MELBOURNE AND METROPOLITAN TRAMWAYS BOARD

REPORT OF VISIT TO UNITED STATES AND CANADA BY S. M. RICHARDSON, H. H. BELL, JNR AND J. R. PATTERSON - OFFICERS OF THE BOARD

1946

R E P O R T

OF

MESSRS.

S.M. RICHARDSON, MANAGER,

H.H. BELL, PERMANENT WAY ENGINEER,

AND

J.R. PATTERSON, MANAGER, PRESTON WORKSHOPS,

OF THE

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD,

ON THEIR TOUR

OF

THE UNITED STATES OF AMERICA AND CANADA,

1945.

The Chairman and Members of the
Melbourne and Metropolitan Tramways Board.

Gentlemen,

VISIT OF MR. S.M. RICHARDSON, MR. H.H. BELL JNR. AND MR. J.R. PATTERSON TO U.S.A. AND CANADA.

In accordance with your instructions, the abovementioned left Melbourne on the 22nd. August last to visit the U.S.A. and Canada to inspect and report upon the latest methods of Street Car design and operation, track construction, maintenance, plant and equipment.

We were in Brisbane from the afternoon of that day, (22nd.), until the morning of the 27th., our plane requiring repairs. In the interim, we conferred with Mr. Quinn and his officers whose car-building programme and track maintenance was being delayed through lack of materials.

The P.C.C. car was discussed with Mr. Quinn and he informed us that his Council was interested more in the bogie and electrical controls than the complete car. Brisbane is adding to its plant whenever possible and it was noticed that a spring tempering equipment has been installed. Mr. Quinn expressed appreciation for the Board's help in procuring a milling machine which was greatly needed.

We once again discussed Brisbane's method of numbering stopping places. Mr. Quinn has convinced us that this system is of great value to the travelling public.

On Tuesday, 27th. August, we left Eagle Farm at 8 a.m. by U.S.A. Troop Carrier for Manila and San Francisco. The plane, carrying 30 passengers plus crew, arrived at Darwin at 6 p.m. and took off for Manila at 8 p.m., arriving there at 7 a.m. on the 28th.

MANILA.

We were met by the Consul General for Australia, Mr. Peterson, who introduced us to the Consul General for U.S.A.

Manila is practically demolished but tramlines are still visible. All the once beautiful churches are rubble and little is being done to clear up the mess; streets are in a frightful condition and the transport system consists of a few light buses and a horde of "jeeps" all driven madly and overloaded.

Electric power is supplied by a floating power station ship called "Impedance" and stated to be 50,000 K.W. capacity.

On the 29th. we were told to be ready to board at 2 p.m., but at 4 p.m. were told the plane would leave at 6 a.m. on the 30th.; meanwhile it was very hot and humid.

August 30th. - Arrived at airfield at 6 a.m. and after passing doctor, got away at 10.30 a.m. with 32 passengers, destination - Guam, approximately 1,603 miles. This plane is more comfortable with cross bucket seats instead of along each side.

GUAM.

August 30th. - Arrived Guam, 10 p.m. This is an important junction for air traffic from China and the East. It is a coral island and was occupied by the Japanese until 1943, and is now being fortified as a base by the U.S.A.

1st. September - Warned for 8 a.m. and find Mr. Richardson put off list. We protested, and Mr. Bell was put off in place of Mr. Richardson.

Organisation - very poor. We were told to go aboard and at 9 a.m. taxied off, but were recalled for Mr. Bell to board. Destination - Honolulu via Kwajalein, Johnston Island, approx. 4,000 miles. We reached Kwajalein at 6 p.m. and left at 9.30 p.m., arriving at Johnston Is., 7.30 a.m. 2nd. Sept., leaving for Honolulu at 9 a.m., arriving Honolulu - 1 p.m.

In the interim, we have passed the date line and it was still 1st. September.

HONOLULU.

Did not see city as we had to be at call. We refused quarters offered on account of their dirty condition, and were sent to Officers' Quarters after protest.

Left Honolulu, 2nd September at 3 p.m. and arrived San Francisco on the 3rd. at 7.30 a.m. Airport about 60 miles outside city and we reached hotel by bus at 11 a.m. The distance travelled since we left Honolulu being approx. 2,453 miles.

SAN FRANCISCO.

4th. September - Called at Consulate and met General K. Smart, the Australian Consul General who arranged a meeting with Mr. Jas. Turner, Director of Public Utilities, San Francisco - Mr. Turner is a Civil Engineer in charge of Transport, Water and Sewerage. We had a long interview with Mr. Turner, discussing street transport in general.

The population of San Francisco is approx. 834,000. The Commission operates 669 electric cars, mostly bogie type, and 5 P.C.C. cars, double ended; also 18 trolley coaches, 250 petrol buses and a number of cable cars. A further 10 P.C.C. cars are on order, also 18 trolley coaches. The length of single track owned and operated is 269 miles.

The total passengers on cars and buses during the year ending June, 1945, was 295,306, 166.

Profits from the types of transport were as follow :-

Street car operation	showed	a profit	of	2,966,495	dollars.
Cable "	"	" loss	"	1,229	"
Motor coach "	"	" "	"	207,742	"
Trolley coach "	"	" profit	"	127,452	"

A flat fare of 10 cents is now in operation. - This fare was increased from 7 cents in 1945.

The number of accidents per 100,000 passengers was 4.56. During this same period, the number of passengers carried on the Board's vehicles was 351,394,444, and the number of accidents per 100,000 passengers was 2.065.

As you are aware, there are four tracks in the principal thoroughfare - Market Street. The tracks owned by the Market St. Railway Coy. were taken over by the Commission in 1944 and it is intended to remove two tracks, and if necessary, to run trolley coaches alongside trams in peak periods.

The P.C.C. cars here are unorthodox, being double-ended and 50 ft. long x 9 ft., over pillars. They are dated 1940, have four only 60 H.P. motors, and brakes on wheels. We were informed that acceleration is about 5 m.p.h. per second and braking was adjusted for passenger comfort (estimated about 4 m.p.h. per second). They are one or two-man operated as occasion demands.

San Francisco people were enthusiastic about the P.C.C. cars but admit minor troubles and failures in the early stages, calling for towing in.

Mr. Requa, Designing Engineer, intimated that the track brake required re-desigining and also the shaft brakes on later models.

Personal observations were that the P.C.C. cars start and stop quickly and are quiet on straight track but not so quiet over the special work. They are a great improvement on existing rolling stock which is all very old and ill-kept.

The older cars are so noisy that in Market Street, ordinary conversation required shouting. Flats were numerous and the only method of removal was by means of carborundum shoes. A grinding machine is under consideration and San Francisco will be glad to have our drawings.

Mr. Turner stated that street cars are the most suitable vehicles for heavy traffic but was of the opinion that the Commission would use trolley coaches increasingly on the lighter routes owing to the high cost of reconstruction and the difficulty in obtaining rails. These coaches are one-man operated and seat up to 44. Schedule speed of trams is about 9½ m.p.h., stops for traffic lights being numerous.

Mr. Turner arranged a conference with his Engineers, Mr. Olson, Chief Engineer, Mr. Perrin, Senior Engineer, and Mr. Degnam, Civil Engineer, and we had a long discussion on technical subjects pertaining to street transport generally.

In company with Mr. Perrin we inspected the Commission's largest depot which accommodates trams, trolley coaches and buses, and also Traffic Revenue Offices. This depot is not up to the standard of the Board's modern depots and the conditions of the messroom for the traffic men provides only the barest amenities. The Revenue Office is provided with a coin counting machine which gives a complete total of the money received and has proved very satisfactory in all details.

An extensive inspection of the permanent way was carried out. The condition of the majority of the tracks and special work was poor but the recently reconstructed tracks appeared satisfactory. The reconstruction was all carried out under contract.

The Commission favours concrete construction with an asphalt surface. The rails were 110 lb. per yard, but it is probable that they will be obliged to use 130 lb. rails as these will be the only rails rolled.

Only a small length of trackwork has been reconstructed since 1940 as war conditions restricted the use of the required materials and the shortage of labour added further to the difficulties, with the result that the tracks and special work generally require immediate attention and an extensive programme is contemplated in the near future.

After inspecting these tracks, it was apparent that the design of the permanent way and the finished work is not up to the Board's standard. The special work is all cast manganese and is of the old design. Mr. Degnam is interested in the Board's new design of special work and has asked that plans of this work be forwarded to him.

The works yard under the control of the Civil Engineer is centrally situated, having an area of approximately 15 acres and provides storage space for all materials which are transported to the various jobs by electric trams converted to work trucks.

As all reconstruction work is carried out under the contract, only maintenance plant is required and this is of a type now out of date.

Through the courtesy of Mr. Degnam, an interview was arranged with Mr. Rogers, Engineer for A.D. Schrader, General Construction Contractors. This firm is considered one of the largest railway construction contractors on the west coast. They also carried out the contract for the recently reconstructed tracks for the Commission. The visit to this Contractor's central works yard was certainly an education. All types of modern roadmaking and railway construction machinery were demonstrated; one machine of particular interest to the Board was the track lifting machine

manufactured by the Nordberg Manufacturing Company of Milwaukee, and it appears to have great possibilities for use in pulling up the surface and rails of the cable tracks.

This machine consists of a welded steel frame car powered with a 40 H.P. motor having a lifting capacity of 50,000 lbs. and is operated by one man. The principle of operating this machine is for the operator to clamp the machine to the rails and lower the spud shoe to rest on the ground. With the spud offset from the centre of the track, one side will be raised first and as the spud continues to move downwards, the height of the rise increases and the track and surface of roadway is lifted. After the track has been lifted to the required height, the clamps are released and the machine is moved ahead a distance of about 50 feet, where the process is repeated.

Another machine of special interest was the "Racine" rail cutting machine. This machine is portable and is operated by a small petrol engine. Two men can readily move or place the machine on the track, but only one is needed to operate it in making the cut. Greater speed is assured in cutting by this method. At the present time, all our rails are cut by hand and the average time for a man to cut a rail is 45 minutes. The time taken to cut a rail of the same section with the above machine is approximately 5 minutes.

Methods of handling material and rails were observed and noted for probable future use on our works.

The methods adopted by this firm for the handling of mass concrete and asphalt materials was also discussed at length and the information tendered by Mr. Rogers on this and other construction methods was indeed appreciated. Mr. Rogers was asked whether his firm was interested in contracting for tramway work in Australia.

He said he would discuss the matter with his principal, A.D. Schrader. The following day he rang to advise that his principal could not say at the present time whether they would tender for work in Australia but would prefer to defer a decision until such time as tenders were called in Australia.

The Asphalt Institute of the United States of America, both in New York and San Francisco, were interviewed, and some of the methods discussed with this Institute as follows :-

Bitumen, hot-mix asphalt, cold-mix asphalt, hot and cold mixing plants, high-type asphalting pavements, low-costs roads, tests, experiments and research, etc.

Colonel D.B. Miller in San Francisco and Mr. A. Meyer in New York were most helpful and since our return, they have forwarded some up-to-date literature on this matter which will prove of great value to the Engineers of the Board.

We were fortunate in obtaining from the Department of Public Works, State of California, their Standard Specification for Highway Construction and Maintenance.

We were very interested in the Union Square Garage which occupies the entire block bounded by Powell, Post, Geary and Stockton Streets, in the centre of the city, built underneath a very fine Park.

The following information gives the statistics of this garage :-

Capacity	-	1,700 cars.
Cars garaged in 24 hours	-	3,600 "
Completed date	-	11/ 9/1942.
Construction	-	Reinforced concrete, fireproof throughout.
Cost	-	Approx. 1,550,000 dollars.

Building Plan - Four stories in depth, all underground, with floors connected by ramps. Lower three floors for parking exclusively, top floor for general affairs, reception and delivery of cars, servicing, cashiers and parking.

Parking Fees - 25 cents for one hour.
35 " " two hours.
50 " " all day (12 hours)
75 " " overnight (24 hours).
Monthly rate - 12.50 dollars and 20.00 dollars, the latter including all services.

Handling of Traffic. - Entrances and exits to streets on all four sides permitting routing of incoming and outgoing cars without interference from regular street traffic.

Ventilation - Mechanical ventilation completely changing air on all floors every 10 minutes.

BRIDGES.

The San Francisco population is served by two very fine bridges, namely the Golden Gate Bridge and the Oakland Bay Bridge (double deck), also numerous ferries.