Dual Purpose Road and Tramway Bridges on Queensland's Cane Railways by Greg Stephenson

In their Australian Railway Historical Society, Qld. Division, 1975 book *Sunshine route jubilee: a short history of the North Coast Railway on the occasion of its fifteenth anniversary*, John Armstrong and John Kerr stated that the Burdekin River Bridge between Home Hill and Ayr was one of only two dual purpose bridges on Queensland Railways. The other being the Dickabram Bridge at Miva on the now closed Kingaroy Branch – it remains in use as a road only bridge.

Dual purpose Road/Railway Bridge over Burdekin River Bridge, Home Hill

From an early age, I had been aware of the narrow rails across the *David Low Bridge* over the Maroochy River at Bli Bli on the Nambour Sugar Mill network. It was to be many years before I actually saw a cane train on this bridge. However, the Armstrong and Kerr book sparked an interest in dual purpose bridges with research being undertaken on an "ad hoc" basis for nearly 40 years! During that period many of the smaller timber bridges have been replaced. However, some high level prestressed concrete bridges have also been built.

The Sugar Industry

The sugar industry is Queensland's most significant rural industry and one of the most important agricultural industries in Australia. Queensland's sugar industry produces 95% of Australia's sugar cane, worth almost $2 billion dollars to the state's economy (Australian Sugar Milling Council; Canegrowers 2010). The remainder is grown in Northern New South Wales.

Queensland's cane crushing season occurs annually from early June to late November/early December. During the 2009 crushing season, which occurred over 117 days between 16 June and 10 October, 22 sugar mills were operating along the east coast of Queensland, between Mossman in Far North Queensland and Rocky Point, south of Brisbane.

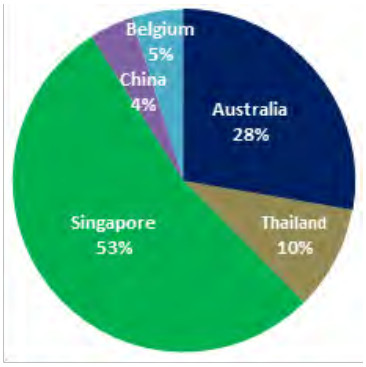
List of ownership of Australian sugar mills *Grower owned (Australian) entities for sugar mills currently operating.

NORTHERN REGION

1. Mossman — Mackay Sugar (Grower owned limited company)*
2. Tablelands — MSF Limited (ex Maryborough Sugar Factory)
3. Mulgrave — MSF Limited (ex Maryborough Sugar Factory)
4. South Johnstone — MSF Limited (ex Maryborough Sugar Factory)
5. Tully — COFCO

HERBERT – BURDEKIN REGION

6. Mackanade — Wilmar
7. Victoria — Wilmar
8. Invicta — Wilmar
9. Pioneer — Wilmar
10. Kalamia — Wilmar
11. Inkerman — Wilmar



MACKAY – PROSERPINE REGION

12. Proserpine — Wilmar
13. Farleigh — Mackay Sugar (Grower owned limited company)*
14. Marion — Mackay Sugar (Grower owned limited company)*
15. Racecourse — Mackay Sugar (Grower owned limited company)*
16. Plane Creek — Wilmar

SOUTHERN REGION

17. Bingara — Bundaberg Sugar
18. Milliquin — Bundaberg Sugar
19. Isis — Isis Central Sugar Mill*
20. Maryborough — MSF Limited (ex Maryborough Sugar Factory)
21. Rocky Point — Heck & Sons*

NEW SOUTH WALES

22. Congdong — NSW Sugar Milling Cooperative Ltd (Grower owned)*
23. Broadwater — NSW Sugar Milling Cooperative Ltd (Grower owned)*
24. Harwood — NSW Sugar Milling Cooperative Ltd (Grower owned)*

Harvesting Sugar Cane

In the early stages of the Australian sugar industry, cane was cut by hand and there was an on-going struggle to obtain labour for harvesting. Initially, Kanaka labourers were brought in from the Pacific islands to assist with harvesting, and, after World War II, European immigrants played a major role. Hand cutters achieved daily outputs for cut-

ting and loading of 9–12 tonnes in burnt cane and around 6 tonnes in green cane. The advent of mechanical loaders, such as the Toft grab loader, resulted in a significant improvement in output to about 12–18 tonnes per day in burnt cane. Approximately 30% of the crop was loaded mechanically in 1957, and 65% by 1962.

Hand cutting of burnt sugar cane

Portable tramway rail was used to get the cane trucks into the canefield for loading

Loading hand cut cane onto cane trucks in the canefield

Cane trucks were returned to the mainline for haulage to the mill by locomotive

Wholestalk harvesters were used as early as 1944, but did not have a significant role until the 1960s. The pioneering chopped cane harvester was the MF515, side-mounted on a farm tractor. Development work began in 1956, and by 1964, chopper harvesters were well established. In the mid-1960s, the industry was poised between wholestalk and chopper harvesting, but the latter prevailed, due partly to the ability of choppers to handle lodged crops in north Queensland and the Burdekin. The combined cut-load operation of chopper harvesters also eliminated the extra loading step required with wholestalk machines.

The transition to chopper harvesters was not straightforward, with conflict over supply of special mesh bins for chopped cane and the more rapid deterioration of chopped cane between cutting and crushing. Once the deterioration problem had been overcome by better control of burning, improved mill transport scheduling, and the cessation of weekend storage of cane at the mill, chopper harvesting expanded rapidly and, by 1975, 98% of the crop was cut with chopper harvesters.

Left: Chopper harvester loading directly into cane bins on truck. The bins are then delivered to the cane railway siding for transport to the mill.

Right: Chopper harvester loading into tractor "haul out" which transfers the cane to cane bins at the cane railway siding.

The harvester fleet is predominantly rubber tyred in drier districts and steel tracked in wet districts. The adoption of full tracks for better flotation in wet conditions makes moving between farms more difficult and low loaders are used widely for moving these machines. Slow infield speed is usually not a disadvantage in crops of average size, but can restrict capacity in small crops or badly lodged crops where one-way cutting is necessary. Fulltrack harvesters have a compensating advantage of faster turning at the ends of rows.

Until the 1940s, most of the Australian crop was cut green, with residual trash being burnt on the ground. Burning prior to harvest was allowed in some mill areas to control Weil's disease (spirochaetal jaundice or leptospirosis), a potentially fatal disease spread in rat urine. The shortage of labour, together with the increased output of manual cutters in burnt cane, led to burning becoming standard practice after World War II. Most mills retained a penalty for burnt cane. Burning persisted as the standard practice until 1980

when north Queensland growers began to experiment with mechanical green-cane harvesting. Since that time, green-cane harvesting has expanded gradually reaching 65% of the crop in 1998. While harvesters have improved markedly in their ability to cut green cane, there are still difficulties in high yielding, lodged crops. Capacity in green cane ranges from 50 to 80% of that in burnt cane, depending on crop size, variety, and the severity of lodging. Districts with high yielding one- or two-year crops such as the Burdekin and northern New South Wales have largely avoided green-cane harvesting because of harvesting difficulties and agronomic constraints. These districts harvested 11% and 2%, respectively, green in 1998. In most districts, selective burning of large, lodged crops is carried out to make harvesting easier.

Cane Transport

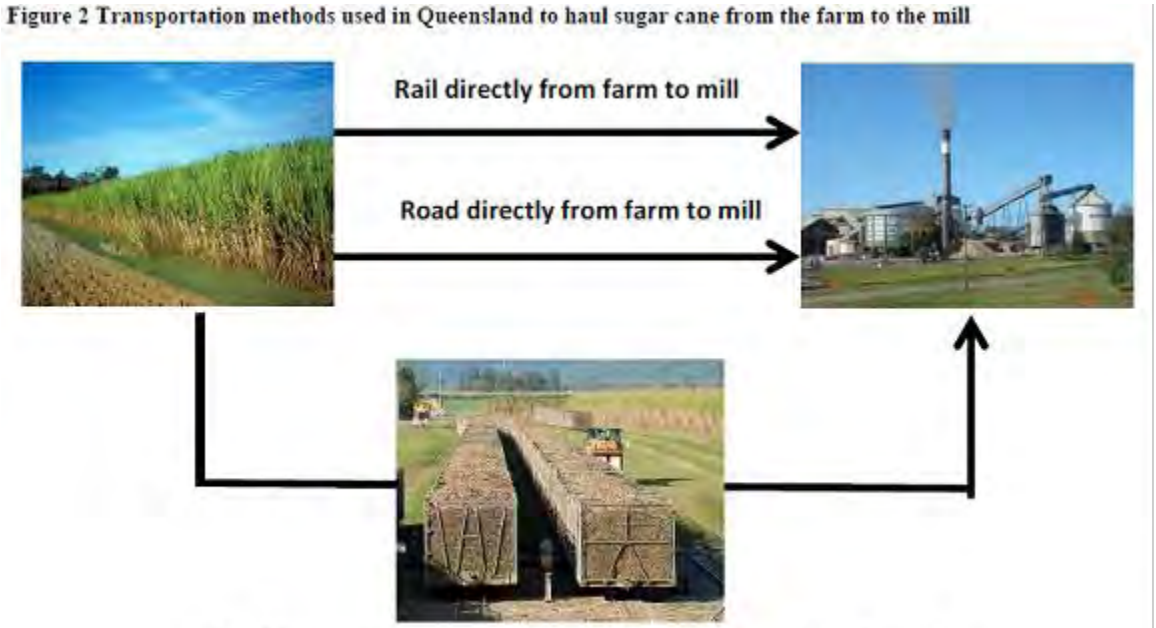
The transportation of harvested cane utilises two transport modes – rail and road. In the 2014 crushing season, approximately 28.7million tonnes or 93 per cent of cane harvested in Queensland was transported directly to raw sugar mills on these mill owned cane railways. The freshly harvested cane is transported to the sugar mill for processing as soon as possible, generally within 6 - 14 hours and definitely within 24 hours. The operation goes on 24 hours a day and in most cases 7 days a week during the crushing season.

The investment by the sugar industry in cane railway networks is significant. There are in excess of 4,000 kilometres of track, of which about 3,000 kilometres is main line, transporting up to 32 million tonnes of sugar cane each season. The furthest run to a mill is 119 km and the average distance hauled ranges from 13 kms up to 35 kms. Trains can run at 40 km/h and can be up to 2000 tonnes in weight and one kilometre in length. There are about 250 diesel hydraulic locomotives in use with power of up to 520 kilowatts, with numbers of them converted to 610 mm (2ft) gauge from 1067 mm (3ft 6 in) and even standard gauge. About 52,000 cane "bins", both four - wheel and bogie – with capacity from 4 tonnes to 14 tonnes are used to transport the chopped cane.

Where adjoining mills operate under common ownership, the rail systems are connected, not just for ease of locomotive and rolling stock transfer, but more importantly for cane transfer to smooth out supply, particularly in the case of mill or rail breakdowns.

The availability of suitable 2nd hand rail for upgrades and maintenance is vitally important to the industry as the cost of new rail is prohibitive. During the past few years the industry has spent more than $3 million to boost all important stocks of rail needed for maintenance and relaying of worn sections of track. This 2nd hand rail generally sourced from Queensland Rail has become available because of track upgrades or in some cases the closure of regional QR lines. The Milling Council plays a lead role in sourcing and purchasing this all important rail for on-sale to its member mills.

Figure 2 Transportation methods used in Queensland to haul sugar cane from the farm to the mill



Only Macknade and Victoria Mills near Ingham transport raw sugar by private railway to the local port. The main line operators transport the raw sugar from some mills to their ports but they no longer transport any sugar cane.

Road transport in one form of another is used to transport approximately 12% of the Australian sugar cane crop from the farm to the mill or rail siding. A total of 14 mills use road transport with three of these using it as the only transportation method. The heavy vehicles used are either owned by the individual mills or contracted out to private haulage companies. Three types of heavy vehicles are used: tri-axle semi-trailers with a 14t - 24t capacity; multilift vehicles with a 21 - 24t capacity; and b-doubles with a 36t - 39t capacity.

Road Conditions

Early newspaper reports contain much criticism of the condition of local roads. As an example, Daily Mercury (Mackay) on Thursday, 13 June 1918, published the following from their Koumala Correspondent.

> "We are having ideal, weather at present. A light shower fell on Tuesday night, which registered 24 points. The coming crushing is the chief topic of conversation now. The tale about the railway engine we are supposed to get is about played out and people are beginning to wonder whether we are going to get any relief here at all. Even a pumper, while the roads were so bad would have been useful.
>
> While on the subject of roads I might say that they are drying up fast but it will be a long time yet before a load will be able to go over them in places. Mr. D. Blyth broke his buggy axle at one of the bad spots, near W. J. Hatflield's. While the vehicle was there it was a danger sign and people knew where the hollow was. Our committees here seem to be in recess or there would be something done towards having these matters attended to."

The Main Roads Board (MRB), consisting of 3 members, was appointed under "The Main Roads Act of 1920". Mr. John (later Sir John) Kemp was appointed Chairman of the Board on 29th October 1920. On 1st February, 1921, Mr. J. A. Fraser, and on 3rd March, 1921, Mr. D. A. Crawford were appointed to the Board. The Board set out to discover the conditions of roads in Queensland. They found that very little had been done by the Local Authorities of Queensland on permanent road construction with work generally carried out in a haphazard fashion and to no set plan. Very little sound road construction had been accomplished in most of the districts visited and even when roads had been constructed, in many cases, the efforts of the Local Authority to maintain them had been ill-directed. They concluded that many Local Authorities do not appear to recognise that road making is a specialist's job. The First MRB Annual Report included notes on the construction and maintenance of roads and necessary plant and machinery, which, it was hoped, may be of some benefit to Local Authorities, not only in the construction of Main Roads, but in the construction of roads generally.

In sugar districts, economical transport of cane by narrow gauge tramways has been secured, but the lack of roads is none the less keenly felt. In some areas farmers are unable to reach their homes excepting by "rail pump car," whilst in others the existing tracks are quagmires in the wet season. Isolated cane areas adjoining the larger areas do not warrant construction of tramway, and farmers are pressing for roads so that cane may be transported by motor truck. (3rd MRB Annual Report)

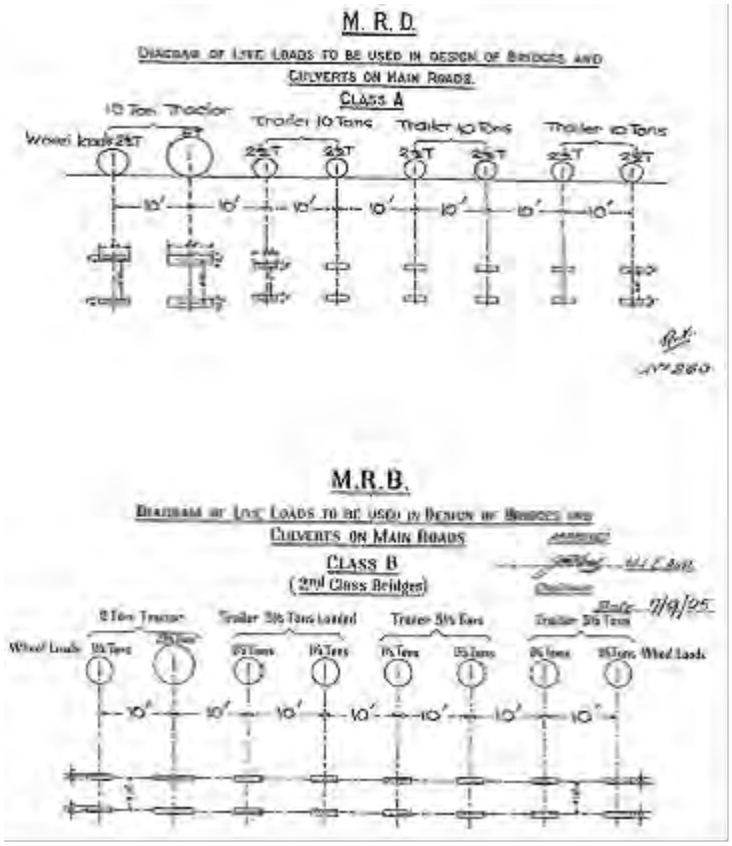
Often bridging creeks was the only improvements that could be undertaken in the short term. In developing rural areas, local Councils struggled to meet the many demands from developing areas and sharing the costs with the sugar mill by jointly funding dual purpose road and tramway bridges was often used. This was particularly the case in Mossman, where the Douglas Shire Council owned its own tramway and the sugar mill was a grower controlled enterprise. Many mill tramway bridges were decked for the convenience of road traffic.

Timber Bridge Terminology

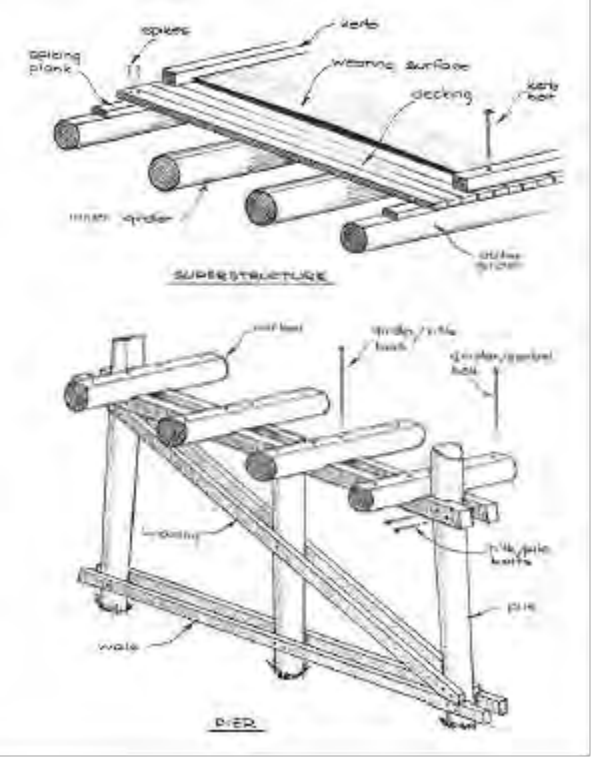
The ART of road-bridge building in Queensland was well advanced by the end of the 1800's. Engineers of those earlier days produced structures well adapted to Queensland conditions and the needs of the period. A. B. Brady took a special interest in low-level submersible bridges that is at a height at which flood debris should pass over them and the spans of which are of minimum depth for their length. The preferred medium was understandably timber rather than imported steel or concrete. This is an example of good engineering practice in the utilisation of an indigenous material selected for its strength and excellent durability – Queensland hardwoods. In the early part of the twentieth centaury, the Queensland Railway Department had done extensive tests on clear specimens of timber and some tests to destruction of full size round girders. This data combined with the experience of the members of the Main Roads Board led to the production of the published standard. (Garland 1963)

The Second MRB Annual Report included the "M.R.B. Diagram of Live Loads to be used in the Design of Bridges and Culverts on Main Roads. CLASS A" and a standard

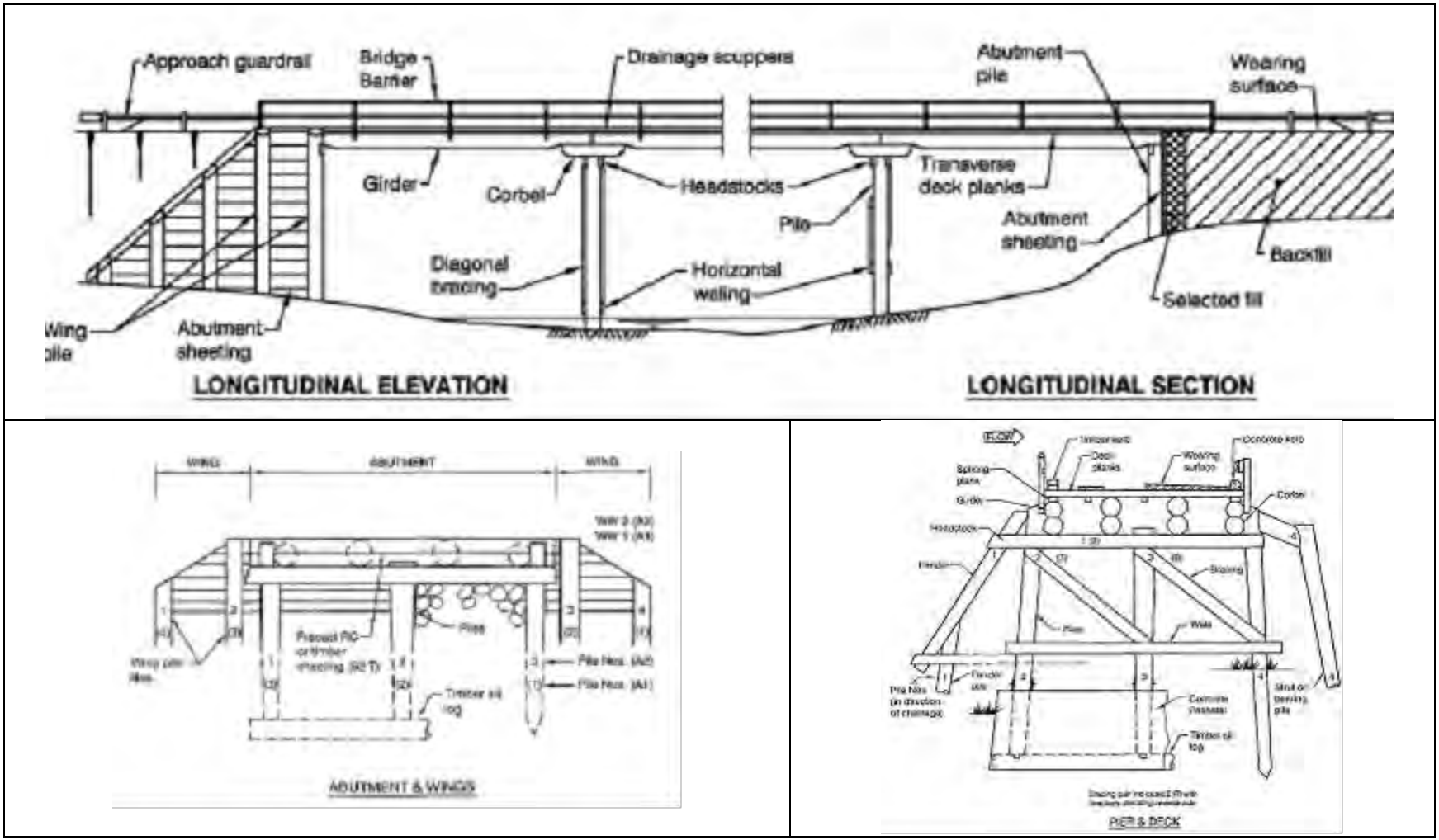
drawing of timber bridges with 12, 16 and 18 feet width between kerbs to establish uniformity of practice. The loading was a 15 ton tractor followed by an indefinite number of 10 ton trailers. The Fourth MRB Annual Report included a standard drawing second-class bridge timber for roads of lesser importance and designed for the CLASS B Live Loading of an 8 ton tractor followed by $5^1/_3$ tons with an even 10 feet axle spacing.



The MRB standard drawings introduced some innovations, which startled some members of the brotherhood of bridge builders. The general opinion was that cabinet makers not bridge carpenters were needed to build the design but costs showed bridge carpenters to be economical cabinet makers and when some of the die-hards were cured of their habits, the life prospects of girders became better. Current timber bridges still follow these original designs and the 19 inch diameter inner girders with 30 feet spans has proved reasonably satisfactory even for modern loads.



The Main Roads Board became the Main Roads Commission, Department of Main Roads - Queensland, Department of Transport and currently it is Department of Transport and Main Roads. During World War II, it also functioned as part of the Allied Works Council.



Source: Department of Main Roads, Queensland, Timber Bridge Maintenance Manual, February 2005

Timber Dual Purpose Bridges

The following are notes on some timber dual purpose bridges. There are many others that did or still do exist – the complete list remains to be compiled! For many of the minor local bridges published references to them are very had to find.

Stone River Bridge

Bundaberg Mail and Burnett Advertiser, Thursday 6 January 1910, page 2
STONE RIVER TRAMWAY PROPOSED EXTENSION SHIRE COUNCIL TO BORROW £23,500. Ingham, Tuesday
"A special meeting of the Hinchinbrook Shire Council held to-day passed a formal resolution to borrow £5000 to construct a tramway from the Stone River terminus to meet the Mount Fox-road, as per agreement with the Government; and also to borrow £18,500 to purchase (1 7/8??) miles of the tramway, from the Colonial Sugar Refining Co., build a road and tramway bridge over the Stone River and construct 10 miles 70 chains of tramway to Long Pocket."

Ingham – Upper Herbert Road (Hinchinbrook Shire) became a Main Road and the 5th MRB Annual Report (1926) showed completion of extensive repairs to Stone River Bridge including redecking, strengthening piers, and some new girders. Completed

At the January 1930 monthly meeting of the Hinchinbrook Shire Council, a telegram was received from the Main Roads Commission advising that the negotiations between the Commission and the company in regard to the agreement for the running right over the Stone River tramway bridge had been satisfactorily arranged.

Haughton River Bridge

At the Thuringowa Shire Council's November 1922 monthly meeting it received a letter from the Main Roads Board forwarding a copy of the Board's letter to the Haughton Sugar Co. Ltd. having regard to the Board's favorable disposition towards the proposed bridge over the Haughton River at Basalt Crossing suitable for tramway traffic, and asking to what extent the company was prepared to go in assisting the Council.

The Main Roads Commission accepted Mr. Hendren's tender of £5,481 for the construction of the Haughton River Bridge. At a later date the Haughton Sugar Company (owners of Invicta Mill) would be called on to make their own arrangements for the tramway track. It was hoped to have the bridge completed before the end of 1927.

The MRC 7th Annual Report (1928) stated that the Haughton River Bridge at Giru – the latter a dual purpose bridge accommodating a sugar tramline – was amongst the most important bridges completed or commenced during the year. However, the Contractor was delayed in the work this year owing to floods and other causes. MRC 8th Annual Report (1929) shows that bridge together with the approaches had been completed. The bridge consists of a timber superstructure upon concrete piers, and as well as providing for vehicular traffic carries a 2-foot gauge tramline for cane traffic.

The 1947 work by the Main Roads Commission in North Queensland included the completely redecking of the bridge over the Haughton River, logs for which had been supplied for cutting. Re-decking of the bridge over the Haughton River, near Giru, was seriously delayed owing to the slow delivery of timber decking, but every effort was being made to complete the work so that the bridge will be ready for traffic when the crushing season commences on June 23, 1947. The Haughton Sugar Company had expressed its intention of paying 20 per cent of the cost, as its locomotives made great use of the bridge.

A replacement road bridge on new alignment existed by 1972 because the Haughton River Bridge at Giru was extended by 3/45ft spans. A short approach at the northern end of the bridge was also completed. (52nd Main Roads Department AR 1973) The tramway crosses the Haughton River in the original location. However, the original dual purpose bridge has been completely replaced.

The Brisbane Courier (Qld. : 1864 - 1933), Tuesday 29 January 1929, page 16

The bridge over the Houghton River (built by the Main Roads Commission) on the road leading to the sugar mill at Gin. south of Townsville. It is constructed of timber, with concrete piers. It is a dual purpose bridge—designed to carry ordinary traffic and also steam tram traffic from the canefields. One of the features of this bridge is that it has concrete copings.

Ayr Shire – Ayr-Rita Island Road

Sugar cane was first grown on Rita Island and transported across the Burdekin River Anabranch on the Mill tramline during the year 1913. This tramline was put down by Pioneer Sugar Mills Ltd. under a ten years agreement with the cane farmers, the growers undertaking to pay a levy for the maintenance of the tramline across the Anabranch on a sliding scale. At the expiration of the 10 years period the growers by making application to the Central Cane Prices Board, had this levy removed, although strongly objected to by the miller, and the cost of maintenance was borne, first by the Pioneer Sugar Mills Ltd. and after reassignment of the cane growing areas by the Kalamia Sugar Mill.

In April 1927, The Rita Island Producers' Association wrote to the Ayr Shire Council approving of the scheme for a dual purpose bridge over the Annabranch. The Council decided that the scheme for raising the necessary funds should be put before Kalamia Co. and the Main Roads Board.

By 1930, the Anabranch which separates Rita Island from the remainder of the Burdekin delta was a main road, a road had been made to the crossing and also on the other side, but the only crossing at the present time was an earth track across the sand. The Rita Island growers were still lobbying for a bridge over the Anabranch. The general desire of all the parties concerned was that the bridge should be sufficiently wide to take a set of rails, so that cane from Rita Island could he hauled over the bridge.

After lobbying and negotiations with Kalamia Estates, by late 1932, the Main Roads Commission approved "Shire of Ayr, on the Ayr-Rita Island Road, erection of bridge over the Anabranch of the Burdekin River, and construction of approaches." It was reported that the bridge, which will be much longer than the Burdekin traffic bridge, will carry a single tramline in the centre, but will not be wide enough to permit of both way traffic.

Townsville Daily Bulletin of Monday 29 May 1933 stated; **"**The contractors (Schrock and Sons) are making steady progress with the construction of the dual purpose bridge across the Anabranch to Rita Island, but the structure will not be ready for use until some time after the crushing commences. To meet the requirements of Rita Island growers, the Kalamia mill tramline is being laid across the Anabranch for the transport of cane from that centre."

Townsville Daily Bulletin of Monday 9 October 1933 stated; "The bridge across the Anabranch to Rita Island, which is being built by Schrock and Sons, is nearing completion and should be in readiness within a week or two. This is a very fine solid structure, well and truly made, and will prove a boon to the farmers and other residents of Rita Island."

The Anabranch traffic bridge connecting Rita Island with the mainland, was officially opened by the Hon. J. Dash, MLUA. (Minister for Transport) on the afternoon of Saturday, 5th May 1934 in the presence of a large and representative gathering. A

detailed account of the ceremony and speeches was published by the Townsville Daily Bulletin on Tuesday 8 May 1934.

The 12th MRC Annual Report (1933) was little less descriptive in its reports on the bridge: "Amongst many important works on roads other than those previously referred to, mention may be made of the construction of a timber bridge, consisting of thirty-four 30 feet spans 16 (sic) feet wide, as a dual purpose road and tramway bridge over an anabranch of the Burdekin River. It had been hoped that the bridge might have been utilized for tramway purposes during the present sugar-cane crushing season, but the contractor had not progressed far enough to allow this. The construction of the bridge is being subsidised by the Kalamia Estates, with a view to the elimination of the almost annual renewal of the low-level tramway crossing of the anabranch."

"The timber beam bridge 1,020 feet long over the Burdekin Anabranch at Ayr was completed during the year. The piles of this bridge were cleated to prevent excessive penetration and obtain better bond." (13th AR 1934)

At the official opening, the bridge contractor "Mr. Schrock, seconding the motion, said that he was pleased to hear the remarks of the Minister regarding the construction of the bridge. It had been built to the plans and specifications of the Main Roads Commission, and would stand everything that was expected of it." Similarly, Mr. J. W. Inverarity, representing Kalamia Estates, said that "The fact that Kalamia had come into the scheme had given them an even stronger structure than was originally planned. The bridge had been constructed to stand any current that might come down the Anabranch. It was a splendid piece of work, and the farmers of Rita Island need have no fear about getting their cane to the mill."

However, by December 1946, a representative meeting of shire councillors, farming and milling interests held at Rita Island to discuss erosion in the Burdekin River and "decided that an urgent and immediate protest be forwarded to the Co-Ordinator General of Public Works expressing grave concern at the present unsatisfactory and unfinished state of the approaches to the Rita Island bridge and the river bank; and that immediate action be taken to put into effect work of a permanent and protective nature."

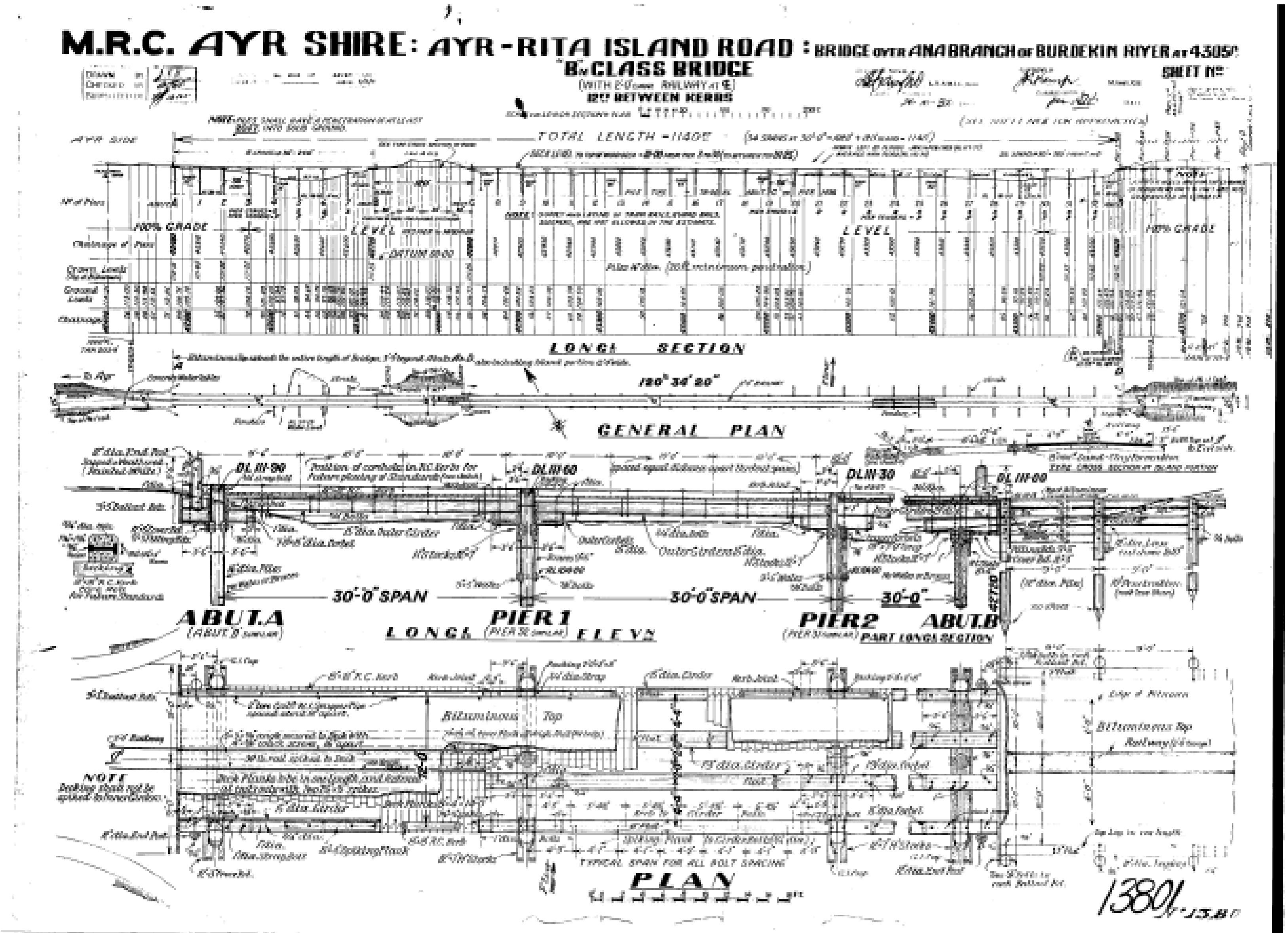
The Main Roads Commission released a scheme for repairs to extensive washouts on the approaches to the Anabranch on the Ayr — Rita Island road was in hand and a survey had been made. The rock-filled work done here in the previous year (1946) last year was not affected by the flood, but the water washed around the ends of the rocks due to the packing of debris against the bridge. An assurance was given to the engineer at Kalamia Mill, Mr. Kerr that the work at Rita Island of repairing the badly scoured approaches to the Rita Island bridge would be completed before the commencement of the 1947 crushing season.

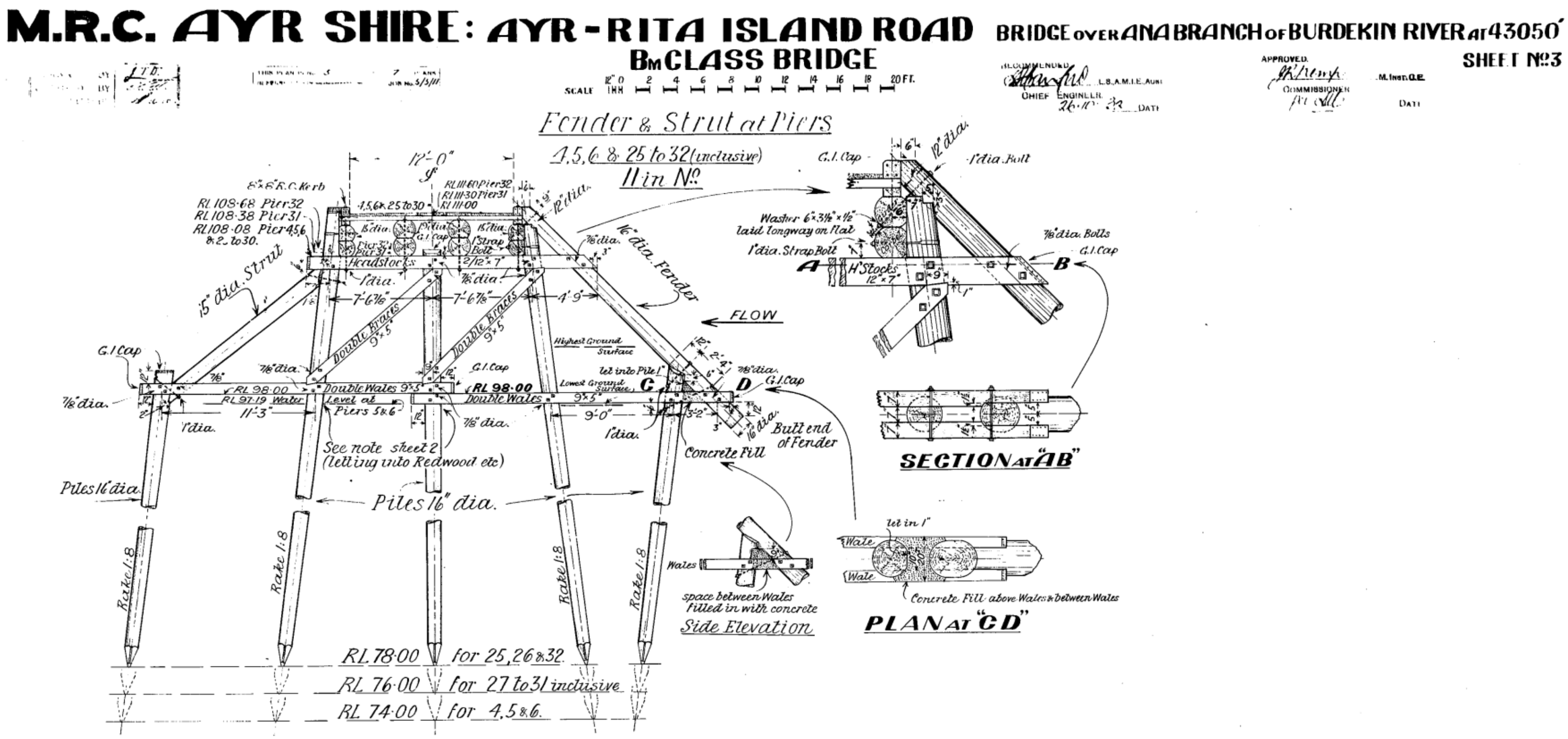
In December 1947, following an inspection of the Rita Island bridge by an engineer of the Main Roads Commission, a report was submitted to the monthly meeting of the Ayr Shire Council stating complete replacement of the first eight spans is required, so badly

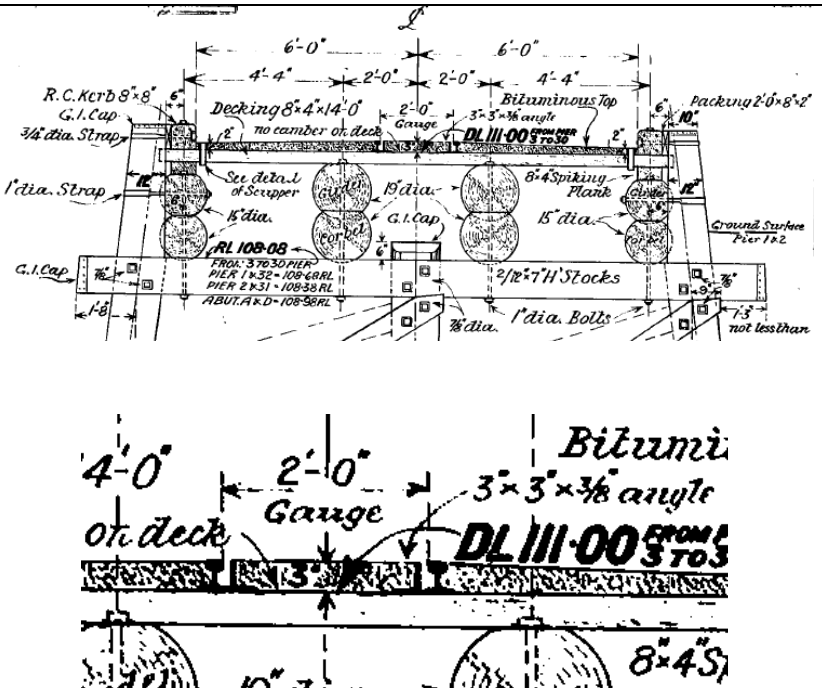
are they decayed. Twelve pieces of decking are also needed on the remainder of the bridge. Although the bridge carries a central tramline, no allowance has been made for its removal and replacement, since this work is assumed to be the responsibility of the sugar mill concerned. A suggestion has been made, however, that, when the new work is to be undertaken, the mill be instructed that the rails must be bolted and not dogged. Dogging, it is contended, results in the splitting of the decking, thus providing the nucleus of decay and white ant infestation. As the work was considered to be beyond ordinary maintenance, a suggestion was made to have the work carried out under special maintenance at an estimated cost of £1,900. Of this amount, the Council would be required to contribute one fifth. The report was adopted by the meeting without discussion. Again in 1950, the Main Roads Commission advised, the Council that extra funds were being made available for repairs to the Rita Island bridge.

Townsville Daily Bulletin of Thursday 21st October 1954 recorded an accident on the bridge where a collision occurred between a utility truck driven by William Thomas Melvin who had as a passenger his wife, Beatrice Melvin, and a Kalamia sugar mill locomotive driven by Frank Kann, of Graham Street, Ayr. As a result the utility was thrown over the side of the bridge and submersed in deep water. The occupants swam to the bank and were later admitted to hospital, suffering from bruises and shock. No damage was done to the locomotive, but the truck, remained submerged overnight was believed to have been severely damaged.

The 49th MRD Annual Report (1970) makes the end of the timber bridge: Anabranch Burdekin River Bridge 660ft long, consisting of 12/45ft and 4/30ft spans, replaces the timber bridge which was destroyed and sweep away during flooding in 1968. The replacement structure was not built as a dual purpose bridge. Parallel road and cane railway bridges remains in use at this crossing but there is evidence of the original timber bridge piers in the river bed.

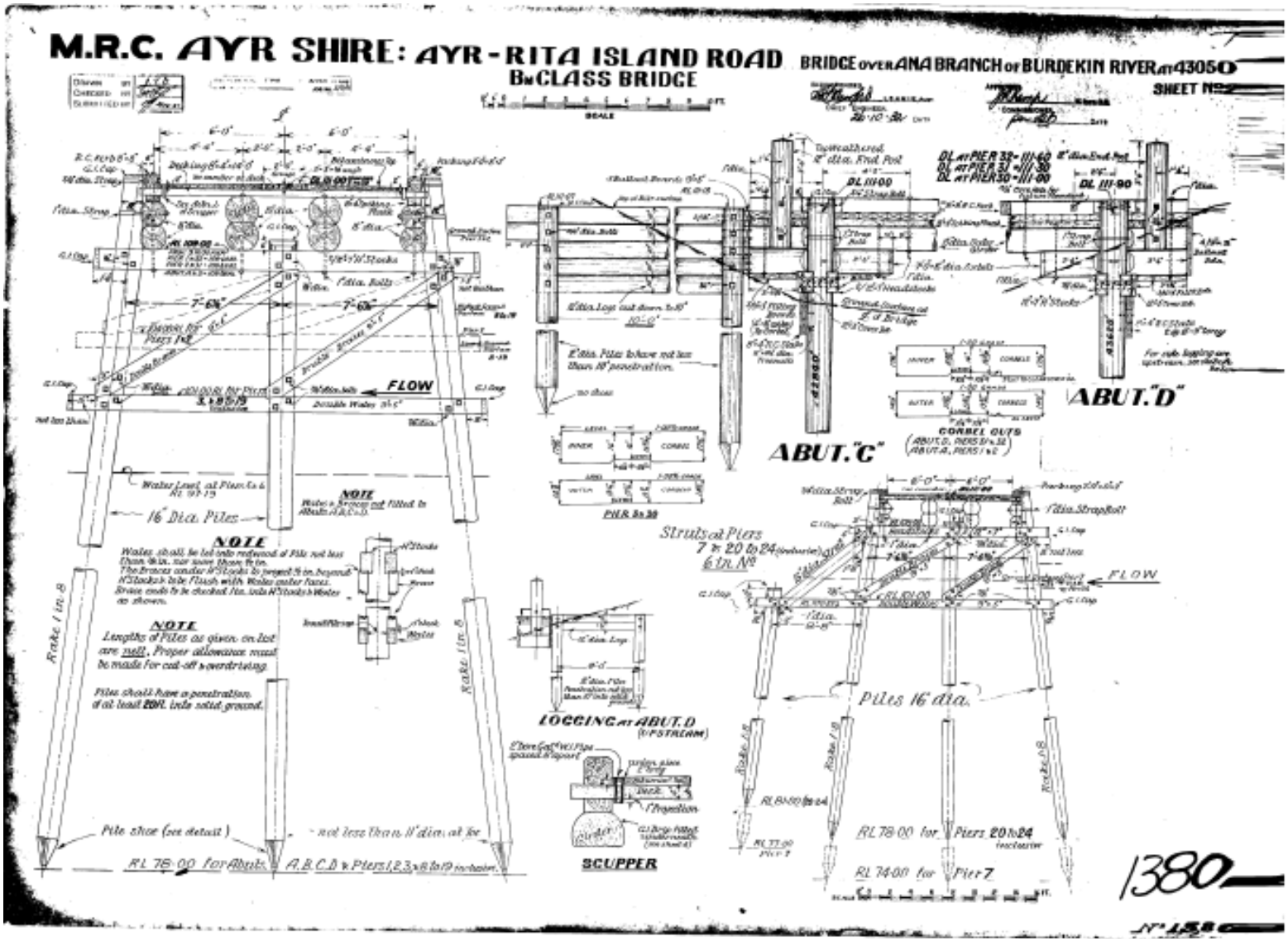

M.R.C. AYR SHIRE: AYR-RITA ISLAND ROAD
"B" CLASS BRIDGE
12'0" BETWEEN KERBS
AYR SIDE
TOTAL LENGTH = 1140'0"
LEVEL
LONGL SECTION
GENERAL PLAN
30'-0" SPAN
30'-0" SPAN
ABUT. A
PIER 1
PIER 2
ABUT. B
LONGL ELEVN
PART LONGL SECTION
Bituminous Top
PLAN
13801


M.R.C. AYR SHIRE: AYR - RITA ISLAND ROAD
BRIDGE OVER ANABRANCH OF BURDEKIN RIVER AT 43050'
BM CLASS BRIDGE
SHEET Nº3
SCALE
APPROVED.
COMMISSIONER
CHIEF ENGINEER
Fender & Strut at Piers
4,5,6 & 25 to 32 (inclusive)
11 in Nº
12'-0"
8"x6" R.C. Kerb
RL 108·68 Pier 32
RL 108·38 Pier 31
RL 108·08 Pier 4,5,6 & 2 to 30.
15" dia. Strut
16" dia. Fender
Headstocks
Double Braces 9"x5"
FLOW
Highest Ground Surface
Lowest Ground Surface
G.I. Cap
Double Wales 9"x5"
RL 98·00
RL 97·19 Water Level at Piers 5 & 6
11'-3"
9'-0"
See note sheet 2 (letting into Redwood etc)
Piles 16" dia.
Concrete Fill
Butt end of Fender
Rake 1:8
RL 78·00 for 25,26 & 32.
RL 76·00 for 27 to 31 inclusive
RL 74·00 for 4,5 & 6.
Washer 6"x3½"x½" laid longway on flat
1" dia. Strap Bolt
H'Stocks 12"x7"
⅞" dia. Bolts
SECTION AT "AB"
Wales
space between Wales filled in with concrete
Side Elevation
Concrete Fill above Wales & between Wales
PLAN AT "CD"



Original detail of connecting tram rails to bridge decking

Remnants of piles and wales of original timber structure


M.R.C. AYR SHIRE: AYR - RITA ISLAND ROAD
B CLASS BRIDGE
BRIDGE OVER ANA BRANCH OF BURDEKIN RIVER at 43050
SHEET No
SCALE
ABUT. "C"
ABUT. "D"
CORBEL OUTS
FLOW
16" Dia. Piles
NOTE
Struts at Piers 7 to 20 to 24
Piles 16 dia.
LOGGING at ABUT. D
SCUPPER
Pile shoe (see detail)
RL 78·00 for Abuts A, B, C, D & Piers 1, 2, 3, 4, 8 to 19 inclusive
RL 78·00 for Piers 20 to 24 inclusive
RL 74·00 for Pier 7
1380

Date Plate cast into the replacement bridge.

In the background, the cane railway bridge is in front of the road bridge. In the foreground are the remnants of the original timber bridge.

Douglas Shire, Mossman-Daintree Road, Saltwater Creek

During the early 1920's, the Daintree River area being opened up for dairying and cane growing which, it was claimed, could not be carried on without tramway connection to the Mossman Mill. The debate ensued as to whether a tramline or road should be constructed to Daintree River. As a good road, would cost as much as a tramline, the preference should be given to the latter, as it will open up ground for a cane area, and also assist in establishing the dairying and timber industries.

From the Mossman Mill Company's Saltwater tramline branch to the south bank of the Daintree River, a bridge at Saltwater Creek would be the only bridge of importance up to the proposed tramway terminus. This bridge was built as a dual purpose bridge by the Main Roads Commission with the bridge and approaches laid with 42 lb. steel rails for the Mossman Mill.

The 8th MRC AR (1929) showed the importance being placed on the Mossman-Daintree Road. "Good progress is being made with the essential sections of the Mossman-Daintree Road, contracts on which have been let for four miles of sidelong formation in the Daintree Valley and a bridge over Barratt's Creek. A contract has also been let for clearing in the forest and scrub country along the coast and for the bridge over Saltwater Creek nearer to Mossman. It is hoped this year to complete the formation of about one mile around Rocky Point, and to construct a further two miles at the Daintree end, thus completing sufficient road works to accommodate vehicular traffic with the Daintree dairying settlement."

The progress of bridging activities was reported in the press:

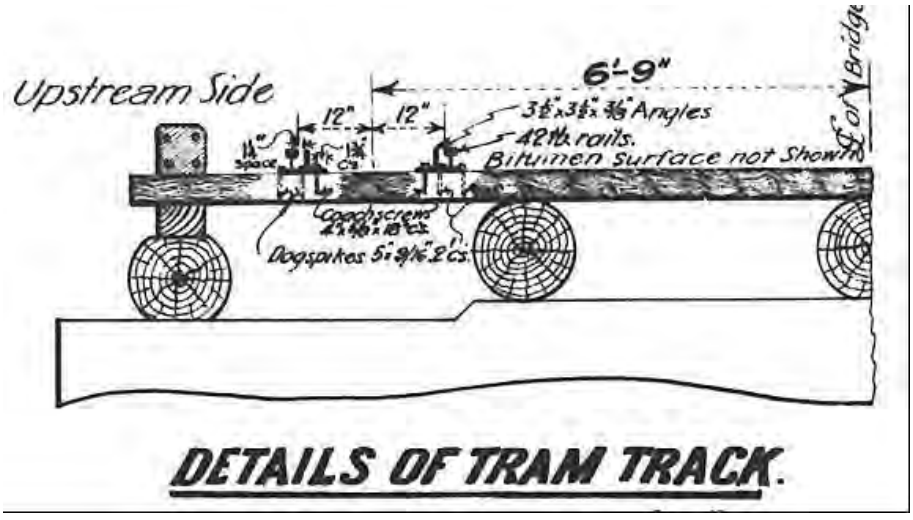
- Two Main Roads Board engineers have been engaged for the past few days examining the site for the bridge over Saltwater Creek at the landing reserve on the Daintree road. (Townsville Daily Bulletin, Monday 13 February 1928)
- The Main Roads Board has landed about seven tons of gear at Miallo to start work on the Saltwater Creek Bridge on the Daintree Road, and Engineer O'Dea is here in charge. (Townsville Daily Bulletin, Friday 20 April 1928) The traffic bridge over the Saltwater Creek on the Daintree road is now being decked.
- The traffic bridge over the Saltwater Creek on the Daintree road is now being decked. (Cairns Post, Saturday 3 August 1929)

Whilst the bridge was built as a dual purpose bridge, it was some time before with the Mill Annual Report of 1930 commenting "As soon as development warrants it, and satisfactory arrangements can be made with the Main Roads Commission, the building of a branch line will be dealt with. In the meantime portable rails will be supplied to the growers. With the erection of this bridge it will mean that should the long talked of Daintree-Mossman line eventuate at any time, there will be no further bridges required on this extension."

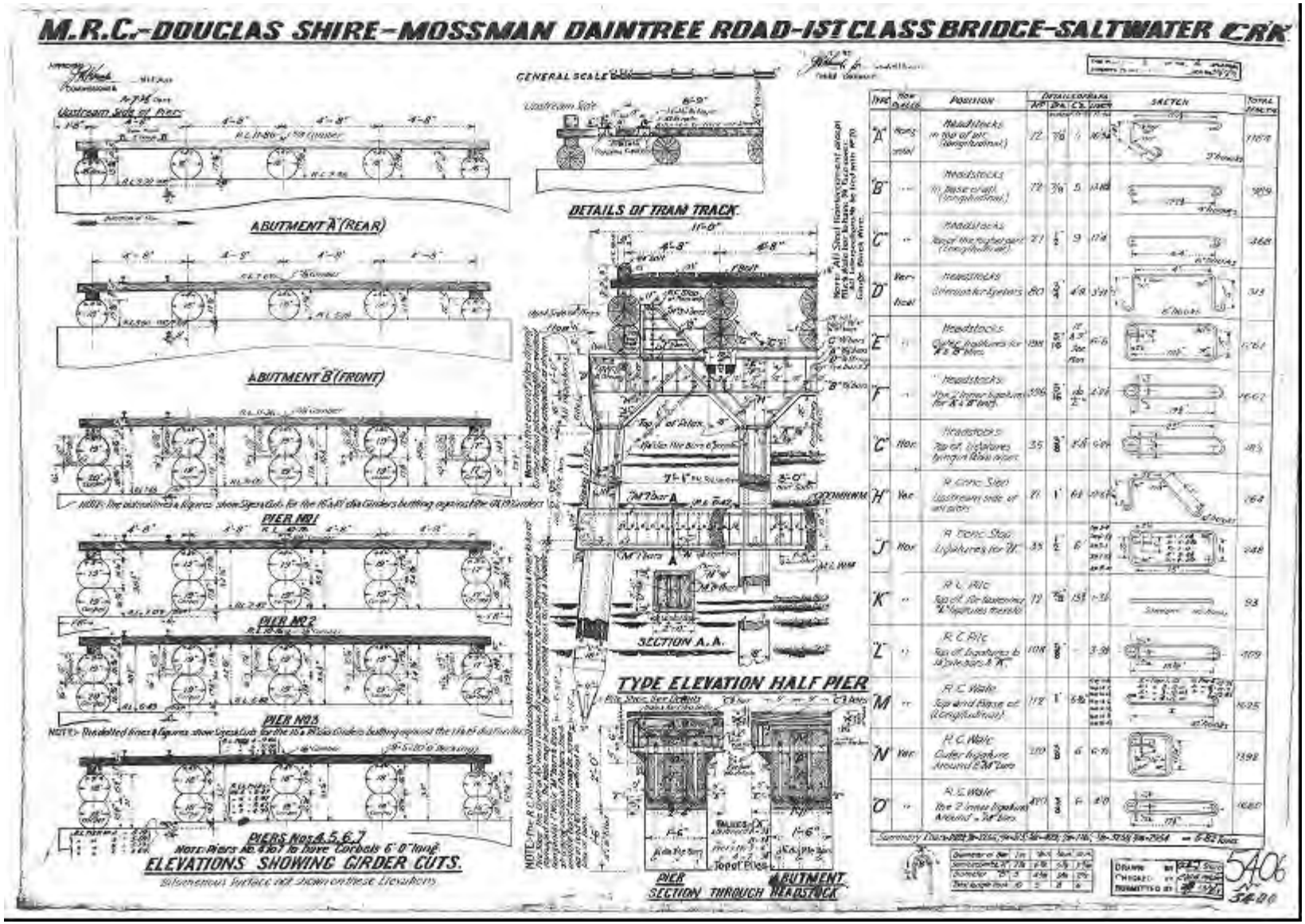
The Cane growing in the area continued to expand and by 1931 the growers on the north aide of the river were striving to get a permanent line laid to connect their farms with the main tramline. Repeated applications had been made to the Board of Directors of the

mill, to have the line constituted. In 1930, the line was extended from Rutherford's point to a point about half way to the bridge, this extension afford little relief to the growers on the north side, as some of them brought their cane, to the previously existing line, by two different routes. It was proposed to extend the line to a point 10 chains beyond the composite bridge and an agreement has been drawn up between the mill and the growers in regard to the repayment of the cost of construction.

This is as far as the proposed Daintree Tramway ever reached and still remains the terminus. A new prestressed concrete road bridge was built downstream of the dual purpose bridge which reverted to tramway only in the early 1990's. The timber girders and decking was replaced with steel girders and timber transoms supported on the original concrete piers. It remains in use in the rebuilt form.




BUDGET
BRIDGES
FEB.2000


M.R.C.-DOUGLAS SHIRE-MOSSMAN DAINTREE ROAD-1ST CLASS BRIDGE-SALTWATER CRK
GENERAL SCALE
Upstream Side of Pier
ABUTMENT A (REAR)
ABUTMENT B (FRONT)
PIER NO1
PIER NO2
PIER NO3
PIERS Nos 4, 5, 6, 7
ELEVATIONS SHOWING GIRDER CUTS.
DETAILS OF TRAM TRACK
SECTION A.A.
TYPE ELEVATION HALF PIER
PIER SECTION THROUGH HEADSTOCK
ABUTMENT
Position
Headstocks
Sketch
5406

Fairydale Road, Bundaberg

Townsville Daily Bulletin, Thursday 4 December 1952, page 6
BUNDABERG AREA DEVELOPMENT - BUNDABERG, December 8.
Fairymead Sugar Co. Ltd, has embarked on a £260,000 land development scheme near Moore Park, about 12 miles from Bundaberg. It is clearing and draining 1700 acres on which 32 60-acre cane farms will be established, and will drain a further 1060 acres for 18 soldier settlers.

It is believed that these bridges over a drainage channel parallel to the road were part of this project. The bridges remain in use.

Privately Funded Bridges – Stratford Bridge (Farmers' Bridge), Cairns

In 1920 William Walter Mason sold Acacia Bank on the north side of the Barron River at Stratford, west of Cairns for £10,000 to the Acacia Bank Farming Co which was a consortium of local farmers and Cairns businessmen. In June 1921 the company applied to the Cairns Harbour Board for permission to erect a bridge and borrow their pile driver and gear. The bridge spans were supported braced pairs of piles, 20 feet long and driven six to ten feet into the river bed. The deck was just wide enough to carry a wagon and tram tracks were laid on the bridge. In 1927, Mr Atherton, chairman of the Stratford Bridge Committee remembered that the farmers used to have to row over the river and he himself had risked the alligators and swum horses across the river. When the sugar industry began to develop the opposite side of the river came more into demand and there was a need for a bridge. Mr Mason had put a punt on the river but in the end the farmers had decided to throw a bridge across the river. The bridge was not the last thing in efficient construction but it had served its purpose and the public had used the bridge.

Original Barron River bridge, Stratford. Image: Cairns Historical Society (B3669).

The public were allowed to use the bridge which provided more direct access to Cairns for farmers on the northern side of the Barron. This meant they no longer had to travel to Kamerunga to cross the Barron. Apart from farmers there was little other traffic as the Kuranda Range road was not built until WWII and the Captain Cook Highway was not built until 1933.

The bridge crossed the river at the same place as the punt and ferry. In 1923 Councillor Draper proposed that because the bridge was used by the public, the Cairns Shire Council should improve the approach road on the Stratford side of the river. The Council decided that as the bridge had been privately funded it was not good economic sense for public money to be spent on improving it. Draper, who lived less than ½ mile from the bridge, was less than happy with the result and explained to the Chairman that he had not attended the Council meeting to be given a lesson in economics.

In "Redlynch in the 1920s, Part 2" by Major W Hughes, Cairns Historical Society Bulletin, No. 416, August 1995, includes the comments:

> Mr Hughes got a full time job cutting cane for Dave Smart at Stratford and when crossing the low level bridge at Stratford a cane truck came off the rails and toppled into the river taking the horses with it. Mr Hughes quickly leapt into the river to unhook the horses but unfortunately the six Clydesdales drowned. He claimed if he had a pocket-knife he could have cut the harness and freed the horses.

However, the Cairns Post, Monday 13 August 1923, page 4 states:

> Horses Fall Into Barron River.
> Whilst half a dozen horses were drawing cane trucks across the Barron River at Stratford on Saturday, they slipped into the river by some mischance, and soon became bogged. The trucks remained on the line. Tackle was secured, and the horses eventually brought out of the river.

It is unclear whether this is the same event. The first account 72 years after the event may have been embellished over the generations.

Although the bridge was higher above the water than the Kamerunga Bridge, it still went underwater in the wet season and minor repairs were funded by the Acacia Bank Farming Co and public donations. After the opening of the bridge in 1921 there was no major flooding on the Barron until the wet season of 1926-7 when moderate flooding caused substantial damage. Townsville Daily Bulletin, Friday 15 July 1927, page 9 reported the reopening:

> The bridge over the Barron River at Stratford, built originally as a tramway bridge for the conveyance of cane and later available to the use of the public, is receiving the final touches to the repairs made necessary by extensive damage caused by the cyclone. To celebrate the reopening of the bridge and to assist in defraying the cost of repairs, the people of Stratford and District have arranged a euchre party and dance for Saturday night next. In the afternoon, His Worship the Mayor of Cairns (Ald. W. A. Collins) will officially open the bridge and an invitation has been extended to the local Councillors and residents to be present on that occasion. The repairs to the bridge were originally estimated to cost £900 but after a conference with the Engineers of the Cairns Shire and City Councils, the Engineer in charge of the construction deemed it advisable to further strengthen the structure, and the cost was thereby increased considerably.

Initial estimates to repair the damage came to £900, but by April 1927 that had risen to nearly £1,500. 220 feet of the bridge was replaced with a wider decked section on 40 foot long turpentine piles driven twenty feet into the river. 320 feet of the old narrow bridge remained, which the Shire expected to replace at a later date. The Council did not get around to replacing the original narrow section of the bridge and it was closed during the wet as it was not considered safe. Moderate flooding in the wet season of 1928-9 caused considerable damage to the bridge and repairs were estimated at £650. However Cairns Shire Council decided not to commit the funds until the alignment of the proposed Cairns-Port Douglas Road had been decided. The Bridge Committee gave notice that it

was unsafe for vehicular traffic and they would barricade both ends and convert it into a foot-bridge for pedestrians only.

Farmers' Bridge being repaired, 1927. Image: Les Humphries.

A coastal road linking Cairns and Port Douglas was first suggested in 1918, but the mountainous terrain along the coast north of Buchan Point was considered too difficult, or certainly too expensive, for road construction. In May 1925 Councillor Rex and eight other Douglas Shire residents walked the 45 miles from Mowbray to Cairns to demonstrate the feasibility of the road and in 1927 surveyors Day and Phillips were assessing the route. In 1932 the Main Roads Department adopted the 'Stratford deviation' for the new road to Double Island and on to Port Douglas and included a new bridge over the Barron River some 250 metres downstream of the Farmers' Bridge. The new Barron Bridge was built under contract by W E Kelly. This bridge was made of eighteen 30-foot sections of concrete piles with timber girders and decking. Construction cost £10,605. 13th MRC Annual Report (1934) confirmed that "the new bridge at Stratford has been completed, and the approaches are under construction. It is being used by traffic."

Some of the bridge piles from the Farmers' Bridge could still be seen until the 1950s, but today there is no evidence remaining. Much of this information is from SAFCA 2016 Stratford Heritage Trail.

When the Minister met the Rita Island farmers in Ayr, he stated: "I can quote a case of Northern growers who built a bridge over the Barron River at a cost of £2000, and they are running it and maintaining it themselves, and paying their own haulage, and we up there are in a worse position, than the people of Rita Island."

Privately Funded Bridges – Wallaville Bridge, Burnett River

In March 1929, Mr W Murray convened a public meeting to discuss the advisability of having the mill tram bridge over the Burnett River converted so as to be suitable for car traffic. The meeting was largely attended and was representative of the district. The bridge if completed would be the means of shortening the main Brisbane-Rockhampton load via Biggenden by about 80 miles. Mr W Chapman after outlining the advantages of such a bridge moved "That in the interests of this district and the opinion of this meeting we proceed with the enterprise and have the bridge made into a car traffic bridge". This was seconded by J Taylor and after the motion had been supported by several speakers was carried enthusiastically. A committee was formed to prepare estimates and commence collecting immediately.

The official opening of the motor traffic bridge across the Burnett River at Wallaville took place on October 12th 1929. Representatives attended from the Kolan Shire (Chairman, C M English) and the Isis Shire (Councillor Shillington and Upwan). The official opening was performed by Mr E H Brand ML A for Burrum, who said that it was the intention of the Government to make available funds to construct bridges across waterways thereby linking up the various localities. Mr Bland further remarked that the farmers were to be commended for their enterprise in taking over the sugar mill at Wallaville from the Government. About 200 people attended the victory dance in the Wallaville Hall to celebrate the opening of the Wallaville bridge.


GIN GIN MILL BRIDGE

By crossing this tramway bridge, which spans the Burnett River at Wallaville, 33 miles 37... seven on the [illegible] south. The route is described in Motor Notes on this page. The road follows the track to the left. At the right hand top corner is shown portion of the Gin Gin Central Mill.

The Central Queensland Herald (Rockhampton), Thursday 11 December 1930, page 49

Mr. W. Murray presided at the bridge committee meeting on April 24th, 1931 when the secretary (Mr. N. Annand) tendered his resignation. The financial statement showed that receipts totalled £181/9/9, and expenditure £177/6/10, leaving a credit balance of £14/2/11. The erection of planking on the mill tramway bridge had been appreciated by numerous car owners. Regret was expressed at the resignation of the secretary.

Representatives from the Kolan and Isis Shire Councils and the Wallaville Bridge Building Committee met on March 12th, 1932 to finalise matters in connection with the project of the Main Roads Commission to construct a concrete bridge across the Burnett at Wallaville. The various representatives were very decided in the desirability of building the structure and it was decided that the Wallaville Bridge Building Committee place the whole position before the Isis and Kolan Shire Councils and arrange for a deputation to visit Brisbane and interview the Main Roads Board.

At the December 1935 monthly meeting of the Isis Shire Council, the Childers and District Chamber of Commerce wrote seeking to ascertain the council's views as to the most suitable site for the proposed bridge across the Burnett River at or near Wallaville. Councillor Baldwin said that the Council was doing all it could to get the Wallaville bridge. The most suitable site for the bridge was at Wallaville in the vicinity of the present tram bridge. Councillor Upham said that the tram bridge was getting somewhat dangerous and a good traffic bridge was the only work the council could put in hand which would develop that particular area.

The 18th MRC Annual Report (1939) advises: “Between Childers and Gin Gin a contract was let for a bridge over the Burnett River at Wallaville, and construction is well in hand. This bridge is690 feet long and is being built on concrete piles with a timber top. The opening of this direct road will shorten the present distance between the two towns by over 30 miles.” Worker of Tuesday 21st November 1939 tells us that “Contractor Sanderson was making good progress with the construction of a bridge across the Burnett River at Wallaville, about 20 men being employed at the time of the organisers visit. A lunch hour meeting was held and arrangements made for the renewal of tickets.” Worker of Tuesday 2nd July, 1940 adds “Organiser Dufficy so visited the gang employed on the approaches to the recently completed bridge over the Burnett River at- Wallaville. All members employed were financial, and Rep. Jeppeson reported everything satisfactory.” The new bridge was opened by the Minister for Works (Mr. Bruce) on Saturday, 11th May, 1940.. It was 690ft. long, and, with approaches, the total cost was £30,000.

The replacement of the tram bridge was not lamented. Morning Bulletin of Thursday 16th May, 1940: “The Burnett is then crossed over the new bridge. The approaches on each side are in good order, and no fear will he experienced by even the most nervous persons. It was different when the tramway bridge was used, for the approaches were rough, and that on the northern side very steep and slippery during rain. The bridge, too, was narrow, and although it undoubtedly was safe enough, it was disconcerting to the timid to look over the side and see merely an inch or so of bridge protruding from beneath the car.” Nambour Chronicle and North Coast Advertiser of Friday 6th September, 1940 added to the critism of the original bridge: “The erection of the new bridge re places the

old much dreaded tramline bridge which traffic was previously called upon to negotiate, and which in the past was instrumental in preventing many motorists from taking advantage of this short cut when travelling the coastal route to or from the north.

Queensland Government Railways Overhead Bridges

The Queensland Government Railways developed a standard design for road bridges crossing over their railway lines and many examples were built. At least of these were dual purpose road/tramway bridges.

Farleigh Mill's tramway crosses the QGR North Coast Line at Mapalo approximately 7km west of Farleigh. This bridge remains in use. The tram rails are spiked directly to the deck and offset to one side so that vehicles do not straddle the rails.

Tully Mill – El Arish Tramway crossed the QGR North Coast Line on a road/tramway bridge. The bridge was redecked in May 1984. The bridge has since been replaced by a tramway only bridge of steel girders on concrete piers.
The rails were spiked directly to the decking and followed the centre-line of the bridge.

Concrete Bridges

Nambour Mill, "David Low Bridge" - Maroochy River, Bli Bli

Nambour Chronicle and North Coast Advertiser of Friday 27 February 1925, included a letter in response to a previous edition: "in your report of the Council meeting published in the issue of February 20th, that a resolution was carried at a public meeting approving of the erection of a tram and road bridge in the vicinity of Bli Bli and the Council, whilst supporting same, asks what contribution towards cost would be forthcoming — always of course, a big problem."

The bridge was not constructed at that time requiring the construction of a new wharf. A meeting of the LPA was held on July 6, 1926 Mr Lyell presided, and gave a report on the construction of the new Bli Bli wharf. He stated that great credit was due to Mr Sandy Sousaari, who was elected by those forming the working bee to oversee the construction of the wharf, which had been completed without a hitch. He stated that the Shire Council workmen were at present engaged in forming the approach to the wharf.

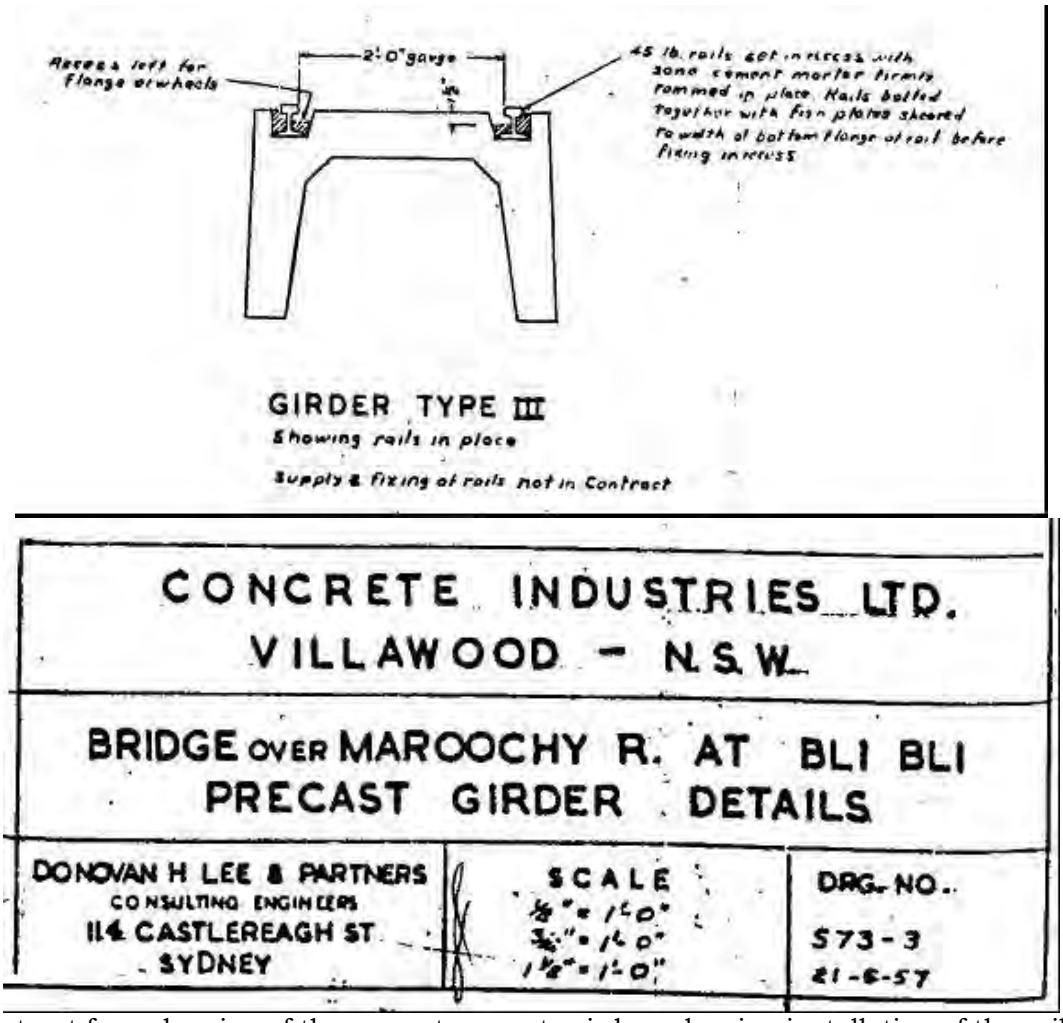
Flooding in early 1947, the opinion was offered that "the opportunity now presented of erecting a dual purpose bridge to span the Maroochy River as replacement of the tramway structure rendered useless by the floods of last week." "Here is a great opportunity for the Mill Company, whether it stays as it is or is taken over by the farmers, to combine with the Shire Council, and build a bridge which will serve both tramline and traffic."

In February, 1953, the Main Roads Commissioner (Mr. D. Crawford) paid a three day visit to the Maroochy Shire. Amongst the itinerary, possibilities of the sites and the construction of a dual purpose bridge over the Maroochy River were impressed upon visitors, councillors and the Main Road Commissioner's party. In the *Nambour Chronicle and North Coast Advertiser* of Friday 28 August 1953, is the report: "Action by the Chairman (Councillor D. A. Low, M.L.A.) in having obtained the services of Mr. D. A. Crawford (former Main Roads Commissioner) to recommend the most suitable site for the Maroochy River dual purpose bridge and to prepare estimate of costs of the structure and the approaches was unanimously endorsed by the Maroochy Council on Monday last. The Chairman went on to explain that no one was more qualified to carry out this work than Mr. Crawford, who had viewed various suggested sites when visiting this district officially as Main Reads Commissioner some time ago."

By October 1953, Mr. D. A. Crawford (ex-Main Roads Commissioner) had presented his report on three sites of the Maroochy River bridge project, tentative estimated costs, and recommendations. The estimated costs were not surprising, when taking into account the nature of the country and "the general trend of high expenditures of such projects in these times." Council adopted a site at what was known as The Wharf, and authority was given for the sinking of test piles and the preparation of the preliminary plans.

Detailed plans were drawn up by October 1956 and tenders invited. The original design was for a timber and steel bridge. When the six tenders were opened, one proposed a bridge built entirely of prestressed concrete and two other tenders were for the use of

prestressed concrete as part of the construction. The concrete option was adopted and the tender awarded to K. D. Morris and Son with prestressed components to be supplied by Concrete Industries Limited.



Extract from drawing of the precast concrete girders showing installation of the rails into recesses left in the top of the girders during manufacture.

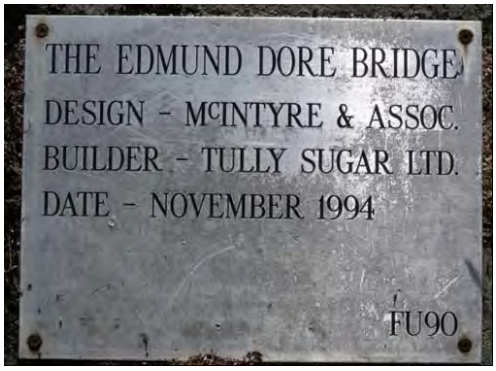
By June 1958 construction was underway and the bridge completed by August 1959. The overall roadway width was 20 feet and the bridge 564 feet long. One and a half miles of tramway was built to connect the tramway from the line to the punt approach to the Punt Line. At the official opening ceremony, the steam locomotives “Moreton” and “Petrie” were used to haul rakes of cane across the bridge. Opening of the bridge eliminated the costly and inconvenient punt transport which had operated for nearly 50 years.

It remained in use as dual road/tramway bridge until the Nambour Mill closed when it reverted to a road only bridge.


MAROOCHY RIVER
DAVID LOW BRIDGE

Tully Mill, Murray River, "The Edmond Dore Bridge", Dore Rd, Murray Upper

Concrete piles and headstocks support steel girders and concrete deck. The rails are cast into the concrete deck and finish flush with the top of the deck.



Edmund Dore, Hooker, Prop, Wallaby #47
Eddie Dore played Rugby Union and debuted for Queensland in 1904, and was described as a "hard-working prop and good in the loose". He was selected to represent Australia following a Queensland game in Sydney that year. He played in a forward position in the first of the three international Test matches against Great Britain on 2 July, 1904 in Sydney.

While in Tully he had bought land near Euramo Station with his son, on which he began to farm sugarcane after his retirement from the police force. He is commemorated by his former school, which named the "Eddie Dore Field" at St Joseph's College, Gregory Terrace, in honour of the its first international Test player, and by "The Edmund Dore Bridge" on the Murray River at Tully.

Pioneer River High Level Structures

During the 1980's and 1990's, three high level dual purpose bridges were built over the Pioneer River in the Mackay Region. Part of the impetus was planned upgrading of weirs on the Pioneer River. Dumbleton Rocks Weir was constructed by Mackay Regional Council to provide an urban water supply and subsequently upgraded twice as part of the Pioneer River Water Supply Scheme in 1993 and 1997.

Pleystowe Mill, Pioneer River, "John Cook Bridge", Pleystowe Connection Road

The bridge crossing the Pioneer River at Balnagowan was official opened on 24th January, 1992 replacing a low level bridge. The commemorative plaque was erected by the Water Resources Commission and bridge opened by the Minister for Primary Industries in the presence of the Chairman of the Pioneer Shire Council and Chairman of Directors of the Mackay Sugar Co-operative Association Limited.

The bridge is named to honour John Cook who settled on "Balnagowan" in 1862 shortly after John Mackay settled on Greenmount on the southern side of the river.

The "John Cook Bridge" remains in service on the Pleystowe to Fairleigh Connection. The cane railway shares one lane with the road traffic.

Marian Mill, Pioneer River, Marian – Hampden Road, Marian

Companion Document to the Sixty-eighth Annual Report 1988-89 of the Main Roads Department, Queensland highlighted that on the Marian – Hampden Road:

- Construction to commence on 210 metre long high level concrete bridge over Pioneer River at Marian, bridge will be joint road/tramway structure (associated road approaches will follow its completion).

The project was jointly funded by the State Government and the Mackay Sugar Co-operative Association Limited. The bridge and approaches were officially opened on 14th December, 1991.

The bridge shares common piers and abutment to the top of the headstocks. The road and tramway are separated on the superstructure.

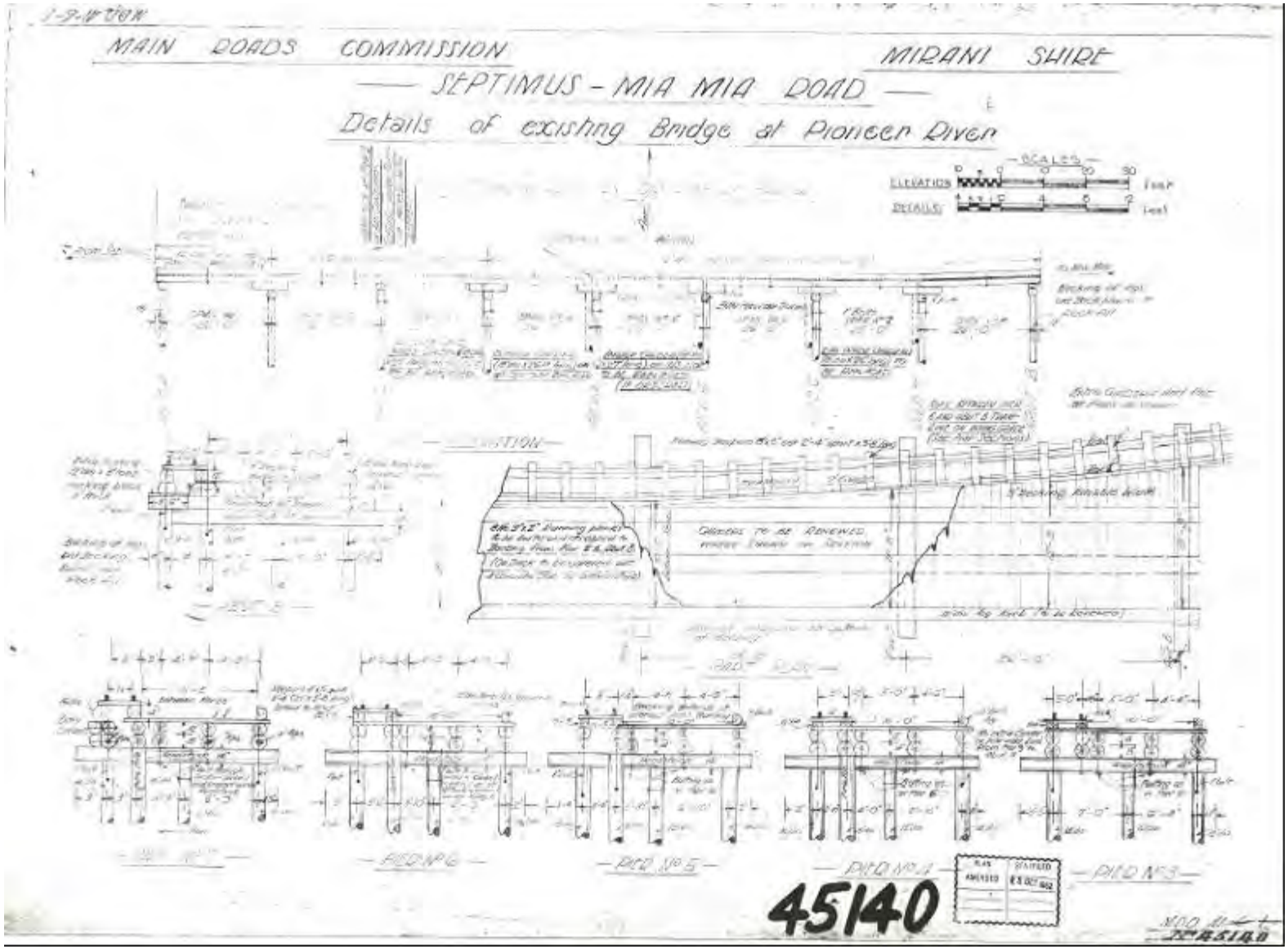
North Eton Mill, "John Luscombe Bridge", Pioneer River, Mia Mia Connection Road

The original low level bridge was constructed in 1905-1906 by the farmers on the western side of the Pioneer River. The necessary timber for the bridge was cut from Badger's and Johnson's properties. It is understood that the Pioneer Divisional Board supervised the job and carried out the pile driving. The tramline through to Septimus was completed in September 1908.

Steep grades of up to 6% down the banks of the river, together with sharp curves onto the bridge caused many derailments of the cane trains. The cost to North Eton Mill was significant. The bridge was prone to flooding causing much disruption to road and tramway traffic. In 1979, following scouring of the western end, two spans of bridging were washed away and replaced by a single span. Eventually, the Mia Mia Connection Road became a declared Main Road and part of responsibility for the bridge would have passed to the Main Roads Commission.

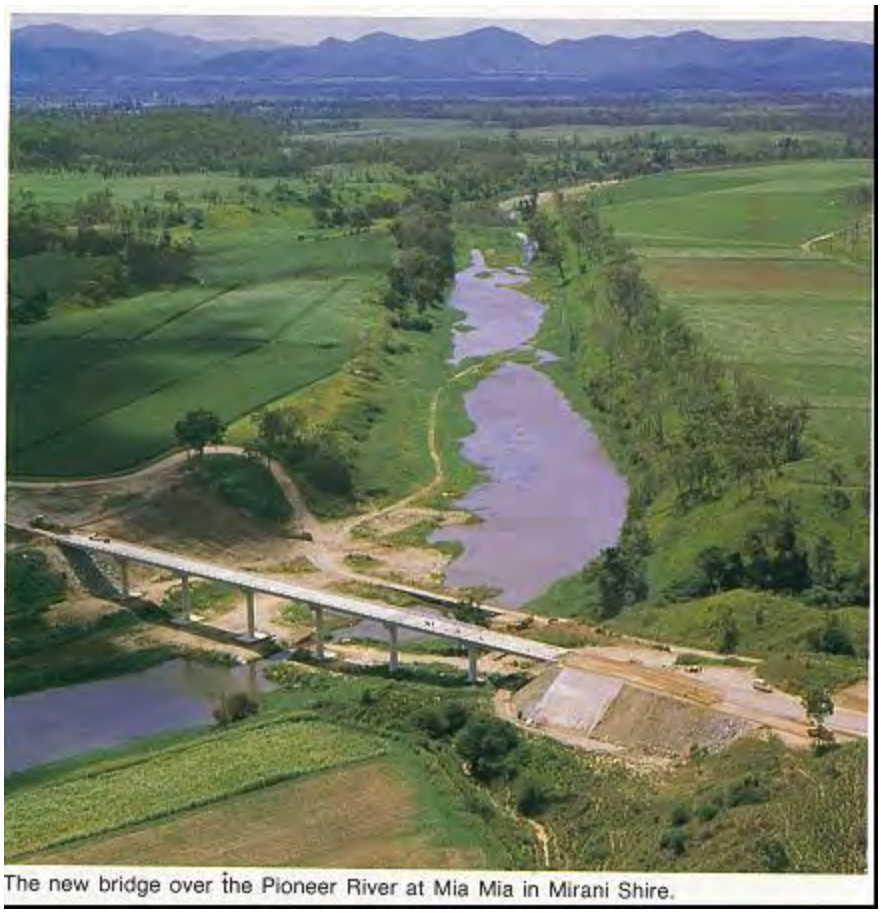
The Mirani Weir is located on the Pioneer River, some 46 km upstream of the Pioneer River mouth. The weir pool stores approximately 4,660 ML and the water stored in the weir pool is used for agricultural purposes. Construction of the weir was completed in 1987 and inundated the original low level bridge. Construction of a high level reinforced concrete road/tramway bridge over the Pioneer River at Mia commenced in May 1986 and the sub-structure of the bridge was completed during an extremely dry period by November, 1986. The bridge was jointly funded by the Main Roads Department, Queensland Water Resources Commission and North Eton Co-operative Sugar Milling Association Ltd. To connect with the new bridge, North Eton Mill carried out relocation of 1.8km of tramway.

The original dual purpose timber low level road/tramway bridge over the Pioneer River at Mia Mia. A MRC sketch of the existing bridge on the next page shows the tramway is on a rising grade and curve compared to the attached road bridge.


MAIN ROADS COMMISSION
MIRANI SHIRE
SEPTIMUS - MIA MIA ROAD
Details of existing Bridge at Pioneer River
SCALES
ELEVATION
DETAILS
PIER No 6
PIER No 5
PIER No 4
PIER No 3
45140

Construction of concrete piled foundations and piers in 1986.

Construction of cast-insitu concrete deck on prestressed girders showing location for installation of tram rails.



The new bridge over the Pioneer River at Mia Mia in Mirani Shire.

From the MRD Annual Report showing the old low level bridge downstream of the new high level bridge which is nearing completion as work continues on the approach roads.

The "John Luscombe Bridge" remains in use as part of the Mackay Sugar Cane Railway Network.

Babinda Mill, Russell River Bridge, Kruckow Access

Russell River Bridge built in 1975. Concrete piles and headstocks with prestressed concrete deck units. Rails set flush with the asphalt deck wearing surface. Bridge still is use but now part of the Mulgrave Mill system.

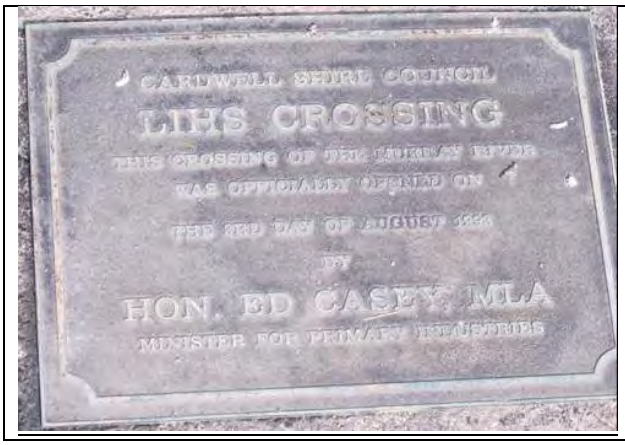
Some remnants of the previous timber bridge remain beside this bridge.

Mulgrave Mill, Mulgrave River Bridge, Vohland Road – Built 1980

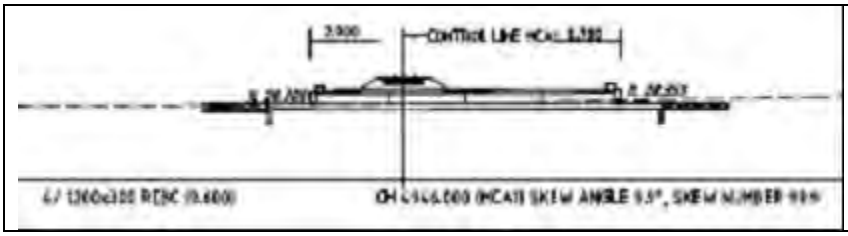
Mulgrave River Bridge built in 1980. Concrete piles and headstocks with prestressed concrete deck units. Rails set flush with the asphalt deck wearing surface. Some remnants of the previous timber bridge remain beside this bridge.

Floodway Structures

Tully Mill, Murray River, "LIHS CROSSING", Murray Upper



Tully Mill, "Bilyana Tramway", Murray Upper



Mossman Mill, Cassowary Road, Mossman


CAUTION
DUAL PURPOSE
TRAM AND ROAD
BRIDGE. BEWARE
OF LOCOMOTIVES

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Editors: Mac Hogarth and Peter Allsopp Published: 2000
Manual of Cane Growing HARVESTING AND TRANSPORT
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