QUEENSLAND RAILWAYS
A MODELLERS OVERVIEW

by Arthur Robinson June 1995.

As most modellers are interested in modelling QR in the period from 1945 to the present day, this paper will mainly deal with that period.

The first railway in Queensland was opened on the 31st.July 1865 between Ipswich and Grandchester.It was the first section of the railway to Toowoomba and the Darling Downs.

On the recommendation of Abraham Fitzgibbon it was constructed to the gauge of 3'-6"(1067mm) being the first 'Main line' railway in the world of this gauge.

The 3'-6" gauge was chosen after much debate. Narrow gauge railways were being promoted vigorously at that time. The proponents arguing that narrow gauge railways were cheaper than standard gauge railways. The major part of the saving was due to the lower standards adopted not the narrow gauge.

Ipswich was chosen as the terminus of the line as it was then the limit of navigation on the Bremer and Brisbane Rivers.

Further railways were constructed.Each one was from a port to the hinterland.The first sections of which were opened on the following dates.

1867 Rockhampton to Westwood
1880 Townsville to Reid River
1881 Maryborough to Gympie
1881 North Bundaberg to Moolboolaman
1885 Mackay to Eton and Mirani
1885 Cooktown to Palmer Road
1887 Cairns to Redlynch
1888 North Rockhampton to Emu Park
1889 Normanton to Haydon
1890 Bowen to Guthalungra

All except the Cooktown and Normanton Railways were eventually linked together.

The North Coast Line linking Brisbane to Cairns was not completed until 1924.

The total route length being over 10,000 km at the peak it is now about 9,500 km.

From the start locomotives and rolling stock were smaller than those in use in the other states of Australia.

Locomotives had axle loads of less than 5 tons.

All wagons were 4 wheel. Coaches were 6 wheel and bogie stock.

At the turn of the century Locomotives of 8 tal (tons axle load) had been introduced. (The B15 and PB15 classes)

This was increase to 9tal in 1903 (C16 class) and 12tal in 1911 (B17 class)

12 tons was the maximum axle load allowed for steam locomotives on the QR although from 1916 all new steel bridges were constructed to a 15tal standard.

At the end of the Second World War in 1945 the QR could be described as a giant light railway.

The larger 12tal locomotives were limited to the following sections:-

The North Coast Line between Brisbane and Bowen.
The Western Line from Brisbane to Rom.
The Southern Line from Toowoomba to Wallangarra.
The Central Line from Rockhampton to Emerald.
The Great Northern Line from Townsville to Charters Towers.

and the following branches:-

Byelee to Monto , the Dawson and Callide Valley branches and the Collinsville branch.

Half of the 'Main Lines' were restricted to 8 and 9tal locomotives only.

Coaches were all of timber construction although steel underframes were in use.

Wagons were mainly of timber construction. The majority being 4 wheel wagons the maximum size being 16 tons for 4 wheel wagons and 32 tons for bogie wagons.

Screw coupled drawgear limited the maximum load that could be hauled to 650 tons which was about the limit that could be hauled by the locomotives then in use.

The majority of bridges were of constructed of timber.

Major bridges were of Iron or Steel construction.

Most main lines were laid with 60lb. rails.

POST WAR REHABILITATION

After the Second World war in 1945 it was decided to strengthen the Ipswich to Rockhampton section to the 15tal standard . However the introduction of diesel locomotives pre-empted the construction of any steam locomotives to this standard.

In 1948 the first of the large numbers of steel wagons that had been ordered as part of the rehabilitation program were placed in traffic.Steel was to replace timber for wagon construction in this period.

1952 marked the commencement of an era that was to completely revolutionise the QR with the introduction of Diesel Electric Locomotives.

Whereas the load for a B18 steam locomotive up the Toowoomba Range was 230t the load for a 90t DEL was 425t.

Air Conditioned passenger trains were introduced on long distance services.

The 1950's saw the introduction of new wagons larger than the previous 32', 32t wagons generally in use. The 36ton WH wagon built in 1953 introduced the concept of bulk handling of grain. Previously grain was transported in bags.

The use of steel wagons with stronger drawgear allowed train loads to be increased.

On the 17th June 1958 DEL 1458 hauled a train of bulk wheat wagons from Toowoomba to Brisbane. This was the first QR train to exceed 1000 tons trailing load.

On the 19th April 1952 a deviation eliminating the Mount Morgan Range rack railway (operated on the ABT system) was opened to cater for shipments of coal from the Callide coalfield near Biloela south of Rockhampton.

THE MOUNT ISA RAILWAY UPGRADING

The decision Mount Isa Mines Ltd. IN 1965 to raise the production levels of lead,copper and zinc meant QR had to increase the capacity of the line between Townsville and Mount Isa.

The upgrading of the line to carry the increased tonnages saw the introduction of trains grossing 2600 tons hauled by two 1250 class DEL's hauling 42 x WHO wagons.

This was the first use of Multiple Unit working of 90 ton DEL's and auto coupled wagons which at 62t gross were the first wagons with an axle load greater than 12 tons.

This project also saw the first large scale use of prestressed concrete bridge girders to replace many of the old timber bridges that had been constructed in considerable numbers by QR.

CENTRAL QUEENSLAND COAL DEVELOPMENTS

The next major development was the start of the export coal market in central Queensland.

In 1959 Thiess Brothers began exporting coal to Japan from Kianga in the Dawson Valley through the port of Gladstone.

The first trains were hauled by BB18 locomotives hauling 35 VJM 4 wheel coal wagons.

The opening of another mine at nearby Moura in 1961 led to increased traffic and trains of 46 VJM's hauled by Beyer Garratt locomotives were introduced.

In 1964 DELs were in use hauling 61 VJM wagons.

August 1964 saw the first of the 62 ton steel bogie wagons constructed in Japan introduced on the Moura coal trains.(They were at first limited to 48 ton gross until the calliope River bridge was replaced.)

1270 class DELs were introduced in 1964.

In 1965 trains of 2/1270 DELs and 34 VAO wagons were the normal on the Moura coal trains.

On the 21st.of December 1967 the first triple header DEL train in Australia ran from Moura Mine to Gladstone hauling 51 VAO wagons, for a gross load of 3200 tons.

The opening of the Moura Short Line from Graham on the Monto line to Moura Mine on 21 June 1968 giving a direct with easier grades and curves than the old line via Mount Morgan enabled a further increase in train loads by the use of 60 VAO wagons. The gross load for the wagons was increases to 71 tons meaning gross train loads were now 4300 tons.

Centralised Traffic Control on this line where the signals were electrically controlled by the train controller was introduced on this line in 1971.

The next significant stage in the export coal traffic was the forwarding from Blackwater on the Central Line on 18 Oct 1967 of coal from the Kinrola mine in trains of 45 VJM wagons hauled by a 90 ton DEL.

The first of the many branches to coal mines and having balloon loops to turn trains was opened to Kinrola mine on the 1st November 1967.

VAO aluminium coal wagons were introduced on this traffic in 1968. Triple header trains of 51 VAO wagons were introduced for this traffic. Later, trains of 64 VAO's hauled by 4 DELs were introduced.

A major regrading program was carried out between Blackwater and Gladstone. The ruling grade was reduced to 1 in 80. This enabled 3 locomotives to haul a 64 wagon train instead of 4.

EE (English Electric) locomotives were used on the coal trains on the Moura and Blackwater lines.

Further development of coal mines in the Bowen Basin coal fields of Central Queensland led to the opening of the line from the port of Hay Point south of Mackay to Goonyella in March 1971.

Trains of 74 G (gondola wagons) hauled by 3 2100 class 96 ton DELs, having a gross load of over 5000 tons were introduced on this line.

Train control was by 'Train Order' system which was the first use of this system by QR .

September 1972 saw the introduction of 'full' CTC operation on QR where points and signal were controlled from the control centre.

Later, due to increase in traffic train of 148 wagons hauled by 3 DELs at the head of the train and 3 DELs in the middle controlled by one driver using the "locotrol" system developed in the U.S.A. were introduced.The radio signals were received by a LRC wagon and passed to the mid train locomotives by the normal MU cables

The success of this system led to its introduction on the "Blackwater system" in 1980 where trains of 100 wagons were hauled by Clyde-GM DELs as the head end power and EE DELs were the mid train Locos.

OTHER DEVELOPMENTS

On the 18th. November 1978 the Merivale Bridge linking North and South Brisbane was opened giving a direct connection between the two Brisbane suburban systems.

The first suburban electric service commenced from Ferny Grove to Darra on 17 th. November 1979. Electrification of the suburban system was completed on 17 th October 1983.

Electrification of the Central Queensland coal lines was next.The first section - Gladstone to Rockhampton was commissioned on 6th. September 1987, followed by Hay Point to Goonyella in 1988.

Stage 4 of the Main line Electrification the main North Coast Line from Caboolture to Gladstone was commissioned 1989.

Multiple unit electric trains with a top speed of 120 km/hr were introduced on a daylight "Spirit of Capricorn' service between Brisbane and Rockhampton.

The 1960's saw the introduction of International Standard Containers. This traffic has grown to become a major freight traffic on QR.
Block trains of container wagons now run regularly.

From 22 ton locomotives hauling trains of less than 100 tons at speeds of 20 kmph, QR has progressed to running freight trains of 2400 tons hauled by electric locomotives at speeds of 100 km/hr, passenger train speeds of 120 km/hr and trains capable of 160 km/hr are under construction.
At present the North Coast Line from brisbane to Cairns and the Great Northern Line from Townsville to Mount Isa are being upgraded to take DELs of 19tal and wagons of 20tal.

STEAM LOCOMOTIVES

Steam Locomotives were classified by a letter indicating the number of driving wheels followed by the cylinder diameter in inches.

A 4 Coupled wheels
B 6
C 8
D Tank engines. (the number of coupled wheels being denoted by a prefix eg. 6D16,4D10,8D15) later the prefix was dropped when all tank engines in use had 6 coupled wheels,

At the turn of the century the PB15 class was the main class of passenger locomotive 202 being constructed.
The C17 class, first built in 1920, was the most prolific class with a total of 227.
Lines were classified as 8tal ,9tal and 12 tal lines.
8tal Locomotives were B15,PB15
9tal C16,C17
12tal B17,B18 ,C18,C19,D16,D17
The AC16 were only allowed to run on the 12tal lines. In 1960 their original tenders were replaced with C16 type and they were allowed to run on some 9tal lines.
The Beyer Garratts were limited to the 12tal lines as were the Australian Standard Garratts which were all withdrawn at the end of the war.

QR steam locos had a family look.
Flat sided cabs with pulldown canvas blinds were standard until the Sedan Cabs with sliding glass windows were introduced in 1935.
Baldwin style sand domes were used from 1870 to 1953.
Funnel styles were the same style, varying only in size until the B18 .
Bar frame cowcatchers were standard until the pressed steel type was introduced with the BB18
The C16 style of tender with flared top was used for all classes built until the straight sided tender was introduced with the 1936 version of the B18 .These later tenders still used the same underframe. The C18 and C19 had a larger version of the C16 tender.
The B18 class built from 1926 has straight sided cabs and C16 style tenders. The 1935 B18 's had the sedan cab,

those built from 1936 onwards had the sedan cabs and the new style tenders.

Later some locos were fitted with centre headlights, some BB18 style steam domes and some with pressed steel cowcatchers.

This would allow a modeller to have several of this class of locomotive and not have two identical.

A modernised version of the C17 class was introduced in 1938. Some of older locos were later fitted with new style of funnel,steam domes and plate cow catchers. Some locos were fitted with 2 sand domes and tender headlights for tender first running on lines without turning facilities such as the Redbank to Bundamba coal lines.

Some locos had only one variation and some had all.

A couple of the newer locos could be seen running with the older tenders and some were fitted with old style funnels.

Steam locomotive numbers were reused when they became vacant. This resulted in one member of a class having a low number while the majority has high numbers.

For example the first B18 to be built was No. 84 later locomotives of this class were numbered 16,18,27,30. The highest number being the batch 887 to 916.

C17 class numbers ranged from No.2 to No.1000.

Beginning in 1948 the B18 's were painted Hawthorn green, the later C17's brown, the DD17 class blue and the Beyer Garratts were Midland red. The BB18 's were painted green the same as the B18 ' but with stainless steel boiler bands whereas the B18 s had polished brass boiler bands.

QR possibly had the worlds most colourful fleet of steam locomotives. Even when hauling coal traffic the Garratts retained their red colouring with gold QR on the tank sides.

For a time the home depots of locomotives were painted on the right hand front buffer beam of locos and in the central and northern divisions on the tender headstock:-

A - Alpha, B - Brisbane, Bowen, C - Cairns,
CT - Charters Towers, CY - Cloncurry, H - Hughenden,
I - Ipswich,Innisfail, M - Maryborough, MK - Mackay,
R - Rockhampton, T - Toowoomba, Townsville,
W - Warwick

In addition the division was painted on the back of the tender: - SED - South Eastern Division, SWD South Western Division, CD - Central Division, ND - Northern Division.

The markings were not always applied to all locos. In fact very few Ipswich locos were so marked but Toowoomba locos nearly always were marked.

DIESEL ELECTRIC LOCOMOTIVES

When Diesel Electric locomotives were introduced the were allowed to be constructed to 15tal due to the absence of "Hammer Blow" caused by the reciprocating masses of steam locomotives.

The first diesels were the 90 ton 1170 class in 1952. Originally numbered in the 1210 series they were later reclassed as 1300 class and later 1170.

With the introduction of the 1200 class in 1953 both classes were used mainly on freight and long distance passenger trains between Brisbane and Cairns and Brisbane to Toowoomba where the greater goods load on the Toowoomba Range was used to advantage.

In 1960 the 1170 class 60 ton light line DEL's were introduced for use on the lighter section of, particularly on the GNR between Charters Towers and Mount Isa.

Nos. 1174 to 1181 were fitted for multiple unit working.

The class was allowed 10tal on lines previously limited to 8tal for steam.

They were knows as 'Paw Paws" after a comic strip offspring of a racehorse. The name lasting long after the comic strip had disappeared.

With the upgrading of this line two were transferred to Roma and some to Cairns for use on the lighter lines in these areas.

1960 saw the introduction of auto coupled Multiple unit fitted DEL's with the delivery of 1255 and 1256 of the 1250 class. They were for use on the upgraded Mt. Isa line.

Later 60 ton DEL's were the 1600,1700,1620 and 1720 classes.

Later 90 ton classes were 1400, 1450, 1460, 1502, 1270, 1300, 2350 and 2370's.

Walkers of Maryborough built a demonstrator Diesel Hydraulic locomotive in 1966 and after trials a total of 73 were purchased by QR to become the DH class. They had their own green and yellow colour scheme.

With the construction of the Goonyella System the 2100 class DEL's came into service.They were allow an increase in axle load to 16 tons and had low noses.

They were allowed to run on A class lines with fuel tanks only part filled thus reducing their weight.

They were followed by similar locos of the 2170,2200 classes.

A 90 ton variation of the same shape was the 1550 class later followed by the 2400,2450 and 2470 classes.

Lines were classified as

S class 16tal Locos and 18tal for wagons.
A class 15tal
B class 10tal

The 2600 class GE dels were introduced in 1982 for the Newlands to Abbot Point coal traffic.They are mainly confined to this working.

When replaced by electric locomotives on the central Queensland coal traffic the 2100, 2170 and 2200 classed have locomotives have had their weight reduced to allow their use on A class. The main visible alteration was the shortening of the fuel tanks.

The letter A was appended after the loco number on the cab sides eg:- 2100A.

The 2800 class DELs now being constructed by Goninans under license to the General Electric Co. of U.S.A. have a 19tal. They will be limited to the Rockhampton to Cairns and Townsville to Mount Isa lines.

Because they were fitted with different control systems EE and GM diesels could not be run in multiple.

The 2600 class being of US parentage had the standard US control systems so they can run in multiple with th GM's.

ELECTRIC LOCOMOTIVES

With electrification of the central Queensland coal lines 18tal was allowed for the electric locomotives by adopting the Bo-Bo-Bo wheel arrangement.

The 3100,3200,3300,3400,3500 and 3600 are used on the coal lines only. The 3100,3300 and 3500 are control locos. Only locomotives of these classes can lead a locotrol train.

They are limited to a top speed of 80 km/hr.

The paint scheme adopted was a combination of green, orange and white.

The 3900 class were constructed with "bogie hung" traction motors thus reducing the forces transmitted to the track allowing their use on the A class North Coast Line from Brisbane to Gladstone. They are allowed a top speed of 100 km/hr.

The 3900 class were painted green and yellow.

All QR locomotives are now being painted in the maroon and yellow scheme.

RAIL MOTORS

Queensland Railways made large scale use of rail motors. They were used to provide faster services especially on branch lines and between towns and cities on main lines.

The first rail motors were the McKeen cars imported from the USA. They were not successful.

There followed a period of conversion of road vehicles to rail use.

In 1927 the 45 HP AEC rail motors using a bus chassis built in Britain were placed in service.

Rail motors were classified according to their engine type:-

45 HP AEC
100 HP AEC
153 HP GARDNER
102 HP GARDNER (The Streamliners)

Rail motors were numbered in the RM series. e.g. RM80.

Rail motor trailers were built to carry passengers, passengers and goods, goods and cream.

Trailers were numbered in their own series and denoted P100 passenger trailers, PL80 passengers and goods, C54 cream and G146 goods.

All trailers were numbered in the one series.

For post war units the numerical classification of 1800,1900 and 2000 was adopted.

The Cooktown to Laura line was for its last years operated only by rail motors as is the Normanton to Croydon line today. The rail motors on these lines hauled goods wagons and were fitted with wagon type drawgear.

One feature of rail motor services was that they stopped not only at stations but at RM stops.

This was a level area beside the track marked by a RM Stop Board. The board read RM STOP 15 with the Milepost (later kilometre) Post distance for that particular line.

This would be an ideal feature for a model railway.

Another feature was that the different types rail motors and their corresponding trailers were of different width and height.

They were sometimes mixed and a rail motor could sometimes be seen hauling two trailers of different sizes.

COACHES

Coaches are referred to by the following alpha codes;

- A First Class
- B Second Class
- C Composite carriage with both first and second class
- D Pullman centre aisle type carriages
- L Fitted with lavatory.
- O Ordinary cars.
- S Sleeping cars
- U Suburban cars.
- V Includes Guards accommodation.
- X Suburban Car.
- BC Baggage car.
- DC Dining car.
- GV Goods brake Van.
- MV Mail Brake Van.

e.g. AL first sitting coach fitted with lavatory.
DAS Pullman type first class sleeper
BUV second class suburban coach with guards compt.

Prefixes denote different types of coach
e.g. M Air Conditioned Trains - MAL

COUNTRY TRAINS

Some dates of introduction of coach types are

1886 Sleeping cars
1896 Travelling Post Office cars all withdrawn by 1932
1912 Pullman sleepers
1931 Dining Cars Townsville Mail attached between Rockhampton and Mackay
The Western Mail between Mitchell and Cunnamulla
1935 Sunshine Express (Roller Bearings)

In the 50's and 60's the country passenger trains on the shorter runs such as the Toowoomba, Gympie and Bundaberg services were a mixture of many different types of coaches.

In this era services to branch line destination such as Kingaroy and Monto were provided by Composite sleepers. They were detached from the main line trains at the junction station and attached to the branch line mixed for forwarding to their destination.

Most long distance passenger trains included a baggage car for parcel traffic.

THE LANDER TRAINS

Air conditioned trains were introduced in 1952. They ran in fixed sets.

The first in use was the 'INLANDER' running between Townsville and Mount Isa.

AC trains were hauled by DELs except where track standards did not allow the 90 ton. DELs to run:

Sunlander - Babinda to Cairns for a short time until this section was upgraded to take the 90 ton DELs.

Inlander - Charters Towers to Mt.Isa by C17 double headed in sections.

With the introduction of the 1170 DELs the steam locomotives on this service were replaced.

Midlander - Emerald to Winton C17s double headed on the Alpha to Bogantungan section.

In 1957 Beyer Garratts were used on the Emerald to Bogantungan section until 1960 when this section was made available for 90 ton DELs.

1960 saw the use of AC16's on the Inlander between Bogantungan and Winton assisted by C17's between Bogantungan and Alpha.

After the delivery of the 60 ton 1600 class DELs they were used on the Inlander west of Emerald.

Westlander - Roma to Charleville hauled by PB15+C17 and from Charleville to Cunnamulla by a PB15 only. The small locomotive being overshadowed by the coaches.

Later 1170 class DELs were used between Roma and Cunnamulla followed by 1600 and later 1700 and 1720 class DELs.

In 1980 Stainless Steel Air Conditioned cars of a more modern design were introduced to the Sunlander services.They were 10 sitting cars and 10 sleeping cars.

Five years later 1985 new Dining cars constructed to the same design were introduced.

On the 20th of April 1986 the Queenslander luxury air conditioned train with motorail service was introduced.

SUBURBAN SERVICES

Early suburban services consisted of a mixture of coaches.

American type suburban cars with end verandahs and clerestory roofs were introduced in 1902. When replaced by Evans cars many were modified for long distance traffic. They were a common sight in long distance trains up to the 1960's.

They were also used on services such as Ipswich to Grandchester and Townsville suburban services.

Commissioner Evans was responsible for the introduction of the cross bench cars which bore his name in 1911.

Constructed up to 1953 they were a distinctive feature of the Brisbane suburban scene.

Different window styles were used and those constructed after the war had semi elliptical roofs.

In 1913 smaller versions of evans cars with 7 not 9 compartments were introduced on the 'South Side' suburban services in Brisbane,

Later versions with lavatories were introduced.Called excursion cars they were used on Southport trains.

For many years north side suburban sets sometimes had main line Cars included in sets. Even Sunshine Express cars were used.

1961 saw the introduction of the Stainless Steel suburban cars. They were run in 7 car sets although at one time the sets were reduced to 3 and 5 cars for the lightly patronised Sunday services.

Constructed to enable later conversion to Electric Multiple unit cars they were fitted with headlights and space for a drivers compartment hence the end windows on the terminal cars.

Electrification of the suburban system on the 25,000 volt AC system and the introduction of longer coaches in the EMU sets meant the conversion was never undertaken.

WAGONS

The wagon classification system used by Queensland Railways evolved from the use of a primary alpha character which represents the type of wagon in each of the four, six and eight wheel configurations.

The initial classification as listed in the 1890 Commissioner's Annual Report was :

Type of wagon	Number of Wheels		
	4	6	8
	Classification		
Covered Goods	A	B	C
Covered Goods (Convertible for Passengers)			CC
High-sided Open Goods	D	E	
Open Goods	F	G	H
Cattle	I	J	K
Sheep	L	M	N
Platform		O	P
Timber	Q	R	S
Ballast	T		U
Hopper	V		
Rail Wagons	W	X	Y

With the withdrawal of 6 wheel stock the following codes were reused:

M medium length 4 wheel sheep wagons.MG

O Tank wagons.

B skeletal container wagons B,BR,BM
G Gondoala Wagons G,GN,GO
M Motor car carrying wagons M,ML,DM,DDM
R Refrigerator wagons.
W flat wagons (longer 32 foot) W, WR, MTW

Some wagons have a three letter code variation of the ANZR four letter coding.QLX,QGX,QFX

Suffixes were used to denote

A Aluminium body. (VAO, VAH,VAZ)
E 11 ton axle load.(X originally used)
G Grovers Bogies (AG, ABG, ALG, FG, MG,SG,ZG)
J (Jumbo) 8ton axle (ALJ, CJ, CJF, FJ, HJ, PJC,SJ)
L Louvred (ALG,ALJ,BLC,CLC,CLF,CLO)
M Insulated formerly Meat.(CMB,CMC,CMI)
O Wagons built for 15 1/2 ton axle load (CO,CLO,HO,HWO WHO,VO,VAO) some now allowed 71t Gross (VAO,GO,GOC,GON)
S Steel construction. (CMIS,HJS)
T Transition couplings (CMIST,HSAT,WHET)
X Bogie exchange (originally 11 ton axle load), (QGX,QLX,QFX)
Y 12 ton axle load.(ALY,PCY,OTY)
Z 20 ton axle load (VAZ,BCYZ,PCYZ)
N 90 tonne gross wagons.(VSNB)
H 100 tonne gross wagons.(VSHB)
Y 100 km/hr running.(PCZY,BCZY.PCOY.

The suffix B was used to indicate a wagon that had a Guards compartment. (KB,KKB,NB,NWB,CB,CCB,CHB)

Suffixes are used to denote ownership of tank wagons (OA,OB,OC etc.)

The first wagons were 4 wheel,10 tons gross.
Later 6 wheel wagons were introduced.
1879 - the first of longer 4 wheel wagons fitted with Grovers bogies. This was a system of two wheel trucks, each pivoted at the centre and linked by diagonal cross rodding. Thus allowing the wheels to align with the curves in the track, allowing the construction of longer 4 wheel wagons.
(Qld had the largest fleet of these wagons in world.)
1887 - bogie wagons.
1910 - louvred vans for fruit.
1911 - The remaining 150 6 wheel wagons were converted to Grovers (27) or Bogie (123) wagons.
1913 - Westinghouse continuous air brakes introduced.
1929 - The 'J' wagons were introduced. They were the longest rigid wheelbase 4 wheel wagons on QR.

In 1945 all wagons, except for tank wagons and the VH, VTS, VJM and HVS steel wagons, were constructed from Queensland hardwood.
4 wheel wagons had gross loads of 10 - 16 tons.
Bogie wagons had gross loads of 20 -32 tons.
4124 were Grovers bogie type composing 20% of the total wagon fleet. Of these 2662 were open wagons.
In 1948 the first of the FJS and HJS steel wagons were introduced into service 1948. The FJS was to be the largest

class of wagons to run on QR with over 4000 built.

Open wagons were the most numerous type of wagon in this period.

All new classes from this time were of steel construction and conformed to the standard bogie wagon size of 32' - 32 tons. e.g: CMIS insulated vans and CLC louvre vans,

The first wagons to exceed these dimensions were the 40'long 36 ton WH bulk grain wagons in 1955 and the 40'- 40 ton BLC Louvre vans in 1956. Both classes were fitted with cast steel bogies.

The BLC's were painted grey and were fitted with screw handbrake which were also innovations for QR.

Until this time wagons were painted red except for insulated vans which were painted grey and steel wagons which were painted black.

In 1969 the decision was made to paint all wagons grey to help improve night time visibility at level-crossings. Within 10 years very few red wagons existed.

Tank wagons were left black as they always had been and aluminium wagons were left unpainted.

The WHO and CO classes introduced in 1962/63 were the first wagons fitted with auto couplers.

The next major development was the aluminium VAO coal wagons in 1967.

Today most new wagon construction is coal wagons or container flats. All wagons are auto coupled and buffers have been removed from most.

90 tonne coal wagons, VSN are in service and two 100 tonne coal wagons VSH are under test.

BOGIES

In 1945 bar frame bogies were the common type of wagon bogie used. There were three main types:- 4' wheelbase with 2'-2" wheels and 2 / 5' wheelbase. One with 2'-2" wheels and the other with 2'-9" wheels

The first deliveries of steel wagons had bar frame bogies but after july 1951 the HJS's were fitted with cast steel bogies as were later CMIS wagons.

The attached list of QR wagon bogies lists the classes of wagons fitted with each type.

WAGON BRAKE VANS

A feature of QR was the use of wagons fitted with guards compartments.

The most notable was the KKB cattle wagon with a guards compartment at one end and drover's compartment at the other end. Although they were mainly used on cattle trains it was a common sight to see them on other freight trains, mainly locals.

Other types still in after 1945 were the CB, CCB, CHB, NB and NWB.

SIGNALLING

Queensland Railways safe working practices were based on the British system of train staff with the later use of electric staff on the busier lines.

In areas of light traffic the standard unattended crossing loop with the minimum of signals was in use. A variation using fixed beacons instead of distant signals.

Later the "trailable facing point loops" were introduced. (See accompanying diagrams)

On the duplicated track sections at major junctions and on the busier single lines the stations Mechanical Interlocked points and signals controlled from a cabin were introduced.

The accompanying diagram is of a simple such installation.

In the suburban areas colour light signals were installed.

Upper Quadrant Automatic signals were used between Petrie to Caboolture from 1952 - 1974. There were some on the 'south side' also.

On the North Coast Line loop extensions beyond the limit for mechanical operation of points by rodding Colour necessitated the installation of electrically operated points and colour light signals on the extended loops while the lower quadrant semaphore signals and mechanically operated remained at the unaltered end of the loop.

Both types of points and signals were controlled from the mechanical frame on some installations.

From the first installation on the Moura line in 1970 CTC has gradually extended to the present time where the North Coast Line and most of the coal lines have this form of train control.

BRIDGES

Most Queensland railway bridges were constructed from the local hardwood timber. It was readily available and cheaper than imported ironwork for bridges.

It was cheaper also cheaper to construct timber bridges than large embankments. In later years many large timber bridges were replaced with embankments and culverts.

The larger spans were of imported iron and steel.

In 1945 there were 200 km of timber bridges
1975 109 km of timber bridges
26 km of steel bridges
25 km of Prestressed Concrete
and 5 arch bridges of reinforced concrete.

Timber was used for the following spans;
1 girder up to 18'
2 girders up to 28'
and understrutted up to 36'

there were a few timber trusses but they were all replaced by 1900.

The longest timber bridges were at Yeppen 1882' and 1668'. The Curra bridge consisted of 71/20' spans and 2/26' spans for a total length of 1462'.

Plate girder spans up to 60'some with 'hog back' were used.

Lattice Truss bridges were the main truss type used up to 1890 spans from 50' to 100' being used.

The Warwick to Wallangarra line had 3 large Lattice trusses. That at Quart Pot Creek at Stanthorpe has 7/50' spans and is still in use having been strengthened by the insertion of centre girders.

Lattice trusses with 100' spans are still in use at Tuckers Creek north of Nambour (3 girders.) and Lockyer creek on the Brisbane Valley Line (span halved by insertion of centre pier.)

Five major bridges were built between 1893 and 1900. They were 'Double Intersection Pratt' or Whipple trusses.

Three have a 'Hog Back' curved top chord.

Brisbane River at Indooroopilly 2/340' spans

Fitzroy River at Rockhampton 2/250' main spans.

Calliope River north of Gladstone 1250' main span and 2/150' side spans with straight top chord.

The other two have a straight top chord.

Bremer River west of Ipswich 2/150' main spans.

Burdekin River at Macrossan GNR. 6/250' spans

The Macrossan bridge was replaced by a bridge with the Pratt trusses of the same dimensions in 1965.

The Calliope river bridge was replaced in 1965 by a prestressed concrete having a cantilevered main span of 100'.

The other three are still in use although some modifications have made to all three.

The first of the American style Pratt trusses was constructed over the Bremer River at Ipswich in 1895 with 3/150' spans.

Most truss bridges built since 1900 are of this type with spans of 60' 80' 100' 110' 120' being used. Longer spans are: The North Johnstone River bridge (1922) 200' main span.

The Burdekin River bridge on the GNR (1966) 6/250'spans

Most of the smaller bridges constructed after the war were of steel girders on concrete piers.

RSJ's are used for spans up to 30'.

Plate girders used for spans to 60'.

Pre-stressed concrete girders were first used at Woogaroo Ck. Goodna opened in July 1962 and at Bundamba Ck. both using 50' spans.

This type of bridge has become the standard bridge type used on QR with spans of 6m to 25m.

Most bridge replacements have been constructed on deviations. This allowed for improvements in horizontal alignment and grading.

The large number of bridges to be replaced under the Main Line Upgrade program, many on straight track led to the adoption of new methods of bridge construction.

A new type of pier construction was used together with a new design of standard 'U' shaped deck units.

~~Details are given in the Main Line Upgrading Fact Sheets~~.

Some timber bridges were not replaced. They were strengthened as an interim stage until funds are available to

construct new bridges on improved alignments.

Details of the various methods used are given in the handout.

The goal of the MLU program was the introduction of 80t wagons (20tal). This was the limit that could be achieved on most of the steel bridges.

To allow for future introduction of even larger wagons and all new bridges have been designed for M270 loading.

REUSE OF BRIDGE GIRDERS

Queensland Railways constructed many bridges using girders previously used on other bridges.

The bridge over Petrie's Creek at nambour originally had a lattice truss main span of 100'. This was replaced in 1916 by a Pratt Truss and this has now been replaced by 2/50' plate girders from the recently replaced Don River bridge at Bowen.

The bridge over the Macintyre Brook at Inglewood on the South Western Line.Built in 1906 it includes 5 different girders:-

26' fish belly girders ex Breakfast Ck.
34' Plate girders ex Boundary st.(Boomerang St.),
60' Plate girders ex The Main Range
72' Hog Back Plates ex Countess St.
50' Plate ex Woogaroo Ck. and Devils Gully (Ipswich)
The concrete piers have distinctive shapes

STATIONS

Most stations are constructed of timber to standard styles.

In 1913 Precast Concrete Post and Slab construction was introduced. Burpengary, Moorooka, Rocklea and Banoon are some of those still in existence.

Roofed Stations were at Brisbane Central,Rockhampton, Mt. Morgan,Gladstone,Winton,Mareeba and Roma Street.

MODELLING IDEAS

Some interesting lines to model would be:

Brisbane Suburban particularly between Corinda and Bundamba with suburban trains, coal trains, freight, grain and long distance passenger trains. Both steam and diesel eras could be modelled. An interesting feature is the use of the VAO coal wagons ex Central Queensland for the coal traffic.

The South coast line. A fairly frequent passenger service using smaller coaches. Freight trains including a fast freight of CJFP's with a passenger guards van at each end. PB15's being the only locomotives on this line.

South Side Brisbane with NSWGR alongside.
Small coaches hauled by PB15s or D17s.
Coal trains from Ipswich to Murrarie
Cattle trains to Cannon Hill.

Or in the present with coal, grain and container traffic to the port.

1996 will see NRC container trains running to the port.

BRANCHES

Beaudesert PB15 cattle, RM's
Brisbane valley C17,C16,AC16,PB15,RM's
Timber, cattle, Friday night Steam passenger service.
Newstead Branch (street running, Warehouses, Wool Stores, Cannery, Wharves, Sugar Refinery, Power Station loop sidings to warehouses crossed each other with diamond crossings set in the concrete road)

References:-

THE AUSTRALIAN RAILWAY HISTORICAL SOCIETY BULLETIN:-

"ONE HUNDRED YEARS OF RAILWAYS IN QUEENSLAND" J.W.Knowles.- July 1965.

"THE RAIL MOTORS OF THE QUEENSLAND RAILWAYS" J.W.Knowles. For a full history of and details of rail motor services. - July,August,October and December 1967.

"THE SUBURBAN RAILWAYS OF BRISBANE" J.W.Knowles. February to September 1964.

"PROVINCIAL SUBURBAN TRAINS IN QUEENSLAND" J.W.Knowles. - Information on Rail local services in major cities.- October and November 1972, May 1974.

"QUEENSLAND LOCOMOTIVE AND OPERATING DEVELOPMENT 1950 - 1970" J.Armstrong. A good overview of the title subject. October, November 1971.

"WAGON BRAKEVANS OF THE QUEENSLAND RAILWAYS" J.W.Knowles. September 1960.

"RADIAL WHEELED ROLLING STOCK ON THE QGR" J.W.Knowles. April 1974.

AUSTRALIAN MODEL RAILWAY MAGAZINE

"THE 'LANDER CARS" John G. Beckhaus July/August, September/October 1969.

"QUEENSLAND RAILWAYS STEAM LOCOMOTIVE NUMBERING" by Reg. Smith - A complete listing of QR steam locomotive numbers. May/June 1992.

OTHER PUBLICATIONS

"QUEENSLAND RAILWAYS CARRIAGE AND WAGON CLASSIFICATION CODES" by Chris Malone and keith McDonald. December 1994.
This lists every code used by the QR for wagons, coaches and rail motor trailers, a description of the vehicle and the relevant QR diagram book number.

QR WAGON BOGIES

BAR FRAME BOGIES

W-B	Wheels	Journals	Axle	KMcD	Wagons	No.
4'-0"	2'-2"	7 x 3	5T	AO	C,CLF,H,K,N,S,SP,U	6500
4'-0"	2'-2'			DX		4
4'-6"	2'-2'			DW		5
4'-9"	2'-2"	8 x 4	9T	BD	HS,HVS	101
4'-9"	2'-9"	8 x 4	9T	AI	VH,HJ	100
5'-0"	2'-2"	8 x 4	9T	AM	CJ,CJF,CMB,CMC,CMI HJ,SJ,MTW	1200
5'-0"	2'-2"	9 x 4.5	10T	BL		3
5'-0"	2'-9"	8 x 4	9T	AJ	CJ,CJF,CMI,HJ,HJS	1600
5'-0"	2'-9"	7 x 5	5T	BE	H,K,UR	250

CAST STEEL BOGIES

4'-9" (2'-2" Wheels) 1450mm (660mm) (7.5mm HO)

Plain Bearing

Type	Axle	Box Lids	Manuf.	Wagon	No.of Wagons
QR1	9T	O	IS	BBV (Passenger)	50
QR3	9T	O	IS	KS	100
QR5	9T	O	BK	HJM,WH,OP,OL*,OT*	170
QR4	9T	SQ.	BK	HJS,HJB,HJC,HRC,PCC,KWA* PCS,PFC,PFC,PC,OA* OB*,OC*,OQ*,OT*,OV*	460

* When fitted with Bogies fitted with package roller bearings called QR4Pac and QR5Pac A is added to the code eg: OAA

Roller Bearing

Type	Axle	Bearing	Manuf.	Wagon	
QR14	9T	SKF	BK	BBV (Passenger)	10
QR17	9T	SKF	IS	HJM,KSA,WHA,HWA,OBA, OCA	300
QR20	9T	SKF	IS	KSA,KWA,NA,WHA,HSA, HWA,OBA,OCA	400
QR24	9T	SKF	BK	KSA,NA,WHA,HWA,OBA	100
QR40	9T	KOYO	CS	PCC	29
QR41	9T	KOYO	BK	PCC	29

5'-6" (2'-6" Wheels) 1575mm (750mm) (8.5mm HO)

Type	Axle	Bearing	Manuf.	Wagon	
QR32	12T	KOYO	BK	KL,DDM,PYC	435
QR34	12T	KOYO	CS	PYC,DDM(43579)	100
QR37	16T	KOYO	CS	B,BR,BRM,HWO,SD	230
QR38	16T	SKF	BK	BRM,BM,BMM,PCO,R,SD	350
QR50		SKF		PCOP	

5'-6" (33.5" Wheels) 1575mm 850mm (9.5mm HO)

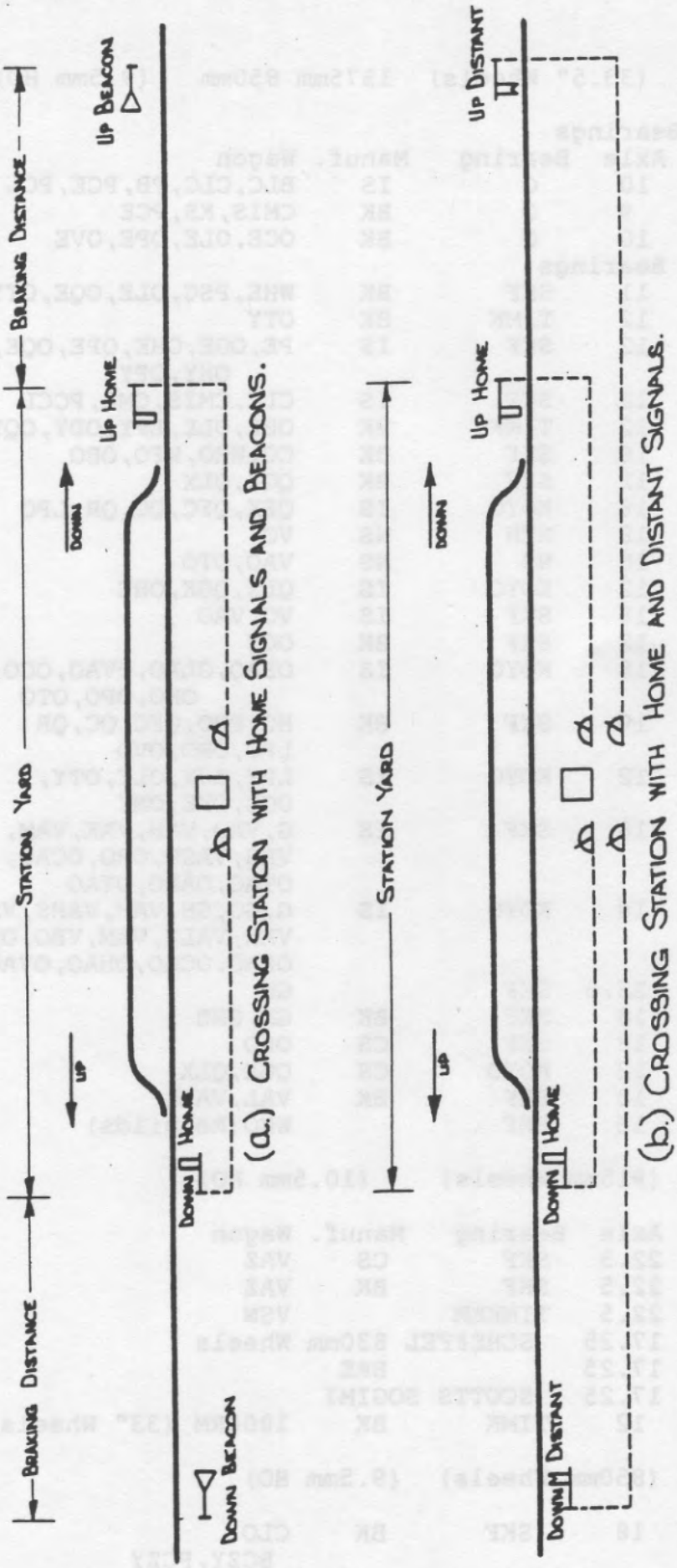
Plain Bearings Type	Axle	Bearing	Manuf.	Wagon	
QR2	10	O	IS	BLC,CLC,PB,PCE,PCL	190
QR7	9	O	BK	CMIS,KS,PCE	180
QR8	10	O	BK	OCE,OLE,OPE,OVE	32
Roller Bearings					
QR9	11	SKF	BK	WHE,PSC,OLE,OQE,OTY	300
QR10	12	TIMK	BK	OTY	1
QR11	12	SKF	IS	PE,OGE,OHE,OPE,OQE, OHY,OPY	60
QR12	12	SKF	IS	CLC,CMIS,CMR,PCCL	110
QR13	12	TIMK	BK	OBE,OLE,LPY,ODY,OQY	14
QR15	16	SKF	BK	CO,WHO,WFO,OBO	450
QR16	12	SKF	BK	QGX,QLX	1020
QR18	16	KOYO	IS	QFX,QFC,QC,QR,LPO	300
QR19	18	NTN	NS	VO	100
QR21	18	NS	NS	VAO,OTO	300
QR22	12	KOYO	IS	QLX,QGX,OHE	250
QR23	18	SKF	IS	VO,VAO	450
QR25	12	SKF	BK	OCY	4
QR26	18	KOYO	IS	OBAO,OLAO,OVAO,OCO, OHO,OPO,OTO	20
QR27	16	SKF	BK	HO,PHO,QFC,QC,QR LPO,ORO,OVO	750
QR28	12	KOYO	IS	LPY,OJY,OLY,OTY, OQE,OKE,OMY	18
QR29	18	SKF	IS	G,VAO,VAH,VAK,VAM, VAH,VASO,ORO,OCAO, OTAO,OAAO,OTAO	1500
QR30	18	KOYO	IS	G,GO,GH,VAH,VAHS,VAJ, VAK,VALK,VAM,VBO,OHO, OBAO,OCAO,OHAO,OVAO	2300
QR31	22.5	SKF		GN	175
QR33	18	SKF	BK	GN,GNB	55
QR35	18	SKF	CS	OHO	10
QR36	12	KOYO	CS	QGX,QLX	350
QR42	18	SKF	BK	VAL,VALL	690
QR48	16	SKF		WHO(Rebuilds)	10-50

1750mm (915mm Wheels) (10.5mm HO)

Type	Axle	Bearing	Manuf.	Wagon	
QR43	22.5	SKF	CS	VAZ	400
QR44	22.5	SKF	BK	VAZ	50
QR49	22.5	TIMKEM		VSN	
QR45	17.25	SCHEFFEL	830mm	Wheels	2
QR46	17.25		BRE		1
QR47	17.25	SCOTTS	SOGIMI		1
QR6	12	TIMK	BK	1800RM (33" Wheels)	24

2135mm (850mm Wheels) (9.5mm HO)

QR39	18	SKF	BK	CLO	50
QR54				BCZY,PCZY	350



Signalling of Crossing Loops.

Figure 1.

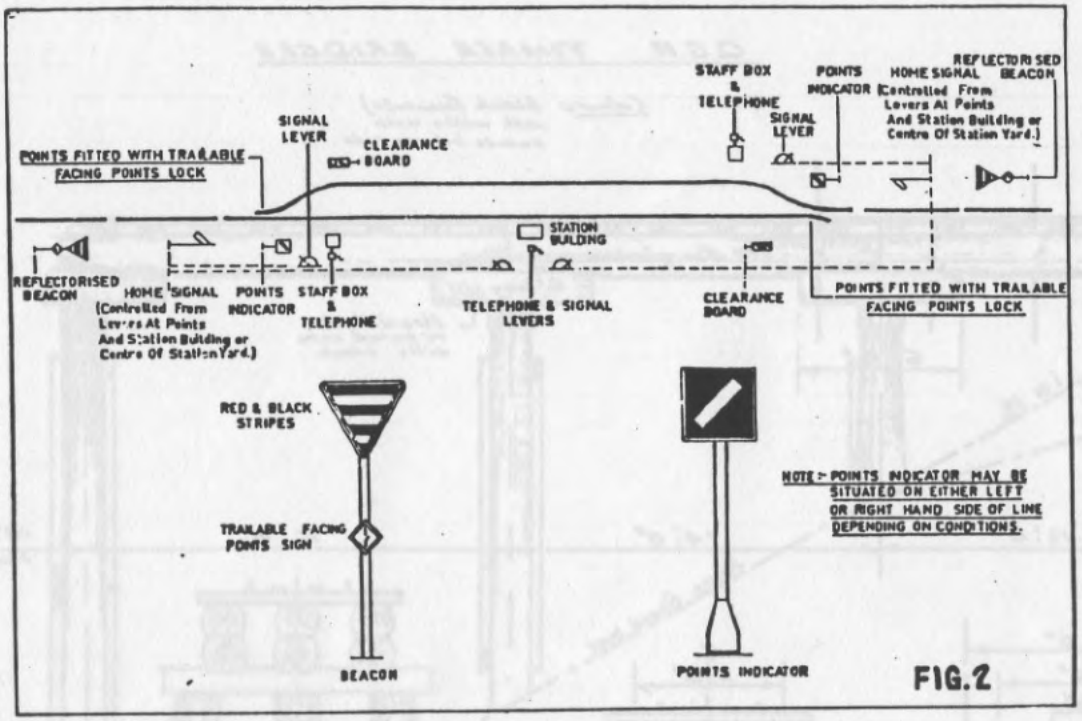

STAFF BOX & TELEPHONE
POINTS INDICATOR
HOME SIGNAL (Controlled From Levers At Points And Station Building or Centre Of Station Yard.)
REFLECTORISED BEACON
SIGNAL LEVER
CLEARANCE BOARD
POINTS FITTED WITH TRAILABLE FACING POINTS LOCK
STATION BUILDING
TELEPHONE & SIGNAL LEVERS
RED & BLACK STRIPES
TRAILABLE FACING POINTS SIGN
BEACON
NOTE:- POINTS INDICATOR MAY BE SITUATED ON EITHER LEFT OR RIGHT HAND SIDE OF LINE DEPENDING ON CONDITIONS.
POINTS INDICATOR

FIG.2

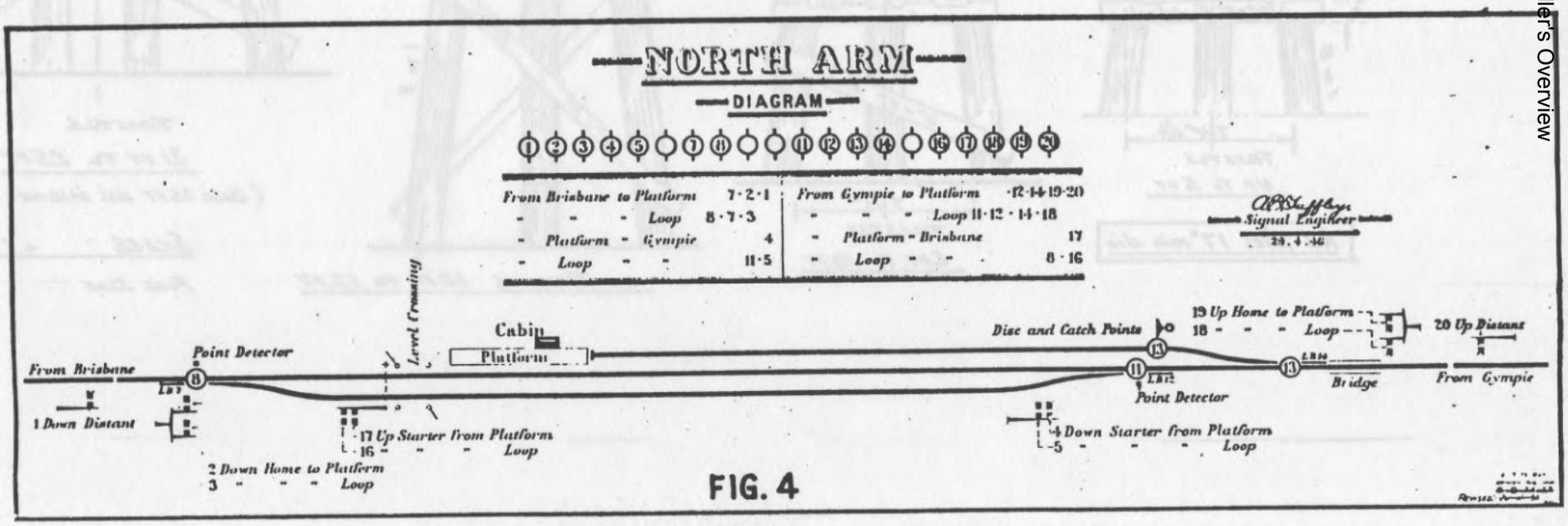
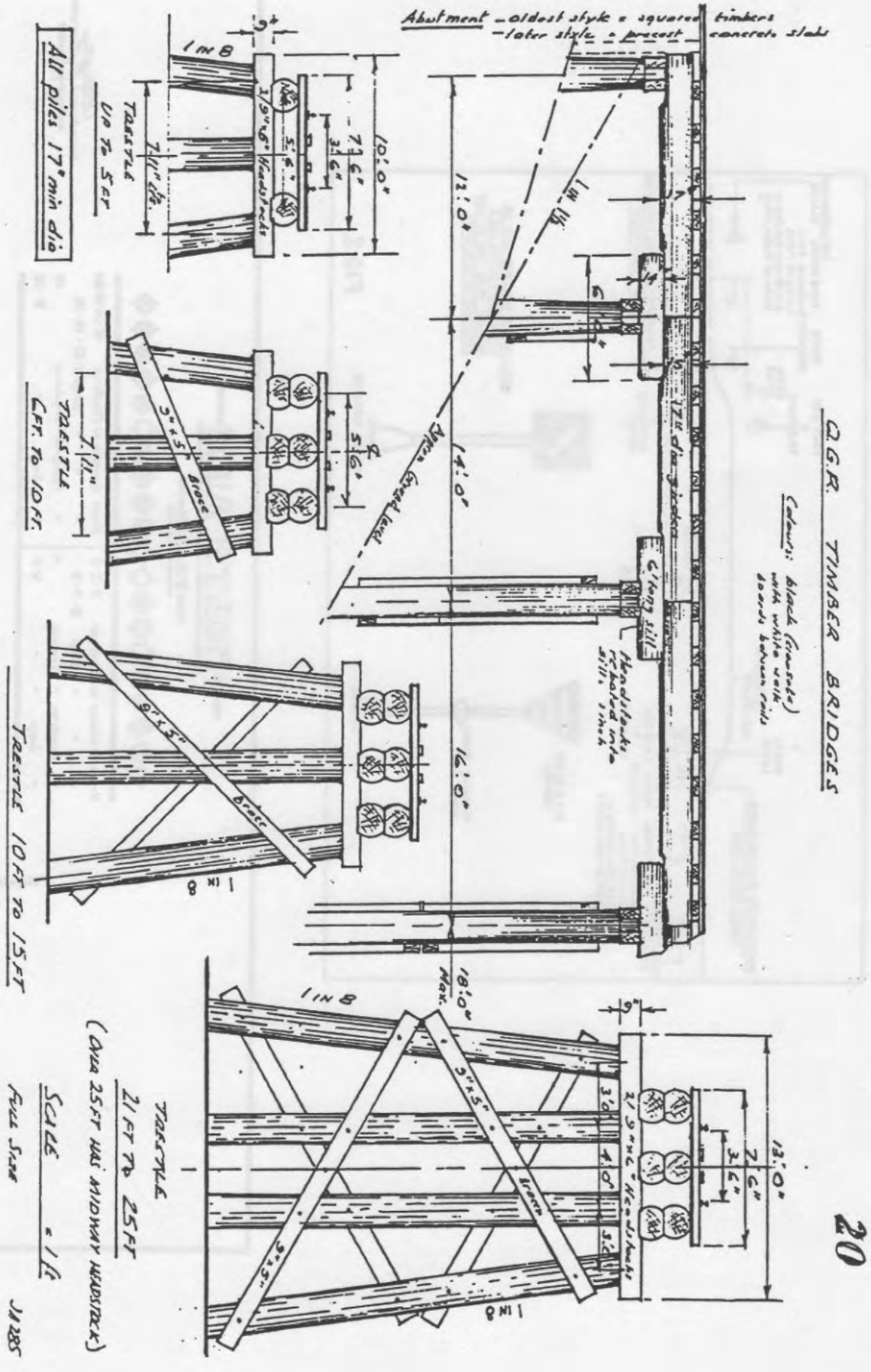

NORTH ARM
DIAGRAM
1 2 3 4 5 7 8 11 12 13 14 15 17 18 19 20
From Brisbane to Platform 7·2·1
- - - Loop 8·7·3
- Platform - Gympie 4
- Loop - - 11·5
From Gympie to Platform 12·14·19·20
- - - Loop 11·12·14·18
- Platform - Brisbane 17
- Loop - - 8·16
Signal Engineer
24.4.46
Cabin
Level Crossing
Platform
Point Detector
From Brisbane
1 Down Distant
2 Down Home to Platform
3 - - - Loop
17 Up Starter from Platform
16 - - - Loop
Disc and Catch Points
19 Up Home to Platform
18 - - - Loop
20 Up Distant
Point Detector
Bridge
From Gympie
4 Down Starter from Platform
5 - - - Loop

FIG. 4


Q.G.R. TIMBER BRIDGES
Abutment – oldest style = squared timbers
– later style = precast concrete slabs
All piles 17" min dia
TRESTLE UP TO 5FT
TRESTLE 6FT TO 10FT.
TRESTLE 10FT TO 15FT
TRESTLE 21FT TO 25FT
(OVER 25FT HAS MIDWAY HEADSTOCK)
SCALE 1/8
FULL SCALE
JM 285
20

PROPOSED STRUCTURES FOR BRIDGE STRENGTHENING