



Engineering and Operations

One Typical Mill, 1992

In the 1992 crushing season the Marian Mill transport system operated 26 shifts/day (engine crews), with a net tonnage of 14-15,000 tons/day (approximately 24,000 gross tons) to supply a 5 days per week (23 hrs/day) crushing schedule. The Mill had approximately 270 kilometres of 2' gauge 'main line' track, a maximum grade of 1:37, and used both 4 and 6 ton link and pin connected bins. Bins were handled automatically within the mill and rotary dumped onto a conveyor belt to the mill.

Prior to 1981 45% of the cane came to the Marian Mill by road transport or QR (Queensland Rail); in 1992 only 20,000 tons came direct to the mill (from a few farms just east of the mill). Some of the farmers on the far ends of the system also delivered their cane to the rail system by road transport, however this cane was then transported to the mill via rail.

Burnt cane must be harvested reasonably quickly, usually the next day. Cane yields were approximately 30 tons per acre, and a single small farmer would perhaps be allowed to deliver 100 tons in a day, thus daily burnings were small.

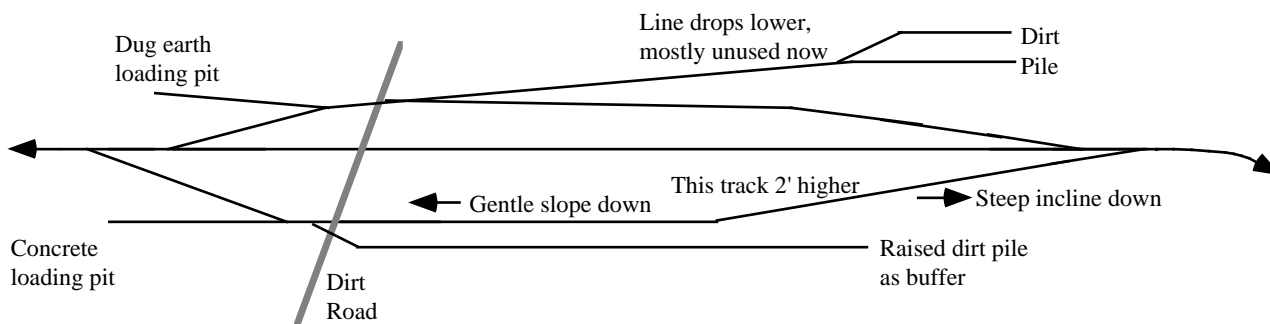
The hilly sections north of the mill had grades to 1:37 [the worst grades were recently eliminated with

a multi-million dollar cutting], the flatter route west through Cattle Creek had maximum grades of 1:80. Normally the maximum curvature on the mainline was 100-150 metres radius, although again, the sections to the north were through much hillier country and some non-mainline sections could be as tight as 130' (2 chains or approx 40 m). Speed (10 or 20 km/hr) and load restrictions were common.

A 40 ton (740 hp) EIMCO locomotive could haul approximately 75 cars up the grade on the northern line. A 24 ton loco can haul 300 4 ton bins on the flat (trailing 1500 tons). The newer, heavier, locomotives were acquired when the lines were extended after 1990—prior to 1968 the average haul was 13 km, by 1992 it was 21 km. The newer locomotives are also able to work with slave units (computer controlled, driverless locomotives), with the slave placed back in the train to assist with both braking and hauling.

Mackay Sugar now (2002) makes extensive use of GPS and related technology to keep track of its trains, is beginning to use superbins at some of its mills and is also likely looking at driver-only trains (eliminating the off-sider, who does all of the leg work during switching) to cut operating costs.

Cane Delivery Sidings



This farm siding (above, not to scale) has storage for perhaps 25 bins on each of the working tracks (currently the central through track and the sloped track below it).

A farm tractor with a wooden bumper or an old tire on front would shift two bins at a time from their trailers, pushing them along the track as required.

CaneSIG: Modelling Cane Railways



This is one of my favourite locations in the Mackay area. The rough track and small yard with its delivery ramps exemplifies cane tramway operations of earlier years. The through line parallels the road to the left; that's a farm access (No Through Road) cutting across the centre of the picture.

A tractor hauling a trailer will drive over the end of the ramp to the right, drop into the hollow beyond and back up to the rails for picking up or dropping off the bins. The track slopes down at this point so empties are likely collected here, letting gravity do most of the work.

Variety and Local Ingenuity

Shire tramways carried cane as well as other traffic in some areas (eg Innisfail) and some continue to have passenger operations as part of encouraging tourism (eg Port Douglas). All maintained some means of carrying navvies and/or other personnel. Likewise, all required some means of dropping off and collecting bins, servicing locomotives and other equipment, crossing water courses, etc.

The charm of the cane railways, as I indicated above, is in the variety of ways that they accomplished their purposes.



Relatively well ballasted 'main line' paralleling the road with cane delivery tracks less well maintained. Some other cane lines have been built and maintained to a better quality than the standard gauge lines.



Cane line on ex-QR timber trestle (2 photos above).

CaneSIG: Modelling Cane Railways



The Mill's locomotive depot above is similar in size to the facilities below right. The small depot (right) is located some distance from the mill and is capable of doing routine servicing but not major repairs.

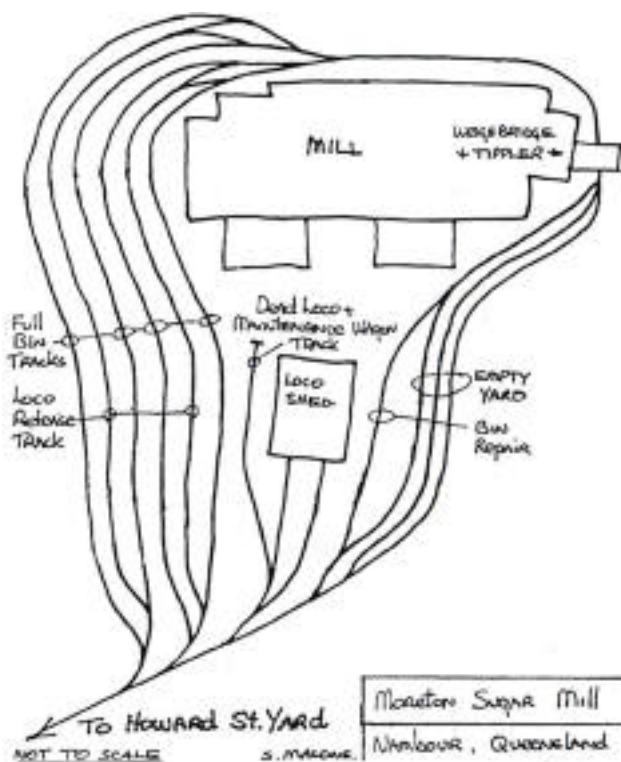


A mill in the early 1990s (above). Traffic officers in the elevated office (top left) schedule bin deliveries and oversee the weigh scale and rotary dump. Billets go up the conveyor belt to the crusher. The locomotive depot is top right.

Mackay Sugar's Broadsound (below), a Clyde-built 0-6-0, heads out again after delivering a rake of loaded bins. Note that the mill yard tracks are almost buried in ballast with cane trash everywhere and the detail for modelling on the loco.



From Field to Mill: Modelling Cane Railways



Mechanical ram (above) for pushing a rake of bins through the mill sits in a concrete trench and rises up to push on a bin axle, moving the rake from the full yard, through the weigh scale and dump, and out into the empty yard.

Moreton Mill map (left) courtesy S Malone (AMRA Journal 236, 1997).

A variety of forms (below) help control equipment movements and maintenance. Other forms record cane deliveries and ensure payment. This composite image and related materials were some of the resources for Modelling the Railways of Queensland 2002, the most recent Brisbane-based biannual gathering of modellers.

Modelling Cane Railways Operations and Maintenance
Model Record (July 2002) photo by Greg Stevenson. ISIS NSW documents from The Cane Millwrights Collection courtesy Isis NSW

NOTICE TO LOCOMOTIVE DRIVER, TRAFFIC OFFICERS AND CANE INSPECTORS
 This notice and sign will apply to locomotives operating on the 1020 and 1040 gauge tracks within the network including full lines. Their use must only be conducted with the approval of a Traffic Officer.

SECTION OF TRACK	09	20	21	22
Maintenance points to North point	40	45	41	30
North Loop to Kamb	40	41	39	26
Jubilee Road to Yard	42	40	31	20
Maintenance points in Yard	40	40	22	20
Top Filter to Filter Flushing	40	40	21	20
Filtering Loop to Top Filter	40	46	25	20
Looping to 2 mile main bridge	40	40	20	20
End Tote to Top Filter	11	18	22	23
Range Road to Top Filter	30	31	40	30
Filter to 20 Cuts	20	20	20	20
Whacker to 2 mile main bridge	20	21	20	20
Whacker to 2 mile main bridge	24	21	22	20
Whacker to 2 mile main bridge	40	40	30	40
Whacker to 2 mile main bridge	40	40	40	40
Whacker to 2 mile main bridge	40	40	40	40
Whacker to 2 mile main bridge	40	40	40	40
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Whacker to 2 mile main bridge	40	40	40	40
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Whacker to 2 mile main bridge	40	40	40	40

CRUSHING PRIORITY SHEET
 DRIVERS ARE TO RECORD NUMBER OF BINS AND NAME OF LOOP OR SIDING WHERE FULLS ARE STORED.
 • Told along line. Place assignment notes inside.
 • Either hand assignment notes to next driver, or send to weighbridge.
 • Case is to be stored to full yard and crush in order of lowest priority number.

BIN REPAIR
 BIN No. _____
 FOLD RUN
 LOCO _____
 STORED AT _____
 NO. OF BINS _____
 PRIORITY NO. _____
 ALWAYS PULL THE RAKE WITH LOWEST PRIORITY
 ALWAYS TRAFFIC OFFICERS SUPERVISE

ISIS CENTRAL SUGAR MILL
 FORM NO. _____
 DATE _____