

Build a portable light-weight composite model railway baseboard

Introduction

The effort of lifting traditionally constructed baseboards is becoming more noticeable, both for myself and other members of Hazel Grove and District MRS. I therefore decided to build a proof-of-concept lightweight baseboard from partly recycled materials. Please note it incorporates a layer of 25mm expanded polystyrene sheet laminated with corrugated cardboard for rigidity and lightness. You could choose to replace the polystyrene sheet with another layer or layers of cardboard (running the grain at right-angles) to make the baseboard more environmentally friendly.

It uses corrugated cardboard fruit boxes obtained from my local supermarket, which allows customers to take them for re-use. You will need 3 of **exactly** the same size and type for the main structure, plus another 5 to 6 to cut up for laminating, reinforcement and the minimal legs. I used a solvent free high grab adhesive (Hard as Nails exterior grade TM).

Using 3 boxes **side to side** produced a nominal 46"x23" (116cm x 58cm) baseboard that would easily fit into my car, and had a net weight of 10lbs (4.5kg). It is easy to carry due to the handholds left in the ends of the original boxes (which become the upright sides of the baseboard), and is surprisingly rigid. Experimentation about methods of wiring, tracklaying and light-weight scenery will be next. You could explore other configurations and sizes.

This article shows the principles involved. You can adapt the method to suit the size of baseboard that you require; nothing is "hard and fast".

Method

Stage 01



This shows the type of box I found most suitable. It has no internal bracing, is made of substantial corrugated cardboard and has high ends and sides. It is assembled with glue, not staples.

Stage 02



Carefully cut through the glue lines with a breadknife to open up the box (either buy a dedicated breadknife for the purpose, or choose your moment with the one from the kitchen!).

Stage 03



One of the end boxes is shown opened out prior to modifying the end flaps. Note that the long side nearest the viewer has been removed to allow this box to butt up to the middle box of the three used.

Stage 04



Modifying the flaps on each of the short sides of the two end boxes.

A-Remove about 50% of the flap, cutting away section A to the line.

B- Cut a notch in the bottom of the remainder about 1 ¼" or 30mm up from the bottom of the flap. This will allow the side flaps to be positioned on the inside of the finished sides, for a neater finish than I got in the Mark 1 version.

C-Leave section C in place for gluing later.

Stage 05



The second or middle box is shown completely opened up and hung up on a blustery day. Cut away sections to leave the remainder of the box as shown.

Stage 06



Close up of the end of the middle box.

Leave D in place, to be folded outwards and glued to the outside of the baseboard sides later, giving additional rigidity.

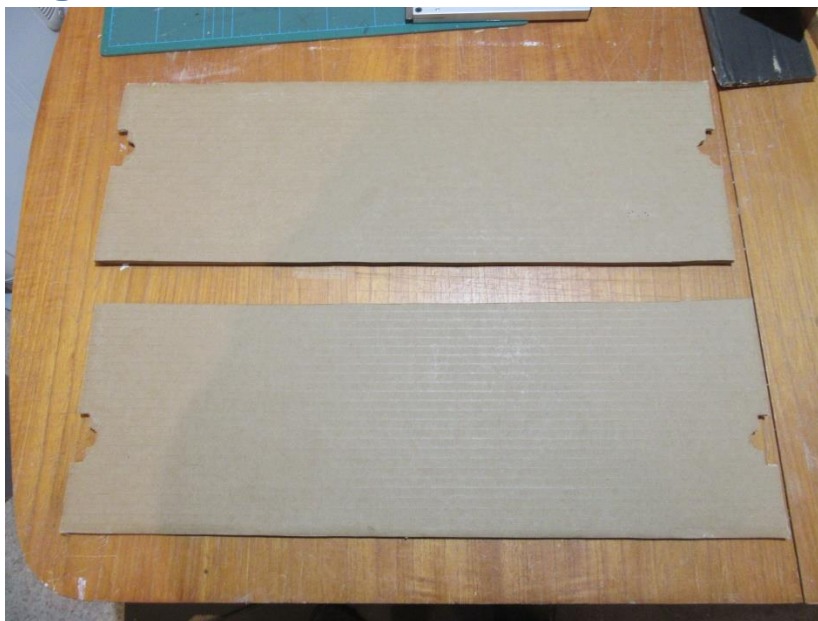
Trim E if necessary to avoid a protrusion.

Stage 07



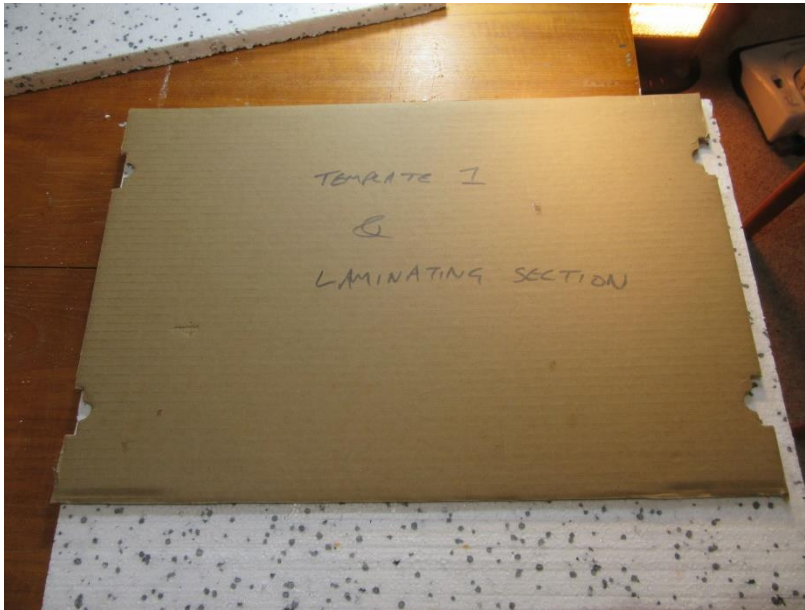
Cut and fit a reinforcing piece of cardboard to strengthen the end of the baseboard (actually the **side** of the box). Run the grain at right angles for rigidity.

Stage 08



Cut the bases out of 3 of the other boxes (not the ones used for the main structure). Cut one of these bases in half so that laminating on top of the polystyrene sheet will avoid coinciding with the joints at the bottom of the main structure.

Stage 09



Shows the trial fit of the first laminating section in the Mark 1 version.

Stage 10 and Stage 11





Glue the end flaps and clamp to the inside wall of the next box(es).

Stage 12, Stage 13

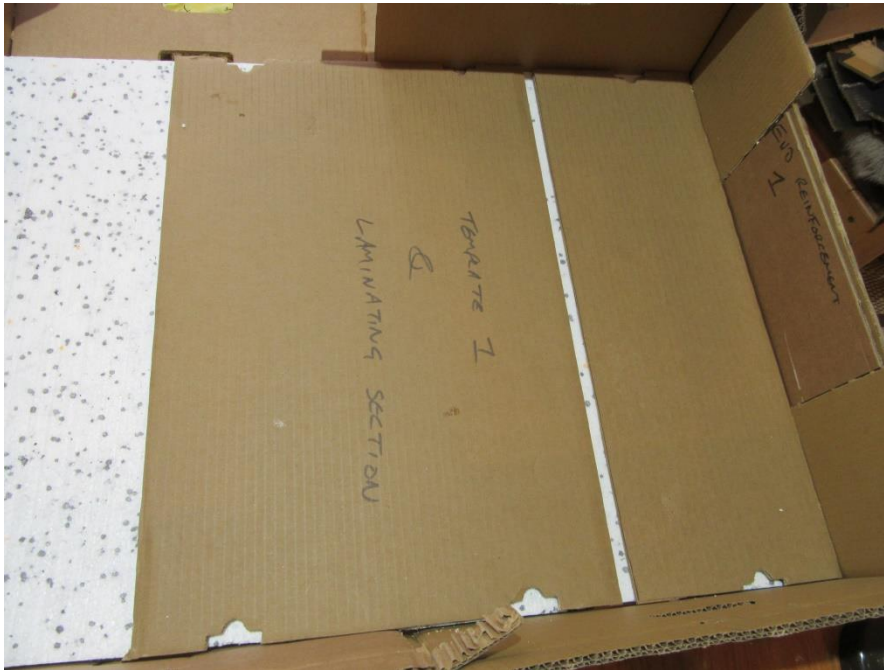


Gluing 2 boxes ready for installing the polystyrene sheet. When you install the polystyrene sheet, make sure you also run a bead of glue along the edge of the sheet where it adjoins the cardboard structure, for extra rigidity. Hold the sides more or less vertical with masking tape or string whilst the glue sets to help them stay upright.



You will have to use your ingenuity regarding clamping and weighting the structure while the glue sets at each stage.

Stage 14



Adding the top laminating layer of cardboard to the polystyrene sheet. Note the initial half-section at the end of the box, to ensure that joints are staggered in all layers of the structure as you assemble the 3 boxes.

Stage 15



Open out and completely flatten another box and glue this in place on the underside to overlap and reinforce both central joints. Don't cut any of this box away, unless it protrudes beyond the sides of the baseboard.

Stage 16



My baseboard will sit on a table, so it only needs to have very short legs. They are made from 3 layers of scrap cardboard and double-sided tape.

Stage 17



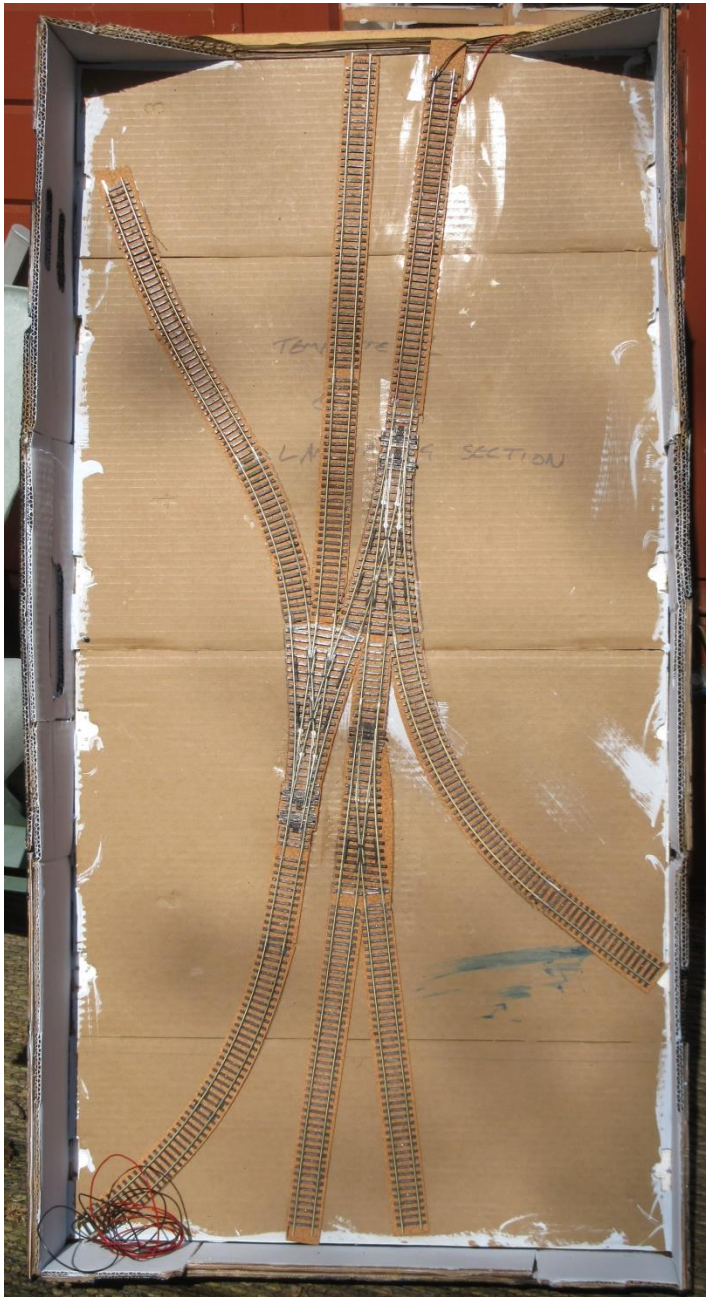
The board is intended join to another (Mark 2!). A simple shelf of hardboard was glued into place for easy alignment. The 2 boards will merely butt together, and may need bulldog clips to hold them together while in use. Time will tell.

Stage 18



The completed baseboard. This is intended to be an “end” board.

Stage 19



The underlay has been fixed with either double sided tape or PVA glue. Track has been fixed with 25mm dressmaking type pins, pushed into place. DCC control will be used. The finished baseboard was given a coat of light blue emulsion on the inside walls and some left over gloss paint on the outside.

Afterthoughts

I added a single additional laminating layer of cardboard to the outside of the baseboard sides (run the corrugations at right-angles to those in the sides) for improved rigidity.

Handholds were cut / opened out as required.

Please re-visit www.hgdmrs.org.uk/cardboard-baseboard for updates about this method of baseboard building and the techniques I am developing.

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