Module Corner

By Ted Larson

CORNER MODULE ENHANCEMENTS PART I

CONNECTICUT S GAUGER'S 90 DEGREE SPLIT-CORNER CONSTRUCTION GUIDELINES Issued February 9, 1993 and Revised August 1, 1996

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INTRODUCTION

The corner design used by the Connecticut S-Gaugers was presented here in the February, 1996 *Dispatch*. This club continues to improve their module designs, and they recommend several enhancements to their basic corner design.

- For easier transportation, the modules can be split to create two 45 degree sections.
- For enhanced operations, #6 switches can be installed in the outer main line to provide a junction, or to provide access to branchline, staging tracks, engine terminal, industrial switching, etc.
- In addition to the previously shown inside yard track, an outside yard track is shown.

A huge thanks is due Bill Krause of the Connecticut S-Gaugers for the many hours spent preparing this new information for publication. Due to the large amount of information, Bill's article will be presented in 3 parts: **Template Preparation, Frame Construction, and Trackwork.**

Please note that many of the methods and options to be presented are applicable to the other corner module designs previously presented in this column. For example, the Rochester Area S-Gaugers (RASG) recently constructed 4 new corner modules using the Quebec Corner Module design published in the October 1995 *Dispatch*. The Quebec design uses a smaller track radius than that used by the Connecticut S-Gaugers, however we were still able to add #6 switches to the outer mainline. In our construction efforts, we experience some of the same difficulties that Bill recounts, and we could have made good use of his suggestion to draw a template. Our solution was to construct a jig on plywood to hold frame pieces in alignment during assembly.

Here is **Part I** of Bill's new information. Parts II and III will follow.

As mentioned in our original set of club module guidelines, dated July 1, 1989, there were four objectives we wished to achieve in building modules. Of these, the third stated that the modular units should be kept to a size that permitted transporting in members' passenger cars. This objective has not been achieved (until now) as far as our 90 degree **Corner** units are concerned. To date, these units are such a size as to require station wagons or vans to transport them to shows. In contrast, our **Straight** units can fit into the trunks of most ordinary cars - providing that we have detachable scenery. The Split-Corner approach described here should **make it completely possible to fulfill this** third objective!

Our approach involves no new technology. Everything has been used by some other club before. The 90 degree Split- Corners are also being used by other S clubs. However, our approach *is* different from others in two ways: (1) our end faces along the 45 degree line are "keyed" together using dowel pins to hold both halves in perfect alignment; and (2) our track rails, along the 45 degree line, are also "keyed" together by using 1/8" Brass tubing. Here again, these two ideas are not original with me - only the application. As I try to explain this construction, hopefully you will learn where some the techniques came from.

To better understand our Split-Corner concept, please study Drawings No. 2 (in the February '96 *Dispatch* article), No. 2B, and No. 4, which is the "split-corner" version of No. 2. The one piece frame previously shown with 17" End-face (No. 2), is the one our club has been using for ten years. These were all built by Bill Fuhrman of our club, and have proved to be quite satisfactory. Why did we use 17" end-faces instead of 24" ones to match our Straight modules? Simply to cut down the overall size of the module to at least fit into a small station wagon or van! Looking at Drawing No. 2B, you will see that our end-faces have been increased to the desired 24", AND by splitting the frame into two halves we now have Corners that also can be transported in ordinary passenger cars. PRESTO, our club has fulfilled our third objective for transporting all modules in ordinary passenger cars.

Please also note that the track work is the same as shown in Drawing No 2, which has been used by our club for a long time. New Drawing No. 4, is essentially the same but shows the split corner, corner adaptor, and optional outer yard track.

HOW I BUILT THIS SPLIT-CORNER FRAME: PART I - TEMPLATE PREPARATION

Drawing No. 2B, shows every conceivable dimension to construct this kind of corner unit. Please note that these dimensions are OUTSIDE DIMENSIONS! When sawing your wood frame pieces, you must make allowances for the thickness of the wood in many instances. All I can say at this point is study the drawing to better understand this point I'm making. As we proceed, I'll try to warn you where such allowances should be made. Also, 1"x 4" lumber is not that, but closer to 3/4"x 3-1/2" in size.

While I have no intention to pose as an expert on module frame construction, I will outline here how I made my first split- unit using readily available materials and simple tools such as a saber saw, screwdrivers, screws, carpenter's glue, pencils, paper, or poster board and sandpaper.

My reason for doing it this way and explaining it, is that some of you ordinary modelers will take heart and try your hand in building one of these much needed and versatile units.

The rest of you wood working specialists should read through the

instructions anyway and then build this unit using your own special way.

There are two points that you should always keep in mind in the construction of any satisfactory corner:

1. The End-faces AK and CJ MUST BE PERPENDICULAR and at 90 DEGREES TO EACH OTHER. To achieve this, the corners A and C (top and bottom) should be 83-7/16" apart. Also, corners K and J (top and bottom) should be at a distance 49-1/2". If you have exactly achieved these two dimensions, even though your carpentry leaves something to be desired, when you are all finished you have the ideal corner!

2. The joining end-faces at DI, along the 45 degree line, are really two pieces of 1"x 4" lumber, each belonging to half of the Split-Corner frame. For the track sections to properly align each time these halves come together, we employ 3/8" dowel pins at random angles, shown in Figure B, as positioning keys. This very unique method was suggested to me many years ago by Matt Lacko, an old time S Gauger, from Media, Pa. Matt, who had a lot to do with producing "S"Gauge's first modular layout, got his early ideas from the old Trolley Modelers around Philadelphia. Old ideas with a new application!

MY PROCEDURE FOR BUILDING THIS UNIT - To cut down on the verbage, I suggest that you place Drawings: No. 2B, No. 3. Fig. A, Fig. B, Fig. C, Fig. D, Fig. E and Fig. F out before you as you try to read and understand the following procedural steps:

MAKING A PAPER TEMPLATE FOR USE IN BUILDING YOUR SPLIT-CORNER - I found from sad experience that I couldn't lay out the desired table top accurately on the wood surface using a carpenter's square. The problem seemed to be in achieving true 45 and 90 degree angles. If you are as inept as I am, try using a full sized paper template. Yes, I used heavy brown wrapping paper to make my template. Since using this method, I have also used poster board to make full-sized templates. These have the added advantage of being able to be used more than once by other club members.

(Bill - Don't attribute the need for a template to being inept. Wood warps and its thickness varies from piece to piece, and even within one piece. The RASG had the same problems, which is why we built a jig. TL)

First, study Drawing No. 2B for key dimensions of the module frame. To put this on my paper template without using a square, I kept certain mathematical relationships regarding squares in mind: (1) Diagonals of squares are 1.4142 the size of each of the four equal sides. (2) Each of the four equal sides of the square are .707107 the two diagonals.

Assuming you have studied Drawing No. 2B long enough, go to Drawing No. 3. This drawing contains all of the frame dimensions in 2B and a lot more. *moreover, it has been rotated 45 degrees to resemble the paper template that you are about to make.* To make it easy for you, I have calculated every possible dimension you might use in making this full sized template.

Roll out about 84" of your brown heavy wrapping paper on the work table (or floor) where you will eventually build your Corner unit. The important thing here is that you should use a relatively **flat** surface. Me, I have a big 4'x8' table surface to work on. It is sure a lot easier on the back! In my case, my roll of paper is only 30" wide. So--I taped another 10" strip to the top of my template. If you look at Drawing No. 3, you will soon see that our 84" roll of paper needs only to be exactly 36-11/16" wide. That's OK, as I like to see clearly the Edge surface, EDF. With some masking tape that doesn't have a too strong adhesive bite, fasten the roll of paper to the table (floor) top. Now construct your FULL SIZED TEMPLATE with the following steps:

* At the bottom, measure off 83-7/16" Be sure the bottom edge isstraight.

* On the left side of this line construct the square box AVKU, with four sides that are 16-31/32". If done correctly, the diagonals should be exactly 24" in length. Now repeat the same process for square box XCYJ, at the other end of the 83- 7/16" line. YOU NOW HAVE THE ACCURATE LOCATION OF END-FACES AK AND JC. Draw these in with a heavier line!

* Now draw boxes TGZK and HMJN, with equal sides of 12-11/16", and diagonals of 17-15/16". WITH THESE DIAGONALS IN PLACE, DRAW HEAVY LINES FOR FRAME OUTLINES: KGIHJ! WHILE YOU ARE AT IT, EXTEND HEAVY LINES KG AND JH TO P. If done accurately, your GP and HP lines should measure 17-1/16", at P. Moreover, P should be exactly 12-1/16", from the GH line at I. Also, the PIR line should be the exact middle where the two module halves meet.

* COMPLETE THE REST OF THE MODULE FRAME OUTLINE using dimensions shown in Drawing No. 3. If this is not quite clear, just remember line EDF is parallel and 24" from line GIH. Also, line ALE is parallel and 24" from KG. If you understand this, the same goes for lines FQC and HJ.

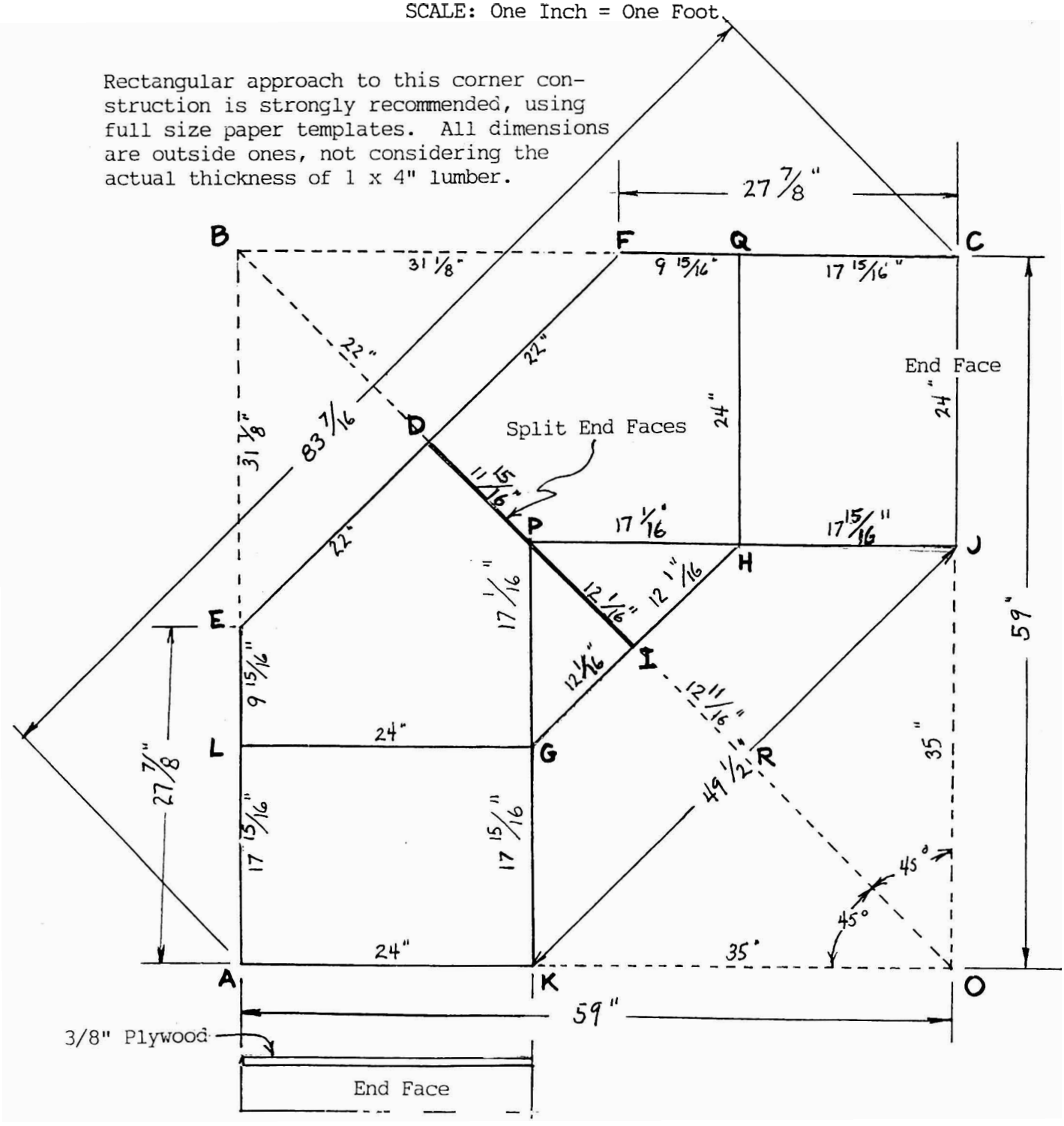
That's your MODULE TEMPLATE! More importantly, you have accurately located points A, K, J and G with each other.

The NASG's S-MOD standards have been accepted by the NMRA Engineering Committee as the basis for their proposed new NMRA S standard gauge module standards. If you do not have a copy of the S-MOD materials, for $5.00 you get the following information:
Package Includes:
NASG S-MOD Module Standards
S-MOD Concept Article
Handheld Throttle Construction Article
Checking Your Module Wiring Article
Orders to: Ted Larson, 5 Kenicott Circle, Fairport, NY 14450

CONNECTICUT S GAUGERS 90 DEGREE SPLIT-CORNER MODULE DIMENSIONS

DRAWING NO. 2B

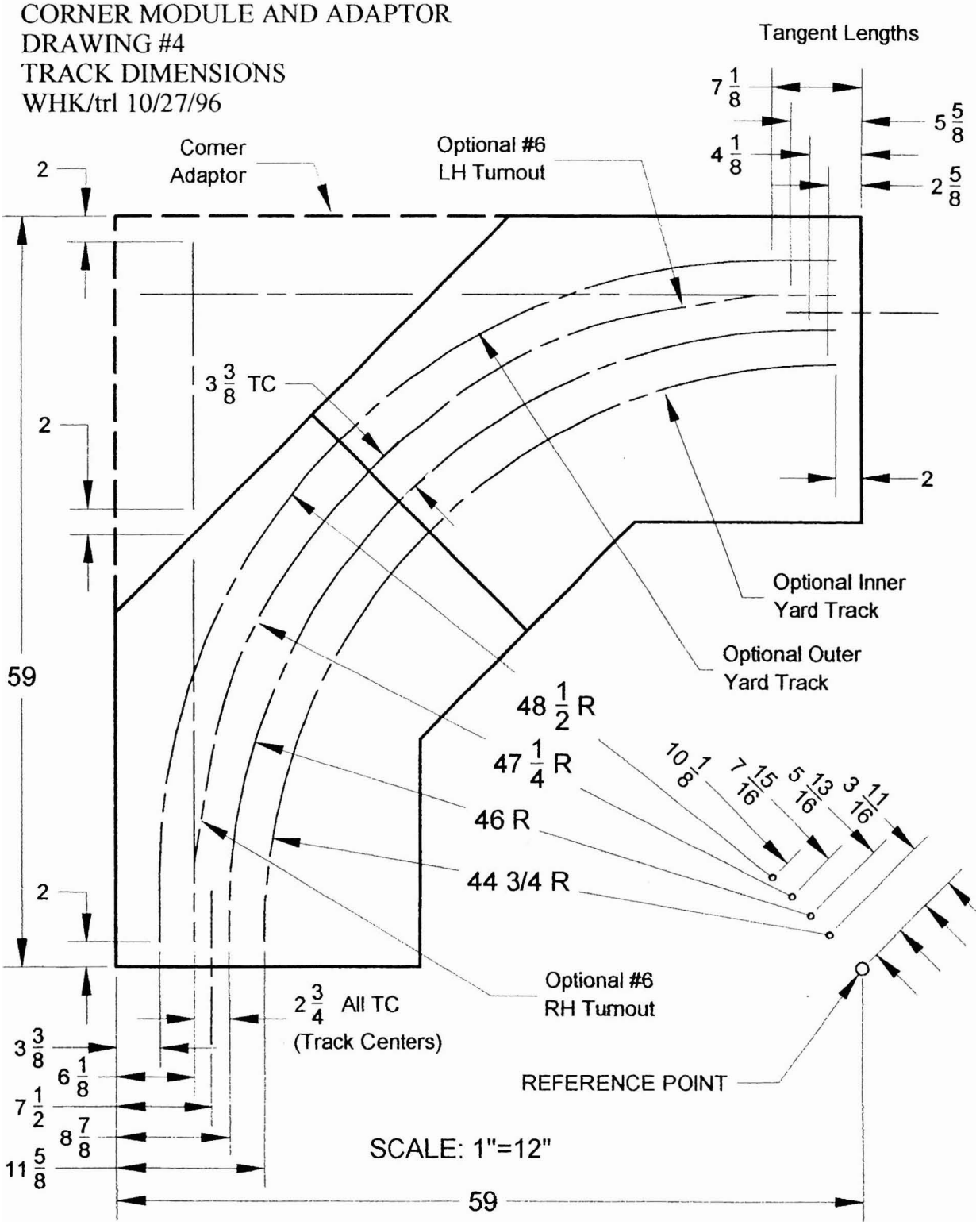
SCALE: One Inch = One Foot



KEY POINTS IN CONSTRUCTION: END FACES AK, CJ and double DI's(each half) should be cut to the lenght of 24" and be held perpendicularly to top surfaces. **Also**, dimensions AC and JK should be maintained closely, in construction, to give assurance that two sections will form a true 90 degree corner unit.

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CONNECTICUT S GAUGERS 90 DEGREE SPLIT
CORNER MODULE AND ADAPTOR
DRAWING #4
TRACK DIMENSIONS
WHK/trl 10/27/96



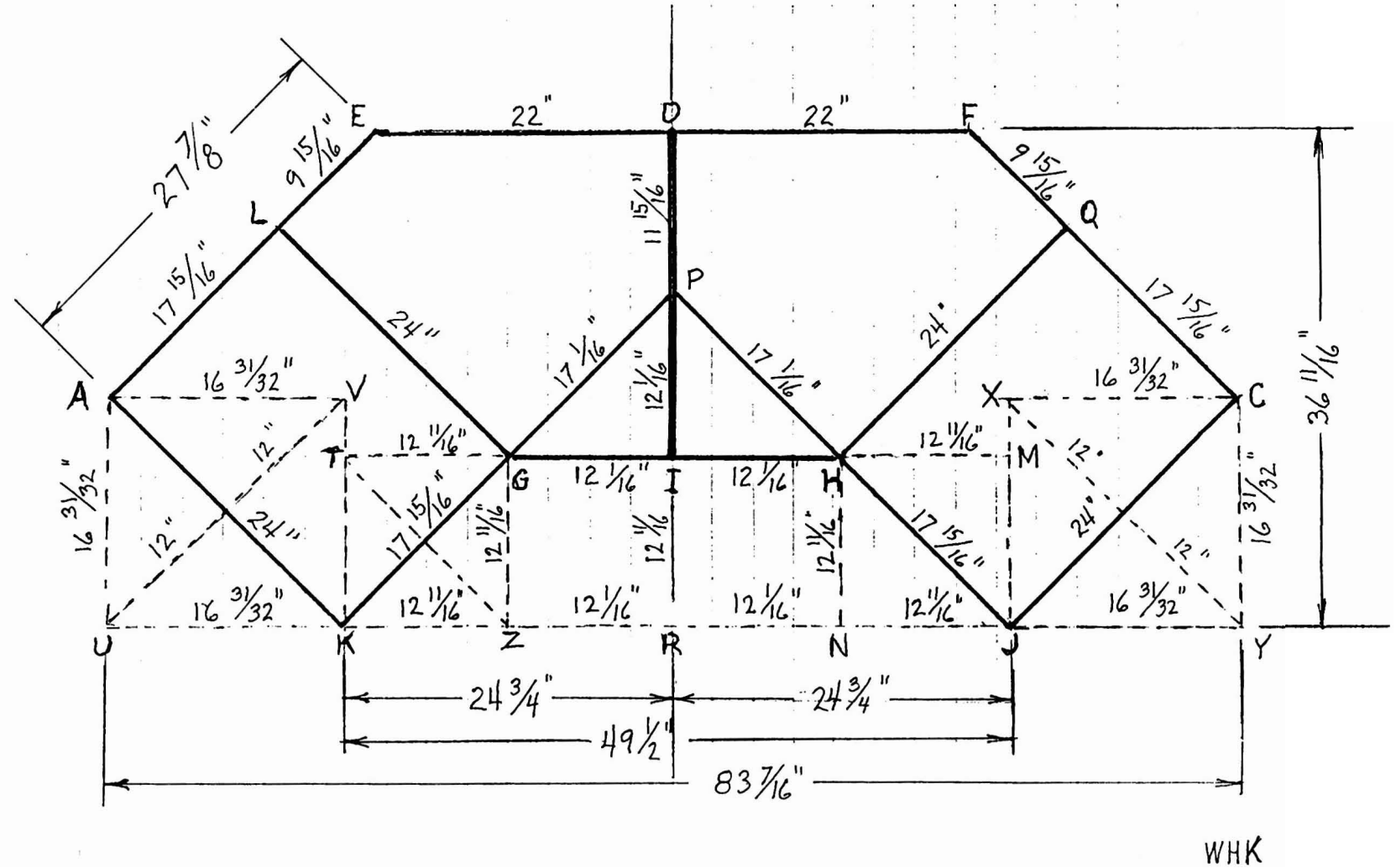
Optional inner and outer tracks will provide additional operating opportunities when joined with other multi-track modules.

Optional turnouts provide interfacing opportunities with other modules. It is NOT recommended to use the outer optional yard track AND turnouts in the outer main together in the same module.

Drawing No. 3

Revised 8-2-96

DIMENSIONS NEEDED TO MAKE TEMPLATE IN CONSTRUCTION OF 90 DEGREE SPLIT-CORNER



Revised 8-2-96

FIG. B

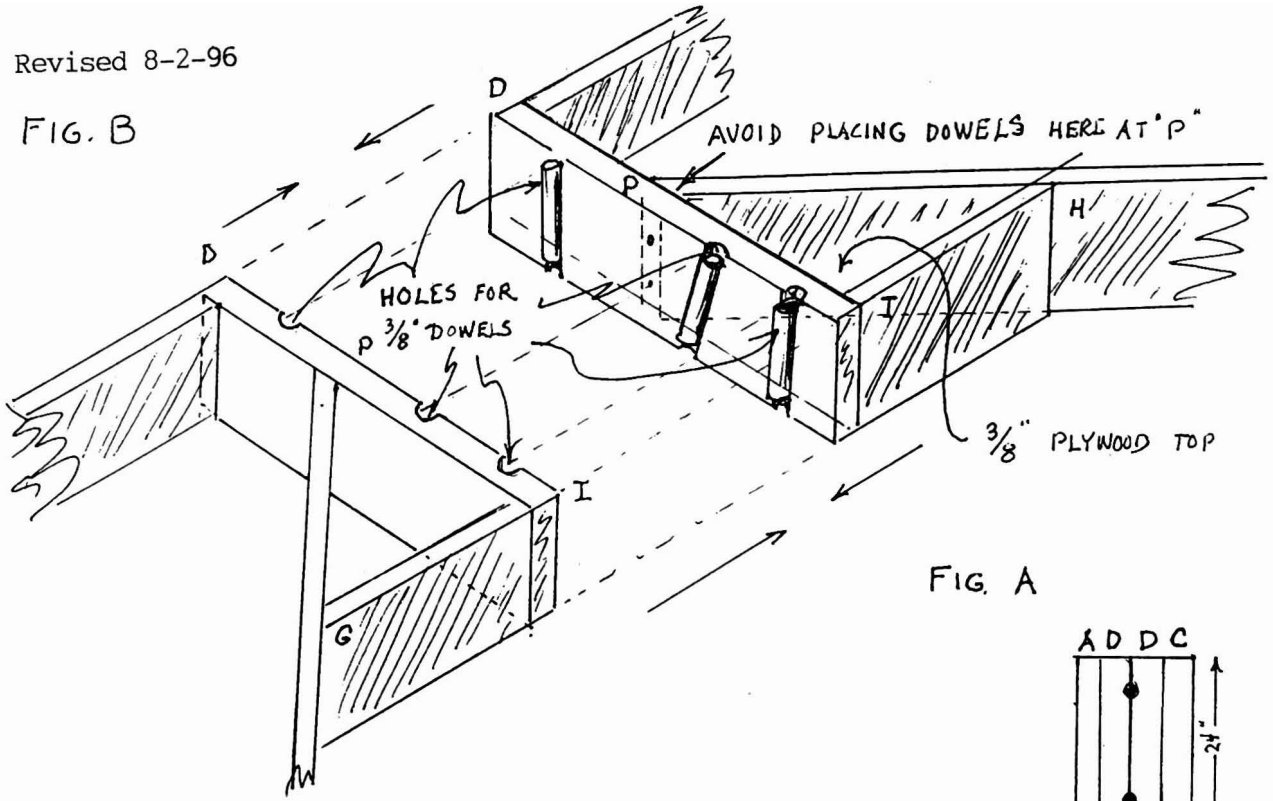


FIG. A

FIG. C

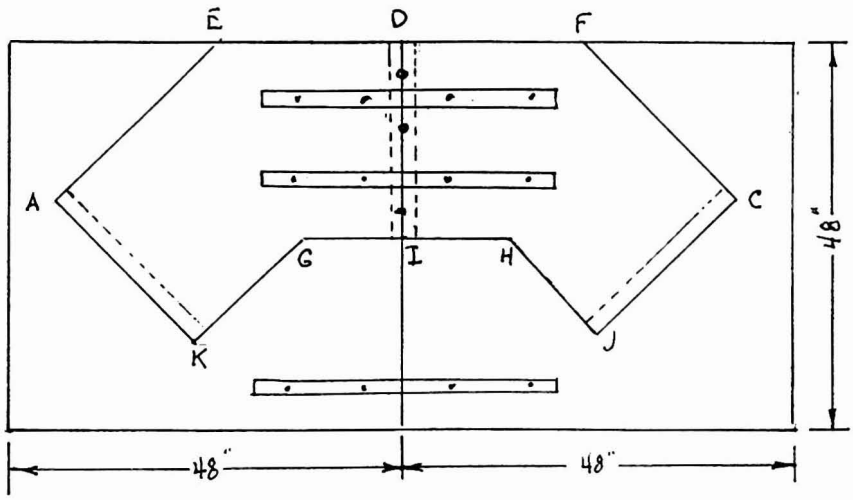


FIG. E

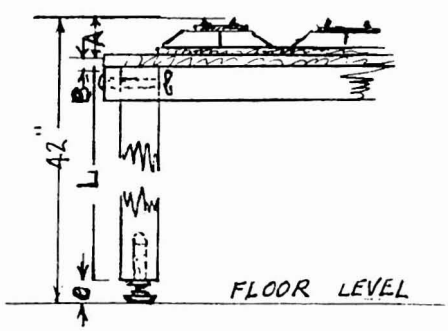


FIG. F

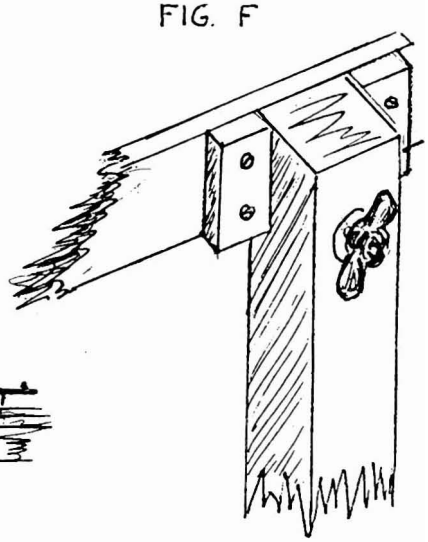
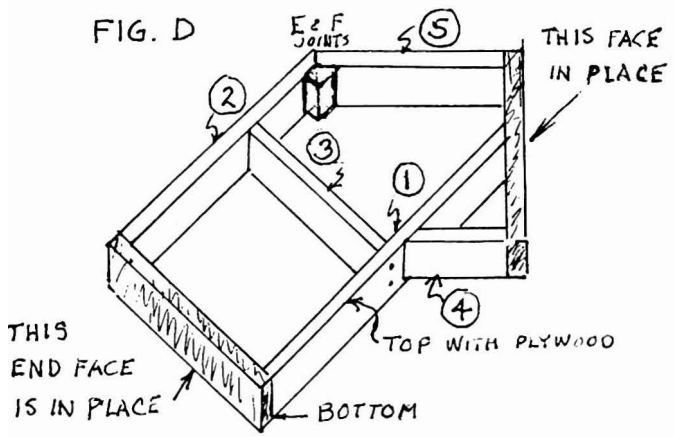


FIG. D



WORK ODER EACH HALF SECTION

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