

Wasatch N-Scale  
Module Standards & Specifications

For most of the module standards and construction suggestions you can refer to the N-Trak module "how to" book. Some of the N-Trak standards have been revised or are not used by Wasatch N-Scale. Any questions regarding standards or construction requirements should be brought before the club at a regular meeting.

**MODULES** – A module can be constructed in any length with the minimum being 2' and the maximum 8'. Several units may be combined together to form a group of 'dedicated' modules making a module set of up to 12' long. The height is 46" from the floor to the top of the rail. The minimum depth is 24" and up to 6" may be added to both the front and rear of the module. If extra is added to the rear the skyboard should still come forward in some manner to the standard position. This will ensure that all skyboards match up at the ends. Any extra added to the front should be painted to match the standard fascia color. Skyboard height is 14". Layout operation is from the front and any operation controls should be mounted so as to be accessible from the front of the module. There is no standard profile for the ends of the module. Modules are connected together by means of C-clamps.

**LEGS** - Legs on modules must have a leveling bolt of some kind to allow adjustment an inch above and below the 46" normal height. Each module should have it's own set of legs and be able to stand on it' own. Legs should be securely fasted to the frame and may be removable or folding.

**CONNECTING TRACKS** - To allow for flexibility the tracks will end 1 ½ " from the module face. Use a square to accurately measure and cut your track. Tracks must be straight a distance of 3" from the module edge. After the sections are clamped together a straight section of track 3" in length is dropped into place. If a member has two modules that must be together because of special trackage the tracks may be laid to the edge of the module where the two meet.

**MAIN LINE TRACKS** – The two main lines, red outside and yellow inside, are common to all modules and are located 20" and 18 ½" from the skyboard. Track spacing is 1 ½" at the ends and may be as close as 1 ¼ elsewhere. They must be laid with code 55 rail and turnouts. For reliability reasons hand laid track is discouraged on the main lines. High quality commercially made flex track and turnouts such as those made by Railcraft and Atlas are recommended. The minimum radius for curves on mainline tracks is 24" with no grade. If your module is six feet long or more you are encouraged to include a crossover track in either direction between the main lines.

**OPTIONAL BRANCH LINE** – The branch line track is designated as the blue line and is located 1 ½" behind the yellow line. The minimum radius for the branch line is 18" and a 2% grade is allowed. **THIS LINE IS NOT REQUIRED.** If your module has the blue branch line there will be limited locations to put it and still use the branch line tracks.

**END LOOPS** – Our club used special end loop units to allow for continuous operation and provide more flexibility in the layout design and set-up. End loops should be club property. The minimum radius for the end loops is 18" and a skyboard is not required. All other standards apply.

**ELECTRICAL: TRACK** – Track power connections between modules are made using the Anderson PP30 series '30 Amp Powerpole' available locally at Standard Supply. This is a genderless connector that can be stacked using dovetails molded into the housing. The housing comes in various colors. We use red/black for the red line, yellow/black for the yellow line and blue/black for the blue line. Minimum wire size is 16 gage. We have found that these connectors work best when soldered; crimping is not suggested. Do not use common rail type wiring. There should be no electrical connection between any rail on the main lines.

**ELECTRICAL: 110 VOLT** - 110-volt wiring should be installed using power strips with the outlets on the left and the plug on the right as shown in the module drawings. However, the power strips should not be "daisy chained" together throughout the entire layout; they should be connected to a wall outlet at least every 3 or 4 strips. Romex wire in handy boxes is no longer acceptable for 110-volt layout wiring.

## Connectors and Orientation

The Anderson PP30 series 30 Amp Powerpole<sup>®</sup> (available from [www.powerwerx.com](http://www.powerwerx.com) and others) is a genderless connector that can be stacked using dovetails molded into the housings (Figure 1). Unlike the typical DC power application, where + and – orientation must always be maintained, modular railroading occasionally needs to reverse track power connections as modules are reversed in a layout. The genderless nature of the Powerpole connector supports this application.

Track Buses (red, yellow, blue, etc.) and the DC Power Bus (white) are connected between modules using connectors at each end of the module as follows:

- **Track Buses (Right End):** - Anderson 30 Amp Powerpole Red/Black set – The two connector housings are stacked *vertically*, hood up, tongue down, *red over black* (Figure 2, right) using the molded-in dovetails provided (memory aid: “Red-Right”). Each Track Bus pigtail should extend 12” beyond the right end of the module. Connector pairs should be color coded with tape or paint (red/yellow/blue, etc.), or appropriate colored connector housings used in place of the red housing of each pair (i.e., Yel/Blk, Blu/Blk, Grn/Blk etc.) as shown in Figure 4.
- **Track Buses (Left End):** – Anderson 30 Amp Powerpole Red/Black set – The two connector housings are stacked *vertically*, hood up, tongue down, *black over red* (Figure 2, left), using the molded-in dovetails provided. Each Track Bus pigtail should extend 12” beyond the left end of the module. Connector pairs should be color coded with tape or paint (red/yellow/blue, etc.), or appropriate colored connector housings used in place of the red housing of each pair (i.e., Yel/Blk, Blu/Blk, Grn/Blk etc.) as shown in Figure 4.

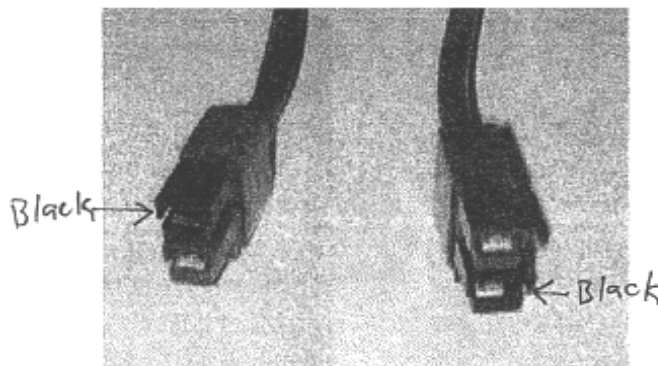
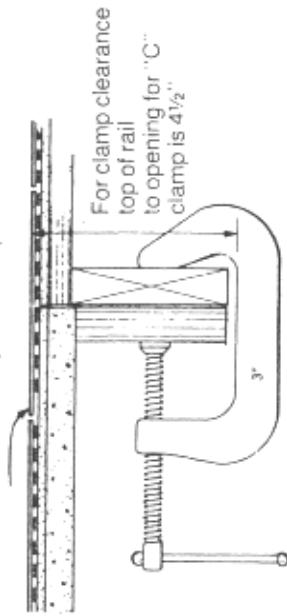


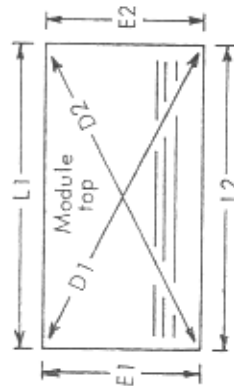
Figure 2 –Track Bus Connectors (Vertical Stacking)

Modules are joined in a layout by clamping with two "C" clamps & inserting **3" Sections of track**

Remove the tie from one end so the rail joiners will slide fully on. Place joiners on other end, put in place and then, with tweezers, slide joiners into position.

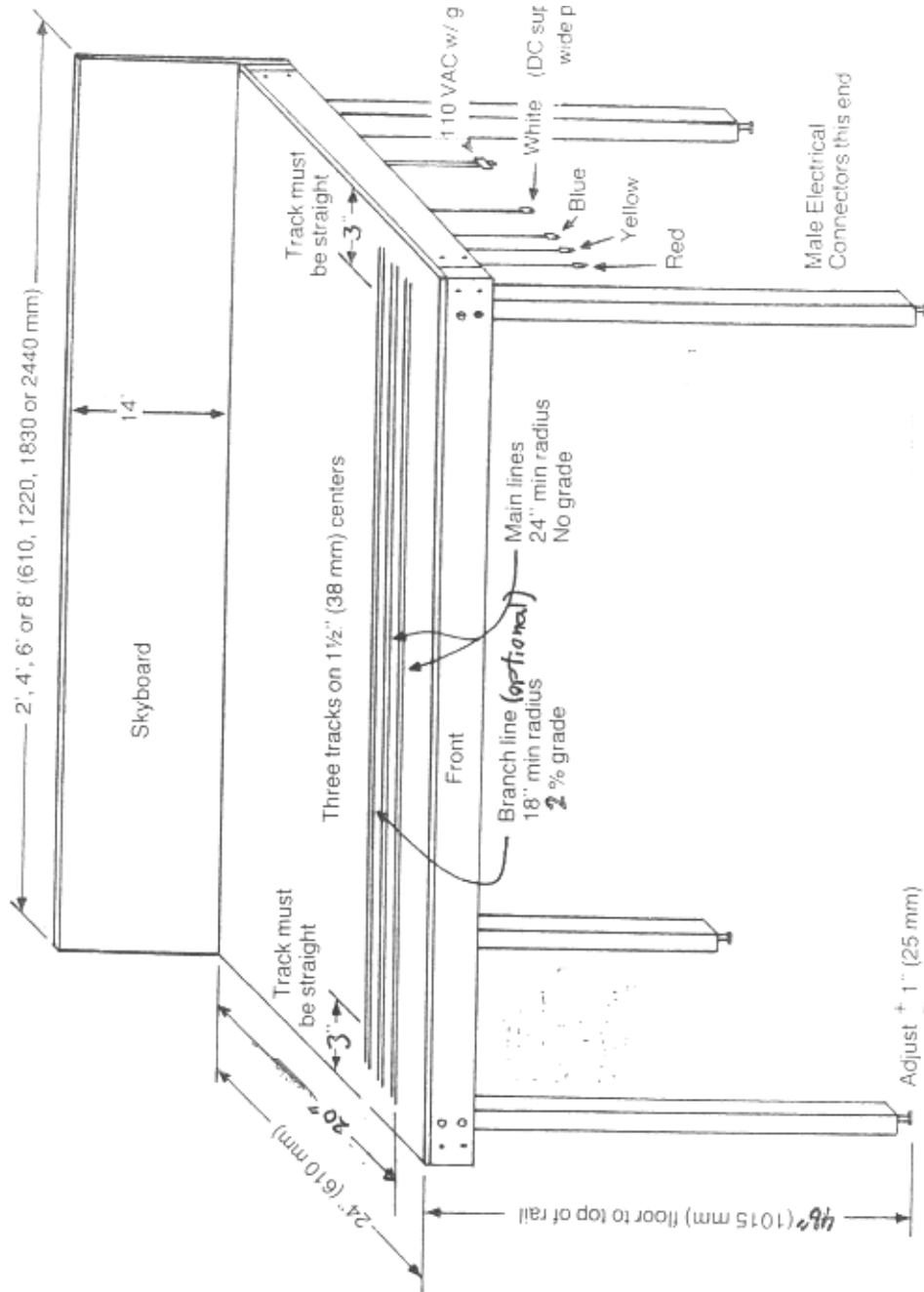


The corners of your module must be square.



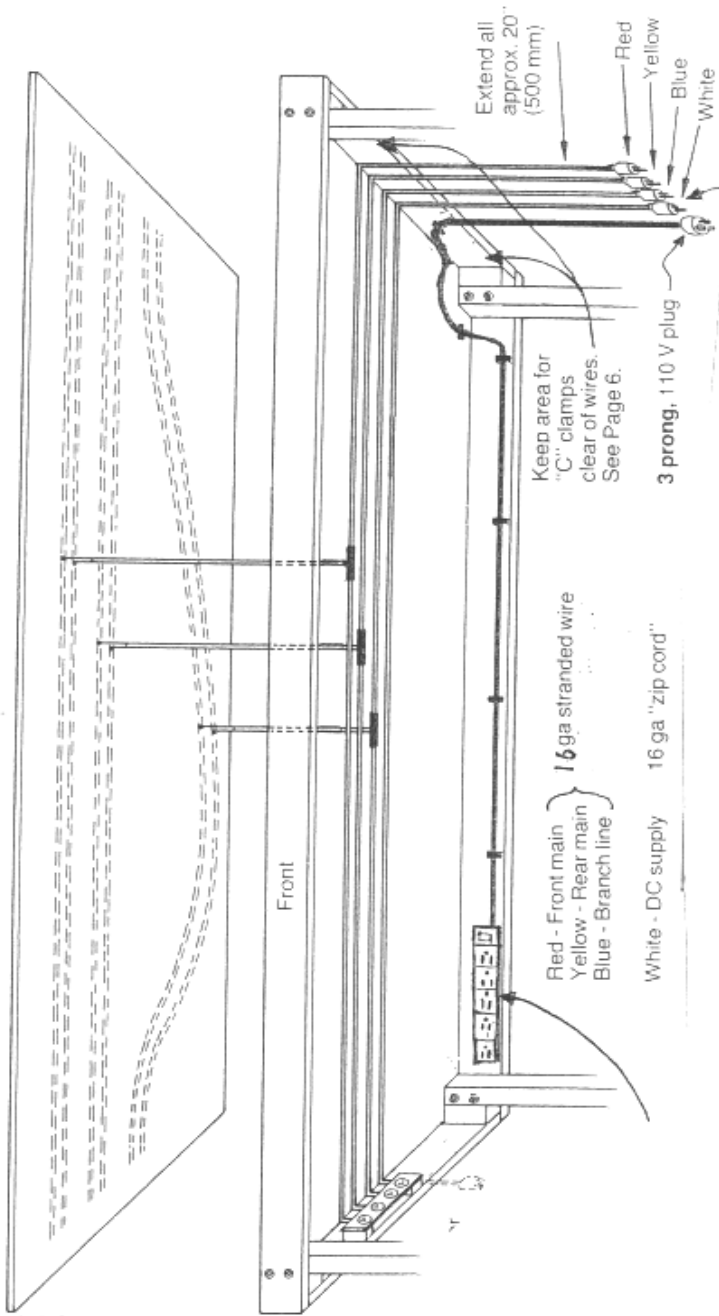
Lengths L1 & L2 should be equal, as should ends E1 & E2. Diagonal dimensions D1 & D2 should be the same.

Several units of any length may be combined to form a "module" that is a standard length (8', 12', etc.) See page 20.



**NOTE:** A single large power supply is used with the many throttles on large layouts. The three tracks **MUST NOT** have any common connection. **DO NOT** use "COMMON RAIL" wiring. Gaps must be used on both rails on any crossover tracks. If the three main tracks are part of a yard, it must be possible to isolate them electrically.

Use #22 to #24 ga solid wire soldered to outside of rails for connection to track power leads. "Solder terminal strips" make an easy to trouble shoot connection point. Use as many power feeds per track as needed.



## POWERING YOUR MODULE TRACKS

The private tracks on your module that run into the branch line track can be powered several different ways. If you have only a siding or two and don't plan more than picking up and setting out cars, then just an on-off switch (Fig. 2) between your track and the branchline power is all that is needed. This way locomotives can be parked on your tracks by turning the switch off. If you plan more in the way of switching, then, so as not to tie up the branch line throttle, you should furnish your own throttle and connect it in with a DPDT, center off switch, (Fig. 3). This would be "Two Cab" wiring with the branch line (blue) as one cab and your throttle as the other.

A control panel for your module should use the same color code for the mainline and branch line tracks as for the connectors. During a show others may need to operate on your module and the controls should be easy to use and clearly marked. Even if you aren't there to guide them, another operator should be able to work the turnouts and power the tracks with a minimum of confusion.

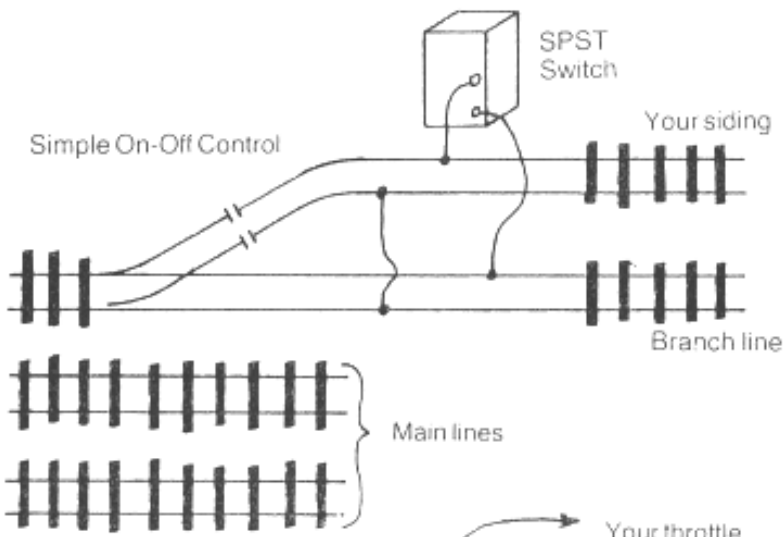
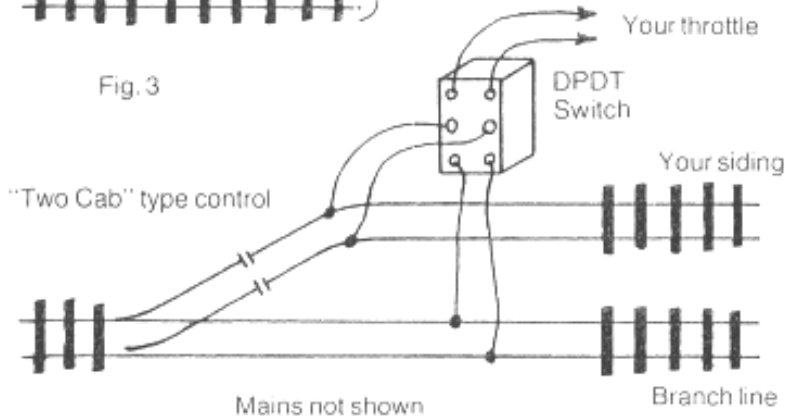
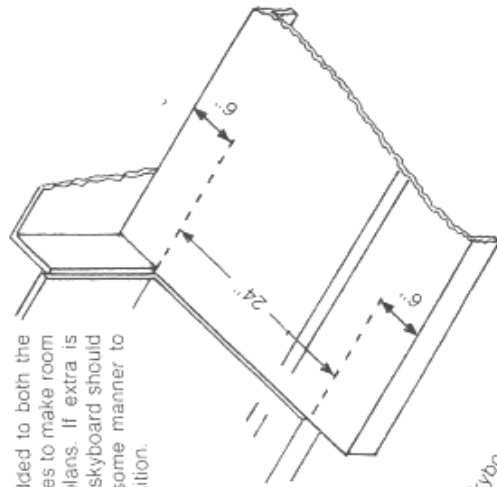


Fig. 3

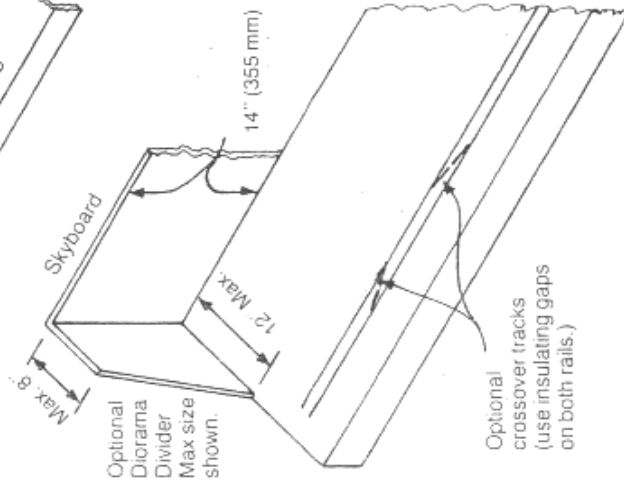


A transition curve is needed where a curved length of track meets a tangent (straight) track. The transition will avoid the misalignment of the ends of longer cars as they pass from the curve to tangent track.

Superelevation (banked curves) are not recommended. Longer trains can be run with flat curves than can be run with superelevation.



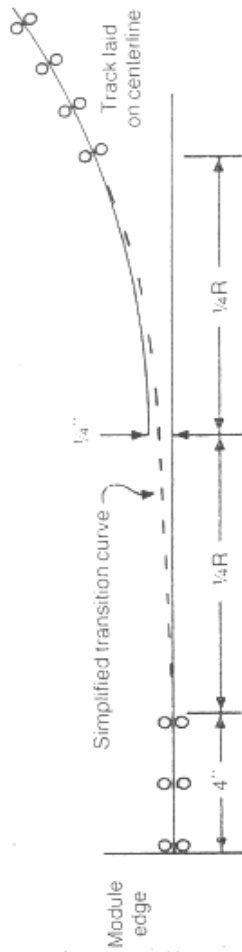
Up to 6" may be added to both the front and rear of modules to make room for scenery or track plans. If extra is added at the rear, the skyboard should still come forward in some manner to match the standard position.



Optional Diorama Divider Max size shown.

Optional crossover tracks (use insulating gaps on both rails.)

Crossover tracks between the mainlines and branch line tracks are an option. A set of each hand is helpful in any layout to shift trains from one track to another. Builders of 6' and 8' modules are asked to include a set of either hand on their modules if they fit with the track plan. Insulated gaps are needed in both rails of any crossover tracks.



A smooth transition at the ends of a curve can be laid out by eye using flex track as a "bent stick," as shown in Fig. 5. The first  $1\frac{1}{2}$ " of track must be straight to meet **WNS** specs (3" in from end of module). It is suggested that track be extended to or beyond the module edge and then trimmed to length after the laying of the transition curve is completed. This will make it easier to keep the  $1\frac{1}{2}$ " length straight. The track is restrained by pins or nails at the points marked with small circles. Check it out by pushing several long passenger cars through the transition. If the ends of the long cars stay aligned coming out of the curve, without relative motion from side to side, then the transition is good. If not adjust the track and re-check. Avoid sharp kinks in the rails. Where two pieces of track must be joined on a curve, solder the rail joiners in place with the track straight and then form the curve.

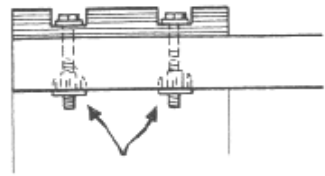
There isn't enough room for a full transition on the three foot corner, but enough easing can be done to make problems with long cars minimal on these corners.





Wing nuts

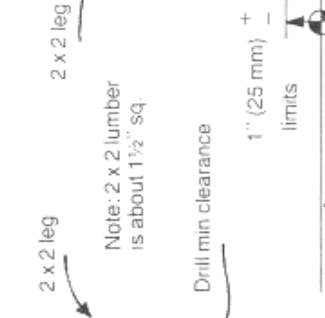
Leg fasteners should be flush with the outside surfaces for a neat and safe assembly.



"Tee Nut"

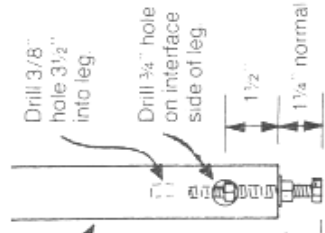
1/4" Hex bolts or machine screws.

Select full thread style.



"Tee Nut"

5/16" or 3/8" full thread bolt for adj.



Drill 3/8" hole 3 1/2" into leg.

Drill 3/4" hole on interface side of leg

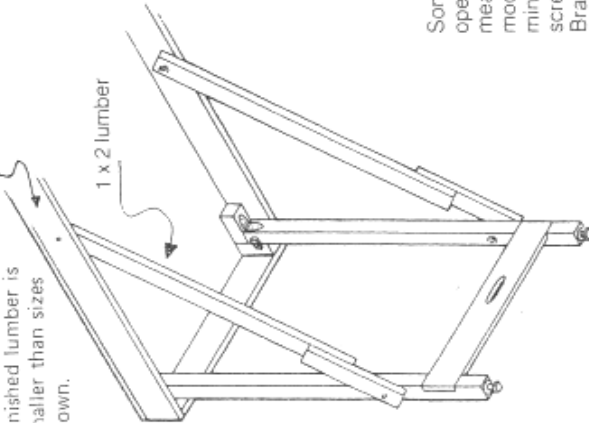
Note: 2 x 2 lumber is about 1 1/2" sq.

Drill min clearance

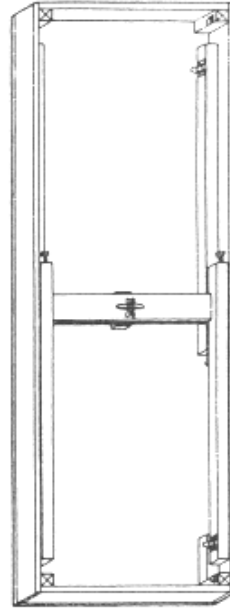
1" (25 mm) limits

Floor line normal

Note: Finished lumber is smaller than sizes shown.

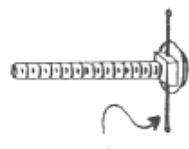


**NOTE:** Legs should be marked for the corner they go in and which module they belong to. Others may have to assemble your module at some time. Make it easy for them, and yourself.



Some clubs set up their modules every few weeks for operating meetings. Quick assembly and break down means extra time for running trains. One club calls for modules that can be set up by one person in five minutes without tools. Some use furniture legs that screw into place. Folding legs are self contained. Braces using "Tee nuts" can be fastened with thumb screws.

**NOTE:** If you want modules at a different height for home use, the simplest solution is to use a second set of legs.



Cut full threads on carriage bolt with die and drill hole for hand adjust rod.

Threaded rod with "acorn" nut may be used in place of full thread bolts.



FOUR FOOT CORNER

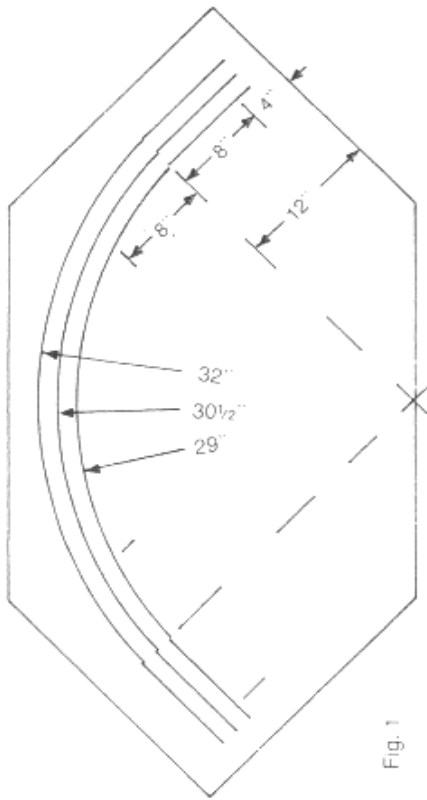


Fig. 1

THREE FOOT CORNER

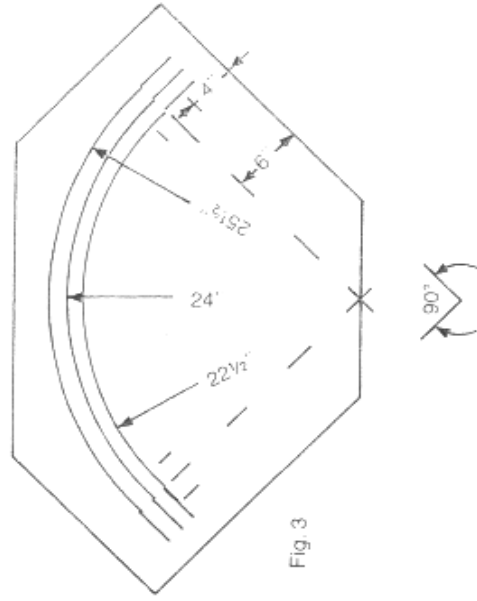


Fig. 3

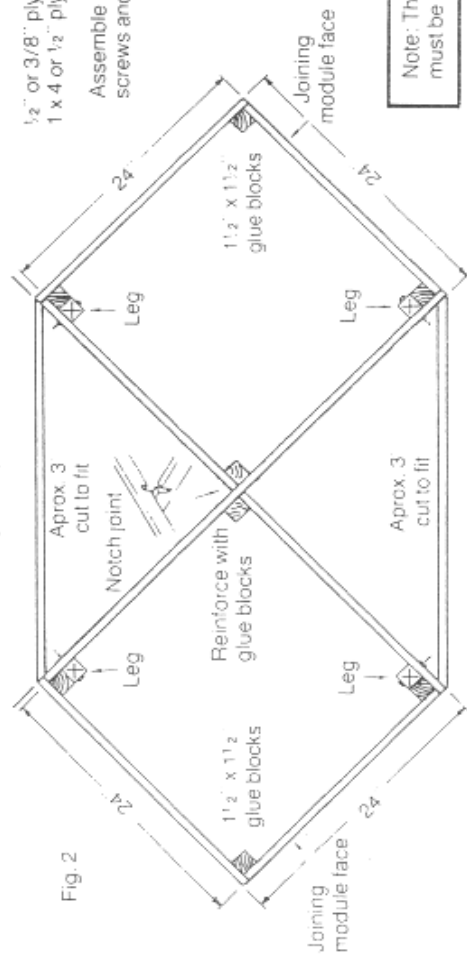


Fig. 2

1/2" or 3/8" plywood top  
1 x 4 or 1/2" ply framing.  
Assemble with  
screws and glue.

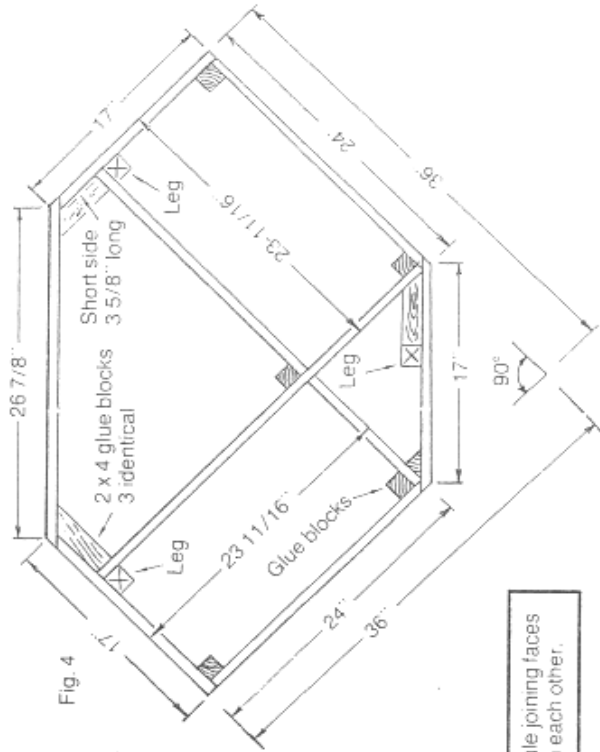


Fig. 4

Note: The two module joining faces  
must be square with each other.