VALLEY HO TRAK

MODULAR MODELRAILROAD CLUB

OF CONNECTICUT

MODULE SPECIFICATIONS

Revised: 2016

GUIDE LINES

These specifications serve as a basic design guide for VALLEY HO TRAK MODULES. You are required to follow all dimensions, use accepted materials, and meet electrical requirements for the construction of the table, sky board, front shield, and wiring. Feel free to ask any member for assistance with module construction or designs. There is a wealth of experience available in the membership, no sense making the same mistakes the rest of us did!

In event the recommended materials are not used and problems (such as track alignment, wiring errors, etc) occur, you will be required to make corrections before your module can be used in a show.

DIMENSIONS

OVERALL MODULE SIZE

First you need to select the size module you wish to build. There are two different sizes of modules that you may elect to build:

4' x 24" The most common size.
4' x 30" Extra depth for more modeling fun.
Corner module as describe later.

ACCEPTED MATERIALS

ELECTRICAL

- ❑ 2-pin Cinch Jones connectors are used with the track wiring. One set, male & female, per track.
- ❑ 18/2 SPT-1 wire, Carol #02301 or equivalent (18AWG "zip" cord (lamp wire) for track power.
- ❑ 110 volt "UL" approved power strip and/or air conditioner extension cord. Cord should hang approximately 18" from end.

LUMBER

- ❑ 1" x 4" Pine lumber for framework. See "Assembly" for module sizes and lumber requirements.
- ❑ ½" plywood for the top.
- ❑ 2" x 2", 2" x 3" or 2" x 4" for legs. See the "legs" section below.
- ❑ ¼" lauan plywood or equivalent for the sky board.

HARDWARE

- ❑ 4 - ¼" x 3 ½" bolts, one for each leg.
- ❑ 4 - ¼" "T" nuts, one for each leg.
- ❑ 4 - ¼" flat washers, 2" diameter, one for each leg.
- ❑ 8 - 3" x ¼" bolts, 8 washers, 8 wing nuts, two per leg. (Note: leg pockets will eliminate these.)

❑ Dry wall screws (1 ½") to attach plywood top to frame and assemble leg pockets.

OTHER MATERIALS

❑ Carpenters' wood glue

❑ ¾" Velcro, 48" in length with rough/ "hook" side attached to module face

SHOW HARDWARE

❑ Four 3" or 4" C clamps for first module, two for each additional module you bring.

TRACK

All track must be code 100, nickel silver with plastic ties. Atlas is the preferred brand.

❑ For 2 mainlines: 3 - 3' flex track for a 4' module.

❑ For 3 tracks: 4 - 3' flex track for a 4' module.

❑ 2 - 9" sectional track for each track on your module (minimum 4 required, may need 6 or 8). The club supplies 9" sectional track for you to use at show time. It's a good practice to have your own supply, though. Yours maybe painted and/or ballasted.

❑ Rail joiners (nickel silver & insulated).

❑ Track nails.

❑ HO scale cork roadbed for each track the full length of the module.

❑ Turnouts: Peco "Insulfrog" turnouts are to be used for all mainline construction. Peco #6 RH = SL 88, Peco #6 LH = SL 89.

PAINT

Please ask the President, Layout Coordinator, and/or Equipment Manager with brown and blue paints are approved. In the past VHT used Benjamin Moore Rich Brown and Sears Federal Slate Light Blue #032.

BALLAST

The two main lines (Red & Yellow) must be ballasted with Woodland Scenics medium grit Gray Blend ballast. The Blue Line and any other tracks on your module can be ballasted with any color and grit you choose.

ASSEMBLY

TABLE TOP

If your module is going to be flat surface as a base for scenery and track (like most modules) these are the required materials:

- ½" plywood sized to fit the dimensions given for module size.
- ½" Gator Board can be used as a light weight option.
- Extruded foam may also be used as a light weight option. Foam is usually set within the frame. MAKE SURE YOUR FRAME IS 4" WIDE! Pine 1x4s are only 3.5" in width! See an example of a foam built module at the end of this document.

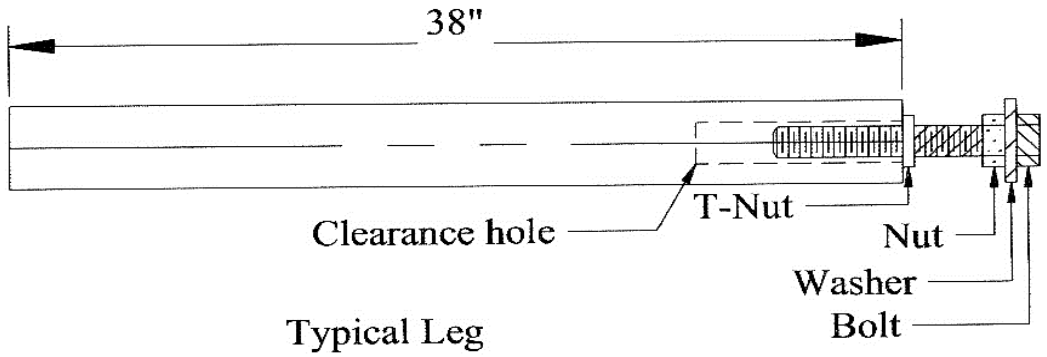
- 1” x 4” pine lumber as listed below:

Module size	Qty	Length
4’ x 24”	2	48”
	3	22 ½”
4” x 30”	2	48”
	3	28 ½”

Pre drill all screw holes and use wood glue and screws to attach the pieces for the strongest bonds. Remember that your module will be carried often and will be subjected to bumping and twisting forces. Good assembly techniques now will prevent headaches in the future.

LEGS

All modules must have four legs. The legs are usually made from 2”x 4” lumber that has been ripped down the middle to make two 2” x 2” legs. Leg length, including feet, must bring railhead to 40” above the floor. Your adjustable feet must allow for a minimum of +/- 1” adjustment.



Typical Leg

SKY BOARD

MATERIAL: Plywood (lauan) or similar firm material of sufficient strength to stand up in place. You may need to add stiffeners to keep it from warping.

HEIGHT: 12” above tabletop surface. Add 4” to allow enough material to attach it to the base of the module of an overall height of 16”

WIDTH: Must be ¼” less than the length of the module (47 ¾” for a 4’ module). Place 1/8” in from the ends of the module to allow for a slight separation between adjacent sky boards.

FRONT SHIELD

Required for the front of the module for protection of scenery and trains.

MATERIAL: ¼” clear Plexiglas or Lexan.

HEIGHT: 15” total. Top of front shield must be even with sky board. 12” of plexi above table top, 3” of plexi against frame, 1” space below plexi for Velcro.

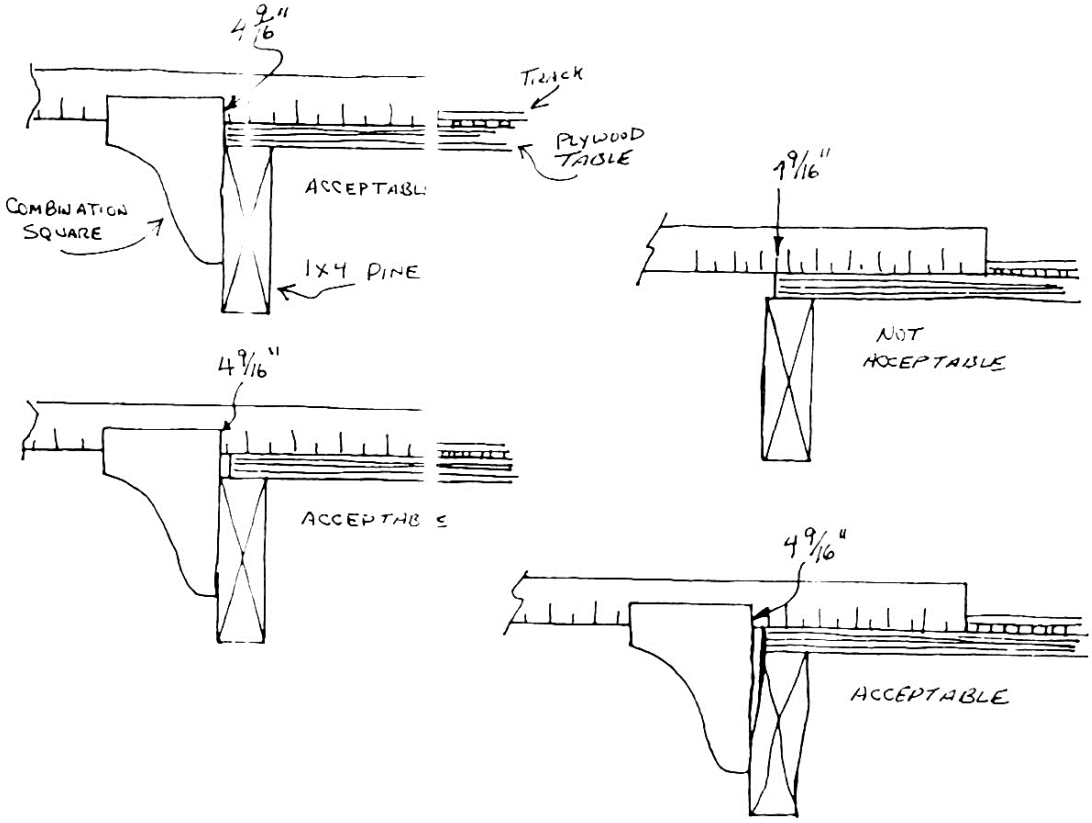
WIDTH: Must be ¼” less than the length of the module, placed 1/8” in from the ends of the module. The edges must be sanded smooth and all corners rounded to reduce the

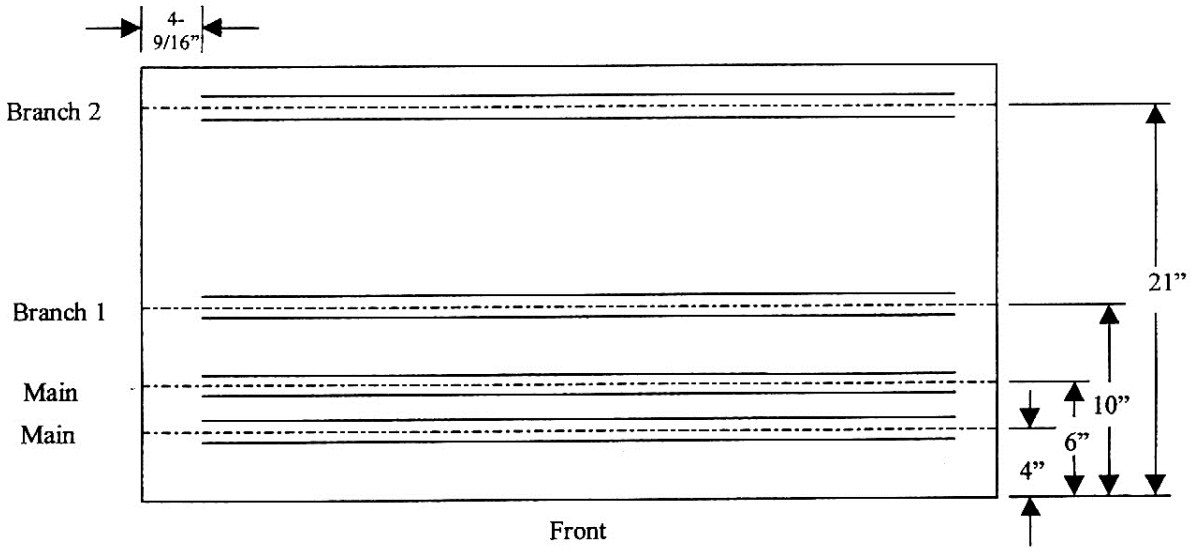
chance of injury.

TRACK

- HO scale cork roadbed must be used to support all mainline and through tracks. Yard and spurs tracks maybe supported with cork if desired. The roadbed runs the full length of the module.
- You must remove the tie plates from the last two ties on each end of the flex track to allow rail joiners to be pushed all the way on the rail.
- To prevent electrical short circuits, insulated rail joiners must be placed between turnouts that are connected to adjacent mainline tracks (crossovers, as well as those turnouts which connect a mainline to a siding. Gaps cut and filled with styrene is acceptable too.
- Main lines (2 required): The centerline of the outer track is located 4” from the front edge of the module. The centerline of the second track is located 6” from the front edge of the module.
- Branch line 1 (optional): The centerline of the branch line 1 is 10” from the front edge.
- Branch line 2 (optional): The centerline of the branch line 2 is 21” from the front edge.
- All tracks end 4 9/16” from the end of the module to allow for the 9” sectional track.

4 9/16” Track Set Back





Track spacing

CORNER MODULES

The club will own and maintain four corner modules. If you plan to build a corner module, please let the Layout Coordinator know, so he can plan accordingly for shows. Construction materials are the same as a straight module. Below are the dimensions and radii for corner modules. It is important to note the track curvature must start a minimum of 6" in from the edge of the module. The track separation between the 4" and 6" main lines starts at 2" at the ends and then increases to 2 ¼" at the middle of the curve.

OUTSIDE CORNER MODULE: 4' x 4' (overall dimensions)
- 4" mainline: 38" radius
- 6" Mainline: 36" radius
- 10" Branch line: 32" radius

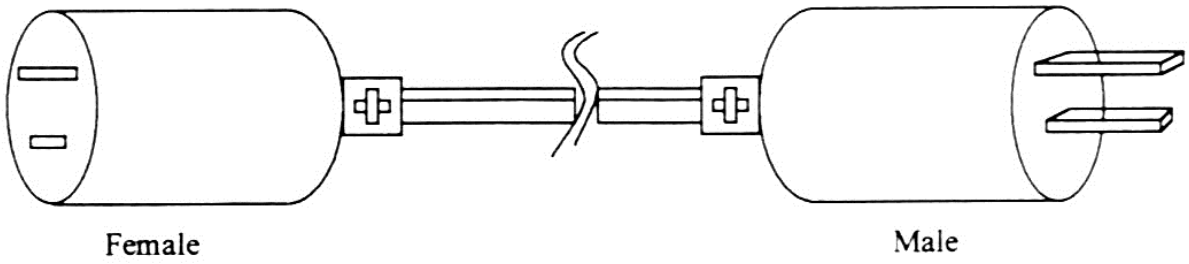
INSIDE CORNER MODULE: 6' x 6" (overall dimensions)
- 4" Mainline: 40" radius
- 6" Mainline: 42" radius
- 10" Branch line: 46" radius

ELECTRICAL

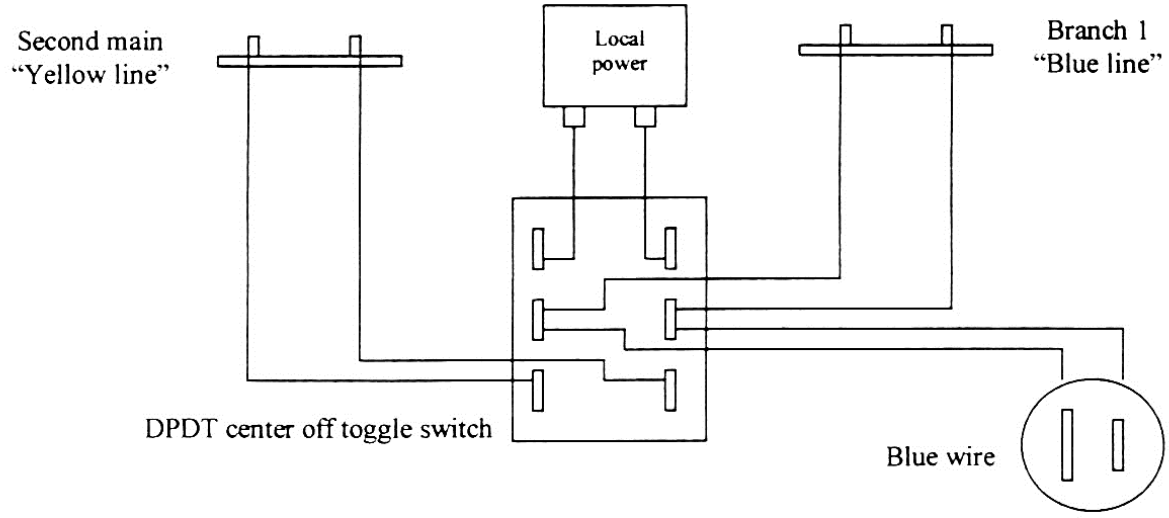
TRACK WIRING

Refer to the wiring diagram below. 2-pin Cinch Jones connectors will be used in making all connections between modules. Please observe the polarity for the connector. The wide pin goes to the front rail. When facing the front of the module, the male connectors are to be to the right. All plugs must be color-coded using colored tape or paint as follows: 4" Main Line = Red, 6" Main Line = Yellow, 10" Branch Line = Blue, 21" Branch Line = White

The wires should hang 18” below the module at each end to allow ease in connecting to adjacent modules. You may want to provide some method of holding the loose ends up under the module during transport to prevent damage.



WIRING FOR A SELF POWERED MODULE



- Use a double pole, double throw, center off toggle switch or equivalent rotary switch.
- Switch must be clearly labeled YELLOW (up) and BLUE (down).
- The yellow position is to run branch 1 from the second main line throttle (cab). The blue position is to run branch line 1 from the local power supply.
- Insulated rail joiners are to be used on both ends of the branch line 1 track between self-powered modules. Do not connect the blue wire under where the insulated rail joiners are located.

110V WIRING

All modules must have 110 volt wiring. This is required to provide power to components on the module and to allow for the transfer of power to the adjacent module. This may be achieved by using a “UL” approved power strip with a 6’ power cord or a 6’ “UL” approved “air conditioner” extension cord as a jumper between 4’ modules. A combination of an outlet strip and an extension cord will be required for a 6’ or 8’ module.

PAINT

Paint the legs, frame, and back of the sky board with approved brown paint and the front of the sky board with approved light blue paint.

MODULE INSPECTION

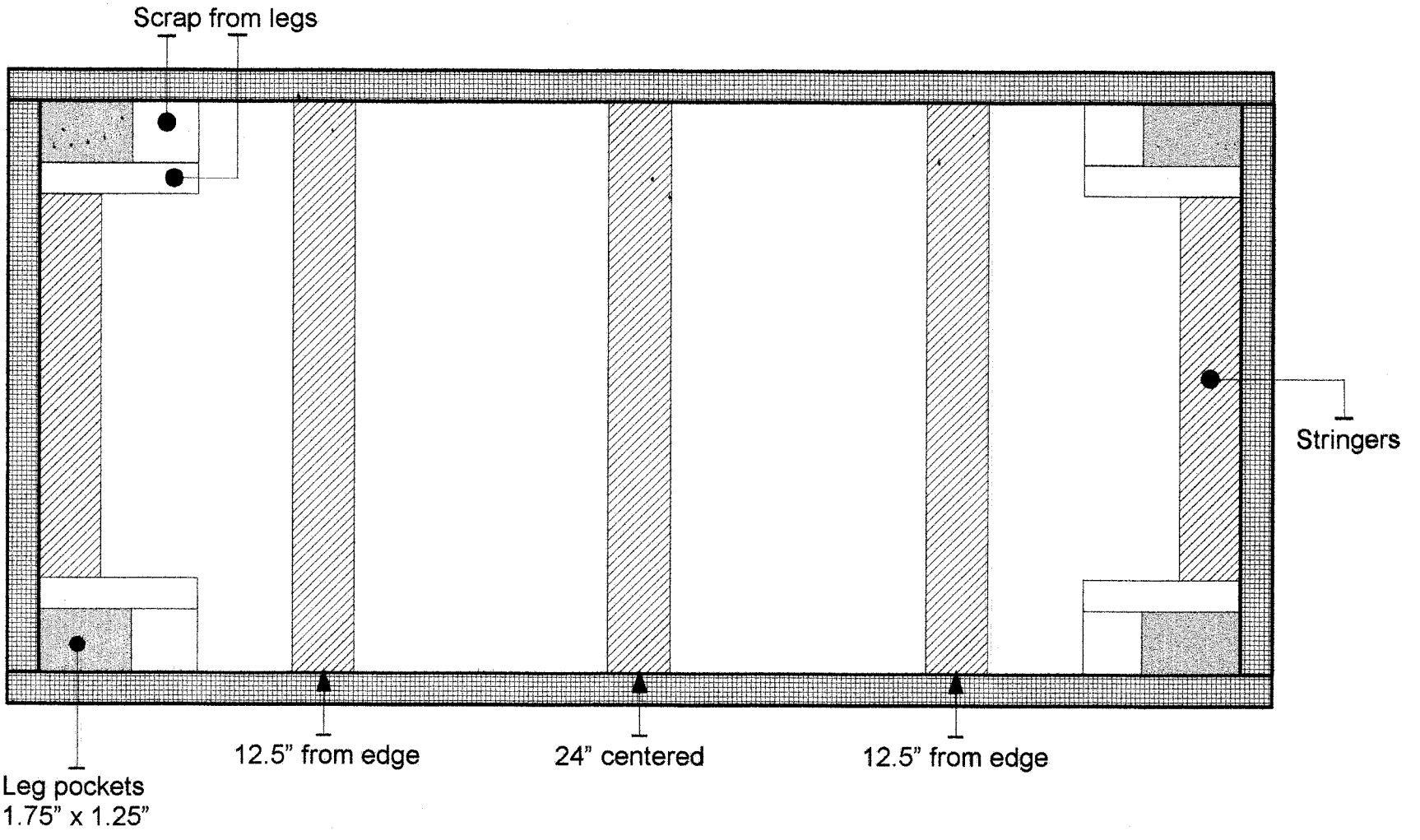
A new module must be inspected, prior to participation in a show, for proper electrical and mechanical operation. At the first show, it must be operated without any track ballast or scenery, in case any adjustments are required. The Layout Coordinator is responsible for module inspections, requirements, and show entries.

Any approved module that has undergone refurbishment and/or a rebuild, may require a new inspection by the Layout Coordinator. This determination will be made by the Layout Coordinator on a case-by-case basis. Such factors that will determine a new inspection are, but not limited to: amount of rebuilding, what was changed and/or added, new structures, re-wiring, etc.

The Layout Coordinator can deem a module unsuitable for show participation at any time if the module becomes damaged, or is no longer within the specifications. Repairs or modifications must be made and approved by the Layout Coordinator before the module can be readmitted into show participation.

BALLAST

Once the module has been built, inspected, and tested in one show, it is time to ballast the main line tracks. See material section for approved ballast types. Ask a member for help if you need it.

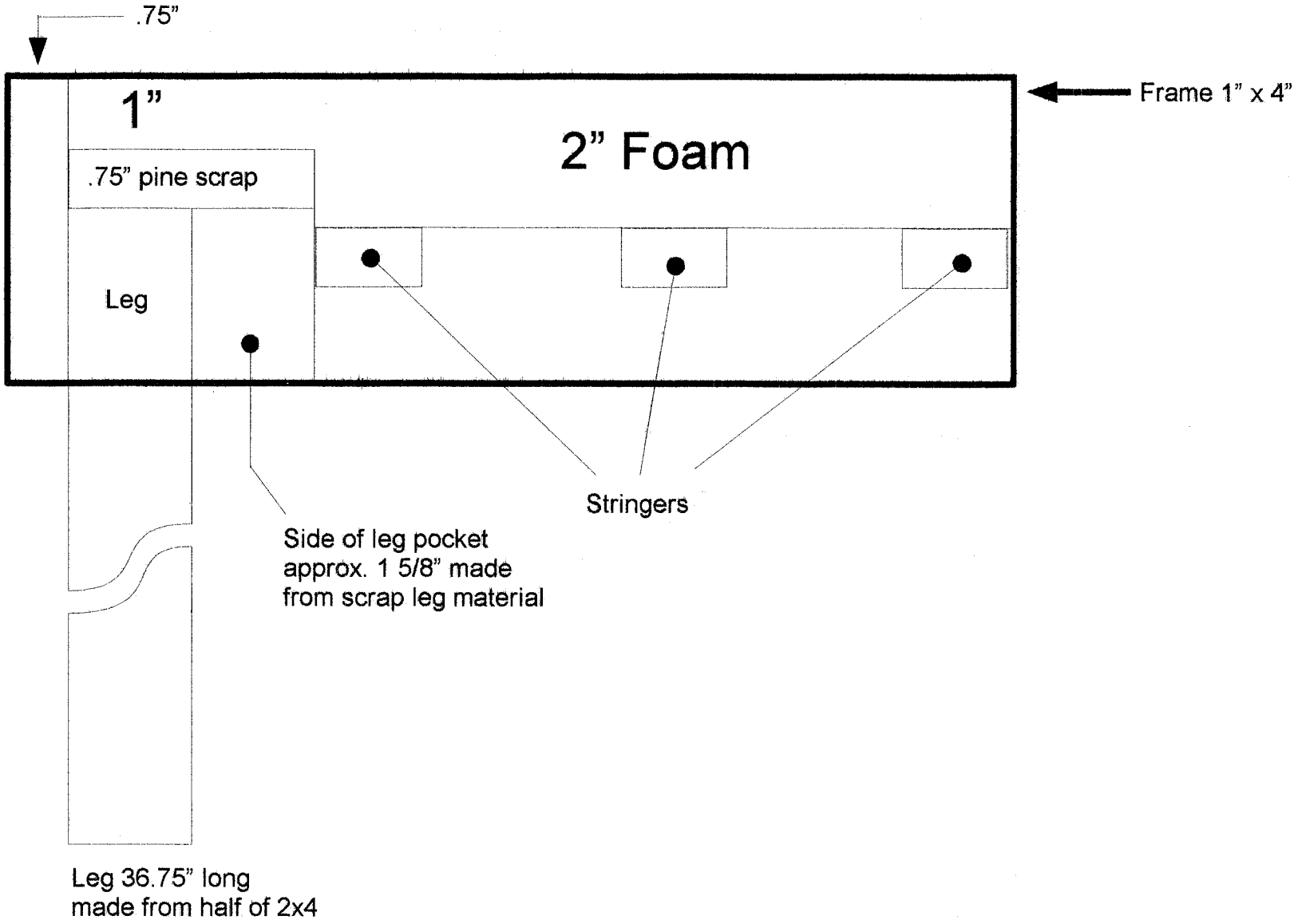


This module was made with 2" foam and a frame made of 1"x6" pine ripped down to 4". The extra from the 1x6's were used as the stringers to support the 2" foam. Legs were made from 2x4's ripped in half. Leg pockets are scrap leg and frame material. Foam was secured to framework using "PL Polyurethane Premium Construction Adhesive". This same adhesive was also used to secure the roadbed and track. Foam was cut at the corners to fit around leg pockets.

Materials

1 - 2' x 8' (2"thick) foam
2 - 1" x 6" (6 foot length) pine
2 - 2" x 4" (8 foot length)

Side View


.75"
1"
2" Foam
Frame 1" x 4"
.75" pine scrap
Leg
Stringers
Side of leg pocket
approx. 1 5/8" made
from scrap leg material
Leg 36.75" long
made from half of 2x4