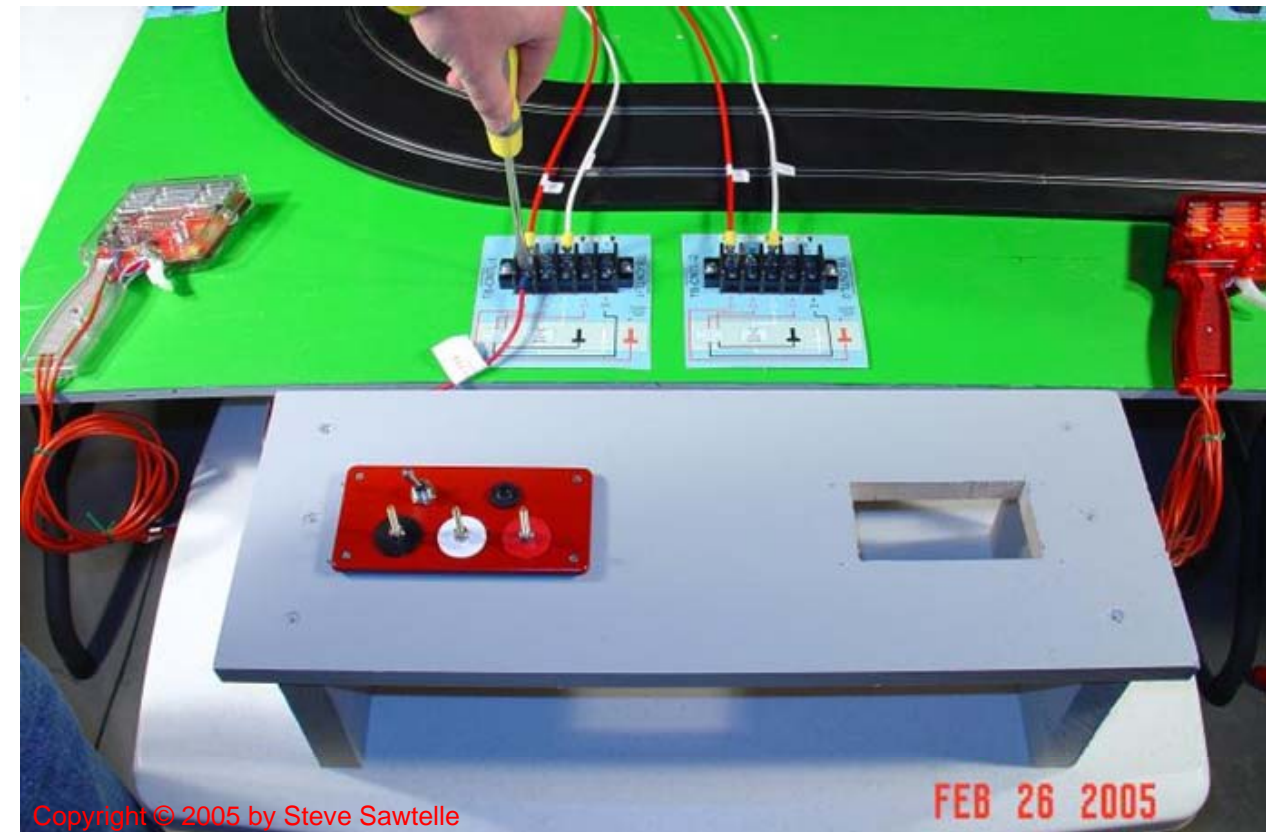
5b



5c



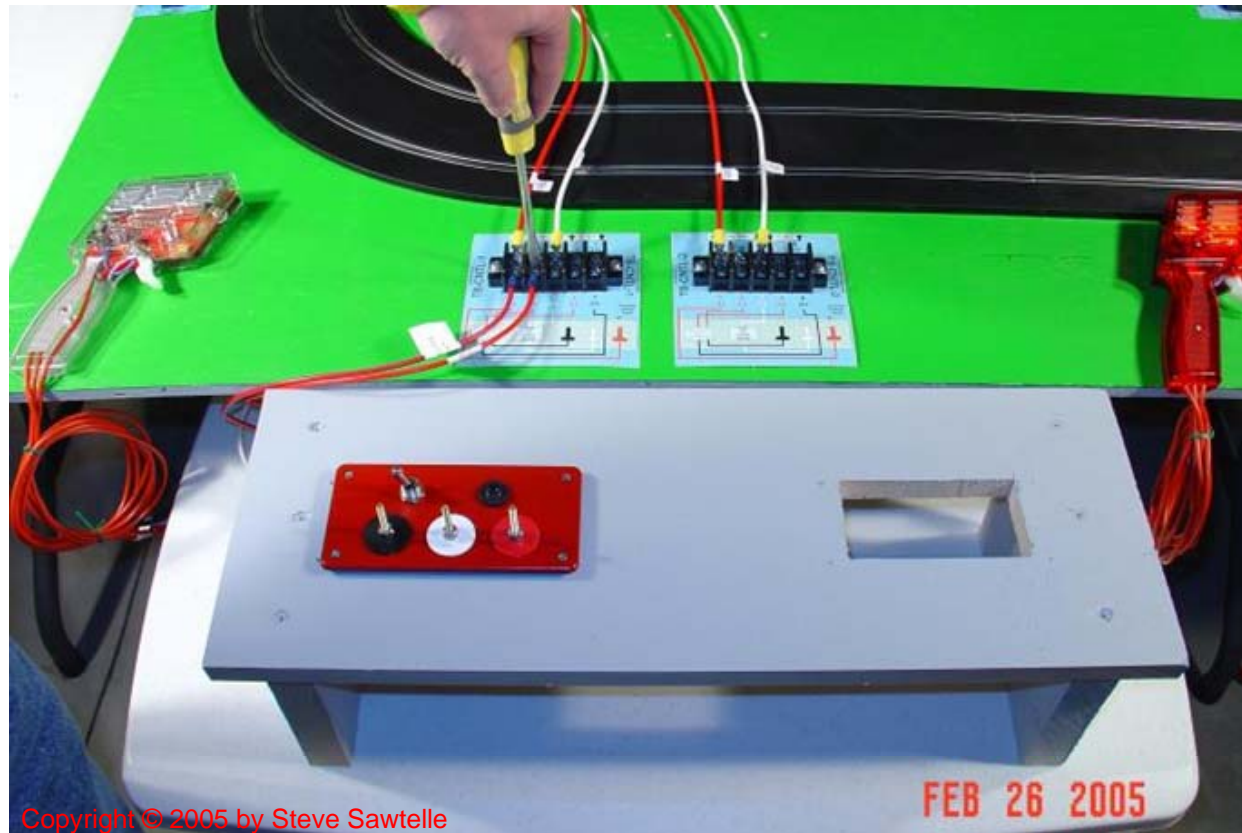
5d



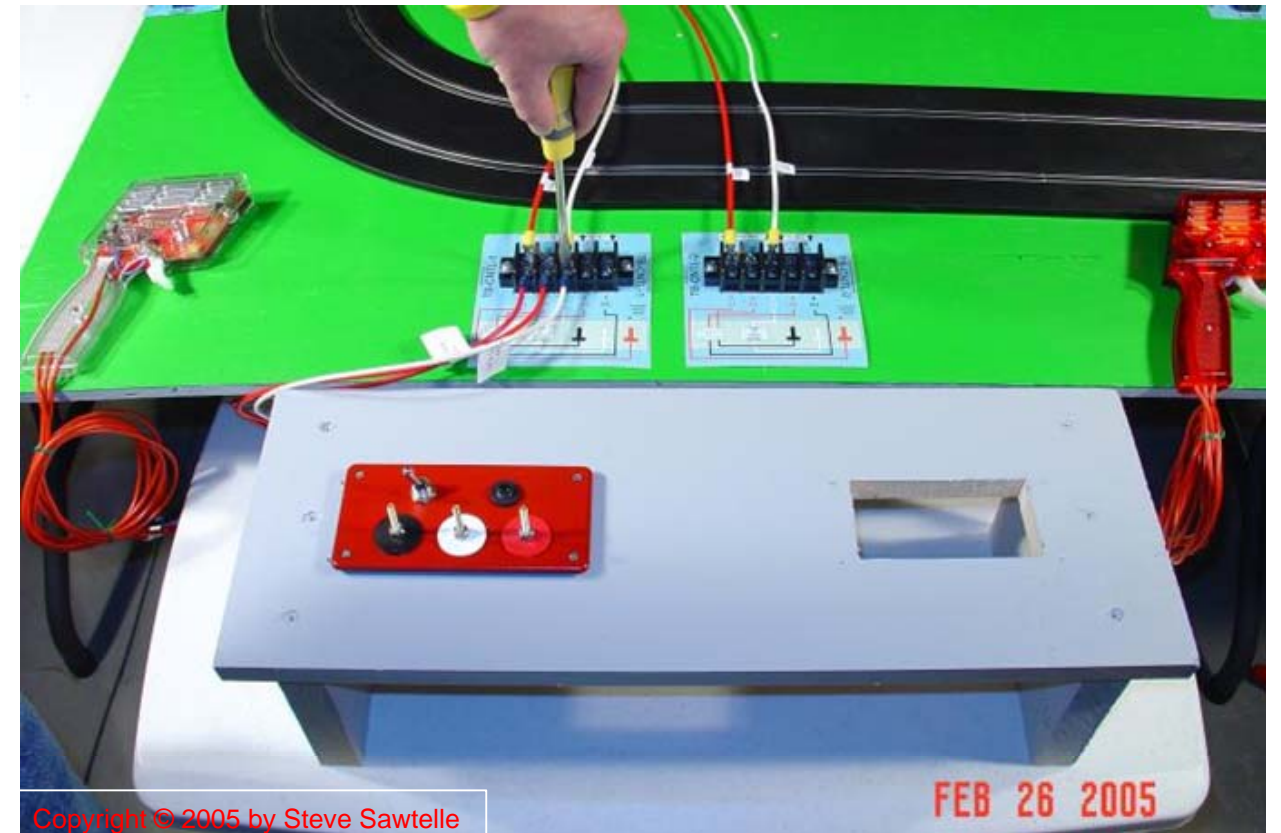
STEP 5

Track Wiring Diagram (Positive Polarity) (TB-CNTL-1 to Lane 1 Hookup Panel)

5e



5f



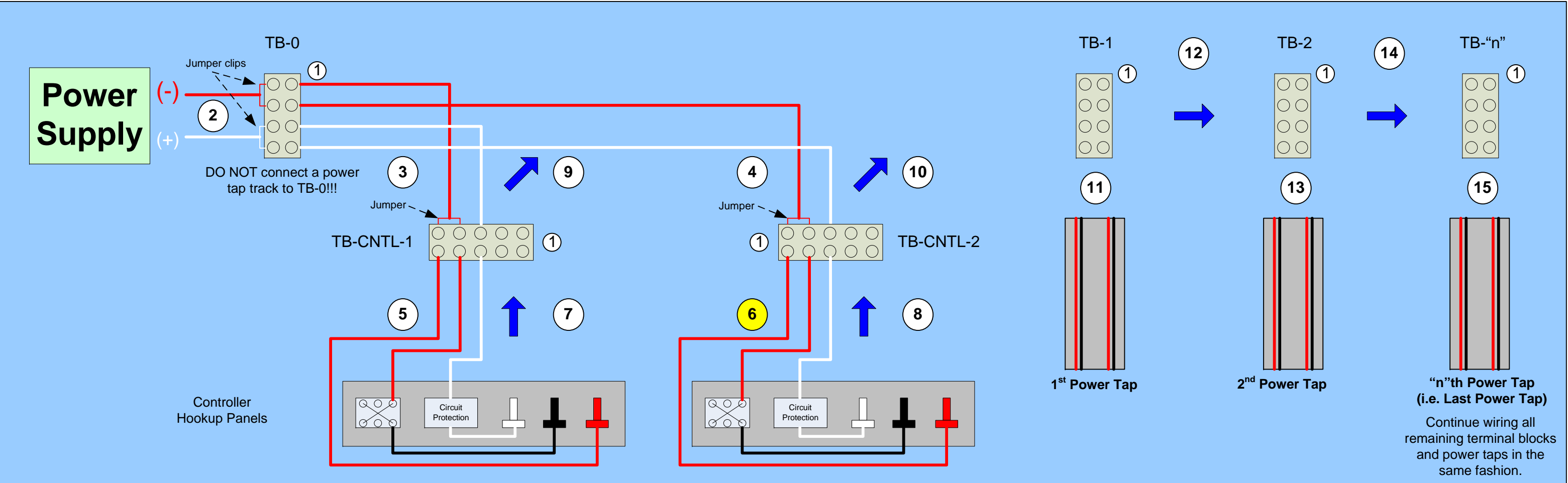
5g



Please Note:

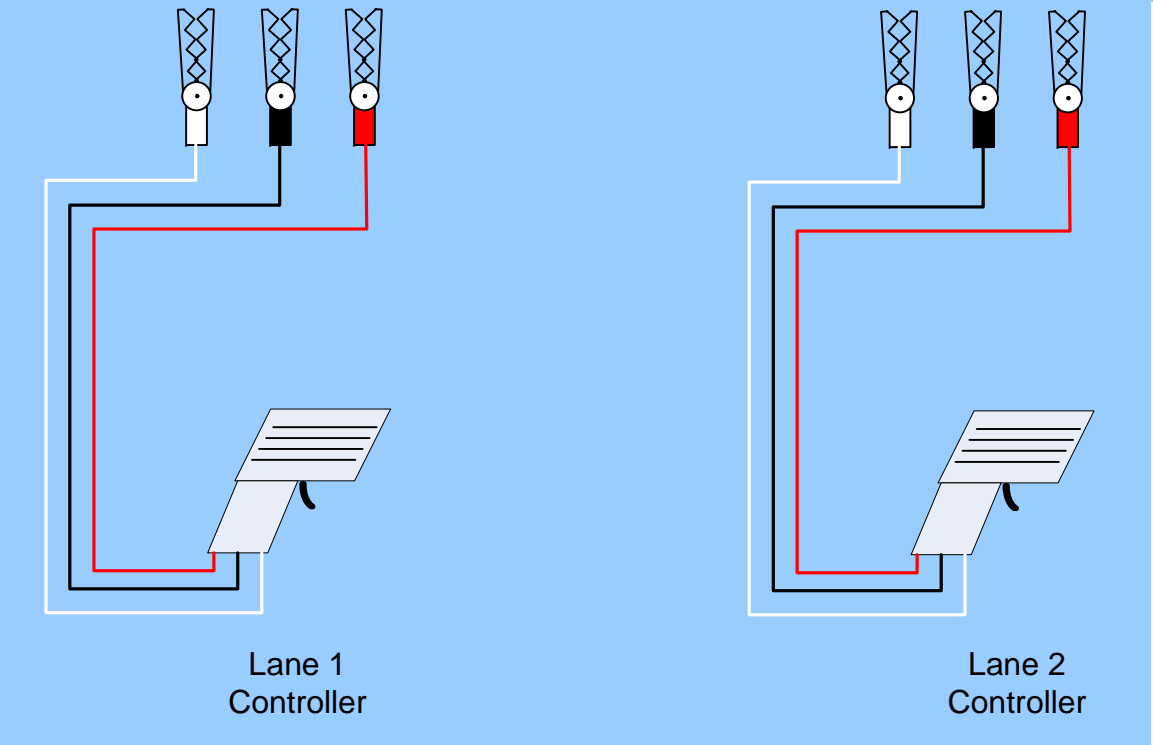
1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

Track Wiring Diagram (Positive Polarity) (TB-CNTL-2 to Lane 2 Hookup Panel)



Instructions:

- 1. If you purchased a controller hookup panel and 5 position terminal block from me, the terminal block will be pre-wired to the hookup panel. Skip to Step 9.
- 2. The diagram shows the proper connections for a standard controller hookup with a lane reversing switch. If your controller hookup panel is wired differently, you may need to make the connections shown in Step 6 differently.
- 3. Label all wires.
- 4. Use the wiring template for TB-CNTL-2 as a guide to determine how to connect your controller hookup panel.



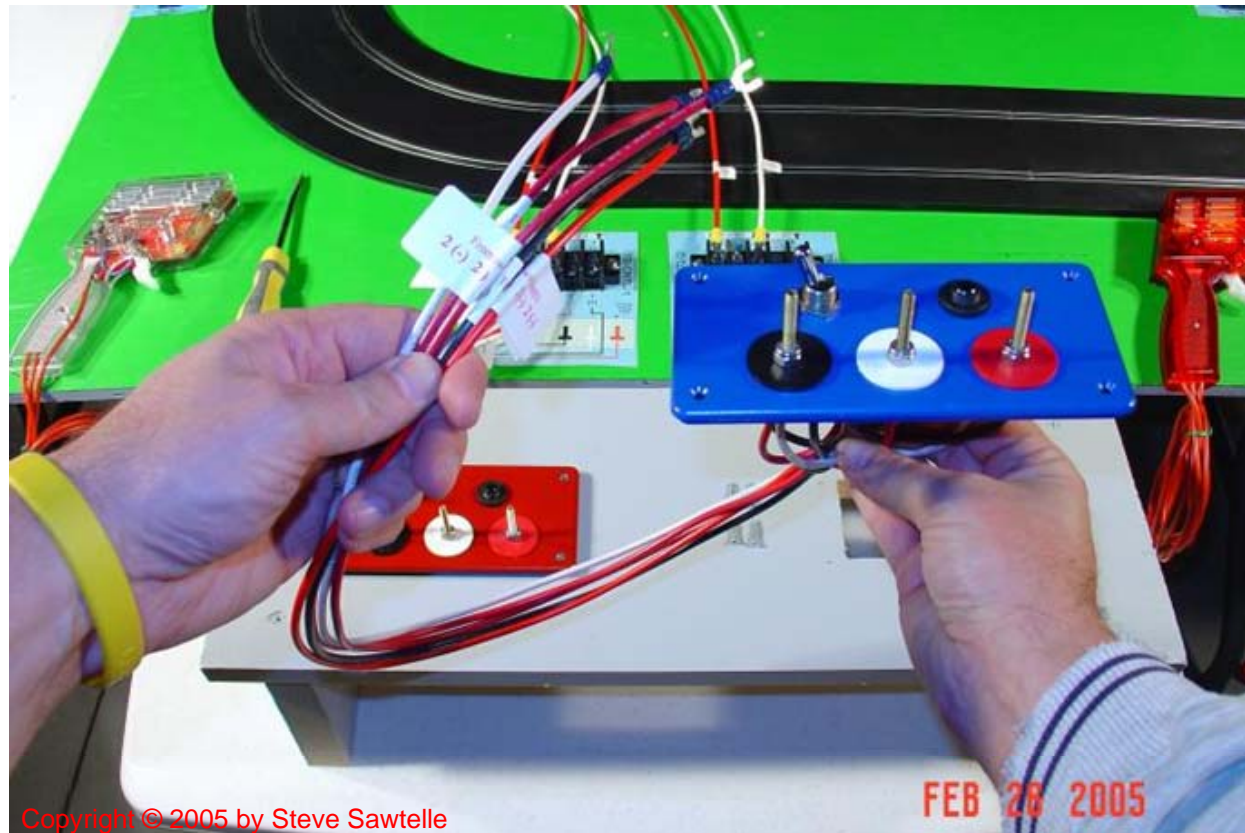
IMPORTANT!!!

- 1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
- 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- 4. Label ALL wires
- 5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
- 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- 7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
- 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

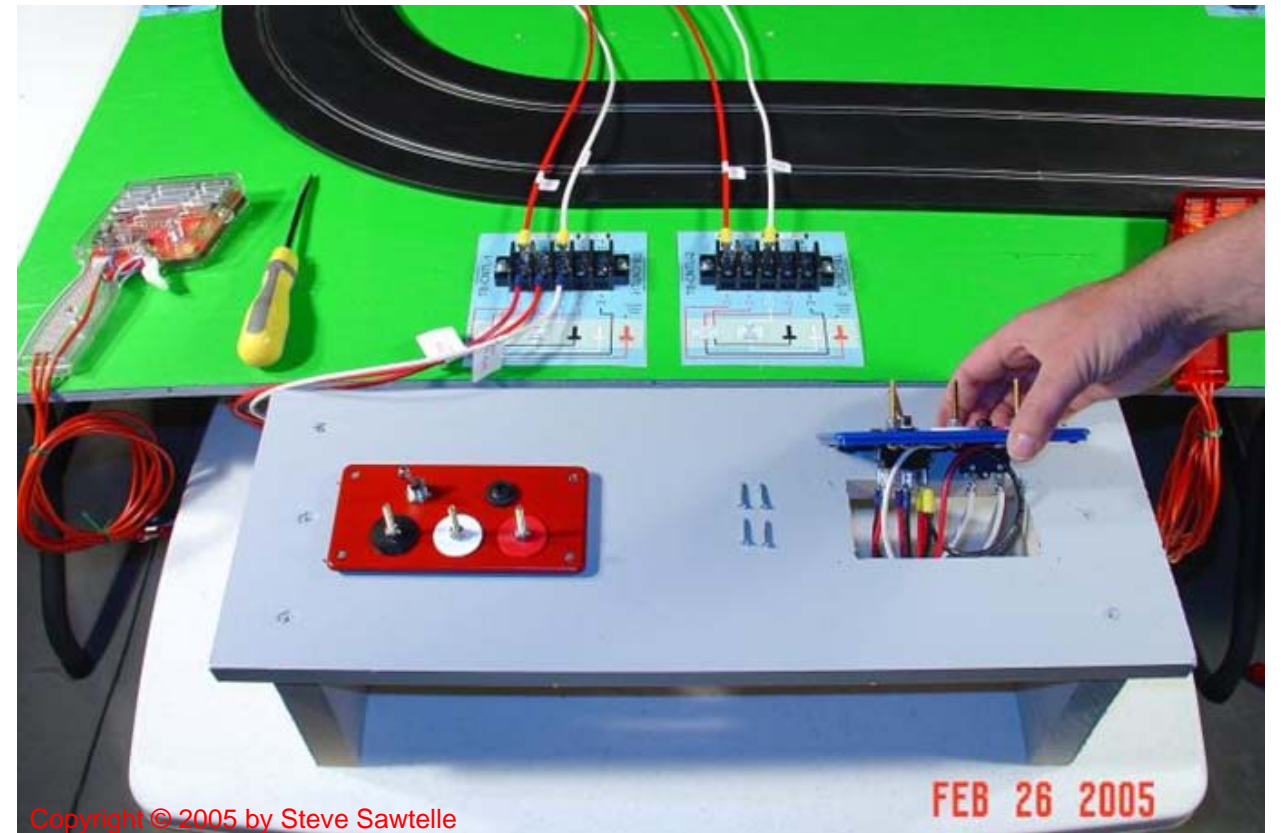
STEP 6

Track Wiring Diagram (Positive Polarity) (TB-CNTL-2 to Lane 2 Hookup Panel)

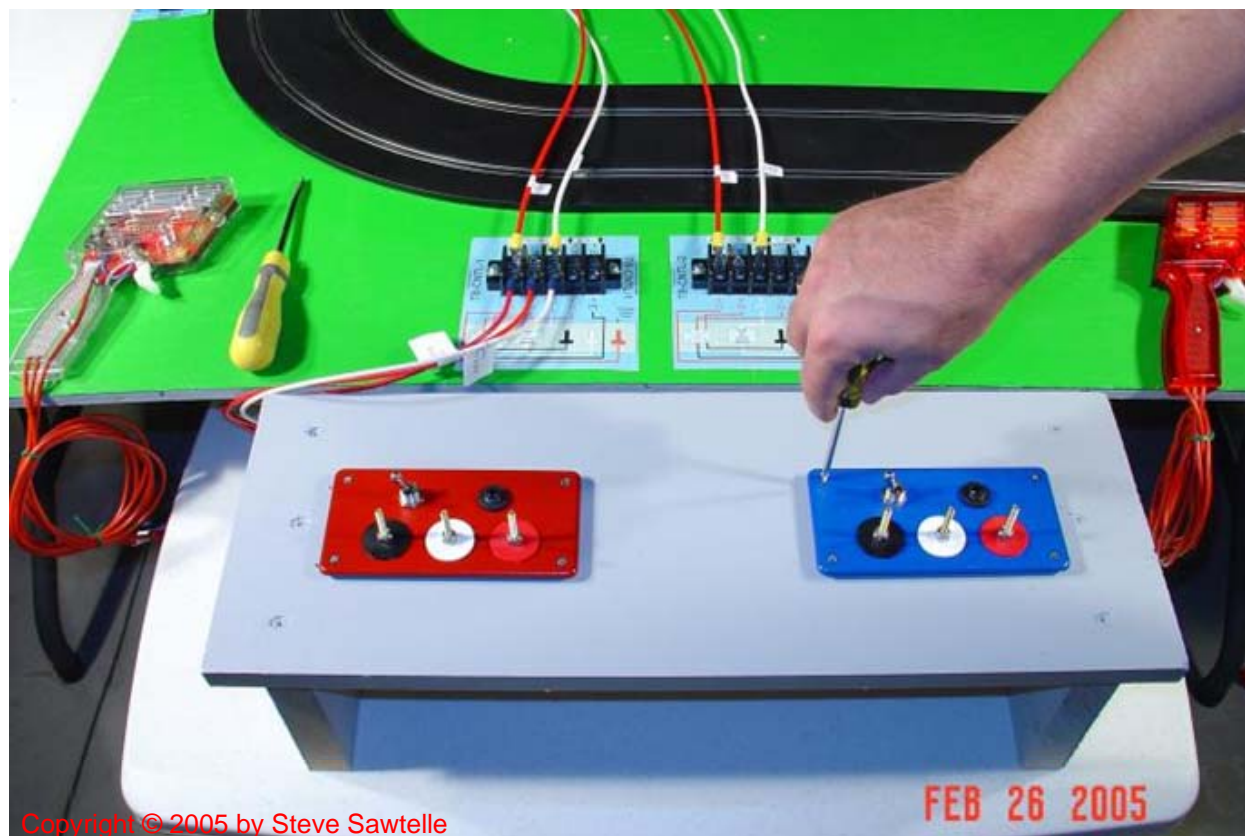
6a



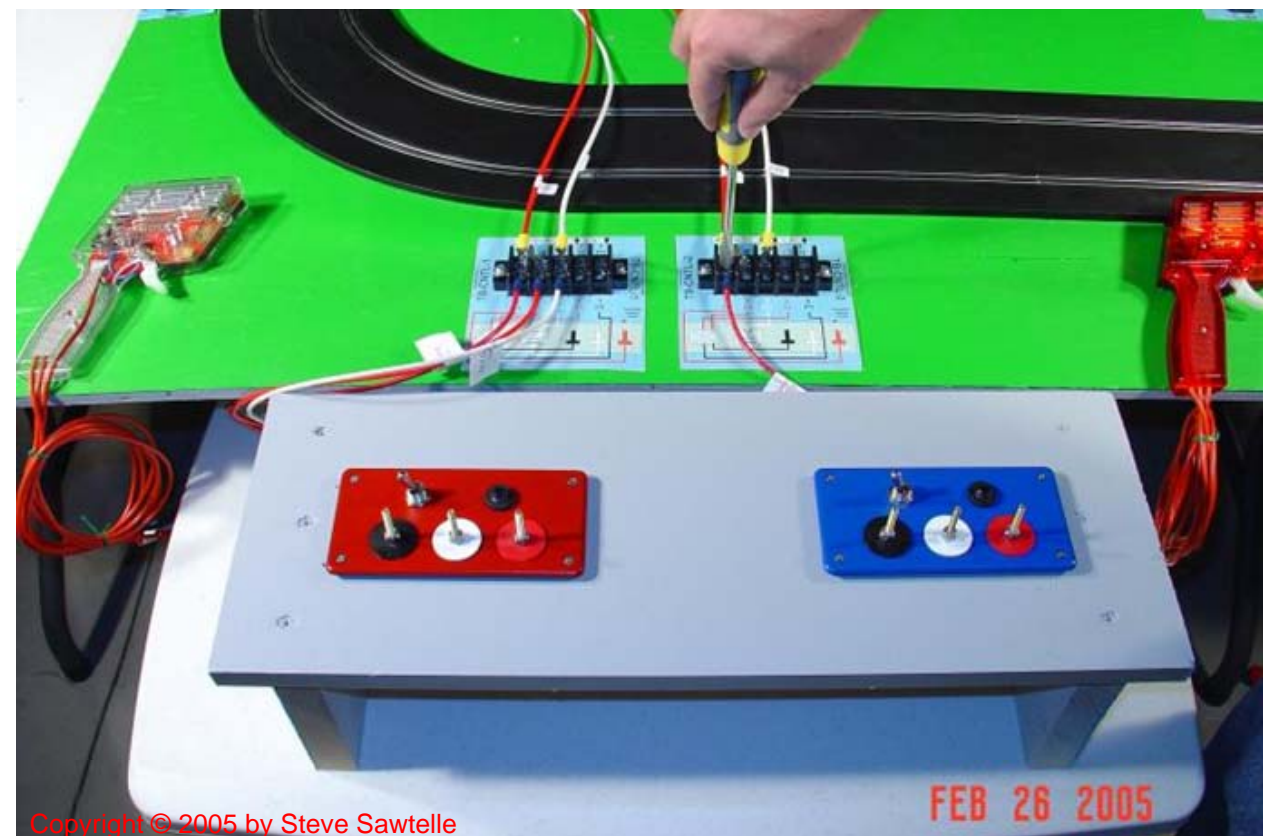
6b



6c



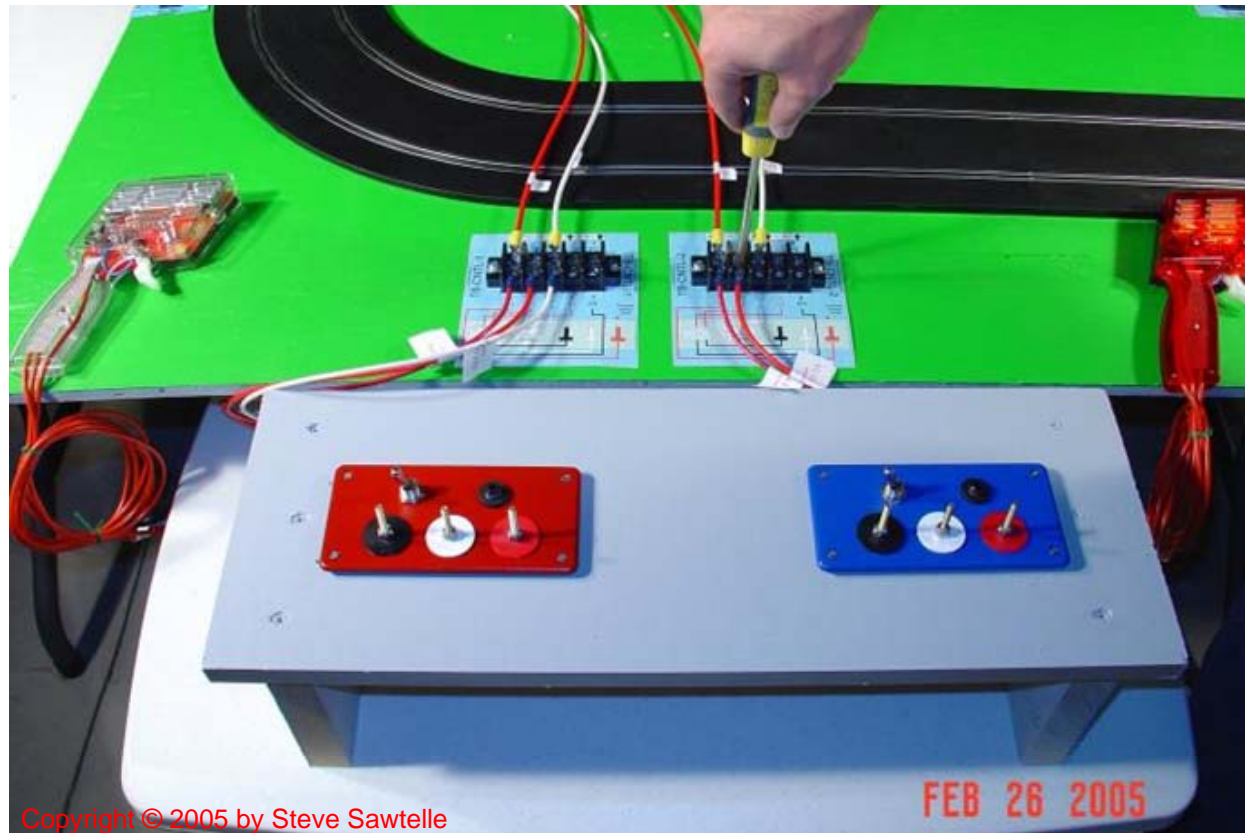
6d



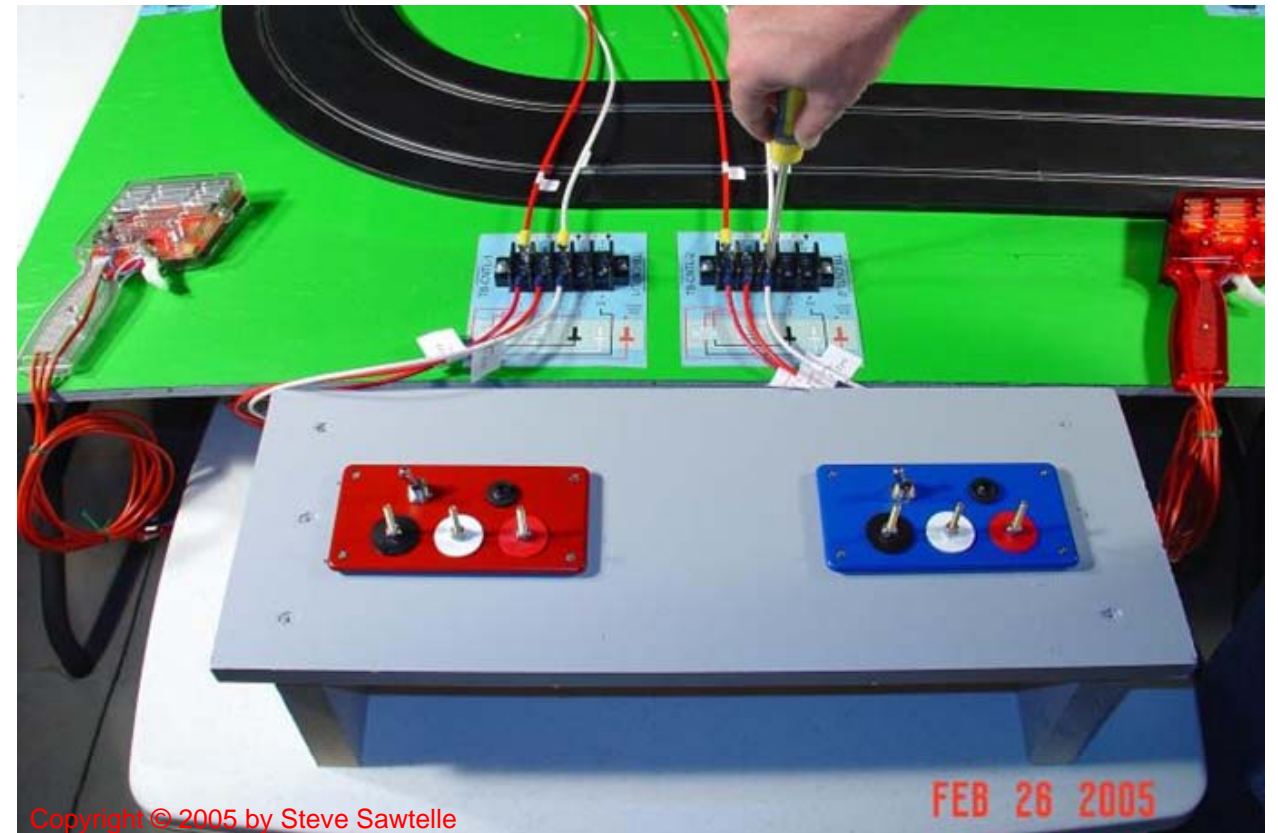
STEP 6

Track Wiring Diagram (Positive Polarity) (TB-CNTL-2 to Lane 2 Hookup Panel)

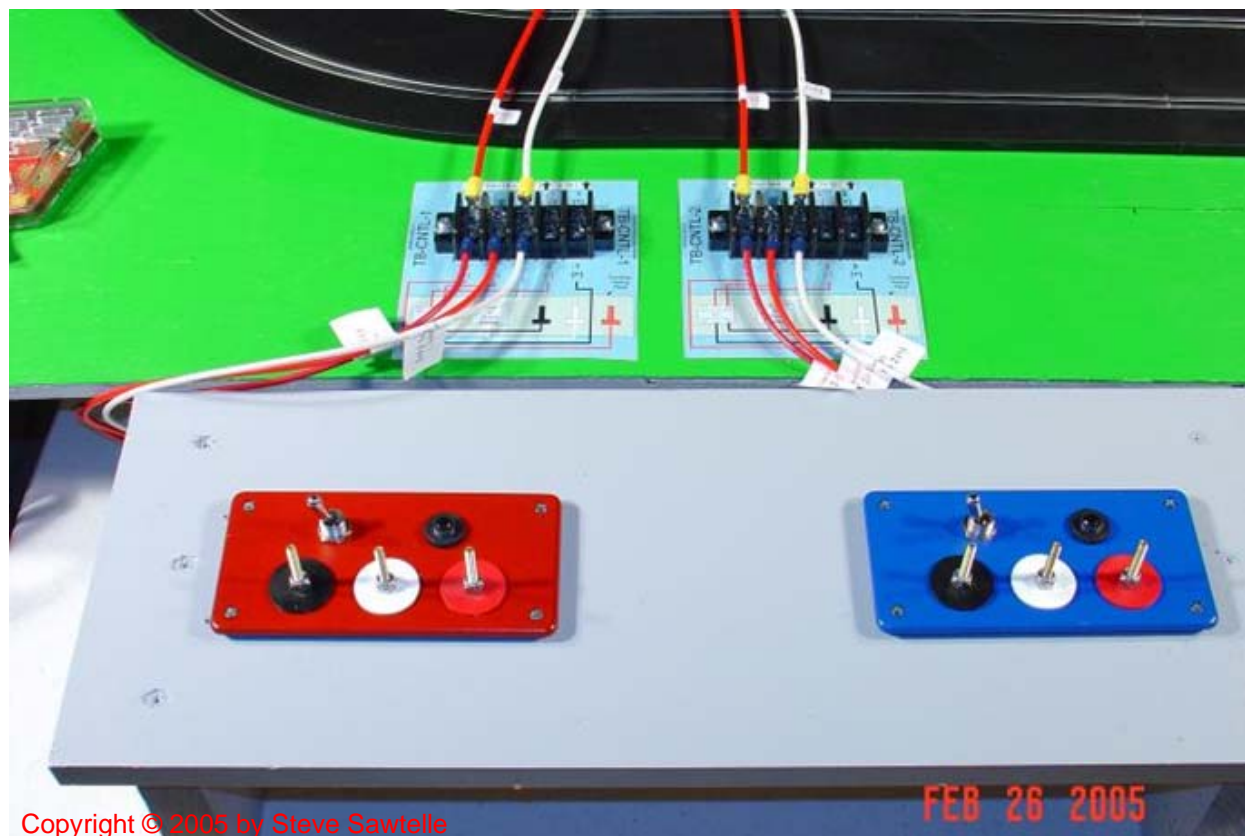
6e



6f



6g

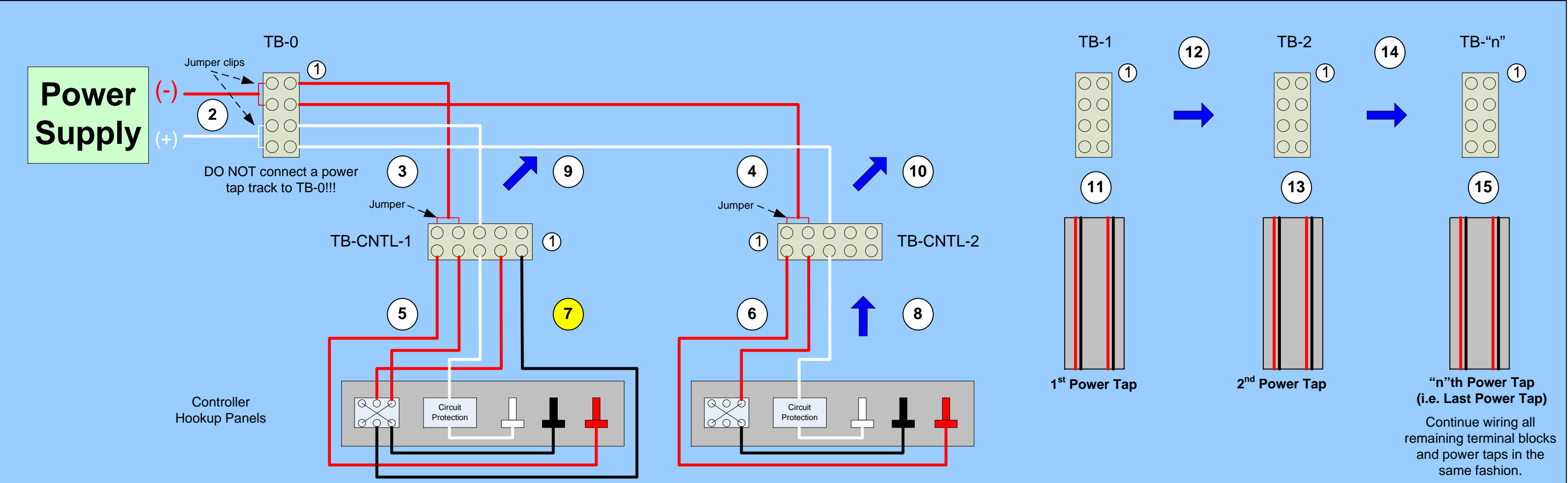


Please Note:

1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

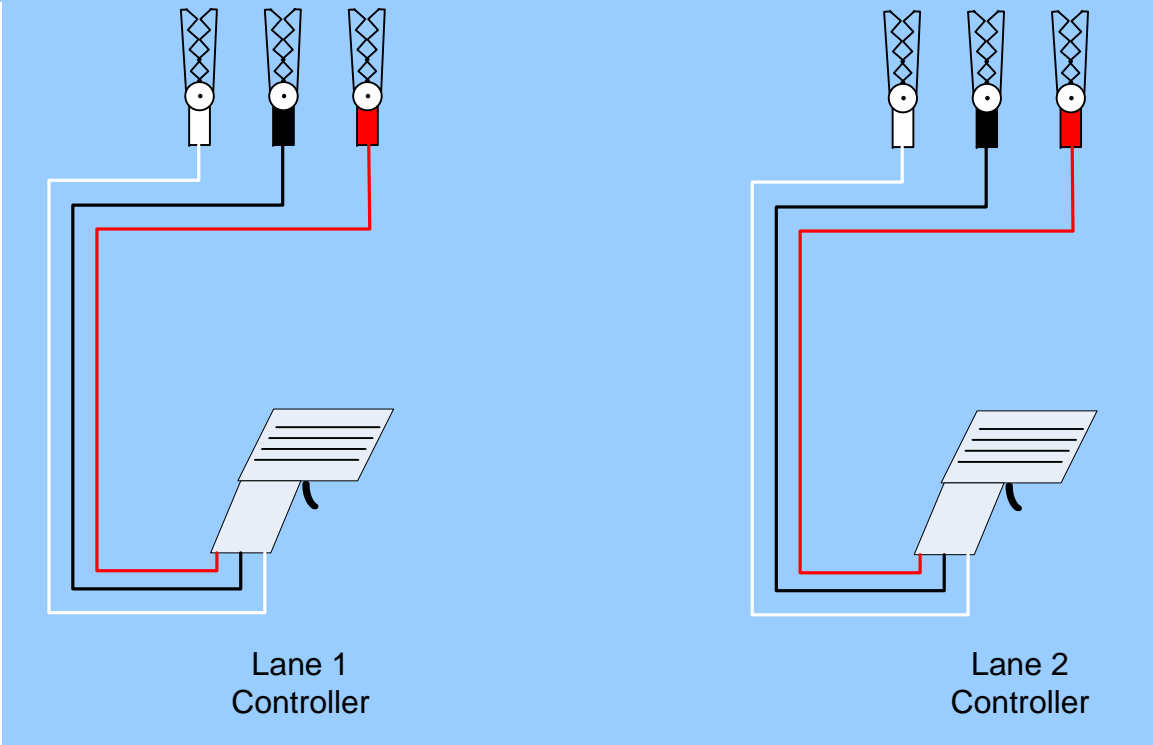
Track Wiring Diagram (Positive Polarity)

(Lane 1 Hookup Panel to TB-CNTL-1)



Instructions:

- 1. If you purchased a controller hookup panel and 5 position terminal block from me, the terminal block will be pre-wired to the hookup panel. Skip to Step 9.
- 2. The diagram shows the proper connections for a standard controller hookup with a lane reversing switch. If your controller hookup panel is wired differently, you may need to make the connections shown in Step 7 differently.
- 3. Label all wires.
- 4. Use the wiring template for TB-CNTL-1 as a guide to determine how to connect your controller hookup panel.



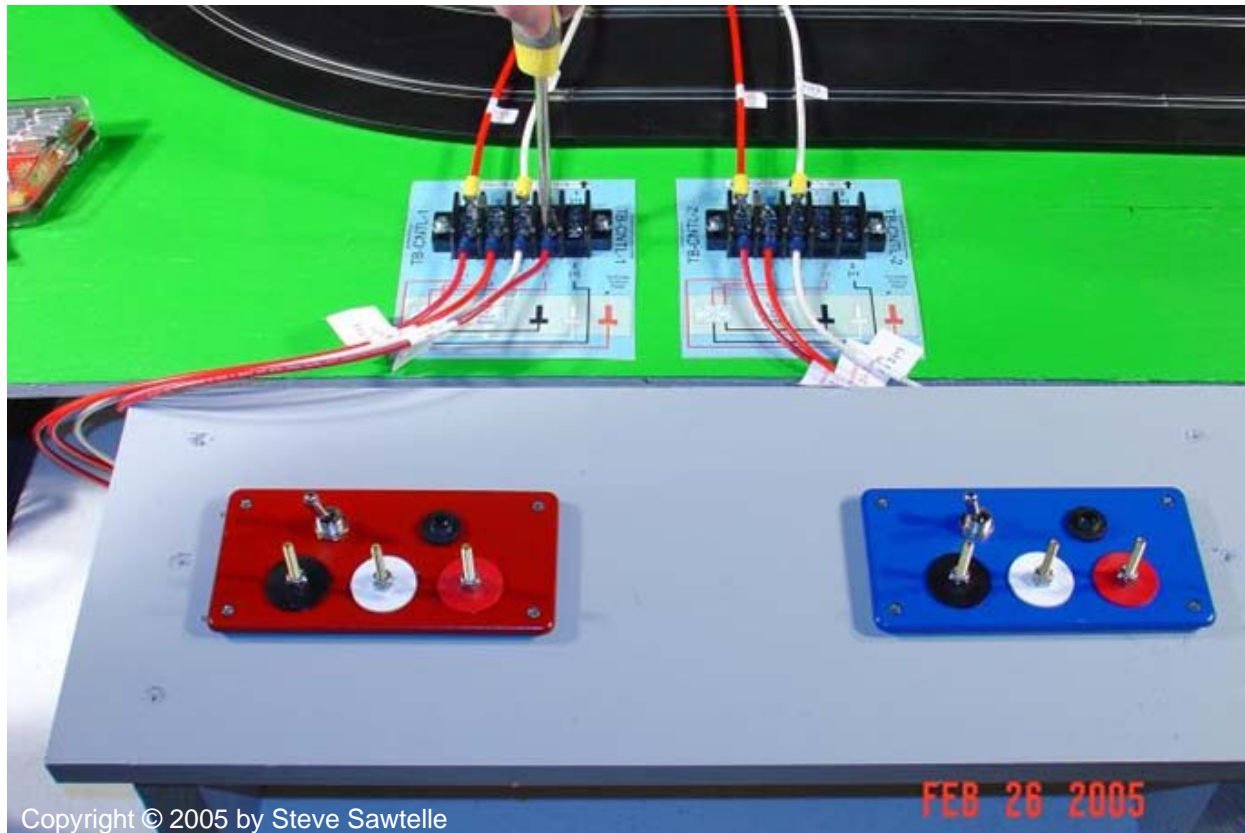
IMPORTANT!!!

- 1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
- 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- 4. Label ALL wires
- 5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
- 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- 7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
- 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

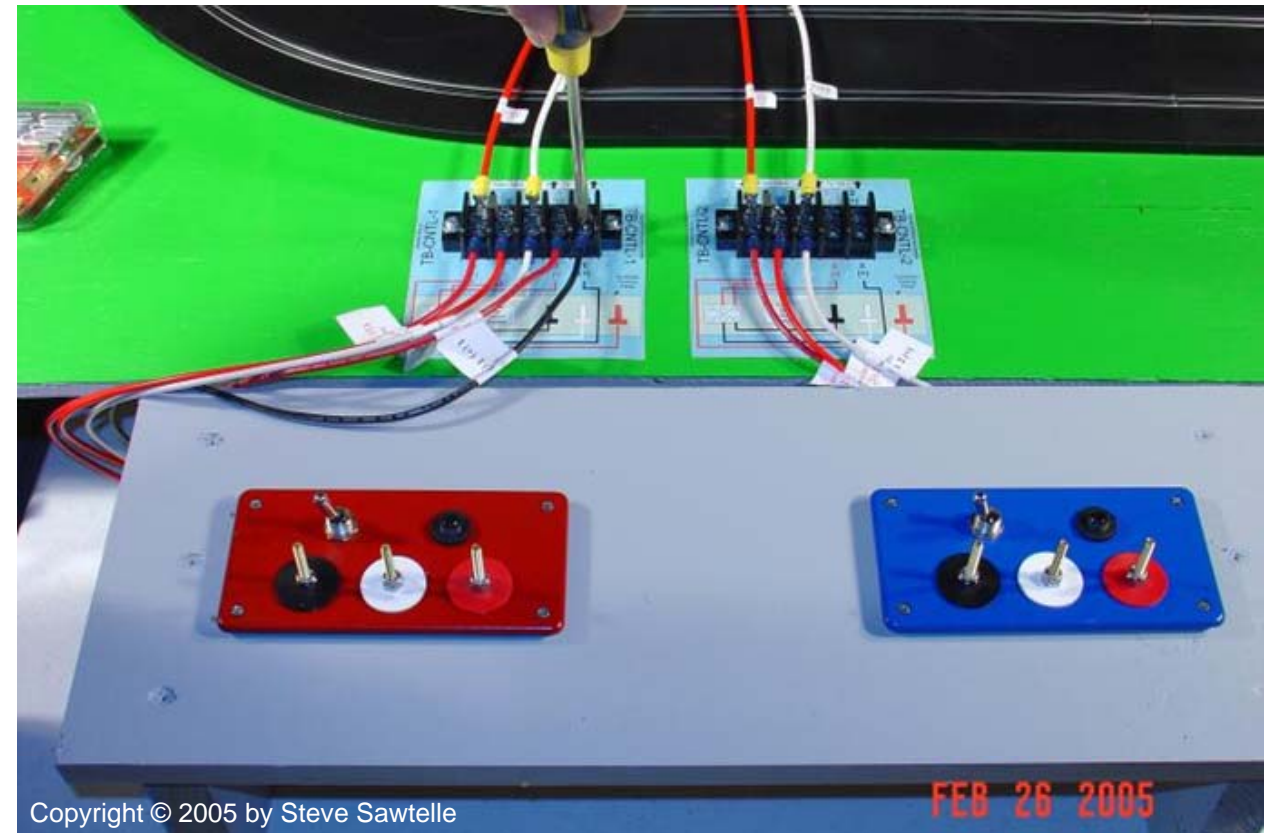
STEP 7

Track Wiring Diagram (Positive Polarity) (Lane 1 Hookup Panel to TB-CNTL-1)

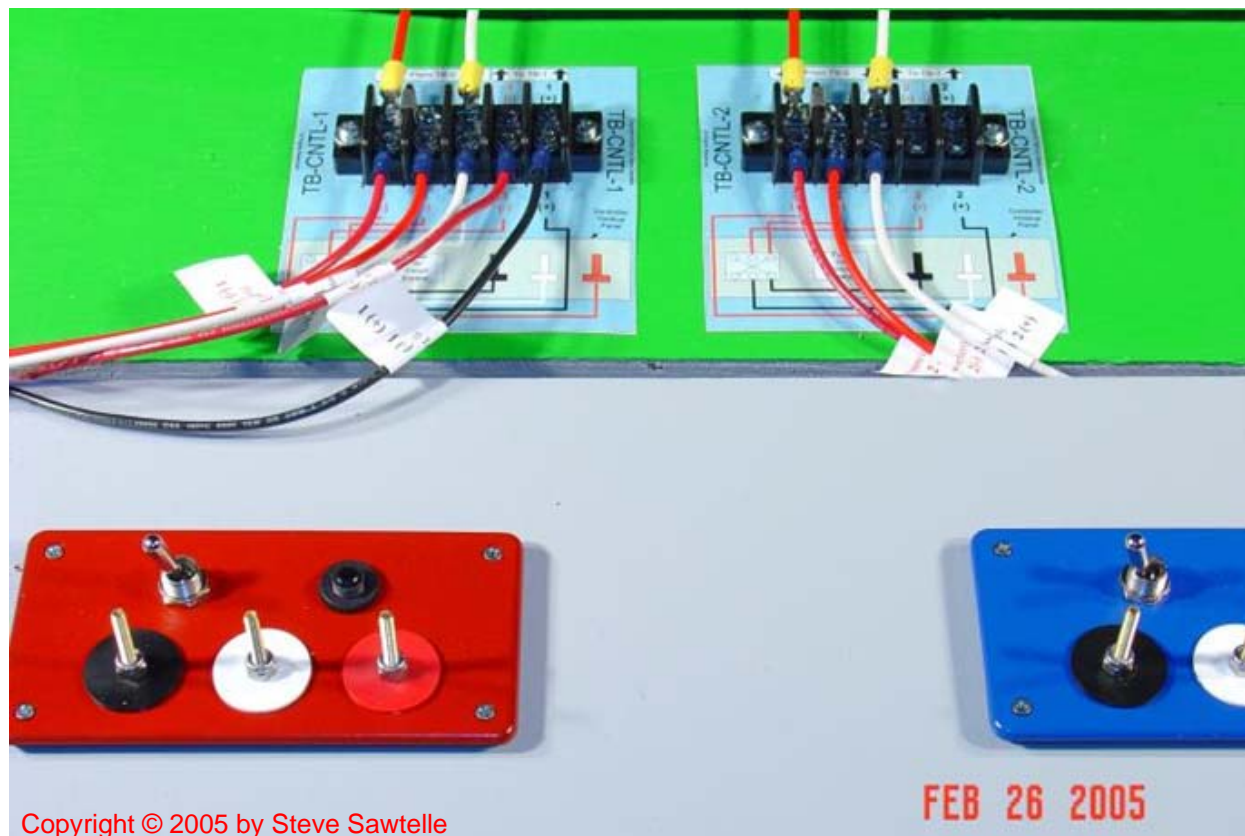
7a



7b



7c

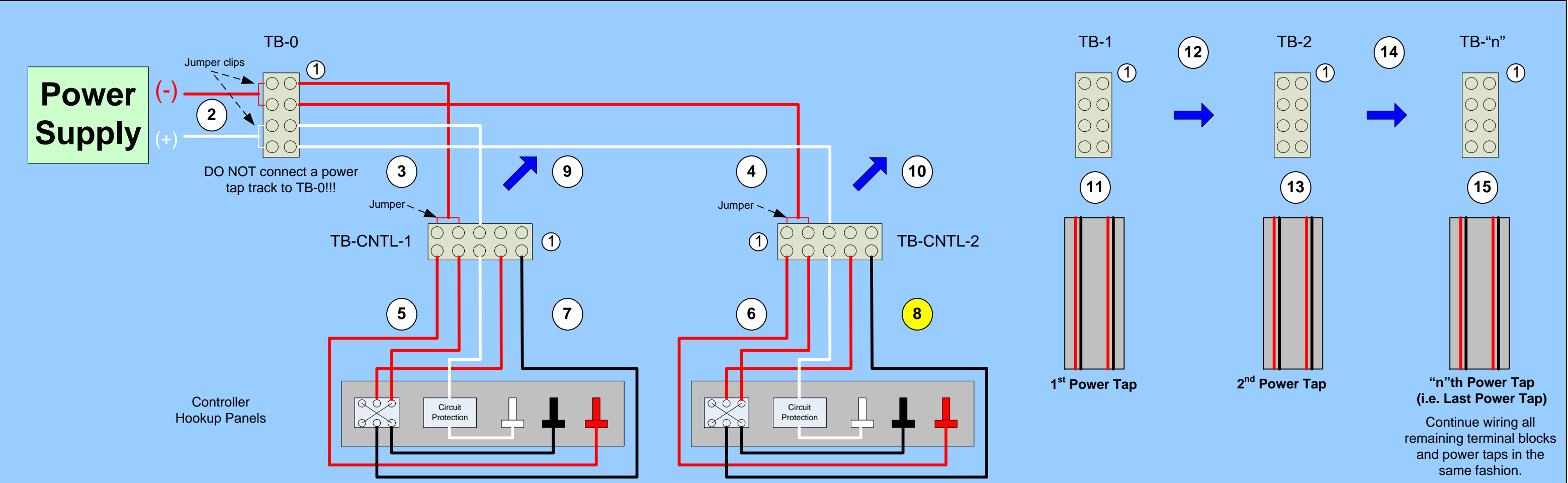


Please Note:

1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

Track Wiring Diagram (Positive Polarity)

(Lane 2 Hookup Panel to TB-CNTL-2)



Instructions:

1. If you purchased a controller hookup panel and 5 position terminal block from me, the terminal block will be pre-wired to the hookup panel. Skip to Step 9.
2. The diagram shows the proper connections for a standard controller hookup with a lane reversing switch. If your controller hookup panel is wired differently, you may need to make the connections shown in Step 8 differently.
3. Label all wires.
4. Use the wiring template for TB-CNTL-2 as a guide to determine how to connect your controller hookup panel.

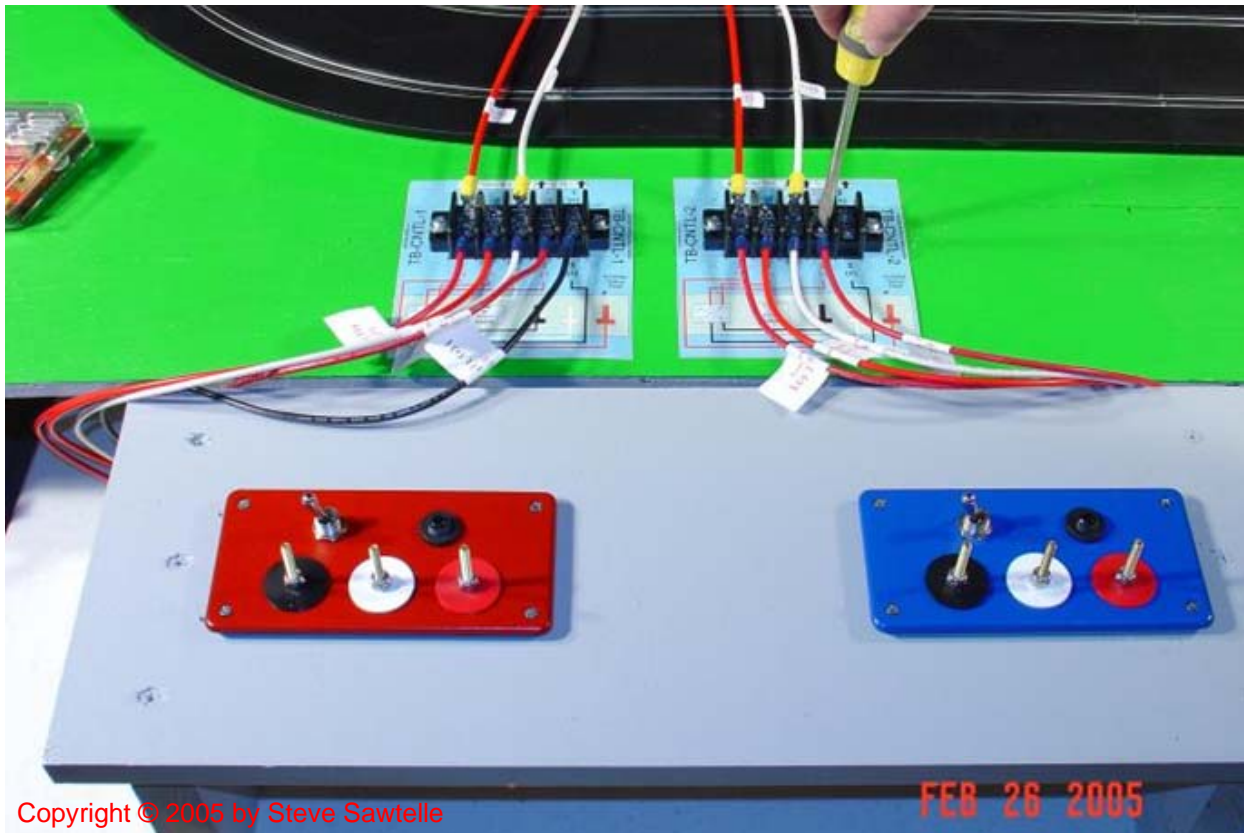
IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

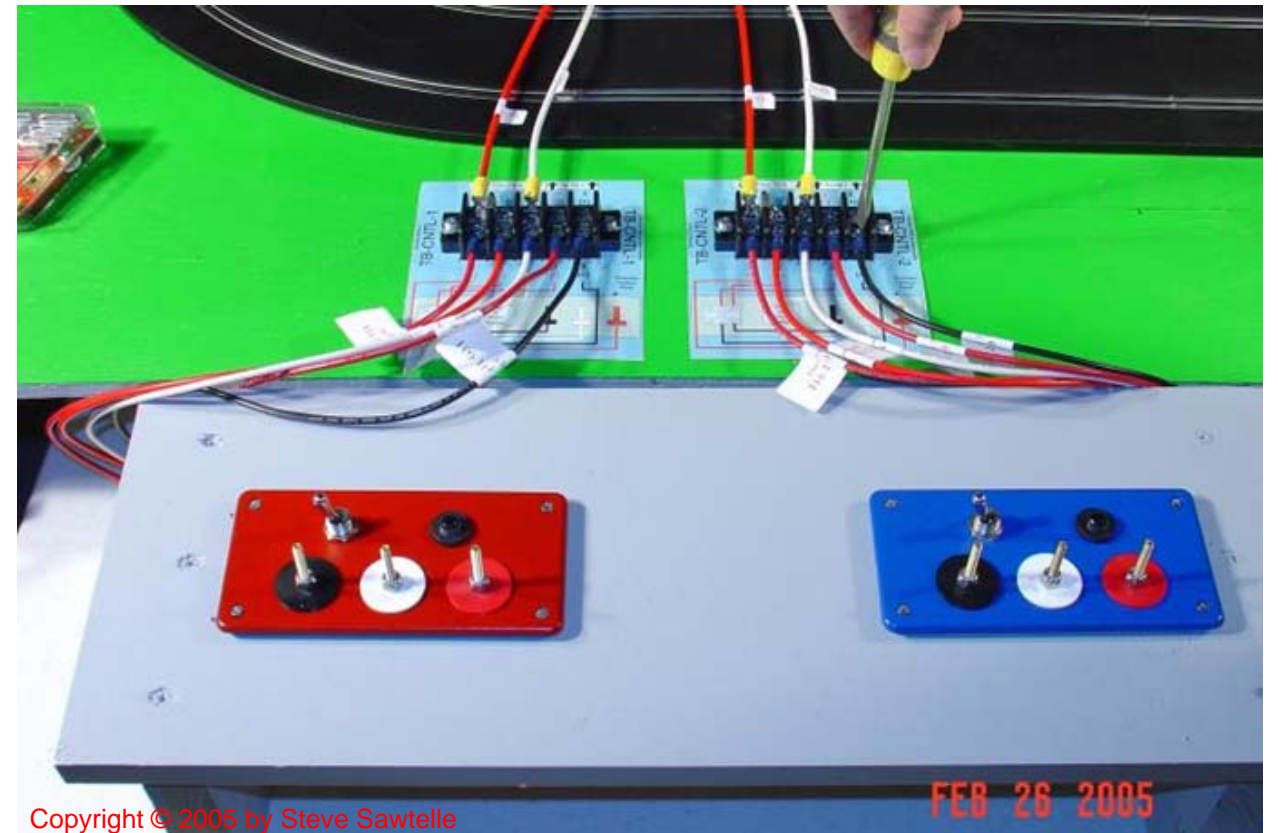
STEP 8

Track Wiring Diagram (Positive Polarity) (Lane 2 Hookup Panel to TB-CNTL-2)

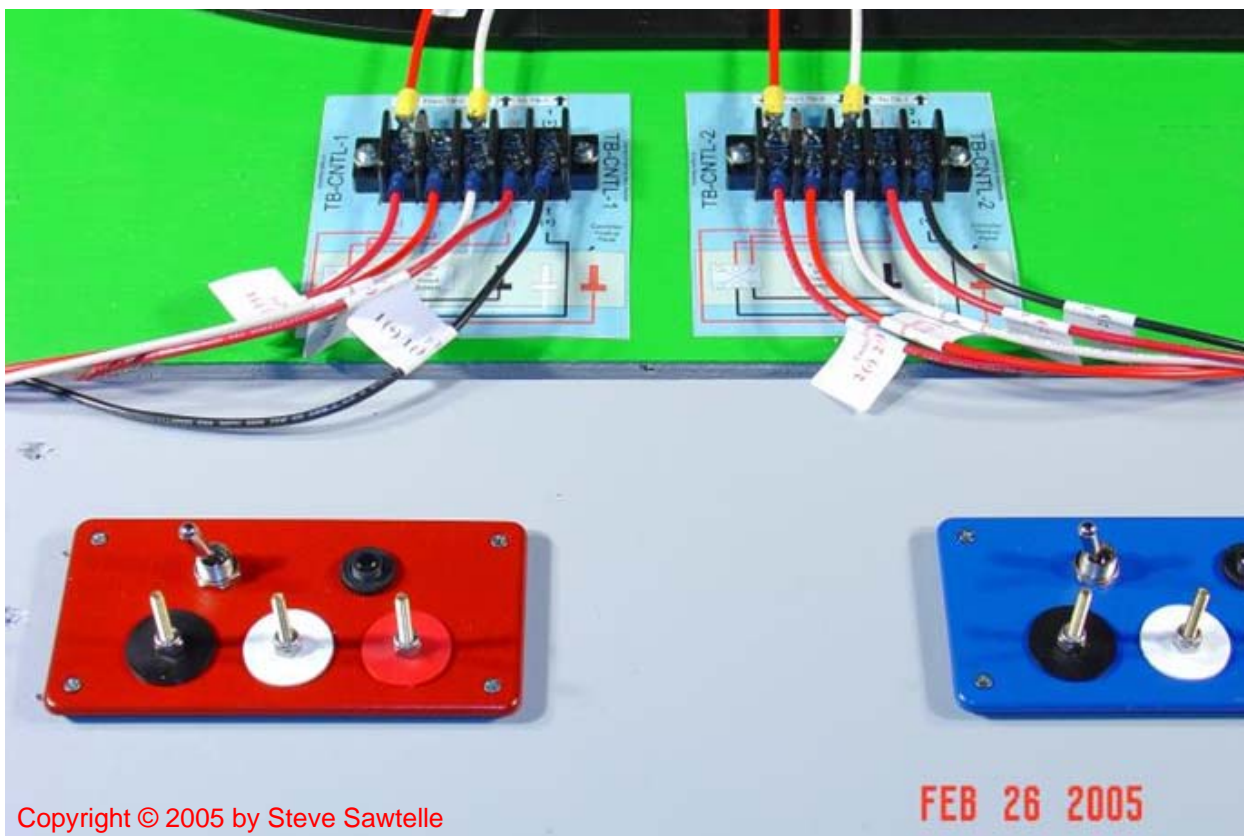
8a



8b



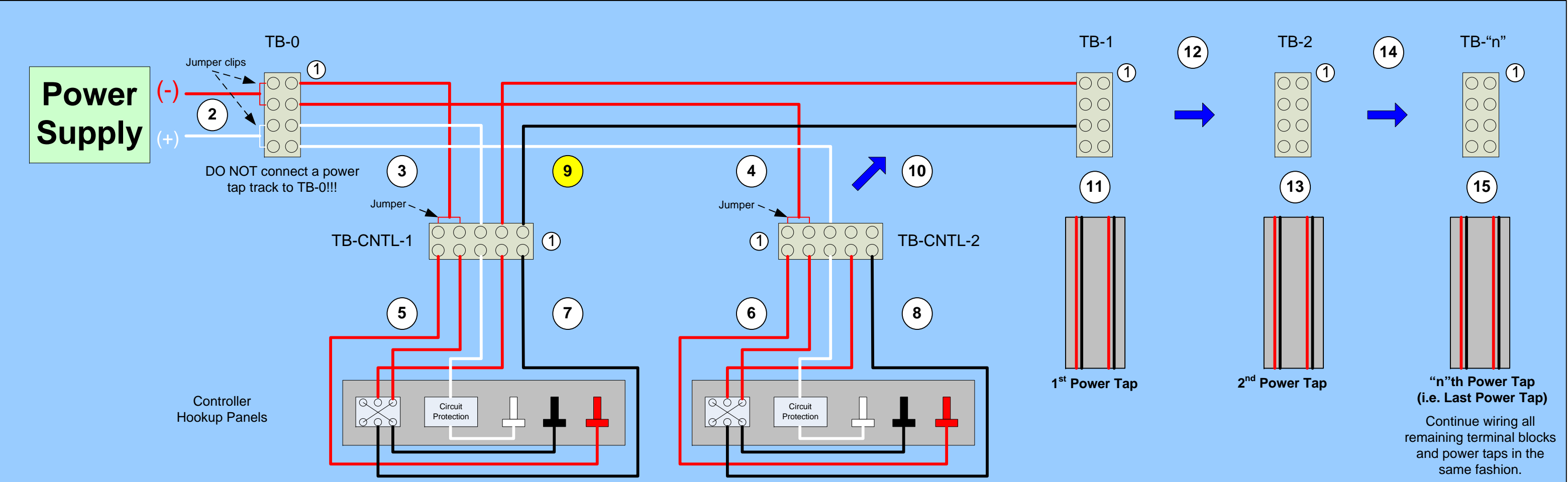
8c



Please Note:

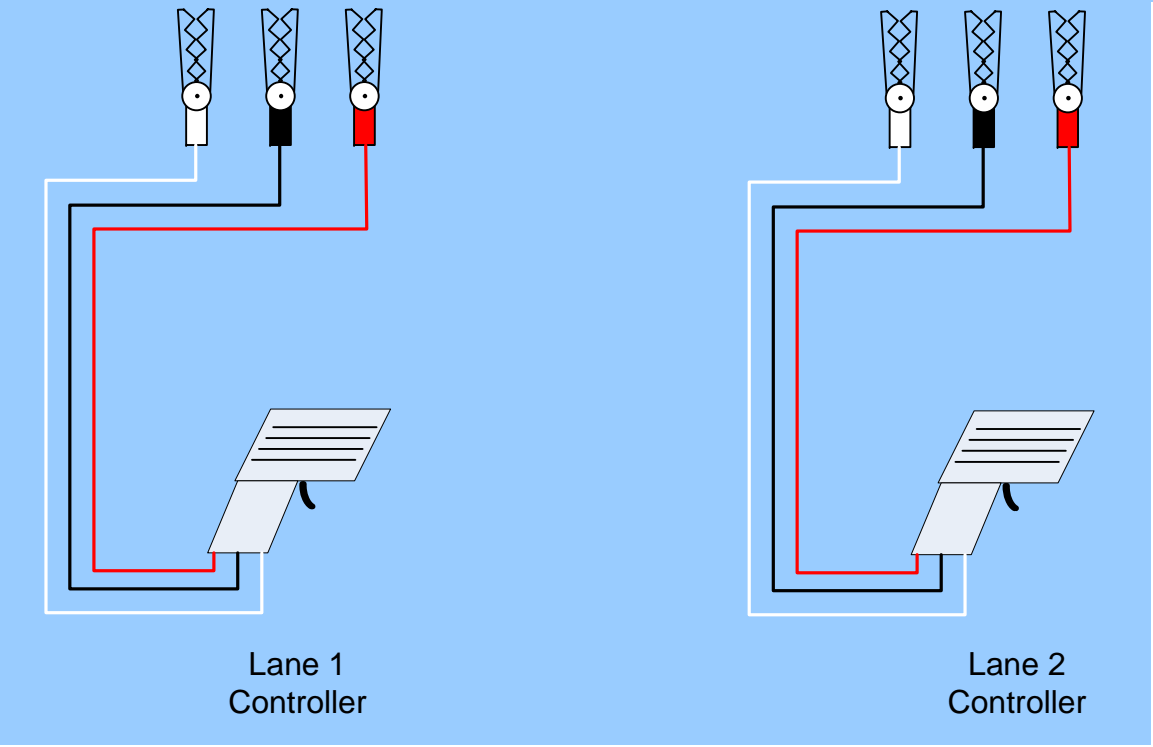
1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

Track Wiring Diagram (Positive Polarity) (TB-CNTL-1 to TB-1)



Instructions:

1. Measure "positive" (black) and "negative" (red) wires for the Lane 1 connection between TB-CNTL-1 and TB-1 as shown.
2. Cut wire to the required length.
3. Strip 5/16" of sheathing from both ends of each wire. Crimp AND solder heavy duty spade terminals to all wire ends.
4. Label all wires:
 - a. "Black" Lane 1 = "1 (+)"
 - b. "Red" Lane 1 = "1 (-)"
5. Use the wiring templates for TB-CNTL-1 and TB-1 to connect the wires to the designated screws/posts. Screws/posts should be snug -be careful not to over tighten.



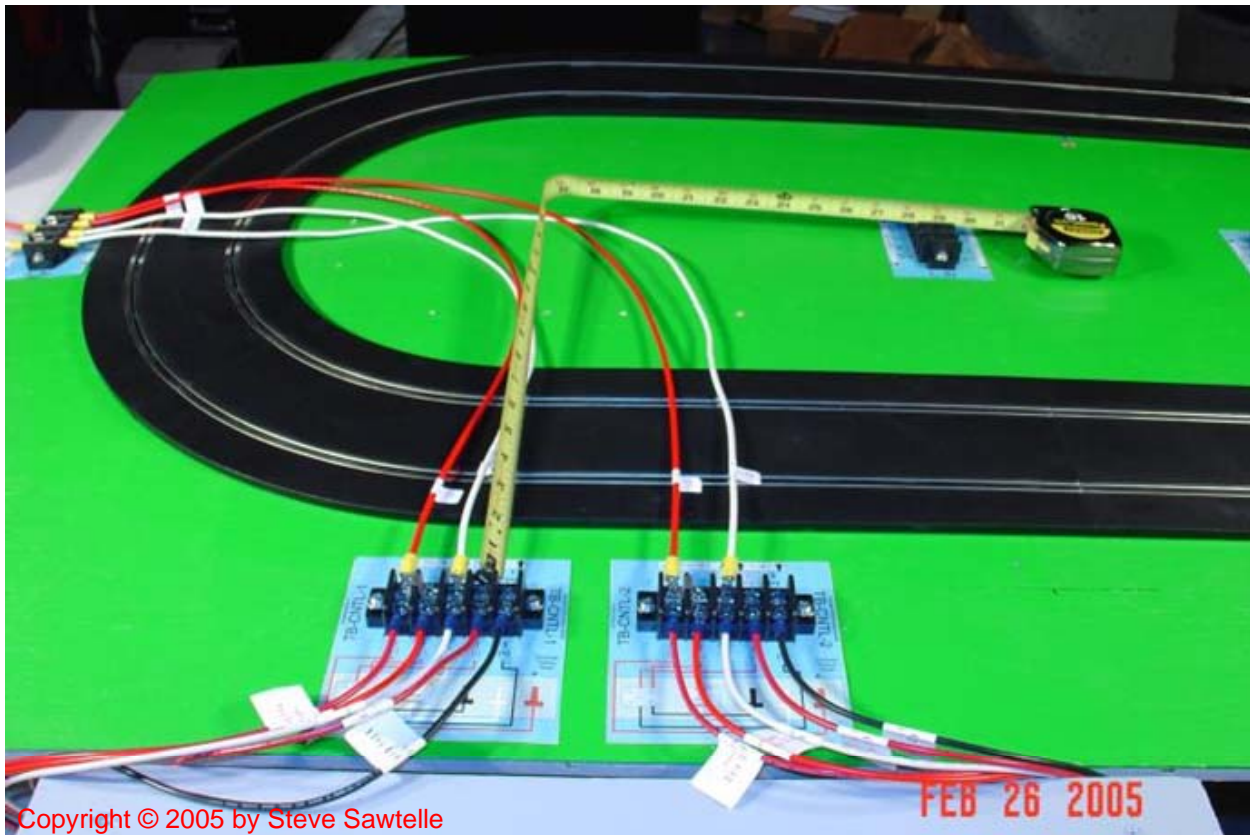
IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

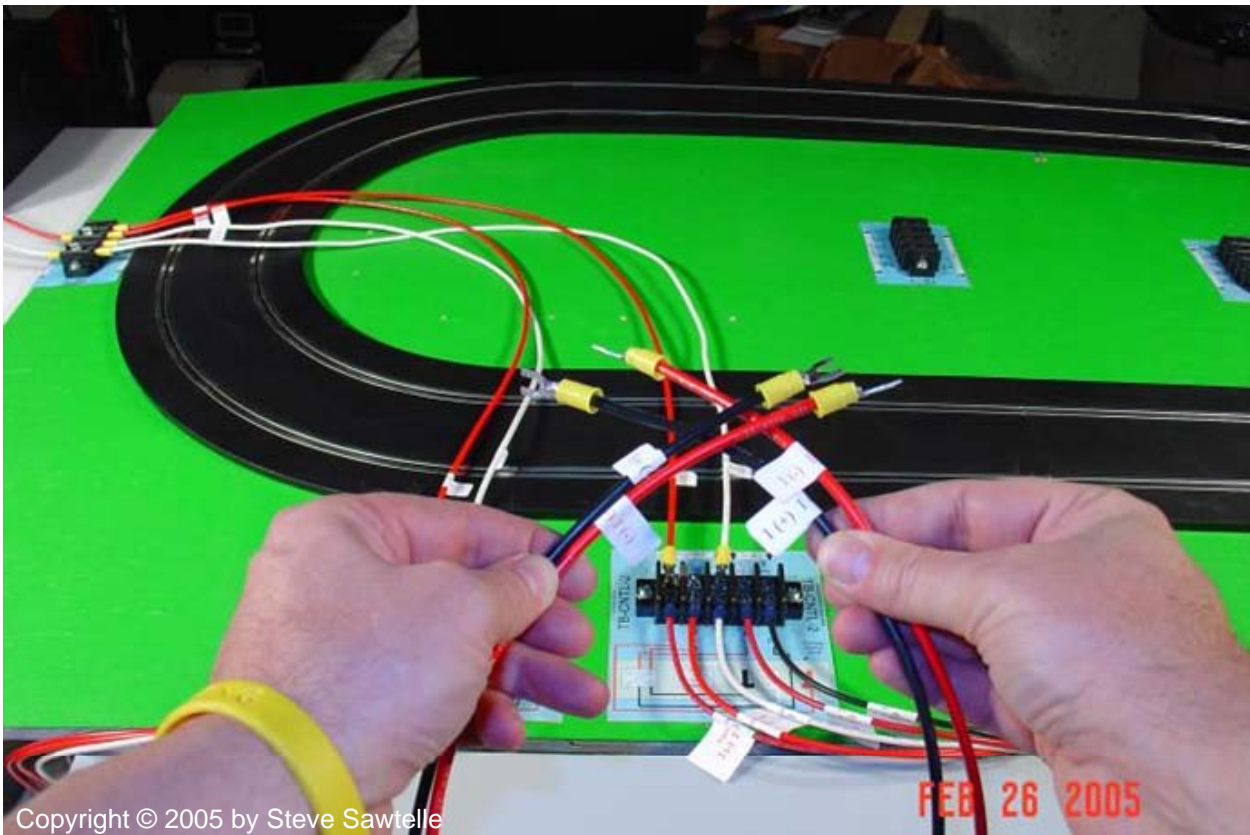
STEP 9

Track Wiring Diagram (Positive Polarity)
(TB-CNTL-1 to TB-1)

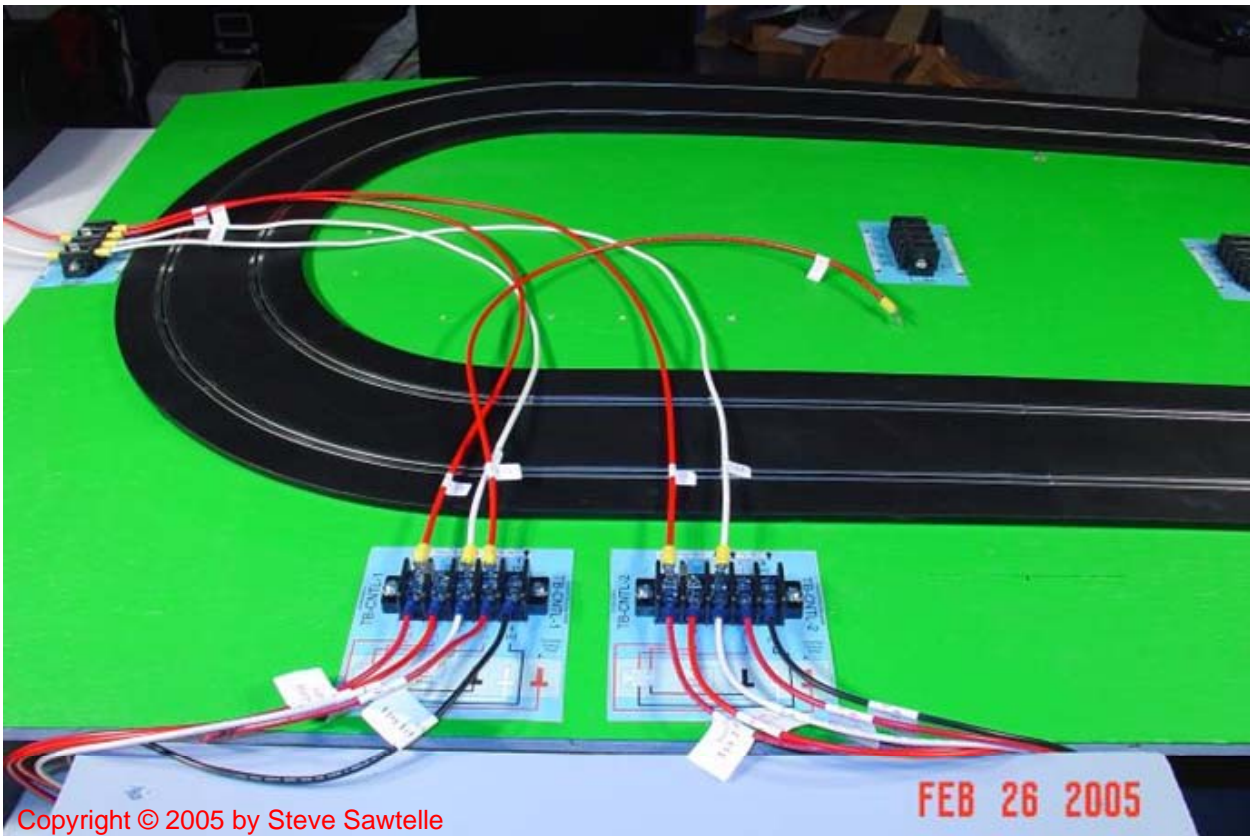
9a



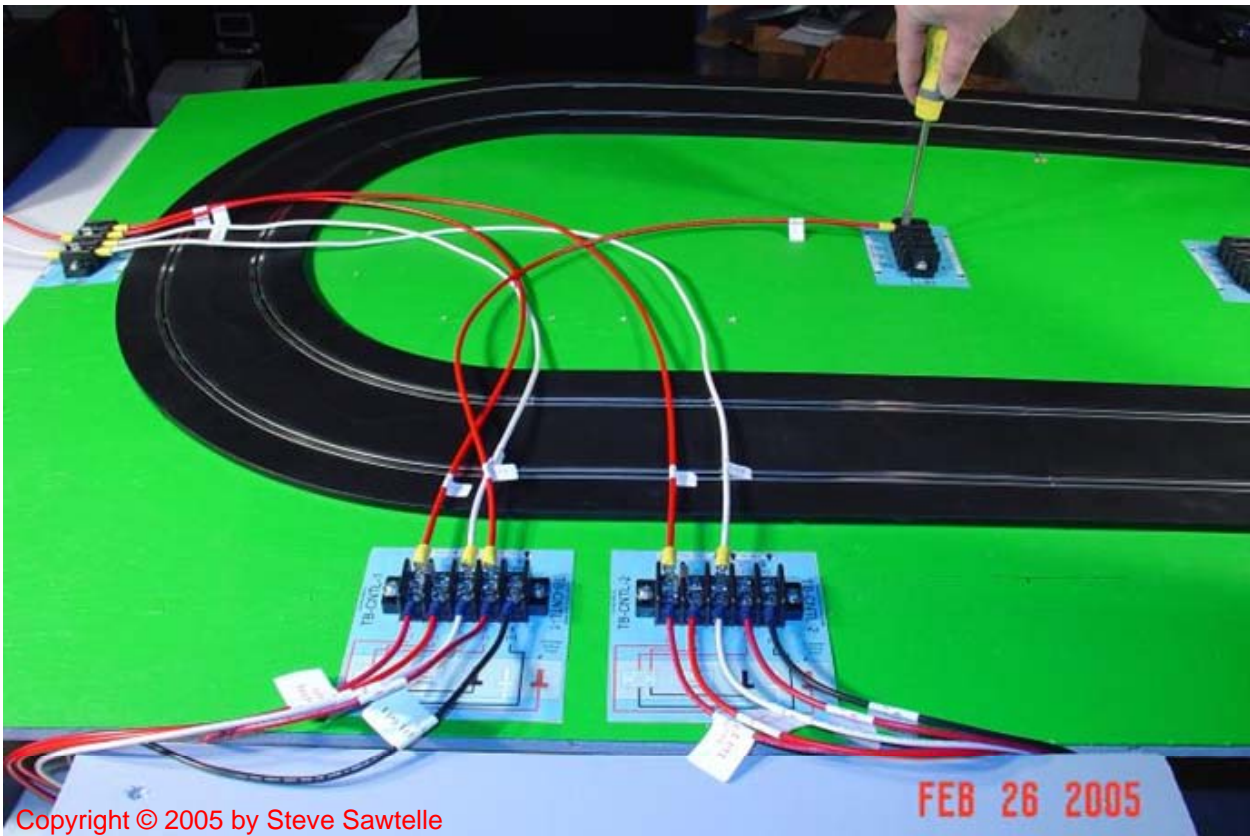
9b



9c



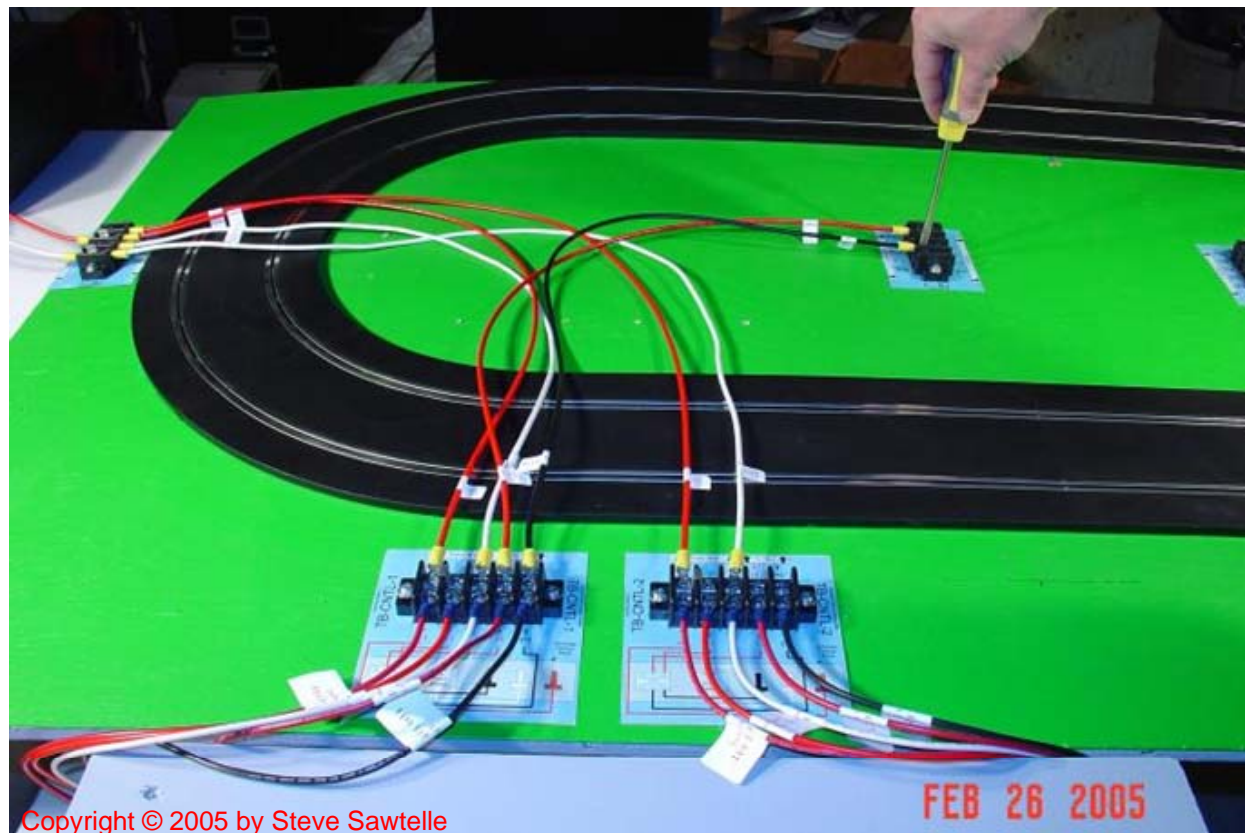
9d



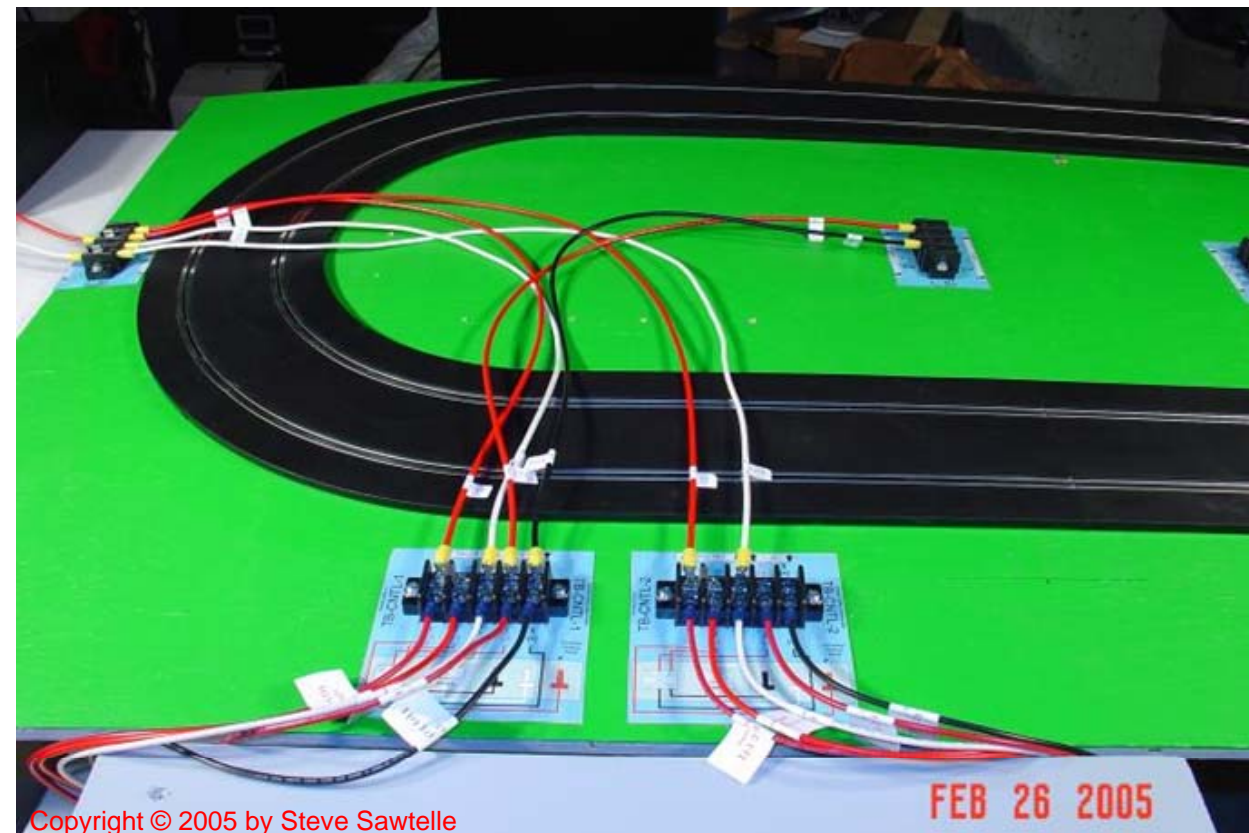
STEP 9

Track Wiring Diagram (Positive Polarity) (TB-CNTL-1 to TB-1)

9e



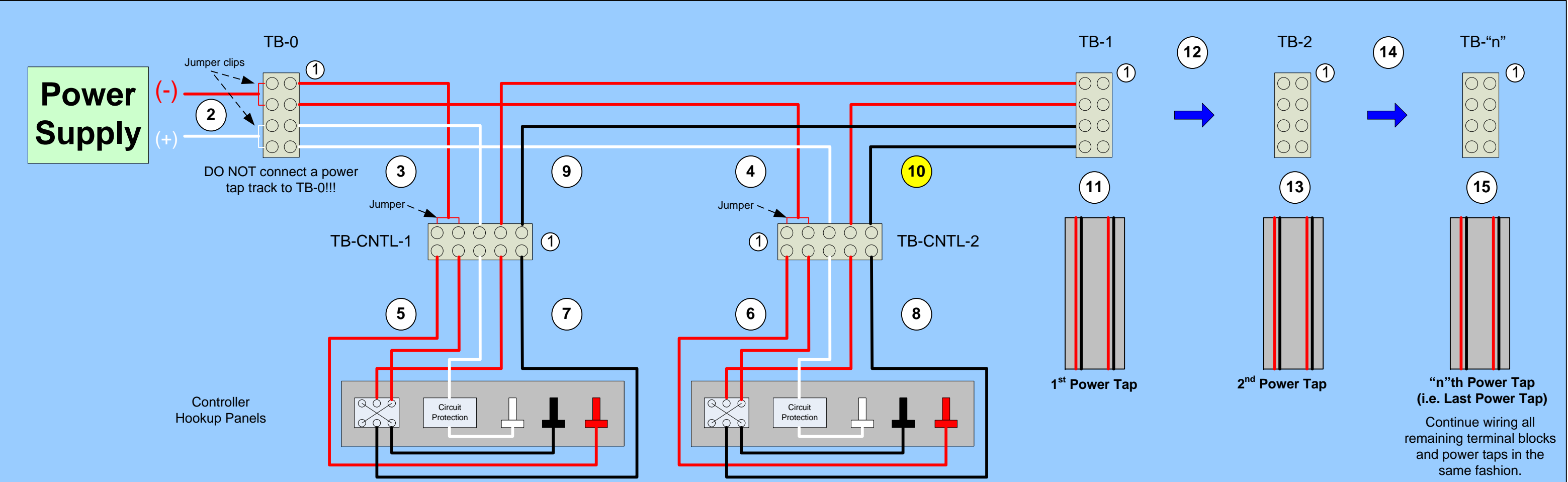
9f



Please Note:

1. For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.
2. Most items which are shown in these pictures are available for purchase in the Online Store at www.slotcarcorner.com

Track Wiring Diagram (Positive Polarity) (TB-CNTL-2 to TB-1)



Instructions:

1. Measure "positive" (black) and "negative" (red) wires for the Lane 2 connection between TB-CNTL-2 and TB-1 as shown.
2. Cut wire to the required length.
3. Strip 5/16" of sheathing from both ends of each wire. Crimp AND solder heavy duty spade terminals to all wire ends.
4. Label all wires:
 - a. "Black" Lane 2 = "2 (+)"
 - b. "Red" Lane 2 = "2 (-)"
5. Use the wiring templates for TB-CNTL-2 and TB-1 to connect the wires to the designated screws/posts. Screws/posts should be snug -be careful not to over tighten.

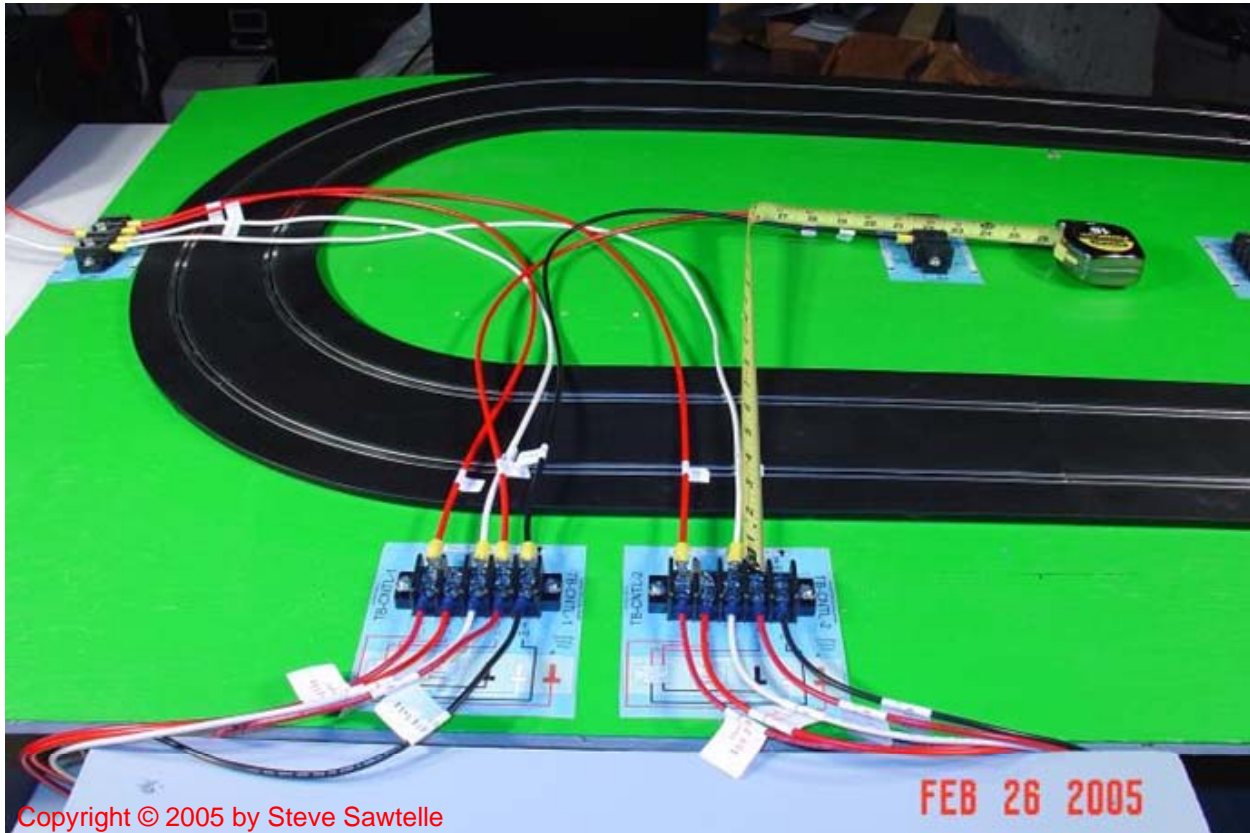
IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

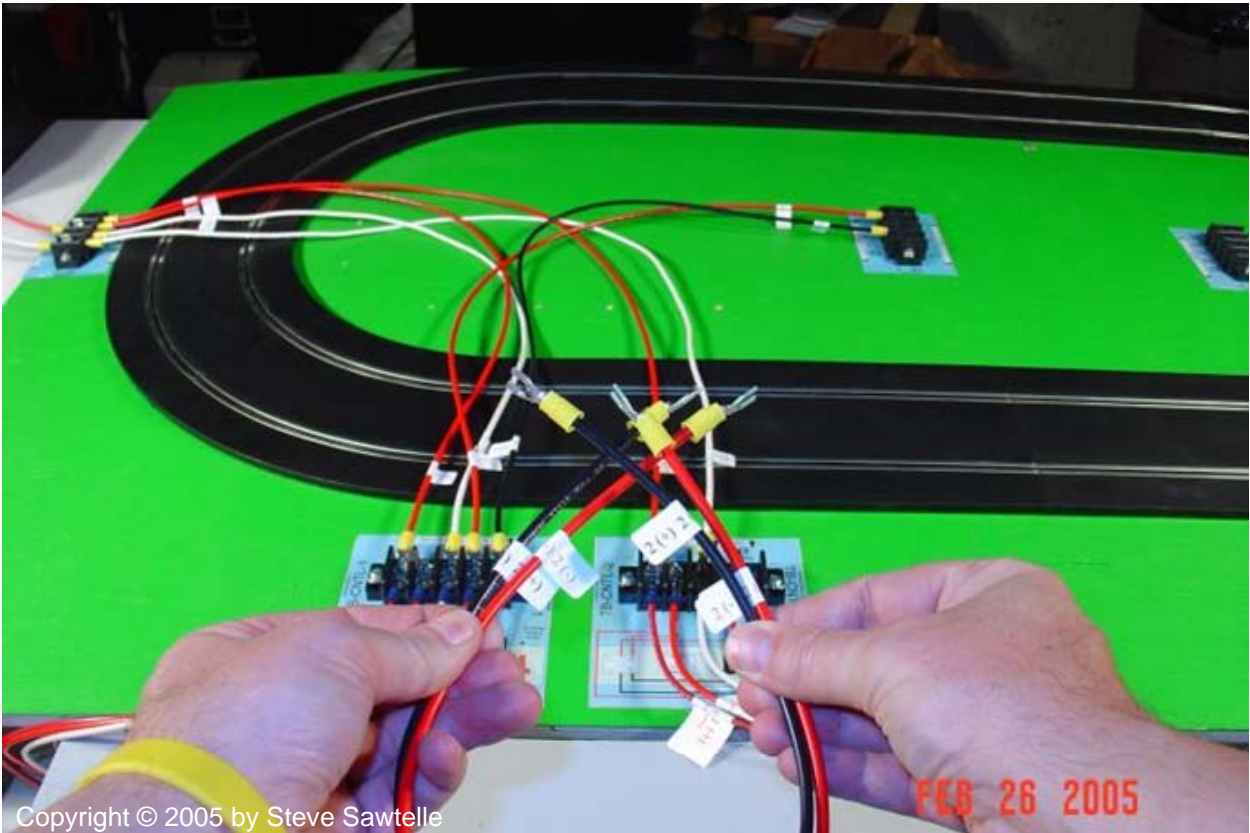
STEP 10

Track Wiring Diagram (Positive Polarity)
(TB-CNTL-2 to TB-2)

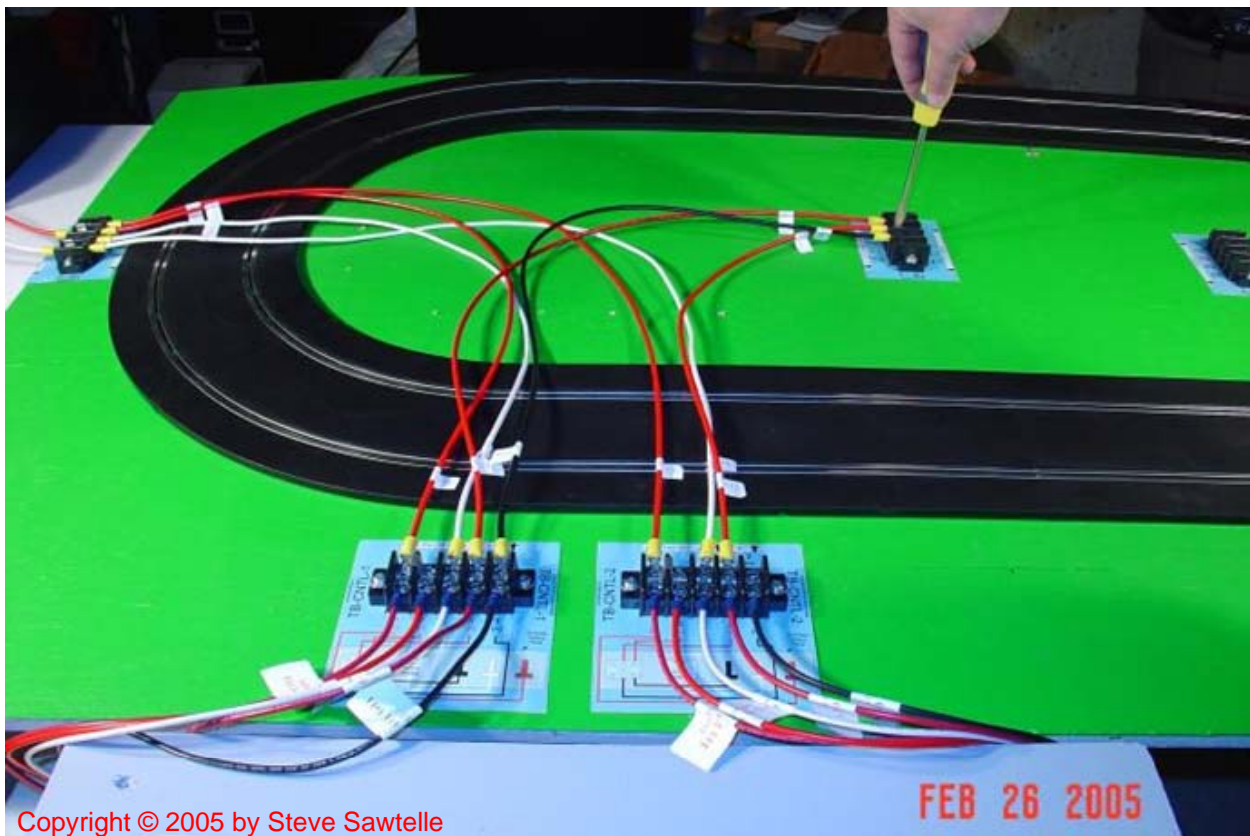
10a



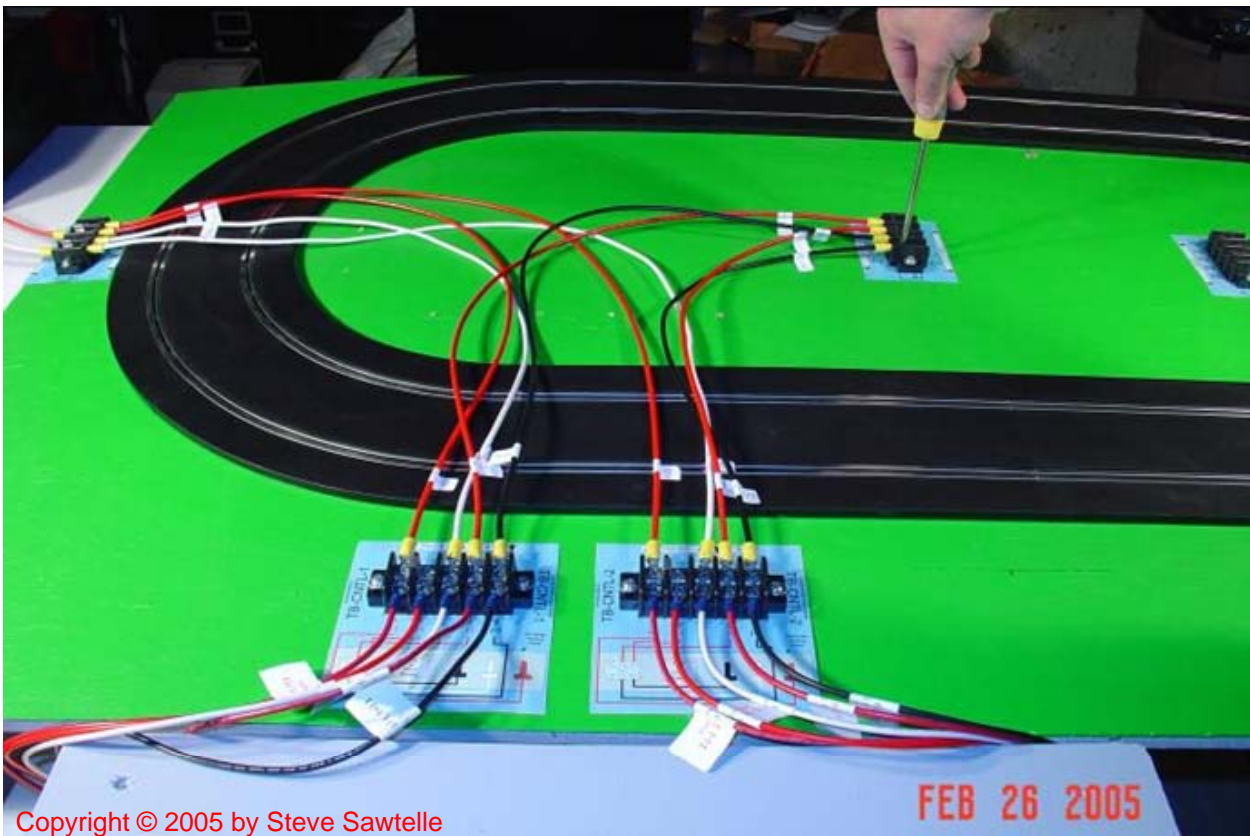
10b



10c

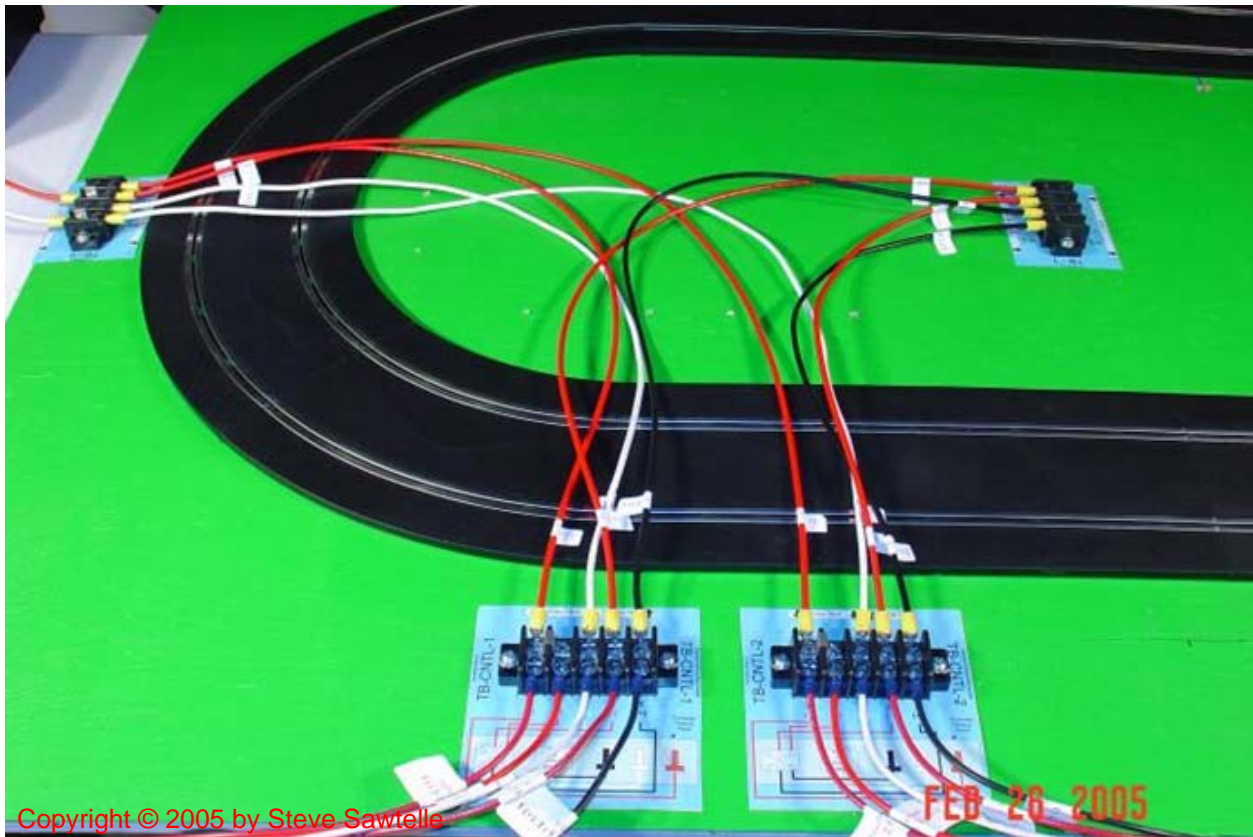


10d

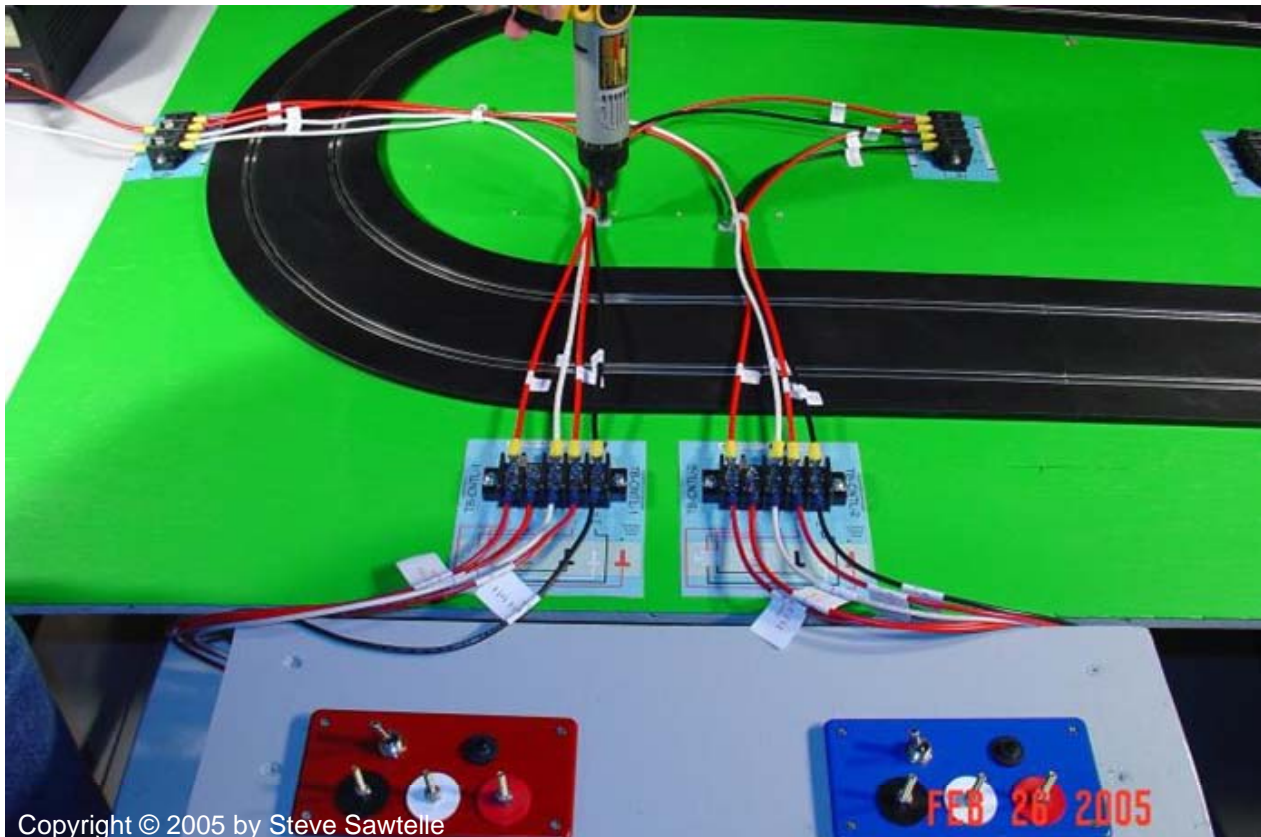


Track Wiring Diagram (Positive Polarity) (TB-CNTL-2 to TB-2)

10e



10f

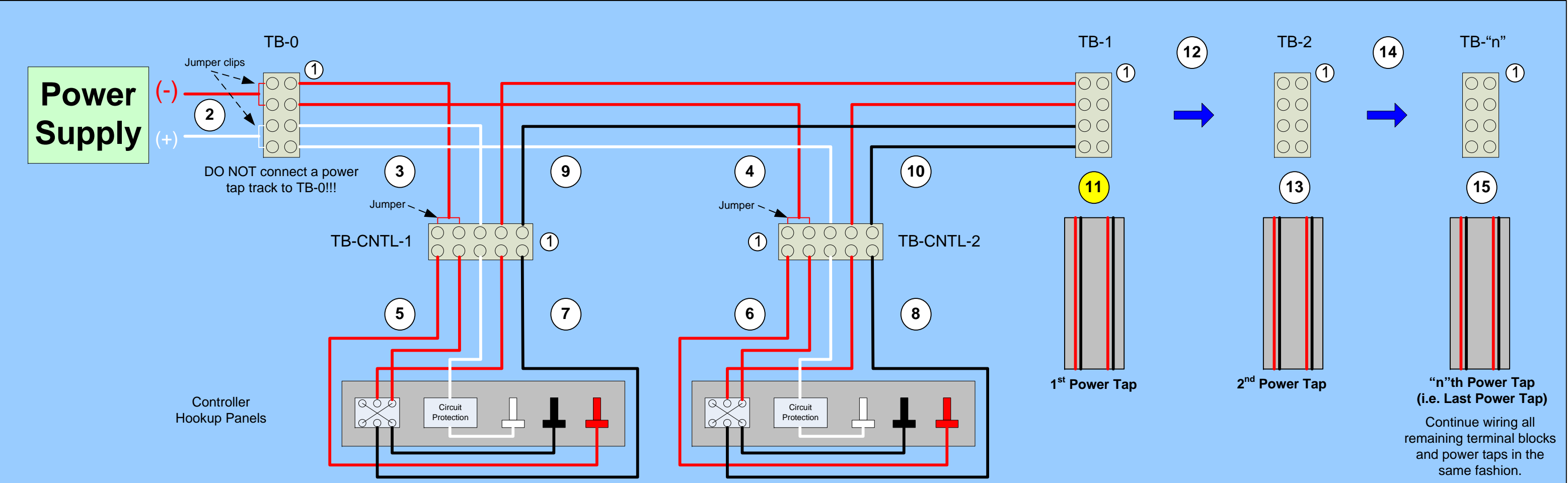


10g



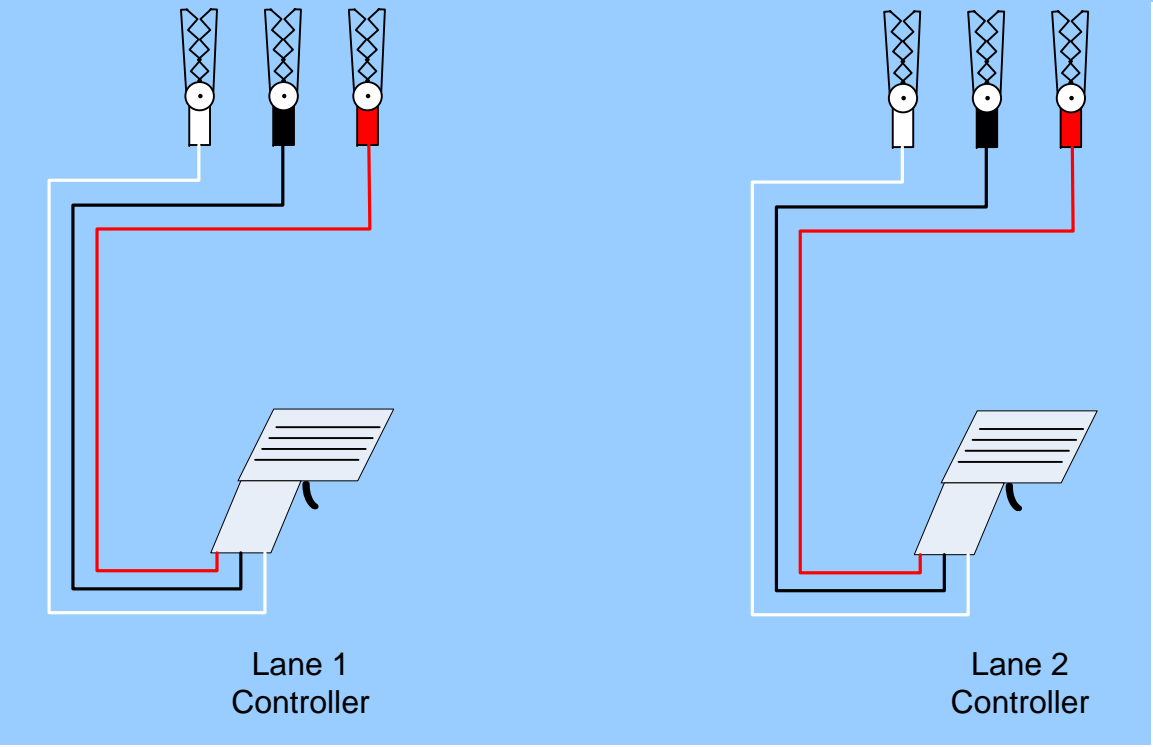
Tip:
For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table. Thanks to gravity, when you run wire on the underside of your table(s), the wire will sag and put stress on the spade terminal connectors. To avoid this, secure wiring to the underside of the track using cable clamps such as those shown. Tucking the wire up out of the way will also prevent other items which may be under your table from “snagging” the wire and causing a problem. Cable clamps such as the ones shown in the picture are included with track wiring kits.

Track Wiring Diagram (Positive Polarity) (1st Power Tap)



Instructions:

1. Connect the first power tap track to terminal block "TB-1". Refer to the next page for more detailed instructions.
2. Test your wiring before proceeding. Refer to the "Basic Track Wiring Testing and Troubleshooting" section at the end of this document.
3. Do not proceed to the next step until all lanes have passed this testing.

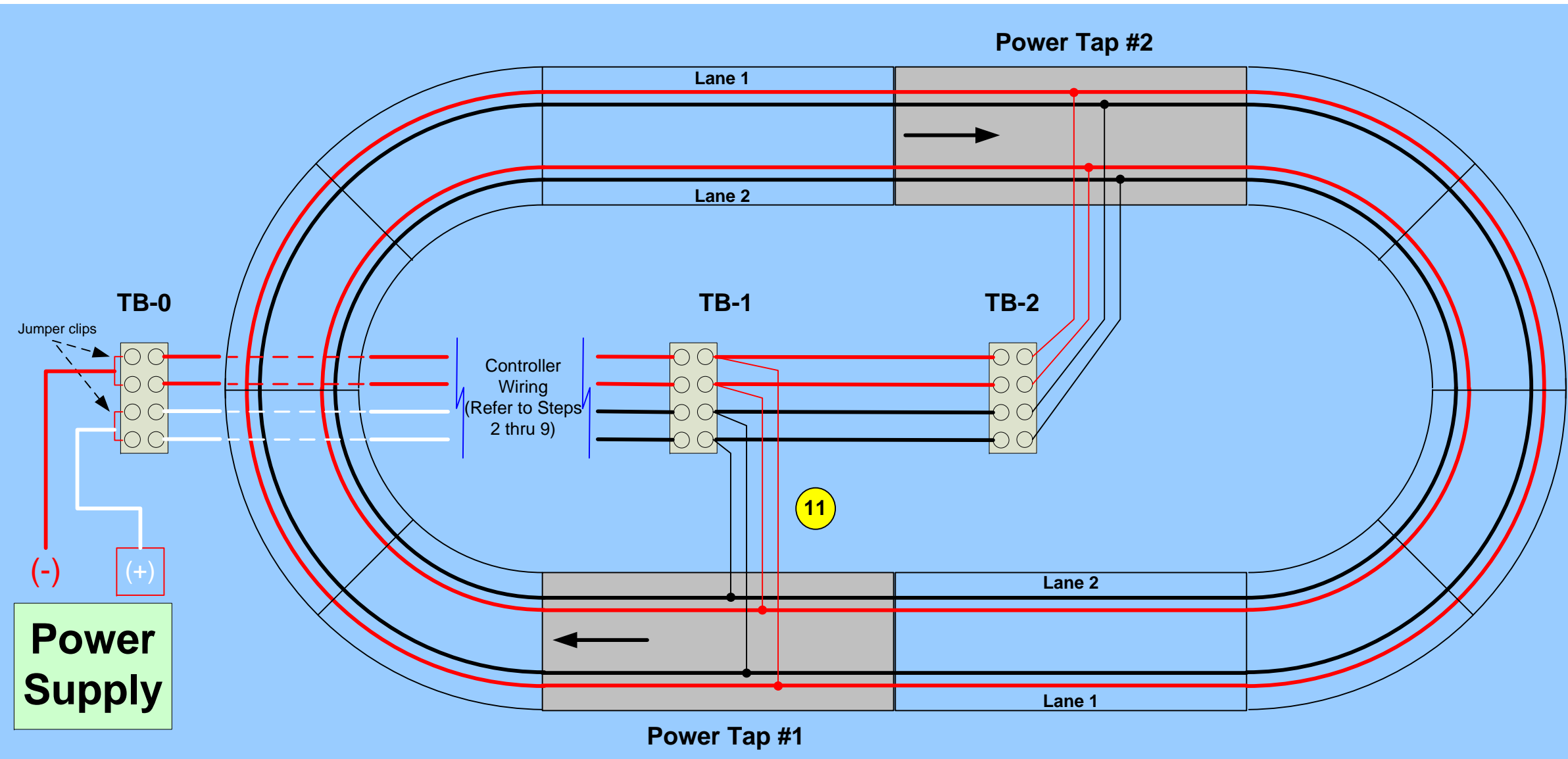


IMPORTANT!!!

1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
4. Label ALL wires
5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

Track Wiring Diagram (Positive Polarity) (Power Tap Connections)

Note:
Lane designations shown are for illustrative purposes only – they may/may not be the same as the Terminal Block Wiring Templates. ALWAYS use the terminal block wiring templates as the basis for all wiring connections.



- Instructions:**
1. Use the Power Tap Orientation templates provided in the wiring kit to ensure ALL power taps are "oriented" properly. The red and black lines representing track rails on the Power Tap Orientation template MUST match the corresponding red and black wires attached to the underside of the Power Tap track sections.
A. Lanes - Lane 1 / Lane 2 designations are consistent for ALL power taps
B. Rail/wiring – for a given lane, the "red" and "black" wires attached to the underside of the rails are consistent for ALL power taps
 2. For each Power Tap, label all wires to be consistent with the Power Tap Orientation template. Labels should identify the Lane # and "+" for "black" wires or "-" for "red" wires.
 3. For each Power Tap, connect each wire to the corresponding screw/post on the terminal block associated with the Power Tap. Use the wiring template for the terminal block as the basis for all connections.
 4. Double-check all connections (compare labels on Power Tap wires to wiring template on terminal block). Ensure all terminal block screws/posts are snug – do not over tighten.

Note:
Arrows show desired direction of car travel for Power Tap tracks located throughout the example layout. The orientation of track rails (red, black) shown for each lane must be consistent for ALL power taps around the entire layout.

Track Wiring Diagram (Positive Polarity) (1st Power Tap)

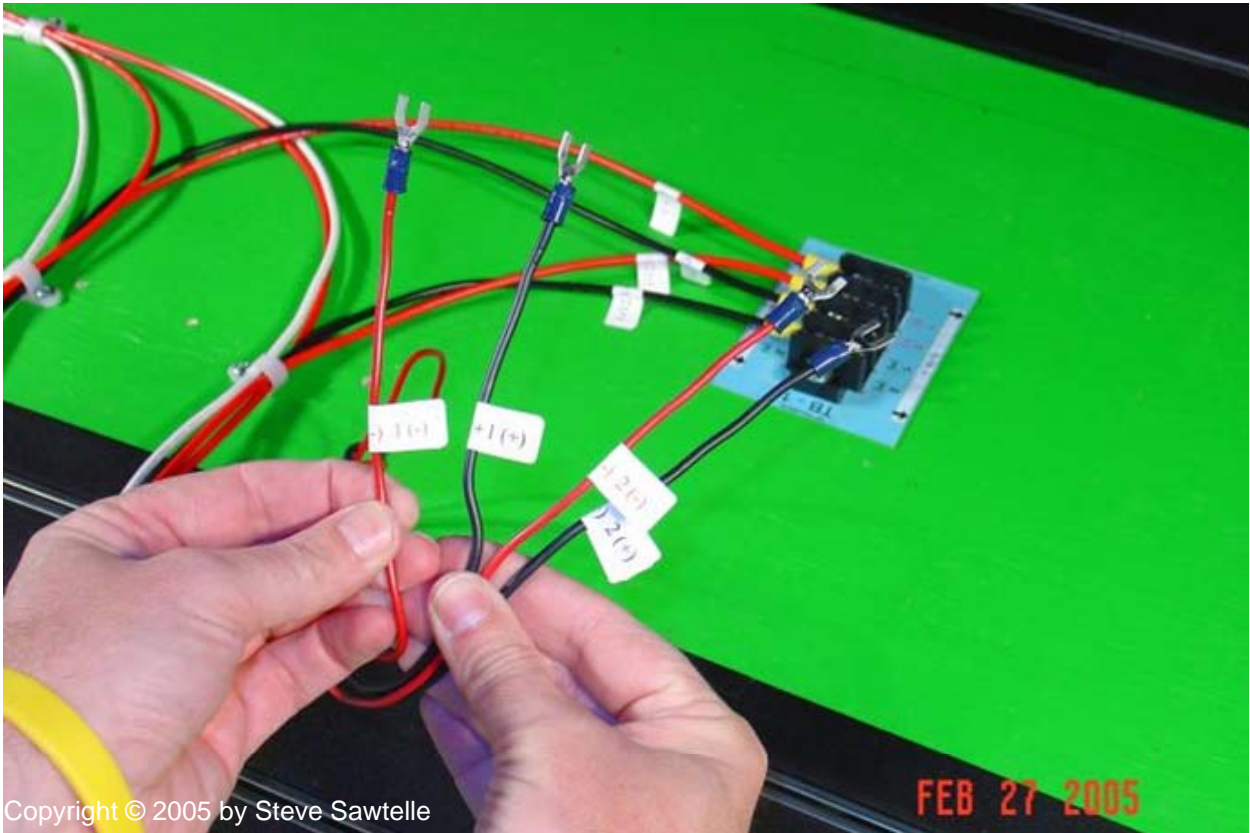
Power Tap Wiring Basics

- 1. Ensure all power tap wires are labeled properly (see earlier instructions).
- 2. Connect power taps wires for lane 1 (use wiring template).

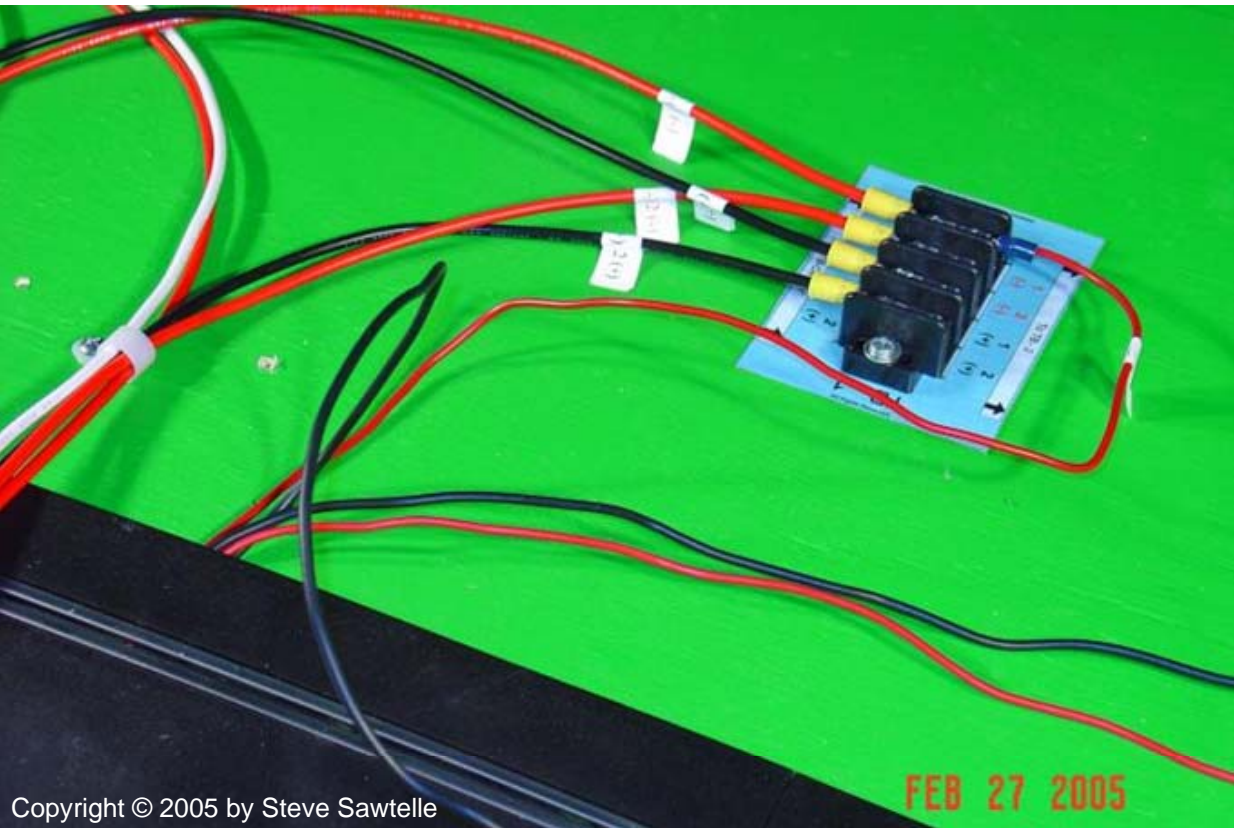
Note: Power tap wires can be connected to either side of terminal block.

Please Note:
For illustrative purposes, track wiring for the sample layout is run on top of the table.
You will (normally) run the wiring on the underside of the table.

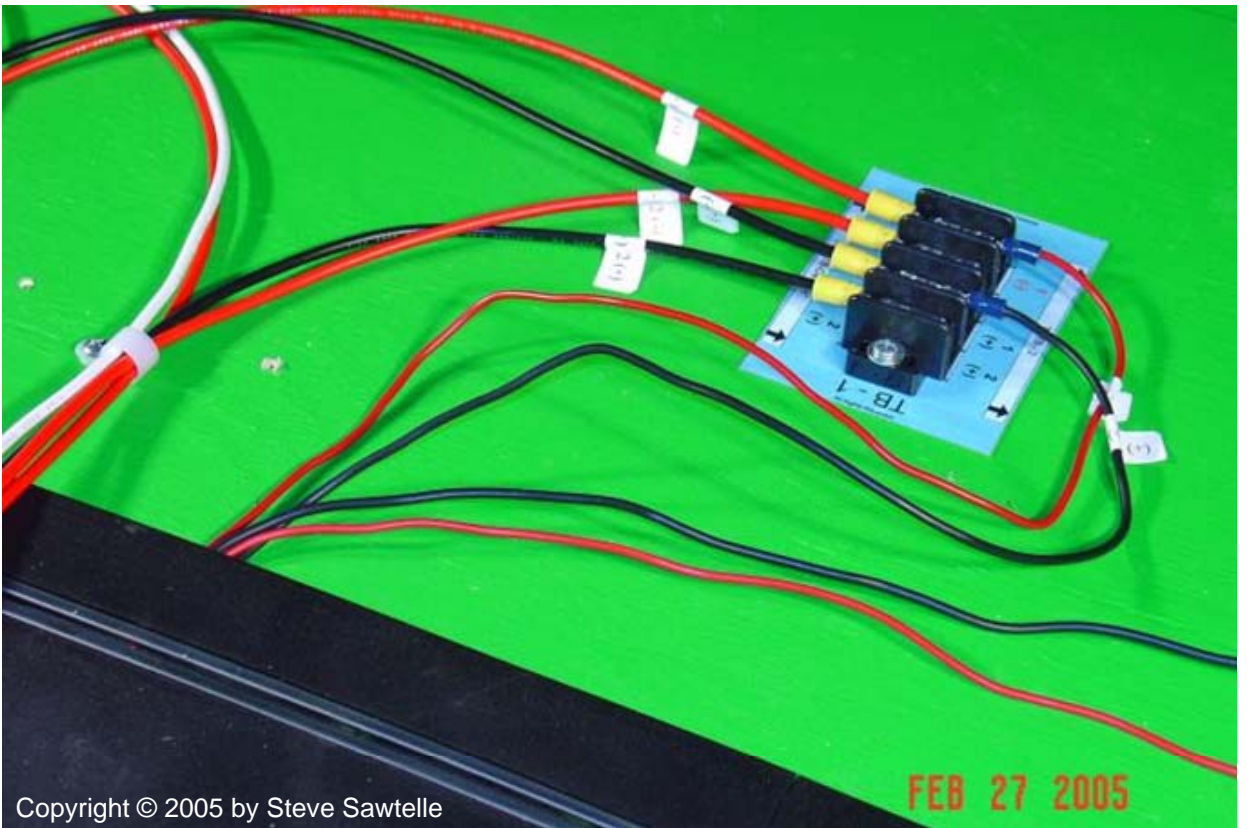
11a



11b



11c



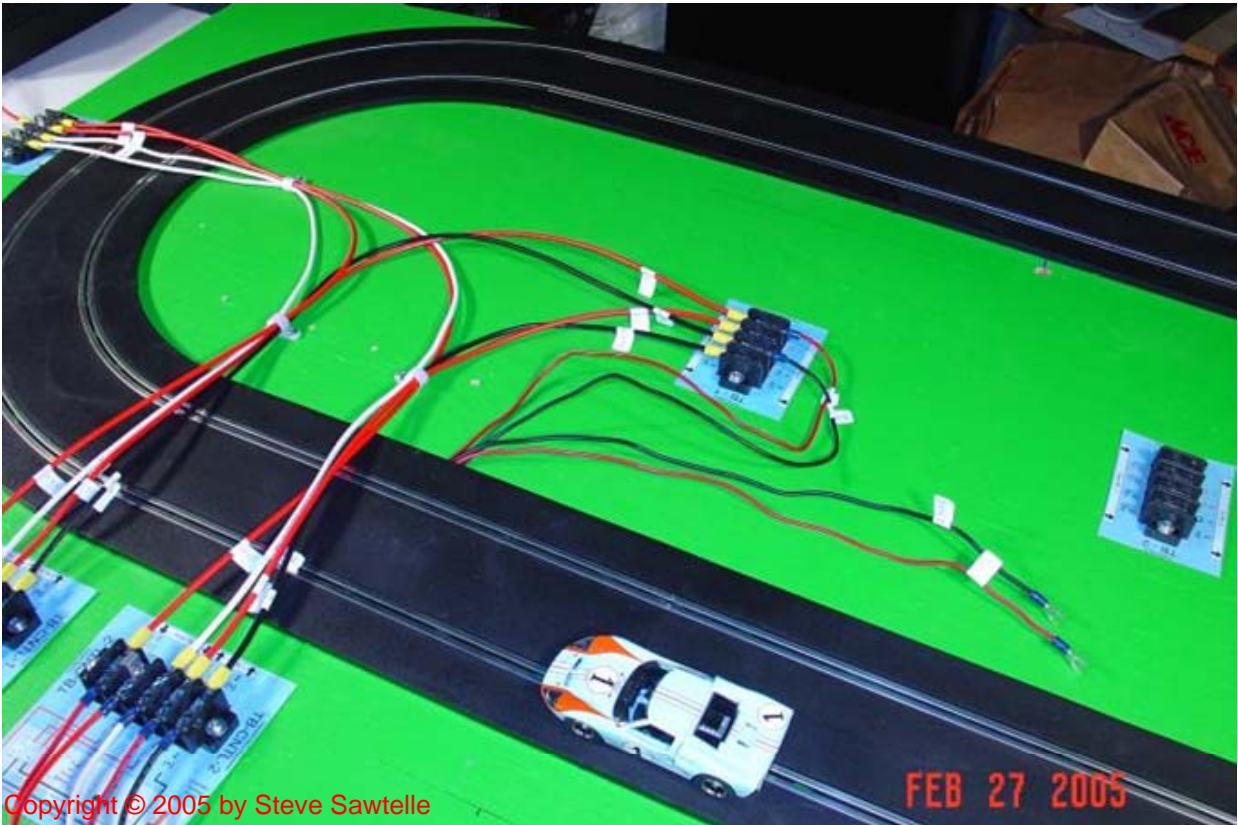
Track Wiring Diagram (Positive Polarity) (1st Power Tap)

Power Tap Wiring Basics (continued)

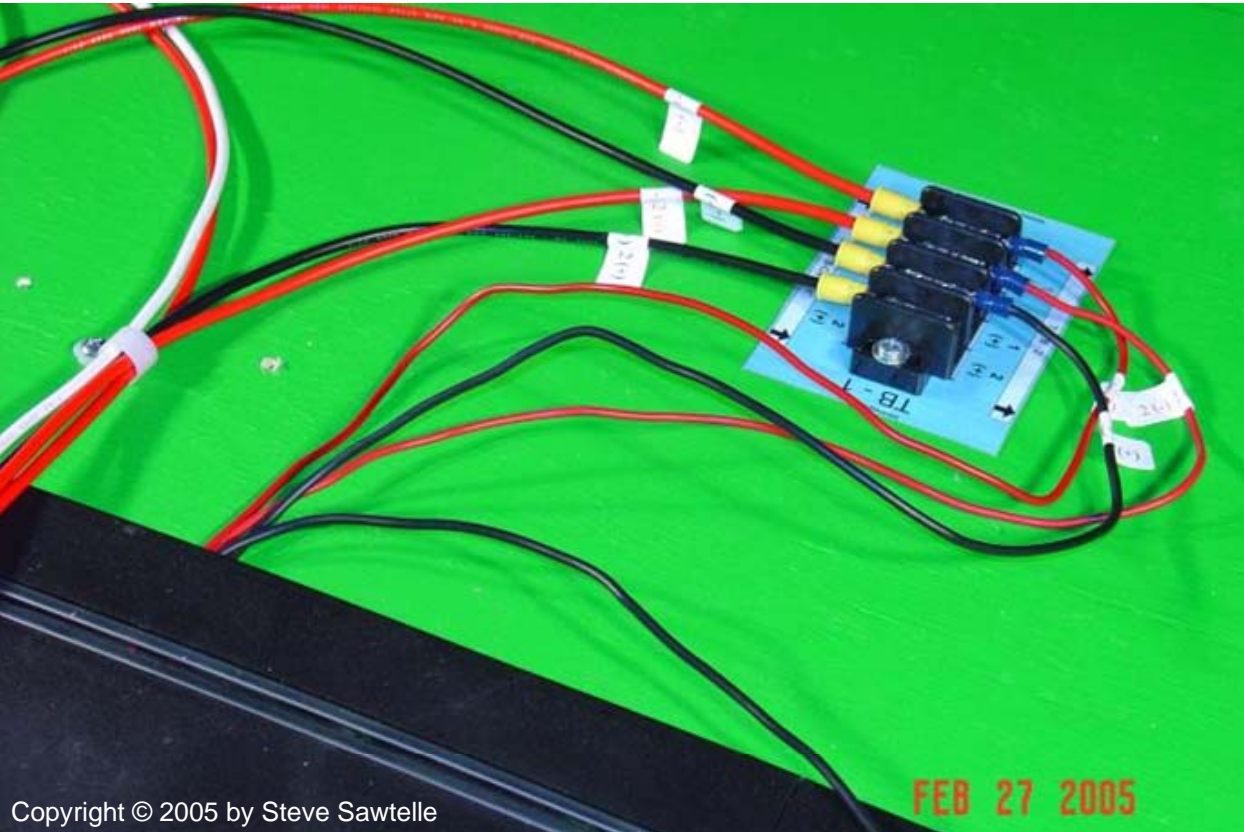
- 3. Hookup controller for Lane 1 and place car on track (Lane 1...)
 - 4. Turn on power. If problems are evident, turn off power immediately
 - 5. Test wiring (car should travel around track).
- Note: If problems encountered, refer to “Testing and Troubleshooting” section of guide.*
- 6. Once testing is successfully completed, turn of power and unplug power supply.
 - 7. Connect power tap wires for Lane 2 (using Wiring Template)

Please Note:
For illustrative purposes, track wiring for the sample layout is run on top of the table.
You will (normally) run the wiring on the underside of the table.

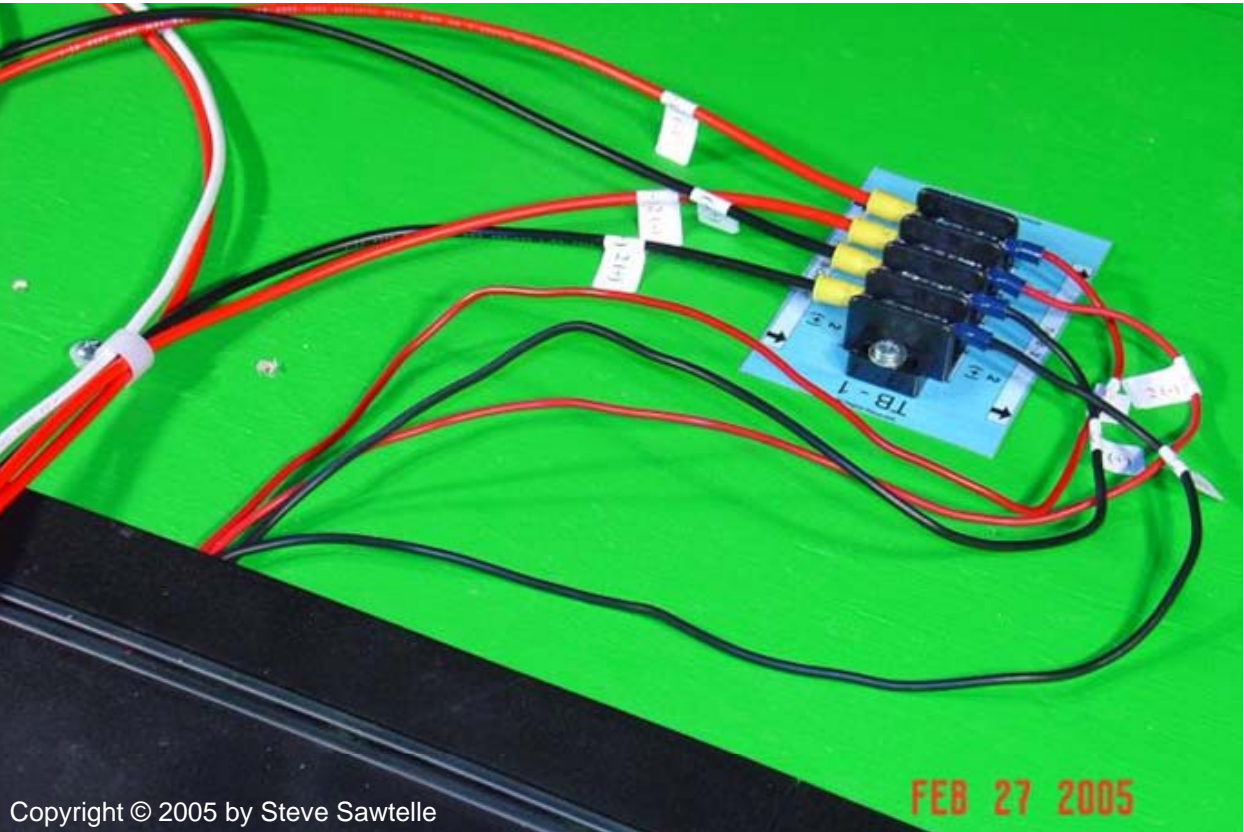
11d



11e



11f



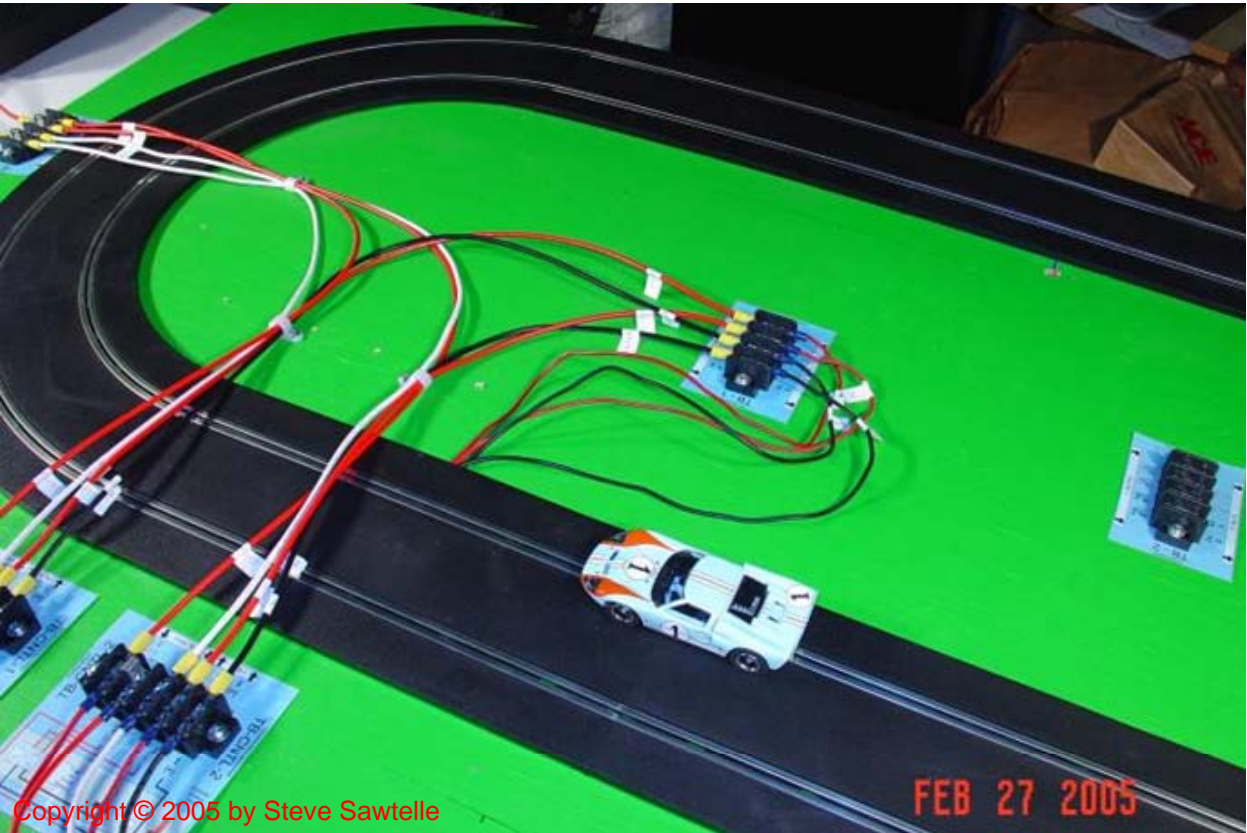
Track Wiring Diagram (Positive Polarity) (1st Power Tap)

Power Tap Wiring Basics (continued)

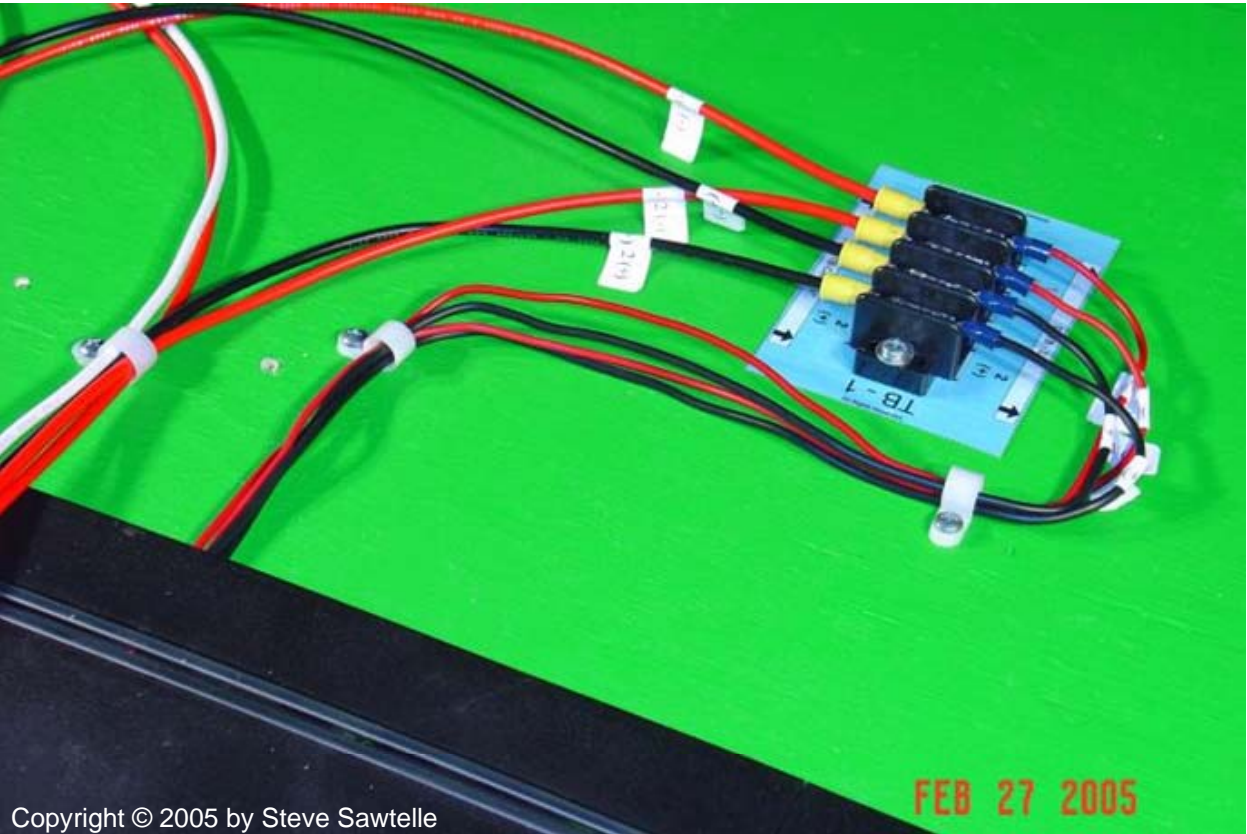
- 8. Hookup controller for Lane 2 and place car on track (Lane 2...)
 - 9. Turn on power. If problems are evident, turn off power immediately
 - 10. Test wiring (car should travel around track).
- Note: If problems encountered, refer to “Testing and Troubleshooting” section of guide.*
- 11. Once testing is successfully completed, turn of power and unplug power supply.
 - 12. Use wire clips to secure power tap wiring to underside of table.

Please Note:
For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.

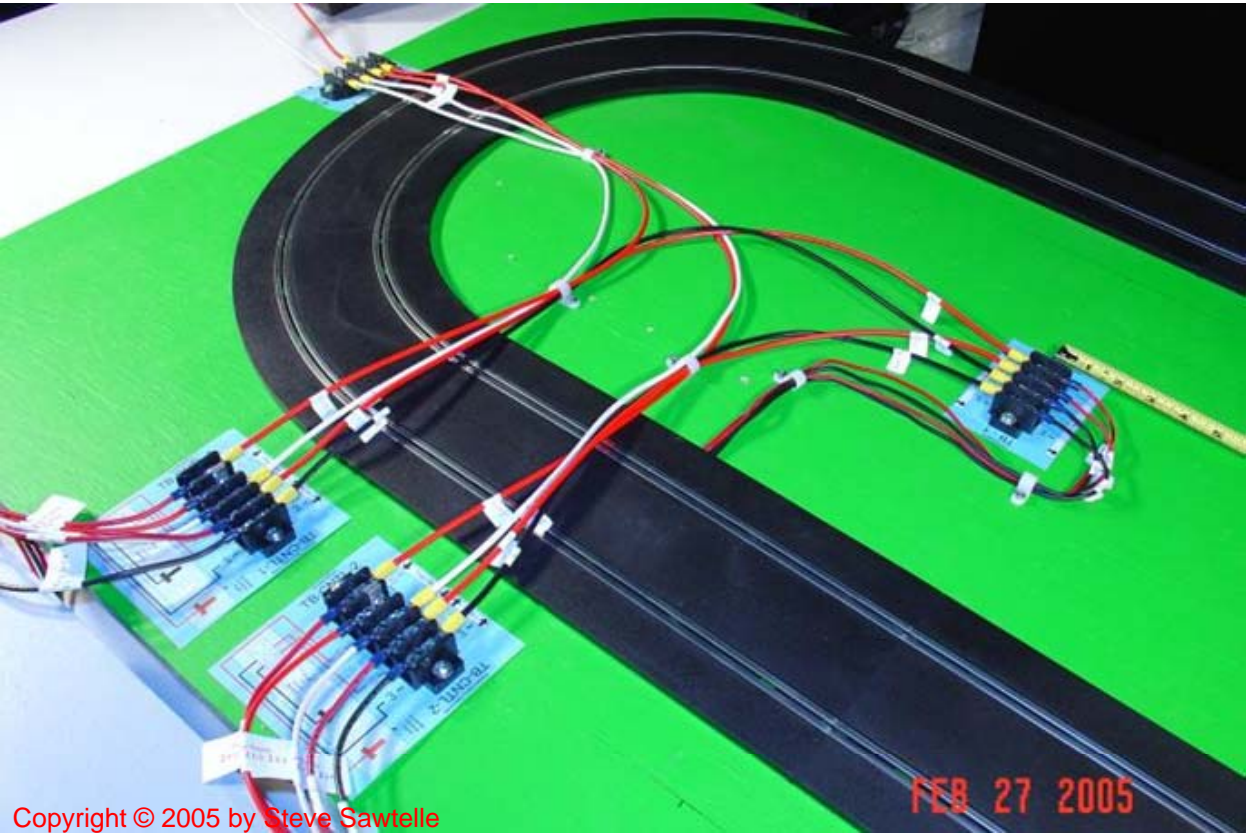
11g



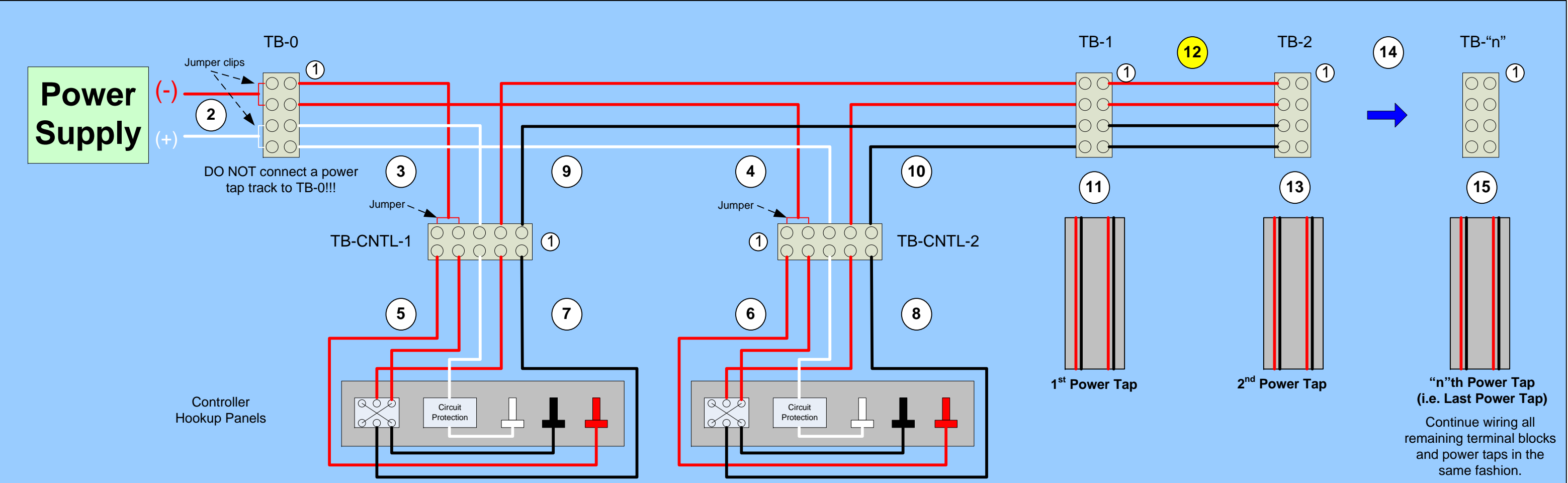
11h



11i

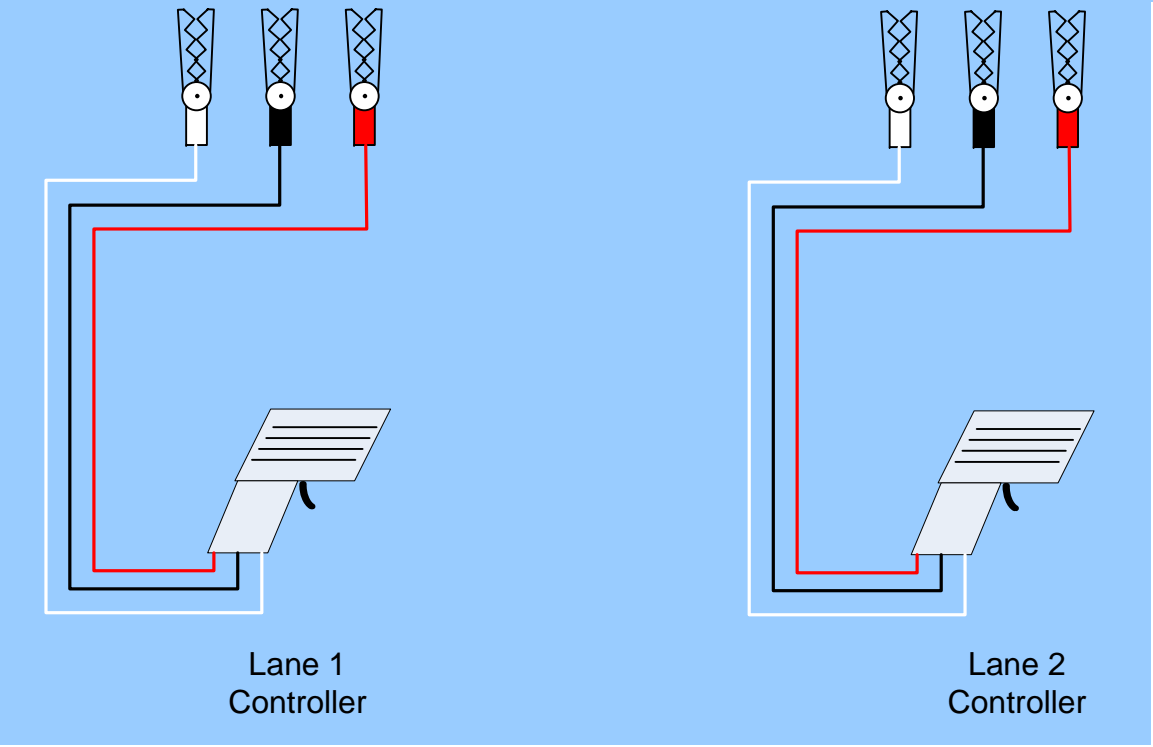


Track Wiring Diagram (Positive Polarity) (TB-1 to TB-2)



Instructions:

- 1. Measure “positive” (black) and “negative” (red) wires for the Lane 1 and Lane 2 connections between TB-1 and TB-2 as shown.
- 2. Cut wire to the required length.
- 3. Strip 5/16" of sheathing from both ends of each wire. Crimp AND solder heavy duty spade terminals to all wire ends.
- 4. Label all wires:
 - a. “Black” Lane 1 = “1 (+)”; Lane 2 = “2 (+)”
 - b. “Red” Lane 1 = “1 (-)”; Lane 2 = “2 (-)”
- 5. Use the wiring templates for TB-1 and TB-2 to connect the wires to the designated screws/posts. Screws/posts should be snug -be careful not to over tighten.



IMPORTANT!!!

- 1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
- 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- 4. Label ALL wires
- 5. Use wiring templates for all terminal blocks (designated as “TB-xxx” in diagram)
- 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- 7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
- 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is “tripped” (or “blown”). Correct the problem BEFORE turning power back on again.

STEP 12

Track Wiring Diagram (Positive Polarity) (TB-1 to TB-2)

Connecting Two Spade Terminals to a Single Terminal Block Screw/Post

1. Note the spade is offset to one side of the "barrel" - this allows the wire to be inserted in the barrel (refer to picture 12d).
2. The orientation of the 2 spade connectors shown in picture 12f would make it very difficult to attach both connectors to a common screw/post on the terminal block.
3. The orientation of the 2 spade connectors shown in picture 12g will make it much easier to attach both connectors to a common screw/post on the terminal block. This is the orientation you should use.

Please Note:

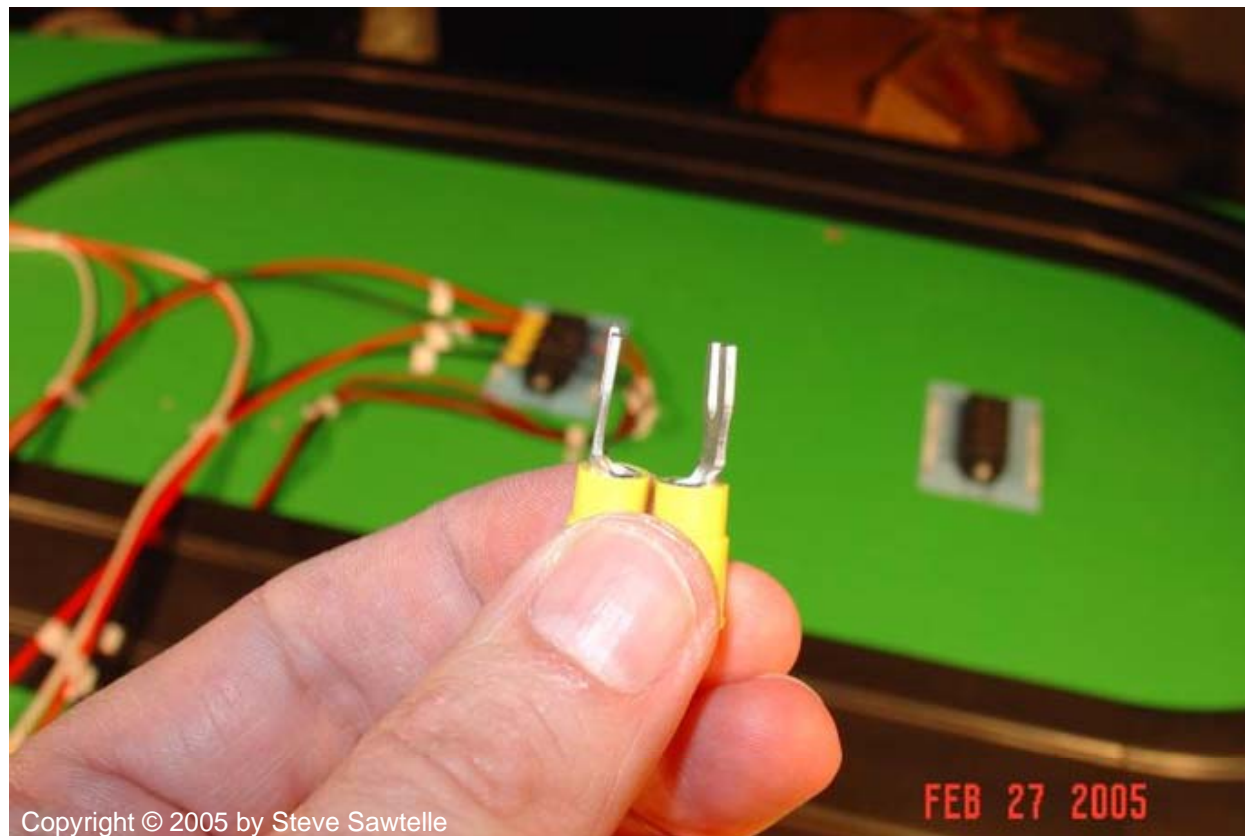
For illustrative purposes, track wiring for the sample layout is run on top of the table.
You will (normally) run the wiring on the underside of the table.

12d



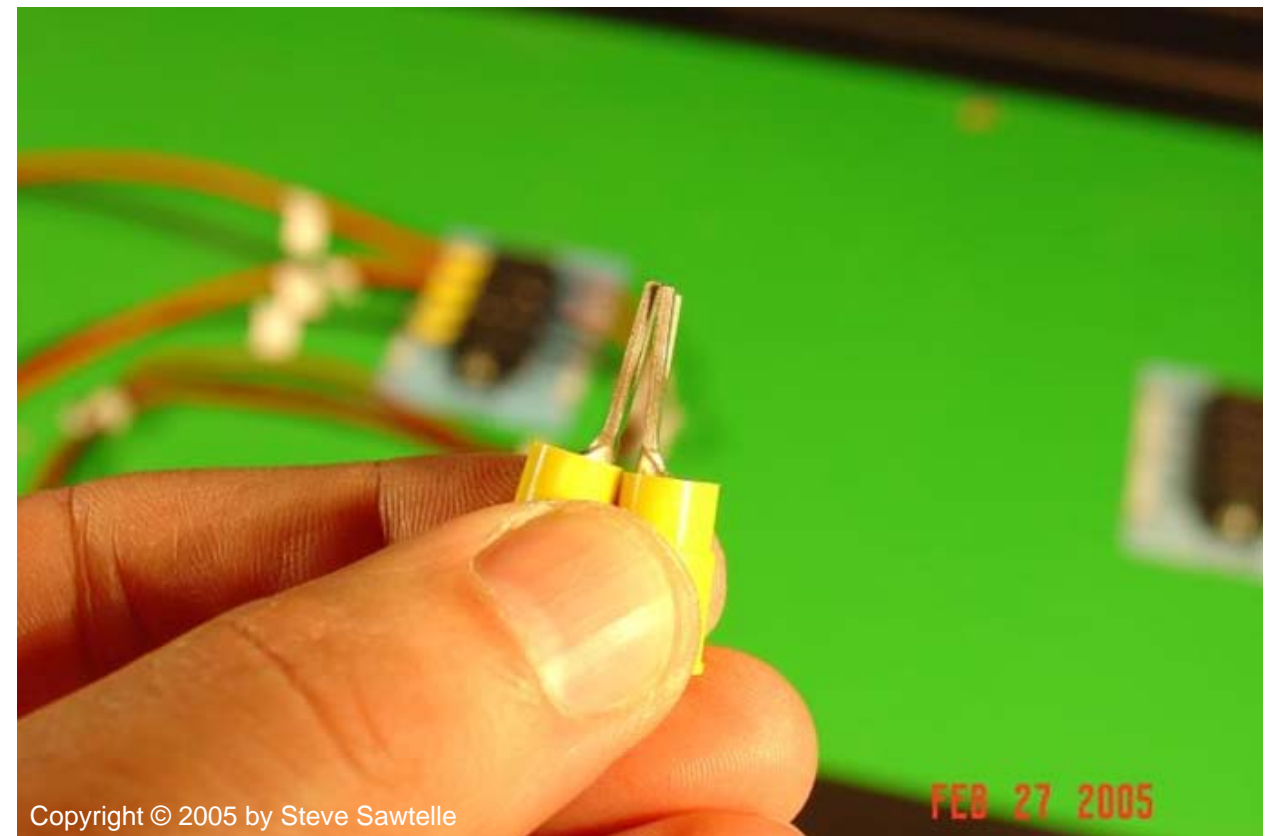
Copyright © 2005 by Steve Sawtelle

12f



Copyright © 2005 by Steve Sawtelle

12g



Copyright © 2005 by Steve Sawtelle

Track Wiring Diagram (Positive Polarity) (TB-1 to TB-2)

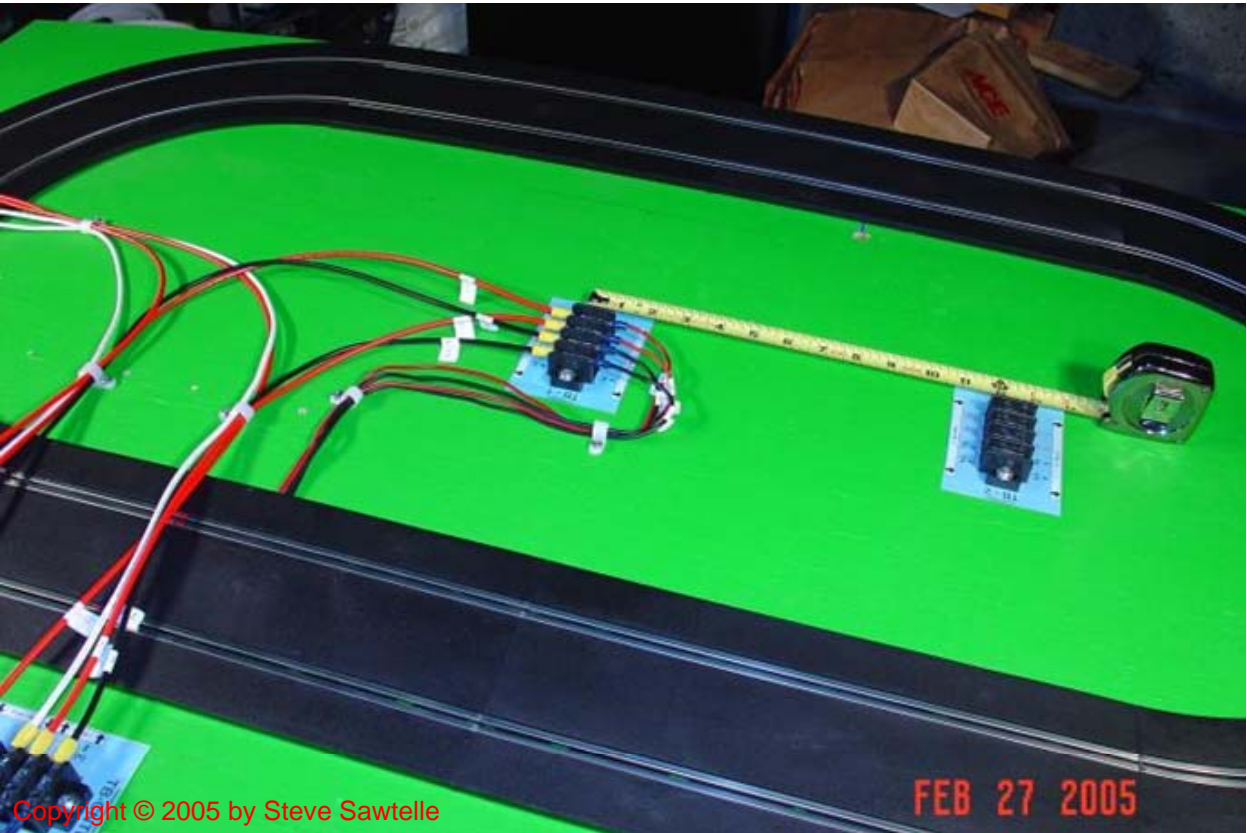
Instructions

- 1. Measure length of wire needed. Cut wire to length, crimp and solder spade terminal connectors to both ends of each wire.
- 2. Label all wires.
- 3. Attach wires between terminal blocks using the wiring templates.

Note: You will attach one end of each wire to the same screws/posts which the power tap wires were attached to in the previous step. Refer to the previous page to ensure each pair of spade terminal connectors is oriented properly.

Please Note:
For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.

12a



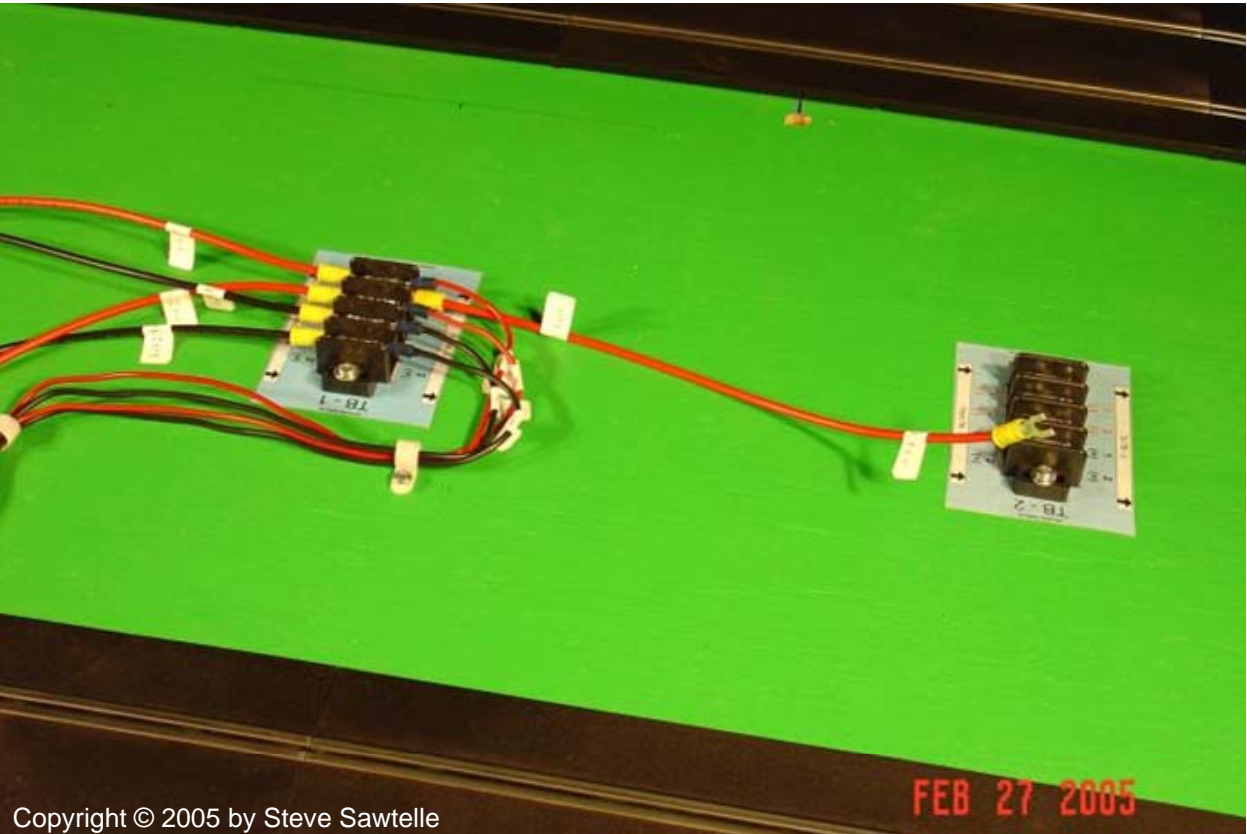
Copyright © 2005 by Steve Sawtelle

12b



Copyright © 2005 by Steve Sawtelle

12c



Copyright © 2005 by Steve Sawtelle

STEP 12

Track Wiring Diagram (Positive Polarity) (TB-1 to TB-2)

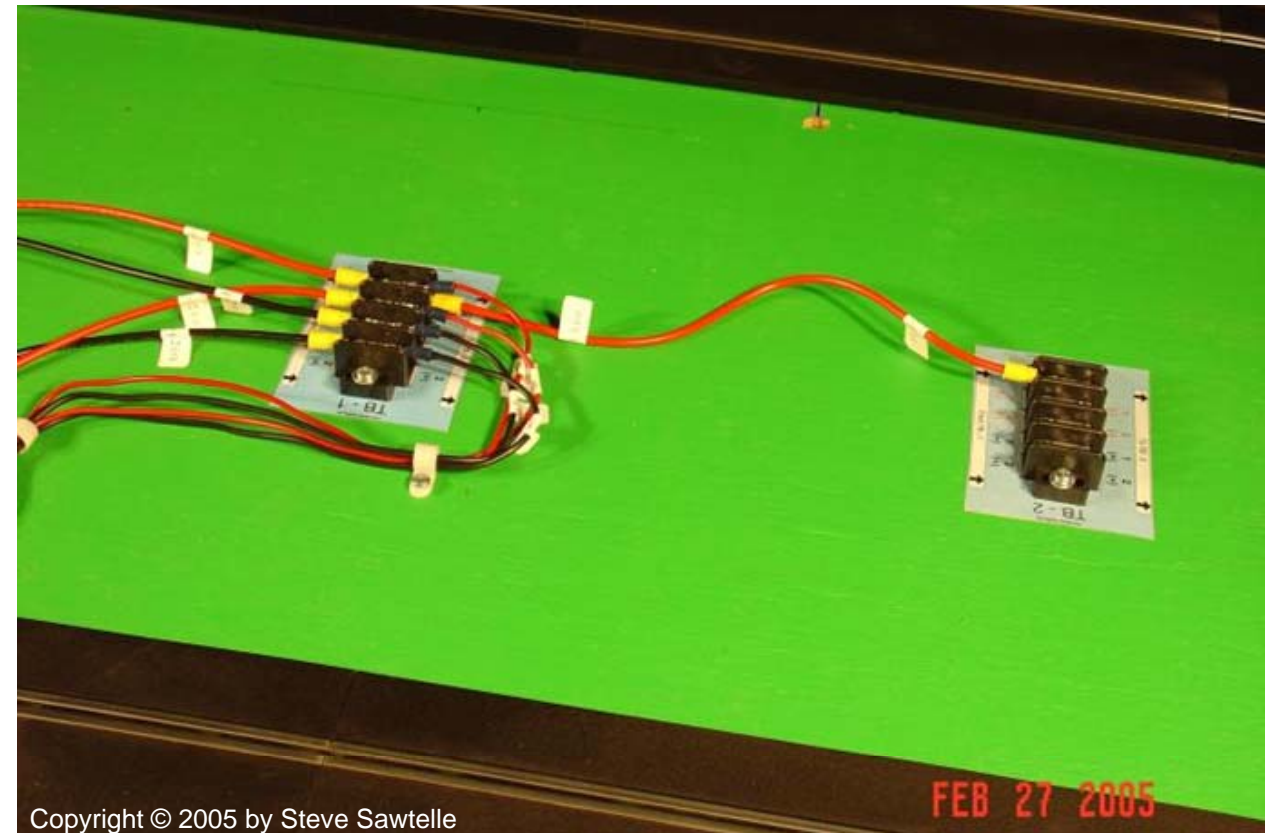
Instructions (cont.)

4. Connect the negative (red) and positive (black) wires for Lane 1 as shown. The wiring templates will ensure the wires are connected to the correct screws/posts.
5. Referring to picture 12j, note the doubled up spade connectors on the terminal block screws/posts corresponding to Lane 1

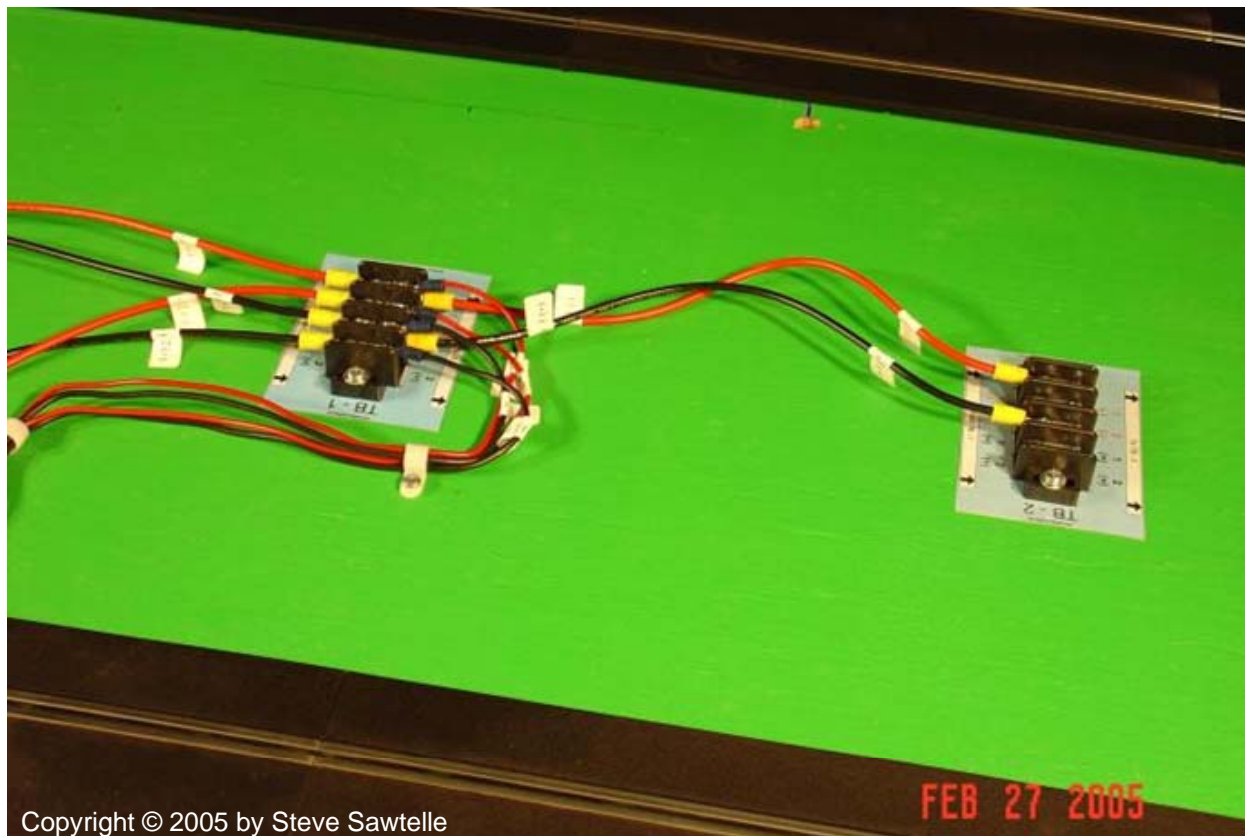
Please Note:

For illustrative purposes, track wiring for the sample layout is run on top of the table.
You will (normally) run the wiring on the underside of the table.

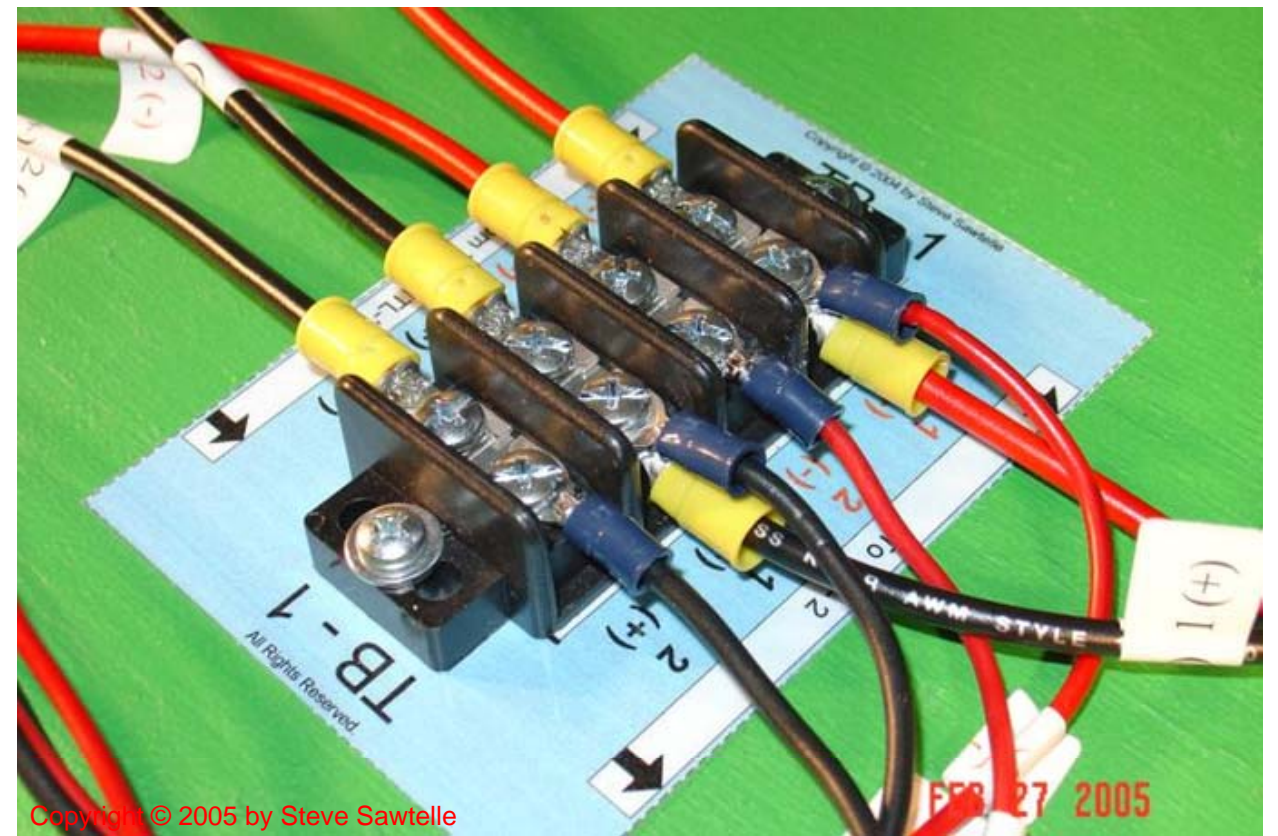
12h



12i



12j



STEP 12

Track Wiring Diagram (Positive Polarity) (TB-1 to TB-2)

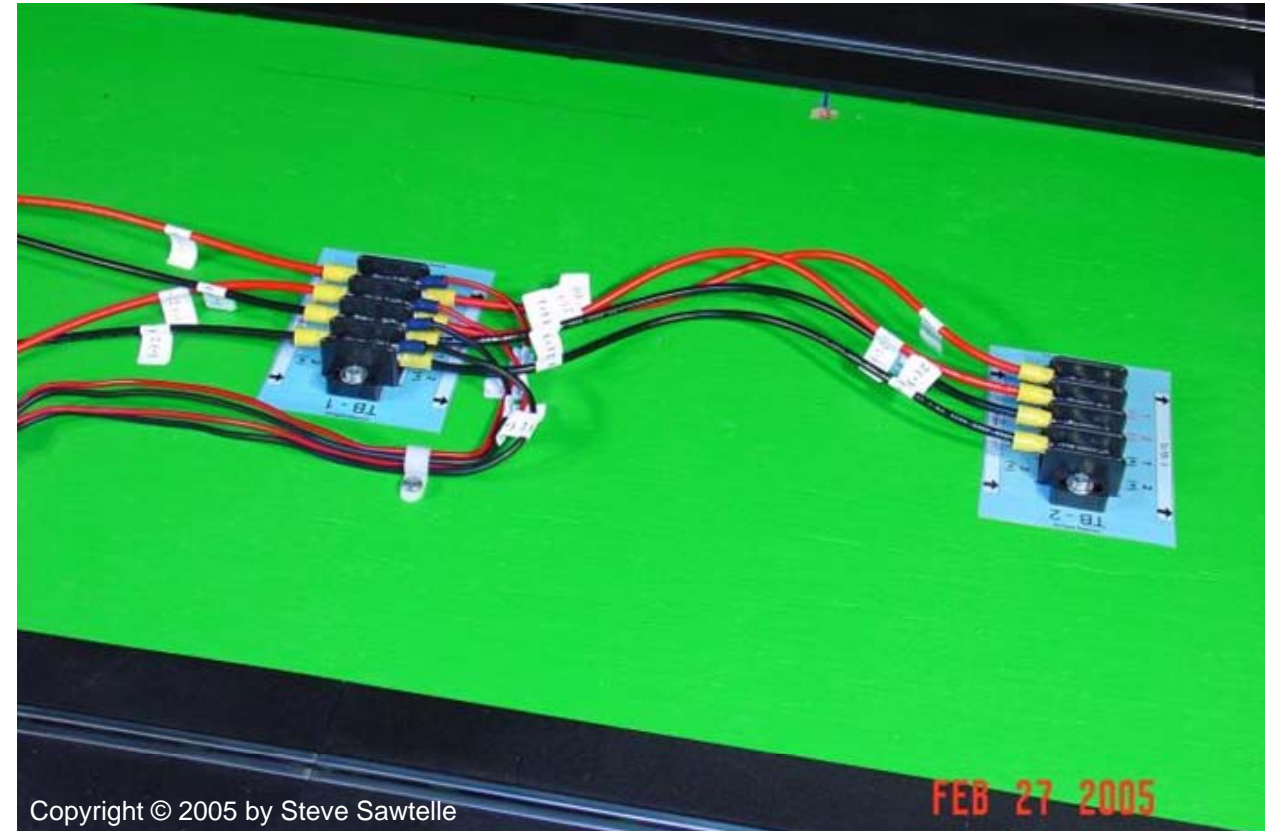
Instructions (cont.)

6. Connect the negative (red) and positive (black) wires for Lane 2 as shown. The wiring templates will ensure the wires are connected to the correct screws/posts.
7. Use cable clamps to tidy up the wiring.
8. Referring to picture 12m, note the doubled up spade connectors on the terminal block.

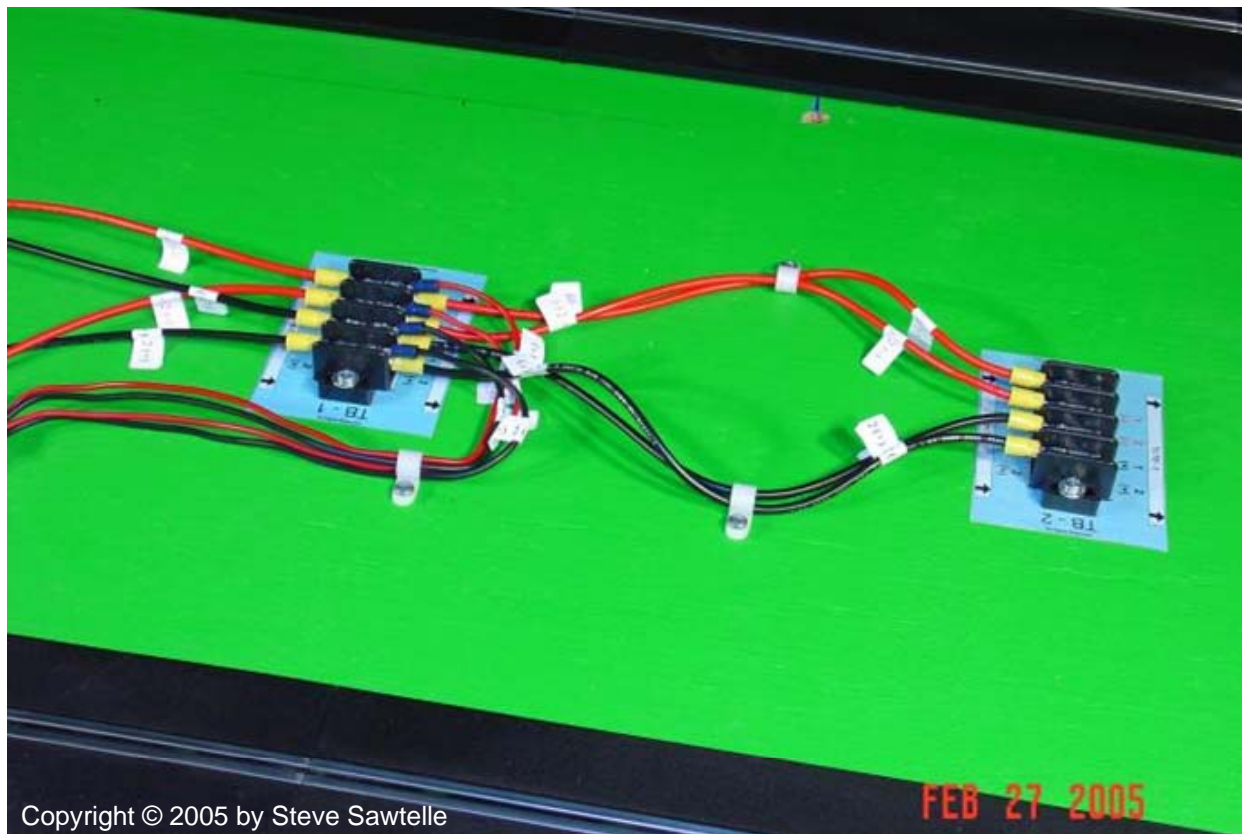
Please Note:

For illustrative purposes, track wiring for the sample layout is run on top of the table.
You will (normally) run the wiring on the underside of the table.

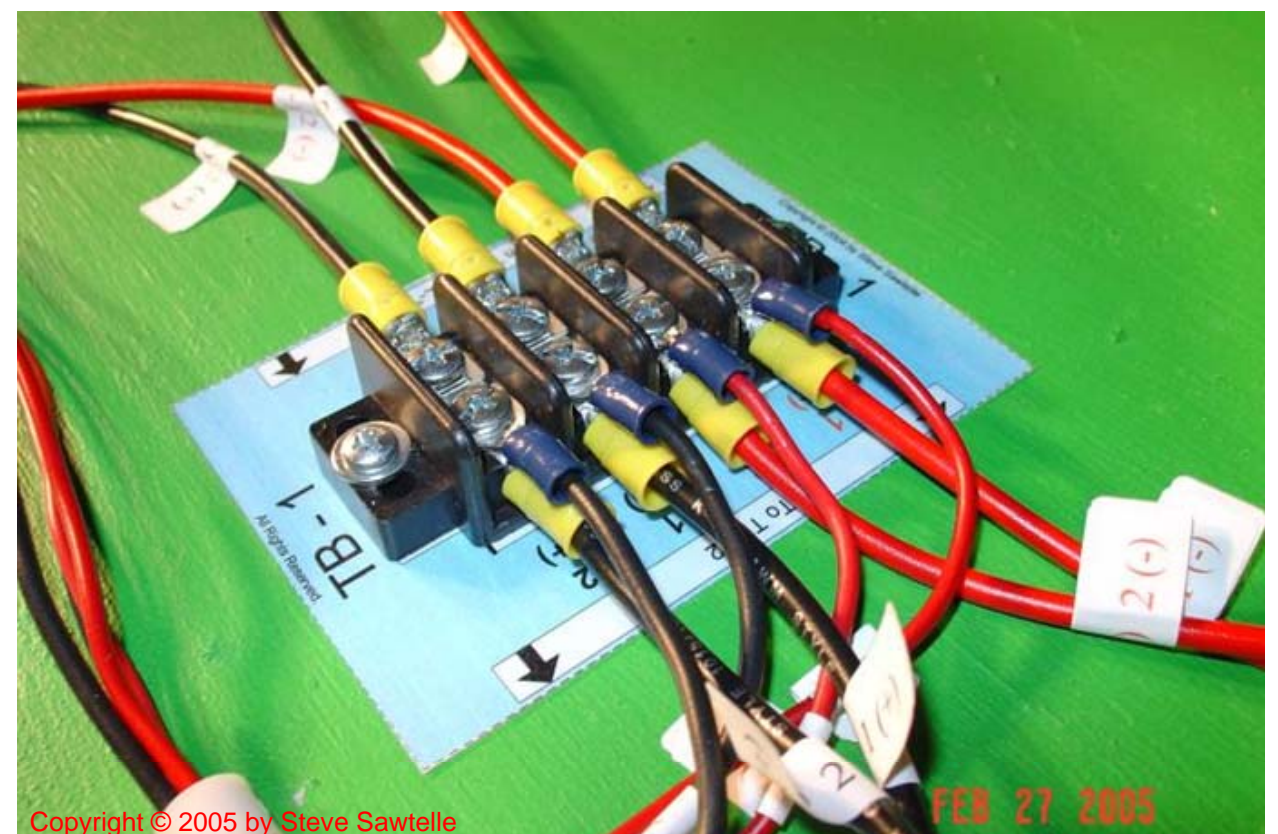
12k



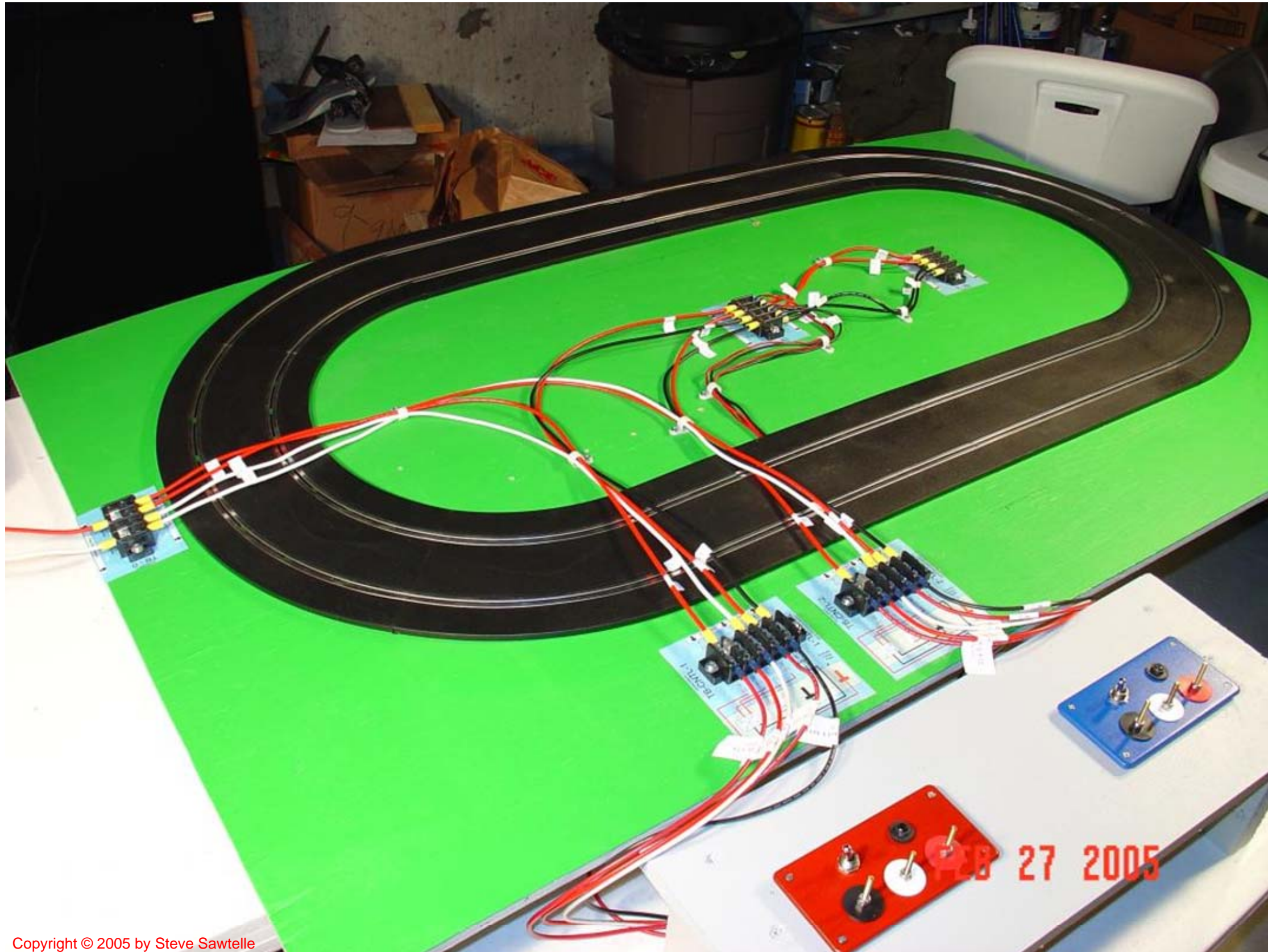
12l



12m

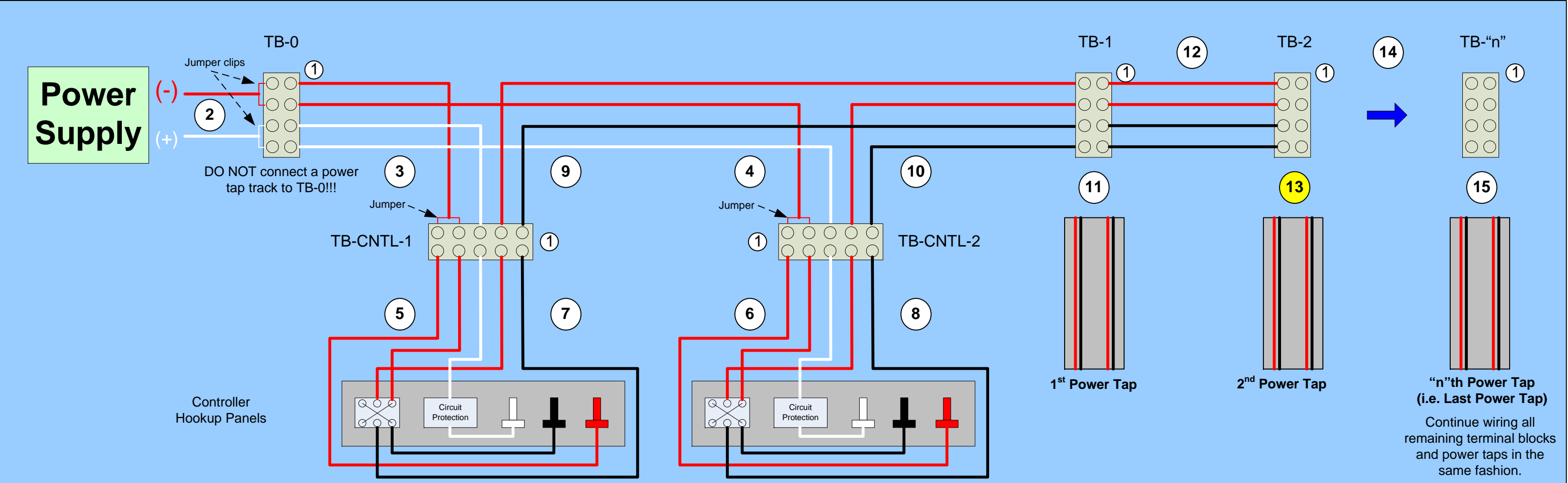


Track Wiring Diagram (Positive Polarity) (TB-1 to TB-2)



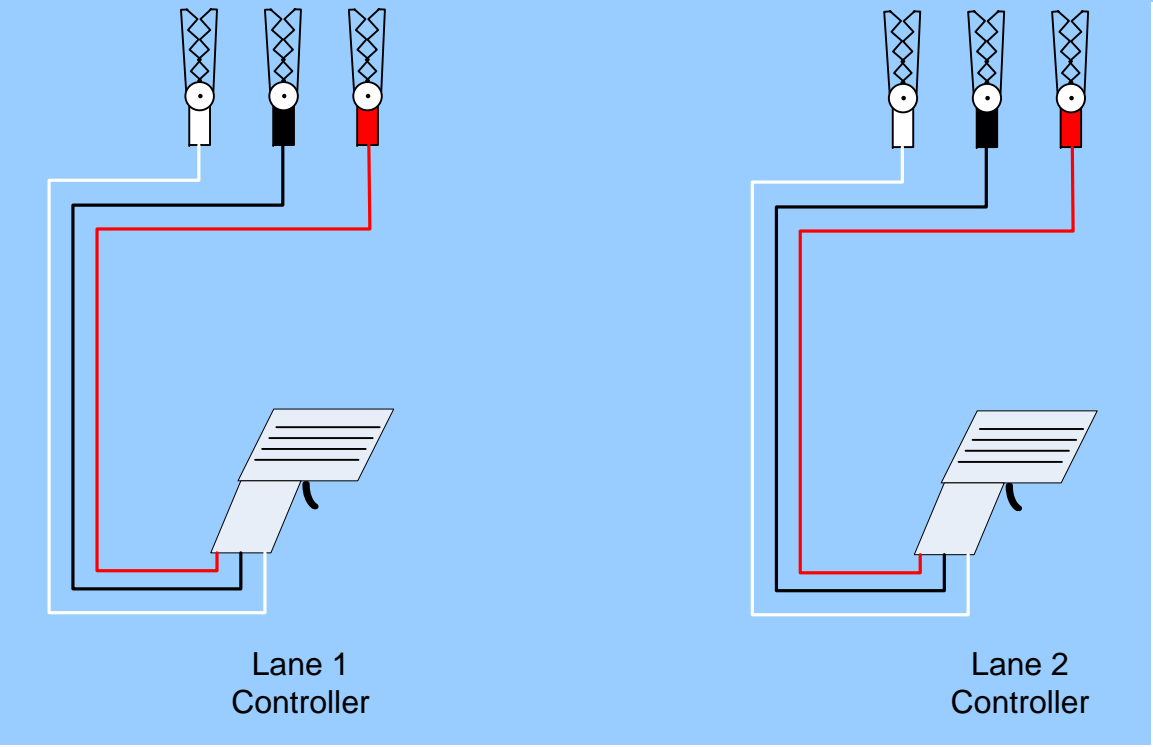
Copyright © 2005 by Steve Sawtelle

Track Wiring Diagram (Positive Polarity) (2nd Power Tap)



Instructions:

- 1. Connect the first power tap track to terminal block “TB-2”. Refer to the next page for more detailed instructions.
- 2. Test your wiring before proceeding. Refer to the “Basic Track Wiring Testing and Troubleshooting” section at the end of this document.
- 3. Do not proceed to the next step until all lanes have passed this testing.

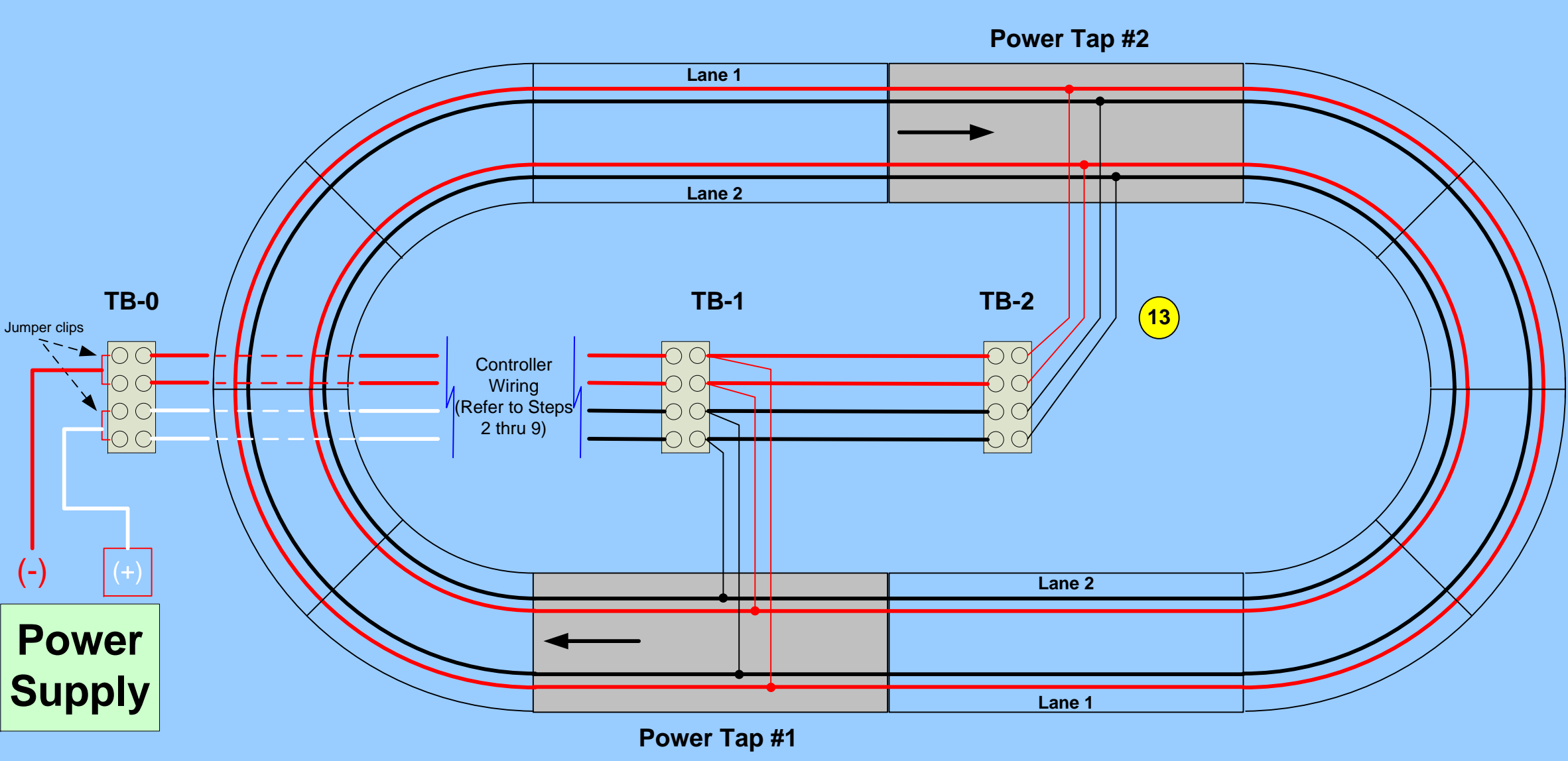


IMPORTANT!!!

- 1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
- 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- 4. Label ALL wires
- 5. Use wiring templates for all terminal blocks (designated as “TB-xxx” in diagram)
- 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- 7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
- 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is “tripped” (or “blown”). Correct the problem BEFORE turning power back on again.

Track Wiring Diagram (Positive Polarity) (Power Tap Connections)

Note:
Lane designations shown are for illustrative purposes only – they may/may not be the same as the Terminal Block Wiring Templates. ALWAYS use the terminal block wiring templates as the basis for all wiring connections.



Note:
Arrows show desired direction of car travel for Power Tap tracks located throughout the example layout. The orientation of track rails (red, black) shown for each lane MUST be consistent for ALL power taps around the entire layout.

- Instructions:**
1. Use the Power Tap Orientation templates provided in the wiring kit to ensure ALL power taps are “oriented” properly. The red and black lines representing track rails on the Power Tap Orientation template MUST match the corresponding red and black wires attached to the underside of the Power Tap track sections.
A. Lanes - Lane 1 / Lane 2 designations are consistent for ALL power taps
B. Rail/wiring – for a given lane, the “red” and “black” wires attached to the underside of the rails are consistent for ALL power taps.
 2. For each Power Tap, label all wires to be consistent with the Power Tap Orientation template. Labels should identify the Lane # and “+” for “black” wires or “-” for “red” wires.
 3. For each Power Tap, connect each wire to the corresponding screw/post on the terminal block associated with the Power Tap. Use the wiring template for the terminal block as the basis for all connections.
 4. Double-check all connections (compare labels on Power Tap wires to wiring template on terminal block). Ensure all terminal block screws/posts are snug – do not over tighten.

STEP 13

Track Wiring Diagram (Positive Polarity) (2nd Power Tap)

Power Tap Wiring Basics

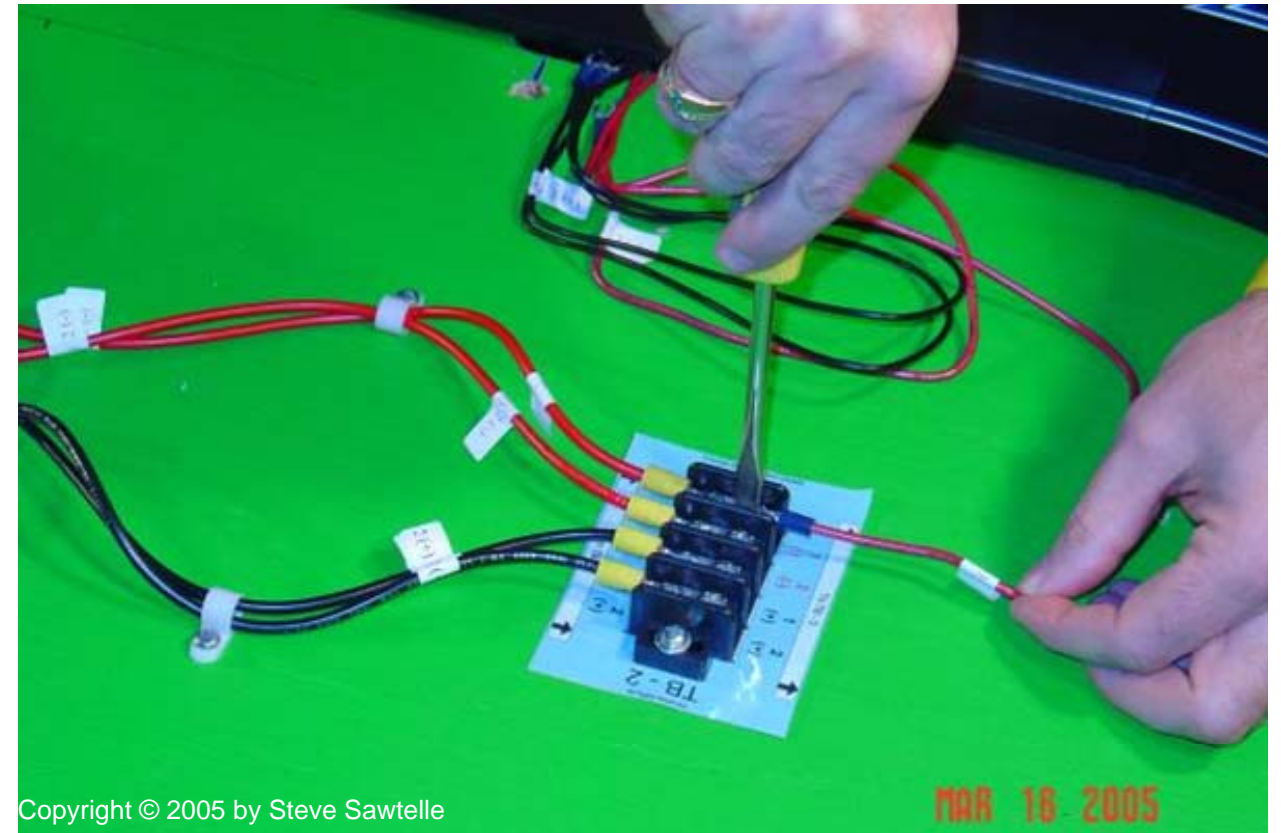
1. Ensure all power tap wires are labeled properly (see earlier instructions).
2. Connect power taps wires for lane 1 (use wiring template).

Note: Power tap wires can be connected to either side of terminal block. Since this is our "last" power tap for this layout, it will be easier to make the connections on the unused set of screws/posts as shown.

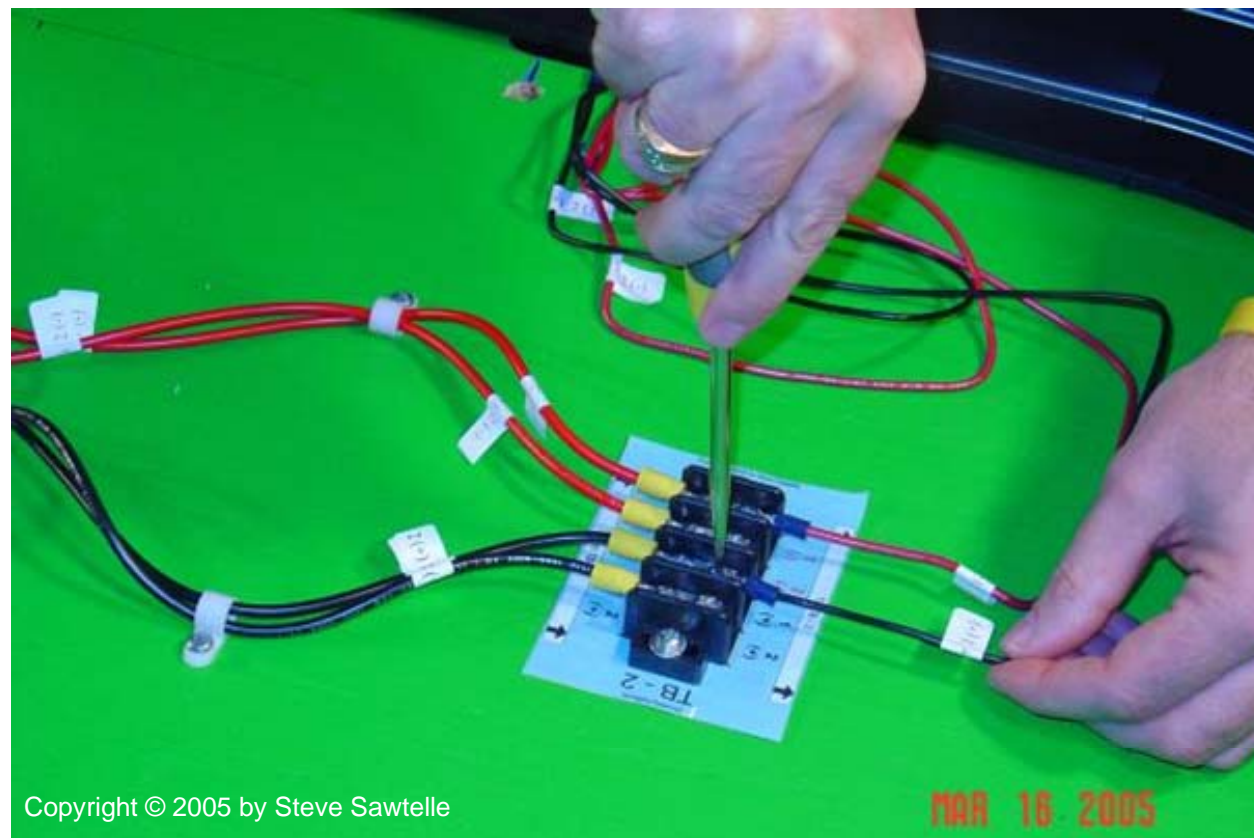
Please Note:

For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.

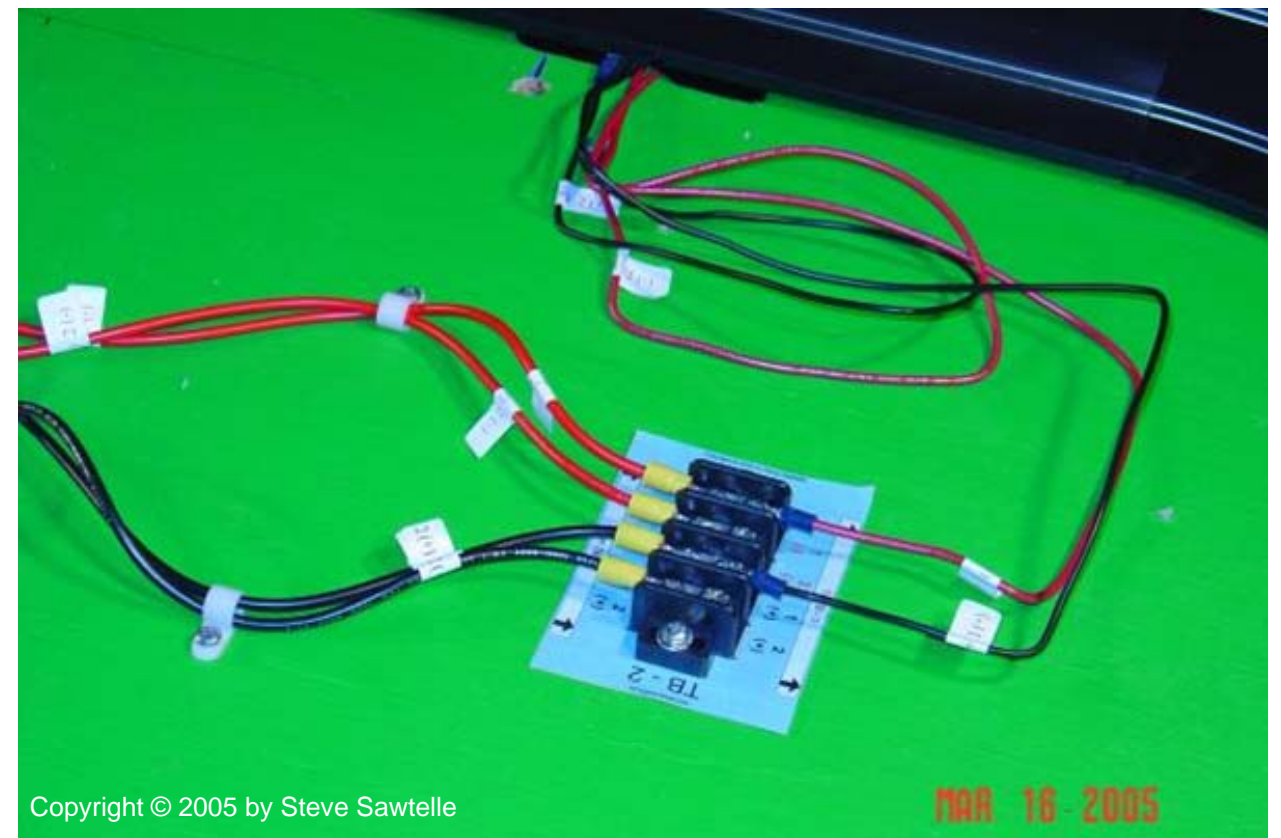
13a



13b



13c



Track Wiring Diagram (Positive Polarity) (2nd Power Tap)

Power Tap Wiring Basics (continued)

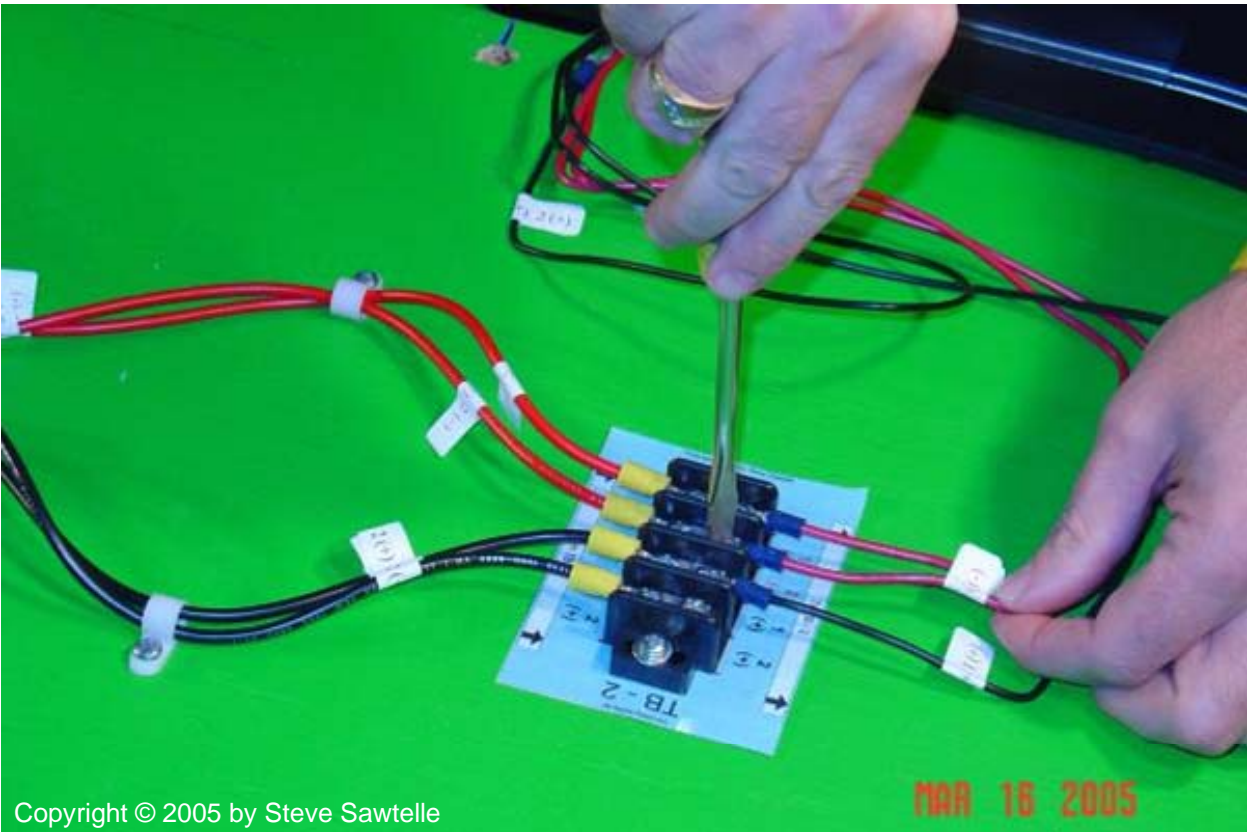
- 3. Hookup controller for Lane 1 and place car on track (Lane 1...)
- 4. Turn on power. If problems are evident, turn off power immediately
- 5. Test wiring (car should travel around track).
- Note: If problems encountered, refer to “Testing and Troubleshooting” section of guide.*
- 6. Once testing is successfully completed, turn of power and unplug power supply.
- 7. Connect power tap wires for Lane 2 (using Wiring Template)

Please Note:
For illustrative purposes, track wiring for the sample layout is run on top of the table.
You will (normally) run the wiring on the underside of the table.

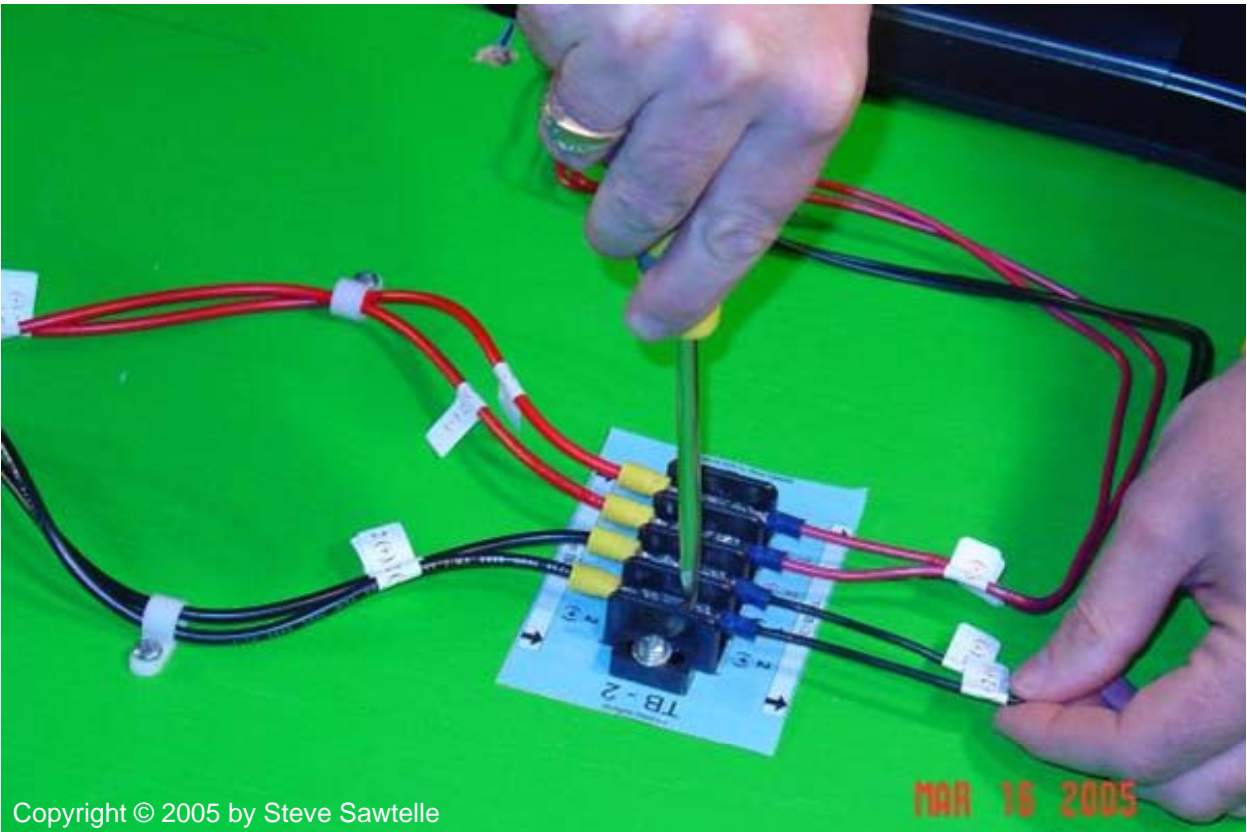
13d



13e



13f



Track Wiring Diagram (Positive Polarity) (2nd Power Tap)

Power Tap Wiring Basics (continued)

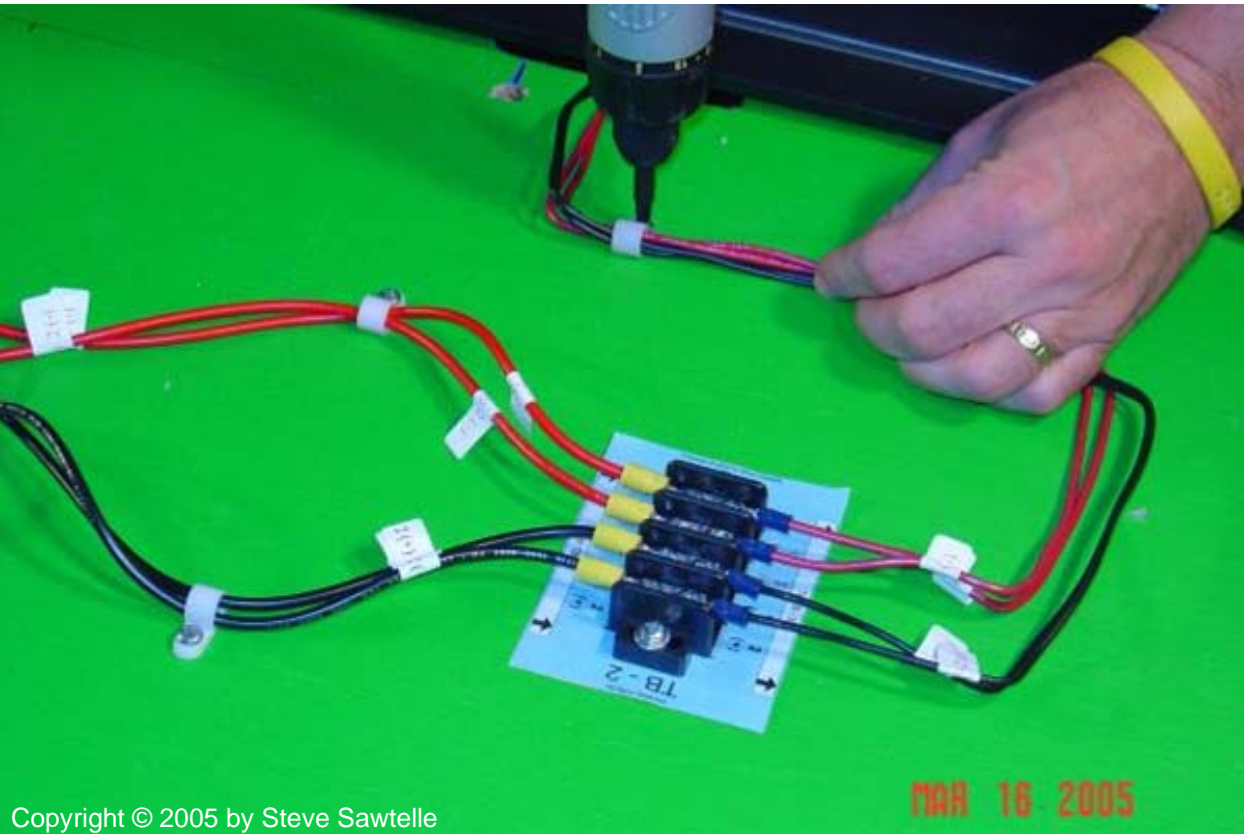
- 8. Hookup controller for Lane 2 and place car on track (Lane 2...)
 - 9. Turn on power. If problems are evident, turn off power immediately
 - 10. Test wiring (car should travel around track).
- Note: If problems encountered, refer to “Testing and Troubleshooting” section of guide.*
- 11. Once testing is successfully completed, turn of power and unplug power supply.
 - 12. Use wire clips to secure power tap wiring to underside of table.

Please Note:
For illustrative purposes, track wiring for the sample layout is run on top of the table. You will (normally) run the wiring on the underside of the table.

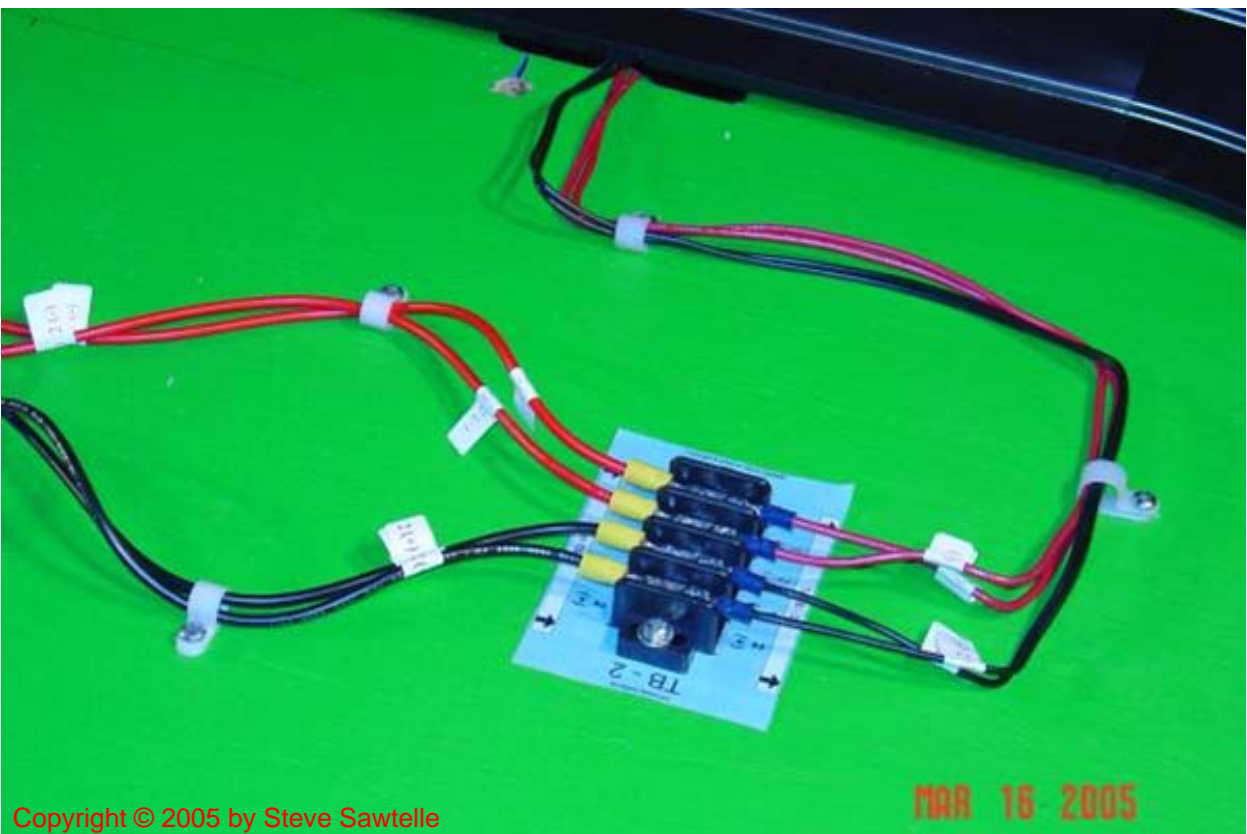
13g



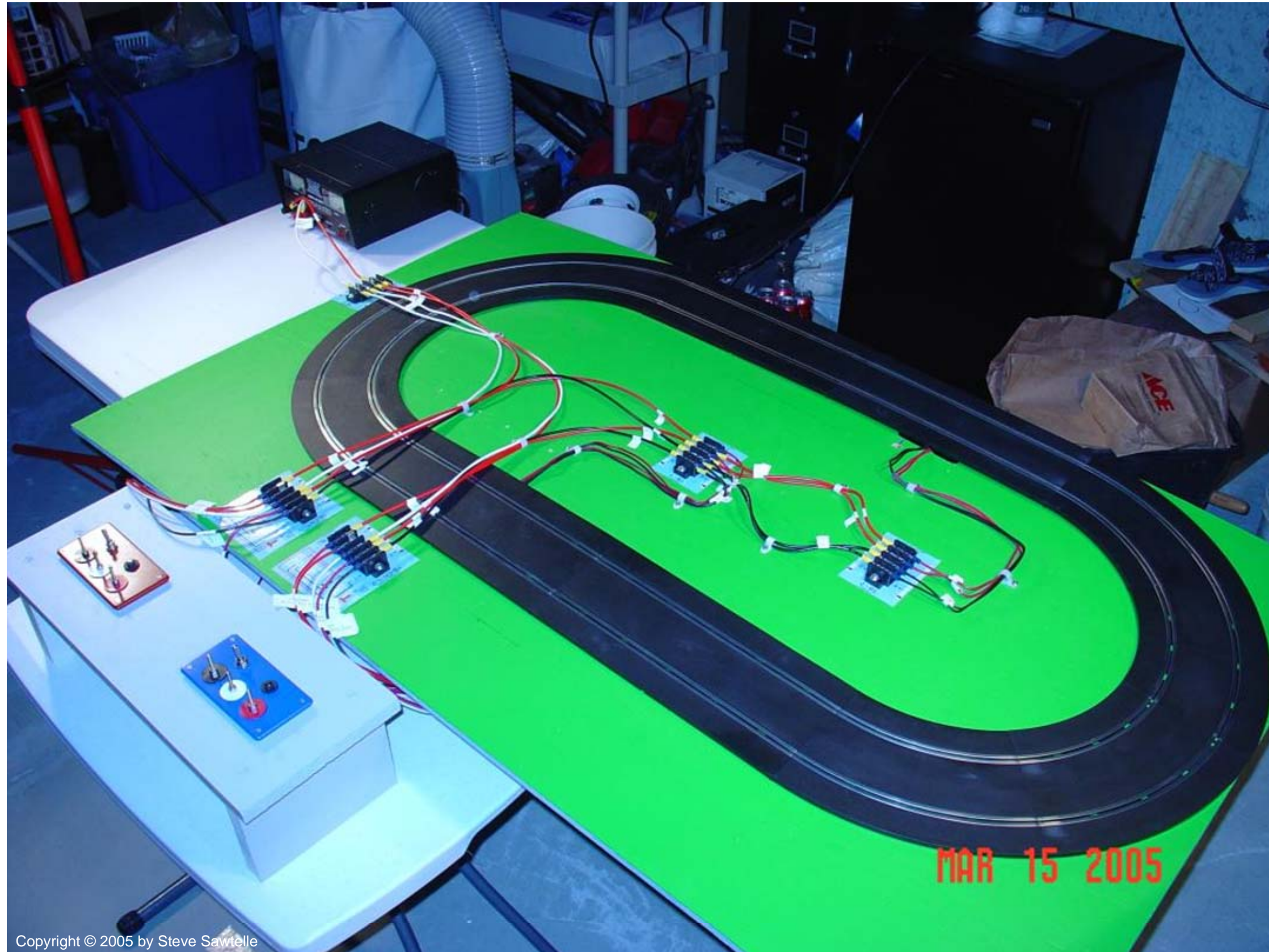
13h



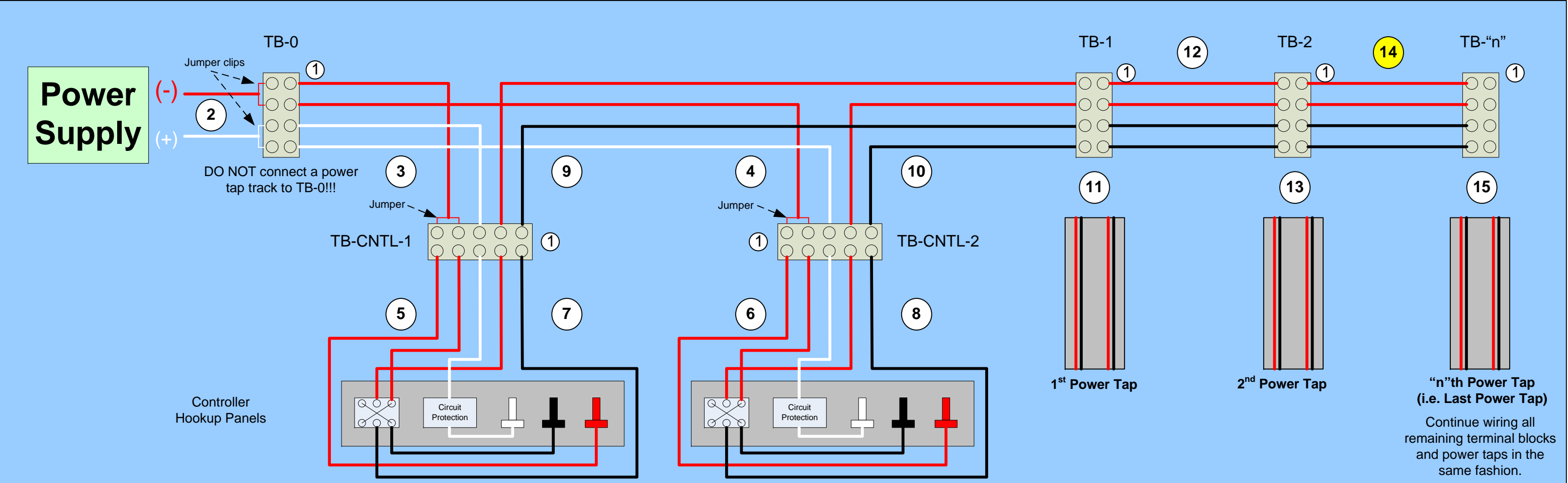
13i



Track Wiring Diagram (Positive Polarity) (2nd Power Tap)

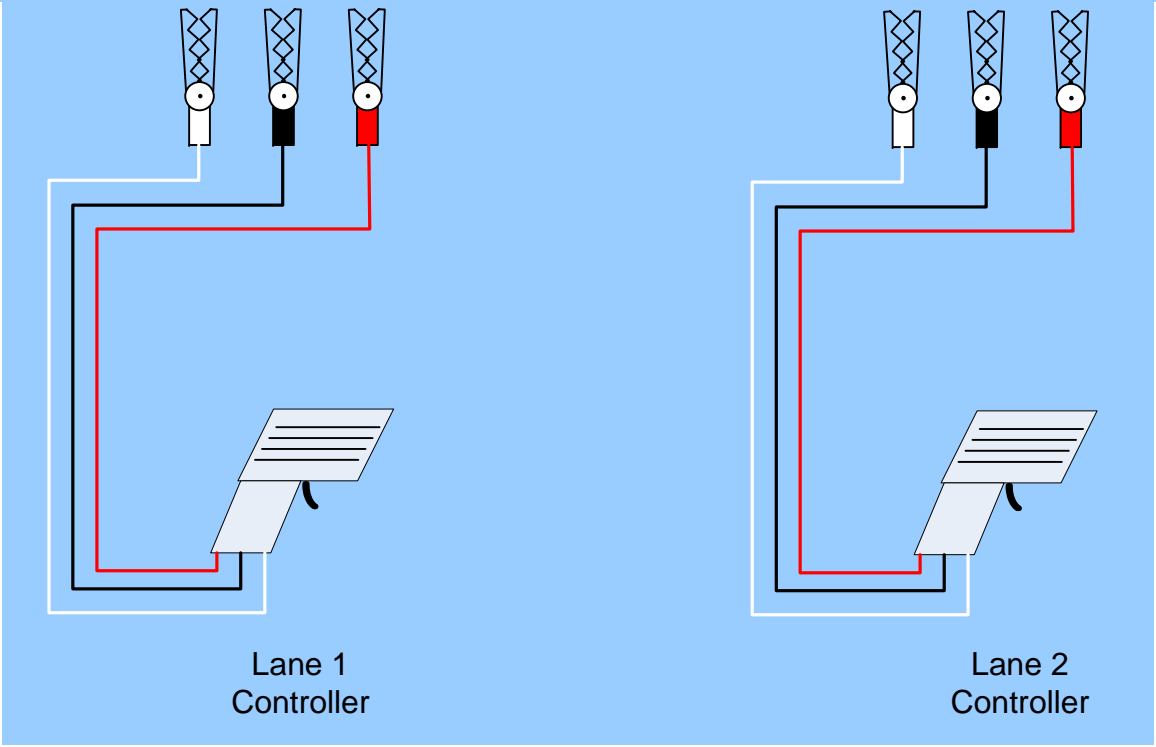


Track Wiring Diagram (Positive Polarity) (Additional Terminal Blocks)



Instructions:

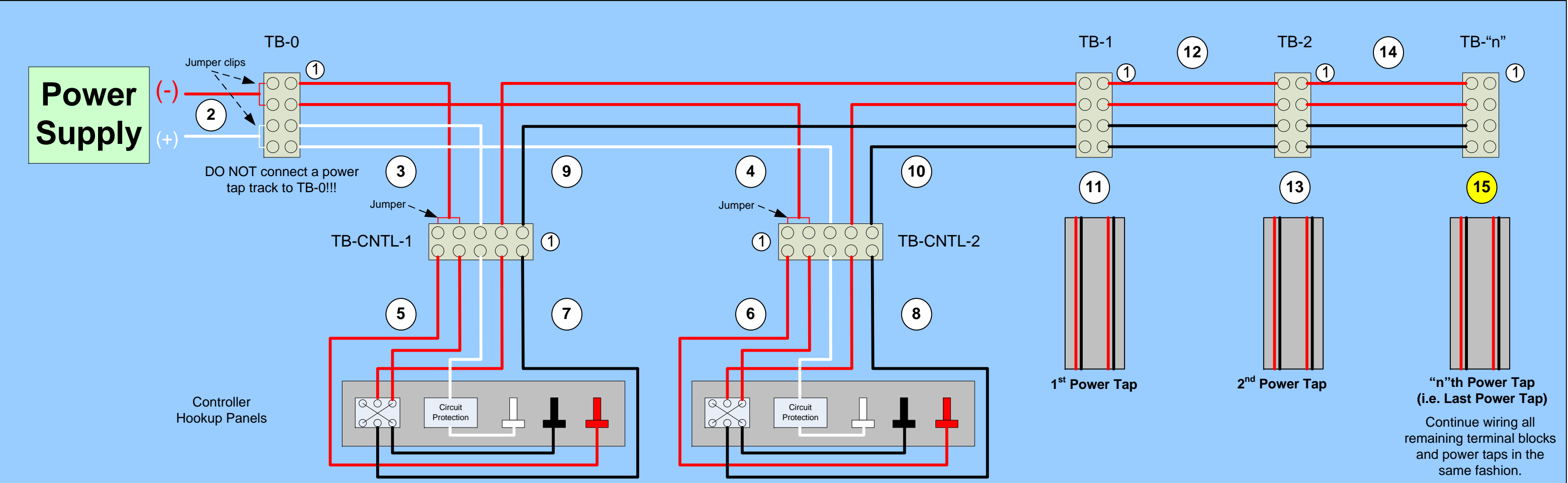
- 1. Continue measuring “positive” (black) and “negative” (red) wires for the Lane 1 and Lane 2 connections between remaining sets of terminal blocks.
- 2. Cut all wire to the required length.
- 3. Strip 5/16" of sheathing from both ends of each wire. Crimp AND solder heavy duty spade terminals to all wire ends.
- 4. Label all wires:
 - a. “Black” Lane 1 = “1 (+)”; Lane 2 = “2 (+)”
 - b. “Red” Lane 1 = “1 (-)”; Lane 2 = “2 (-)”
- 5. Use the wiring templates for the remaining sets of terminal blocks to connect the wires to the designated screws/posts. Screws/posts should be snug -be careful not to over tighten.



IMPORTANT!!!

- 1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
- 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- 4. Label ALL wires
- 5. Use wiring templates for all terminal blocks (designated as “TB-xxx” in diagram)
- 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- 7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
- 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is “tripped” (or “blown”). Correct the problem BEFORE turning power back on again.

Track Wiring Diagram (Positive Polarity) (Additional Power Taps)



Instructions:

- 1. Connect remaining power taps one at a time using the detailed instructions for Step 15 on the page which follows.
- 2. As each additional power tap is connected, test your wiring before proceeding to any remaining power taps. Refer to the "Basic Track Wiring Testing and Troubleshooting" section at the end of this document.
- 3. Do not proceed wiring the next terminal block or power tap until all lanes have passed this testing.

IMPORTANT!!!

- 1. Seek assistance if you are unclear on ANY details associated with your track wiring project.
- 2. ALWAYS turn off AND unplug the power supply BEFORE doing any work on the track wiring
- 3. ALWAYS employ a circuit protection device (e.g. fuse) in EACH lane's wiring
- 4. Label ALL wires
- 5. Use wiring templates for all terminal blocks (designated as "TB-xxx" in diagram)
- 6. Use stranded copper wire for all track wiring. Recommendations: 1) Layouts under 100' – 14 or 12 gauge; 2) layouts over 100' – 12 gauge
- *** Note: Track wiring kits are available with wire connectors for 12 or 14 gauge wire – be sure to order the wiring kit with connectors for the wire size you plan to use.
- 7. Use wire with sheathing colors which match the wire colors used in this guide's diagrams
- 8. Crimp AND solder ALL spade terminals to the end of each wiring segment which gets attached to a terminal block (TB).
- 9. BEFORE turning on power:
 - a. Use wire labels and wiring templates to double-check ALL connections
 - b. Double-check all terminal block screws are tight
- 10. When testing track wiring, turn off power IMMEDIATELY if a circuit protection device is "tripped" (or "blown"). Correct the problem BEFORE turning power back on again.

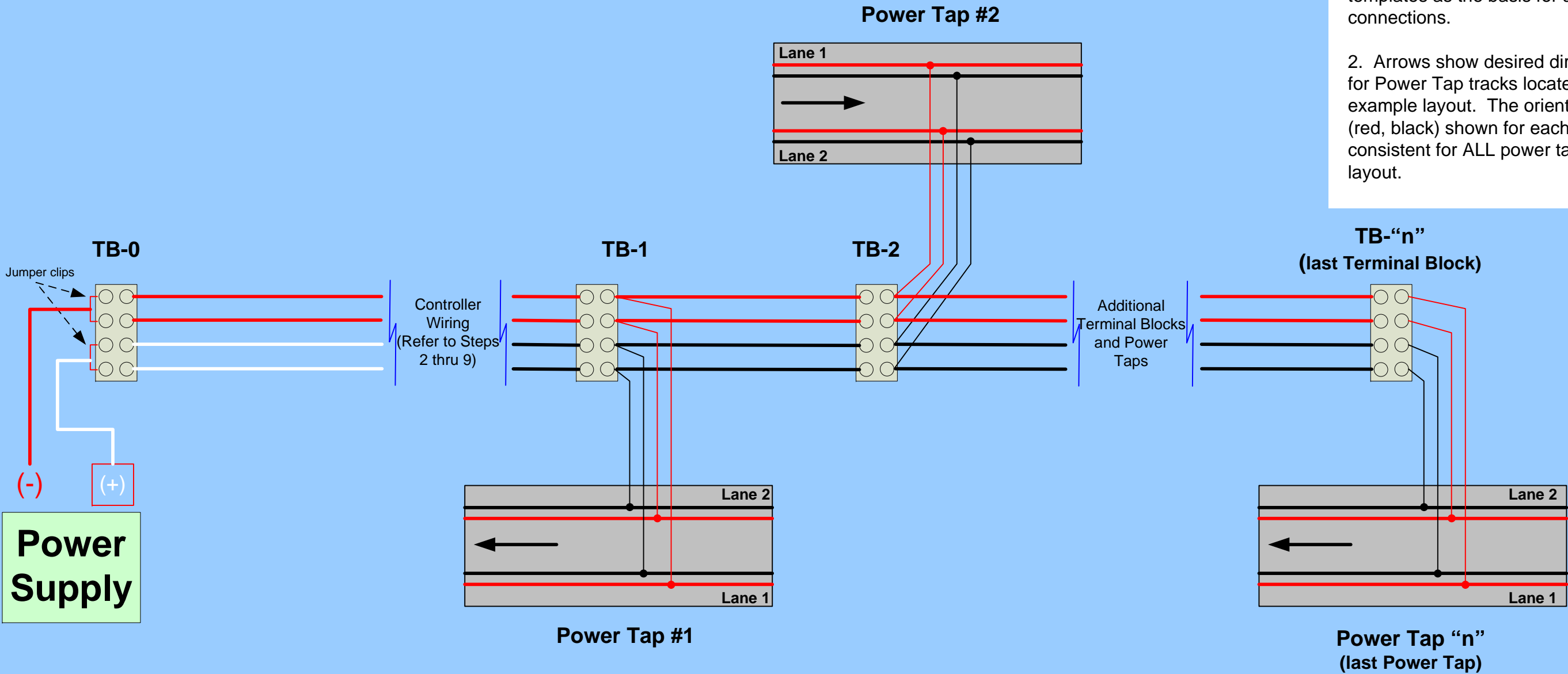
Track Wiring Diagram (Positive Polarity) (Power Tap Connections)

Instructions:

- 1. Install, wire and test all remaining terminal blocks and power taps in the same fashion as TB-1 and TB-2.

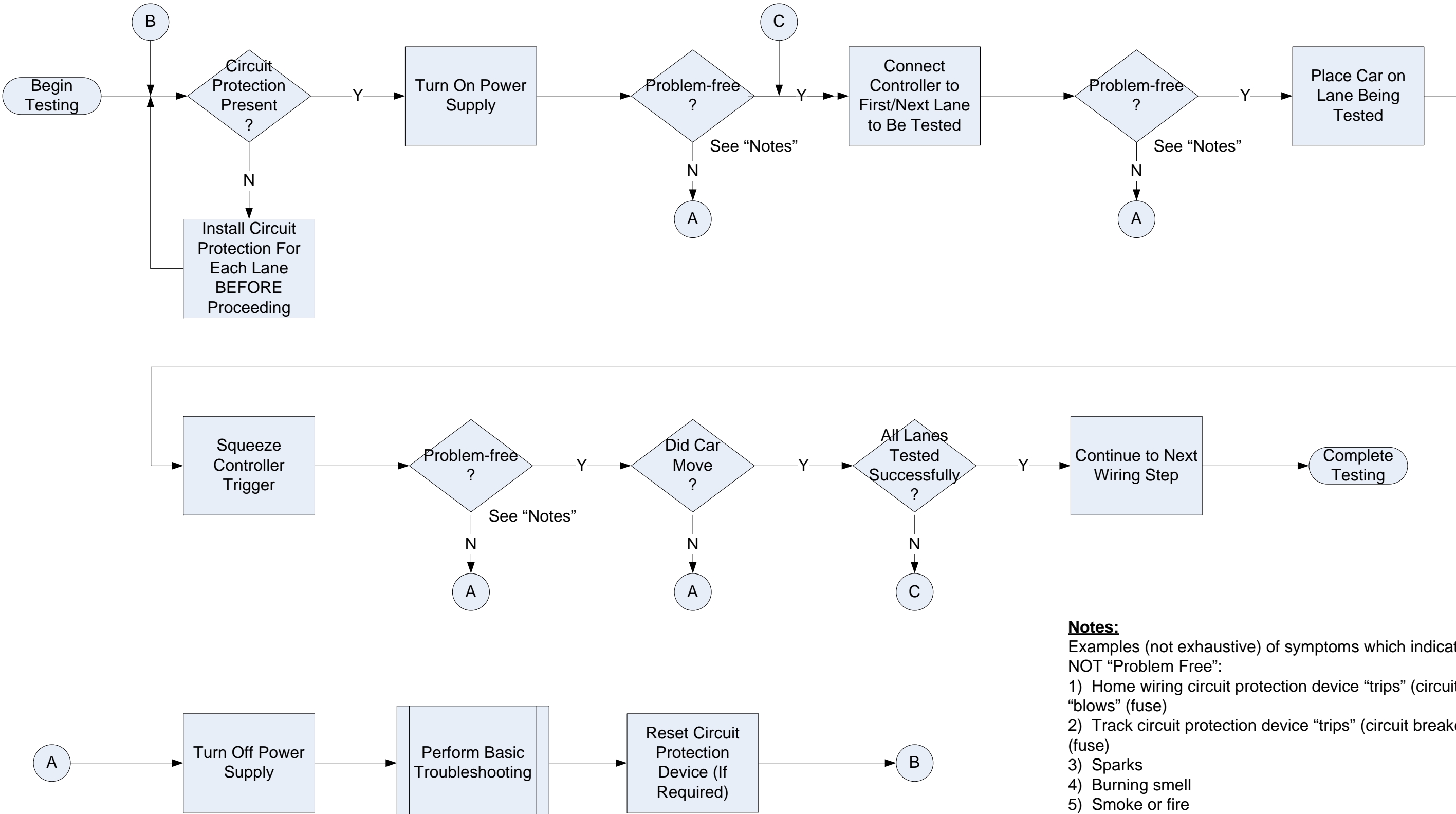
Notes:

- 1. Lane designations shown are for illustrative purposes only – they may/may not be the same as the Terminal Block Wiring Templates. ALWAYS use the terminal block wiring templates as the basis for all wiring connections.
- 2. Arrows show desired direction of car travel for Power Tap tracks located throughout the example layout. The orientation of track rails (red, black) shown for each lane must be consistent for ALL power taps around the entire layout.



Basic Track Wiring Testing Procedure and Troubleshooting

(Part 1)



Notes:
Examples (not exhaustive) of symptoms which indicate testing is NOT "Problem Free":
1) Home wiring circuit protection device "trips" (circuit breaker) or "blows" (fuse)
2) Track circuit protection device "trips" (circuit breaker) or "blows" (fuse)
3) Sparks
4) Burning smell
5) Smoke or fire

Basic Track Wiring Testing Procedure and Troubleshooting

(Part 2)

Power Supply Related Problems

- 1) Make sure the power supply is plugged in and turned on
- 2) Ensure the wall outlet the power supply is plugged into has power (e.g. circuit breaker tripped?)
- 3) If the power supply is plugged into a power strip or surge protector,
 - a) Make sure the power strip/surge protector is plugged into a wall outlet
 - b) Make sure the power strip/surge protector is turned on
 - c) If the power strip / surge protector has a circuit protection device, check to see if it needs to be replaced (fuse) or reset (circuit breaker)
- 4) If the power supply has a circuit protection device, check to see if it needs to be replaced (fuse) or reset (circuit breaker)
- 5) If possible, try swapping the power supply with another one. If the problem disappears, the original power supply may be defective and require repair/replacement.

Controller Related Problems

- 1) Use an ohm meter to ensure power is available where the controller attaches to track wiring (e.g. controller hookups)
- 2) Check controller for obvious problems such as broken wires or soldered connections which have failed
- 3) Ensure all controller wires are attached to the driver's station (e.g. controller hookups) or track correctly
- 4) For electronic controllers, check to ensure controller polarity matches track polarity
 - a) Place car on track
 - b) Touch "positive" wires to respective posts ("black" and "white" wires assuming track wired for positive polarity); do NOT attach / touch braking wire
 - c) Car should NOT move; if car moves, controller polarity must be reversed
- 5) If controller has built-in circuit protection, check to see if it needs to be replaced (fuse) or reset (circuit breaker)
- 6) Ensure the "wiper" is making contact with the resistor (non-electronic controller) or diodes (electronic controller)
- 7) Try swapping the controller with another one. If the problem disappears, the original controller may be defective and require repair/replacement.

Wiring Related Problems

- 1) Ensure EVERY wire is labeled!
 - a) Check for improperly labeled wires (e.g. the connection is "right" based on the label but the wrong label was attached to a given wire)
- 2) Ensure all power taps are oriented in the same manner.
 - a) Power tap wires for each lane must remain consistent around the entire layout (i.e. ALL wires labeled Lane 1 are associated with Lane 1 ONLY)
 - b) For a given lane, the "positive" (black wire) and "negative" (red wire) rails must remain consistent around the entire layout
- 3) Check all terminal block wiring connections – ensure each wire is connected to the "right" terminal block screw/post and all connections are tight
 - a) Main wiring runs from terminal block to terminal block
 - b) Power tap wires
- 4) Make sure "ends" of wires for power taps which have not been hooked up yet are not touching one another (short circuit).
- 5) Check to see if any wires are missing (e.g. forgot to attach a wire)
- 6) Check to see if one or more wire connections are loose

General Problems

- 1) Check for poor connections between track sections
- 2) Check for a "break" in copper tape or braid (routed tracks)
- 3) Check for metal objects (e.g. screwdriver, body retaining screw) touching both track rails causing short circuit

Other Recommended Products

SensorTrak (tm)

Now that you've got your track power squared away, you're ready to install a PC-based race management system. Whether you're just running laps by yourself or planning to host races, a race management system can make your racing much more fun. There are several to choose from; however, all require some way to "trigger" the software whenever a car passes the start/finish line on your layout. This is where the SensorTrak comes in – it uses an IR emitter and photo-transmitter installed on either side of each track slot to send a signal to the PC-based race management software anytime a car's guide passes by. Installation couldn't be easier and the developer, Brent Carlson, is known for his service and support. For more information, visit Brent's website at <http://slotcars.carlsoncomputers.com/> or see the "Links" section of my website (www.slotcarcorner.com). I've used a pair (4 lane layout) in my track for about 7 months now - highly recommended.

