Prototype Notes

In 2001 there were some 4,500 kilometres of privately owned track in Queensland, representing seventeen tramway systems serving twenty-two sugar mills. With the exception of one system, the Pioneer Mill at Brandon which uses 1067 mm track, the remainder is narrow gauge 610 mm (2' 0"). Materially these are scaled down versions of 'full size' state rail systems, yet their standards of civil and mechanical engineering are often equal to, if not better than, their larger counterparts. On a power/weight ratio, and proportional size of 'trains' (rakes), cane tramways often compare quite favourably with the government systems.

The isolation of the tramway systems from each other has resulted in interestingly varied types of motive power, rolling stock and operational procedures. Steam locomotives were obtained from both overseas and local sources, and at least a dozen builders were represented during the steam era.

As internal combustion locos supplanted the steam fleets a range of new manufacturers appeared on the narrow gauge scene. Earlier rigid framed diesels were later complemented (and often superseded) by bogie locomotives. Motive power at several mills now includes even larger ex-mainline locos, QR's DH and NSW 73 class, that have been modified and regauged to 610 mm.

This diversity of locomotive types is made even more interesting by the use of corporate colour schemes for each mill or system, together with in-house modifications.

Similarly a selection of rolling stock is available, from early simple four-wheeled whole-stick trucks through to bins capable of carrying 10 or more tonnes of chopped cane. There are also numerous 'non-revenue' wagons, including track maintenance and navvy wagons, to add variety to operations.

From the modeller's point-of-view the areas of most intense activity occur within the mill's environs. The mill yard comprises a number of sidings for the arrival of bins, discharge of cane loads and departure of empties but requires a reasonably large amount of space if even small prototype train lengths are used. The weighbridge, rotary tipper, crusher sequence is interesting but complicated to model effectively (although some excellent scratch-built models have been produced in the past).

Modelling the locomotive maintenance facilities has formed the basis of this series, mainly because of the relative simplicity of the scratch-built structures together with the fact that trackwork and activities can be compressed into a reasonably compact area on the layout. Modellers interested in operation also have some excellent possibilities scheduling and operating trains from the farmer's collection points to a mill represented by a hidden staging yard, perhaps with the maintenance facilities (loco depot or out-depot) modelled on the layout itself.

Maintenance sheds are utilitarian buildings and are accompanied, inside and out, by a variety of smaller paraphernalia such as oil drums; minor items of equipment and machinery (both useful and junk); benches, machine tools and hoses for air, water and lubricants; and nearby bin repair sheds with reject frames, wheel-sets and tools.

Auxiliary accommodation in the form of crew rooms, storage areas and offices sometimes form part of the facility. These can be incorporated under the main roof or they may be contiguous to the central shed, appearing as an assortment of adjoining lean-to sheds.

Model Construction Notes

The techniques discussed in this series have been tested with HOn30 (1:87) models. However similar techniques should work in other scales.

The models were built on plywood, craftwood (MDF), balsa or styrene bases. The wood bases for models incorporating pits were fabricated around an 18 x 12mm pine sub-frame, or alternatively, the styrene base was built up from 30 or 40 thou sheet as shown on the next page. These materials provide a stable base and are easily worked.

Sheet balsa is also useful for supplementary flooring. Some modellers avoid the use of balsa, mainly because of its open grain and 'furriness'. I find the texture of balsa is good for representing concrete, particularly the older and/or weathered kind, and the 'fur' can be removed with a light sanding after a coat of paint. Balsa is suitable mainly for bigger units. It is far too weak to be used as thin structural members in HO buildings, although it might be more useful in the larger scales.

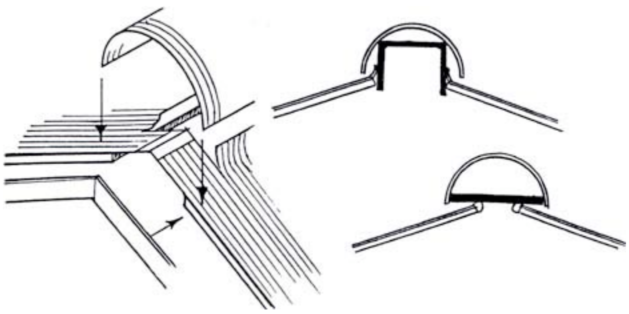
Where slender components such as wall and roof frames are modelled, NorthEastern stripwood or Evergreen styrene strips are preferred. When it comes to heavier posts, etc., commonplace (and inexpensive) materials such as matchsticks and kebab skewers should not be overlooked.

Styrene corrugated metal siding (40 thou spacing) is used to represent roofs and walls, provided all of the surfaces are flat. Where curved iron is required, nothing beats the ribbed aluminium sheets that are marvellously pliable and can be rolled to any desired profile. Be aware, however, that none of these is exactly HO scale—they typically vary between 2.5 and 3.5 scale inches in rib centres. The moral of this observation is that maintaining visual accuracy requires one to use the same material throughout a particular model.

Detailed wall and roof frames are fabricated where they will be visible, otherwise sheet materials such as styrene, plywood or balsa are used for walls and roofs. Because of the open nature of many of these sheds, aluminium corrugated panels on framed walls present greater realism internally as well as externally, But if the shed is more enclosed profiled wood or styrene sheets are adequate. In any case, it is worthwhile painting the interior a mid to dark grey as assembly proceeds.

[Some Brisbane area O scale modellers use the heavy aluminium foil from sealing dairy products. Corrugations are formed by rubbing pre-cut foil strips onto a die of appropriately spaced wires fixed in parallel using a soft stick. Commercial materials can also be used.]

A curved vented ridge is a common feature of many sheds. As was noted in the first segment of this series (*Modelling Loco Depots 1: Overview*) it is useful to cut a trial shape from stiff paper before attempting the final component. The curve can be achieved by rolling the aluminium sheet around a piece of dowel or tube that is a little smaller in diameter than the final profile. Do this slowly and carefully to avoid kinks since it is difficult to achieve the desired shape once the sheet is distorted.



For weather protection the main roof sheeting is curved up under the ridge vent. Fixing the ridge in position also calls for some ingenuity or improvisation. The sketches above (also in the Overview) are indicative only and the use of a gap-filling adhesive (eg 5 minute epoxy) is recommended.

Older sheds may simply have a packed dirt floor with rail laid on sleepers the same as out-doors. Rails are glued directly to the base in more modern sheds, retaining a few sleepers at the ends and where floors will hide them to maintain the correct gauge. The I-beams ‘supporting’ the rails across a pit are glued in place before the floor is added. 1.6 mm (1/16”) ply or balsa can be used to build up the ‘concrete’ floor abutting the track.

With code 80 rail there should be just enough clearance below rail head for good wheel contact. If not, carefully remove a layer of the adjacent ‘floor’. As thin balsa is inclined to warp when glued on one face it is important to weigh down the sheet until the glue has dried. Finally, if a number of identical components, such as portal frames or roof profiles, are required a simple jig is invaluable.

Scaling/Guesstimating Dimensions

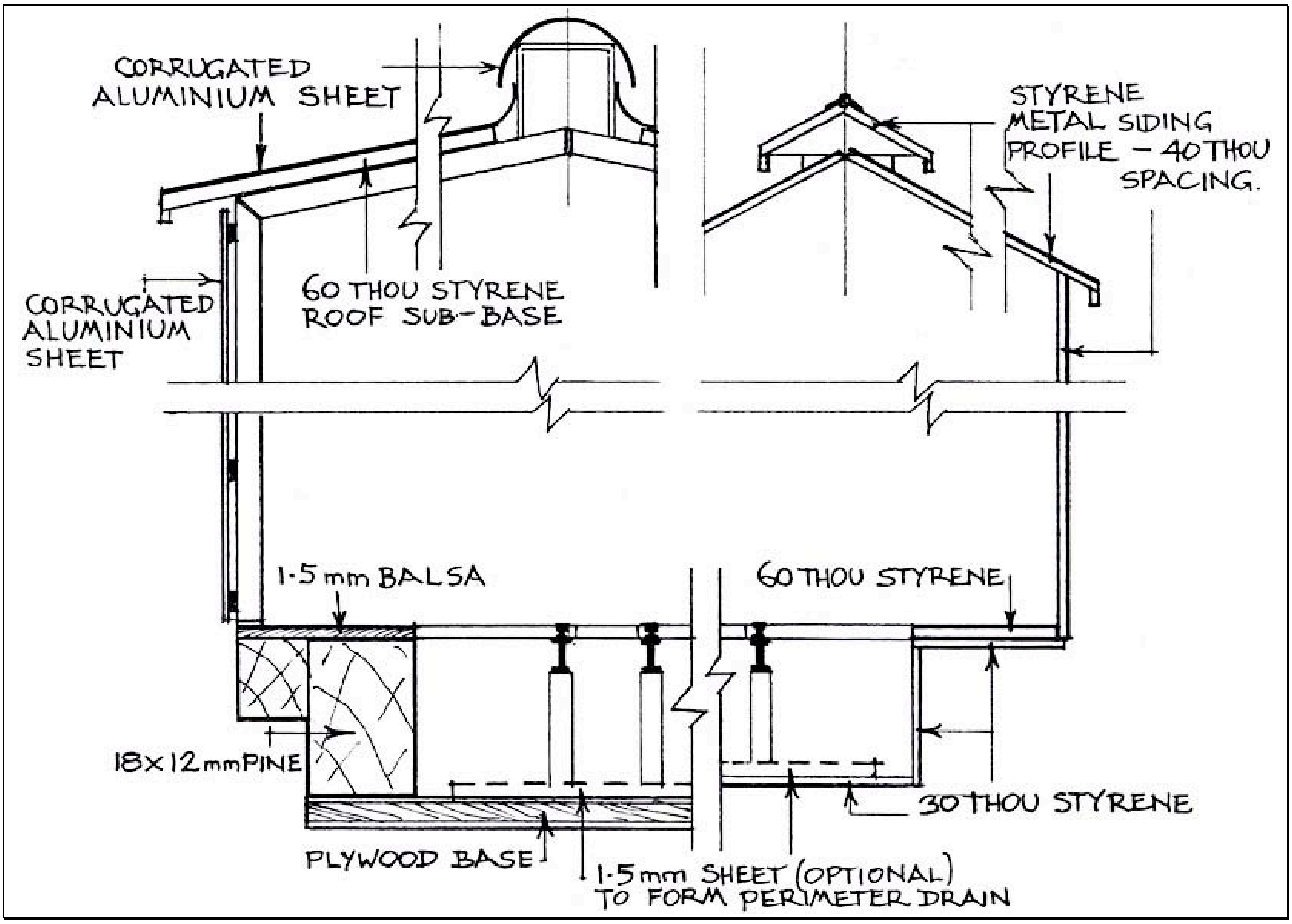
In the first paper in this series (*Modelling Loco Depots 1: Overview*) I indicated that none of the models in this series pretends to be an exact representation of the prototype. Lack of detailed information (and lack of time for comprehensive research) has resulted in drawings and models that are based on dimensions derived (guesstimated) from photographs and discussions with enthusiasts who have a more intimate knowledge of cane tramway workings than I have.

Further discussion has indicated that in many instances accurate data is probably not available, with records of building activities having been lost over time, if they ever existed. The most significant archive for Queensland’s sugar cane mills is that of CSR (the Noel Butlin Archives in Canberra) and it’s quite limited in terms of locomotive facilities and related structures.

The *based on* method can produce a credible but approximate result when more exact data is otherwise unavailable. The drawings in this series have been reproduced to scale, but no dimensions are shown, lest such information might be misrepresented as being accurate.

Assumed dimensions are ascertained by identifying elements and scalable materials visible in the photograph(s). Building elements include components such as windows, doors and, in the case of railway buildings, the track (2’ gauge for most Queensland mills).

With most cane loco sheds there is little visual reference to rely on with respect to windows and doors because, being part of an industrial structure built for a particular function, their size is often specialised and indeterminate. It may be possible to estimate the width of a loco entrance by comparing the track gauge to the total opening, but remember



Typical loco shed construction techniques for HO. Other scales would be similar, albeit using different sizes of materials.

that unless the photo is taken directly facing the wall, perspective recession will distort the relative dimensions and proportions.

A somewhat more tedious, but more accurate, estimate can be obtained if the corrugations of the roof and/or wall cladding are visible. Standard corrugations on iron and asbestos/fibre-cement (fibro) sheets are at 3” or 76mm centres, while ‘super-six’ fibro had a 6” (152mm) spacing. So if the photo shows enough of this detail it is simply (??) a matter of counting the corrugations and multiplying by the appropriate factor to arrive at an approximate dimension—not an exercise for the faint-hearted, nor one that should be attempted late at night or after a big party!Corrugated iron water tanks are rolled from the same material (dimensionally) as above, and this may give some guidance as to height, again being mindful of the perspective factor. Sometimes the lines of sheet overlaps are visible, but care should be taken if using this as an estimate module as overlaps may be one, one-and-one-half or two (or more) corrugations. The dimensions between overlaps may therefore not be consistent.

Other materials that may be useful for estimating dimensions are brickwork (usually about four courses to 13”-13 1/2” or 330-343mm), concrete blocks (16” x 8” or 407 x 203mm), and timber weatherboards (generally between 5 1/4” and 6” or 133-152mm). These materials would not have been commonly found on older sheds, although they might be seen on associated buildings.

The heights of openings could be determined by comparison against locomotive heights, if locos are adjacent to the opening and if their height is known—a lot of ifs. It is far safer to adopt the minimum modelling height determined by your loading gauge (I recommend an absolute minimum scale height clearance of 12’ 0”, remembering that this height is measured from the top of the track, not ground level).

Locating the Model

As mentioned earlier (*Modelling Loco Depots 3: The Out Depot*) it may be easier to provide a small out depot shed, located away from the mill proper, to simplify modelling requirements. However, this type of installation would not have the same amount of supporting infrastructure as a central facility.

If space permits it would be visually and functionally satisfying to incorporate a section of the mill itself to complement the depot. But anyone who has been in reasonably close proximity to even a modest operation will be aware of the immensity of the mill structures. Nonetheless some dedicated hobbyists have produced excellent models that focus on this aspect.

The later version of the Qunaba loco shed on Jim Hutchinson's HOn30 diorama set in the steam to diesel transition era illustrates the value of including a variety of details to make the scene 'live'. Note also the Traffic Office (*Modelling Loco Depots 2*) in the upper right corner. Additional photos of this diorama can also be found in the previous note in this series (*Modelling Loco Depots 5: Qunaba Mill Loco Sheds*).

A useful and effective compromise is to represent the main complex on the backscene, either in low relief, painted or photographically. The loco shed(s) can then back onto the mill representation. Modelling in this way might also allow a through shed to be represented, perhaps simplifying operations on the whole layout. As an alternative, the loco depot could be located a short distance away from the mill proper, perhaps with an associated rolling stock maintenance facility. This should be less demanding for modelling while providing greater operating realism. Models of other typical structures such as the Traffic Office (see also 'Other Models' on page 4) can help identify the mill's/shed's locale and provide additional interest.

Finally, the cane loco sheds that are the focus of this series are all fairly simple structures that can be readily assembled by the average scratch-builder. What gives them their particular character, and authenticity, is the detailing of the site—both inside and outside the buildings. To achieve the maximum visual impact it is essential to detail the models, some colourful oil and fuel drums if nothing else. Throw in a sand bin, a few tools, a hose or three, oxy-acetylene bottles, some bits of rusty ironwork, etc., and the scene will really start to live (see diorama photo above)… demonstrating how easy most of these rudimentary 'timber and tin' structures are to model.

The Mourilyan Shed

The former shed at Mourilyan (plan on page 6) appears to have been constructed with 'in-the-round' posts and roofed with large sheets of corrugated asbestos-cement. The front views were the only visual reference for the model. The openings were 'guesstimated' to be at least 12' 0" (3.66m) high and David Mewes recollected that the shed could accommodate just one loco in each bay, so a depth of 30' 0" (9.15m) was arbitrarily selected for the exercise.

David Mewes photo, 1976.

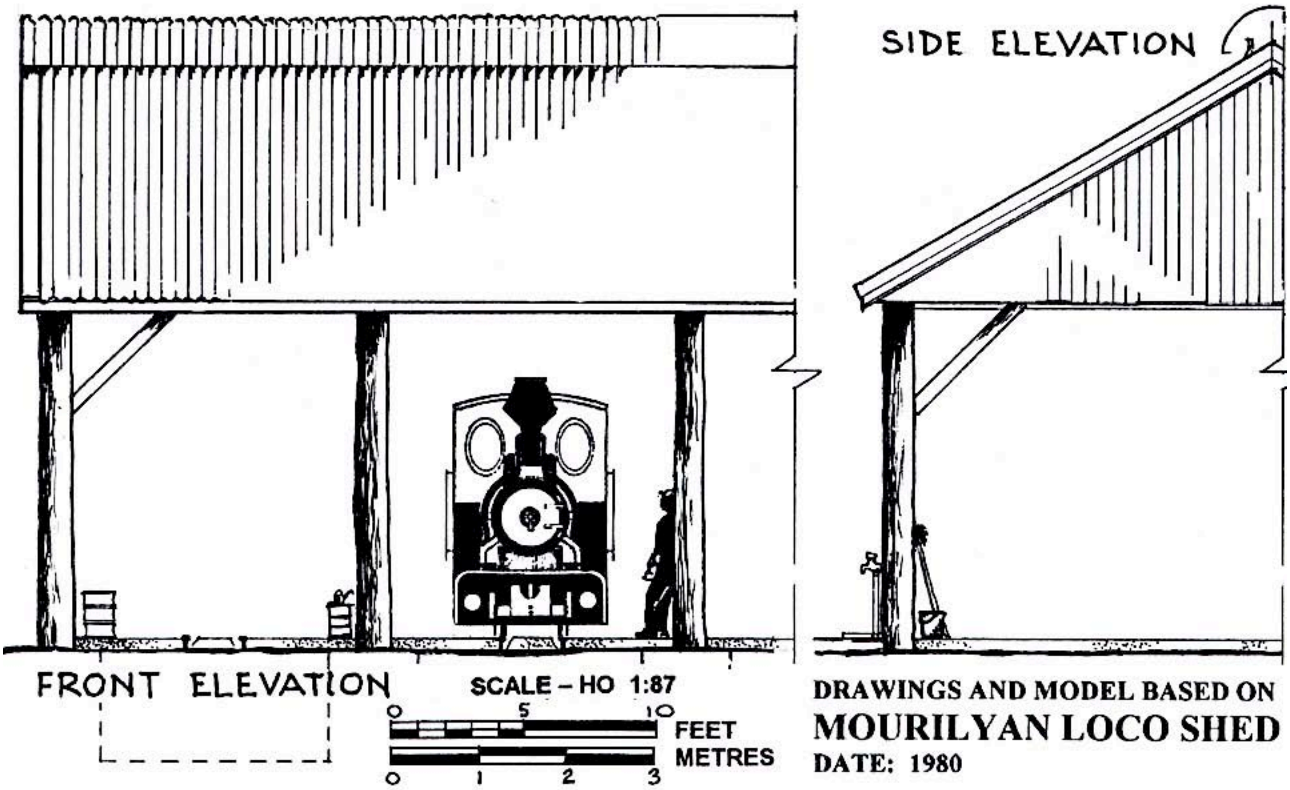
Material used for the model included 4mm kebab skewers for the posts, 2.4mm balsa roof formers and 1.6mm balsa for the floors, glued to the 18 x 12mm sub-frame. The steps for assembly are shown in the photograph on bottom of the next page, reading from the left. First the rails are glued directly to the sub-frame, leaving a few sleepers in place (except over the pit) to maintain gauge. Next the balsa floor is added and the supporting beams glued under the rails across the pit. Now add the pit floor, steps, beam supports and any other pit details. It is advisable to paint the pits and floor at this stage.

Drill locating holes for the posts 2-3mm deep and glue the posts in position, making sure the tops are even. The longitudinal top plates and roof formers are then attached, following which the sub-roof of 2.4mm balsa can be glued down to receive the roof sheeting. If the roof's prototype super-six fibro roof profile is desired it can be represented by O scale corrugated iron.

The pits included in this model are pure conjecture but they add interest. One useful facet of this design is that the number of bays can be increased or reduced without changing the cross-section—the basic module is simply repeated as often as desired—the model only comprises four bays. This would probably cater for the needs of most layouts.

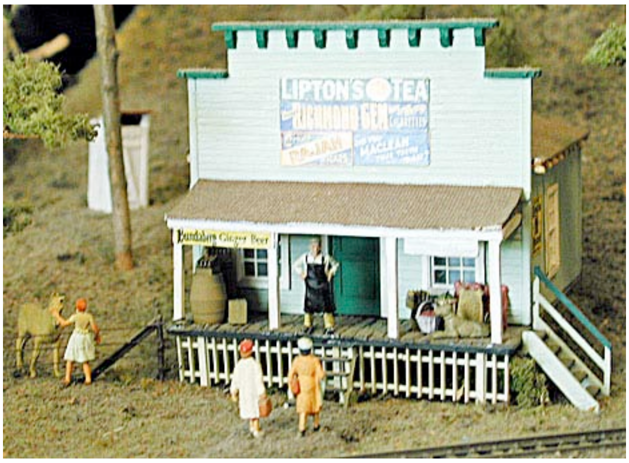
Mourilyan Shed; David Mewes photo, 1980.

Mourilyan shed demonstrating the steps for assembling any of the loco sheds, reading from the left. First the rails are glued directly to the sub-frame, leaving a few sleepers in place (except over the pit) to maintain gauge. Next the balsa floor is added and the supporting beams glued under the rails across the pit. Now add the pit floor, steps, beam supports and any other pit details.



Other Models

The single road loco shed on 'Dowmont', Bob Dow's HOn30 home layout. The shop in the background follows Queensland small town commercial building construction practice. Lynn Zelmer photo.



Typical Queensland structures (shop above and 'low-set', ie raised on stumps, houses above right) on Greg Stephenson's HOn30 home layout add interest and help set the scene for the viewer. Lynn Zelmer photos.

Acknowledgments

These notes have been edited and extended, with permission, by CaneSIG Coordinator Lynn Zelmer from Jim Hutchinson's *Modelling the Railways of Queensland Convention 2000* notes. Jim provided the Mourilyan and Qunaba (diorama) models, model photos and drawings.