

Edward (Ted) Barton: My Way through the CRB, RCA, VicRoads

Part 1: 1957 to 1967

Pre CRB

I was born in the little bush nursing hospital in the township of Yackandandah on 9th April 1936, the 7th in a family of 12 children. We lived on a relatively small dairy farm at Gundowring in the Kiewa R. Valley, about a third of the way down from Mt Beauty to Wodonga. I attended the Upper Gundowring Primary School, a one teacher, single room school of 20 to 25 students, (beginners through to Grade 7) and then I went on to the Wangaratta Technical School in 1949.

As we lived well beyond the limits of the then school bus system I was boarded at a 'Hostel' for boys set up by the Anglican Cathedral in Wangaratta to cater for boys (of any religion) from the more remote regions of NE Victoria. It was located within the grounds of the large Anglican Cathedral (built of pink granite mined from the Warby Ranges near Glenrowan) and conveniently located next door to the Technical school in Wangaratta (at that time).

I was sent to the Wang. Tech with the intention of training for an apprenticeship as a carpenter and builder, the trade my Father had before he took up the running of his father's dairy farm. I obtained very good results in the three years of the 'Junior Tech' exams and the school Principal advised my parents that I should do an Engineering course rather than a Trade course so I was enrolled in the Diploma Entrance course for my 4th year and subsequently started a Diploma of Mechanical Engineering in 1953. At the end of the first year of that course I switched to the Civil Engineering course and subsequently completed the first two years of the Diploma, which was as far as one could go at the Wangaratta Technical School. I then enrolled at the Swinburne Technical College in Melbourne for the final two years, completing the Diploma of Civil Engineering course at the end of 1956.

My Start at the CRB

My father was a councillor (and Shire President) in the Shire of Yackandandah at the time of my graduation and he mentioned to the then Divisional Engineer Benalla (Mr HS Gibbs), while visiting the Shire, that I was completing my Diploma of Civil Engineering, Mr Gibbs suggested that I come down to Benalla for an interview for employment with the Country Roads Board (CRB). After getting the results of my final year exams at Swinburne and having passed all subjects, I took the train from Wodonga down to Benalla and found my way to the CRB office on the banks of the Broken River just downstream of the Hume Highway Bridge at the south end of the main shopping centre.

Initially I talked to Max McPherson, an engineer at the time sharing Mr Gibb's office, as Mr Gibbs was busy on another engagement, he told me about the current works going on in the Division and the opportunities available for engineers. When Mr Gibbs arrived he asked me if I was interested in joining the CRB at Benalla and when I said yes to that he simply said when can I start I said straight away, as soon as I can find accommodation in the town. I started as a junior engineer a few days later; I think it was early March 1957.

As was the custom in those days in the Divisional Office I was assigned to general duties, some days working in the Divisional Soils Laboratory (with Rupert Cheetham), some days working in the Drafting office, plotting up cross-sections and doing earthwork calculations, sometimes accompanying more senior engineers on routine highway inspections and roadworks supervision etc.

At the time I joined there were 10 other engineers working under Mr Gibbs, mostly allocated to various sections of the State Highways and Tourist Roads under the direct control of the CRB in the Division. These were: Frank Lodge (Assistant Divisional Engineer), Alan Thompson, Max MacPherson, Graham Marshallsea, Wally Dyall, Bill Stubbington, Bill Thomas, Arthur Ford, Ted Oppy and Ted Renton.

After my three months of general duties I was allocated to assist Graham Marshallsea, who was responsible for the Hume Hwy from Seymour to Benalla, the Goulburn Valley Hwy from Seymour to Strathmerton and the Midland Hwy from Mooropna to Benalla. At that time there was several reconstruction projects underway on these three sections of State Highway. Notable amongst these was the reconstruction on the Hume Hwy. south of Euroa at Tubbs Hill and Maygar's Hill, Flat rock Hill through to Mt Teneriffe and Locksley Hill and a re-alignment associated with the 'Douglas Deviation' at Avenel involving the historic stone bridge over Hughes Creek. There was also reconstruction work on the Goulburn Valley Hwy through and north of the township of Nagambie and major widening on the Midland Hwy between Shepparton and Mooropna.

During this period I worked closely with the several roadworks Overseers, doing engineering surveying, setting out of the works, checking grading levels, setting slope stakes and setting out culvert and drainage installations etc. I also did investigation work on existing road pavements, especially on the Hume Hwy from Euroa to Avenel. This involved taking 'dippings' – digging holes in the pavement, generally on the centreline at about 200yards spacing and measuring the thickness of the various layers of material that made up the pavement and sub-base and taking samples of the materials for testing in the Divisional laboratory. This was done while traffic was still passing along the highway and was not without some danger, as no warning signs were placed, but traffic flow was not high and speeds were lower than in more recent times. Also in those days, most of the materials for new pavement construction were natural 'hill gravels, 'or 'river gravels', or 'granitic sand', particularly on the Hume Hwy – Euroa to Seymour. I was often involved in discussion with local farmers and searching their properties for suitable deposits of materials, for which they had little choice but agree to and in return they were paid the sum of three pence per cubic yard royalty for any materials taken.

This was a period when I first realised, that although I had an engineering qualification, I had a lot to learn about road and bridge construction and often the people that taught me the basic construction methods and skills were the overseers, gangers and plant operators working for the CRB on these projects. Talking to and observing their workings I learned how the various items of plant are used to achieve the best results. The other engineers at Benalla gave me great mentoring and support that was invaluable in learning and developing the more technical engineering skills involved in road construction and maintenance.

After working with Graham Marshallsea for about a year or two I was then asked to take over the organisation and supervision of the bituminous surfacing work throughout Benalla Division from Arthur Ford. This work involved almost totally the application of ITP&S (initial treatment prime & seal) generally using coal tar primers and cut-back bitumen binders for single (and sometimes double) application chip seals. Much of the technology for this type of road surfacing was developed by the CRB in Victoria (and also in New Zealand) and was documented in the 'BST bible' of the time – referred to as the 'Blue Book'. The key items of plant for this work, such as bitumen heaters and sprayers, aggregate spreaders and mobile screening plant were largely developed by the Boards Mechanical sub-branch and the Asphalt Division, along with detailed methods of plant operation and work procedures to ensure satisfactory performance of this type of road pavement surfacing. This included careful control of the aggregate used, particularly 'one-size' grading and associated characteristics such as flakiness, durability and bitumen adhesion characteristics.

My work in managing this activity in Benalla Division involved recording and scheduling each BST project for all of the Boards sector engineers on direct control highways, main roads and tourist roads, as well as all requests for sealing works from Municipal Councils on Declared Main Roads and Unclassified Roads. It also included some pavement sealing works (such as parking areas and pathways) associated with properties used by other Victorian Government Instrumentalities not covered by local councils, e.g. Beechworth Mental Hospital.

This work involved managing and direct supervision of three BST sealing units and two priming units, and the ordering and supply of bitumen (by rail and/or road tankers) and of coal tar in 44gallon drums to suitable temporary storage and BST work camp sites, as well as the supply, sampling and testing arrangements for the

aggregate to be used. As many of these roadworks had been constructed some weeks or months ahead of the BST program (which was generally limited to the drier warmer months of the year) most of the road pavement surfaces needed to be re-prepared (fine graded) just ahead of the arrival of the priming units at the site. Initially this final preparation work was done by the Board's (or Council) construction gangs but this was often not very convenient for them and also many (especially Municipal Council works) were not adequately skilled at this final preparation work) so we set up a couple of specialised 'Final Preparation units' with appropriate plant, (multi-wheel roller, water tanker and long wheel-base grader with skilled operator) to work in conjunction with the priming units. This worked very well and resulted in a much improved riding surface on these projects.

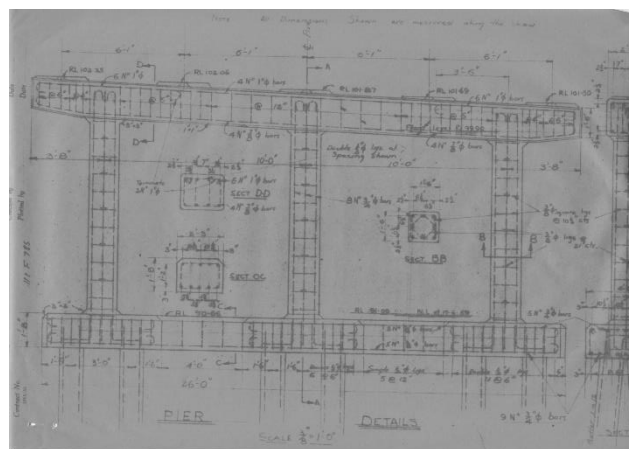
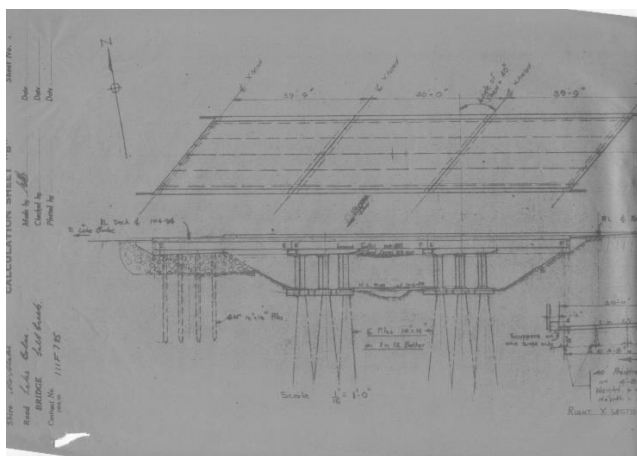


At that time we were also doing some experimental work to overcome problems associated with the surface treatments on granitic sand pavements commonly used on the Hume Hwy. south of Euroa. These pavements often developed severe shrinkage cracking as the pavement aged and the cracks reflected through the bituminous surface treatments allowing water to penetrate the pavement leading to failures. To counter the cracking of the bitumen surfacing we experimented with the addition of latex (rubber) to the hot bitumen just prior to loading it into the bitumen sprayer. This was only moderately successful as a treatment for this problem.

I was responsible for the BST work in Benalla Division for about three years leading up to my temporary transfer to Head Office to obtain Bridge Design experience. Mr Gibbs (DE) encouraged all his engineers to become qualified Municipal Engineers as we were often dealing with local council engineers in respect to works on declared Main Roads that were under the care and management of Municipalities. Getting this qualification involved passing examinations set by the Municipal Engineers Board and achieving their required amount of practical experience in road and bridge design and construction. I passed the necessary examinations for Road and Street Design and for Powers & Duties of Municipal Engineers as set by the Municipal Engineers Board and my work in the CRB at Benalla qualified me in all except Bridge Design. To obtain this it was necessary for me to transfer to Bridge Division at Head Office for at least 3 to 4 months which I did in mid-1959.

At the time that I came down to HQ there was no immediate vacancy in the Municipal Bridge Design section (run by Mr Phil Reed) so I spent about a month temporarily attached to the Traffic and Location (T&L) Section, at that time headed by Neil Guerin (I think). The CRB Headquarters staff at that time we were located at the Melbourne Exhibition Building and the Chief Engineers Branch was housed in the 'Tin Sheds' at the back of the north end of the building in Rathdown St Carlton. During this short stay in T&L I was mostly occupied on documentation and analysis of the Boards Annual March Traffic Census. This census of traffic flow involved 12 hour manual counts of all vehicles passing through a given location (mostly road intersections) from 7:00AM to 7:00PM on the 2nd Tuesday in March each year. The count classified the vehicles counted into cars, trucks: rigid or articulated 2-axle or 3 axle or 4 axle etc. farm machinery, horse drawn vehicles, motor cycles, bicycles and at some locations included pedestrian counts. The census results were published in a large book format and available to anyone who wanted this information and at no cost. The census date, the 2nd Tuesday in March, was considered to be the best choice of an Average Day for the year. This census continued through to about the early 1970's when as Assistant Traffic Engineer I introduced a more statistically robust traffic counting regime using both manual and automatic counting machines involving pneumatic rubber (road) tubes and inductive loop detectors, as well as some manual counting of turning movements at important intersections.

I finally made it to the Municipal Bridges Section of Bridge Design Division, headed by Mr Phil Reed and started to learn the real skills of practical bridge design associated with conventional reinforced concrete 2 and 3 span bridges over creeks and small rivers on declared Main Roads under Municipal Council control. I enjoyed this work very much as it put into practice much of what I learned about structural engineering at Swinburne. The work involved analysis of the stream catchment area and water-way requirements to cater for the flood frequency expected at the location of the bridge as well as structural calculations and provision of fully dimensioned sketches of the bridge sufficient to allow the Municipal Engineer to prepare final plans and specifications for the bridge. Typical of this work was the bridge over Salt Creek on the Lake Bolac Road, In the Shire of Mortlake.



As it turned out I was allowed to stay for a little over 12 months in this section of Bridge Division as I started doing a 2 year part time course at Melbourne University, intending to obtain a bachelor Degree in Civil Engineering. However I found it quite difficult to get back into the academic work required along with various other activities I had on at the time. While I was working in T&L prior to Bridge Division I met Mr John Loader, one of the senior engineers in T&L at that time and he told me of his experience working in Canada a few years earlier. He told me that there were large civil engineering works about to start up in Western Canada to develop a hydro- electric project on the Columbia River. This interested me as I had just taken a guided tour of the Snowy Mountains Hydro-electric Scheme in southern NSW which impressed me greatly and I decided to request Leave of Absence (without pay) from the CRB and to go to Canada to gain work experience there. I was granted 2 year LWOP (leave without pay) and arranged my passage on the P & O ship SS Oriana from Melbourne to Vancouver in March 1961.

My Canadian Experience

I arrived in Vancouver on 26 May 1961 and booked into the YMCA. While I was at the YMCA in Vancouver, I met up with Ted Renton (ex CRB Benalla engineer) who had (although I did not know it at the time) also taken leave of absence (for just 12 months) from the CRB. Together we travelled around Vancouver looking for civil engineering work but there was very little on offer as the Canadian Government had not started the Columbia River project due to difficulties in negotiations with the USA about the sale of 'downstream benefits'. We visited at least 10 Engineering Firms but most of them had no vacancies or were specifically looking for people with experience in the Petrochemical Industry or petroleum pipelines etc. which neither of us satisfied. There was nothing that really interested us, so we decided to take a bus trip East to Calgary in the province of Alberta. From went to Banff in the southern part of the Canadian Rockies. We knew it was a well-known 'Tourist' location and but it also had a regional office of the Dominion Public Works Department (DPWD). That office looked after all the infrastructure in the National Parks in that part of Canada, and it was worth a try for Civil Engineering employment in 'road engineering' works. At the time I had no idea that they were doing a large amount of road construction and reconstruction through the Rocky Mountains within the Banff and Jasper National Parks. . As it turned out it was my turn to go to their office and check out the prospects for employment and it was quite fortunate for me as they were actually looking for a Civil Engineer to work on a project doing research into 'frost penetration' and "frost heave" in road pavements and the associated damage in the main street of Banff and they offered me a job.

After a couple of days sight-seeing in and around Banff, Ted Renton and I both went back to Calgary, me to pick up my 'belongings' from the YMCA before heading immediately back to Banff to start work, while Ted Renton decided to go up to the City of Edmonton (more to the north) which is also the Capital of the Province of Alberta. So we parted company. He actually went to the DPWD office in Edmonton and they offered him a short term (12 months) job at a place up in the Yukon Territory and I did not see him again for about 18 months and by that time I was out in Ontario.

Working on the Banff – Jasper Highway, Alberta, Canada

I reported for work at the DPWD office in Banff, I think it was in early June 1961, but the funding for that work was held up for more than 12 months by the Canadian Government in Ottawa and I never got to do the job that I was originally hired to do. As a temporary measure I was assigned to work on a project constructing a section of the Banff – Jasper Hwy just south of the Town of Jasper. I went as a passenger on the supply truck that delivered provisions etc. to a series of construction camps along the Highway which runs close by the Athabasca River from the Columbia Icefields North to Jasper Town. There were construction camps about every 20 miles or so along the route and I was assigned to the Camp at Athabasca Falls, located about 20 miles south of Jasper Township.

At that time much of the length of the Banff – Jasper Hwy was being reconstructed from a relatively low standard 2 lane 2 way road to a high standard two-lane two-way Highway (now known as The Icefields Parkway). The upgrading work at that time involved most of the length from the Columbia Icefields north along the Athabasca River to Jasper Township. The Athabasca Glacier located in the Columbia Icefields in the northern section of the Canadian Rockies is the source of the Athabasca River which runs roughly North through the upper end of the Rockies, then NE through northern Alberta and ultimately ends in Lake Athabasca on the Alberta /Saskatchewan/NW Territory border.

By mid-afternoon on the 2nd day we arrived at the Athabasca Falls DPWC camp which was in a 'clearing' just off the alignment for the new highway on the west side of the actual falls.

This was the Summer Camp consisting of three main buildings at the camp, the engineering office, the cook house and meals room and the Bunk House. These were all simple prefabricated temporary wooden buildings with relatively flat pitched roof also made of timber and covered with waterproof rubberised sheeting. The Engineering Office Building consisted of a drafting / drawing room, a general use room with several desks and tables, and a couple of smaller rooms as offices for the resident engineer and his assistant. There was also a room for storage of survey equipment and other things. The whole setup was very typical of a road construction camp anywhere and it accommodated about 20 to 30 people (all men) involved in the setting out and supervision of a large construction contract. The water supply came from a nearby stream which froze up in the winter as did the septic tank arrangement so this camp had to close down over winter. Life at the engineering camp was fairly routine, we had comfortable sleeping quarters and a well-stocked mess hut and kitchen facilities which had to be surrounded with an electric fence to keep the bears out. The huts were all temporary and moveable and gas heated from a large gas cylinder.

About half a mile away to the north was the Contractors camp which was much similar but larger, accommodating a hundred or more people. However most of our staff saw very little of the construction camp and we did not get to know any of the people working for the contractor. The Resident Engineer, who had a degree in Civil Engineering, from a University out East in Ontario Province was a married man with a couple of children and also his deputy and some of the other longer term married staff did not live at the camp but lived in large 'House Trailer' (mobile Home) accommodation at the main campsite in Jasper Township and commuted down to Athabasca Falls each day.

Although I was a qualified engineer in Australia, I was not registered with the Professional Engineers Association in Canada and therefore could not practice as an engineer. I was engaged on this project as a 'Survey Crew Supervisor' (SCS) at the lowly pay rate of \$1.75 per hour. Although I had had some training and a little experience in engineering surveying, I was not very expert at it, especially in respect to large project work like this and in such mountainous terrain. I was very content to simply run a 'levelling crew', at least until I got to know how things were done in Canada. I found their survey methods were quite different to those I had learned in Victoria. I was set up with a crew of 3 (students doing vacation work) from Eastern Canada, and a New Zealander who was working his way around Canada. The two university students had been doing this type of 'Summer Vacation' employment for quite a few years and were experienced at doing their job and were great workers and great company. The task was to take cross-section levels on original ground (after tree clearing), then again after stripping of the top-soil, and then periodically to measure up the excavation quantities for each month's progress payments to the contractor. It was a 'schedule of rates' contract and for earthworks the contractor was paid for the volume of material excavated (per cub. Yard) and that included the cost of placing it in fill or waste. The cross sections were taken at 50 feet intervals in earth cuts and 25 feet intervals in rock cuts. Because of the very steep side slopes, especially near the Athabasca R. the cross sections had to be accurately set at right angles to the centreline (radial on curves) which required parallel alignments to be pegged 50 to 100 feet each side of true centreline. The side slope was often so steep it would take 3 or 4 'change points' to cover a single cross section. . I (my crew) was also involved in the levelling in setting out the many small and large diameter corrugated iron pipe culverts used on the project. The following pictures were taken at the time. While they had specialist survey crews pegging the alignment I found it interesting that they used 'Degree of Curvature' rather than Radius when calculating parameters for setting out curves on the alignment.

Working in the Canadian National Parks was an unusual experience as there was prolific wildlife always about and we were warned to take particular care as some could be quite dangerous. This was especially true with the larger animals such as Bears (Black and Grisly) and also Elk and Moose. The mule deer, mountain sheep and mountain goats were common on the steep slopes close to the river.



Clockwise from top: Mt Kerkesslan , Athabasca Falls in Summer, The same in Winter, Self (on right) with survey crew, Summer camp after early winter snowfall.

I was on this project through the summer of 1961 and winter of 1961/62 and the Project Engineer suggested that if I wanted to get the latest highway engineering experience I should go East to Ontario where there was large freeway works going on. I took up his advice just at the end of their winter (around April) and drove an old Austen Cambridge car that I bought in Calgary along the trans-Canada Highway across Alberta, Saskatchewan, and Manitoba, around the north side of Lake Superior, into Ontario province and on to Toronto on the north shore of lake Ontario.

After a few days staying at the YMCA I was invited to reside in the Toc H Toronto residence by Mr Sam Cant, a former employee of the CRB (Bridge Division I think) who was at the time working for the Ontario Department of Highways. The Toc H organisation originated during WW1 (in France I think) as a 'rest and recuperation' place a short way back from the 'front line' for the battle line troops taking a short break from the trenches. After the war it continued on as a place of residence for men travelling alone in some commonwealth countries. The only requirements were that one had to be of good character and willing to undertake some relatively minor charitable work while in residence.

There were about 10 or 12 men living at the Toronto Toc H accommodated in a very nice old 3 story house in a quiet leafy residential area not far out from the business district in Toronto.

The residents were a good mix of nationalities: Canadian, US, Indian, English, New Zealand and Australian and it employed a very good cook and Housekeeper. There was some shared rooms and some single rooms, large dining and Lounge rooms and convenient car parking. As it turned out there were three of us from Australia, Sam Cant, myself and another engineer Mr Peter Parrot from Melbourne (a former MMBW employee) who was an ice hockey player, a member of the Australian team, playing in World championship competition. At the time I joined Toc H Peter had been looking for civil engineering employment and had just been to a consultant firm that was looking for engineers with road/highway experience. His experience was in Waterworks and Sewerage so he suggested I should go and see them. This I did the next day and found immediate employment with the firm of Giffels & Associates of Canada, who already had another Australian engineer working in a senior position, and were very happy to take me on. The head of the Civil Engineering side of the consultancy was an engineer of Geek heritage. He had been previously employed by the Ontario Department of Highways and he was pleased to employ Australians because (as he told me some time later) of his experience as a boy during WW2 when he came in contact with Australian troops fighting to save his country, Greece, from the German invasion. (These were the Australian troops, originally directed to return from the North Africa campaign to protect Australia after the outbreak of the Pacific War against Japan, but were diverted to Greece and Crete instead).

My immediate supervisor was another Australian engineer, (Mr. Barry Hitchcock) originally from Sydney who ran the roads and bridges planning, design and construction side of the business. My initial task was to do a record survey of the underground drainage system on the Downsview Air Force base in the northern outer area of the City of Toronto. This base was at the time mostly used by the De Havilland Company, being adjacent to their factory producing Caribou military transport planes. After finishing that work I was involved with various road 'functional planning' projects of highway projects for the Department of Highways Ontario. At that time Giffels & Assoc. were engaged on a bridge construction project over Etobicoke Creek for the Rural City of Toronto (on the western edge of Toronto) and as the then resident engineer became quite ill and had to leave the job I was asked to take over the direct supervision working under Barry Hitchcock (as I was not registered as a Professional Engineer as required in Canada at that time). The project was well advanced when I took over the direct supervision of the contractor I supervised the completion of the structure and construction of the approach roadways to the bridge.



As it turned out we were later involved in a legal dispute and associated court case about payment for rock excavation on the bridge approach roads a year or so after the completion of the project, which ended in our favour.

My leave of absence from the CRB was due to expire in about March 1963 so I resigned from Giffels & Assoc. about that time. I was told by my boss, Mr. Barry Hitchcock, that if when I got home to the CRB and wanted to return to

Canada I would be welcomed back to my old position. As it turned out the position offered by the CRB on my return was at about half the salary I was on in Canada and as I had recently met my (Future) wife in Toronto, I decided to resign from the CRB and return to Canada immediately.

It was about that time that I was encouraged to obtain registration with the professional engineers association of Ontario to allow me to take direct responsibility for the engineering work I was engaged on. Up to that time I

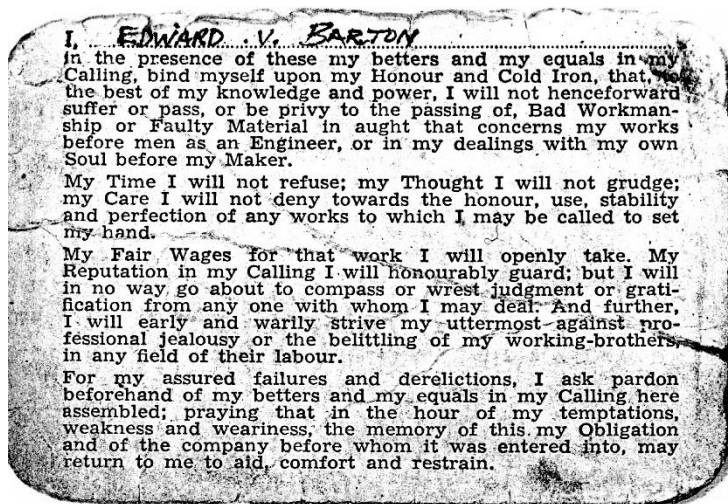
was employed as a project manager not a project engineer. To that end I obtained full academic details of the Diploma of Civil Engineering Course I had completed at Swinburne and subsequent practical experience with the CRB and submitted an application for registration in the province of Ontario. I subsequently received notification that while the course was considered to be of adequate engineering standard the Association had not had any experience of it and requested that I write a thesis on a suitable engineering subject of my choosing for their consideration. For this I chose to write on the subject of Bituminous Surface Treatments using chip seals. I had a couple of year experience in this work while at Benalla and was able to obtain further technical information from Mr Stuart Deaney (who was at that time either head or deputy of Asphalt Division). I also obtained information on Canadian practices in this area from a senior executive of Imperial Oil Company, which had a major office in Toronto at the time and who I had met during a visit he made to the CRB during my time running the BST work in Benalla.

I completed the thesis and submitted it to the Association of Professional Engineers Ontario and it was approved and I became a registered Professional Engineer in the Province of Ontario Canada.

About that time I also went through what was/is known as the Iron Ring ceremony. Many (if not most) Professional Engineers in Canada wear an iron ring on the little finger of their working hand to denote their calling. The ring made of plain iron is awarded at a ceremony where a (ethical) oath is made. I understand the wording of the oath was written by Rudyard Kipling.

For various reasons I have not worn the ring in Australia but have always tried to keep the oath in all that I do.

The work I was doing while working for Giffels & Associates was a mix of construction supervision and road Planning and Design. Construction work in Canada at that time was mostly restricted to the late spring and summer months of the year as carrying out earthworks was



virtually impossible when the ground froze, which it did to a depth of two to three feet during the winter months. During that period I was mostly involved in 'Functional Planning' investigations generally of Freeway and Arterial Road projects for DHO (Dept. of Hwys. Ontario). After the Etobikoke Bridge project I was engaged on a number of construction projects which involved 'setting out' surveying and general construction supervision. These included the construction of a very large vehicle parking facility for the Ford Motor Company in Oakville Ontario which involved relocation of about 2 miles of an important Arterial road and railway level crossing to the plant and digging up and relocating a major tele-communications cable linking the Fords Oakville plant to its HQ facilities in Detroit Michigan USA. This had to be done without breaking or damaging the cable or interrupting communications in any way. Other projects included investigations into the failure of a water reservoir earth dam and mass concrete (retaining) wall and spillway. The last Project that I completed was the construction of a large harness horse (trotting) track with grandstand, horse stables and other associated buildings in the city of Windsor, Ontario. The most important part of this project was the building of the race track itself, which was not unlike a normal road formation and pavement but with a final surfacing of what was known as a 'Tartan Surface' (synthetic rubberised material) developed by the 3M company in the USA.

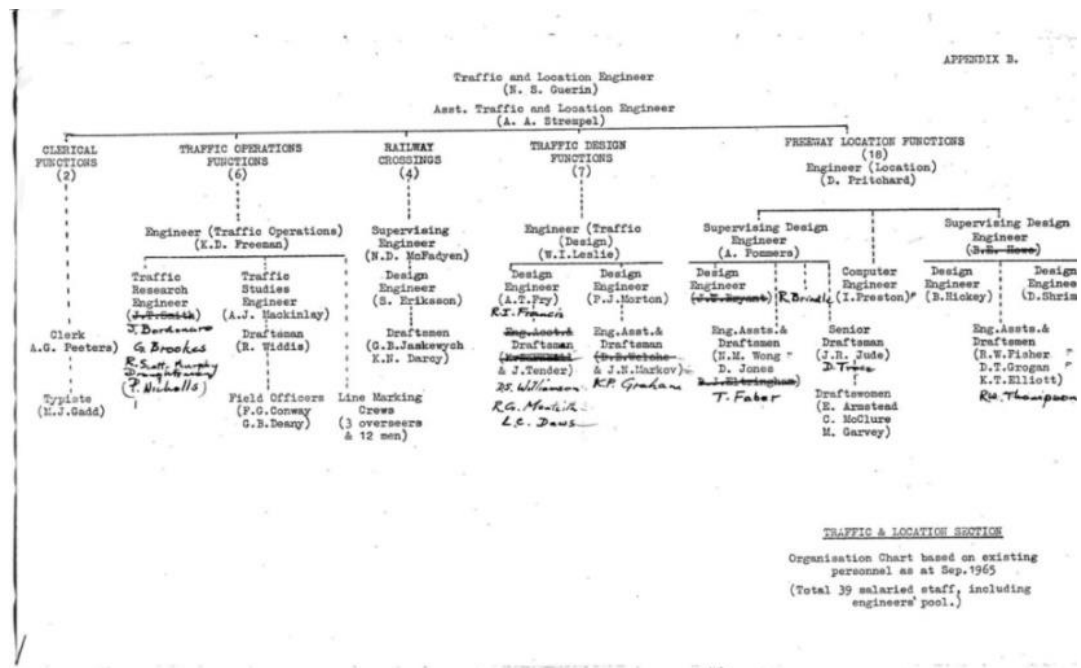
At that time I was the firm's most experienced construction supervisor and although I enjoyed doing this type of work I was not enamoured with continued exposure to the harsh weather/climatic conditions it involved during

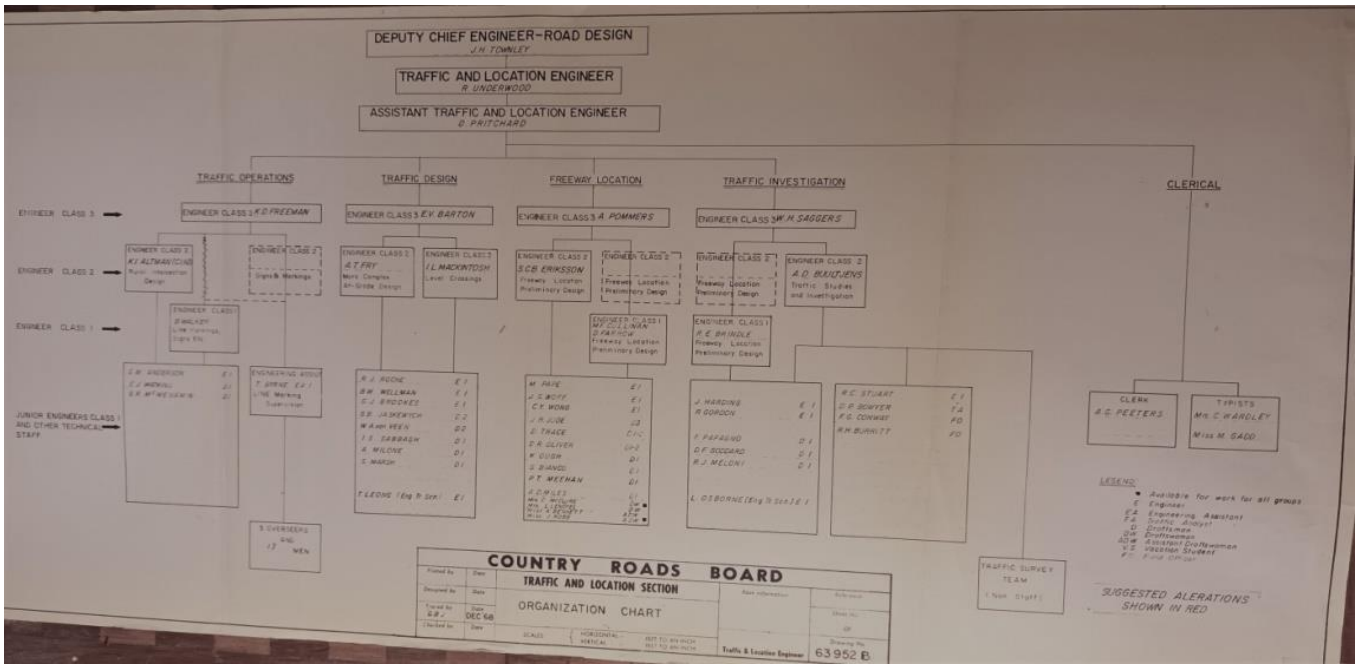
the early spring and late autumn periods and it was this that largely made me decide to return to Australia. Giffels & Associates had just received a contract to build about 30 miles of railway to a Nichol mine in the northern area of Manitoba province and that was to be my next project. I had married about 18 months earlier and my wife and I had our first child, who was then about 12 months old and it would have meant leaving them in Toronto or having them live in Winnipeg, Manitoba Provincial capital, with me living in a construction camp about 200 miles to the north in Manitoba, throughout the construction period. I did not want to do that so I advised my superiors in Giffels that I was resigning and returning to Australia, which I did in August/September 1966. My wife and I packed up our belongings, in numerous boxes and then travelled by train eastwards across Canada to Vancouver, in the province of British Columbia, and thence by P&O ship (SS Canberra) diagonally SW across the Pacific Ocean via Hawaii and New Zealand to Sydney, thence by train to Albury and car to my parents farm at Gundowring.

Re-employment with the CRB, October 1966

Shortly after arriving home I took the train to Melbourne and went to the (Then) CRB HQ in Kew and arranged an interview with the Personnel Manager. At the time of my interview there was another engineer, Bob Morison (from the UK) also seeking employment and we were advised that there was two positions available: one in Plans & Surveys and the other in Traffic & Location. Bob's experience was mostly in roadway design so he took the Plans & Survey position and I was happy to accept the Traffic & Location position.

At that time (1966) Neil Guerin was T & L Engineer and Robin Underwood, Assistant T & L engineer, was away doing post graduate study at Yale University in the USA and Alan Stempel was acting as Assistant T & L engineer. The division was made up of four 'functional' sections, Freeway Location under Don Pritchard, Traffic Design headed by Bill Lesley and included Tony Fry, Traffic Operations group was headed by David Freeman and included Alan Mackinlay and Graham Brooks et al, and 'Railway Crossings' headed by Noel Mc Fadyen with Sven Eriksson. I was allocated to Don Pritchard's Freeway Location section which included: Anton Pommers, B E Howe Ivor Preston Brian Hickey, David Shrimpton and Ivor Preston. The pictures below shows the T& L organisation chart for September 1965 (but it is substantially the same as at the time I re-joined the CRB) and a similar chart for December 1968.





At that time the work in Freeway Location was investigating route location for possible future freeway routes that would be needed to cater for road traffic demands across the whole metropolitan area of greater Melbourne as foreshadowed by the Melbourne Metropolitan Transportation Study (MMTS) which was underway at the time by international consultants Wilber Smith & Associates & L T Frazer & Associates. That study included a 'Working Group made up of engineers and other specialists from the 4 contributing Authorities (MMBW, Victorian Railways, MMTB and CRB). Bill Saggars was the CRB engineer on the working group. The study identified the need for an extensive network of new Freeway routes which was substantially reduced in later years in favour of major widening and up-grading of existing arterial roads to cater for the estimated travel demands identified by the MMTS. The Freeway Location Section was also heavily involved with functional design of the Tullamarine Freeway (then under construction), Calder Freeway and the Princes Highway (Dandenong bypass).

In addition to involvement on these projects, I worked on improvements to routes for heavy traffic through and around the city of Geelong. At that time we were investigating what was known as 'The Belmont Bypass' with the objective of taking the 'through traffic' out of the central shopping area of Geelong and Belmont by major upgrading of La Trobe Terrace, a new bridge over the Barwon R. and the development of the Settlement Rd route for the Princes Highway through south Geelong. The Geelong Ring Road was not yet at the concept stage.