

Modern Cane Railways of Queensland

Carl Millington's presentation at the Modelling the Railways of Queensland Convention, 2004

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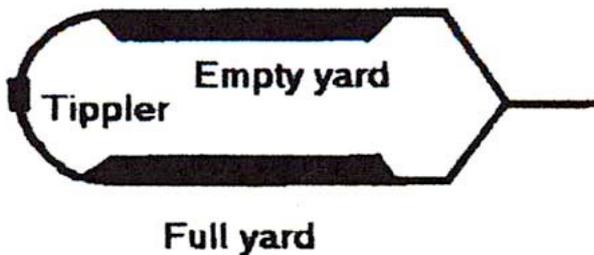
Part 8: Mill Layouts and Yards

Mill layouts

Balloon: Mills that use the balloon arrangement usually only have one way in and out of the mill or the factory site is in an area that limits the space in which the yards can be accommodated.

Mills that use a balloon loop include: Moreton, Isis, Millaquin, Plane Creek, Racecourse, Pleystowe, Marian, Farliegh, Proserpine, Invicta, Pioneer, Victoria, Macknade, Tully and Mossman.

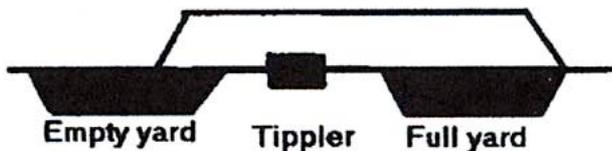
Normally there are two yards, full and empty. Victoria Mill has a combined empty and full yard.



Balloon layout

Straight: Mills that utilize a straight arrangement are not confined to space limitations like the ones that use a balloon.

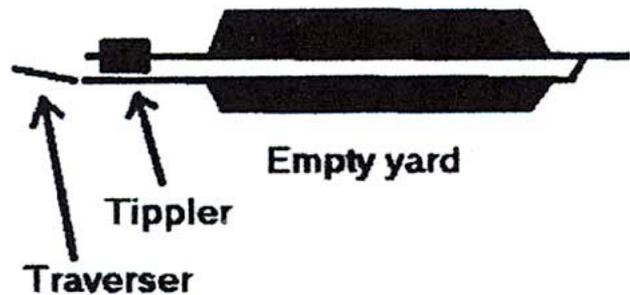
Mills which use this straight layout arrangement include Fairymead, Bingera, Inkerman, Kalmia, South Johnstone, Mourilyan and Babinda.



Straight layout

Dead End: Mulgrave Mill at Gordonvale, has a very interesting operation in that the combined full and empty yards end in a dead end. A traverser is used to move the bins after they have been tipped to the empty yard.

Full yard



Mulgrave Mill's dead end layout

Yards

The Full yard: Full bins of cut cane arrive at the full yard ready to be brought to the tippler. In the full yard you will find release lines for locomotives, devices to stop bins from rolling forward or backwards known as rollbacks and rollforwards. Rollbacks are steel stops that are located between the rails at the far end or arrival end of the yard, and are raised either manually or automatically to stop full rakes of bins rolling away and entering the running lines. Roll forwards are normally automatic stops that are found on the tippler end of the full line and are there to stop rakes or bins from rolling forward towards the tippler.

Mills with an automated full yard use hydraulic pushers to push rakes of tins to the tippler. These pushers are located on the outside or inside of the rails and are integrated with the rollbacks and rollforwards by electrical/electronic controls.

Mills that don't have pushers use winches to bring the rakes from the full yard to the tippler.

The Tippler: The tippler is where the cane is tipped from the cane bin onto the cane carrier [conveyor] that takes it to the shredder and milling train. The tippler is a large steel 'can' frame, in which the bins are pushed in by hydraulic pushers.

Most mills have a combined tippler/weighbridge, with the tippler frame sitting on pads that measure the weight of the bin. The bins are held in the tippler by very tight tolerances. Some mills tip two bins at a time, while others tip bins of various lengths and heights. Once emptied the bin in the tippler is again weighed, before it is pushed out by the next full bin(s).

Mills have to calibrate their tippers every 24 hours to satisfy a government requirement. To do this several mills have made a 'Tare weight' wagon which is simply added to the back of a rack in the full yard. The 'tare weight' wagon weighs the design weight of a fully loaded bin. Mills that don't have a purpose-built wagon use weights placed by crane on the corners of the tippler floor.

Before a bin can enter a tippler it has to be uncoupled from the other bins. Mills that use knuckle couplings use automatic bin uncouplers located before the tippler. Mills with hook and ring or link and pin have an employee to uncouple the bins. Bins with knuckle couplers pass over a pneumatic ram once out of the tippler, which closes the coupling allowing it to couple up to other bins. Mills that don't use knuckle couplings have another employee to link the bins up in the empty yard.

The Empty Yard: Empty yards consist of several tracks on which the empty bins from the tippler are placed prior to being taken back to the fields. The number of tracks in an empty yard depends on the amount of space the mill has for it. Several mills use a tractor to couple and move bins around in the empty yard./

The Loco Shed: All mills have a loco servicing of some kind, the size of these facilities depends on how much room is available. Loco sheds are normally located at the back of the mill, or opposite/in-between the empty and full yards. Some mills have a separate loco storage area for their locos to use during the crush, because the loco shed is located in a way that it would disrupt tippler operations.

Most mills have a full service shed containing inspection pits, overhead cranes or loco jacks to do heavy overhauls on the locomotives and brake vans. Other facilities found around the loco shed include a sand drying and filling facility, be it an overhead pneumatic discharge type or a manual 'scoop and pour' type. Diesel pumping bowsers are provided to fill the diesel tanks on locos and brake wagons.

With more than one mill in the area being owned by the one company and having interconnecting lines,

locos are often transferred from one mill to another in the slack to receive heavy overhauls, as the facilities at one mill make it easier to be completed. By doing this some mill loco sheds have become "running" sheds only.

Navy Yards: Not all mills have a dedicated navy yard. Some simply have a track near the loco shed or one of the yards for the storage of navy wagons and track maintenance equipment. Mills that do have a navy yard usually consist of a couple of tracks and a few sheds in a lockable compound.

Raw sugar loading facilities: Mills that transport their raw sugar by rail use an overhead-loading bin to fill the wagons. The train's engine is used to move the sugar boxes under the bin, by following coloured light signals showing green for moving forward, orange to ease up and red for stop. Sensors next to the bin loading chute control these signals. An operator controls the flow of sugar into the sugar boxes.

Several mills that use QR to transport their raw sugar use radio telemetry to facilitate loading. As QR have dedicated 'sugar' locomotives, they are fitted with a device that communicates with the loading bin by radio signals. The loco's driver simply watches the lights on the box in the cab, which tells him or her when to move or stop the train. The bulk sugar wagons are automatically filled with sugar.

Molasses loadouts: Proserpine, Inkerman, Kalmia and Pioneer mills are the only mills that transport molasses by rail, with QR being the carrier. The molasses wagons are placed under an overhead filling nozzle that is manually controlled to fill the wagons. The train's locomotive is used to position the wagons. Communication between filler and train crew is by two-way radio.

Concrete sleeper plant: Only a handful of mills have their own plant for the manufacturing of pre-stressed concrete sleepers. Finished sleepers are either placed directly onto wagons that will take them directly to the job site or are stockpiled for future use. Some mills not only make sleepers for themselves but for other mills.



Empty and full lines run side by side on the dead end layout of Gordonvale's Mulgrave Mill



Cane bin traverser on the dead end mill layout at Mulgrave Mill



Bin being tipped at Fairymead Mill, July 2002. Lynn Zelmer, photographerr



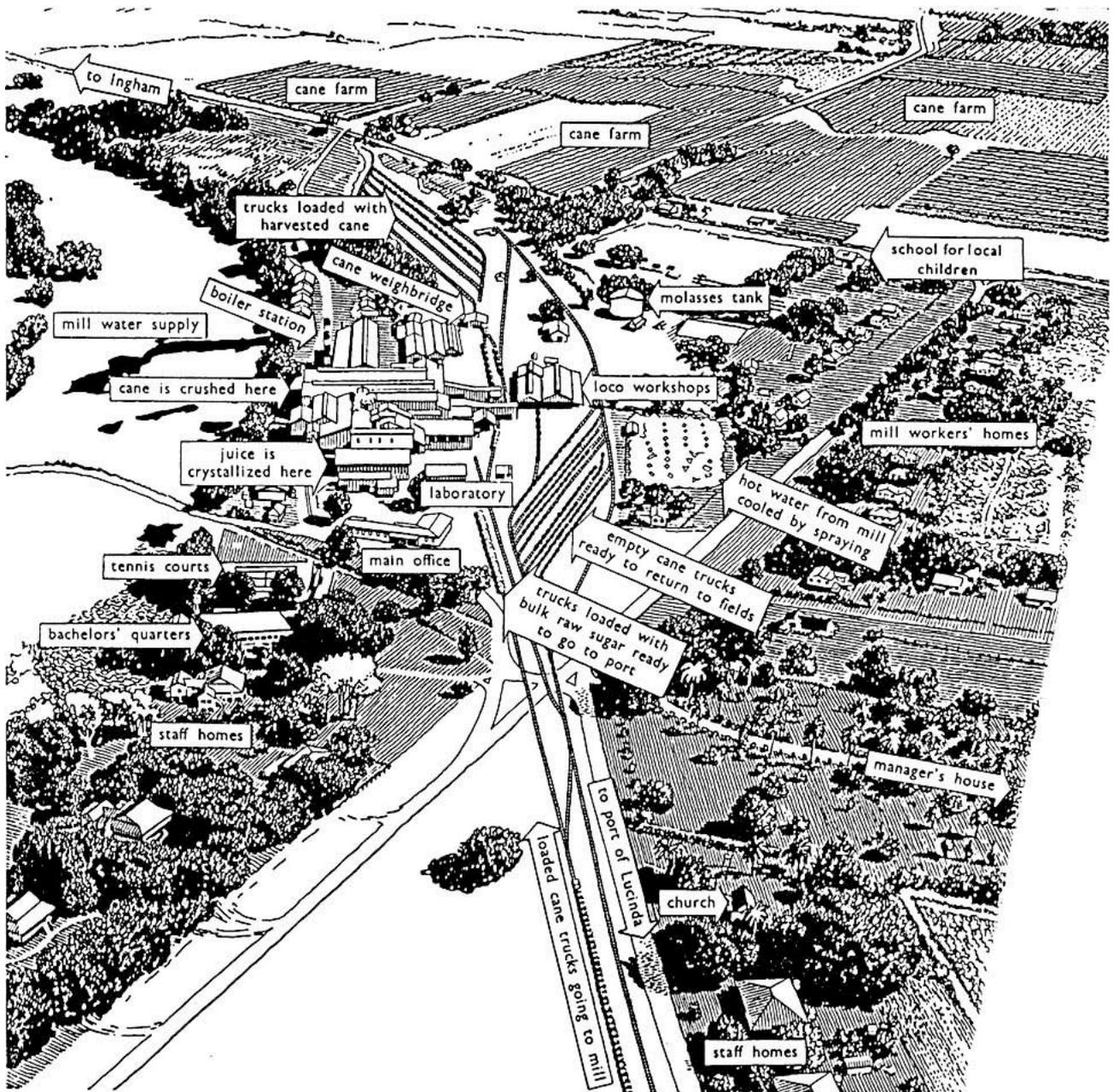
The three-road loco shed with attached two-road truck shop (right) at Isis Mill



The navy line at Moreton Mill before it was demolished.



QR sugar train being loaded at Inkerman Sugar Mill.



Aerial view of Victoria Mill, near the town of Ingham in tropical North Queensland, as it was in the early 1970s. From Turnbull, Clive (1960). 'Sugar, Wealth of a Tropic Land' in *Australia Today* (National Annual), 56: Oct, p 72.