

# Kitbashing an O Scale 20-foot ISO Container

by Lynn Zelmer

Some NGDU readers will be aware that I started modelling cane and shire railways in HOn30, rather than On30. A variety of standard shipping containers are available in HO and I was able to modify one of them to somewhat resemble a Moreton Mill work van. However when I looked for a similar O scale (1:48) model to adapt the best I could find was a ready-to-run US-style container wagon with a 40' container load. I didn't buy that model, and I haven't yet built an O scale work van, but this article describes the 20' ISO container I developed to fill that void.

I think it's safe to say that none of the Queensland cane or shire railways had specialized equipment to transport general purpose containers safely over their narrow gauge (2' or 610 mm) lines, although at least one mill adopted a 'container' format for its bogie cane bins and Moreton Mill converted a 30' container as a bogie work van. Both regular flat wagons and specialized container wagons are used to carry containers on wider gauge (and standard gauge) lines, and containers (of various lengths and types) carry almost all of the commodity traffic on Queensland's main North Coast Line.

## The Model

Over the years I've photographed a number of shipping containers, primarily ones used for storage on industrial or construction sites. However I didn't start developing this model until I became familiar with using the computer for photorealistic card-based modelling. As a standard container is basically a rectangular box it's perfect for this type of model construction.

A web search provided basic dimensions for a 20' container and a free downloadable HO scale container card model provided door hardware details. I rescaled the 1:87 model to 1:48 and used this as a guide for drawing my own plans. A rust streaked container used for storing tools, etc., for park maintenance provided usable 'texture'

images after I had done some image manipulation and adapted my scale drawing to its rib pattern. Changes included stretching and skewing the images, replacing leaves and like materials with 'texture' from other areas of the image, and modifying the position and angle of door hardware to match the base photo.

While this probably required 10-12 hours of computer work, the result was a set of images for all five visible faces of a container. Yes, the two sides are identical except for being flipped end for end, but you can only see one side at a time and I didn't see any reason for developing two unique sides at this time. That will change when I finally build a container as a work van since one side typically has one or two windows and at least one door, while the other side has only windows and vents.

The ribs, door hardware and other protrusions were cut from 210 gsm printed card and applied to a 210 gsm card print of the side, end or roof with good quality white glue. The end and side components were then glued to heavy mat cardboard and left to dry under weights (my 10 kg bag of lead shot) for at least 24 hours.

The mat board for bracing is relatively thick. It would be possible to glue the textures to mat board with the edges cut at 45 degrees for corner joining, but it's not easy to create a consistent bevel without the proper tools. I glue square edged mat board to the some of the pieces, the ends in this case, then cut board to fit the other pieces. The photo of the underside of the model shows the mat board extending to the edges of the end prints, but cut short on the sides by the thickness of the mat card. This provides an overlap and two squared faces for gluing.

*BELOW: The 30' container van saw extensive service during track removal at Moreton Mill. Due to the bad weather hitting southeast Queensland and the chance of flooding, the 'destruction' train crew had moved it to higher ground for the weekend. Photo taken near Dyne siding (154), 6 March 2004, Carl Millington photographer.*





ABOVE: Having finished removing the 'Fishers' line, Moreton Mill's 'destruction' train containing the 30' container van is being moved from 'Philbrooks' to the 'Coolum' Line, 9 September 2004. Carl Millington photographer.

## ISO Standard Containers

The Wikipedia web site ([www.wikipedia.org](http://www.wikipedia.org)) provides a history of specialised shipping containers: a variety of country-specific and usage-specific sizes lead to the ISO (International Organisation for Standards) defining standards for global shipping. While there are still a variety of other standards for local use containers, there are over 18 million stackable ISO containers in cargo use globally. Older or damaged containers are also regularly adapted for use as offices, 'sheds' or workshops, emergency and long term housing, secure storage and (apparently) to house computer data centres.

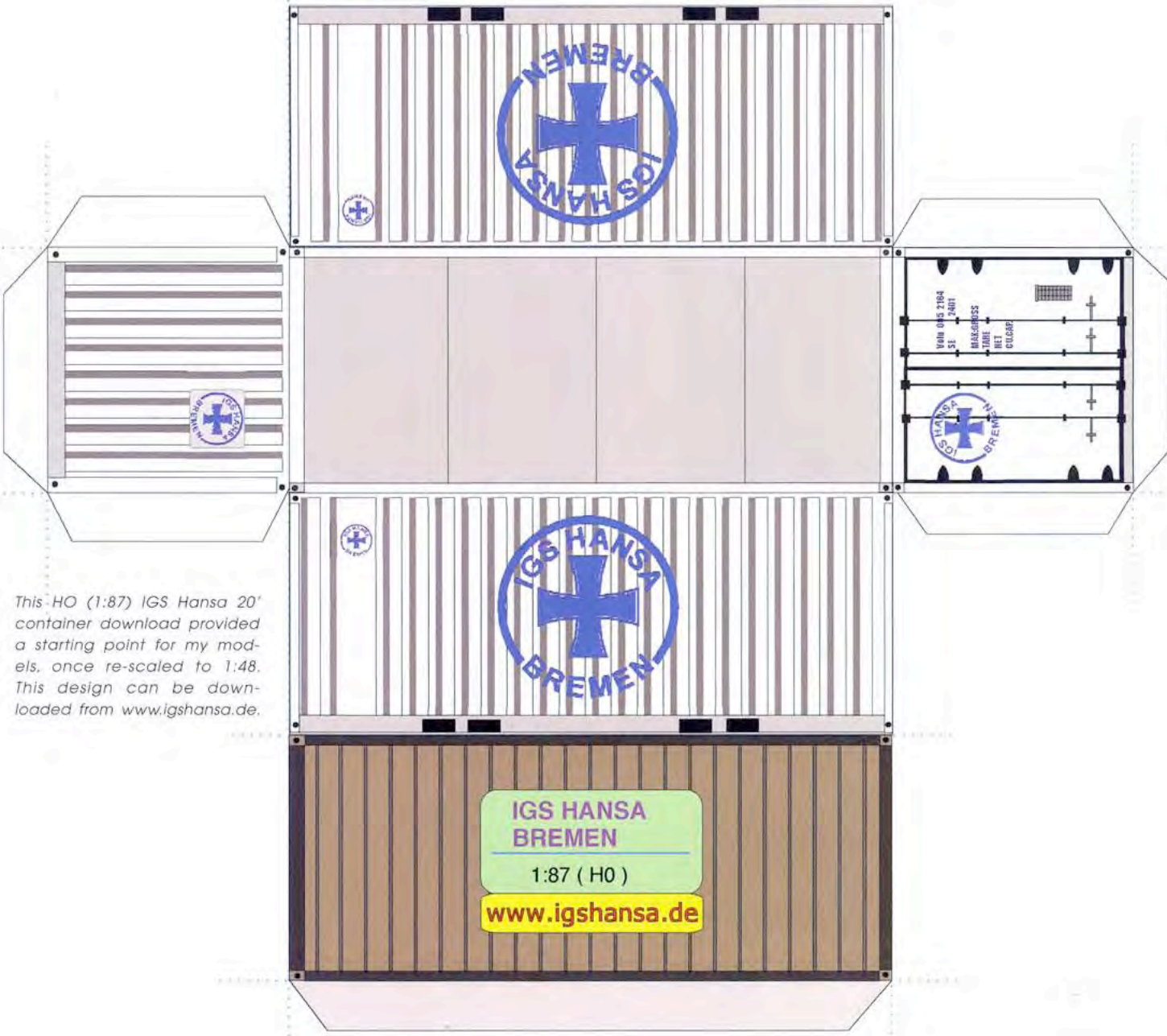
The five common standard lengths, 20' (6.1 m), 40 ft (12.2 m), 45' (13.7 m), 48' (14.6 m), and 53' (16.2 m) all have a width of 8 ft. Their height varies depending on use, with 8' still likely being more common than the 4' 3" half height, 9' 6" High Cube, or other varieties. The conventional closed container is the most common, but liquid/bulk materials are often shipped in a tank or other specialized carrier encapsulated in a framework that meets the ISO dimensions. Refrigeration equipment and its fuel for specialized uses must also be contained within the ISO defined framework.



ABOVE: A slightly different door and rib designs appears on this container used by AMIRA(Q) for storage of their exhibition tables and other materials. The roof of this container is not flat; instead it is formed from the same ribbed material as the sides.

RIGHT: A different end design on a private owner container in a Rockhampton parking lot. I tried to get a straight-on view of the end, but obviously wasn't standing in quite in the right place because the end is slightly skewed. The deficiencies can be corrected and it might have made a better starting point for my model since I was able to get clear views of both ends and one side (and the door hardware is still in good shape). However I didn't see or photograph this container until after I had started my model.





This HO (1:87) IGS Hansa 20' container download provided a starting point for my models, once re-scaled to 1:48. This design can be downloaded from [www.igshansa.de](http://www.igshansa.de).

I prepared these notes some time after building the model so I'm not absolutely sure, but the mat board for the top was likely inserted from the bottom after the sides and ends were assembled and the printed top tacked in place. Alternatively it may have been fabricated first with the walls assembled around it. In either case, it supports the roof texture and keeps the corners square. Quarter inch strip wood from the scrap box was then glued in place to strengthen the joints and minimise warping.

## Detailing

The corner stacking/lift detail is actually in one piece and folds around the corner to help disguise any assembly gaps. The lift hole could be cut out for additional detail but wasn't considered necessary for a background model. The bottom has been left open for ease of construction as it cannot be seen in normal use. The model was finished with several light applications of mat spray, inside as well as outside, to seal the model against moisture and prevent the printed texture ink from running if it gets wet at some point.

I built two of these containers, one in the original gray and the other in a red oxide colour. Close examination of the two containers would show rust and other details in exactly the same spot on both models (see the end view images) as I simply used Photoshop to replace the gray on the first model with a red oxide colour.

*BELOW & OPPOSITE PAGE:* I don't have any construction photos but most of the details can be seen here. Visible surfaces have all been printed on 210 gsm printed card and backed with heavy mat board. The raised ribs and door detail are extra layers of printed card. The model is gray with rust streaks like the prototype; the lighter appearance here is the result of the artificial lighting used for my photography.

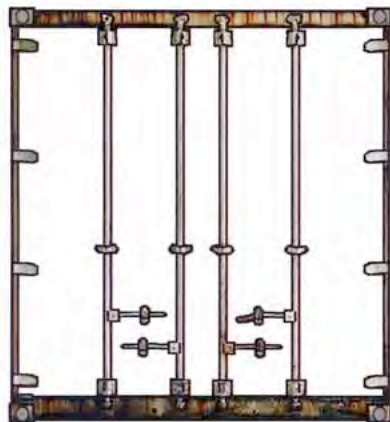
A look inside the container shows both the mat board backing for the printed photorealistic textures, the added rib and door detail layer, and the framing material used to strengthen the model and reduce warping.





*OPPOSITE TOP:* The original container with its distinctive rust streaks in situ in a North Queensland seaside park. While I was able to get reasonably straight-on shots of this side and the two ends, the portable office on the far side and the foreground clutter prevented me from getting a full view of either side. Other parts of the two side walls were cloned to replace the clutter, eventually resulting in a complete side which was used for both sides of the model.

Note that the container is sitting directly on the ground, although the nearby portable office does have concrete block supports. While the end view is in shade, it was possible to adjust the image brightness to match the colour on the sides. The only other complication was the tree leaves (upper right) which had to be replaced with a partial image cloned and flipped horizontally from the left side.



The drawings of the end view show firstly, the scale drawing (drawn on the computer based on the IGS Hansa dimensions) superimposed on the door hardware textures. When printed it must be carefully cut from the card and glued on the end view print to create the 3D effect seen on the model.

The gray door (middle) is from my first design. The second door (right) was created by replacing the gray areas with a red-brown colour in Photoshop. The result was two quite different-appearing models from the same set of textures. The 210 gsm card used for printing has a mat finish, so that one model was a deep gray and the other a red oxide colour.

Once built the models were either located near the loco shed or stacked in front of the mill buildings on the Capricorn Sugar Rail Museum layout. Interestingly, while a corner of one or the other container can be seen in some of the published CSRSM photos, I discovered that I didn't have a single photo which specifically shows either of them in situ on the layout. Perhaps that's the sign of a good detail item, they added credibility to the scene without being a distraction.

## Other Modelling Options

If you model in HO (1:87) scale, a layout of the IGS Hansa 20' container can be downloaded from [www.igshansa.de](http://www.igshansa.de). This "kit" was rescaled (1:48) to ensure that the basic dimensions and hardware were correct for developing my model. The web site has free downloads for at least 16 different shipping lines, usually with both 20' and 40' models in several different scales.



ABOVE: HO<sub>30</sub> version of a bogie work van being constructed from a commercial HO container model. The minimalist underframe includes a central beam, bolsters, and the coupler mounts. Brake gear is not required as it is intended for cane railway service.

A 30' container would be required to correctly model the Moreton Mill work van and could easily be fabricated by simply extending the length using two sets of printed textures. However, I've found that a 20' container appears quite large beside my On<sub>30</sub> cane railway equipment and will likely stick to 20' when building a similar van for my use. A 30' van wouldn't go around the curves on my layout/modules in any event!

The On<sub>30</sub> Capricorn Sugar Rail Museum has been discarded except for one module, which I hope to eventually finish as the museum's 'back lot' where locos and other equipment are restored and maintained. In the meantime the module, structures and backscene have been in storage except for one Sunday when this scene, containing the only 20' container still in my possession, was posed under artificial light for a NGDU photo session. And yes, like many of the second hand containers being used for storage, etc., there is a slight warp down the side as if it was dropped from a height at some point in its working life.



Modelling a container in this way is not as simple and quick as cutting out and folding up the IGS Hansa HO card model, but the 3D detail is well worth the extra work for O scale. As can be seen from the prototype photos or a trip around any industrial area, there are many variations in rib structure, end and roofing materials, etc. With a little extra work it would be possible to create models with these variations, in different colours and perhaps even with an open door. The same techniques could also extend the container for longer models although an open frame containerised tank car, specialised bulk handling or refrigerated container would be a bit more challenging.

Finally, I do intend to some day build a work van using a variation on this model, but that will hopefully be an article for another time. In the meantime, my initial gray O scale model has been packaged in a pdf format and is available on the web as a free download. Since pdf pages can be rescaled when printing you should be able to adapt the model, and the overlay techniques, to one of the smaller scales for a very credible and detailed model.

## Acknowledgments & References

IGS Hansa download for HO (1:87), N (1:160), 1:100 and 1:200 scale containers; <http://www.igshansa.de/igsorg.html> and select Download/English. Still valid 21 March 2012.

Wikipedia: material downloaded 24 September 2009; <http://en.wikipedia.org/wiki/Containerization>

Many computer image manipulation programs could have been used for this project. I've used Photoshop for many years in my work and continue to do so in my modelling, rather than learning how to use alternate tools.

The O scale kit is available on the CaneSIG ([www.zelmeroz.com/CaneSIG/](http://www.zelmeroz.com/CaneSIG/)) and Modelling the Railways of Queensland ([QldRailHeritage.com/mrqc/](http://QldRailHeritage.com/mrqc/)) web sites. All drawings and photos by Lynn Zelmer unless otherwise indicated. Additional prototype photos are available in the rail heritage image collection ([www.zelmeroz.com/albumquery/\\_search.php/](http://www.zelmeroz.com/albumquery/_search.php/)). A scale drawing of the Moreton Mill bogie work van built from a 30' container is also available on the site (use container as the search term). →