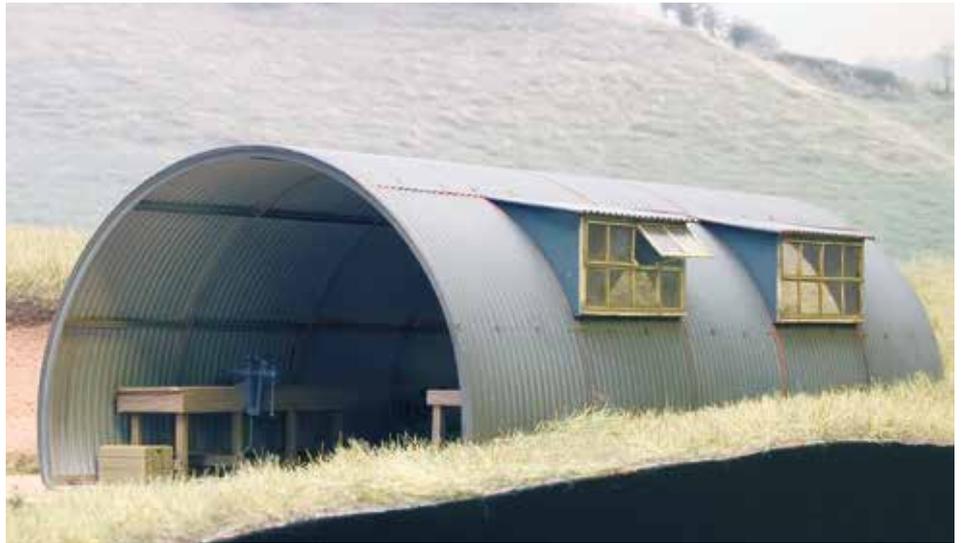


NG Sand & Gravel

014 Industrial Layout Part 7 – The Nissen Hut



Photos: REVIEW Studio

AFTER COMPLETING THE SAND HOPPERS, the next and final structure on the diorama was the workshop structure. As mentioned in REVIEW 63, I had wondered if this should be in the form of a 'Nissen' hut and a card mock-up was created to evaluate this. After a few months looking at it, while working on finishing the hoppers etc., I grew to like the curved structure and it began to be an integral part of the scene. So, after all this, what could be easier than making a 'proper' model?

While apparently a simple structure accurately portraying a Nissen hut posed more than a few problems. Initially, just finding out the sizes took time. Here, access to the internet proved a boon. I quickly found a site dedicated to Nissen huts and, later, came across a downloadable document that contained dimensioned drawings (see 'references' later). It seems there were three sizes – 16ft, 24ft and 30ft wide, usually seven bays – each bay 6ft long. While the two larger sizes are half circles in section, the one I chose (the smallest) has its radii of 8ft sprung 2ft above the baseline, giving an overall height of 10ft. In addition, I made mine up of five bays only.

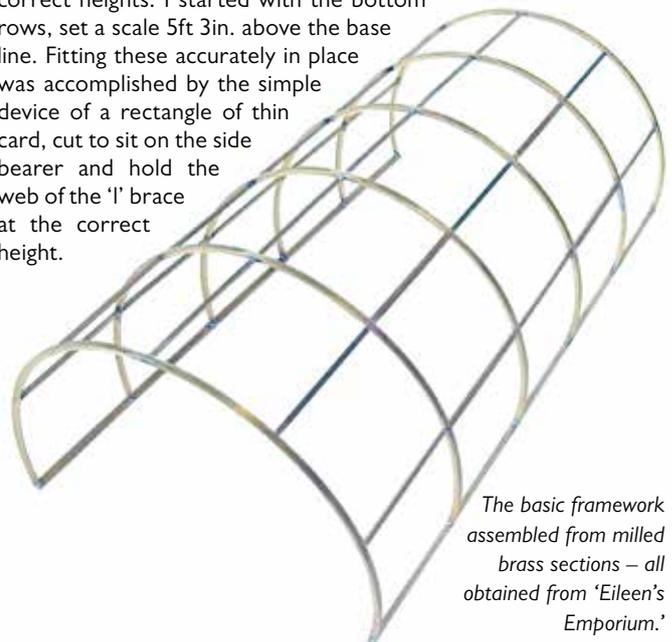
FRAME

To give a solid base for what would be a fairly flimsy structure, I chose to make a frame up from milled 'T' and 'L' section brass. Making the basic metal frame was quite straightforward – once I had found out how to bend the 'T' section brass accurately. Any section other than flat or round will want to curve in two planes at once. The 'T' section is particularly bad at this and a groove was turned into one roller of my rolling mill, expressly for this purpose. This enabled me to take the 'T' section (2mm x 2mm x 250mm) and form six identical 'hoops', the legs of which were trimmed to give the correct scale 10ft (70mm) height.

A pair of 'L' section (2.5mm x 2.5mm x 294mm) pieces were cut to form side bearers. I soldered these, back to back, onto a thick piece of 1/8 in. thick scrap brass. This was dogged down onto a milling table and six slots cut through the upstand (but not the bases) of the angle. These were 2mm wide to accept the 'T' section hoops. Once milled the angles were unsoldered and cleaned up.

A piece of 'Sundeala' board, suitably braced to prevent any warping, was chosen as a building board. The two angles were pinned in place, using rail spikes, the correct distance apart and the

six 'T' section hoops soldered firmly in place. A steel square ensured that these were upright. All soldering was done using a resistance soldering unit – which made assembly very easy and reduced to a minimum the requirement to clean up the joints afterward. To this basic structure, the internal 'braces' were added, using 'L' section brass (1.5mm x 1.5mm). Initially, to give strength, a row was soldered in place at top dead centre. The remainder need to be placed so that the 'window' openings in the Nissen hut occur at the correct heights. I started with the bottom rows, set a scale 5ft 3in. above the base line. Fitting these accurately in place was accomplished by the simple device of a rectangle of thin card, cut to sit on the side bearer and hold the web of the 'l' brace at the correct height.



The basic framework assembled from milled brass sections – all obtained from 'Eileen's Emporium.'

After soldering the angle in place, the card was popped out and the action repeated. Adding the upper braces was done in a similar manner, this time using the line of the lower braces. The final soldered structure, when unpinned from the building board, was light but quite strong.

CORRUGATED IRON

I had hoped that the corrugated iron would be fairly simple – but was proved wrong after a few experiments proved that getting the materials I had to hand into shape was difficult – if not impossible. Initially I had high hopes with regard actual corrugated steel sheet, which I had used very successfully on the little ‘pump’ shed next to the screen (see REVIEW 68). While this would probably have been the best, I could not get the required sizes so reluctantly had to look elsewhere.

Plastic sheet from a variety of sources was looked at and, eventually, some sheets from ‘Tenmille’ were purchased – which had the right spacing for the type of iron used on these structures. The next problem was how to form it, as plastic of around 1mm thick definitely likes to stay flat. I knew though, from forming the corrugated ‘tunnel’ for the sand conveyor (REVIEW issue 60) that it could be permanently set to a curve using heat.

A 1mm thick brass plate was rolled to the same radii as the hut profile, cut over length and two ‘clamps’ made at either end – from similar material.

Rectangles of the plastic corrugated sheet were cut, a scale 6ft wide and of a suitable length to give full coverage between pairs of horizontal braces on the brass frame. The long edges of each rectangle were cut so at one side the cut was made at the ‘top’ of a corrugation and the other at the ‘trough’. These were slid into the forming jig and then plunged into a pan of boiling hot water on the cooker. I used a pair of long nose pliers to hold the jig – don’t drop it into the pan, it only needs immersion for a few seconds. You will see the plastic relax and as it does so, remove from the boiling water and plunge into cold – I had a bowl of water in the nearby sink for just this purpose. Repeat until you have a surplus of curved panels. Once formed in this manner the plastic sheet was as reluctant to flatten as it was to curve in the first place. So far, after many months, there is no sign of it relaxing.

Fitting the panels to the brass frame was not just a matter of sticking them in place. I wanted to show the way they overlapped one another. This would have been simple if I had used thin corrugated steel sheet but 1mm thick plastic required something more demanding, so as not to be glaringly obvious.

Along the intermediate horizontals, where the top sheet overlaps the side sheets, some thin plastic strip (1mm x 0.5mm) was glued, using cyanoacrylate. In effect, the sheets are fitted the opposite way round to the prototype, with the top sheets going on first. The top sheets are lifted at the ‘overlap’ (which is really a butt joint)

and create the illusion of an overlap as the side sheets, when fitted, are slightly lower (0.5mm). Likewise, the sheets (top and two sides) are added from one end and the way the sheets were cut, with ‘high’ and ‘low’ edges, also allows the overlap to be simulated in the thick sheet. The sheets were stuck in place using a contact adhesive, reinforced with cyanoacrylate where found necessary.

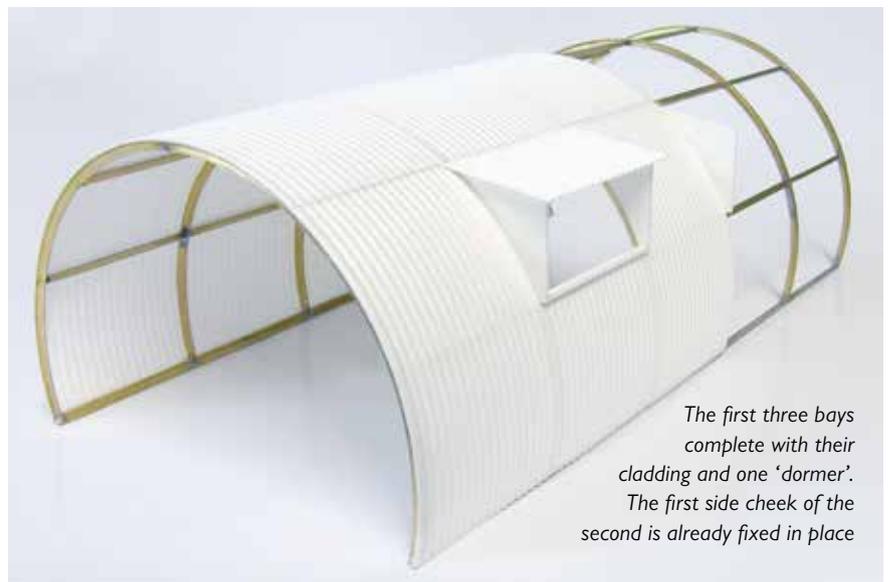
WINDOW OPENINGS

The second and third bays house ‘dormer’ windows – on one side only of my model. I made them up from 1mm plastic sheet. Start with cutting two ends to fit the curved hoops and add a rectangular plain cill and roof. The ends were stuck in place with contact adhesive. Next the curved top sheet of corrugated ‘iron’ is added, trimmed as required to fit the ‘roof’ of the window – followed by a trimmed panel beneath the window ‘cill’. I completed the basic covering and pair of windows then added a flat corrugated plastic roof to each of the ‘dormers’.

FIXINGS

The fixings that hold the corrugated sheets in place on the prototype have a very distinct external appearance. Basically, it is a large thin rectangular washer, applied on the diagonal to the top of a corrugation with a small square bolt head. Even in 7mm scale, these are surprisingly delicate and probably account for about a quarter of the time it took to make the whole model!

Using my computer, I drew a fine grid of 1.75mm squares, which were printed out on 80gsm paper. These were cut out using a scalpel. Pencil lines were drawn along the outside of the model to indicate where the bolts has to go. Four bolts were fitted to each sheet along lines drawn at the overlap,



The first three bays complete with their cladding and one ‘dormer’. The first side cheek of the second is already fixed in place

Photos: REVIEW Studio

Detail view of the completed Nissen hut, in place with the initial 'weathering' applied. I found making the hut look only slightly aged, 'run down', rather than decrepit, harder than I thought.

To keep up appearances, the corrugated material on the tops of the windows has been thinned at the edges.

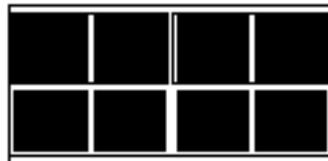


centre and lower edges (as appropriate). Each little paper rectangle was held diagonally in a pair of tweezers and each protruding 'ear' curved downward. With an 'OO' brush loaded with plastic solvent it was then floated into place on the 'crest' of a corrugation, aligned with a horizontal pencil mark. Repeat until you finish – or tedium dictates you go off and do something more interesting. If this was a pain, the next step was worse. Small rectangles of plastic (0.5mm cube) were cut from 0.5mm sheet. These are floated onto the centre of each paper rectangle using a brush loaded with solvent. The challenge was to pick up the cube on the point of a sharpened pin and hold it in place while the solvent was applied – and then get the pin away without disturbing the setting 'bolt head'. At least this step did not last forever!

PAINTING & WINDOWS

At this stage, the whole assembly was spray painted grey – Humbrol No.27 – on the outside and Humbrol 64 inside. A good coat of each was flooded on to ensure complete coverage. The metal sections and corrugated surfaces proving quite difficult to get even. Once dry, I set to on the actual window frames.

I used the computer again to make up a template (see right) for the frames, printing them out on plain paper as before. An oversize rectangle of clear plastic sheet was taped over each image, with about 1cm overlap. Starting with the outer frame, pieces of plastic strip were glued onto the clear sheet, using the image below as a guide. Gradually, more strips, of differing sizes, were added, until the frame was completed. On one frame I cut out one of the upper sections (hinged on the real thing) and made a separate frame, fixed in the open position with a fine 0.3mm flattened wire 'stay'. I didn't bother painting the white plastic strip, just weathering it with a thin



mix of 'mud' colour acrylic paint. Using a scalpel, each completed window was released from the clear sheet by cutting tight up to the outer edge of the frame. They were fixed in place on the 'dormers' using plastic solvent and the bare edges painted over to blend in. Essentially, the structure was now complete, apart that is, from the ends. Basic weathering was undertaken, using 'Rustall' and dry brushing with a pale grey. Later, once the hut was in position, further weathering would be added.

ENDS & INTERIOR

Only the ends and interior remained to be added to complete the structure. As these are quite complex, I am leaving their description to another article.

REFERENCES

THE NISSEN HUT

Tim Shackleton – article in Model Railway Journal No.128, page 179.

INTERNET

For general information on Nissen huts go to: www.nissens.co.uk

I also found a downloadable booklet 'World War II Hangers' - A guide to hanger identification. Go to: www.defence-estates.mod.uk/publications/technical_bulletins/2002/tb_02-02.pdf

This contains PDF format drawings of a variety of hangers – including Nissen huts. Go to the drawing No. DE/HI/100/300. What sort of aircraft could be housed in a 16ft Nissen hut is not explained!

Thanks are due to Tim Shackleton (editor MRJ) who generously provided help – particularly with regard the 'dormer' windows.