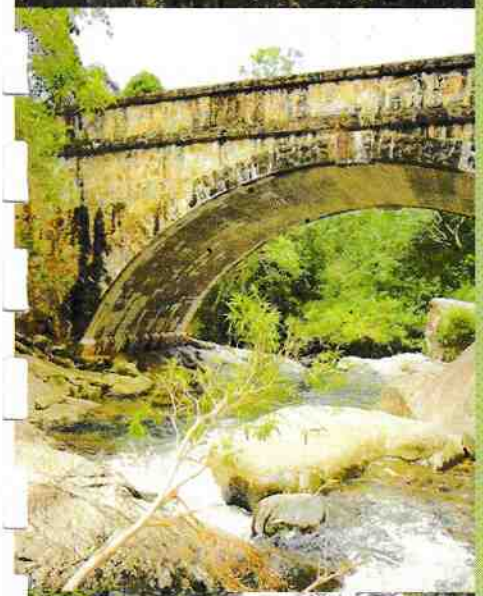

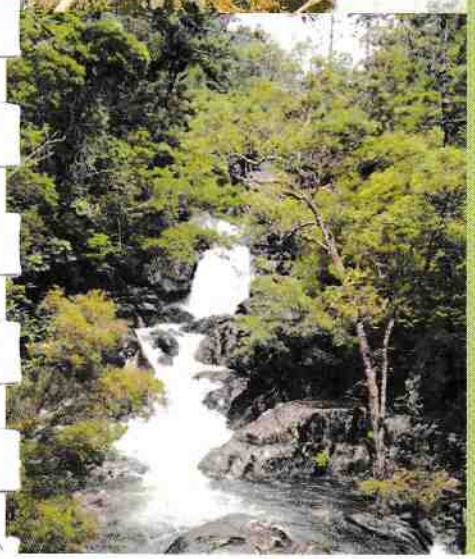

MT SPEC ROAD AND LITTLE CRYSTAL CREEK BRIDGE PALUMA

CONSERVATION MANAGEMENT PLAN 2011

Ivan McDonald Architects

MT SPEC ROAD AND LITTLE CRYSTAL CREEK BRIDGE
PALUMA

CONSERVATION MANAGEMENT PLAN
2011

Prepared by
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for
QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS
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3 DOCUMENTARY EVIDENCE

3.1 MT SPEC

The Aboriginal name for the mountain was *Munan Cumbura* meaning *Misty Mountain*. The township of Paluma was originally called Cloudy Clearing until the name Paluma was adopted. Paluma was derived from *HMQS Paluma*, a Queensland government survey ship that worked along the North Queensland coast in the 1880s and 1890s. There are several theories for the name, Mt Spec: one derived from the name of a prospector's donkey (Old Speck) and another from a good spec (speculation) of tin. Another theory is that it was named after a Cleveland Bay lighter named *Spec* by the men on the *HMQS Paluma*. Alternatively, it was named after the local coastal trading brig, *Spec*.[3]

The earliest tracks followed Aboriginal pathways and, by the 1890s, there were six tracks that provided access to Mt Spec but most of these were foot tracks or, at best, navigable by horse only. In 1875, Fred, Arthur and Edwin Benham discovered tin west of Paluma. Mining for wolfram occurred at Ollera Creek in 1895 and at Saltwater (later Crystal) Creek in 1898.[4] A better access road was needed.

Increasingly, there was talk of the need for a better road for tourists. As early as 1902, the area was suggested as a good location for a health resort.[5] The idea gathered momentum, especially in the 1920s when public interest in mountain retreats and the push to open up countryside was strong.[6] A legacy from colonial times, citizens believed that healthier mountain air facilitated recuperation and that it was beneficial to escape the summer heat for health reasons.[7] The tourist potential of Mt Spec had long been realised and its scenic amenity had long been noted. Guesthouse accommodation on the mountain was established after World War I and Mt Spec became a weekend retreat for Townsville residents. After the railway from Townsville to Ingham opened in 1924, visitors could disembark at Bambaroo and then be transported by packhorse up the mountain.[8] Although considerable lobbying for a road commenced, the trip remained an arduous journey as roads on the mountain were rough tracks. Despite these obstacles, in 1930, it was reported that *even with the disabilities of road access, the attraction of Mt Spec as a health resort is already established and the flow of visitors maintains an increasing average.*[9]

Lobbying for a tourist road up Mt Spec intensified with the support of the Royal Automobile Club of Queensland (RACQ) and the Townsville and District Development Association.

3.2 TRAVEL ROUTES IN QUEENSLAND

As Queensland developed, rail became the most important method of transportation. Unlike New South Wales, Victoria and South Australia, Queensland railway lines did not radiate from the capital city but were built east-west from the principal ports along the coast to facilitate the exportation of primary produce. Three main lines were built – the south-west line from Brisbane to Charleville to Cunnamulla (1865-1898); the main central line from Rockhampton to Longreach (1867-1892); and the northern line from Townsville to Hughenden and on to Cloncurry (1880-1908). It was not until 1924 that the separate networks were inter-connected with the north coast line from Brisbane to Cairns.

Until the early 20th century, roads in Queensland were of secondary importance to rail and often regarded as feeders to the nearest railway line. There was no real road network established. The location of roads was often adhoc responding to local needs. It was not until 1920 and the passage of the *Main Roads Act* that a Main Roads Board was created to implement a state-wide road policy. In 1925, the board became the Main Roads Commission. They were responsible for the classification, gazettal and construction of main roads and, after 1923, developmental roads.

3.3 TOURIST ROADS

The concept of a "tourist road" was raised by the Main Roads Commissioner in his 1926 annual report, *Roads are needed, not only for pure development purposes, but for health reasons, to enable people to readily obtain a change of climate from coast to highlands and vice versa.* In this group, he cited roads to Maroochydore, Tewantin, Redcliffe, Tambourine and Canungra-Beachmont, *inasmuch as they both open up scenic beauty and area developmental in character.*[10] In support of his request, he argued that the road over Hervey's Range proposed by Townsville Council was, practically, for health purposes.

He called for funds to be allocated for the construction of "tourist roads". These were roads that did not fall *within the ambit of main road operations*, but opened up *national parks, waterfalls and camping grounds at high elevations in various parts of the State.* Part of his justification was that it would encourage people to holiday in Queensland, rather than interstate.

The Main Roads Act made *no provision for purely tourist roads to our national parks* - a significant oversight in the opinion of the Main Roads Commissioner. In comparison, America, at the same time, had recognised the importance of tourist roads with slogans such as "Sell our Scenery".[11]

In 1929, legislative amendments were made to enable the declaration, construction and maintenance of tourist roads.[12] Costs were to be repaid by the local council in proportion decided between the commissioner and the council prior to the commencement of work.[13]

Within 12 months, 58 miles (93 km) of tourist roads had been gazetted.[14] The first tourist roads gazetted in Queensland were the Mt Spec Road; the Enoggera Waterworks to Mount Nebo Road (providing access to Mount Nebo and Mt Glorious); and the Halifax to Lucinda Point Road (providing access to Hinchinbrook Passage and the coastal areas).[15] A further 204 miles (328 km) of tourist roads were gazetted between July 1931 and June 1932.[16] By 1932, the Bunya Mountain Road, Eungella Range Road and Tully Falls Road were also officially-categorised as tourist roads.[17].

3.4 PLANS FOR A ROAD TO MT SPEC

The Main Roads Commission reported in 1928 that the area between Mount Fox and Mount Spec was being investigated in the hope of providing tourist facilities and, at the same time, developing country for other purposes.[18] The mayor of Townsville, WH Green, saw the potential to develop the area as a water catchment for the growing city of Townsville. The neighbouring shires of Thuringowa and Hinchinbrook, however, were not prepared to fund the road and Townsville was equally unwilling to fund a road in adjoining shires.[19]

Other motivations were the desire to provide access to the land at the top of the range for a new farming community and to utilise the mountain's timber reserves and possible mining opportunities. These desires were either never realised (such as mining and timber getting) or were slow to achieve (water was not supplied to Townsville until 1954). Critics of the road believed the cost would outweigh any real benefit and the decision to build Mt Spec Road was not without controversy.

Ultimately, the decision was political. Queensland found itself in the midst of a world-wide economic depression. Between 1923 and 1929, the cost of relieving Queensland's unemployed had more than doubled. Both the Labor government and the incoming Moore Conservative government (elected in May 1929) supported construction as a means of providing work for the unemployed. An ambitious, labour-intensive project was required. The building of the Mt Spec tourist road was the perfect project.

3.5 UNEMPLOYMENT RELIEF ROADS

Unemployment relief funds were used to build roads throughout Queensland, although often it was clearing and grubbing work in preparation for road construction such as the Brisbane - Mt Lindsay Road and the Rockhampton - Banana Road. Two major exceptions were the Enoggera Waterworks-Mt Nebo Road and the Mt Spec Road.[20]

The Mt Spec Road was described by the Main Roads Commissioner as the *most extensive single work* undertaken by relief workers.[21] It was of a magnitude comparable to the Cairns Range road.[22]

The road was gazetted as a tourist road in October 1929. Once the tourist road funding was assured, the road could commence. Its potential significance was summarised by the Main Roads Commissioner in 1930:

> *This road will rise to almost 3,000 feet* [1000m.] *and will give the advantages of a temperate climate to Townsville and north-western residents, whilst at the same time forming a road connection to the mining and pastoral districts of the hinterland. It will be the only road up the coastal range worthy of a name (except the out-of-the-way Mount Fox Road, on steep grades) between the Townsville-Charters Towers and the Cairns Range roads, a distance of 200 miles* [320 km.].[23]

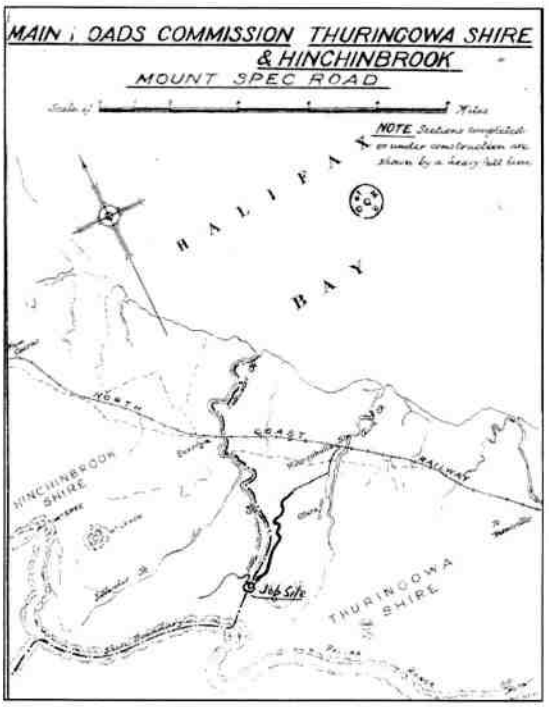


Figure 3 *Sketch showing location of Little Crystal Creek Bridge (labelled job site).*
Source: Qld State Archives, Item ID 822274

3.6 THE MEN EMPLOYED

The Main Roads Commission was responsible for the survey, design and supervision of construction of Mt Spec Road. Main Roads staff were the only permanent employees. Others, such as truck drivers, were under contract. The remainder of the workforce was unemployed workers. These men were employed for six weeks or up to ten weeks if they were married. They could be re-employed after that if they re-registered with the Department of Labour and Industry and waited for more work. They could be employed for a maximum of three months.[24]

Figure 4 *Workers on the Mt Spec Road*
Source: City Libraries Townsville, Local History Collection No. 0001/0001008

Wilfred Hector McClelland was the officer in charge from July 1931 until 1942. He had previously been in charge of Queensland's first relief work road construction project - the Mt Nebo Road. McClelland and his family lived on the road's campsites throughout most of the construction, with three children born during that time.[25]

Figure 5 *Engineer J Young and WH McClelland (right) inspecting road site*
Source: City Libraries Townsville, Local History Collection No. 0001/0001009

Figure 6 *Linda McClelland with children at The Saddle campsite in 1933.*
Source: City Libraries Townsville, Local History Collection No. 0001/0001023

The Main Roads Commission also employed three truck drivers, powder monkeys, a cost clerk, a pay clerk and a time keeper.[26] These men lived in campsites, along with the relief workers, for the duration of their work.

The work was physically demanding and the men endured both wet conditions and water shortages. From 47,500 to 72,500 feet through chainage, the land had to be cleared manually through jungle or *vine scrub*.[27] Cuttings had to be blasted through the granite with gelignite. Once the trees were cleared and the ground broken up, it was cleared using horse-drawn scoops, wheelbarrows or mining trolleys on small pieces of portable track. Most work was done with pick and shovel. Two tractors and a few small trucks were all the mechanical support available. Later, small scoops known as *tumbling tommies* were towed by crawler tractors.[28] Further mechanisation included use of the Sullivan compressor on rock boring and the Ingersoll machine.[29]

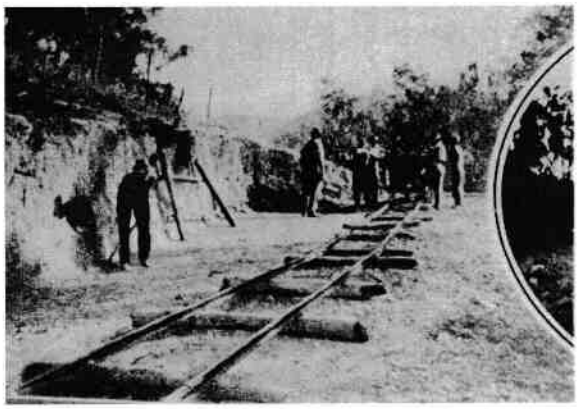


Figure 7 *Men laying portable tracks for trolleys used to clear the road.*
Source: City Libraries Townsville, Local History Collection No. 4755.

Figure 8 *Road workers on Mt Spec Road (193?)*
Source: City Libraries Townsville, Local History Collection No. 0001/0001010.

Figure 9 *Pay day for Mt Spec workers (193?) Note the horse-drawn scoop.*
Source: City Libraries Townsville, Local History Collection No.0001/0001002.

Figure 10 *Road workers near Barrett's Guesthouse and N°3 camp (The Saddle) in 193?*
Source: City Libraries Townsville, Local History Collection No. 0001/0001004.

Building Mt Spec Road was the most labour intensive unemployment relief project in the region and took five years to complete. Hundreds of men worked on the project with a maximum of 180 men at one time.[30] The men were organised into gangs with a foreman. For example, in June 1932, there were three gangs led by Birmingham, Delaney and Barrett.[31] McClelland experienced difficulties securing men, particularly those with the necessary construction skills. In May 1932, he appealed to the District Engineer to secure skilled stonemasons:

> *Now that rotation is again about to start, and having the bridge over Little Saltwater Cr. in hand, will it be possible to extend the number of special men whom I am allowed to hold over their rotation period? As you will understand this work is more or less skilled, and unless plenty of stone masons are offering, by holding those who prove themselves capable of the bridge work, it does not enable me to hold sufficient leading hands for my other gangs, which are engaged on construction work.*[32] The District Engineer argued his case to the Main Roads Commissioner stating that *stone masons are naturally a very scarce class of labour.*[33]

The problem continued. In August 1932, McClelland again reported to the District Engineer that the team *I had were not all the best. I sent two men off the structure as being too slow, while the remainder Ganger Hubbard informed me some time ago that he had only three men of whom he could rely upon to correctly line out the round timber for dressing.* The Railway Department was calling for bridge carpenters and, since they were paying more (award rates), they were attracting better workers.[34] In September 1932, he reported:

> *I am having a little trouble with labour, one of the best stone layers is leaving stating that the work is too heavy.*[35]

He asked, and was granted permission, to retain J Inglis, W Campbell, P Richardson and W Tomlinson - experienced stone workers - until the end of the job.[36]

Figure 11 *Workers on the bridge over Little Crystal Creek 193?*
Source: City Libraries Townsville, Local History Collection No. 0000/0000677.

Figure 12 *Workers at rest on Mt Spec Road in 1934.*
Source: City Libraries Townsville, Local History Collection No. 0001/0001197.

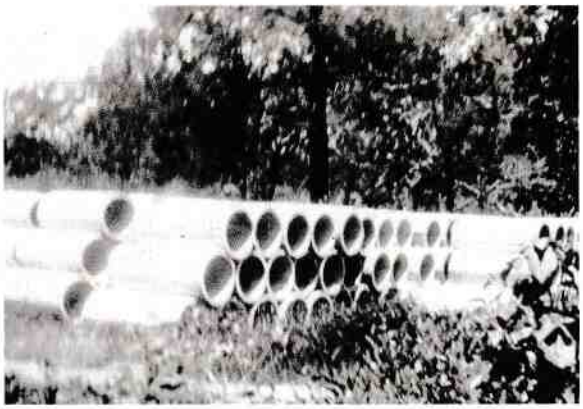


Figure 14 *Pipes at the Ollera Creek pipeworks stacked ready to go to the construction site, Mt Spec Road in1932.*
Source: City Libraries Townsville, Local History Collection No. 001/0001013.

3.7 CAMPS

The men - and sometimes their families - were accommodated in camps along the road. One gang of men would work up the mountain from their camp; another would work down the mountain from a higher campsite. When the work was completed, new camps were established.[37] There were four main camps established. Camp No. 1 was located near the base of the range. It accommodated 200 men. A pipeworks was established on Ollera Creek which remained until its removal in November 1934. The men at this camp made hundreds of concrete culvert pipes for the road.[38] The pipes were cast, assembled, cured and stored at this site. There was also a gravel pit and blacksmith's shop at this location.[39] Sand was dug from the nearby creek bed for the concrete.

Camp No. 2 below Little Crystal Creek was completed on 18 March 1932. It was an unpopular camp, plagued by bushfire, spiders and inadequate water supply.[40]

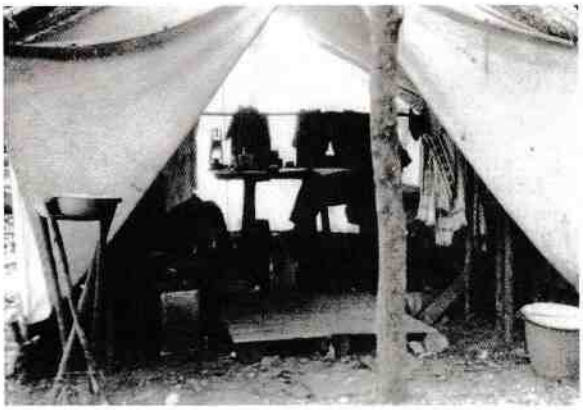


Figure 15 *Camp tent with washing and living items, Mt Spec Road.*
Source: City Libraries Townsville, Local History Collection No. 0000/0000662.

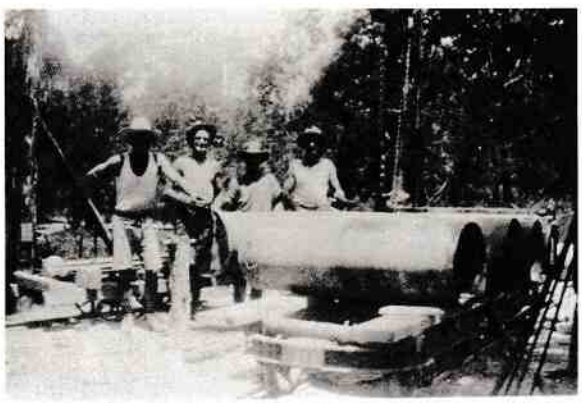


Figure 13 *Ollera Creek pipeworks, Mt Spec Road in 1932. Hundreds of concrete pipes used in Mt Spec Road were made here.*
Source: City Libraries Townsville, Local History Collection No. 0001/0001011.

Figure 16 *Unidentified camp site on Mt Spec Road in 193? The large angular object in the centre of the photo is similar to the steel water tanks currently beside the road above the original site of The Saddle base camp.* Source: City Libraries Townsville, Local History Collection No. 0000/0000666.

Figure 17 *This may be Camp No. 3, The Saddle, in 1933.*
Source: City Libraries Townsville, Local History Collection No. 0000/0000672.

Camp No. 3 was The Saddle base camp which was also established in 1932.[41] Work building the road to the camp (at 46,000 feet through chainage) began in July 1932. This became the central camp in December 1932. The site office moved there in late 1933 and lasted 5 years. The camp was located just uprange from The Saddle and extended hundreds of metres into the bush downhill from the road towards Saddle Creek. For years later, it was maintained as a lookout and picnic area. There was room to stable horses and build a tennis court. The site had an office, tool shed, communal amenities, a telephone line and ship's water tanks as a back-up water supply. It accommodated over 100 workers. Recognising the importance of this unemployment relief project, the Governor, Sir Leslie Wilson, visited this camp. The Saddle camp moved to Paluma in 1938.[42]

There were also smaller campsites near major projects as well as many single gang camps. Barrett's guesthouse (built during the road's construction on the uphill side of Camp N°. 3) also provided accommodation for the single men and visitors to the construction site.

Figure 18 *McClelland's third camp at The Saddle (193?)*
Source: City Libraries Townsville, Local History Collection No. 0001/0001017.

John Plant and Jim Linton recall the locations of the campsites taken from the road at the junction of the Bruce Highway. While the numbering may vary from the information above the locations are worth noting: Camp No 1 (0.7km on right); Camp No 3 (4.2 km on left); camp (7km on left); The Saddle (10.3km on right); camp (13 km) and Camp N°. 8 (15.8km).[43]

Figure 19 *Mrs Reagan with children Eilee, Danny and Kathleen and friends at The Saddle camp (193?)*
Source: City Libraries Townsville, Local History Collection No. 0001/0001017.

Figure 20 *Tents, wagons and pipes on Mt Spec Road during construction (193?)*
Source: City Libraries Townsville, Local History Collection No. 0000/0000667.

3.8 WORK UNDERWAY

Work on the road began in 1930 and, by December, clearing had occurred. A touring party recorded:

> *At Moongabulla the party deviated from the beaten track and inspected the new Mt Spec – Cloudy Creek Road and were amazed to find that such progress had been made with this new road. About five miles of the track had been cleared of all trees and stumps; and the first cuttings at the foot of the Range were well in hand, whilst a considerable amount of blasting had also been done at the foot of the Range.*[44]

The survey work was completed before February 1931. The bridge over Little Crystal Creek was approved by the Department of Labour and Industry in October 1931.[45]

Working drawings for the road were prepared by the Main Roads Commission and approved in July 1931. The plans note that catch drains were to be constructed on the high side of the road (or where directed by the engineer). Stone pitching at the inlets and outlets at culverts was to be constructed between 34,500 – 35,167 and 35,277 - 39,800 feet through chainage. The engineer was to *design, on the job, double track or benching where necessary*. The engineer was also empowered to vary the alignment slightly on the ground to reduce the earthworks and to *substitute pitched slopes for rockwalling using 1 to 1 slopes where practicable*.[46]

By April 1932, the foundations of walls and wings were finished for the culvert at 34, 800 feet through chainage.[47] The culvert was completed the following month.[48] This is the current Culvert 141A immediately before the Little Crystal Creek carpark. In June 1932, the culvert at 22,131 feet through chainage was completed, with a timber deck and formation above.[49] This is the current Culvert 187A at Fairy Falls.

Figure 21 *Surveyors on Mt Spec Road 193?*
Source: City Libraries Townsville, Local History Collection No. 0000/0000175

Figure 22 *Surveyors on Mt Spec Road 1932*
Source: City Libraries Townsville, Local History Collection No. 0000/0000179.

Figure 23 *Mt Spec Road survey line 193?*
Source: City Libraries Townsville, Local History Collection No. 0000/0000173.

By June 1931, three masonry arch culverts had been completed at 25,363 feet; 15,666 feet and 17,093 feet through chainage. These are the current Culverts 176A (Maindenhair Fern Creek), 210 and 206A respectively. Two other culverts at 22,025 feet (Culvert 188A) and 32,375 feet (Culvert 150A) through chainage were under construction. The culvert at 17,093 feet through chainage (Culvert 206A), had a span of 11 feet, 5 inches (3.5m), with 32 feet (9.7m) between kerbs.[50]

By June 1932, several culverts had been completed. A masonry arch culvert (Culvert 188A), with a 5 feet (1.5m) span and 44 feet (13.4m) length, was completed at 22,025 feet through chainage.

Figure 24 *Construction of drainage on Mt Spec Road.*
Source: City Libraries Townsville, Local History Collection No. 0001/0001003.

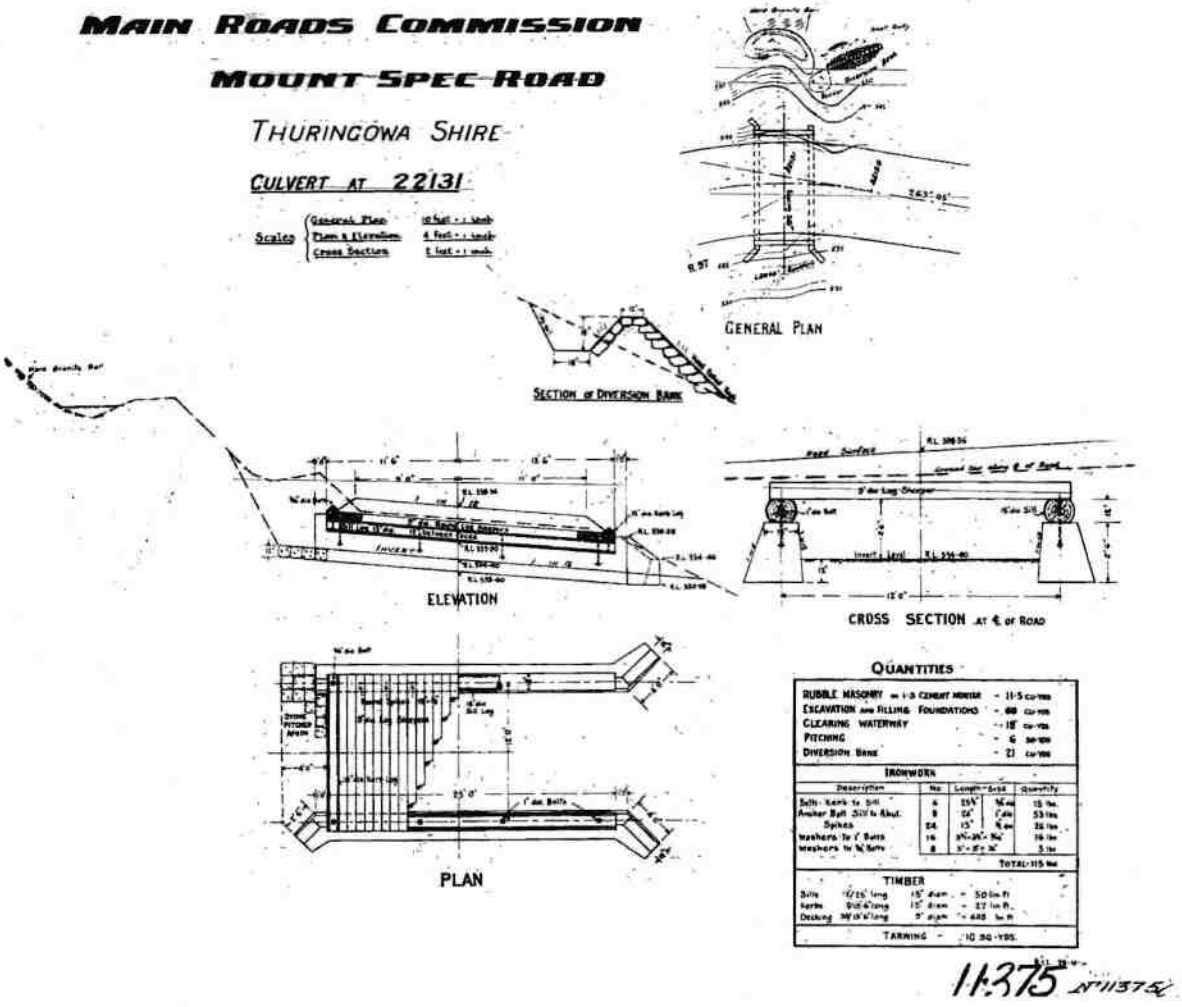


Figure 25 *Original drawing no. 11375 of Culvert 187A (Fairy Falls) at 22,131' through chainage. The original timber decking was replaced with concrete decking in the 1960s. This is the only culvert on the road with a documented diversion bank above the inlet.*
Source: Qld State Archives

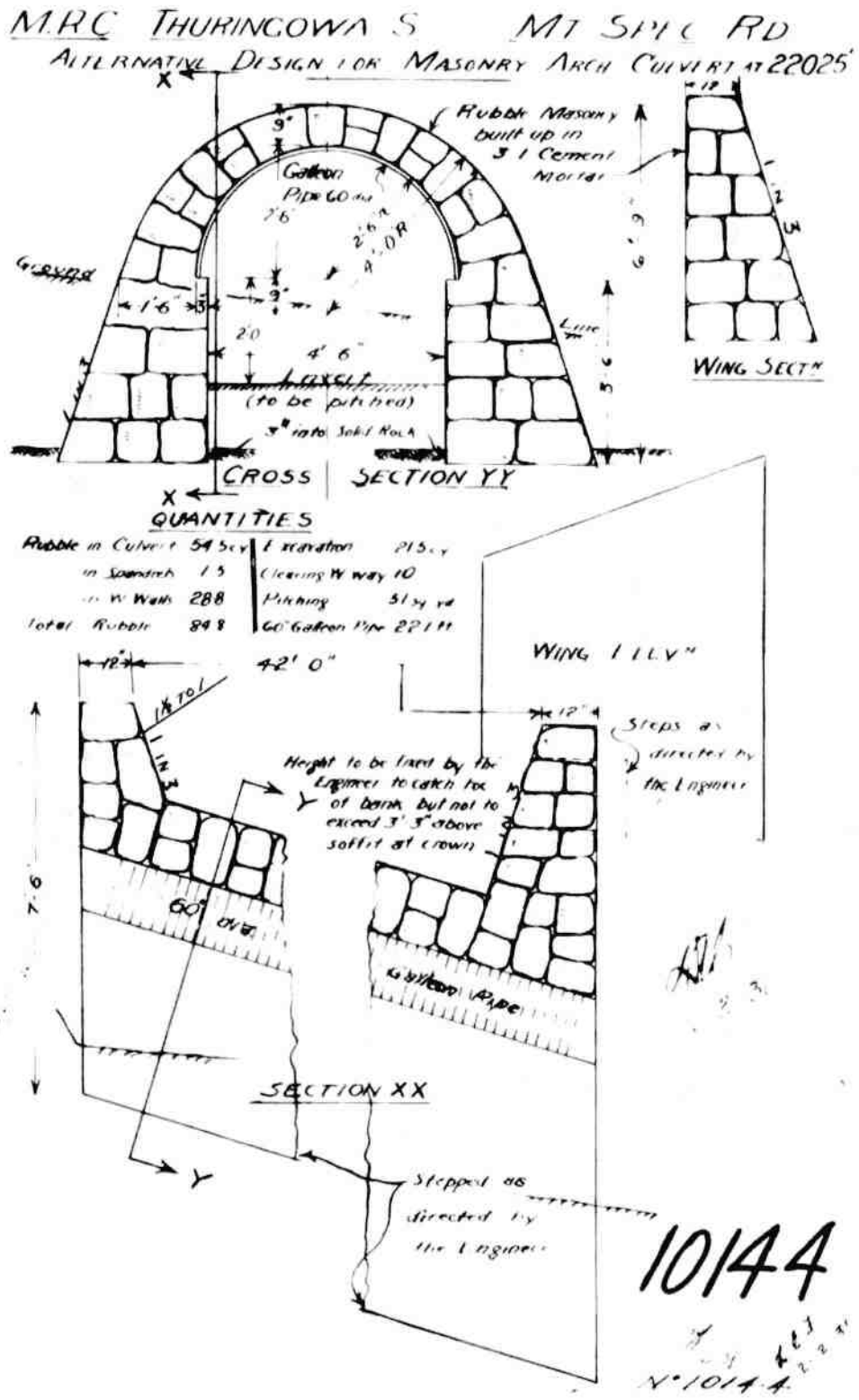


Figure 26 *Original drawing no. 10144 of Culvert 188A at Fairy Falls. This was one of three different designs for masonry arch culverts on the road.*
Source: Qld State Archives

A culvert (Culvert 150A), with masonry abutments and a log top, a span of 10 feet (3.0m) and length of 30 feet (9.1m), at 32,375 feet through chainage was completed. A culvert at 28,732 feet through chainage (Culvert 164A at Reedy Creek), with masonry abutments, a log top, 10 feet (3.0m) span and length of 30 feet 6 inches (9.3m) was completed. Another masonry culvert with log tops of 12 feet (3.0 – 3.6m) span and length of 25 feet 6 inches (7.8m) at 28,924 feet through chainage (Culvert 163A at Noah's Ark Creek) was completed.

A timber culvert with a 10 feet (3.0m) span and length of 29 feet (8.8m) was completed at 34,792 feet through chainage (Culvert 141A).[51] Surface gravelling between 35,300 and 36,700 feet through chainage was largely complete.[52]

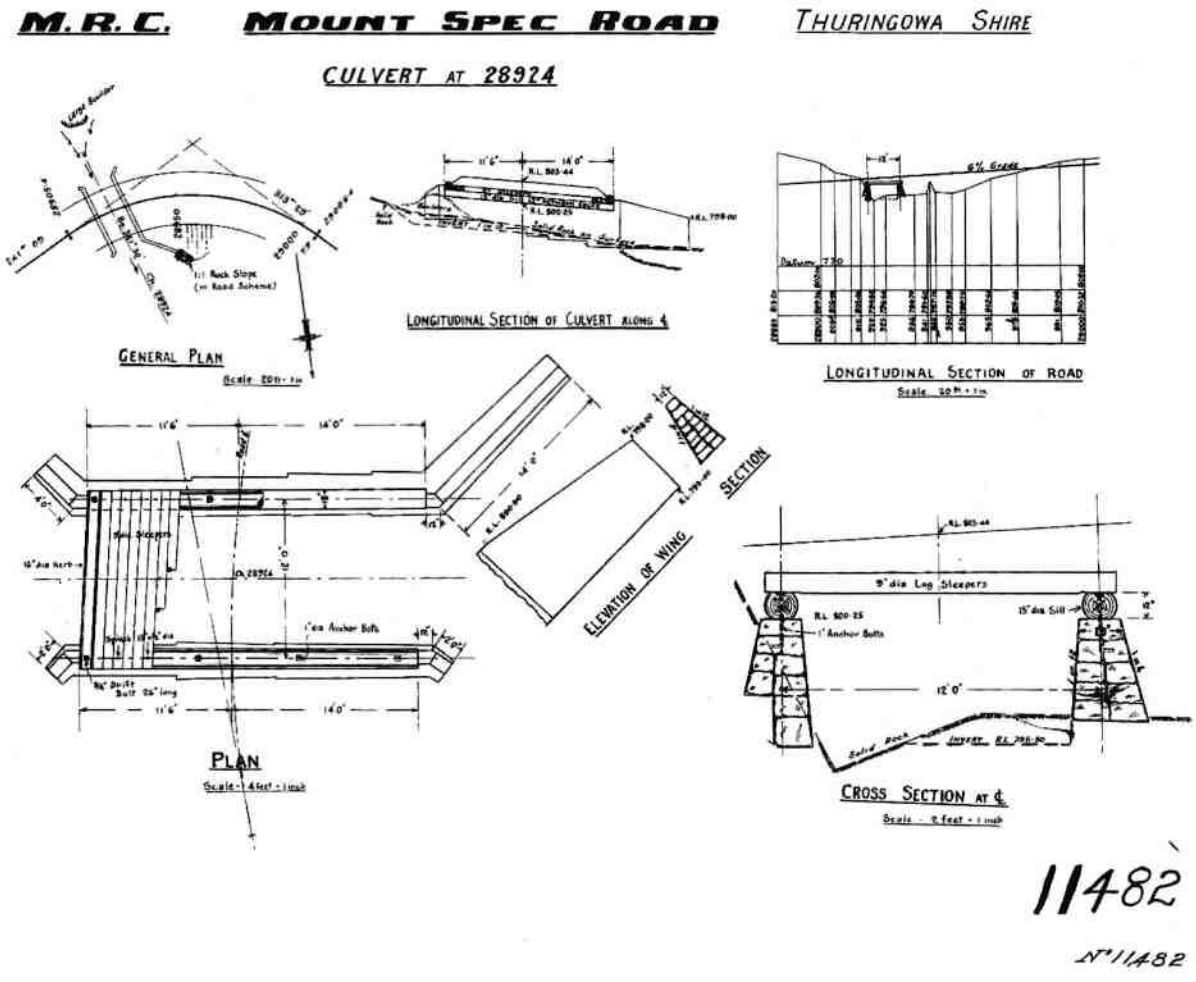


Figure 27 *Original drawing no. 11482 of Culvert 163A at Noah's Ark Creek. The initial design was for a timber girder bridge (drawing no. 11283) but this was never built.*
Source: Qld State Archives

By November 1932, the area under construction had reached 45,500 feet through chainage. The section at The Bluff (also referred to as Barrett's Bluff), 40,000 feet through chainage, was excavated in December 1932.[53] The section from 45,600 to 46,600 feet through chainage commenced in December.[54]

3.9 BRIDGE OVER LITTLE SALTWATER CREEK

Aesthetic considerations were forefront in the mind of the Main Roads Commission when planning the bridge over Little Saltwater Creek. Initially a "B" class timber bridge was designed for Little Saltwater Creek, at 35,230 feet through chainage, in 1932. This design, however, was abandoned in favour of a masonry and concrete bridge. The Townsville District Engineer wrote to the Secretary of the Main Roads Commission on 8 June stating that *from an aesthetic point of view a masonry arch should be considered, as it would harmonise with a rather picturesque spot.*[55] The variation was approved in January 1932. The Chief Engineer wrote in the Annual Report that:

> *the bridge is located in rugged country, and since this road will carry much tourist traffic, attention has been paid to aesthetic considerations – lintel courses and pilasters have been incorporated in the exterior face. Small parking areas are to be constructed on either end, for the benefit of tourists or picnic parties. The arch is one of the filled spandrel type, and comprises a segmental circular plain concrete arch rib, 60 feet span between centre lines of skewbacks and 18 feet rise with a road width of 18 feet 8 inches between kerbs. Both the spandrel walls and arch rib are faced with granite. The stone facing serves the twofold purpose of acting as end formwork to the arch barrel, and of imparting a masonry finish in conformity with the spandrel and wing walls. A sold concrete thrust block with its base at right angles to the line of pressure had to be constructed between the rock and the skewback level at one abutment.*[56]

The masonry-faced, concrete arch bridge was approved in February 1932.[57] By then, it was known as Little Crystal Creek Bridge.

By May 1932, a temporary timber bridge over Little Crystal Creek was under construction to provide access to the road works beyond. A start had been made on clearing the foundations for the main bridge.[58]

Figure 28 *Construction of Mt Spec Road at the 11 mile peg*
Source: City Libraries Townsville, Local History Collection No. 0001/0001007.

Figure 29 *Construction of Mt Spec Road with logs along road (193?)*
Source: City Libraries Townsville, Local History Collection No. 0000/0000998.

Figure 30 *A Ford truck crossing the temporary timber bridge over Little Crystal Creek Bridge in 193?*
Source: City Libraries Townsville, Local History Collection No. 0000/0000670

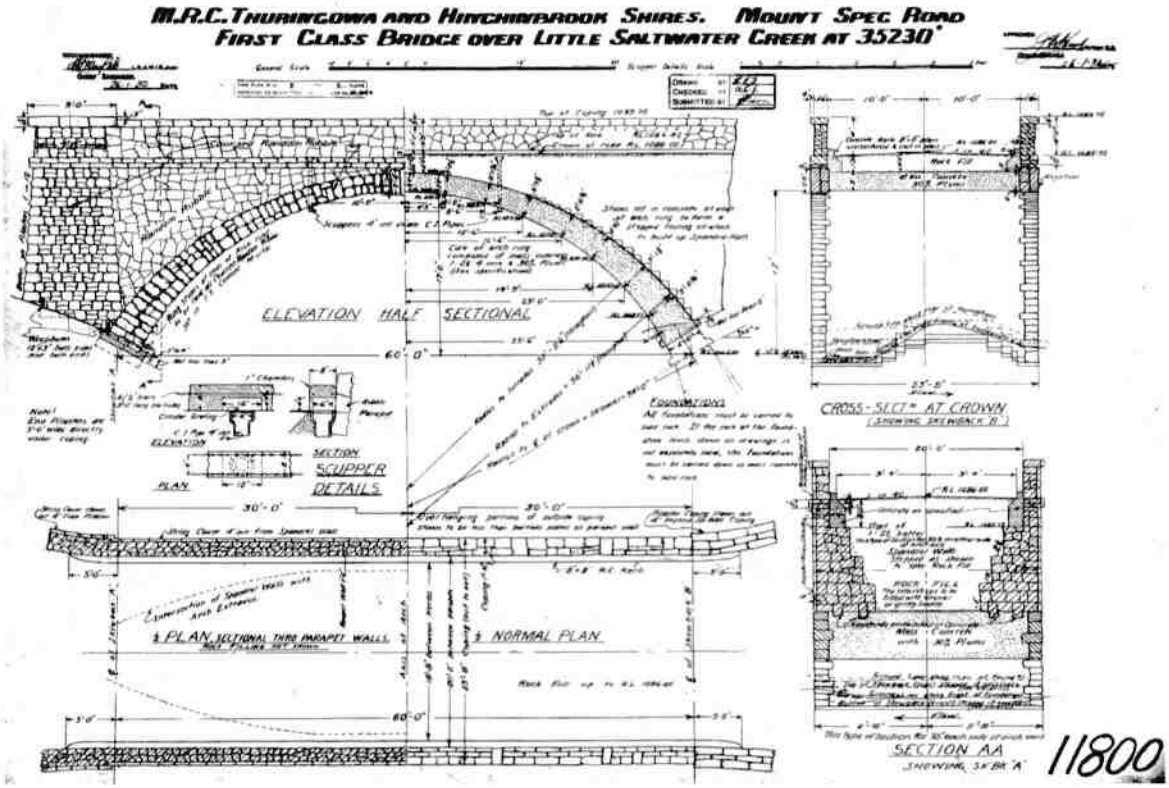


Figure 31 *Original drawing no. 11800 of Little Crystal Creek (originally called Little Saltwater Creek) Bridge by Main Roads Commission, January 1932. Refer Appendix 1 for larger reproduction.*
Source: Qld State Archives

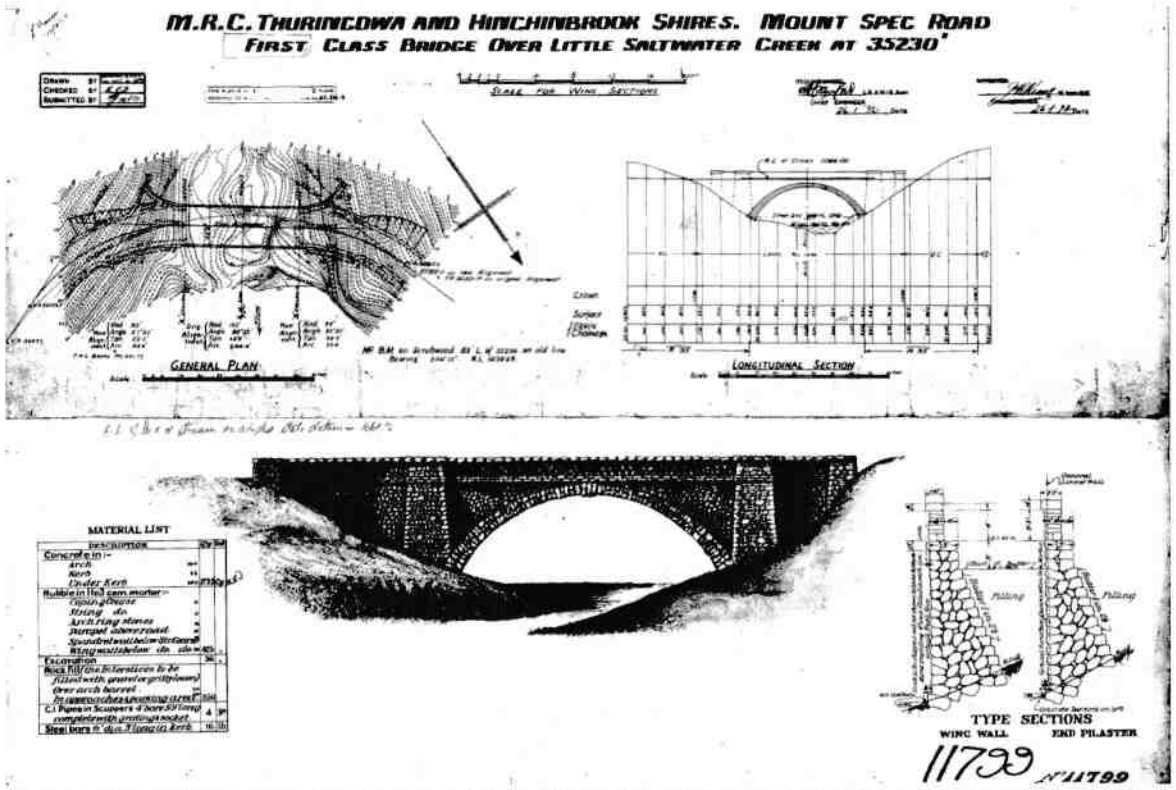


Figure 32 *Original drawing no.11799 of Little Crystal Creek Bridge by Main Roads Commission, January 1932. Refer Appendix 1 for larger reproduction.*
Source: Qld State Archives

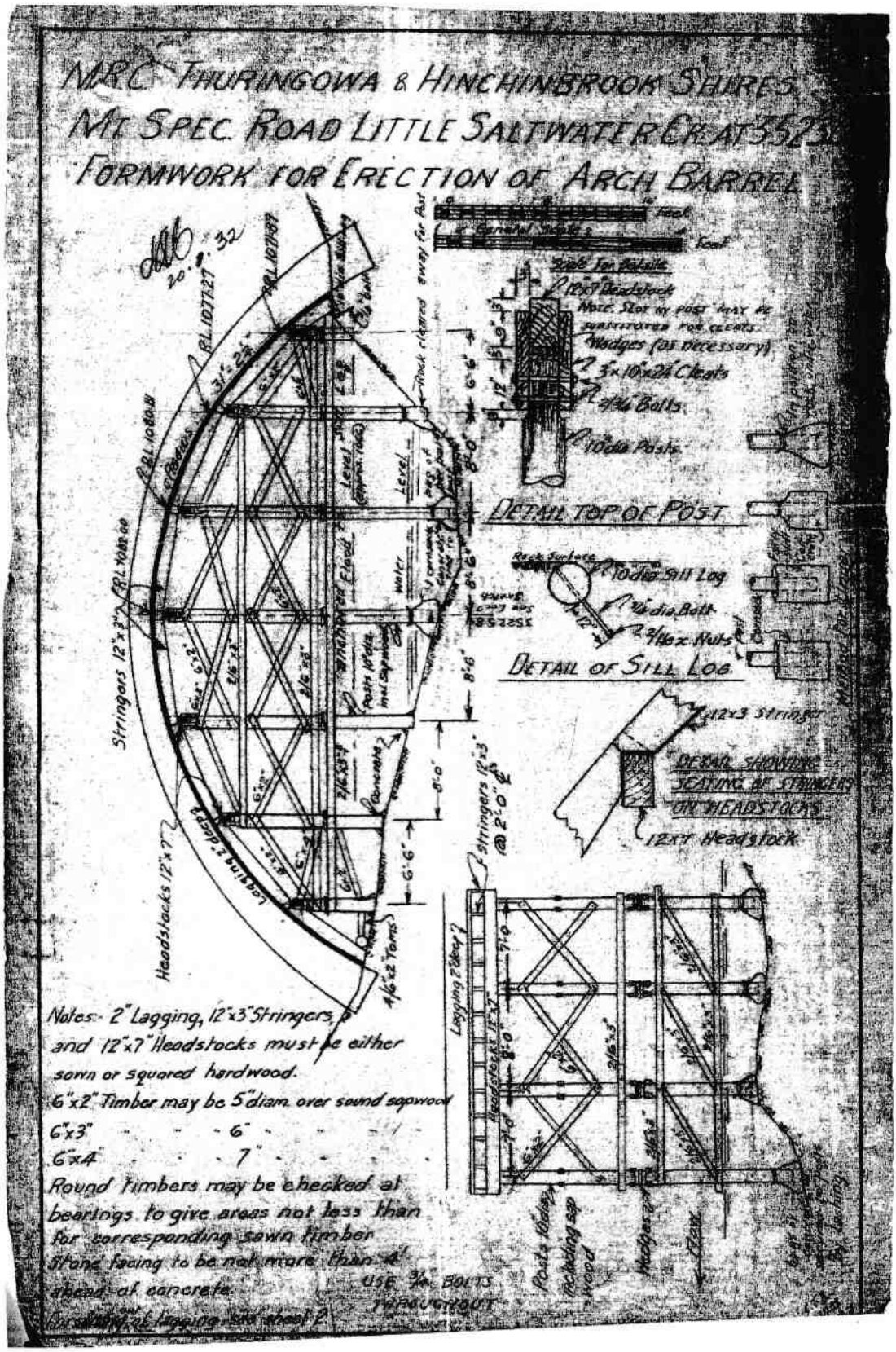


Figure 33 *Formwork design for the arch barrel of the Little Crystal Creek Bridge.*
Source: Qld State Archives Item ID 822274

The formwork for the arch barrel of the bridge was to be constructed from timber. Where possible, the timber was obtained locally. However, a shortage of timber supplies slowed down progress. In August 1932, timber for the bridge formwork was shipped from the south on *SS Poonbar*.[59]

Most of the stone for the bridge was quarried from Barrett's Bluff, not far uphill from Little Crystal Creek. The quality of the stone was high and compared favourably with the highly-regarded Aberdeen granite.[60]

Figure 34 *Formwork for Little Crystal Creek Bridge in 1932*
Source: City Libraries Townsville, Local History Collection No. 0000/0000673.

Figure 35 *Formwork for Little Crystal Creek Bridge in 1932*
Source: City Libraries Townsville, Local History Collection No. 0000/0000674.

Figure 36 *Formwork for Little Crystal Creek Bridge in 1932*
Source: City Libraries Townsville, Local History Collection No. 0000/0000675

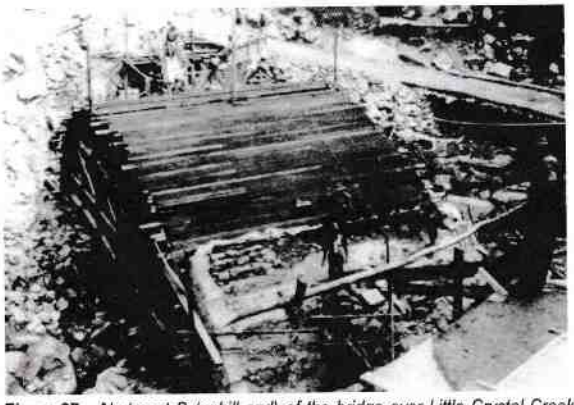


Figure 37 *Abutment B (uphill end) of the bridge over Little Crystal Creek on 10 October 1932.*
Source: Qld State Archives Item ID 822274.

Figure 38 *Abutment B (uphill end) of the bridge over Little Crystal Creek on 10 October 1932.*
Source: Qld State Archives Item ID 822274

Figure 39 *Abutment B (uphill end) of the bridge over Little Crystal Creek on 10 October 1932.*
Source: Qld State Archives Item ID 822274.

Hand drills were used, often with one man holding the drill and another hitting it with a hammer. Some long vertical drill cuts can still be seen on the rock face on the lower side of the bridge.[61] By November 1932, the *building of the spandrel and wing walls was well in hand.*[62] The bridge was completed by September 1933. Although it is strictly a masonry-faced, concrete arch structure, the *Courier Mail* reported that the bridge was the first masonry arch bridge to be constructed by the Main Roads Commission. The arch had a span of 60 feet (18m), a rise of 17 feet (5.2m) and a road width of 20 feet (6.1m). Mr HA Bruce, the Minister for Works, paid tribute to the workers:

> *The skilled nature of the work and the finish given to the whole job showed what could be done by relief labour when it was adequately supervised.*[63]

Figure 40 *Stone cutting during construction of Mt Spec Road at 45,000 feet through chainage in c.1933. The car belonged to the McClellands.*
Source: City Libraries Townsville, Local History Collection No. 0000/0000999 and Venn, p.28.

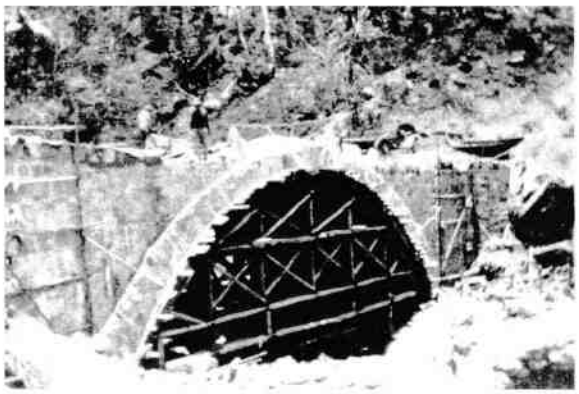


Figure 43 *Bridge close to completion in 1932*
Source: City Libraries Townsville, Local History Collection No. 0000/0000676.

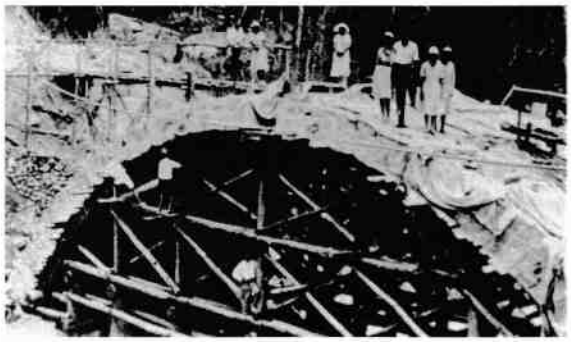


Figure 41 *Construction of bridge over Little Crystal Creek*
Source: City Libraries Townsville, Local History Collection No. 5701.

Figure 44 *Bridge close to completion in 1932*
Source: City Libraries Townsville, Local History Collection No. 0000/0000678.

Figure 42 *Construction of bridge over Little Crystal Creek*
Source: City Libraries Townsville, Local History Collection No. 5703

Figure 45 *Completed bridge in 1932*
Source: City Libraries Townsville, Local History Collection No. 0000/0000680.

By February 1935, Mt Spec Road was within a mile and a half (2.4km) of Paluma.[64] In 1935-6, work continued on the Townsville to Moongobulla section of the road, a further 40 miles (64km), which was built by the Main Roads Commission. The full length road was trafficable by February 1936. However, it was not officially opened until 18 July 1937. The ceremony was sponsored by the Townsville District Development Association. The Member for Kennedy, the Hon CJ "Nugget" Jesson performed the ceremony. He paid tribute to Main Roads, their staff and the men who worked on the road. The road had achieved its twin objective, he believed, of providing a tourist resort and establishing communications with the *back country*.[65] The press quoted Jesson: *the road itself presents spectacular and unusual features. The fine masonry arch bridge over Little Crystal Creek is unique in Queensland and of the only labor (sic) and material in it, the only foreign substance is the cement – a comparatively small part of the structure.*[66]

Figure 48 *Spectators at the official opening of Mt Spec Road on 18 July 1937.*
Source: City Libraries Townsville, Local History Collection No. 0001/0001029.

Figure 46 *Governor's party inspecting the completed bridge over Little Crystal Creek.*
Source: City Libraries Townsville, Local History Collection No. 5006.

Figure 49 *Completed bridge over Little Crystal Creek.*
Source: City Libraries Townsville, Local History Collection No. 4702.

Figure 47 *The Hon CJ Jesson opening Mt Spec Road on 18 July 1937.*
Source: City Libraries Townsville, Local History Collection No. 0001/0001028.

Figure 50 *Completed bridge over Little Crystal Creek.*
Source: City Libraries Townsville, Local History Collection No. 0000/0000987.

Figure 51 *Bridge over Little Crystal Creek, 193?*
Source: City Libraries Townsville, Local History Collection
No. 0007/0007036.

Figure 52 The completed *Mt Spec tourist road (undated)*
Source: City Libraries Townsville, Local History Collection
No. 0001/0001132.

3.10 IMPACT OF MT SPEC ROAD

The importance of the Mt Spec Road for tourism was soon realised. Back in June 1932, the Main Roads Commission Annual Report had speculated:

> *Works are still proceeding steadily on this tourist road, and it is hoped that in a short time the route will be open to traffic. Even at the present time sufficient work has been done to permit the Railway Department at Townsville to inaugurate a very popular week-end tourist trip. Reports to hand indicate that this road, once completed, will be regarded as one of the best tourist propositions in the North.*[67]

As soon as the bridge was trafficable, people began camping there. Permission was granted to sleep in Main Roads Commission tents before the Paluma township was gazetted and cottages were built.[68]

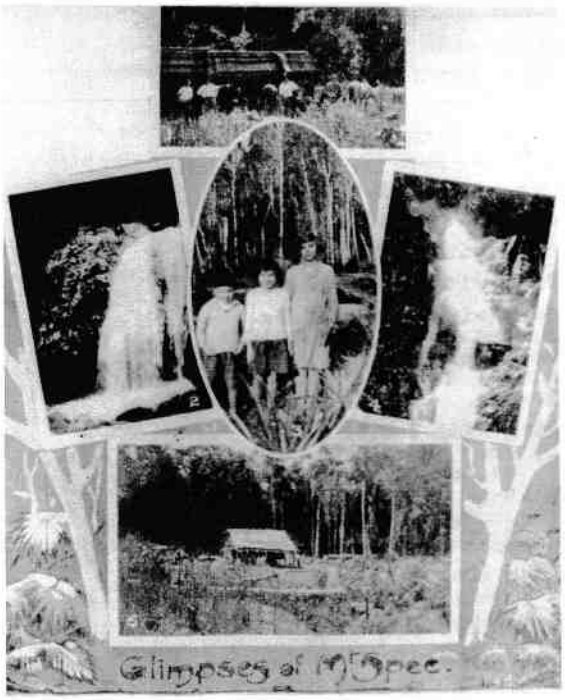


Figure 53 *Mt Spec became a popular tourist destination, 193?*
Source: City Libraries Townsville, Local History Collection No. 0006/0006950.

A network of walking tracks was developed by Main Roads for tourists. One of these led to a site named McClelland's Lookout in 1987. A motor camp was also built by the Main Roads Commission at Paluma which is claimed to have been the first motel in Australia.[69] The Railway Department also promoted tourism to Mt Spec.

The road brought increased settlement and the land at the top of the hill was surveyed and first sold as 40 residential blocks in the new township of Paluma in 1934. Guesthouses and campsites were built along the road. Fred Barrett (a foreman on the road) established Barrett's Guesthouse with his wife Georgina during the road's construction.

Figure 54 *Barrett's Guesthouse in c. 1934. The guesthouse was built while the road was under construction and accommodated construction workers. It was located high above The Saddle campsite.*
Source: City Libraries Townsville, Local History Collection No. 0001/0001025.

3.11 CHANGES TO THE ROAD

The road has occasionally been subjected to landslips. In February 1940, there were two cyclones only weeks apart. Massive landslides closed the road for some weeks until a truck could reach Paluma. As the road has consolidated, these slips have become less frequent.[70]

Originally, Mt Spec road was gravel surfaced. It has been surfaced with bitumen since 1961.

In the 1960s, the Department of Main Roads undertook substantial culvert works on Mt Spec Road. Plans were drawn in 1963 and amended in 1966. The original timber decking on 16 culverts was replaced with reinforced concrete slabs and some stone pitching was undertaken at an estimated cost of £12,727 ($25,500).[71] The scope of works is detailed below:

On 18 July 1987, a plaque was erected beside Little Crystal Creek Bridge by the Hon. R Katter Jnr recording the construction of the road by the Main Roads Commission and unemployment relief workers and the opening on 18 July 1937.

The campsite used for the construction of Little Crystal Creek Bridge was developed as a car park by Queensland Parks and Wildlife in the 1990s. Some sections of the original stone retaining walls survive in this portion of the road reserve.

In 2001, minimal pullover road widenings were constructed at 24 locations on Mt Spec Road.[72] In addition, 20 cu.m. of rock face was excavated between Culverts 129 and 128 to improve corner sightlines.

Selected drawings showing the general design of the original road and bridge and changes to the road over time (such as the 1960s concrete re-decking of the large culverts) are set out in **Appendix 1**.

Culvert No.	Chainage	Summary of Work
1	22,147	1. Replacing timber decking with 7 R.C. Slabs.
2	22,830	1. Replacing culvert with a 42" R.C.Pipe (44') 2. Rockfill at outlet. 3. Handpacked rubble at outlet. 4. Grouted rubble masonry ends to culvert. 5. Stone pitching at inlet and outlet.
3	28,765	1. Replacing timber decking with 9 R.C. Slabs.
4	28,940	1. Replacing timber decking with 7 R.C. Slabs.
5	32,400	1. Replacing timber decking with 8 R.C.Slabs.
6	34,800	1. Replacing timber decking with 8 R.C. Slabs.
7	46,340	1. Replacing timber decking with 6 R.C. Slabs. 2. Grouted rubble masonry end to culvert and extension to abutments at outlet. 3. Stone pitching at outlet. 4. Demolish D/S Wingwalls.
8	49,368	1. Replacing timber decking with 7 R.C. Slabs. 2. Grouted rubble masonry end to culvert, and extension to abutments at outlet. 3. Stone pitching at outlet.
9	49,896	1. Replacing timber decking with 6 R.C. Slabs. 2. Repair grouted rubble masonry.wingwall D/S
10	52,008	1. Replacing timber decking with 7 R.C. Slabs. 2. Repair grouted rubble masonry abutment.
11	57,800	1. Replacing timber decking with 6 R.C. Slabs.
12	58,050	1. Replacing timber decking with 9 R.C. Slabs.
13	58,525	1. Replacing timber decking with 14 R.C. Slabs.
14	59,080	1. Replacing timber decking with 6 R.C. Slabs.
15	59,550	1. Replacing timber decking with 9 R.C. Slabs.
16	60,200	1. Replacing timber decking with 3 R.C. Slabs. in part and remainder with R.C. Decking cast in situ.

Figure 55 *Summary of work conducted in the 1960s by the Main Roads Commission. Extract from drawing no. 90872. Note: These are not current culvert numbers.*
Source: Qld State Archives

4 PHYSICAL EVIDENCE

4.1 METHOD OF INVESTIGATION

A visual inspection of the entire road was carried out on foot to identify existing road features, materials, methods of construction and changes over time. This inspection was carried out in daylight from ground level. Some large culvert interiors were inspected by torchlight. Each road feature was recorded in field books on standardised survey recording forms. A sample survey record is set out in **Appendix 2**. In total, 243 field records were completed. A reference map locating each feature is set out in **Appendix 3**. General digital photographs (not to archival standards) were taken of each road feature and these are reproduced in the photographic log in **Appendix 4**. No fabric was physically removed as part of this investigation.

For major features such as the main Little Crystal Creek Bridge and the 20 large masonry culverts, further engineering investigation was carried out with respect to the physical condition of each structure. This assessment is set out in section 6.2.

The standard locational system for roads relates to distances along the centreline of the road from a known point and is referred to as "chainage". For the Mt Spec Road (TMR Road N° 6106), chainage begins at the intersection of Barretts Road (the old Bruce Highway) with the centreline of the current Bruce Highway. Mt Spec Road's gazettal chainage is from chainage 3.744km to chainage 21.943km. Throughout this plan, the 2006 Main Roads Culvert Inspection Checklist chainages are used as the chainage reference because this provides a precise chainage to all of the road's 231 culverts. It should be noted, however, that other documents relating to the road all incorporate slightly different chainages including the 2009 Cardno Eppell Olsen Mt Spec Road Road Safety Audit, the 2009 TMR Mt Spec Road Seal Width Survey, the 1999 Mains Roads survey plans and the original 1931 working plans.

4.2 EXISTING FABRIC

The road winds through approximately 18km of coastal range and is constructed using conventional technology of its time by cutting and, in places, filling the steeply-sloping range embankments to achieve a level roadway. Originally a gravel surface, the road is now bitumen-sealed.

To span the many gullies, creeks and gorges along the road length and to divert water under the road, a combination of 211 small culverts, 20 large culverts and the main bridge over Little Crystal Creek currently exist. These features all appear to be in their original locations and many are still in original condition. The abundance of local rock, including good-quality granite, has led to its extensive use in a wide range of road features such as culvert walls, kerbing, channelling, retaining walls, diversion banks and for decorative facing of the main bridge.

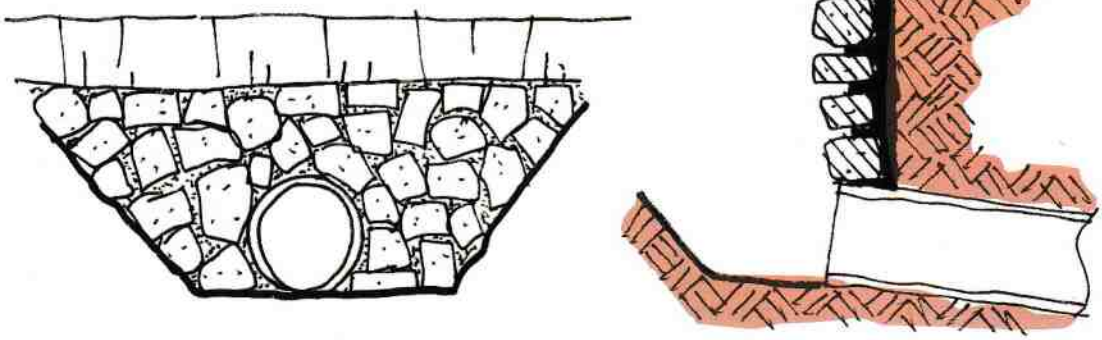
4.2.1 SMALL CULVERTS

The most common road features are the 211 small culverts. These typically consist of a 450mm or 600mm diameter reinforced concrete pipes (made in-situ at the nearby Ollera Creek pipe-making camp) running under the road and secured at each with a stone headwall. Occasionally, larger pipes (up to 900m diameter) and/or dual pipes are used. In rare instances (viz. Culverts 214, 213, 211 and 209), corrugated iron tube has been used for the pipe and some of these have recently been lined with pvc.

In one instance (Culvert 57), a 2m diameter corrugated iron tube exists as a 1998 reconstruction after a substantial landslip at this location.

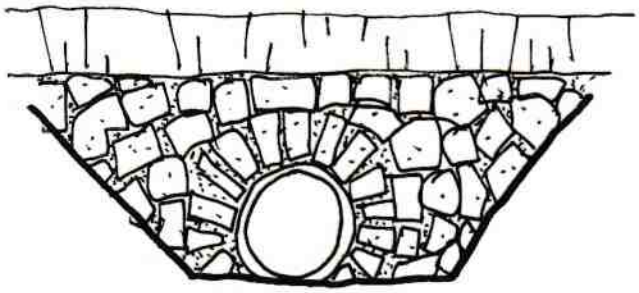
The small culvert headwalls are constructed of local rock probably sourced immediate to each culvert location. There are slight variations in their design: (i) hand-packed random rubble, (ii) hand-packed random rubble with voussoirs and (iii), coarsed rubble in cement mortar. These are shown in **Figures 56**. The height of the small culvert headwalls is typically approximately 1m. but this varies up to 4m. in places. In many instances, culvert inlets are hewn directly into the rock face.

Of the small culvert headwalls inspected, 42% have been unsympathetically altered over time and are not considered to be readily-reversible. These alterations include substantial loss of stone fabric through scouring, removal or inappropriate repair techniques. 48% are substantially-intact. The remaining 10% are either in unknown condition due to concealment or have been altered (either sympathetically or readily-reversibly).

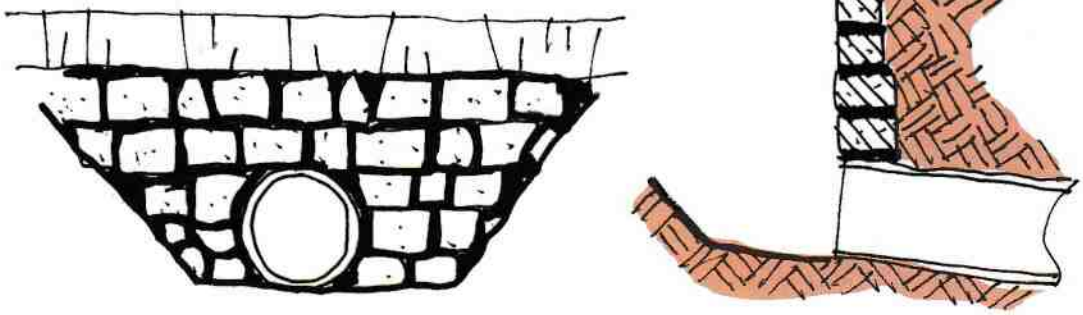


(i) Hand-packed random rubble

Section – Types (i) & (ii)



(ii) Hand-packed random rubble with voussoirs



(iii) Coarsed rubble in cement mortar

Section – Type (iii)

Figure 56 *Small culvert headwall types*

4.2.2 LARGE CULVERTS

Although some small timber girder bridges were originally designed for the road, these were eventually constructed as large, timber-decked culverts. In total, 20 large culverts exist along the road and are typically located at creeks and large gullies. These culverts are set out in **Table 1**.

CULVERT NO.	CHAINAGE	TYPE	LOCATION
210	4.351	Masonry arch	
206A	4.737	Masonry arch	
188A	6.240 approx.	Masonry arch	FAIRY FALLS
187A	6.280 approx.	Masonry wall / concrete deck	FAIRY FALLS
176A	7.350	Masonry arch	MAIDENHAIR FERN CREEK
164A	8.114	Masonry wall / concrete deck	REEDY CREEK
163A	8.235	Masonry wall / concrete deck	NOAH'S ARK CREEK
150A	9.400	Masonry wall / concrete deck	
141A	10.150	Masonry wall / concrete deck	LITTLE CRYSTAL CREEK CARPARK
112A	12.405	Masonry arch	
99	13.690	Masonry wall / concrete deck	
87	14.664	Masonry wall / concrete deck	
85	14.858	Masonry wall / concrete deck	
77	15.521	Masonry wall / concrete deck	MOUNTAIN CREEK
55	17.251	Masonry wall / concrete deck	
54	17.339	Masonry wall / concrete deck	
52	17.583	Masonry wall / concrete deck	
48	17.795	Masonry wall / concrete deck	
45	18.008	Masonry wall / concrete deck	
40	18.284	Masonry wall / concrete deck	TWIN FALLS

Table 1 *Large culvert types*

There are two basic types of large culvert – masonry arch culverts and masonry wall/concrete deck culverts. The most common types are the masonry wall/concrete deck culverts (15 off). Originally built with timber log decking supported on well-constructed, coarsed rubble walls, the timber decking logs presumably deteriorated and were replaced in 1966 with pre-cast concrete decking slabs on (typically) two courses of reinforced concrete blockwork set on top of the original (and extant) masonry walls. These masonry wall/concrete deck culverts vary in size from 0.9m. wide x 1.2m. high to 2.5m. wide x 3.5m. high. In some instances, the natural rock formations have been incorporated into the culverts. Typical details of this type of large culvert are shown in **Figure 57**.

Of particular note is the large culvert at Twin Falls (Culvert 40). This culvert features an elaborate arrangement of masonry elements both above and below the road surface. As suggested by its name, the natural rock formation at this location creates two small waterfalls immediately abutting the inside lane of the road. A large quadrangular coarsed rubble training wall sits above the road to train the waterflow into each of the falls. Below the road, coarsed rubble walls merge the twin inlets into a single large outlet which then drops spectacularly into the gorge below. In peak rain events, the falls miss the inlets and arch completely over the road. This unusual configuration is shown in **Diagram C** of **Appendix 3**.

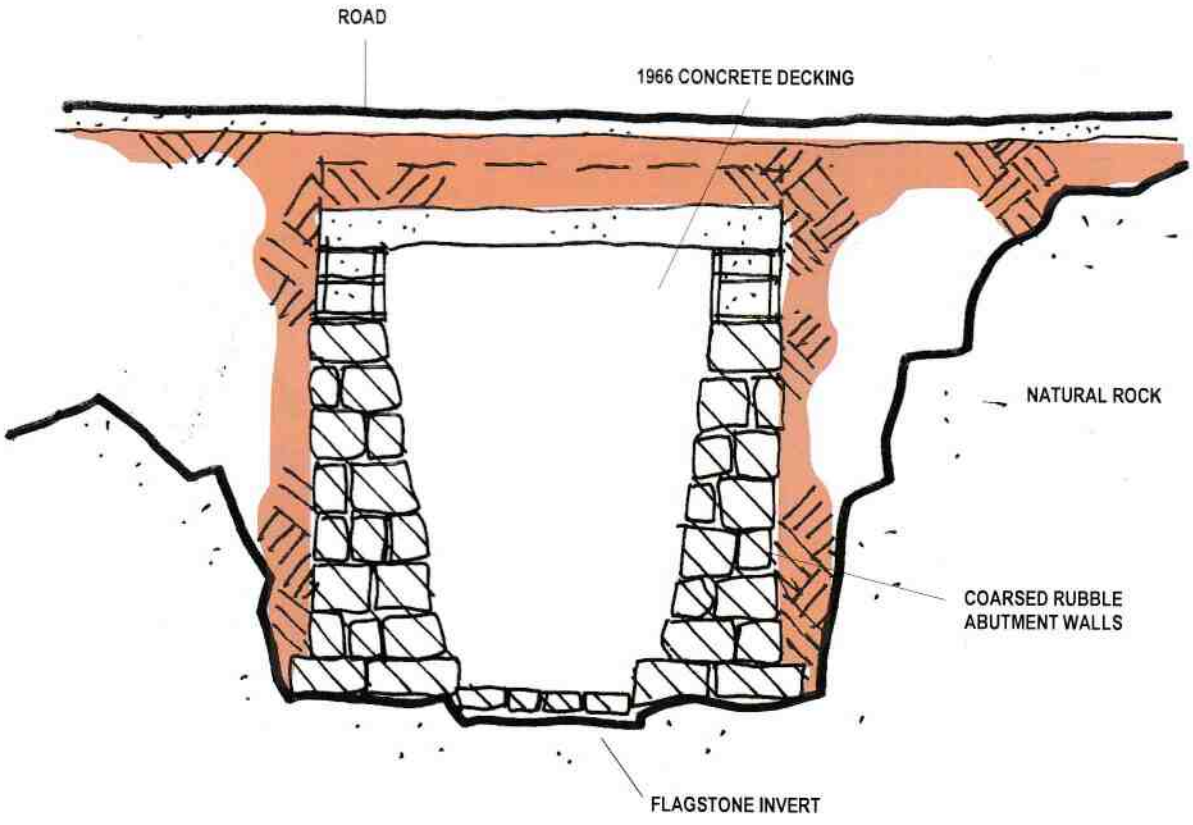


Figure 57 *Typical culvert with masonry walls and concrete deck*

The less common types of large culvert are the five masonry arch culverts (viz. Culverts 210, 206A, 188A Fairy Falls, 176A Maidenhair Fern Creek and 112A). Of these, there are three variant designs. Culverts 210 and 206A were originally designed as parabolic mass concrete arch structures but were built as parabolic masonry arches using local rubble laid on timber formwork and grouted with concrete.

Culverts 176A and 112A were designed and constructed as masonry arch culverts using the same materials and techniques as the parabolic arch culverts. Culvert 188A is unique in utilising a cast-insitu, corrugated iron form to support a masonry arch structure surmounting vertical masonry walls. These various types of masonry arch culvert are shown in **Figures 58** to **60**.

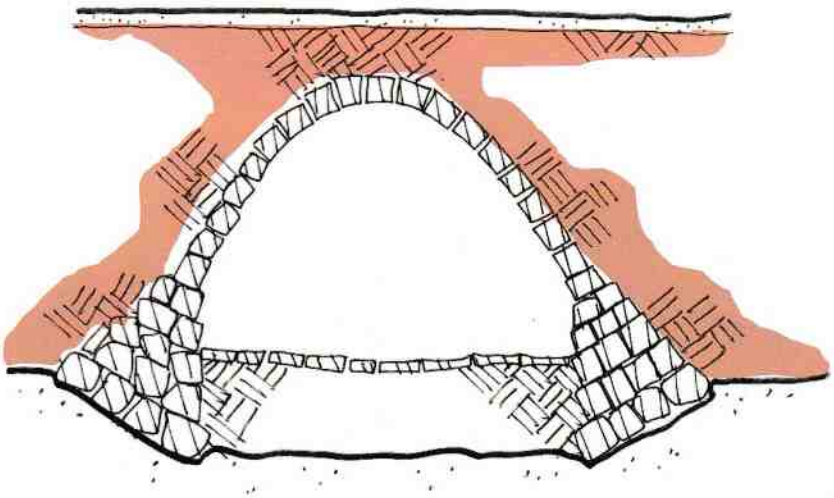


Figure 58 *Large culvert – parabolic masonry arch*

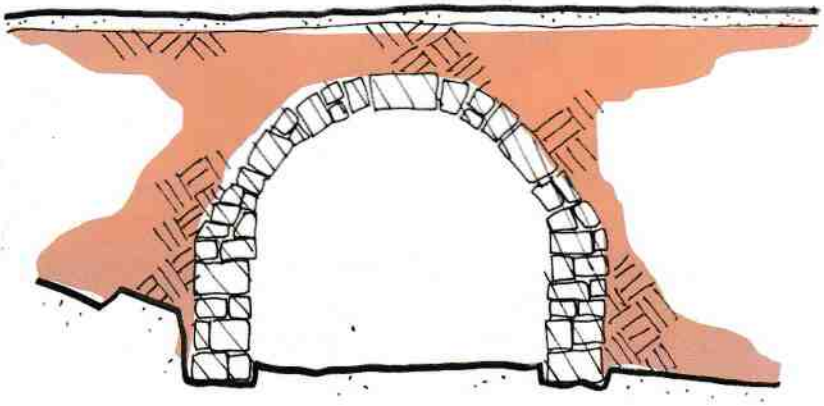


Figure 59 *Large culvert – masonry arch*

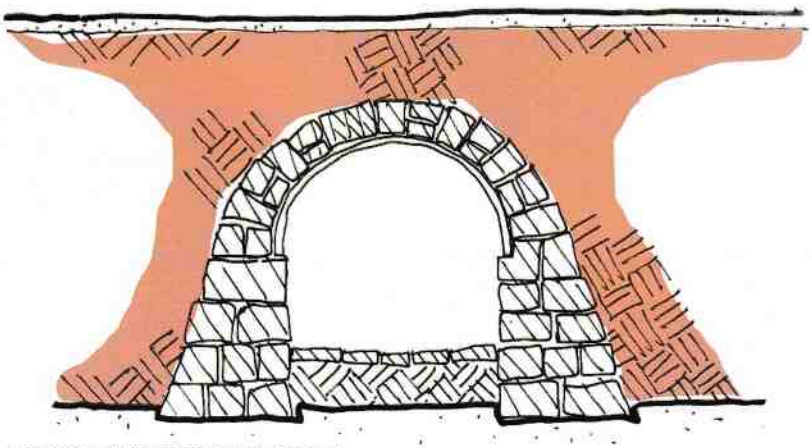


Figure 60 *Large culvert – masonry arch with corrugated iron formwork*

Most large culverts incorporate stone-flagged inverts and extensive inlet and outlet headwalls constructed of coarsed rubble masonry in cement mortar. Depending on the topography, large culvert outlets often also incorporate substantial retaining walls constructed of hand-packed random rubble masonry as shown in **Figures 61** and **62**. In many instances, the natural or hewn rock forms part of the culvert structure as headwalls or inverts.

Figure 61 *Large culvert headwall constructed in coarsed rubble*

Figure 62 *Large culvert headwall incorporating stone retaining wall*

4.2.3 STONE KERBING and CHANNELLING

Extensive lengths of stone kerbing and stone-pitched channelling were built as part of the original road construction. Although the exact extent of kerbing and channelling was not set out on the original drawings, provisional allowances were made for each road section to be installed where directed by the supervising engineer. The existing stone kerbing and channelling typically occurs at the lead ins to culverts and around rock cuttings on corners. Similar to the culvert headwalls, the stone for these features appears to have been sourced in-situ. Delaminated granite of similar thickness to the 50mm. thick kerbstones commonly occurs along the road. The kerbstones stand approximately 200mm. high and are cement mortared at their perpends. The 600mm. wide channelling is pitched with granite setts in cement mortar at typically 1 in 4 grade. It is apparent that considerable extents of original kerbing and channelling have been removed over time are/or covered over with bitumen seal. Extensive leaf litter also concealed some channelling from inspection. Remnant sections of stone kerbing and channelling less than 2m. in length were generally not recorded. Refer **Figures 63** and **64**.

Stone kerbing in lengths greater than 2m. occurs at 75 locations with the longest continuous section being 144m. uphill of Culvert 207. The total length of intact stone kerbing is approximately 1800m. Intermittent stone kerbing in lengths greater than 2m. occurs at 10 locations and up to 55m. in length uphill at Culvert 86. The total length of intermittent stone kerbing is approximately 230m.

Stone-pitched channelling in lengths greater than 2m. occurs at 56 locations with the longest continuous section also being 144m. uphill of Culvert 207. The total length of intact stone-pitched channelling is approximately 1700m. Intermittent stone-pitched channelling in lengths greater than 2m. occurs at 20 locations and up to 62m. in length uphill of Culvert 119. The total length of intermittent stone-pitched channelling is approximately 500m.

Figure 63 *Stone kerbing and channelling*

Figure 64 *Stone kerbing and channelling*

4.2.4 STONE WALLS

In-situ stone has also been used to construct retaining walls and stone-pitched banks utilising a variety of stone-laying techniques including:

- hand-packed rubble (mainly used in bank stabilisation)
- random rubble in mortar
- coarsed rubble in mortar
- drystone.

Figure 65 illustrates an example of this technique.

Of these various techniques, the drystone walling is the most- finely-crafted and most-attractive. It has been used predominantly in small, roadside retaining walls and consists of local stone flags laid in rough courses with unmortared joints. It is likely that the flags are packed in concrete or cement mortar at the rear and are not true "drystone" walls in the strict dry-laid definition of the technique.

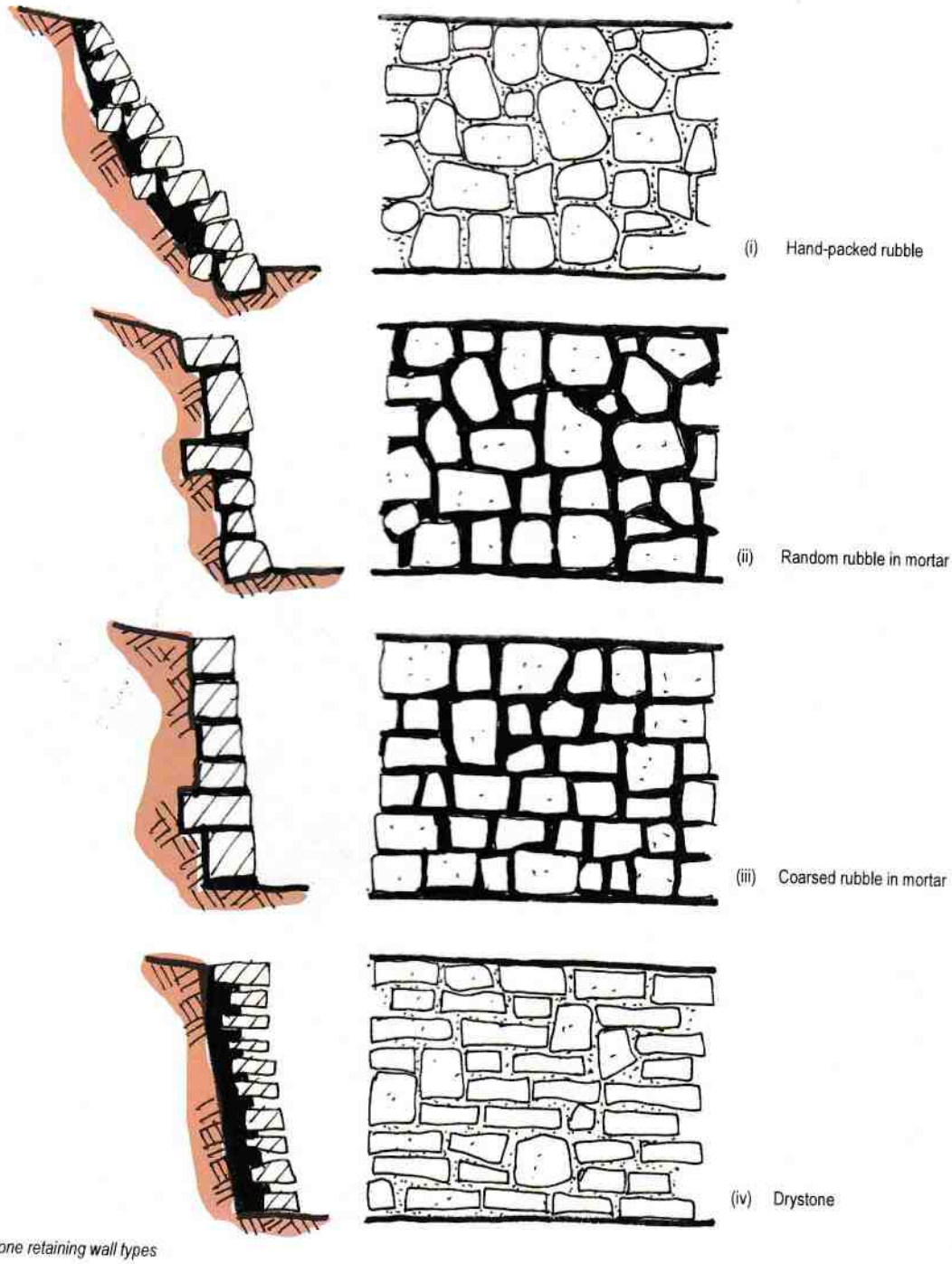


Figure 65 *Stone retaining wall types*

4.2.5 MAIN BRIDGE

The main feature of the road is the Little Crystal Creek bridge. The bridge spans Little Crystal Creek (originally called Little Saltwater Creek) with a mass concrete arch ring of 60' (18m) span and 17' (5m) height. The arch is cast into concrete skewbacks founded in the natural bedrock. The core of the structure is rock-filled and the upstream and downstream sides are faced with a combination of random and coarsed rubble set in cement mortar. The stone was obtained from cuttings at "Barrett's Bluff" approximately 1.8km uphill of the bridge (in the vicinity of Culverts 120 and 119). This was the only stonework on the road executed by stonemasons.

Stone pilasters are expressed at the span ends and at the splayed abutment ends. These pilasters are taken up to the level of the stone parapets. Cast iron pipes drain four scuppers in the road surface and are the only metal components in the bridge. Unreinforced, cast-insitu concrete kerbs abut the inside faces of the stone parapets. The substantial custom-designed and custom-built timber formwork appears to have been re-used as guide rails on the road. The highly-unusual scalloped timber guard rails surviving near Culvert 17 match precisely the intrados radius of the concrete arch.

Bridge features associated with the recreational use of Little Crystal Creek are discussed in section 4.3.

Figures 66 and **67** illustrate the existing bridge.

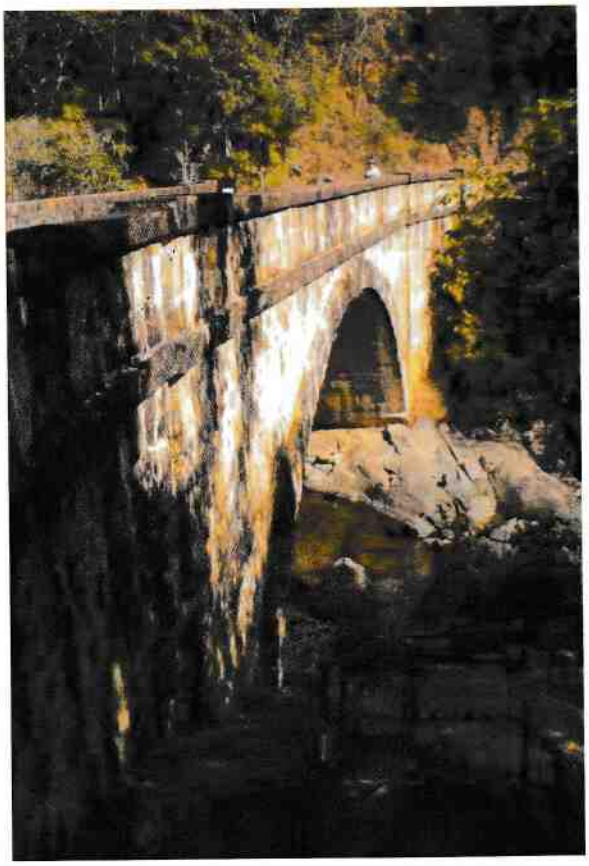


Figure 66 *Main bridge*

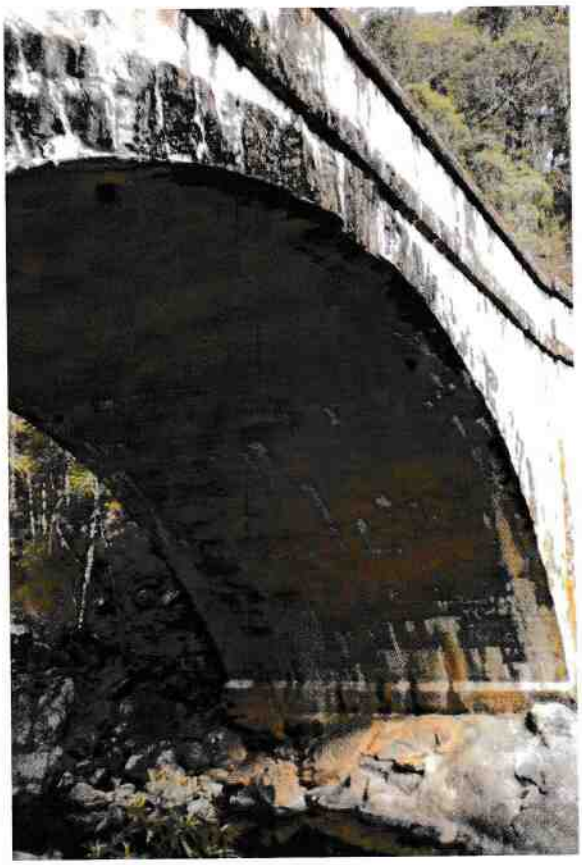


Figure 67 *Main bridge*

4.2.6 DOUBLE TRACKING

Sections of the road originally incorporated "double tracking" whereby the road widened and guide posts were fixed down the centre of the road. On some double track sections, centre culvert inlets and white-painted guide rocks were also installed. No evidence of these features survives.

4.2.7 TIMBER GUARDPOSTS AND RAILS

Although no documentary evidence has been found to indicate the original extent of timber guardposts and guardrails, the Paluma community indicates that, until relatively recently, these existed in substantial quantities along the road. A series of corner posts currently existing in the township of Paluma are said to have been relocated from the range. These currently are located at Culvert 3 and at both ends of Lennox Crescent. These posts are typically 300mm diameter x 1200mm high hardwood set directly into the ground. The original drawn detail sets out that the rounded tops were to have a steel ring holding two layers of white-painted canvas in place. This detail does not survive on any extant 300mm diameter timber posts.

In total, nine 300mm diameter timber guardposts appear to be in their original locations. One is located at Culvert 40 (Twin Falls) and the remaining eight are grouped together uphill from Culvert 17. This group of eight incorporates three 75mm thick scalloped timber rails (with a fourth laying rotten on the ground) which are identical in dimension and shape to the main bridge formwork stringers described above. Refer **Figure 69**.

The current system of posts and rails consists of a very large number of standard plastic reflector-type guide posts and limited sections of w-profile (Armco or similar) steel guard rail.

Figure 68 *Early photograph showing original double tracking. Note also the extensive use of timber guardposts.*

Figure 69 *Surviving timber guardposts and rails uphill from Culvert 17*

4.2.8 ANCILLARY FEATURES

Ancillary to the road itself are a number of features which are associated with the logistics of the road construction. These include local quarry sites, campsites and benchmark trees.

Throughout the entire length of the road, roadside trees were used as temporary survey benchmarks. The original drawings locate 31 such trees which were blazed and inscribed with an arrowhead, "MR" and a distance in miles. Although a number are claimed to exist, only the "5½" mile benchmark tree at Culvert 163 was located. This is on a stringybark tree which, although appearing dead, was shooting new leaves after a recent bushfire. Refer **Figures 70** and **71**.

The considerable amounts of stone used in the construction of the road were sourced from immediate worksite areas and from small roadside and nearby quarries. Known quarry sites at the bottom of the range (just uphill of the bottom gate) and the top of the range (in the township of Paluma) exist beyond the current road reserve with no physical evidence within the road reserve.

Figure 71 *Benchmark tree at Culvert 163*

Figure 70 *Benchmark tree at Culvert 163*

Barrett's Bluff, (between Culverts 120 and 119) was the source of the main bridge stone and is a prominent roadside feature with the angled fracture lines of the quarrying process clearly evident as shown in **Figure 72**. A small, roadside quarry site also exists uphill of Culvert 206A, some of which is contained within the road reserve. Drill marks and large fractured stones are still clearly evident as shown in **Figure 73**.

Figure 72 *Barrett's Bluff quarry site*

Figure 73 *Culvert 206A quarry site*

Section 3 describes the extensive nature of the various campsites that accommodated the men (and sometimes their families) working on the road. In most cases, these camps were well off the road and beyond the current road reserve such that there is little physical evidence of them within the road reserve. The Crystal Creek Bridge campsite was located in what is now the main carpark. No physical evidence of this camp was found within the road reserve although some remnant stone retaining walls heading into the carpark may relate to its earlier use. Refer **Figures 74** and **75**.

Figure 74 *Existing Little Crystal Creek Bridge carpark*

Figure 75 *Remnant stone retaining walls at entrance to carpark*

Evidence of The Saddle campsite within the road reserve exists in the form of a small access road immediately past The Saddle corner and before Culvert 103 as shown in **Figure 76**. Further evidence exists in the form of three steel water tanks as shown in **Figure 77**. These are currently located on the outside of the road at Culvert 101 but are believed to have been previously located further down the hillside nearer to the camp location. The Saddle campsite was very large and extended approximately 500m. beyond the current road reserve.

Figure 76 *Access road to The Saddle campsite*

Figure 77 *Water tanks beside the road at The Saddle campsite area*

4.3 EXISTING SETTING

The road winds through coastal plain and eucalypt forest before making a transition to tropical rainforest at approximately halfway up the range. At numerous points, spectacular views across the Crystal Creek valley and to the distant Halifax Bay are available as shown in **Figure 78**. For most of its length, the road traverses the Paluma Range National Park which is the southern-most part of the Wet Tropics World Heritage Area. The route of the road has not been altered since construction nor has it been widened (other than a very minor rock cutting in about 2001 in the vicinity of Culvert 128). The remainder of the rock cuttings are original.

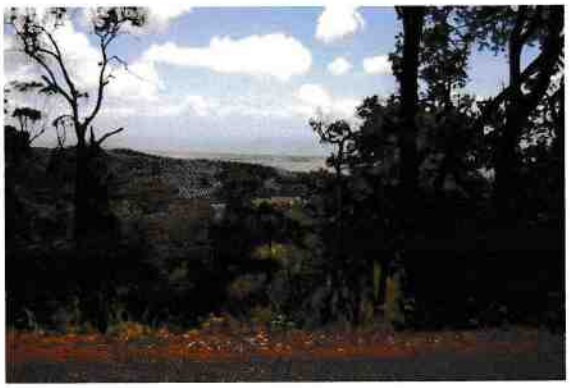


Figure 78 Panoramic view of Halifax Bay from the range

Section 3 identifies that initial clearing prior to construction left much of the current road reserve denuded of trees. Most of the vegetation that currently exists within the road reserve is regrowth since construction although some older trees remain. At two places, stands of introduced mango trees beside the road are in contrast to the native vegetation. These are the commemorative plantings at the Little Crystal Creek Bridge downhill abutment as shown in **Figure 79** and uphill of Culvert 163 in the area attributed to Linton's Campsite as shown in **Figure 80.**

Figure 79 Mango trees at Little Crystal Creek

Figure 80 Mango trees near Linton's campsite

The area around the Little Crystal Creek Bridge has been developed as a recreational area administered by Queensland Parks and Wildlife Service (QPWS). It contains a modern carpark, toilets, picnic area and access to the various picturesque swimming pools and waterfalls in the creek - both upstream and downstream of the bridge. These facilities incorporate many stone features in keeping with the general design ethos of the road and bridge including drystone walls, stone-flagged paths, stone kerbs and stone stairs. These recreational areas extend well beyond the road reserve. Refer **Figures 82** to **86**.

At the top of the range, the small township of Paluma unfolds with the road continuing through the town as its main street as shown in **Figure 81**.

Figure 81 Paluma main street

Figure 82 *Little Crystal Creek looking upstream*

Figure 83 *Drystone walls at Little Crystal Creek*

Figure 84 *Stone features at Little Crystal Creek*

Figure 85 *Little Crystal Creek Bridge*

Figure 86 *Modern facilities at Little Crystal Creek*

5 ASSESSMENT OF CULTURAL SIGNIFICANCE

5.1 ASSESSING CULTURAL SIGNIFICANCE

The term *cultural significance* as it is used in this plan deals essentially with identifying what is important about the road and bridge and why they are important. As defined in the Queensland Heritage Act (the Act), the "*cultural heritage significance", of a place or feature of a place, means its aesthetic, architectural, historical, scientific, social or other significance, to the present generation or past or future generations.* The assessment of significance is done objectively and by drawing on a considerable amount of factual data. Comparisons are relevant in order to place the road and bridge in their context and a thorough knowledge of the history and condition of the place is essential.

Assessing cultural heritage significance against set criteria is a widely-recognised method of achieving consistent, rational and unbiased assessments. Various authorities and bodies involved in heritage conservation adopt assessment criteria including the Australian Heritage Council, the National Trust, Australia ICOMOS and the Queensland Heritage Council. Whilst consistent with notions of cultural heritage significance inherent in these bodies' criteria, the Act sets out specific tests for considering State heritage places.

In assessing the cultural heritage significance of a State heritage place, s.35(1) of the Act sets out that the place must satisfy one or more of the following criteria:

(a) the place is important in demonstrating the evolution or pattern of Queensland's history;
(b) the place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage;
(c) the place has potential to yield information that will contribute to an understanding of Queensland's history;
(d) the place is important in demonstrating the principal characteristics of a particular class of cultural places;
(e) the place is important because of its aesthetic significance;
(f) the place is important in demonstrating a high degree of creative or technical achievement at a particular period;
(g) the place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
(h) the place has a special association with the life or work of a particular person, group or organisation of importance in Queensland's history.

The notion of thresholds of significance must also be considered. Not all places (or all aspects of a particular place) will be of similar importance or of importance to the same community. Just as there are places on the World Heritage Register (such as the adjoining Wet Tropics World Heritage Area) which are of importance to mankind as a whole, there are places of purely local cultural significance which are important to a relatively small community. The conventional thresholds of cultural significance which are adopted are local, state, national and world. It is axiomatic that the road and bridge are not of world heritage significance. In assessing cultural significance at all other thresholds, the same criteria as set out above can be applied, however, the thresholds for the place (or for different aspects of the place) may vary.

Each of these criteria are discussed below with respect to the road and bridge.

5.2 DISCUSSION OF SIGNIFICANCE

5.2.1 Criterion (a) The place is important in demonstrating the evolution or pattern of Queensland's history.

The Great Depression was one of the major historical events of the 20th century and affected the lives of most people in Queensland. Unemployment rates rose to their highest ever and governments at all levels and in all States were implementing ways of dealing with a chronic social problem. Two such initiatives were a substantial increase in public works expenditure (especially on major infrastructure projects) and the distribution of Unemployment Relief funds to provide limited amounts of paid employment (usually for unskilled manual projects). Some of these major infrastructure projects included the Story Bridge, Somerset Dam, the University of Queensland's St. Lucia campus, Mackay Harbour and the Hornibrook Highway.

The Mt Nebo Road was the first road to be built in Queensland by Unemployment Relief workers. Mt Spec Road was the next and was the largest Unemployment Relief fund project in North Queensland. Not only was it a project of substantial civil engineering scale, the high standard of construction and workmanship is remarkable for an almost-entirely unskilled workforce.

Mt Spec Road is also important in demonstrating the development of road infrastructure in Queensland. Queensland's early reliance on railways as the primary transportation mode and the early evolution of a disconnected linear road network meant that road developmental was primarily a function of local government. This led to adhoc development and poor network integration.

It was against this background that the Main Roads Commission was created in the 1920s to co-ordinate a Statewide road network at a time when motor vehicle transport was rising in importance. This period also coincided with a rise in private vehicle ownership and a public interest in seeking out recreational beauty spots such as beaches, national parks, waterfalls and the like. Following similar American trends at the time, a new class of Main Road was declared in the Tourist Road – specifically to facilitate private motor vehicle access to natural beauty spots as a means of promoting tourism within the State. Tourist roads were sometimes associated with railways as a combined transport system to encourage tourism. The Mt Spec Road was in the first group of Tourist Roads declared in Queensland.

5.2.2 Criterion (b) The place demonstrates rare, uncommon and endangered aspects of Queensland's cultural heritage.

The road and bridge are remarkably intact and clearly demonstrate their original design intent. The road has never been widened and still follows its original layout. Apart from bitumen sealing, concrete re-decking of the large culverts and minor road safety improvements, the road appears as it was constructed in the 1930s. This is particularly rare in Queensland. The main bridge is exceptionally intact. The extensive use of stone in the construction of the road and bridge is also rare in Queensland where timber girder bridges predominated before being superseded by concrete and steel. The stone-faced concrete arch main bridge is the only one of its kind in Queensland.

5.2.3 Criterion (c) The place has potential to yield information that will contribute to an understanding of Queensland's history.

The place is not a known scientific research site for the study of floral or faunal habitat although the place does traverse the Paluma Range National Park which is such a place. The extensive land clearing carried out to construct the road removed most of the native vegetation and most of the current vegetation is regrowth since construction.

Although there is good reason to believe that useful information could emerge from the original construction campsites about standards of living in Depression-era, the main campsites have either been removed or were located well beyond the current road reserve and heritage-registered boundary. These sites are now located in the Wet Tropics World Heritage Area and their cultural heritage significance is able to be managed through that listing process.

5.2.4 Criterion (d) The place is important in demonstrating the principal characteristics of a particular class of cultural places.

As set out in 5.2.2 above, stone-faced, concrete arch road bridges are unique in Queensland. It is therefore not logically possible for the Little Crystal Creek Bridge to represent a broad class of such cultural places. Likewise, there are no broad or general characteristics which distinguish Tourist Roads as a legitimate class of cultural places. Place categories and types defined by the Queensland Heritage Council do not descent below the broader class of "road" but, insofar as the Mt Spec Road is a road, it is not important in demonstrating the principal characteristics of a road. The features and characteristics which distinguish the Mt Spec Road are atypical of roads and are more-appropriately assessed under other criteria.

5.2.5 Criterion (e) The place is important because of its aesthetic significance.

The main bridge's gentle arch form and rustic stone features spans Little Crystal Creek with a sense of strength and elegance. It is a built form more reminiscent of the English countryside than of North Queensland. Combined with the natural beauty of the Little Crystal Creek gorge at the bridge crossing point, the resultant composition of the bridge and its setting is very beautiful. This aesthetic potential was realised at the conception of the project in the 1930s and was consciously developed in the unique design of the main bridge.

The aesthetic quality of the main bridge is enhanced by the way views of it unfold around bends both on foot and by car as well as by the way its picnic area setting has incorporated many complementary stone features such as drystone walls, paths and stairs.

Like most range roads, a combination of altitude and steep terrain means that panoramic views of the distant landscape are available from many places on the road. These include highly-attractive views of the Crystal Creek valley and the distant coastal plain and Halifax Bay.

Although not always prominent from the road, the associated stone features are also highly-attractive. These include the stone kerbing and channelling, drystone walling, small and large culverts and, especially, the large masonry arch culverts.

5.2.6 Criterion (f) The place is important in demonstrating a high degree of creative or technical achievement at a particular period.

Whilst the main bridge is highly-attractive, its design was not innovative for the period. In fact, the design employed ideas that date from Roman times and were outmoded in the inter-War period. Both the road and the bridge employed conventional construction techniques and the extensive use of manual labour was well below the standard level of technical achievement for the era.

5.2.7 Criterion (g) The place has a strong or special association with a particular community or cultural group, cultural or spiritual reasons.

Little Crystal Creek is a popular recreation place for tourists and residents of Townsville but it is one of many such popular recreation spots in the region.

The small community of Paluma rely on the road and bridge for access and, in that regard, the place is important to that group for functional reasons.

Part of the Paluma community also appreciates the historical and aesthetic significance of the place and holds the place in high regard such that it would satisfy this criterion at a local threshold of significance.

5.2.8 Criterion (h) The place has a special association with the life or work or a particular person, group or organisation of importance in Queensland's history.

Whilst REA McKiminin (as president of Townsville and District Development Association) was instrumental in lobbying for the construction of the Mt Spec Road and WH McClelland was instrumental in overseeing its construction such that they may have had a special association with the place, neither are of particular importance in the broad context of Queensland's history. Similarly, no other person, group or organisation of importance in Queensland's history is known to have a special association with the road through their life or work.

5.3 STATEMENT OF SIGNIFICANCE

The Queensland heritage register (QHR) entry (included in full in **Appendix 5**) sets out that the road and bridge is of cultural significance because:

Mt Spec Road, which stretches approximately 18km from its junction with the old Bruce Highway to the western outskirts of Paluma and includes the concrete arch bridge over Little Crystal Creek, is important in demonstrating the evolution and pattern of North Queensland's history. The road was constructed between 1930 and 1936 and before the northern highway from Townsville to Ingham, at a time when Main Roads were still a new concept. It was constructed at the height of the Great Depression, using mostly unskilled labour and with the application of Unemployment Relief Scheme funds. Construction of Mt Spec Road was the largest Unemployment Relief project in the region. It was a difficult and ambitious project that eventually took six years to complete and is significant as a long-term regional project employing hundreds of men.

The place is also important in demonstrating transport and communication patterns in North Queensland, and in particular the opening up of the Paluma Range to tourists, tin miners, timber cutters and farmers. The place is one of Queensland's earliest declared Tourist Roads, a new category Main Roads established under 1920-1930 amendments of the Main Roads Act 1920, and constructed under the auspices of the newly formed Main Roads Commission, whose responsibility was to guide the planning and construction of roads in Queensland. {Criterion (a)]

Mt Spec Road remains substantially intact throughout the 18km of its length and demonstrates an extensive and now uncommon use of concrete arch culverts, dry stone walling and stone-paved gutters. The Little Crystal Creek Bridge on Mt Spec Road is the only identified Main Roads concrete arch bridge dressed with stone remaining in service in Queensland. [Criterion (b)]

Mt Spec Road is important in demonstrating the principal characteristics of an early declared Tourist Road designed to open scenic locations to tourist traffic and constructed in hilly terrain by a large depression-era labour force using limited mechanical assistance. These characteristics include the extensive use of concrete arch culverts, dry stone walling and stone-paved gutters; the inclusion of a substantial concrete arch bridge over Little Crystal Creek rather than a less substantial timber structure; and the facing of the bridge and the arch culverts with stone. [Criterion (d)]

The concrete arch bridge over Little Crystal Creek is an aesthetically pleasing design in a picturesque location along the Mt Spec Road. The bridge spans the Little Crystal Creek gorge in the Paluma Range National Park, and has become representative of this scenic part of the landscape, being a very prominent feature commonly photographed by locals and visitors.

The aesthetics of the stone-faced concrete bridge are repeated in the several smaller concrete arch culverts that are located along the full length of the road. The road affords spectacular views of Halifax Bay and the coastal plain. [Criterion (e)]

For the reasons set out in section 5.2.4 above, criterion (d) is not applicable to this place and the QHR statement of significance should be amended accordingly. In consideration of the general discussion of significance set out in section 5.2, and for the purposes of this plan, the following statement of significance is adopted:

Mt Spec Road and Little Crystal Creek Bridge is a place of historical and aesthetic significance and satisfies criteria (a), (b) and (e) at a State threshold of significance because:

- ***Mt Spec Road, which stretches approximately 18km. from its junction with the old Bruce Highway to the western outskirts of Paluma and includes the concrete arch bridge over Little Crystal Creek, is important in demonstrating the evolution and pattern of North Queensland's history. The road was constructed between 1930 and 1936 and before the northern highway from Townsville to Ingham, at a time when Main Roads were still a new concept. It was constructed at the height of the Great Depression, using mostly unskilled labour and with the application of Unemployment Relief Scheme funds. Construction of Mt Spec Road was the largest Unemployment Relief project in the region. It was a difficult and ambitious project that eventually took six years to complete and is significant as a long-term regional project employing hundreds of men.***

  The place is also important in demonstrating transport and communication patterns in North Queensland, and, in particular, the opening up of the Paluma Range to tourists, tin miners, timber cutters and farmers. The place is one of Queensland's earliest declared Tourist Roads – a new category of Main Roads established under 1929-1930 amendments to the Main Roads Act 1920 – and constructed under the auspices of the newly formed Main Roads Commission whose responsibility was to guide the planning and construction of roads in Queensland. **[Criterion (a)]**

- ***Mt Spec Road remains substantially intact throughout the 18km. of its length and demonstrates an extensive and now uncommon use of masonry arch culverts, dry stone walling and stone-paved gutters.***

  The Little Crystal Creek Bridge on Mt Spec Road is the only identified Main Roads concrete arch bridge dressed with stone remaining in service in Queensland. **[Criterion (b)]**

- ***The concrete arch bridge over Little Crystal Creek is an aesthetically pleasing design in a picturesque location along the Mt Spec Road. The bridge spans the Little Crystal Creek gorge in the Paluma Range National Park and has become representative of this scenic part of the landscape, being a very prominent feature commonly photographed by locals and visitors. The aesthetics of the stone-faced concrete bridge are repeated in the several smaller masonry arch culverts that are located along the full length of the road. The road affords spectacular views of Halifax Bay and the coastal plain.*** **[Criterion (e)]**

Mt Spec Road and Little Crystal Creek Bridge is also a place of social significance and satisfies criterion (g) at a local threshold of significance because:

- of the high regard in which it is held by part of the Paluma community.

5.4 RELATIVE SIGNIFICANCE OF ELEMENTS

The statement of significance in section 5.3 sets out in broad terms the nature and level of the significance of the road and main bridge. Implicit in this statement is the notion that cultural significance is embodied in the physical fabric and setting of the place. Different features and elements of the place's fabric and setting, however, vary in their relative significance.

The levels of significance adopted in this plan are defined below. The terms *fabric, setting, maintenance, restoration, reconstruction, adaptation, cultural significance*, and *compatible* are as defined in the Burra Charter set out in **Appendix 6**.

1 – Exceptional significance
Features and elements that form a remarkable, rare or unusual part of the place. Features and elements considered essential to the understanding, appreciation or cultural value of the place. Features and elements that must be retained and rigorously-conserved (e.g. maintained, preserved, restored or reconstructed). Features and elements where intervention would not normally be permitted.

2 - High significance
Features and elements considered important to the understanding, appreciation or cultural value of the place but which could possibly be intervened with in a sensitive, controlled and limited manner. Features and elements that should be retained and appropriately-conserved (e.g. maintained, restored, reconstructed, adapted).

3 - Moderate significance
Features and elements considered useful, but not essential, to the understanding, appreciation or cultural value of the place but for which sensitive intervention would be acceptable. Features and elements that are desirable to be retained and appropriately-conserved.

4 - Little or no significance
Features and elements where intervention and/or new work is appropriate provided that no nearby areas of higher cultural significance are compromised.

5 - Intrusive
Features and elements that should be removed and original form reconstructed or new compatible adaptation made.

The grading of relative significance set out in Table 2 below provides a greater depth of understanding and will assist in the proper conservation management of the place. Appropriate conservation action in accordance with each feature's or element's scale of relative significance is set out in the conservation policies in section 9.

FEATURE / ELEMENT			RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
GENERALLY									Unless superseded by specific assessment or conservation policy
Original road layout				2				Policy 11	
Original rock cuttings				2				Policies 11,27, 29,32	
Bitumen seal						4		-	
Road markings						4		-	
Road signs						4		-	
Modern guideposts						4		-	
Armco railings						4		-	
Panoramic views across Crystal Creek valley					3			Policy 14	
Panoramic views to coast					3			Policy 14	
Paluma streetscape						4		-	
Regrowth vegetation						4		Policy 52	
Old growth vegetation					3			Policy 51	
Timber guard-posts/rails	- original location			2				Policies 26, 46, 49	
	- relocated				3				
Timber road signs at eastern entrance to Paluma						4		-	
Remnant campsites					3			Policy 16	
Little Crystal Creek Bridge			1					Policies 13, 40, 44, 53-55	
Large culverts	- masonry arch		1					Policies 41, 45, 46	
	- masonry wall/concrete deck			2					
Small culverts	- intact & in good condition			2				Policies 35,50	
	- altered unsympathetically / not readily-reversible					4			
	- altered unsympathetically / readily-reversible / poor condition					4			
	- all other conditions				3				
Drystone walling	- > 2m length / good condition			2				Policy 47	
Stone kerbing	- continuous	- < 2m length				4		Policy 47	
		- 2m – 20m length			3				
		- > 20m length		2					
	- intermittent	- < 20m length				4			
		- > 20m length			3				
Stone channelling	- continuous	- < 2m length				4		Policies 23,47	
		- 2m – 20m length			3				
		- > 20m length		2					
	- intermittent	- < 20m length				4			
		- > 20m length			3				
Stone retaining walls		- < 2m length				4		Policy 47	
		- 2m – 20m length			3				
		- > 20m length		2					
Stone retaining walls					3			Policy 47	

1. Exceptional significance 2. High significance 3. Moderate significance 4. Little or no significance 5. Intrusive

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
1	Bottom Gate	3.785 approx	-	-				4			
2	Culvert 216 - U headwall - E headwall - stone kerbing - stone channelling	3.837 3.846 – 3.870 3.846 – 3.883	S. 18° 59.123 E. 146° 17.731	B001 – B003		2 2 2	3				
3	Culvert 215	3.880	S. 18° 59.179 E. 146° 17.697	B004				4			
4	Culvert 214	3.991	S. 18° 59.255 E. 146° 17.673	B005		2					Hand-packed voussoirs to headwall
5	Culvert 213	4.069	S. 18° 59.289 E. 146° 17.675	B006				4			
6	Culvert 212	4.111	S. 18° 59.311 E. 146° 17.676	B007				4			
7	Culvert 211 - U headwall - E headwall - stone channelling	4.192 4.202 – 4.217	S. 18° 59.353 E. 146° 17.689	B008 – B009		2	3	4			
8	Culvert 210 - generally - masonry arch (incl. headwalls) - flagstone invert	4.351	S. 18° 59.427 E. 146° 17.743	B010 – B011	1 1	2					Large culvert / parabolic masonry arch / good condition / highly-intact / similar to Culvert 206A
9	Culvert 209	4.468	S. 18° 59.469 E. 146° 17.706	B012 – B013		2					
10	Culvert 208	4.503	S. 18° 481 E. 146° 17.686	B014				4			
11	Culvert 207 - generally - stone kerbing - stone channelling	4.548 4.558 – 4.702 4.558 – 4.702	S. 18° 59.483 E. 146° 17.661	B015 – B017		2 2		4			
12	Culvert 206	4.700	S. 18° 59.496 E. 146° 17.564	B018			3				
13	Culvert 206A - generally - masonry arch (inc. headwalls) - flagstone invert - quarry site	4.737 4.767 approx.	S. 18° 59.524 E. 146° 17.548	B019 – B022 G000 – G022	1 1	2 2					**QUARRY SITE** Large culvert / parabolic masonry arch / good condition / highly-intact / similar to Culvert 210 / small quarry site above road uphill of culvert has hewn stones on ground and extends beyond road reserve
14	Culvert 205	4.902	S. 18° 59.532 E. 146° 17.493	B023				4			
15	Culvert 204	4.958	S. 18° 59.538 E. 146° 17.454	B024 – B025		2					
16	Culvert 203	5.033	S. 18° 59.529 E. 146° 17.419	B026				4			
17	Culvert 202	5.123	S. 18° 59.557 E. 146° 17.379	B027 – B028		2					
18	Culvert 201 - generally - intermittent stone channelling	5.201 5.208 – 5.239	S. 18° 59.575 E. 146° 17.332	B029 – B030			3	4			
19	Culvert 200	5.261	S. 18° 59.590 E. 146° 17.304	B031				4			
20	Culvert 199	5.377	S. 18° 59.635 E. 146° 17.316	B032				4			
21	Culvert 198 - generally - intermittent stone kerbing - intermittent stone channelling	5.443 5.447 – 5.507 5.447 – 5.507	S. 18° 59.651 E. 146° 17.350	B033 – B034			3 3	4			
22	Culvert 197	5.513	S. 18° 59.654 E. 146° 17.396	B035				4			
23	Culvert 196 - generally - rubble bank - stone training wall	5.621	S. 18° 59.676 E. 146° 17.448	B036 – B038			3 3 3				**WOLFRAM CREEK**

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
24	Culvert 195	5.672	S. 18° 59.697 E. 146° 17.429	B039			3				
25	Culvert 194	5.724	S. 18° 59.708 E. 146° 17.407	B040				4			
26	Culvert 193	5.815	S. 18° 59.745 E. 146° 17.381	B041				4			
27	Culvert 192	5.872	S. 18° 59.770 E. 146° 17.360	B042				4			
28	Culvert 191	5.928	S. 18° 59.790 E. 146° 17.341	B043				4			
29	Culvert 190	6.006	S. 18° 59.823 E. 146° 17.315	B044			3				
30	Culvert 189	6.092	S. 18° 59.869 E. 146° 17.291	B045				4			
31	Culvert 188 - generally - drill marks on rock face	6.161 6.159	S. 18° 59.899 E. 146° 17.279	B046 – B047			3	4			
32	Culvert 188A - generally - masonry arch (incl. headwalls) - flagstone invert - stone kerbing - stone channelling	6.240 6.247 – 6.266 6.258 – 6.266	S. 18° 59.952 E. 146° 17.300	B048 – B049	1 1	2	3 3				**FAIRY FALLS** Large culvert / corrugated iron-lined masonry arch / good condition / highly-intact
33	Culvert 187A - generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert - diversion bank	6.280	S. 18° 59.962 E. 146° 17.287	B050 – B052 / D002	1	2 2 2		4			**FAIRY FALLS** Large culvert / masonry walls / concrete deck / good condition / altered sympathetically / rare example of stone diversion bank above
34	Culvert 187	6.392	S. 18° 59.970 E. 146° 17.232	B053				4			
35	Culvert 186	6.442	S. 18° 59.960 E. 146° 17.201	B054				4			
36	Culvert 185	6.507	S. 18° 59.948 E. 146° 17.169	B055		2					
37	Culvert 184	6.542	S. 18° 59.949 E. 146° 17.150	B056 – B057				4			
38	Culvert 183	6.589	S. 18° 59.954 E. 146° 17.122	B058				4			
39	Culvert 182	6.679	S. 18° 59.963 E. 146° 17.076	B059				4			
40	Culvert 181	6.794	S. 18° 59.995 E. 146° 17.018	B060				4			
41	Culvert 180	6.873	S. 19° 00.019 E. 146° 16.978	B061				4			
42	Culvert 179	7.046	S. 19° 00.016 E. 146° 16.986	B062				4			
43	Culvert 178	7.109	S. 19° 00.105 E. 146° 16.909	B063			3				
44	Culvert 177 - generally - stone kerbing	7.158 7.168 – 7.180	S. 19° 00.123 E. 146° 16.913	B064 – B065			3	4			
45	Culvert 176	7.209	S. 19° 00.141 E. 146° 16.925	B066				4			
46	Culvert 176A - generally - masonry arch (incl. headwalls) - flagstone invert - intermittent stone channelling - stone channelling - stone kerbing	7.350 7.392 – 7.397 7.403 – 7.415 7.403 – 7.415	S. 19° 00.187 E. 146° 16.933	B067 – B072	1 1		3 3	4 4			**MAINDENHAIR FERN CREEK** Large culvert / masonry arch / good condition / highly-intact / similar to Culvert 112A

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
47	Culvert 175 - generally - stone kerbing - intermittent stone channelling	7.428 7.428 – 7.446 7.428 – 7.486	S. 19° 00.168 E. 146° 16.853	B073			3 3	4			
48	Stone kerbing and channelling	7.480 approx. – 7.490 approx.	S. 19° 00.167 E. 146° 16.833	B074			3				
49	Culvert 174	7.541	S. 19° 00.200 E. 146° 16.835	B075				4			
50	Culvert 173	7.622	S. 19° 00.240 E. 146° 16.856	B076		2					
51	Culvert 172	7.682	S. 19° 00.261 E. 146° 16.828	B077				4			
52	Culvert 171	7.733	S. 19° 00.276 E. 146° 16.805	B078				4			
53	Culvert 170 - generally - intermittent stone channelling	7.762 7.770 – 7.780	S. 19° 00.287 E. 146° 16.774	B079 – B080				4 4			
54	Culvert 169 - generally - stone channelling	7.853 7.853 – 7.856	S. 19° 00.321 E. 146° 16.762	B081			3 3				
55	Culvert 168	7.914	S. 19° 00.339 E. 146°16.738	B082			3				
56	Culvert 167	7.950	S. 19° 00.342 E. 146° 16.717	B083				4			
57	Culvert 166	7.966	S. 19° 00.367 E. 146° 16.670	B084				4			
58	Culvert 165 - generally - stone kerbing - intermittent stone channelling	8.025 approx. 8.025 – 8.055 approx. 8.025 – 8.065 approx.	S. 19° 00.392 E. 146° 16.669	B085 – B086		2	3	4			
59	Culvert 164	8.138 approx.	S. 19° 00.447 E. 146° 16.716	B087			3				
60	Culvert 164A - generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert	8.114	S. 19° 00.490 E. 146° 16.711	B088 – B093	1	2	3	4			**REEDY CREEK**
61	Culvert 163A - generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert	8.265 approx.	S. 19° 00.497 E. 146° 16.683	B094 – B100	1	2	3	4			**NOAH'S ARK CREEK**
62	Culvert 163 - generally - benchmark tree - stone kerbing - stone channelling - mango tree stand	8.310 approx. 8.306 approx. 8.312 – 8.390 approx. 8.312 – 8.390 approx. 8.351 / 8.358 / 8.369 / 8.379 approx.	S. 19° 00.491 E. 146° 16.661	B101 – B102 / E001 – E004	1	2 2 2		4		Policy 16, 48	**LINTON'S CAMP** Rare benchmark tree blazed with "MR 5½" above road / mango trees indicate the previous location of Linton's Camp which was above the road opposite the mango treeline / no evidence of camp within road reserve
63	Culvert 162	8.431	S. 19° 00.496 E. 146° 16.616	B103			3				
64	Culvert 161	8.554	S. 19° 00.521 E. 146° 16.566	B104				4			
65	Culvert 160	8.575 approx.	S. 19° 00.521 E. 146° 16.554	B105		2					
66	Culvert 159 - generally - stone kerbing - stone channelling	8.630 approx. 8.640 – 8.680 approx 8.640 – 8.680 approx.	S. 19° 00.529 E. 146° 16.529	B106 – B108		2 2 2					
67	Culvert 158A - generally - stone kerbing - intermittent stone channelling	8.735 approx. 8.743 – 8.746 approx. 8.750 – 8.760 approx. 8.762 – 8.779 approx. 8.743 – 8.779 approx.	S. 19° 00.565 E. 146° 16.487	B109 – B110			3 3 3 3 3				

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
68	Culvert 158	8.830 approx.	S. 19° 00.607 E. 146° 16.478	B111			3				
69	Culvert 157 - generally - stone wall above inlet - U headwall - stone kerbing - stone channelling	8.852 approx. 8.859 – 8.867 approx. 8.859 – 8.867 approx.	S. 19° 00.613 E. 146° 16.464	B112 – B114			3 3 3	4	5		
70	Culvert 156	8.937	S. 19° 00.634 E. 146° 16.439	B115		2					Tiered hewn rock inlet runs 5m. uphill of U headwall
71	Culvert 155	8.992 approx.	S. 19° 00.654 E. 146° 16.426	B116		2					
72	Culvert 154	9.067 approx.	S. 19° 00.675 E. 146° 16.389	B117		2					
73	Culvert 153 - generally - intermittent stone kerbing - stone kerbing	9.112 approx. 9.115 – 9.169 approx. 9.171 – 9.178 approx. 9.184 – 9.212 approx.	S. 19° 00.675 E. 146° 16.370	B118 – B119		2 2	 3 3				
74	Culvert 152	9.227 approx.	S. 19° 00.695 E. 146° 16.314	B120				4			
75	Culvert 151 - generally - stone wall at inlet - stone kerbing - stone channelling	9.292 approx. 9.297 – 9.336 approx. 9.297 – 9.336 approx.	S. 19° 00.723 E. 146° 16.304	B121 – B122		 2 2	 3	4			
76	Culvert 150	9.357 approx.	S. 19° 00.758 E. 146° 16.303	B123		2					
77	Culvert 150A - generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert	9.400	S. 19° 00.788 E. 146° 16.285	B124 – B126	1	2 2		 4			Large culvert / masonry walls / concrete deck / good condition / altered sympathetically
78	Culvert 149 - generally - campsite	9.494	S. 19° 00.771 E. 146° 16.254	B127 / F001 – F003		 2	3			Policy 16	Remnant campsite above road has small level area formed by stone stairs and low retaining walls Refer **Appendix 3 Diagram A**
79	Culvert 148	9.581	S. 19° 00.767 E. 146° 16.221	B128				4			
80	Culvert 147	9.631	S. 19° 00.787 E. 146° 16.219	B129				4			
81	Culvert 146	9.729	S. 19° 00.837 E. 146° 16.206	B130				4			
82	Culvert 145 - generally - stone training wall - stone kerbing - intermittent stone channelling	9.806 9.826 – 9.839 9.844 – 9.849 9.826 – 9.839 9.844 – 9.849	S. 19° 00.871 E. 146° 16.187	B131 – B133		2 2	 3 3	 4 4			
83	Culvert 144	9.876	S. 19° 00.890 E. 146° 16.150	B134 – B135			3				
84	Culvert 143	9.928	S. 19° 00.892 E. 146° 16.125	B136		2					
85	Culvert 142 - generally - stone kerbing - stone channelling	9.962 9.965 – 9.985 9.965 – 9.992	S. 19° 00.888 E. 146° 16.101	B137 – B138		2 2 2					
86	Culvert 141	10.093	S. 19° 00.929 E. 146° 16.006	B139				4			

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)		CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
87	Culvert 141A	- generally	10.150	S. 19° 00.896 E. 146° 16.034	B140 – B145		2				Policy 30	**LITTLE CRYSTAL CREEK CARPARK** Large culvert / masonry walls / concrete deck / good condition / altered sympathetically / flagstone invert extends 3m. beyond E headwall / drystone wall and natural rock face forms part of E headwall
		- masonry walls (incl. headwalls)				1						
		- 1966 concrete decking							4			
		- drystone retaining wall at E					2					
		- flagstone invert					2					
88	Main bridge	- generally	10.285	S. 19° 00.943 E. 146° 16.003	C263 – C303	1					Policies 13, 15, 24, 25, 29, 31, 32, 33, 36, 40, 44, 53, 54, 55	**LITTLE CRYSTAL CREEK BRIDGE** Main bridge / stone-faced concrete arch / good condition / highly-intact / highly-attractive and unique structure in highly-attractive setting / associated stone features (including walls and stairs) contribute to significance / mango trees were commemorative plantings by Main Roads staff at time of construction / no evidence of former construction campsite in carpark / concealed approaches from both directions heighten sense of arrival. Refer **Appendix 3 Diagram B**
		- concrete arch				1						
		- stone facings				1						
		- stone parapet				1						
		- cast iron scuppers				1						
		- original concrete kerb				1						
		- bitumen seal							4			
		- raised pavement markers on parapet							4			
		- plant growth on uphill/upstream parapet								5		
		- flagstone invert						3				
		- natural creek bed					2					
		- concrete stairs and railing on uphill/upstream bank						3				
		- stone plinth on uphill / upstream bank							4			
		- stone stairs on downhill / upstream bank						3				
		- steel handrail on downhill / downstream parapet end								5		
		- 1987 plaque and cairn							4			
		- concrete stairs and railing downhill / downstream bank						3				
		- drystone walls to downhill / downstream bank					2					
		- stone retaining walls to lower picnic area					2					
		- stone stairs and paths to lower picnic area						3				
		- tables to lower picnic area							4			
		- mango trees				1						
		- modern toilets							4			
		- modern picnic shelter							4			
		- tables to upper picnic area							4			
		- carpark - generally							4			
		- modern interpretive sign							4			
		- remnant stone retaining walls						3				
89	Culvert 140		10.365	S. 19° 00.921 E. 146° 15.941	B146 – B147				4			
90	Culvert 139	- generally	10.405	S. 19° 00.888 E. 146° 15.918	B148 – B149		2					
		- stone kerbing	10.415 – 10.420					3				
91	Culvert 138		10.464	S. 19° 00.892 E. 146° 15.934	B150				4			
92	Culvert 137A	- generally	10.500	S. 19° 00.850 E. 146° 15.956	B151 – B152		2					
		- E headwall							4			
93	Culvert 137		10.531	S. 19° 00.831 E. 146° 16.014	B153				4			
94	Culvert 136		10.705	S. 19° 00.815 E. 146° 16.048	B154		2					
95	Culvert 135		10.731	S. 19° 00.806 E. 146° 16.069	B155				4			

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE	CONSERVATION POLICY REF.	COMMENTS
96	Culvert 134 - generally - stone kerbing - stone channelling	10.818 10.818 – 10.829 10.818 – 10.832	S. 19° 00.780 E. 146° 16.076	B156	2 3 3		
97	Culvert 133	10.925	S. 19° 00.737 E. 146° 16.029	B157	2		
98	Culvert 132	10.987	S. 19° 00.717 E. 146° 16.000	B158 – B159	2		
99	Culvert 131 - generally - stone kerbing - stone channelling	11.038 11.041 – 11.048 11.061 – 11.086 11.038 - 11.086	S. 19° 00.684 E. 146° 16.007	B160 – B161	2 3 2 2		
100	Culvert 130	11.124	S. 19° 00.648 E. 146° 16.009	B162	2		
101	Culvert 129	11.236	S. 19° 00.615 E. 146° 15.963	B163 – B164	2		
102	Culvert 128	11.286	S. 19° 00.585 E. 146° 15.959	B165	2		
103	Culvert 127	11.347	S. 19° 00.564 E. 146° 15.981	B166	3		
104	Culvert 126 - generally - stone kerbing - stone channelling	11.388 11.399 – 11.459 11.394 – 11.459	S. 19° 00.550 E. 146° 16.004	B167 – B168	2 2 4		
105	Culvert 125	11.472	S. 19° 00.526 E. 146° 16.036	B169	3		
106	Culvert 124	11.551	S. 19° 00.490 E. 146° 16.061	B170	4		
107	Culvert 123 - generally - intermittent stone kerbing - stone kerbing - intermittent stone channelling - stone channelling	11.577 11.612 – 11.620 11.628 – 11.651 11.624 – 11.628 11.628 – 11.651	S. 19° 00.485 E. 146° 16.075	B171 – B172	2 2 4 4 4		
108	Culvert 122 - generally - stone channelling - stone kerbing	11.656 11.661 – 11.674 11.679 – 11.696 11.679 – 11.696	S. 19° 00.486 E. 146° 16.111	B173 – B174	3 3 3 4		
109	Culvert 121 - generally - stone channelling - stone kerbing	11.708 11.716 – 11.762 11.748 – 11.762	S. 19° 00.469 E. 146° 16.134	B175 – B176	2 3 4		
110	Culvert 120	11.793	S. 19° 00.436 E. 146° 16.159	B177	4		
111	Barrett's Bluff	11.793 – 11.878	S. 19° 00.428 E. 146° 16.153	B178 – B179	2	Policies 27, 28	**BARRETT'S BLUFF** large rock cutting / source of stone for main bridge / highly-prominent and attractive hewn rock feature
112	Culvert 119 - generally - intermittent stone channelling - stone channelling - stone kerbing	11.878 11.887 – 11.949 11.949 – 11.964 11.958 – 11.961	S. 19° 00.409 E. 146° 16.116	B180	3 3 3 4		
113	Culvert 118	12.018	S. 19° 00.428 E. 146° 16.048	B181	4		
114	Culvert 117 - generally - stone kerbing	12.114 12.116 – 12.130	S. 19° 00.417 E. 146° 15.995	B182 – B183	3 4		
115	Culvert 116 - generally - stone kerbing - stone channelling	12.184 12.187 – 12.218 12.187 – 12.218	S. 19° 00.397 E. 146° 15.964	B184 – B186	2 2 2		
116	Culvert 115 - generally - stone channelling - stone kerbing - stone retaining wall	12.234 12.234 – 12.254 12.239 – 11.254 12.289 – 12.309 12.314 – 12.334	S. 19° 00.396 E. 146° 15.933	B187 – B189	2 3 2 2 4		

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
117	Culvert 114	12.322	S. 19° 00.394 E. 146° 15.885	B190			3				
118	Culvert 113	12.352	S. 19° 00.392 E. 146° 15.861	B191			3				
119	Culvert 112A - generally - masonry arch (incl. headwalls) - natural rock invert	12.405	S. 19° 00.380 E. 146° 15.842	B192 – B196	1 1	 2					Large culvert / masonry arch / good condition / highly-intact / similar to Culvert 176A
120	Culvert 112 - generally - stone retaining wall - stone kerbing - stone channelling	12.462 12.462 – 12.505 12.470 – 12.548 12.470 – 12.548	S. 19° 00.352 E. 146° 15.866	B197 – B198		 2 2 2		4			
121	Culvert 111 - generally - stone retaining wall	12.551 12.551 – 12.581	S. 19° 00.298 E. 146° 15.879	B199		2 2					
122	Culvert 110 - generally - stone kerbing - stone channelling	12.642 12.657 – 12.664 12.679 – 12.684 12.709 – 12.717 12.664 – 12.699 12.709 – 12.717	S. 19° 00.257 E. 146° 15.868	B200		 2	3 3 3 3 3				
123	Culvert 109 - generally - stone kerbing - stone channelling	12.781 12.781 – 12.866 12.781 – 12.811 12.826 – 12.866	S. 19° 00.229 E. 146° 15.819	B201 – B204		2 2 2 2					
124	Culvert 108 - generally - stone kerbing - stone channelling	12.902 12.907 – 12.937 12.907 – 12.990	S. 19° 00.204 E. 146° 15.755	B205 – B206		2 2 2					
125	Culvert 107 - generally - stone retailing wall	13.011 12.986 – 13.021	S. 19° 00.162 E. 146° 15.722	B207 – B208		 2		4			
126	Culvert 106	13.111	S. 19° 00.163 E. 146° 15.670	B209 – B210		2					
127	Culvert 105	13.193	S. 19° 00.114 E. 146° 15.667	B211				4			
128	Culvert 104	13.243	S. 19° 00.093 E. 146° 15.648	B212			3				
129	The Saddle - generally - road cutting to campsite	13.410	S. 19° 00.018 E. 146° 15.604	B213 / C260 – C262			 3	4		Policy 16	**THE SADDLE** Original ground level filled at corner / possible access road to original campsite below on corner before Culvert 103 / no evidence of campsite apparent within road reserve / campsite was located well beyond road reserve.
130	Culvert 103 - generally - intermittent stone kerbing - intermittent stone channelling	13.428 13.406 – 13.421 13.406 – 13.421	S. 19° 00.026 E. 146° 15.581	C022 – C023				4 4 4			
131	Culvert 102	13.529	S. 19° 00.057 E. 146° 15.533	C024		2					
132	Culvert 101 - generally - steel water tanks - remnant campsite	13.595 13.607 13.428 – 13.619	S. 19° 00.055 E. 146° 15.492	C025 / C030 – C033		 2	 3	4			**WATER TANKS** 3 no. 1200 x 1200 welded steel tanks sunk into the roadside / originally part of The Saddle campsite which was located downhill from this area / tanks are not in original location
133	Culvert 100	13.619	S. 19° 00.049 E. 146° 15.474	C026				4			
134	Culvert 99 - generally - masonry walls (incl. headwalls) - - 1966 concrete decking - hewn rock inlet channel - intermittent stone channelling	13.690 13.690 – 13.695	S. 19° 00.063 E. 146° 15.445	C207 – C029 / C034	 1	 2	 3	 4 4			Large culvert / masonry walls / concrete deck / good condition / altered sympathetically
135	Culvert 98 - generally - U headwall - E headwall	13.768	S. 19° 00.063 E. 146° 15.399	C035		2 2		 4			Barrett's Guesthouse originally located above road in this location
136	Culvert 97A - generally - stone kerbing	13.800 13.822 – 13.830	S. 19° 00.049 E. 146° 15.428	C036			3	4			

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)		CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
137	Culvert 97	- generally - stone kerbing - stone channelling	13.861 13.868 -13.928 13.943 – 13.966 13.901 – 13.966	S. ??? E. ???	C037 – C038		2 2 2		4			
138	Culvert 96	- generally - intermittent stone channelling	13.983 13.986 – 14.026 approx.	S. 19° 00.003 E. 146° 15.302	C039 – C041			3	4			
139	Culvert 95	- generally - stone channelling - stone kerbing - drystone walling	14.081 14.081 – 14.096 14.086 – 14.096 14.111 – 14.123 14.128 – 14.133	S. 19° 00.013 E. 146° 15.258	C042 – C045		2 2	3 3 3				THE CHUTE Running water discharges through the drystone wall via an asbestos cement pipe
140	Culvert 94	- generally - stone retaining wall	14.136	S. 19° 00.033 E. 146° 15.230	C046 – C048		2 2					
141	Culvert 93	- generally - drystone wall - stone kerbing - stone channelling	14.231 14.204 – 14.206 14.235 – 14.250 14.233 – 14.247	S. 19° 00.034 E. 146° 15.230	C049 – C050			3 3 3	4			
142	Culvert 92		14.335	S. 18° 59.965 E. 146° 15.158	C051				4			
143	Culvert 91		14.446	S. 18° 59.969 E. 146° 15.156	C052				4			
144	Culvert 90		14.651	S. 19° 00.030 E. 146° 15.086	C053			3				
145	Culvert 89		14.568	S. 19° 00.062 E. 146° 15.072	C054		2					
146	Culvert 88		14.613	S. 19° 00.090 E. 146° 15.064	C055		2					
147	Culvert 87	- generally - masonry walls (incl. headwalls) - 1966 concrete decking - stone training wall	14.664	S. 19° 00.073 E. 146° 15.025	C056 – C059	1	2	3	4			Large culvert / masonry walls / concrete deck / good condition / altered sympathetically / remnant stone training wall above inlet
148	Culvert 86	- generally - intermittent stone kerbing - intermittent stone channelling	14.720 14.704 – 14.731 14.752 – 14.807 14.704 – 14.731 14.752 – 14.807	S. 19° 00.068 E. 146° 15.021	C063			3 3 3 3	4			
149	Culvert 85	- generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert - stone training wall	14.858	S. 19° 00.068 E. 146° 15.021	C060 – C062 / C064	1	2	3 3	4			Large culvert / masonry walls/ concrete deck / good condition / altered sympathetically / remnant flagstone invert / remnant stone training wall above inlet
150	Culvert 84		14.931	S. 19° 00.068 E. 146° 14.910	C065		2					
151	Culvert 83	- generally - stone kerbing - intermittent stone kerbing - intermittent stone channelling	14.947 14.972 – 14.982 14.982 – 14.998 14.972 – 14.998	S. 19° 00.111 E. 146° 14.909	C066			3 3	4 4			
152	Culvert 82	- generally - stone kerbing - stone channelling	15.009 15.013 – 15.023 15.091 – 15.113 15.013 – 15.031 15.071 – 15.113	S. 19° 00.111 E. 146° 14.909	C067 – C068		2 2	3 3	4			
153	Culvert 81	- generally - stone kerbing - stone channelling	15.167 15.197 – 15.232 15.197 – 15.232	S. 19° 00.061 E. 146° 14.824	C069		2 2		4			
154	Culvert 80	- generally - stone kerbing	15.272 15.272 – 15.277	S. 19° 00.090 E. 146° 14.775	C070		2	3				

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
155	Culvert 79 - generally - stone kerbing - stone channelling - stone retaining wall	15.322 15.327 – 15.337 15.345 – 15.362 15.327 – 15.326 15.321 – 15.326	S. 19° 00.103 E. 146° 14.750	C071 – C073			3 3 3 3	4			
156	Culvert 78	15.442	S. 19° 00.149 E. 146° 14.740	C074				4			
157	Culvert 77 - generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert - stone retaining walls	15.521 15.496 – 15.511 15.521 – 15.536	S. 19° 00.184 E. 146° 14.715	C075 – C082	1	2 2	 3 3	4			**MOUNTAIN CREEK** Large culvert / masonry walls / concrete deck / good condition / altered sympathetically
158	Culvert 76	15.652	S. 19° 00.186 E. 146° 14.716	C083		2					
159	Culvert 75	15.759	S. 19° 00.188 E. 146° 14.597	C084		2					
160	Culvert 74	15.888	S. 19° 00.159 E. 146° 14.522	C085				4			
161	Culvert 73	15.962	S. 19° 00.160 E. 146° 14.500	C086			3				
162	Culvert 72 - generally - stone kerbing - stone channelling	15.982 16.006 – 16.051 16.006 – 16.051	S. 19° 00.159 E. 146° 14.475	C087 – C088		2 2 2					
163	Culvert 71	16.118	S. 19° 00.120 E. 146° 14.423	C089				4			
164	Culvert 70 - generally - stone kerbing - stone channelling	16.158 16.158 – 16.191 16.158 – 16.191	S. 19° 00.120 E. 146° 14.402	C090 – C091		2 2	3				
165	Culvert 69 - generally - stone kerbing - stone channelling	16.249 16.249 – 16.272 16.249 – 16.272	S. 19° 00.100 E. 146° 14.358	C092 – C093		2 2	3				
166	Culvert 68	16.374	S. 19° 00.097 E. 146° 14.299	C094			3				
167	Culvert 67	16.412	S. 19° 00.116 E. 146° 14.285	C095			3				
168	Culvert 66 - generally - stone kerbing - stone channelling	16.484 16.486 – 16.490 16.486 – 16.495	S. 19° 00.128 E. 146° 14.248	C096 – C097			3 3 3				
169	Culvert 65	16.539	S. 19° 00.144 E. 146° 14.221	C098				4			
170	Culvert 64	16.601	S. 19° 00.176 E. 146° 14.212	C099			3				
171	Culvert 63	16.661	S. 19° 00.208 E. 146° 14.222	C100			3				
172	Culvert 62 - generally - stone retaining wall	16.755 16.735 – 16.755	S. 19° 00.239 E. 146° 14.249	C101 – C102		2		4			
173	Culvert 61 - generally - U headwall - E headwall	16.781	S. 19° 00.259 E. 146° 14.265	C103		2	3 3				
174	Culvert 60	16.863	S. 19° 00.288 E. 146° 14.273	C104			3				
175	Culvert 59	16.912	S. 19° 00.312 E. 146° 14.283	C105		2					
176	Culvert 58 - generally - rubble bank	16.986 16.971 – 16.988	S. 19° 00.313 E. 146° 14.276	C106 – C107		2	3				

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)		CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE					CONSERVATION POLICY REF.	COMMENTS
177	Culvert 57		17.076	S. 19° 00.313 E. 146° 14.276	C108				4			Site of 1998 landslide that destroyed original culvert
178	Culvert 56	- generally - U headwall - E headwall - drystone walling	17.188 17.198 – 17.228	S. 19° 00.420 E. 146° 14.369	C109 – C111		2 2	3	 4			
179	Culvert 55	- generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert	17.251	S. 19° 00.447 E. 146° 14.378	C112 – C114	1	2 2		 4			Large culvert / masonry walls / concrete deck / good condition / altered sympathetically
180	Culvert 54	- generally - masonry walls - reconstructed headwalls at U - 1966 concrete decking - flagstone invert - sprayed concrete shoulders - stone retaining walls at E - stone kerbing - stone channelling	17.339 17.384 – 17.395 17.384 – 17.395	S. 19° 00.460 E. 146° 14.356	C115 – C117	1	2 2 	 3 3 3 3	 4 	 5 		Large culvert / masonry walls / concrete deck / good condition / altered unsympathetically
181	Culvert 53	- generally - stone kerbing	17.429 17.425 – 17.428	S. 19° 00.463 E. 146° 14.266	C118		2	 3				
182	Culvert 52	- generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert - stone kerbing - stone channelling - intermittent stone channelling	17.583 17.586 – 17.606 17.636 – 17.639 17.666 – 17.686 17.586 – 17.606 17.666 – 17.686	S. 19° 00.499 E. 146° 14.???	C119 – C121	1	2 2 2 2	 3 3 	 4 4			Large culvert / masonry walls / concrete deck / good condition / altered sympathetically
183	Culvert 51	- generally - U headwall - E headwall	17.611	S. 19° 00.434 E. 146° 14.207	C122 – C123		2 2		4			
184	Culvert 50	- generally - stone kerbing - stone channelling	17.663 17.693 – 17.723 17.693 – 17.723	S. 19° 00.433 E. 146° 14.183	C124		 2 2		4			
185	Culvert 49	- generally - stone kerbing	17.729 17.729 – 17.738	S. 19° 00.456 E. 146° 14.159	C125		2	 3				
186	Culvert 48	- generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert	17.795	S. 19° 00.474 E. 146° 14.122	C126 – C128	1	2 2		 4			Large culvert / masonry walls / concrete deck / good condition / altered sympathetically
187	Culvert 47	- generally - intermittent stone channelling - stone kerbing	17.854 17.854 – 17.869 17.876 – 17.886	S. 19° 00.472 E. 146° 14.125	C129 – C131			 3 3	4			
188	Culvert 46	- generally - U headwall - E headwall - stone channelling	17.931 17.945 – 17.947	S. 19° 00.473 E. 146° 14.056	C132 – C134		2 2	 3	 4			
189	Culvert 45	- generally - masonry walls (incl. headwalls) - 1966 concrete decking - flagstone invert - sprayed concrete at U	18.008	S. 19° 00.492 E. 146° 14.053	C135 – C136	1	2 2		 4	 5		Large culvert / masonry walls/ concrete deck / good condition / altered sympathetically
190	Culvert 44	- generally - intermittent stone channelling - drystone walling - intermittent drystone walling	18.041 18.041 – 18.049 18.044 – 18.049 18.059 – 18.073 18.049 – 18.059	S. 19° 00.492 E. 146° 14.053	C137 – C139		2 2 2	 3	4			

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE	CONSERVATION POLICY REF.	COMMENTS
191	Culvert 43	18.113	S. 19° 00.492 E. 146° 14.053	C140 – C141	2		
192	Culvert 42	18.153	S. 19° 00.492 E. 146° 14.053	C142	2		
193	Culvert 41	18.221	S. 19° 00.492 E. 146° 14.053	C143	2		
194	Culvert 40 - generally - masonry walls - 1966 concrete decking - hewn rock invert - stone training wall - timber guardpost - stone retaining walls	18.284 18.311 – 18.282 18.286 – 18.306	S. 19° 00.492 E. 146° 14.053	C144 – C154	1 2 2 2 2		**TWIN FALLS** Large culvert / masonry walls / concrete deck / twin inlets merge under road to single outlet / good condition / altered sympathetically / water falls at outlet Refer **Appendix 3 Diagram C**
195	Culvert 39 - generally - stone kerbing - stone channelling	18.359 18.359 – 18.409 18.359 – 18.409	S. 19° 00.487 E. 146° 13.866	C155 – C156	2 2		
196	Culvert 38 - generally - stone kerbing - stone channelling	18.423 18.448 – 18.461 18.448 – 18.461	S. 19° 00.485 E. 146° 13.829	C157 – C159	3 3 3		
197	Culvert 37 - generally - U headwall - E headwall	18.494	S. 19° 0.498 E. 146° 13.803	C160 – C161	2 2 4		
198	Culvert 36	18.522	S. 19° 00.523 E. 146° 13.787	C162	2		
199	Culvert 35	18.586	S. 19° 00.530 E. 146° 13.767	C163	2		
200	Culvert 34 - generally - drystone wall - stone kerbing - stone channelling	18.613 18.613 – 18.616 18.616 – 18.655 18.661 – 18.676 18.628 – 18.655 18.661 – 18.676	S. 19° 00.527 E. 146° 13.746	C164 – C166	2 2 2 2	3 3	
201	Culvert 33 - generally - stone kerbing - stone channelling	18.711 18.735 – 17.783 18.788 – 18.791 18.735 – 18.791	S. 19° 00.493 E. 146° 13.719	C167	2 2	3 3	
202	Culvert 32	18.793	S. 19° 00.497 E. 146° 13.687	C168	2		
203	Culvert 31 - generally - stone retaining wall - stone channelling - stone kerbing	18.851 18.871 – 18.878 18.871 – 18.878 18.897 – 18.909 18.892 – 18.909	S. 19° 00.524 E. 146° 13.644	C169 – C170		4 3 3 3 3	
204	Culvert 30	18.976	S. 19° 00.539 E. 146° 13.608	C171 – C172	2		
205	Culvert 29	19.005	S. 19° 00.550 E. 146° 13.590	C173	2		
206	Culvert 28	19.089	S. 19° 00.579 E. 146° 13.570	C174	2		
207	Culvert 27	19.137	S. 19° 00.580 E. 146° 13.552	C175		4	
208	Culvert 26	19.162	S. 19° 00.583 E. 146° 13.536	C176		4	
209	Culvert 25	19.213	S. 19° 00.611 E. 146° 13.500	C177 – C178	2		

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)		CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE				CONSERVATION POLICY REF.	COMMENTS
210	Culvert 24	- generally - drystone walling - stone channelling - stone kerbing	19.319 19.319 – 19.324 19.319 – 19.330 19.324 – 19.330	S. 19° 00.643 E. 146° 13.482	C179 - C181		2	3 3	4		
211	Culvert 23	- generally - stone training wall	19.337	S. 19° 00.657 E. 146° 13.488	C182 – C186		2 2				
212	Culvert 22		19.488	S. 19° 00.689 E. 146° 13.434	C187 – C188		2				
213	Culvert 21		19.536	S. 19° 00.708 E. 146° 13.410	C189 – C191			3			
214	Culvert 20		19.576	S. 19° 00.719 E. 146° 13.388	C192			3			
215	Culvert 19	- generally - stone kerbing - stone channelling	19.599 19.599 – 19.617 19.599 – 19.621	S. 19° 00.712 E. 146° 13.393	C193 – C194		2 2	3			
216	Culvert 18		19.633	S. 19° 00.726 E. 146° 13.351	C195		2				
217	Culvert 17	- generally - timber guardposts and rails	19.758 19.783 – 19.817	S. 19° 00.705 E. 146° 13.306	C196 – C199		2	3		Policies 24,26,49	
218	Culvert 16	- generally - stone kerbing - stone channelling	19.809 19.823 – 19.838 19.823 – 19.838	S. 19° 00.694 E. 146° 13.287	C200			3 3	4		
219	Culvert 15	- generally - stone channelling - stone kerbing	19.844 19.855 – 19.927 19.907 – 19.927	S. 19° 00.669 E. 146° 13.272	C201 – C202		2 2 2				
220	Culvert 14	- generally - stone channelling - stone kerbing	19.953 19.953 – 19.988 19.960 – 19.992	S. 19° 00.647 E. 146° 13.243	C203 – C204		2 2		4		WINDY CORNER
221	Culvert 13		20.038	S. 19° 00.629 E. 146° 13.203	C205			3			
222	Culvert 12	- generally - stone kerbing - stone channelling	20.085 20.085 – 20.092 20.098 – 20.102 20.085 – 20.107	S. 19° 00.637 E. 146° 13.165	C206 – C208		2	3 3 3			
223	Culvert 11	- generally - intermittent stone channelling	20.177 20.208 – 20.225	S. 19° 00.652 E. 146° 13.117	C209		2	3			
224	Culvert 10		20.326	S. 19° 00.645 E. 146° 13.042	C210				4		
225	Culvert 9		20.381	S. 19° 00.630 E. 146° 13.006	C211		2				
226	Culvert 8	- generally - stone kerbing -stone channelling	20.552 20.552 – 20.582 20.552 – 20.590	S. 19° 00.555 E. 146° 12.978	C212 – C214		2 2 2				
227	Culvert 7		20.644	S. 19° 00.538 E. 146° 12.926	C215			3			
228	Culvert 6		20.771	S. 19° 00.538 E. 146° 12.869	C216 – C217		2				
229	Culvert 5A		20.866	S. 19° 00.541 E. 146° 12.828	C218				4		
230	Culvert 5		20.926	S. 19° 00.522 E. 146° 12.797	C219		2				
231	Top gate		21.000 approx.	-	-				4		
232	Culvert 4	- generally - Loop Road culvert	21.077	S. 19° 00.481 E. 146° 12.760	C238		2		4		

Table 2 *Relative significance of features and elements*

REF NO.	FEATURE / ELEMENT (cont'd)	CHAINAGE	GPS CO-ORDS	PHOTO LOG IMAGE NO.	RELATIVE SIGNIFICANCE	CONSERVATION POLICY REF.	COMMENTS
233	Culvert 3 - generally - stone kerbing - stone channelling - timber guardpost	21.155 20.140 – 20.151 20.140 – 20.151 20.170	S. 19° 00.508 E. 146° 12.699	C239 – C241	2 3 3 3		
234	Culvert 2 - generally - timber guardposts	21.283 21.284	S. 19° 00.542 E. 146° 12.652	C242 – C244	3 4		
235	Culvert (Lennox Crescent West) - generally - timber guardposts	-	S. 19° 00.546 E. 146° 12.600	C245 – C247	3 4		
236	Culvert 1 - generally - U headwall - E headwall	21.427	S. 19° 00.546 E. 146° 12.567	C248 – C249	3 3 4		
237	Culvert (72 Mt Spec Road)	21.900 approx	S. 19° 00.429 E. 146° 12.309	C250	4		

Table 2 *Relative significance of features and elements*

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72 Mt. Spec Road, Drawing Nos 318404 – 318417.
73 Based on TMR Road Maintenance Performance Contract Volume 1: Sole Invitee 5th ed. Version 5.5 December 2007
74 In accordance with s.71 of the Qld. Heritage Act

APPENDIX 1 ***Selected drawings***

Source: TMR Townsville and Brisbane offices

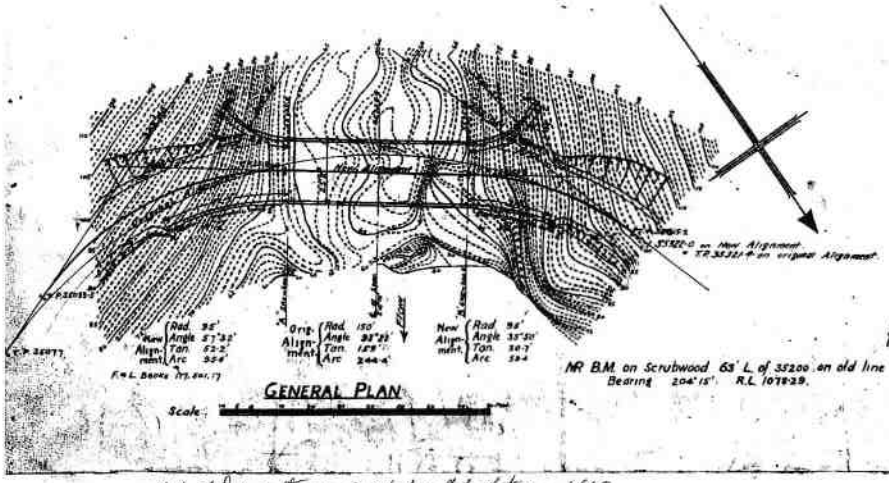
M.R.C. THURINGOWA AND HINCHINBROOK SHIRES. MOUNT SPEC ROAD
FIRST CLASS BRIDGE OVER LITTLE SALTWATER CREEK AT 35230'

DRAWN BY
CHECKED BY
SUBMITTED BY

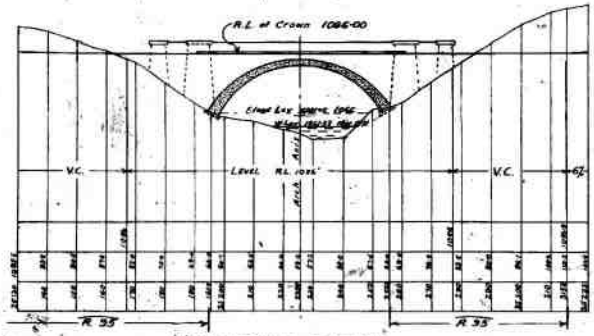
SCALE FOR WING SECTIONS

CHIEF ENGINEER 26.1.32 DATE

26.1.32 DATE

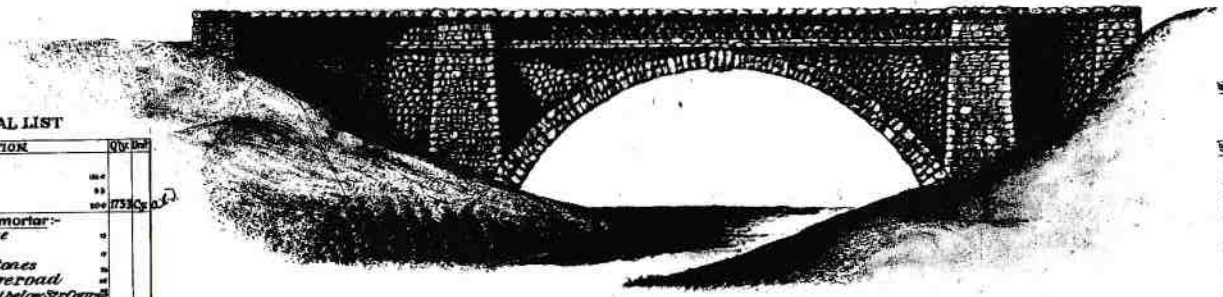


GENERAL PLAN



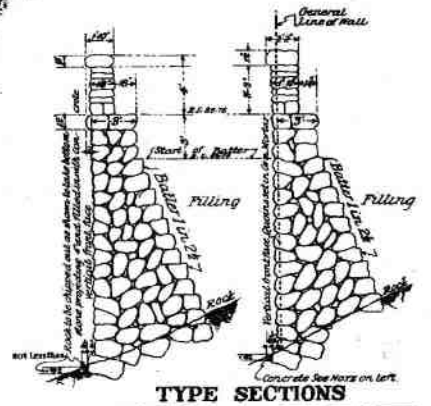
LONGITUDINAL SECTION

R.L. of Bed of Stream on adopted Datum Datum = 1061·2



MATERIAL LIST

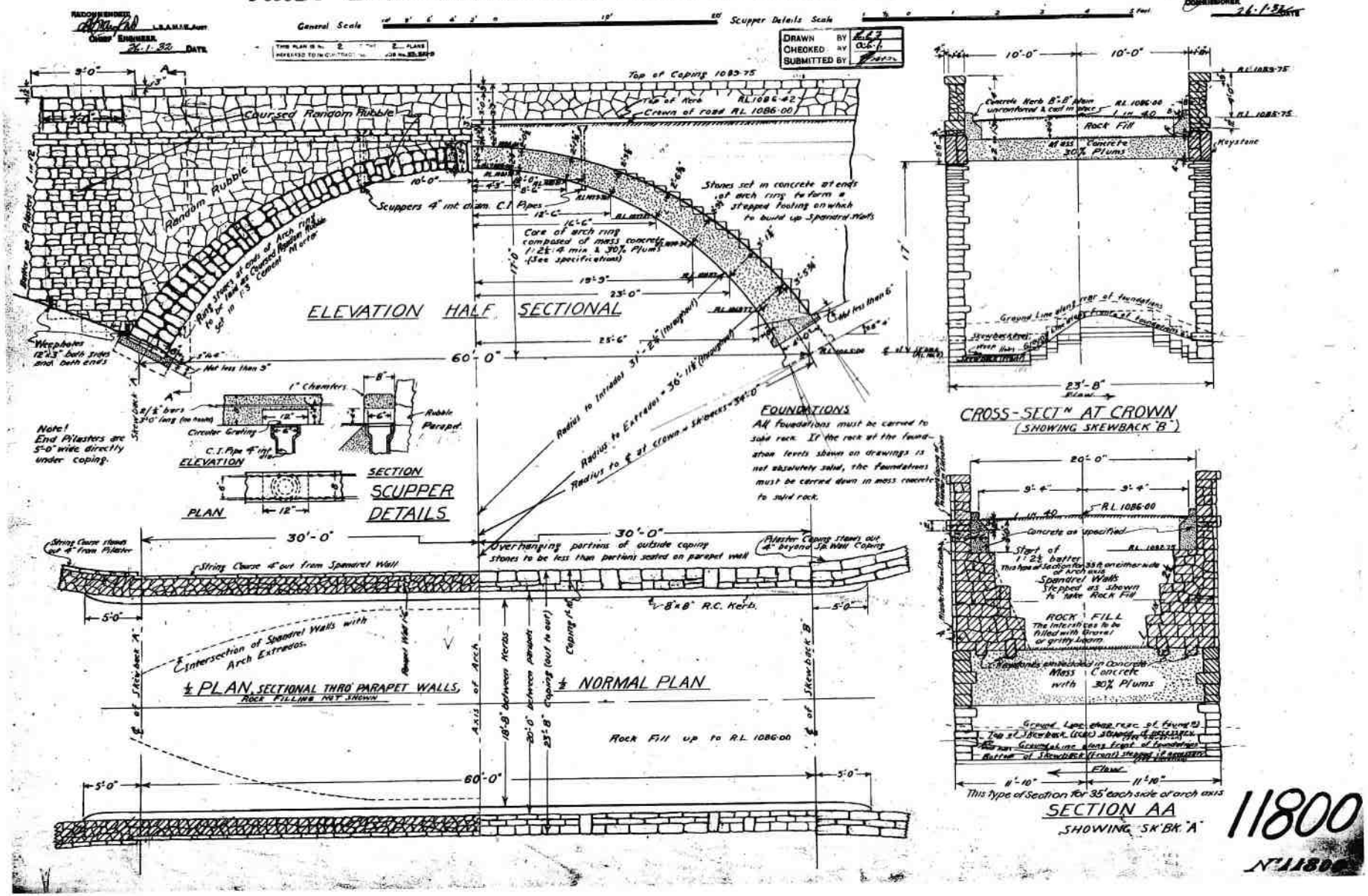
DESCRIPTION	Qty.	Unit
Concrete in:-		
Arch		
Kerb		
Under Kerb	1732	Cu. yd.
Rubble in 1 to 3 cem. mortar:-		
Coping Course		
String do.		
Arch ring stones		
Parapet above road		
Spandrel wall below Str. Course		
Wing walls below do. do.	425	"
Excavation	36	"
Rock fill (the interstices to be filled with gravel or gritty loam) Over arch barrel.		
In approaches packing gravel	656	
C.I. Pipes in Scuppers 4' bore 5'9" long complete with grating & socket.	4	No.
Steel bars ½" d.a. 3' long in kerb.	16	lb.

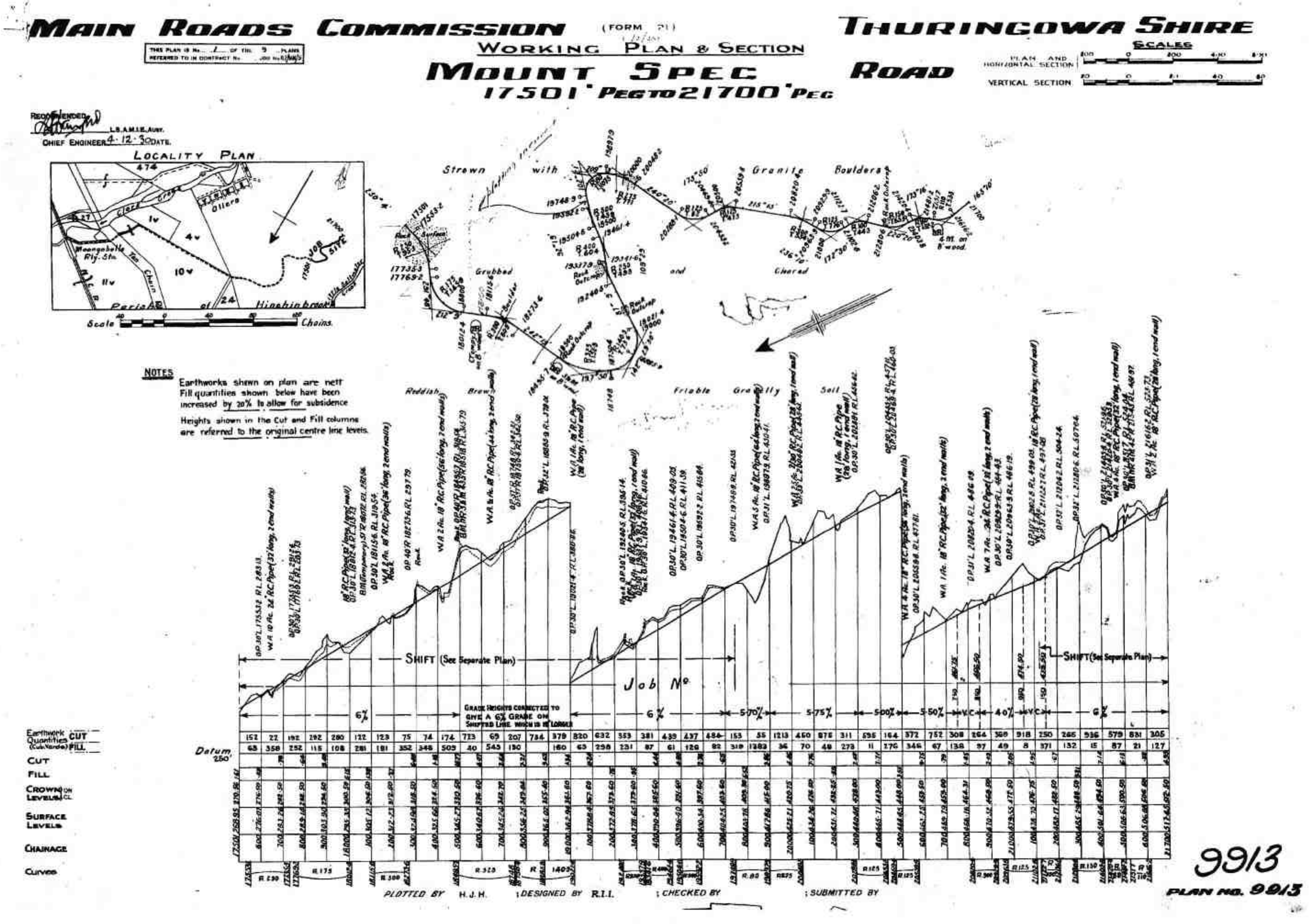


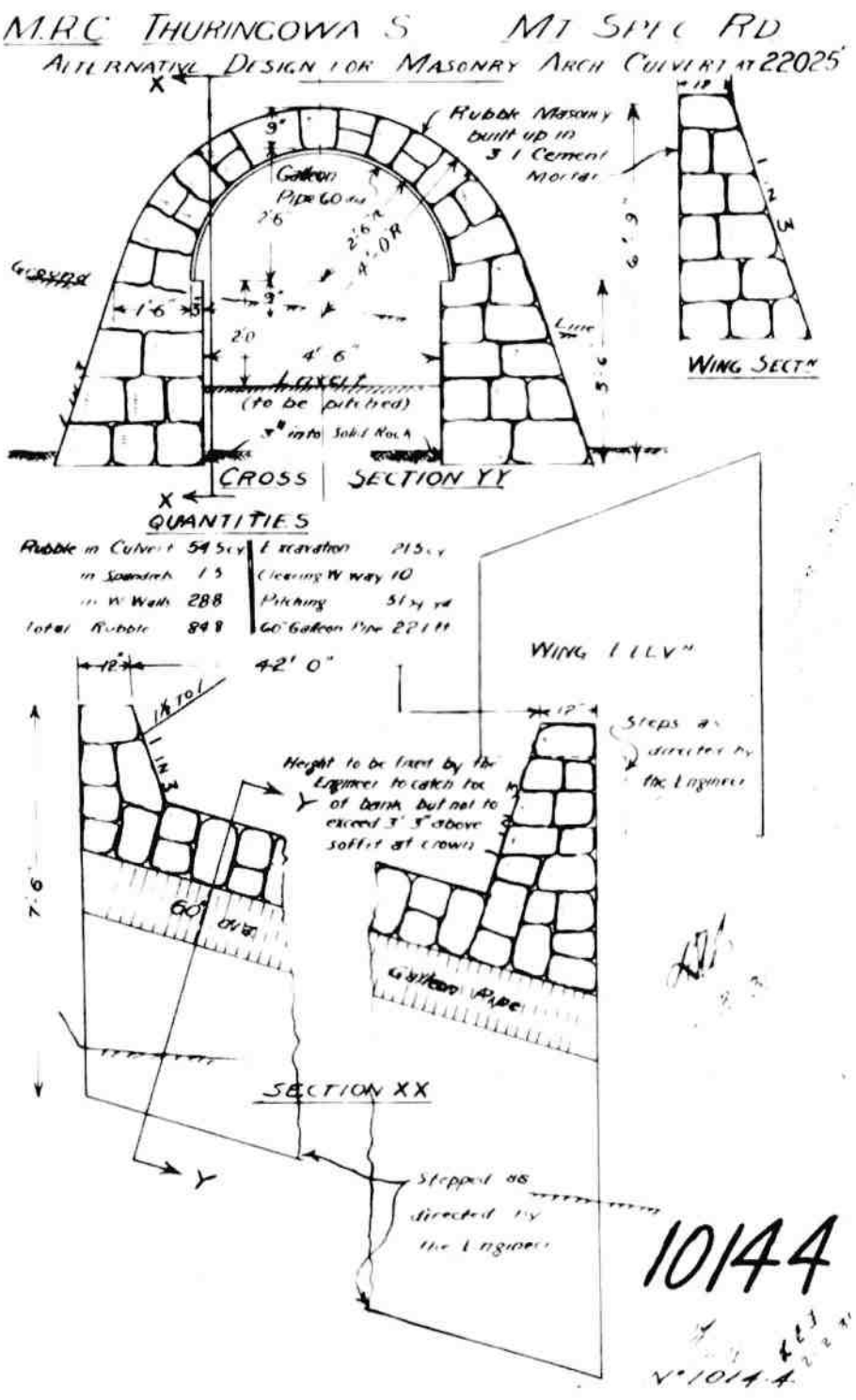
TYPE SECTIONS
WING WALL END PILASTER

11799 N°11799

M.R.C. Thuringowa and Hinchinbrook Shires. Mount Spec Road
First Class Bridge over Little Saltwater Creek at 35230'




Main Roads Commission
(Form 21)
Thuringowa Shire
Working Plan & Section
Mount Spec Road
17501' Peg to 21700' Peg
Scales
Plan and Horizontal Section
Vertical Section
Recommended
Chief Engineer
L.S.A.M.I.E.Aust.
4.12.30 Date
Locality Plan
Scale
Chains
Notes
Earthworks shown on plan are nett
Fill quantities shown below have been increased by 20% to allow for subsidence
Heights shown in the Cut and Fill columns are referred to the original centre line levels.
Strewn with Granite Boulders
Grubbed
Cleared
Reddish Brown
Friable Gravelly Soil
Shift (See Separate Plan)
Job No
Grade heights corrected to give a 6% grade on shifted line which is 1' longer
Datum 250'
Earthwork Quantities (Cub. Yards) Cut
Fill
Cut
Fill
Crown on Levels CL
Surface Levels
Chainage
Curves
Plotted by H.J.H.
Designed by R.I.I.
Checked by
Submitted by
9913
Plan No. 9913


M.R.C. THURINGOWA S MT SPEC RD
ALTERNATIVE DESIGN FOR MASONRY ARCH CULVERT AT 22025'
Rubble Masonry built up in 3 1 Cement Mortar
60 Gallon Pipe
CROSS SECTION YY
WING SECTN
QUANTITIES
Rubble in Culvert 54 Scy
in Spandrels 15
in W. Walls 288
Total Rubble 848
Excavation 215 cy
Clearing W way 10
Pitching 51 sq yd
60" Gallon Pipe 22 lin ft
WING ELEVN
42' 0"
Steps as directed by the Engineer
Height to be fixed by the Engineer to catch top of bank, but not to exceed 3' 3" above soffit at crown
SECTION XX
Stepped as directed by the Engineer
10144

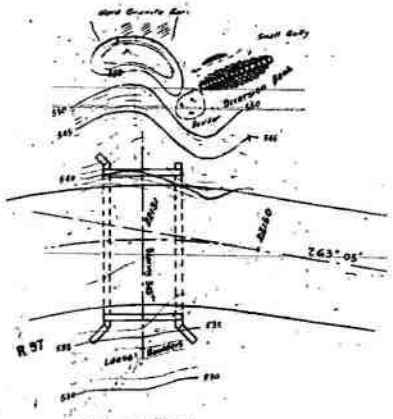
MAIN ROADS COMMISSION

MOUNT SPEC ROAD

THURINGOWA SHIRE

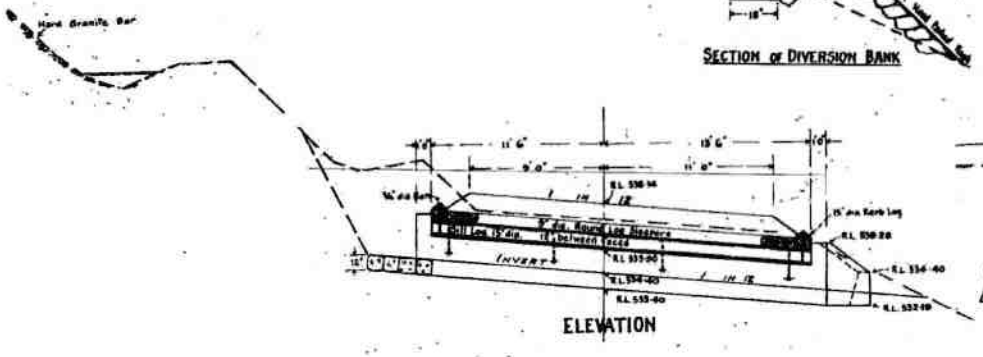
CULVERT AT 22131

Scales: General Plan 10 feet = 1 inch; Plan & Elevation 4 feet = 1 inch; Cross Section 2 feet = 1 inch

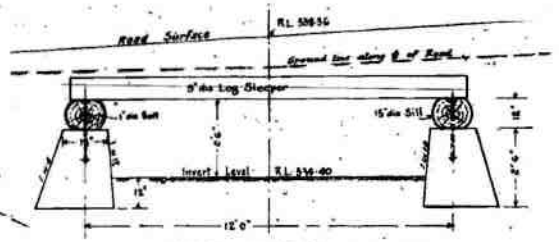


GENERAL PLAN

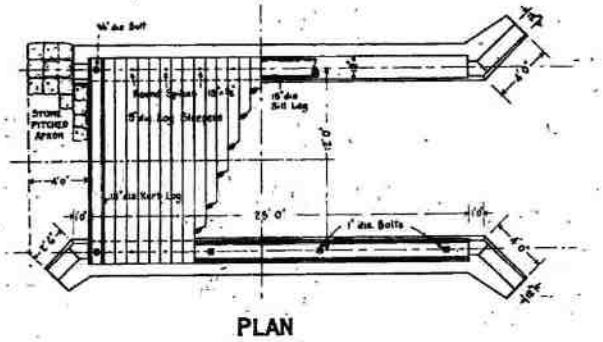
SECTION OF DIVERSION BANK



ELEVATION



CROSS SECTION AT ℄ OF ROAD



PLAN

QUANTITIES

RUBBLE MASONRY in 1:3 CEMENT MORTAR	- 11·5 CU·YDS
EXCAVATION and FILLING FOUNDATIONS	- 80 CU·YDS
CLEARING WATERWAY	- 18 CU·YDS
PITCHING	- 6 SQ·YDS
DIVERSION BANK	- 21 CU·YDS

IRONWORK

Description	No	Length	Size	Quantity
Bolts - Kerb to Sill	4	25½"	⅝ dia	15 lbs.
Anchor Bolt Sill to Abut.	8	24"	1" dia	53 lbs
Spikes	24	15"	⅝ dia	26 lbs
Washers to 1" Bolts	16	3"×3"×¼"		16 lbs
Washers to ⅝" Bolts	8	3"×3"×¼"		5 lbs
			TOTAL	115 lbs

TIMBER

Sills	12/25' long	15" diam	= 50 lin ft
Kerbs	5/13·6" long	15" diam	= 27 lin ft
Decking	80/13'6" long	9" diam	= 405 lin ft

TARRING - 10 SQ·YDS.

11375 N°11375

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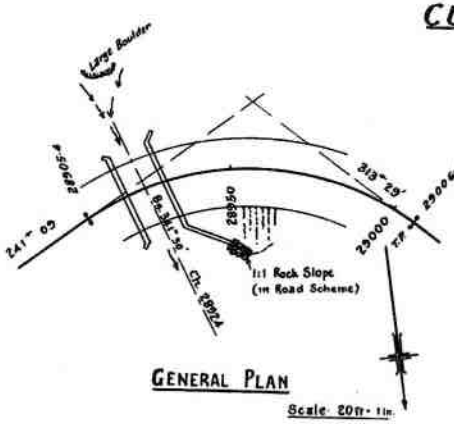
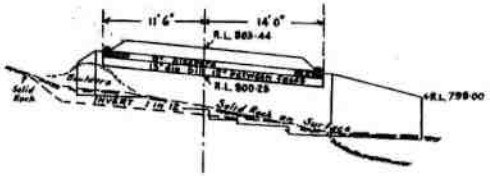
M.R.C. MOUNT SPEC ROAD THURINGOWA SHIRE

CULVERT AT 28924

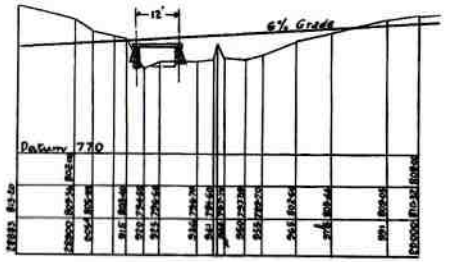


GENERAL PLAN

Scale 20ft. = 1in.

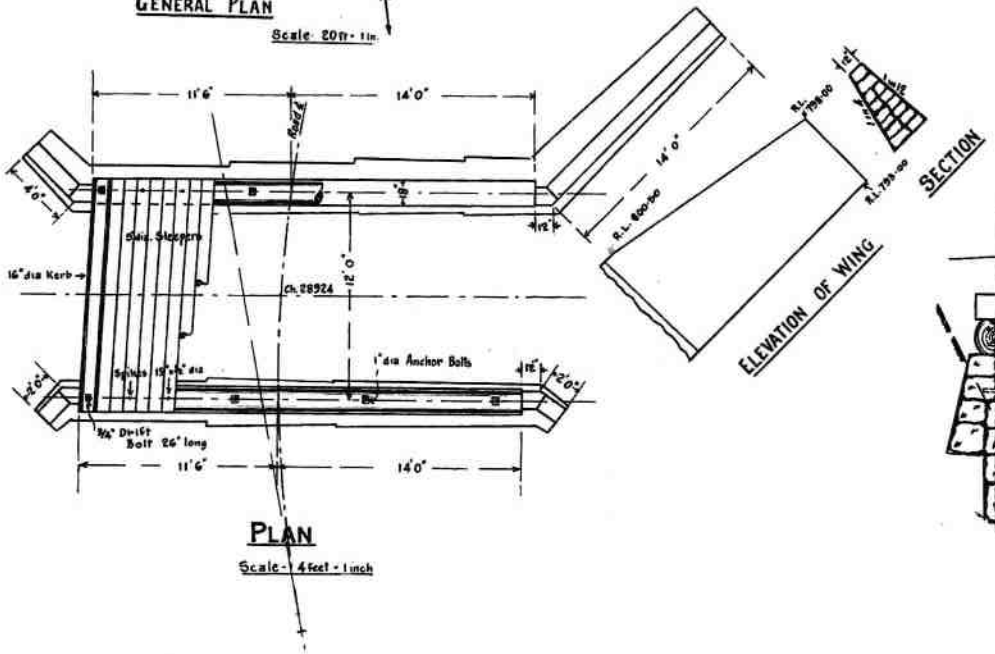


LONGITUDINAL SECTION OF CULVERT ALONG ℄



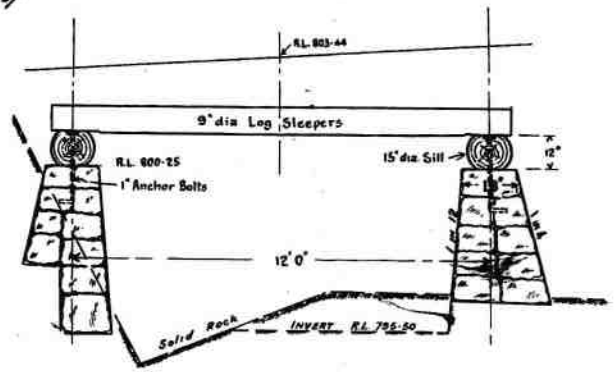
LONGITUDINAL SECTION OF ROAD

Scale 20 ft. = 1 in



PLAN

Scale - 4 feet = 1 inch



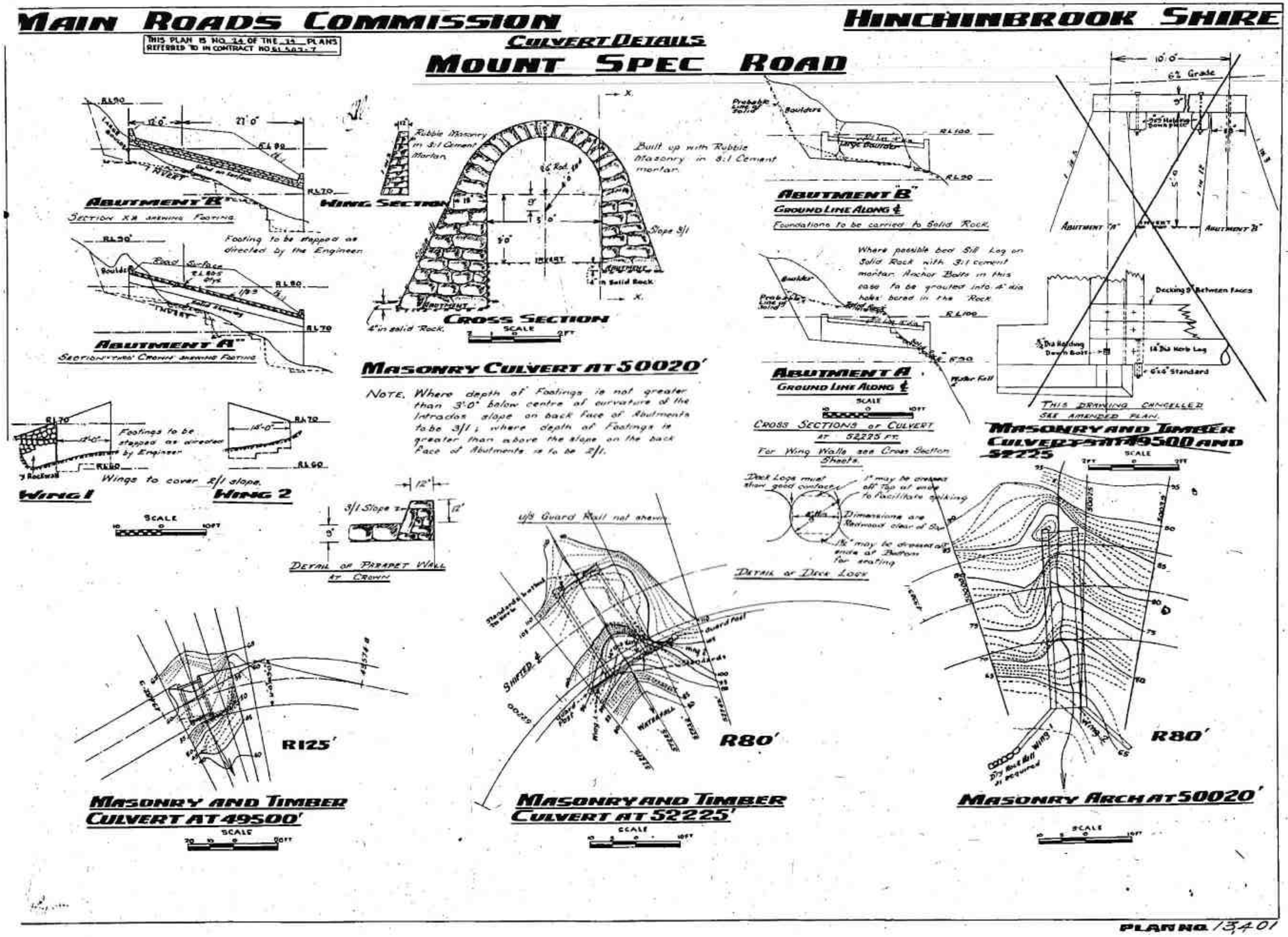
CROSS SECTION AT ℄

Scale - 2 feet = 1 inch

11482

N° 11482

Ivan McDonald Architects


MAIN ROADS COMMISSION
HINCHINBROOK SHIRE
CULVERT DETAILS
MOUNT SPEC ROAD
ABUTMENT "B"
ABUTMENT "A"
WING SECTION
CROSS SECTION
MASONRY CULVERT AT 50020'
NOTE. Where depth of Footings is not greater than 3'0" below centre of curvature of the Intrados slope on back face of Abutments to be 3/1; where depth of Footings is greater than above the slope on the back face of Abutments is to be 2/1.
Built up with Rubble Masonry in 3:1 Cement mortar.
Footing to be stepped as directed by the Engineer
Wings to cover 2/1 slope.
WING 1
WING 2
DETAIL OF PARAPET WALL AT CROWN
ABUTMENT "B" GROUND LINE ALONG ℄
Foundations to be carried to Solid Rock.
Where possible bed Sill Log on Solid Rock with 3:1 cement mortar. Anchor Bolts in this case to be grouted into 4" dia holes bored in the Rock.
ABUTMENT A GROUND LINE ALONG ℄
CROSS SECTIONS OF CULVERT AT 52225 FT.
For Wing Walls see Cross Section Sheets.
DETAIL OF DECK LOGS
THIS DRAWING CANCELLED SEE AMENDED PLAN.
MASONRY AND TIMBER CULVERTS AT 49500 AND 52225
u/s Guard Rail not shewn
R125'
R80'
R80'
MASONRY AND TIMBER CULVERT AT 49500'
MASONRY AND TIMBER CULVERT AT 52225'
MASONRY ARCH AT 50020'
SCALE
PLAN NO. 13401

MAIN ROADS COMMISSION

FORM 21 (-/10/29)

THIS PLAN IS NO. 3 OF THE 24 PLANS REFERRED TO IN CONTRACT NO. 61-502-7

WORKING PLAN & SECTION

HINCHINBROOK SHIRE

MOUNT SPEC ROAD

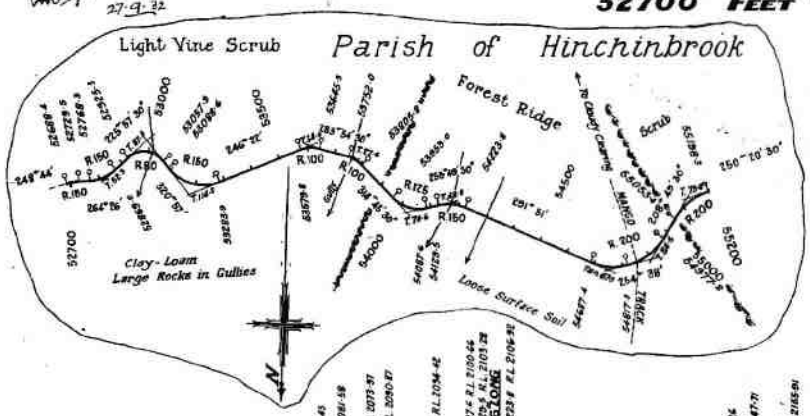
52700 FEET TO 55200 FEET (THROUGH CHAINAGE)

SCALES (FEET)

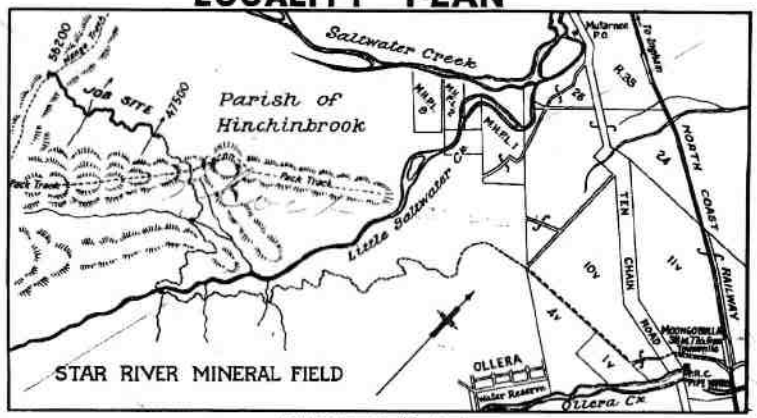
PLAN AND HORIZONTAL SECTION 0 200 400 600 800

VERTICAL SECTION 0 20 40 60 80

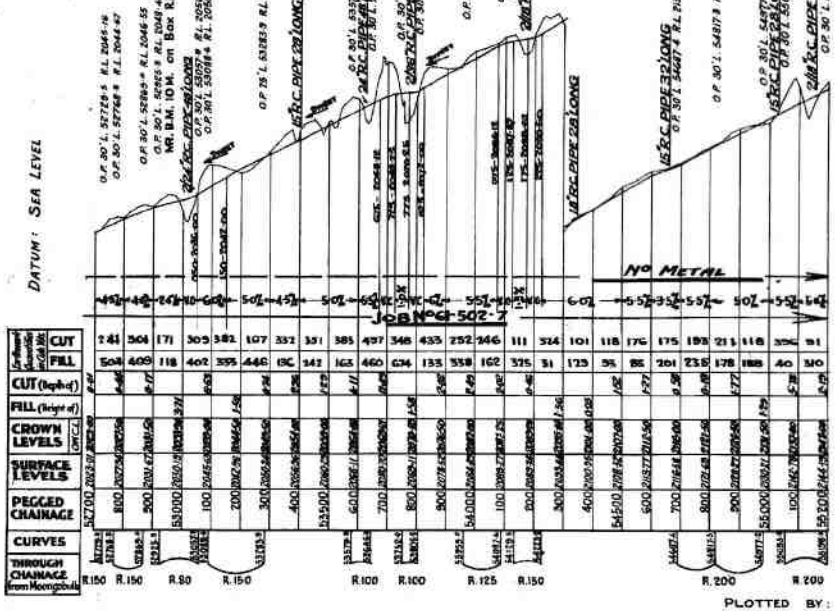
27-9-32

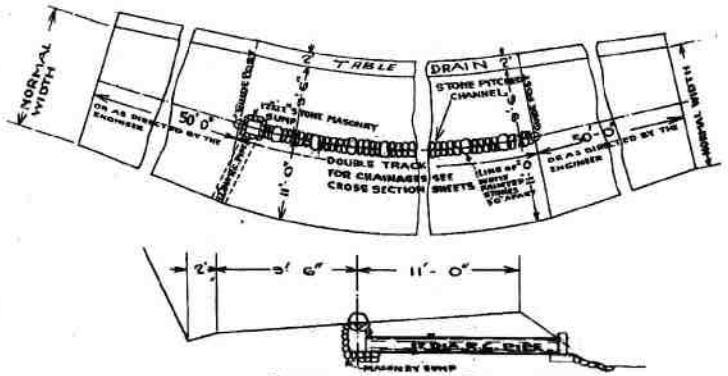


LOCALITY PLAN



Scale 40 30 20 10 0 20 40 60 80 Chains

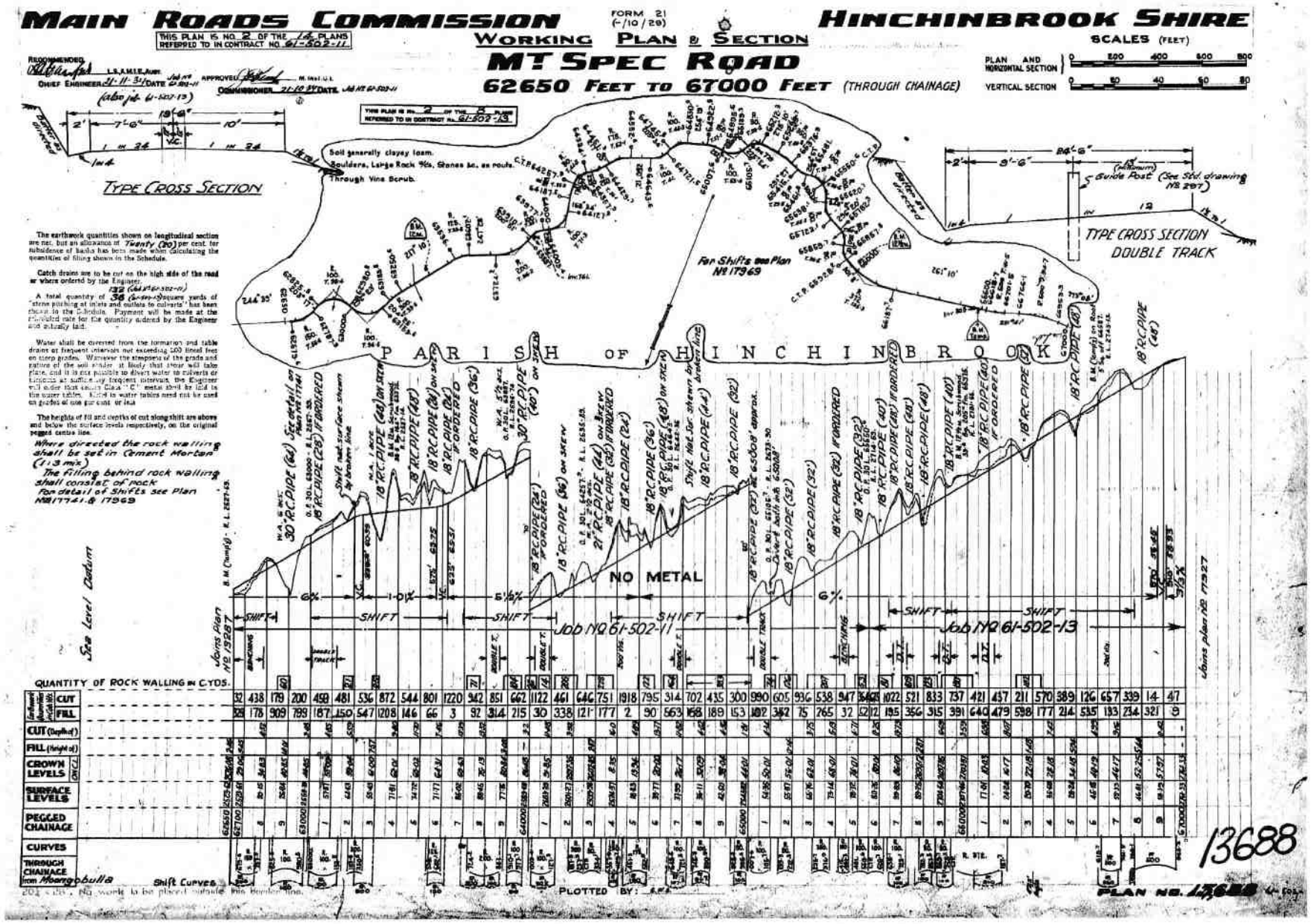




— DETAIL OF DOUBLE TRACKING —
— NOT TO SCALE —

12063

PLAN No. 12063



13688

The earthwork quantities shown on longitudinal section are net, but an allowance of Twenty (20) per cent. for subsidence of banks has been made when calculating the quantities of filling shown in the Schedule.

Catch drains are to be cut on the high side of the road or where ordered by the Engineer.

A total quantity of 38 (61-502-11) square yards of "stone pitching at inlets and outlets to culverts" has been taken to the Schedule. Payment will be made at the scheduled rate for the quantity ordered by the Engineer and actually laid.

Water shall be diverted from the formation and table drains at frequent intervals not exceeding 500 lineal feet on steep grades. Wherever the steepness of the grade and nature of the soil render it likely that scour will take place, and it is not possible to divert water to culverts or turnouts at sufficiently frequent intervals, the Engineer will order that certain Class "C" metal shall be laid in the water tables. Kerbed in water tables need not be used on grades of one per cent. or less.

The heights of fill and depths of cut along shift are above and below the surface levels respectively, on the original pegged centre line.

Where directed the rock walling shall be set in Cement Mortar (1:3 mix)

The filling behind rock walling shall consist of rock

For detail of Shifts see Plan Nos 17741 & 17969

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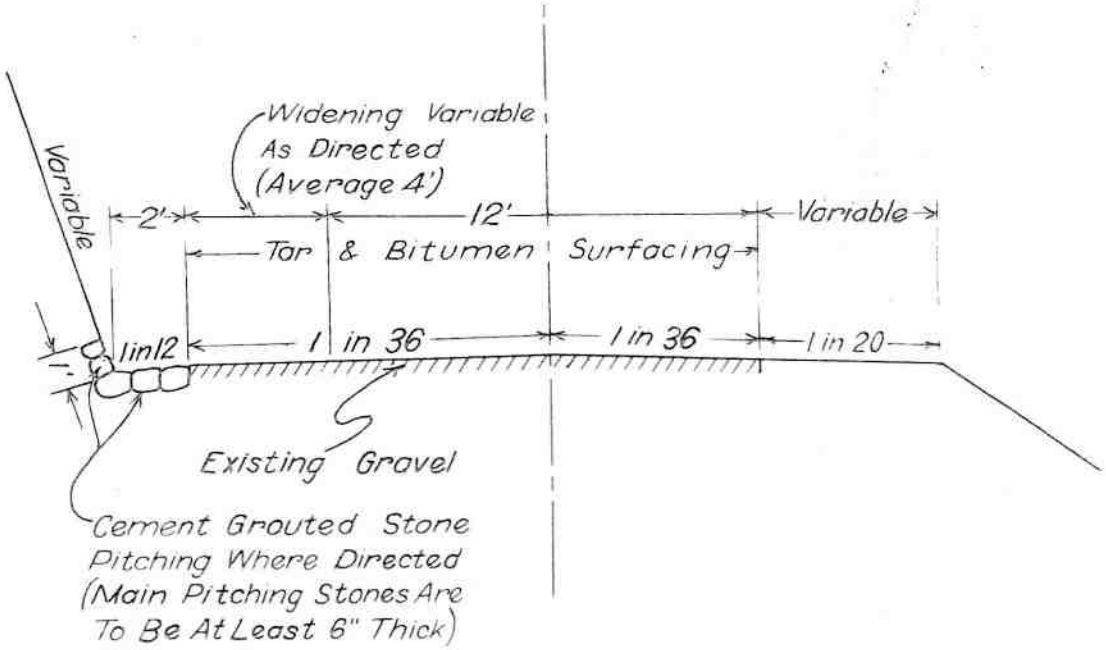
MAIN ROADS COMMISSION

THURINGOWA SHIRE
MOUNT SPEC ROAD
42600 – 72300

Job No. 117-501-31

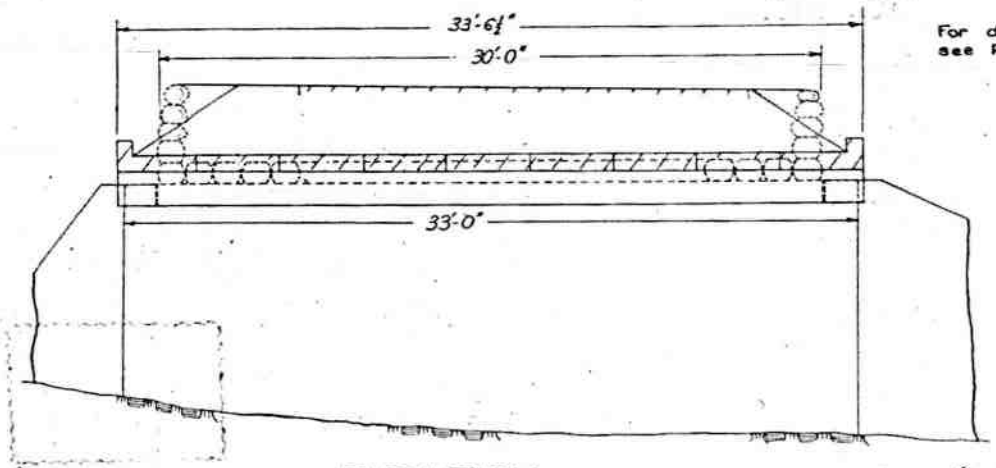


TYPE CROSS SECTION

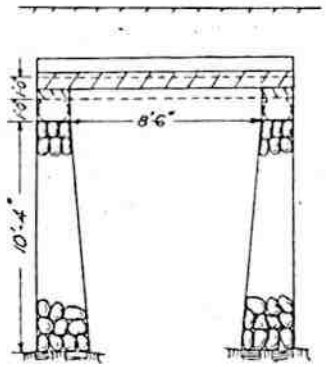
PLAN AMENDED	STAMPED
	7 MAR 1966

Note

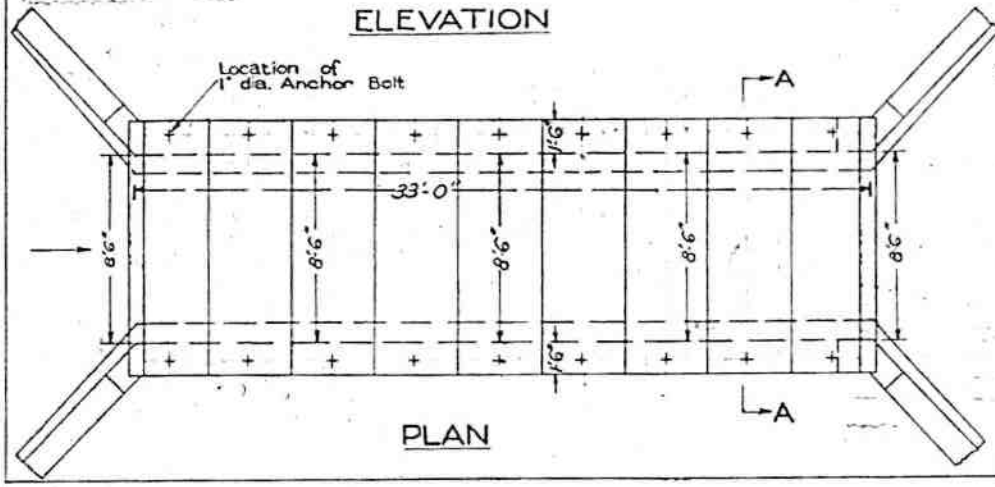
For details of R.C. Headstock see Plan No. 5



ELEVATION



SECTION A-A



PLAN

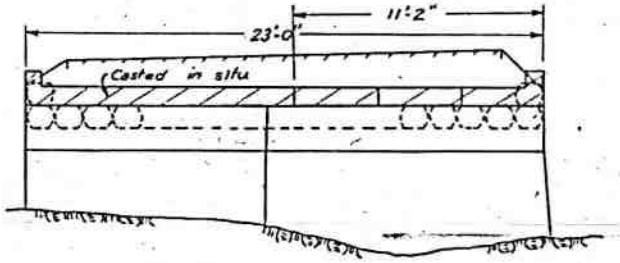
Note Construction to be removed is shown in broken line while existing construction which is to remain and new construction is shown in a full line.

4 3 2 1 0 4
Scale (feet)

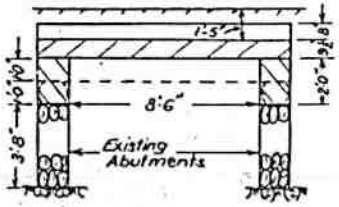
No. 7 OF 21. PLANS REFERRED TO IN JOB No. 117-6106-2

THURINGOWA SHIRE
Mt SPEC ROAD
CULVERT at 28765

PLAN No. 90858



SECTION B-B

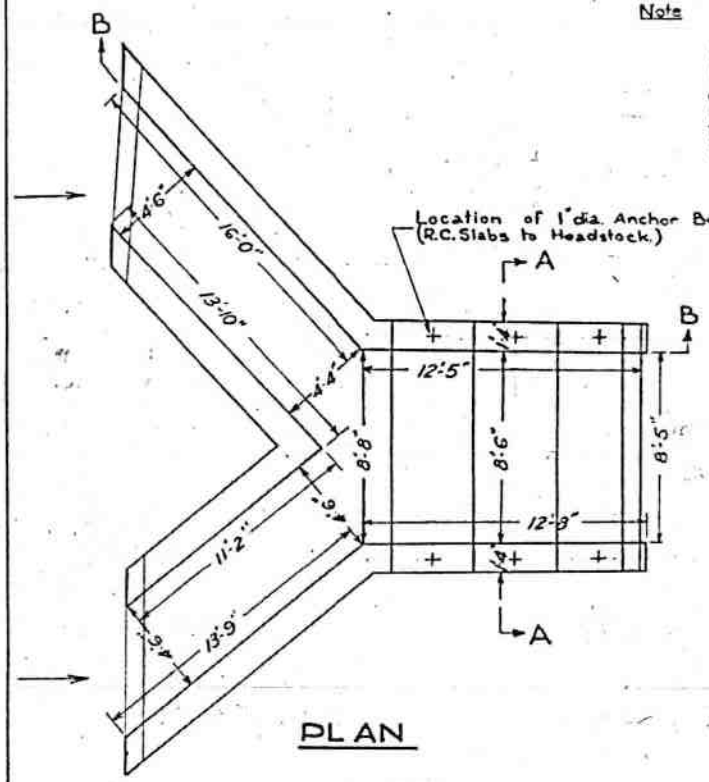


SECTION A-A

Note

For details of R.C. Headstock see Plans Nos. 5 & 21.

Construction to be removed is shown in a broken line while existing construction which is to remain and new construction is shown in a full line.



PLAN

PLAN	STATFILED
AMENDED	- 7 MAR 1905

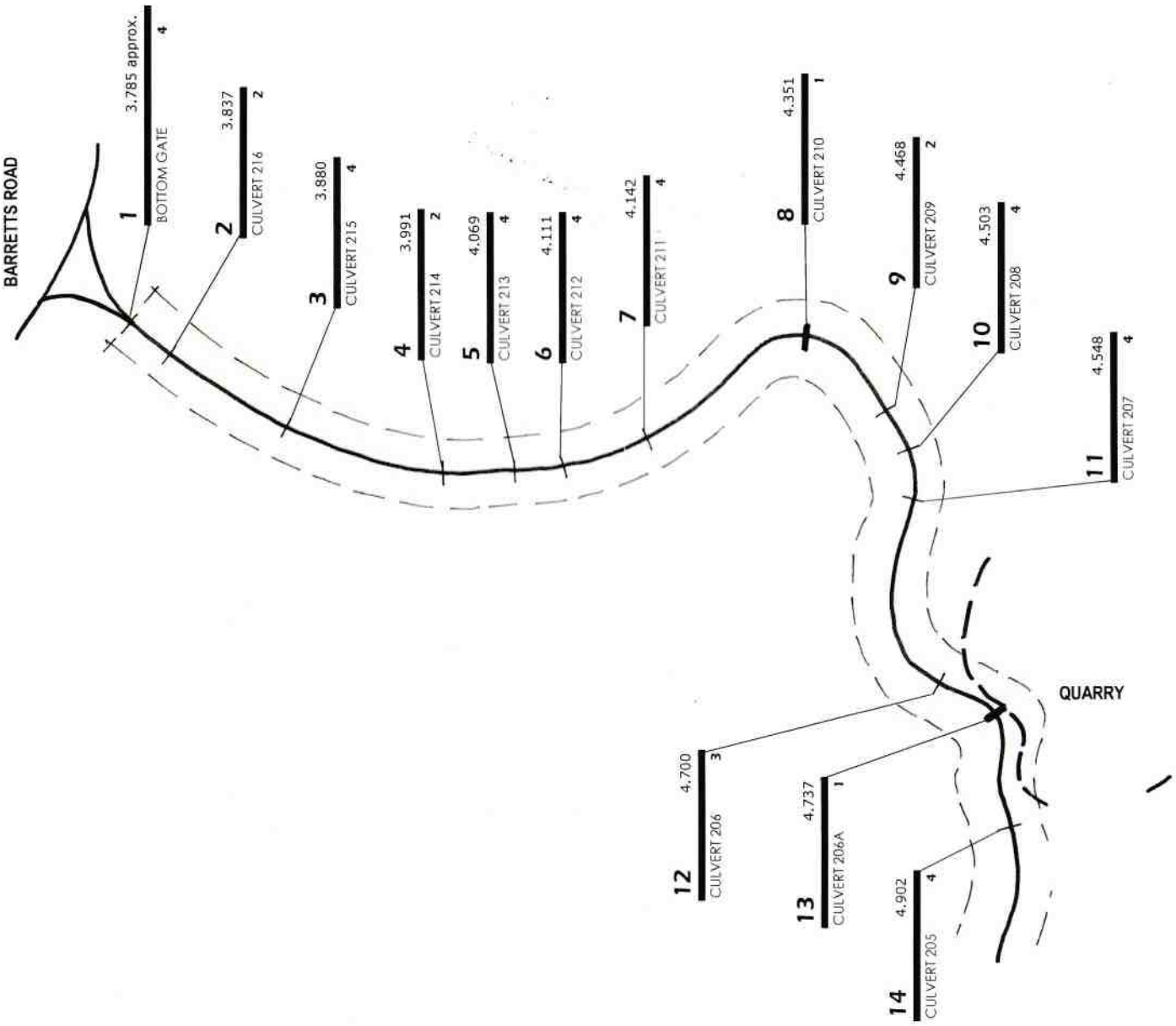
Scale (feet) 4 3 2 1 0 4

No 20 OF 21 PLANS REFERRED TO IN JOB No. 117-6106-2

THURINGOWA SHIRE
Mt SPEC ROAD
CULVERT at 60200

PLAN No. 90871

APPENDIX 3 *Reference maps*



N

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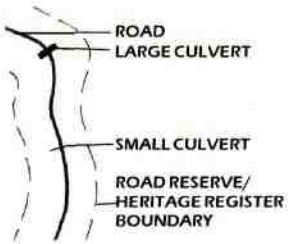
DIAGRAMATIC ONLY

LEGEND



FEATURE REFERENCE NO. — CHAINAGE

2 — 3.837

CULVERT 216 — 2

CULVERT NO. — RELATIVE SIGNIFICANCE (as per section 5.4)

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 1 OF 18

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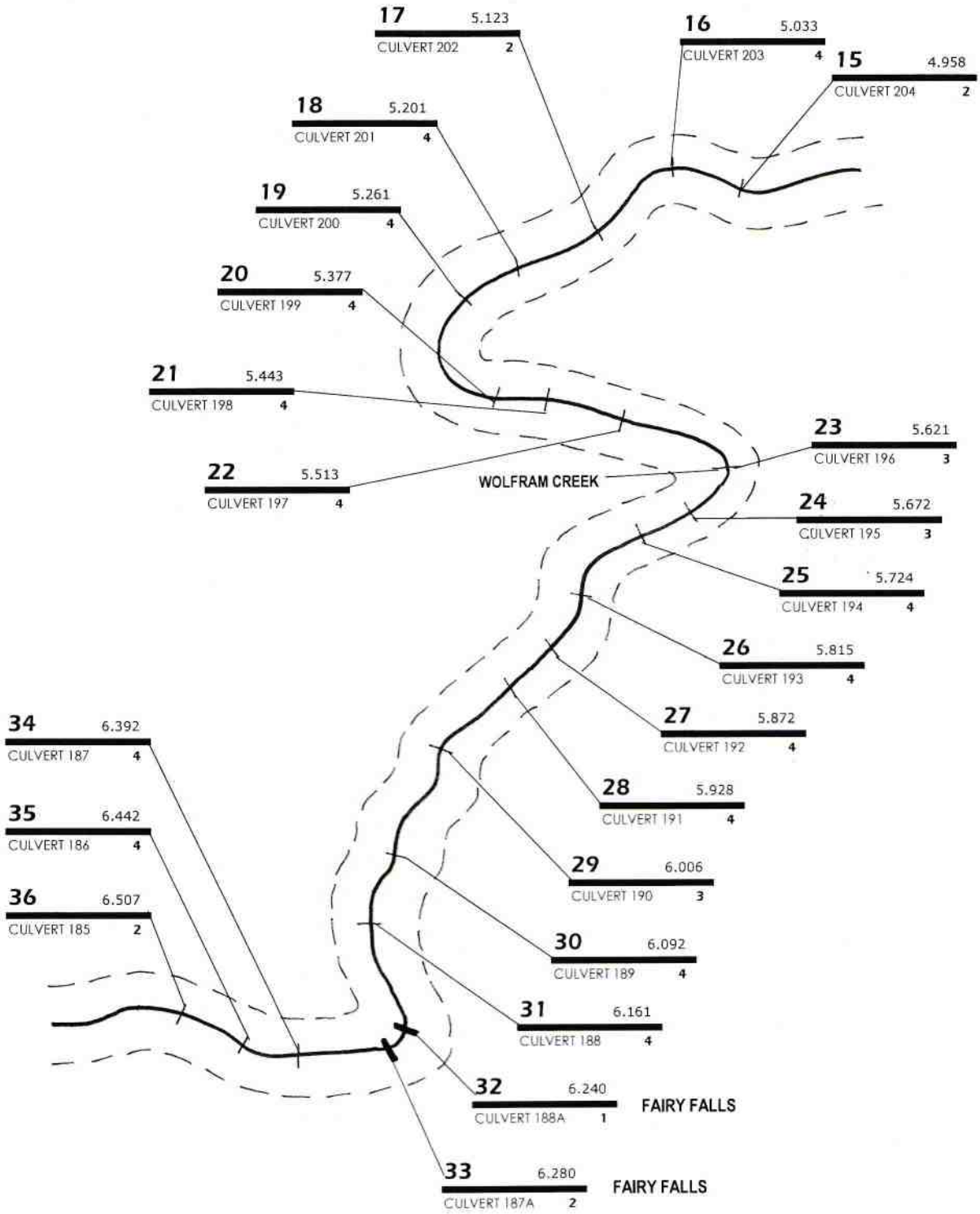


MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 2 OF 18

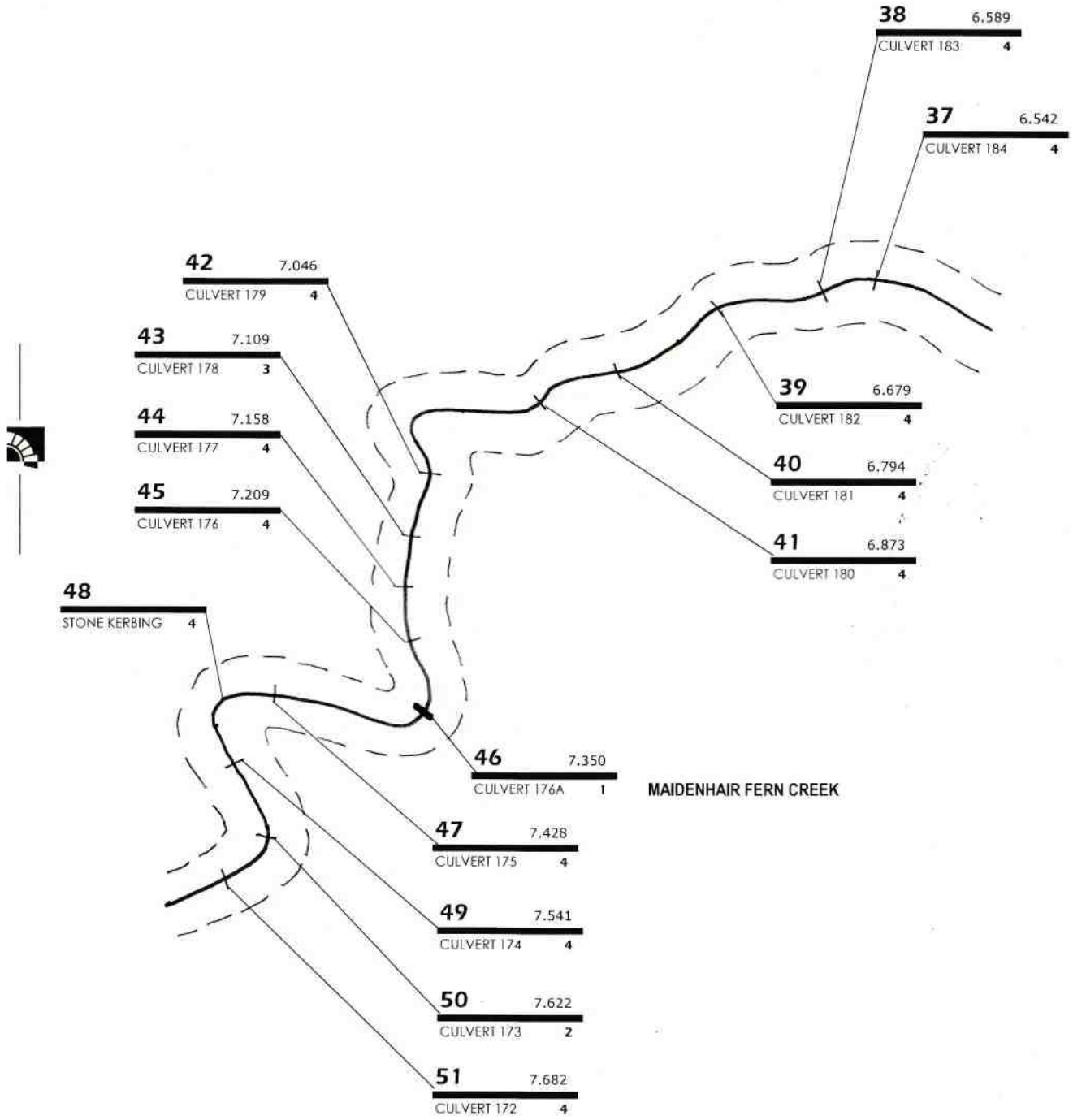
CULVERT NO. — CULVERT 216
FEATURE REFERENCE NO. — 2
CHAINAGE — 3.837
RELATIVE SIGNIFICANCE (as per section 5.4) — 2

LEGEND
ROAD LARGE CULVERT
SMALL CULVERT
ROAD RESERVE/ HERITAGE REGISTER BOUNDARY

1:3144 at A3 size
DIAGRAMATIC ONLY

N

Ivan McDonald Architects



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MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 3 OF 18

LEGEND

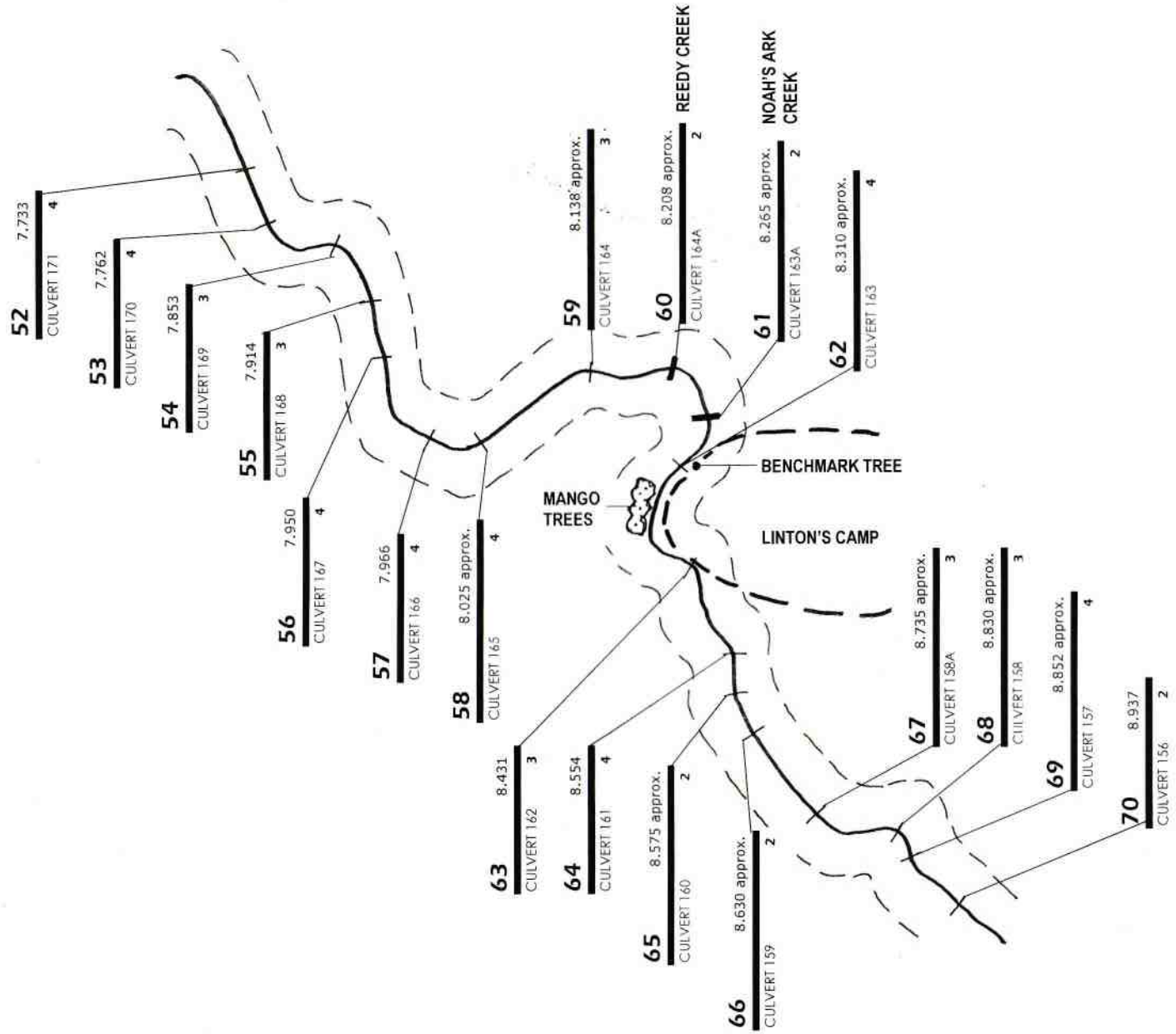
ROAD
LARGE CULVERT
SMALL CULVERT
ROAD RESERVE/
HERITAGE REGISTER
BOUNDARY

FEATURE REFERENCE NO.
CHAINAGE
CULVERT NO.
RELATIVE SIGNIFICANCE (as per section 5.4)

2 CULVERT 216 2 3.837

1:3144 at A3 size
DIAGRAMATIC ONLY

N



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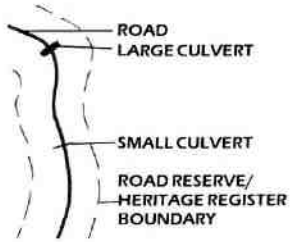
LEGEND



FEATURE REFERENCE NO. — CHAINAGE

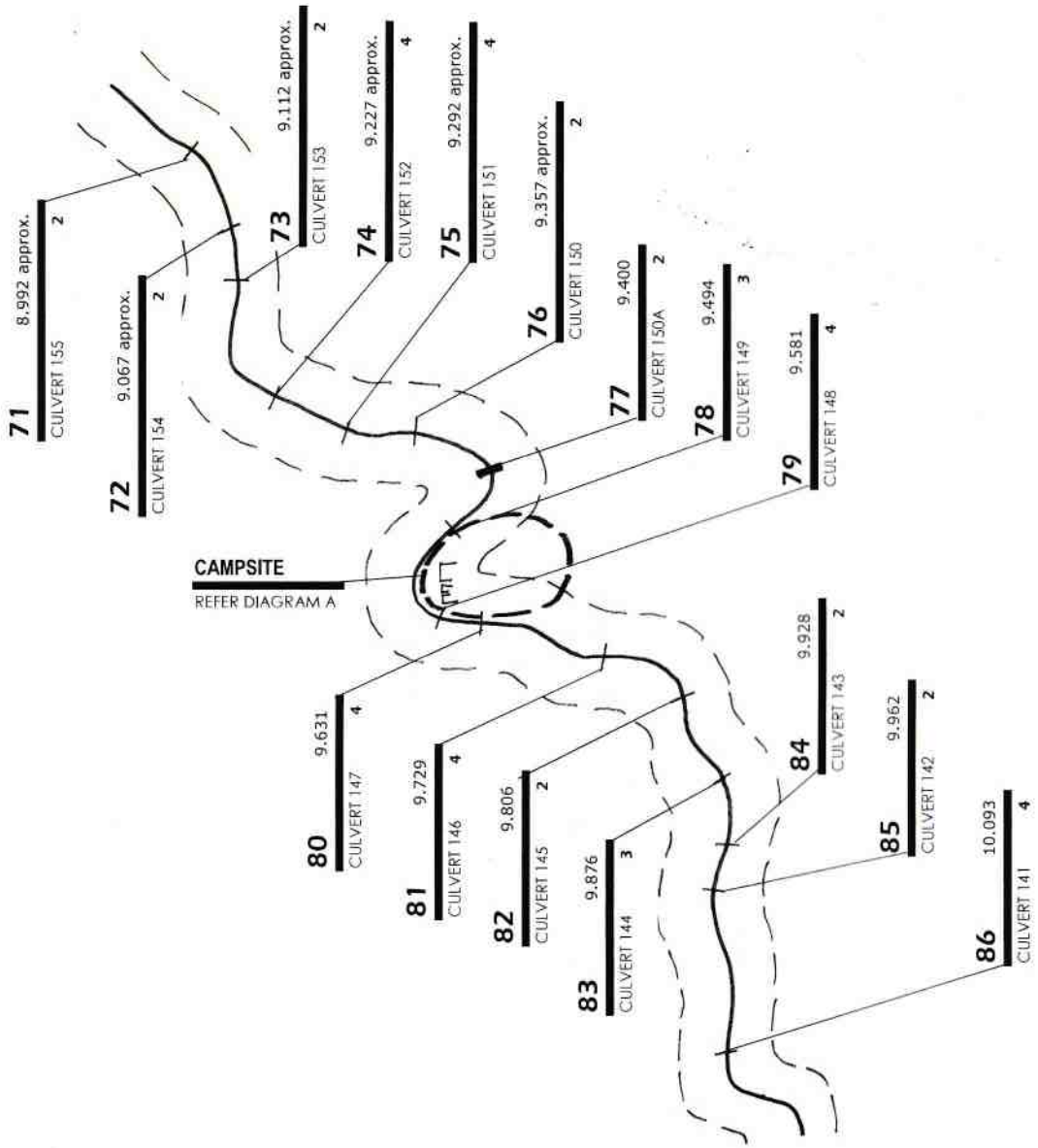
2 — 3.837

CULVERT 216 — 2

CULVERT NO. — RELATIVE SIGNIFICANCE (as per section 5.4)

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 4 OF 18

Ivan McDonald Architects



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DIAGRAMATIC ONLY

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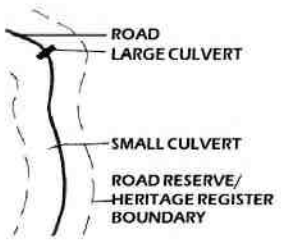
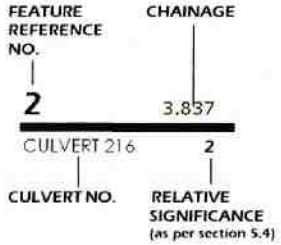
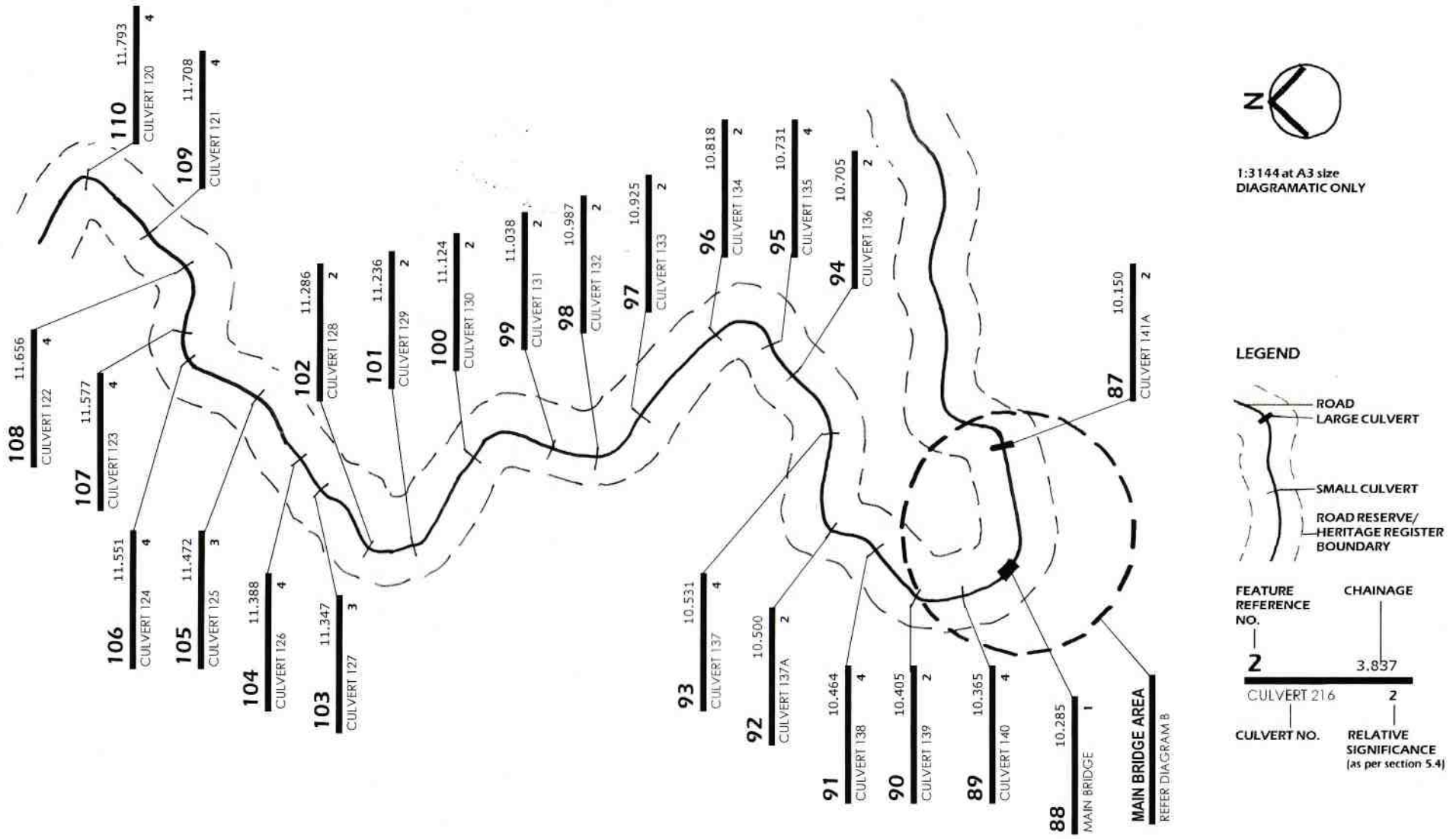




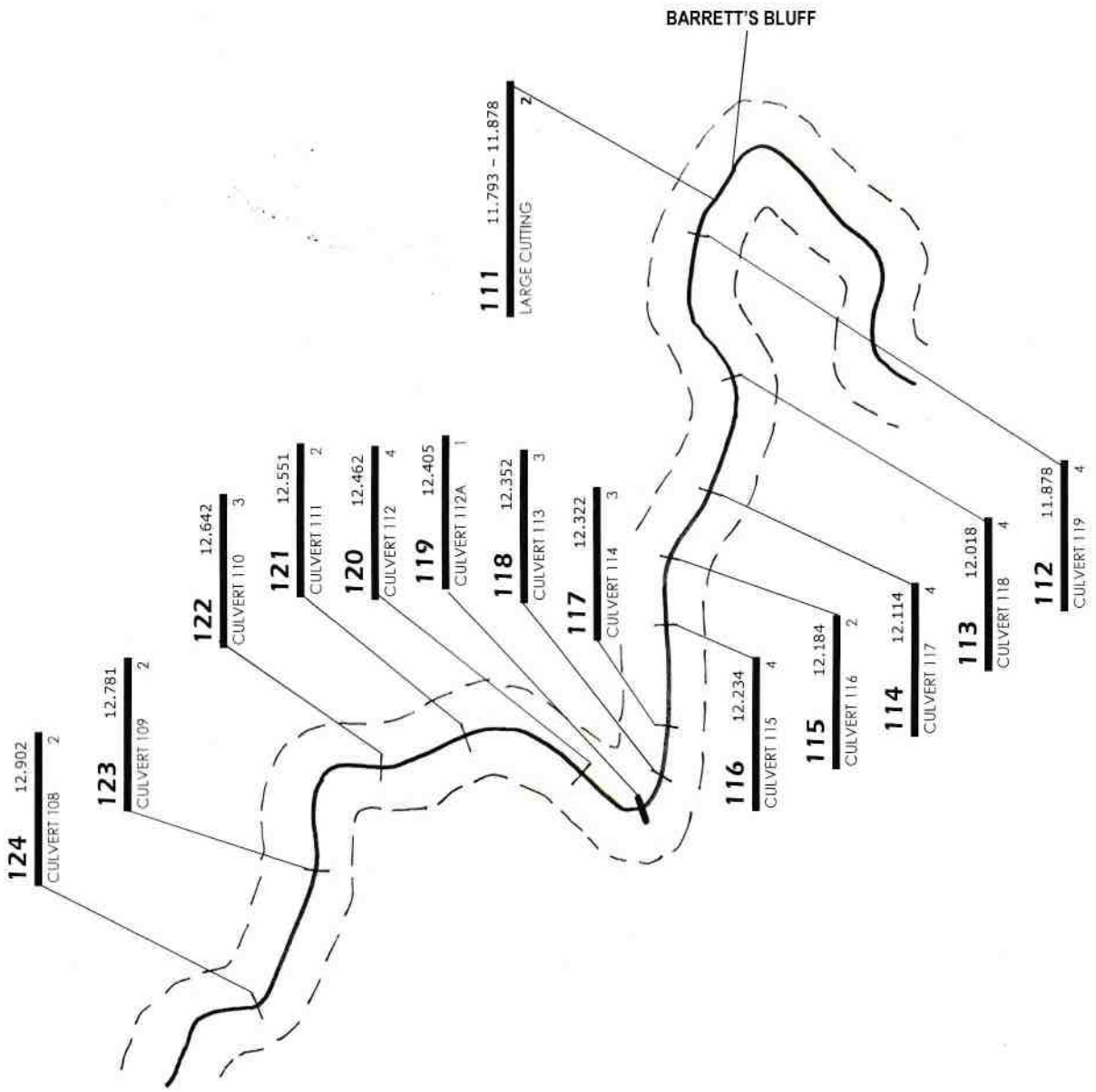
MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 5 OF 18

Ivan McDonald Architects



MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 6 OF 18

Ivan McDonald Architects



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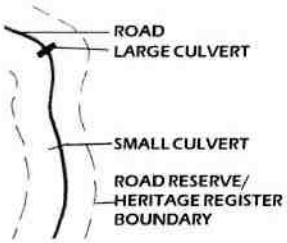
DIAGRAMATIC ONLY

LEGEND



FEATURE REFERENCE NO. — CHAINAGE

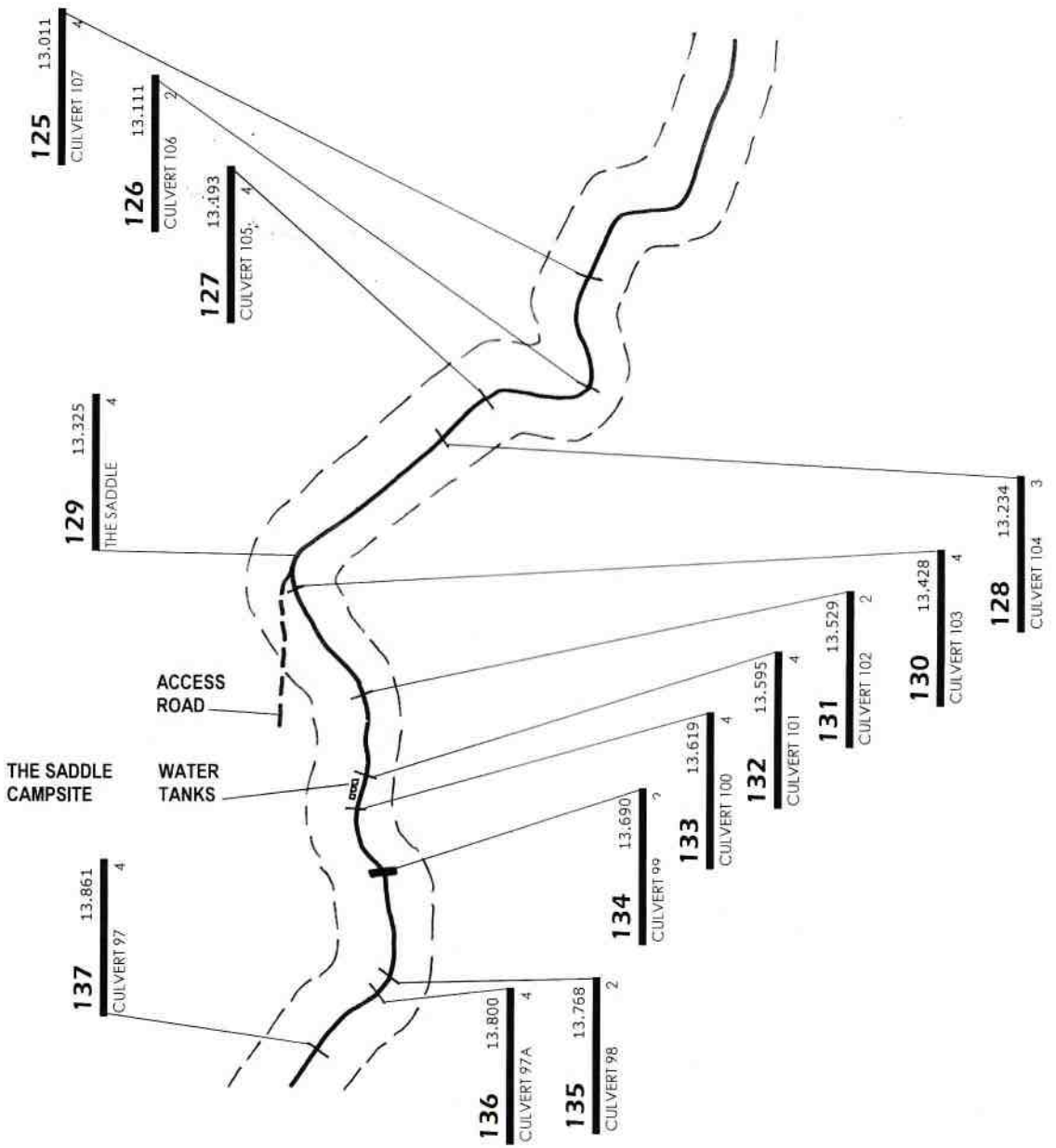
2 3.837

CULVERT 216 2

CULVERT NO. — RELATIVE SIGNIFICANCE (as per section 5.4)

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 7 OF 18

Ivan McDonald Architects



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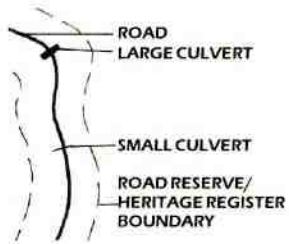
DIAGRAMATIC ONLY

LEGEND



FEATURE REFERENCE NO. — CHAINAGE

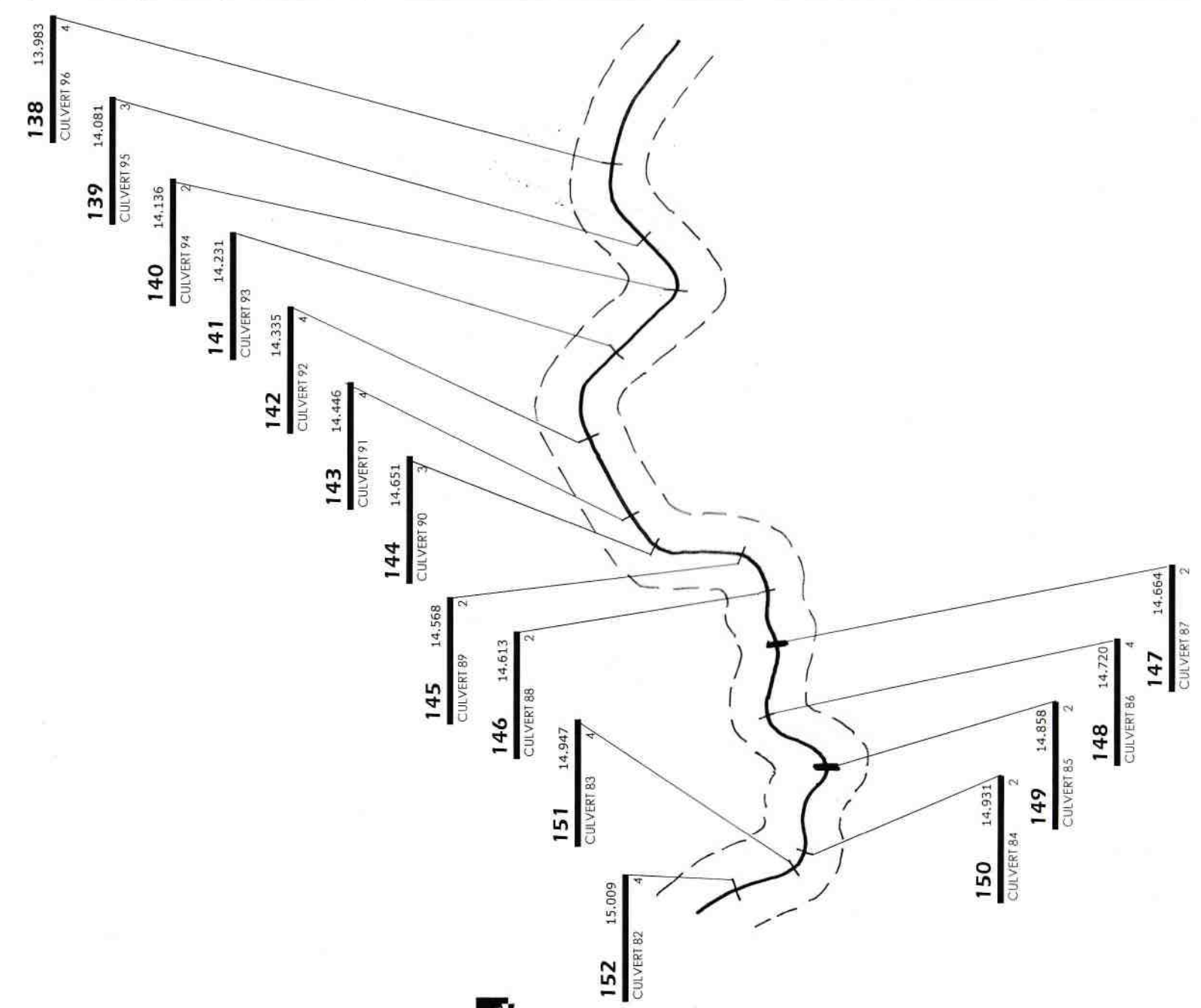
2 — 3.837

CULVERT 216 — 2

CULVERT NO. — RELATIVE SIGNIFICANCE (as per section 5.4)

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 8 OF 18

Ivan McDonald Architects



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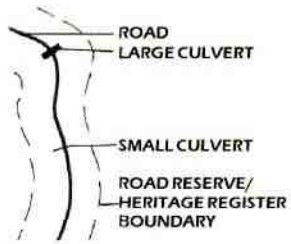
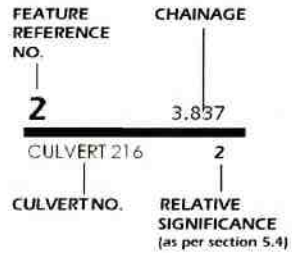
DIAGRAMATIC ONLY

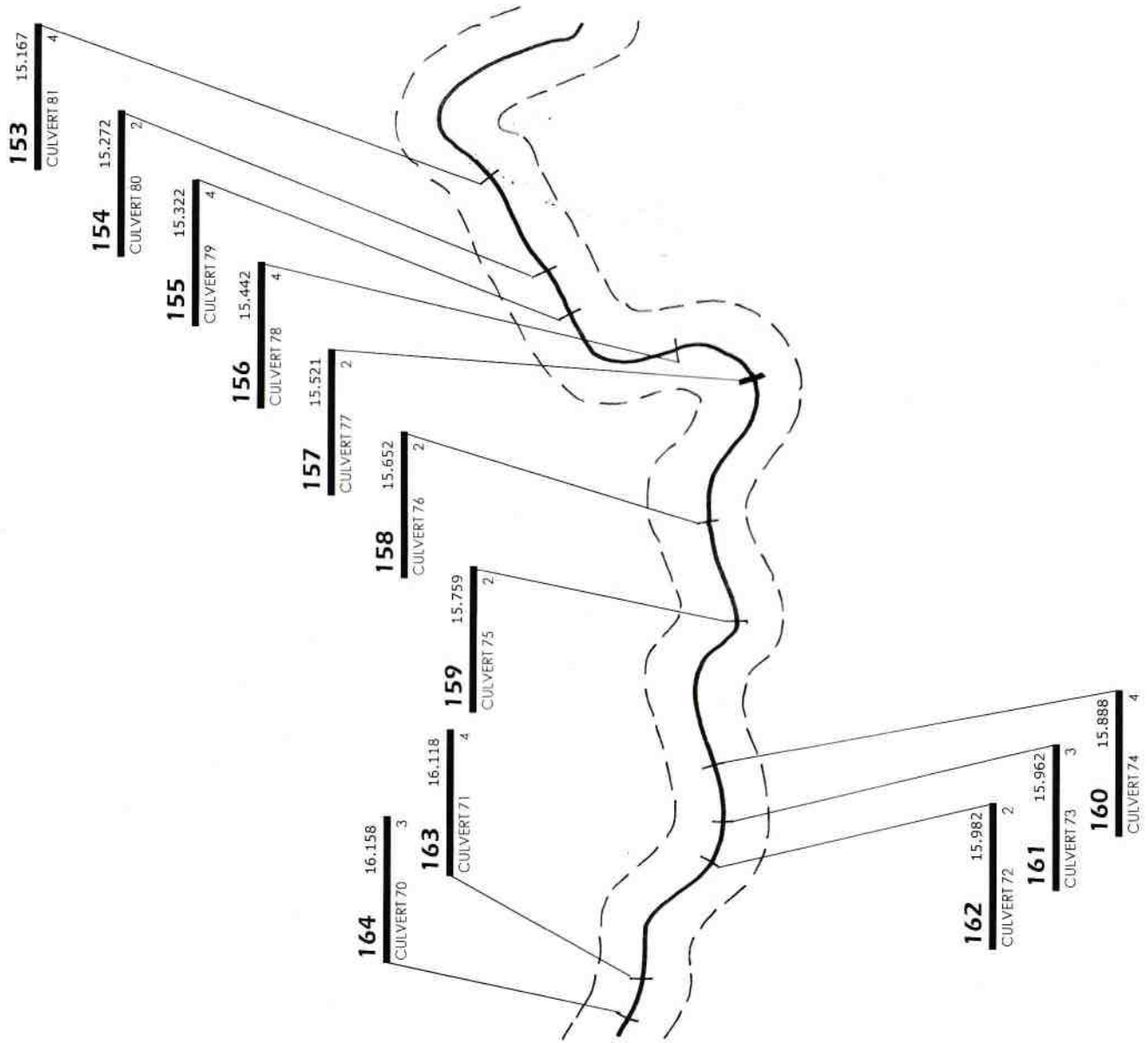
LEGEND





MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 9 OF 18

Ivan McDonald Architects



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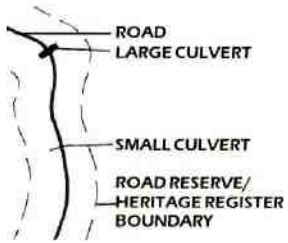
DIAGRAMATIC ONLY

LEGEND



FEATURE REFERENCE NO. — CHAINAGE

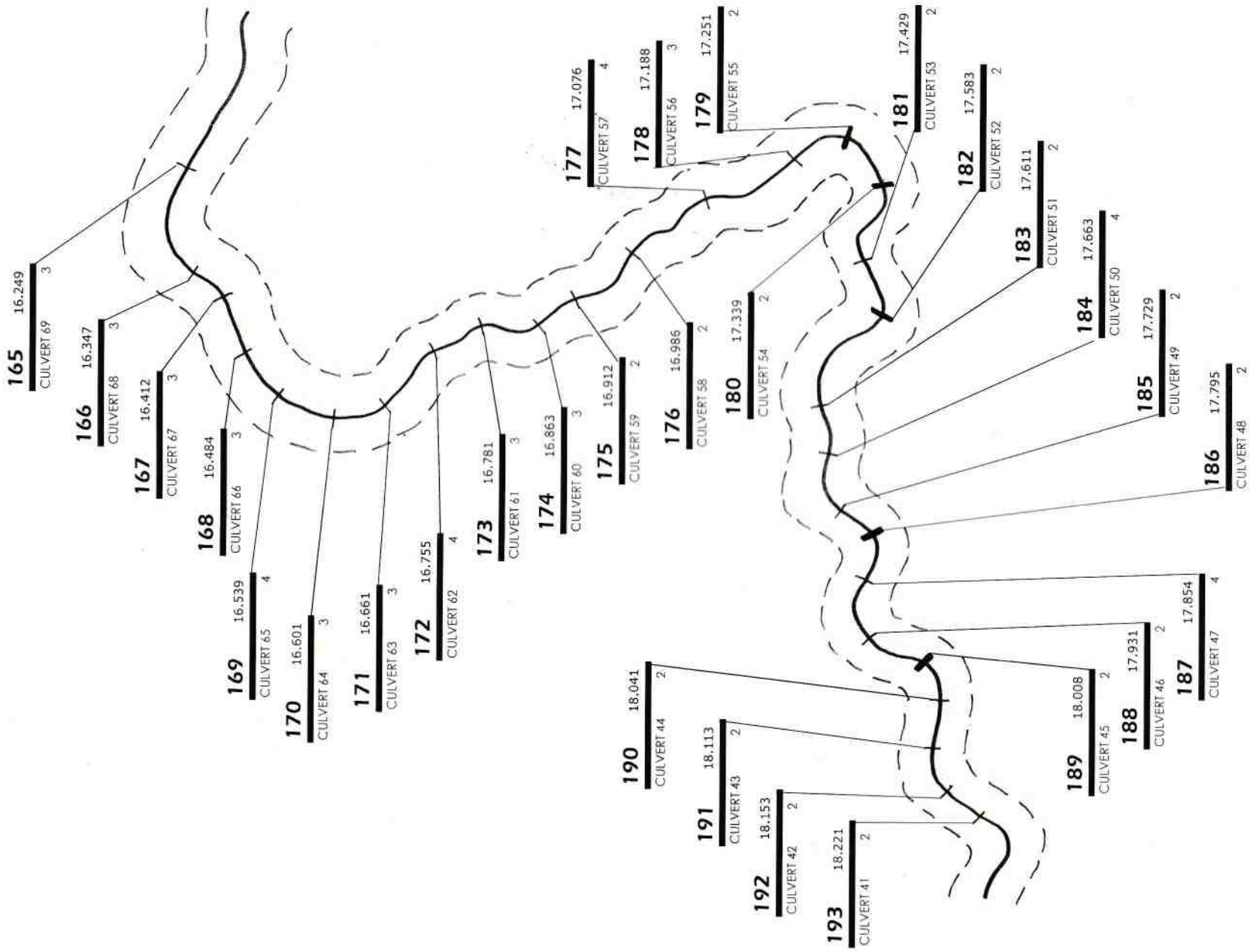
2 — 3.837

CULVERT 216 — 2

CULVERT NO. — RELATIVE SIGNIFICANCE (as per section 5.4)

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 10 OF 18

Ivan McDonald Architects



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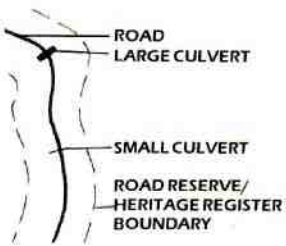
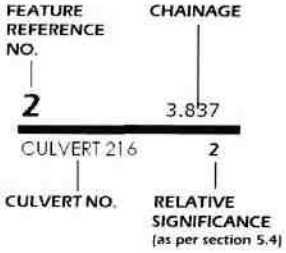
1:3144 at A3 size
DIAGRAMATIC ONLY

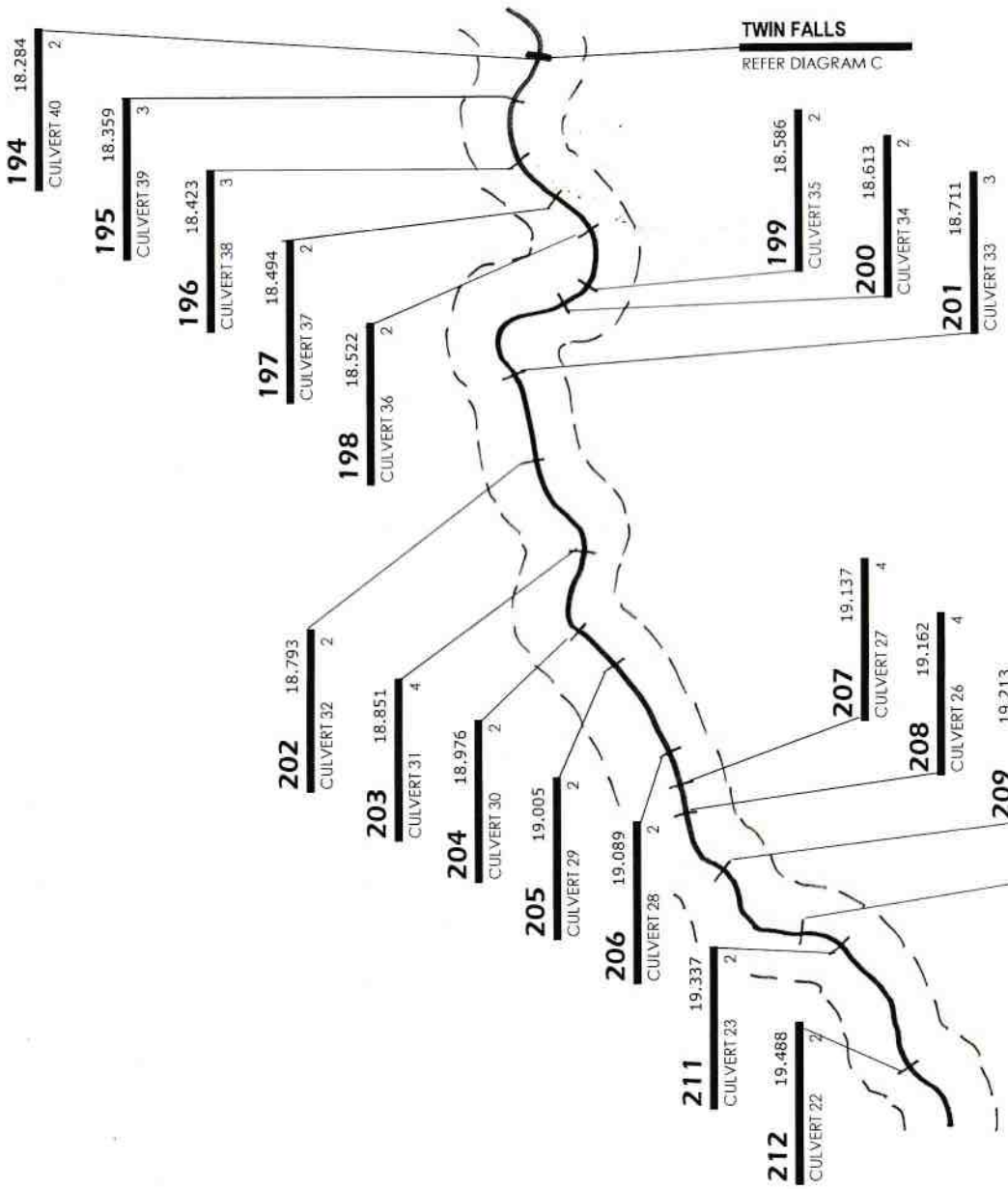
LEGEND

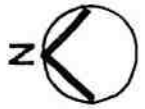




MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 11 OF 18

Ivan McDonald Architects





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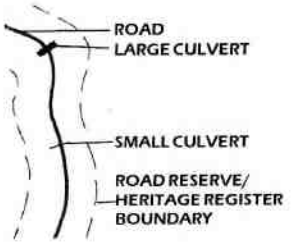
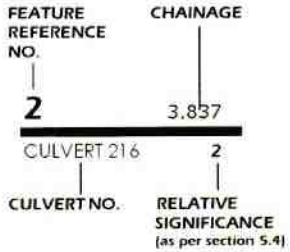
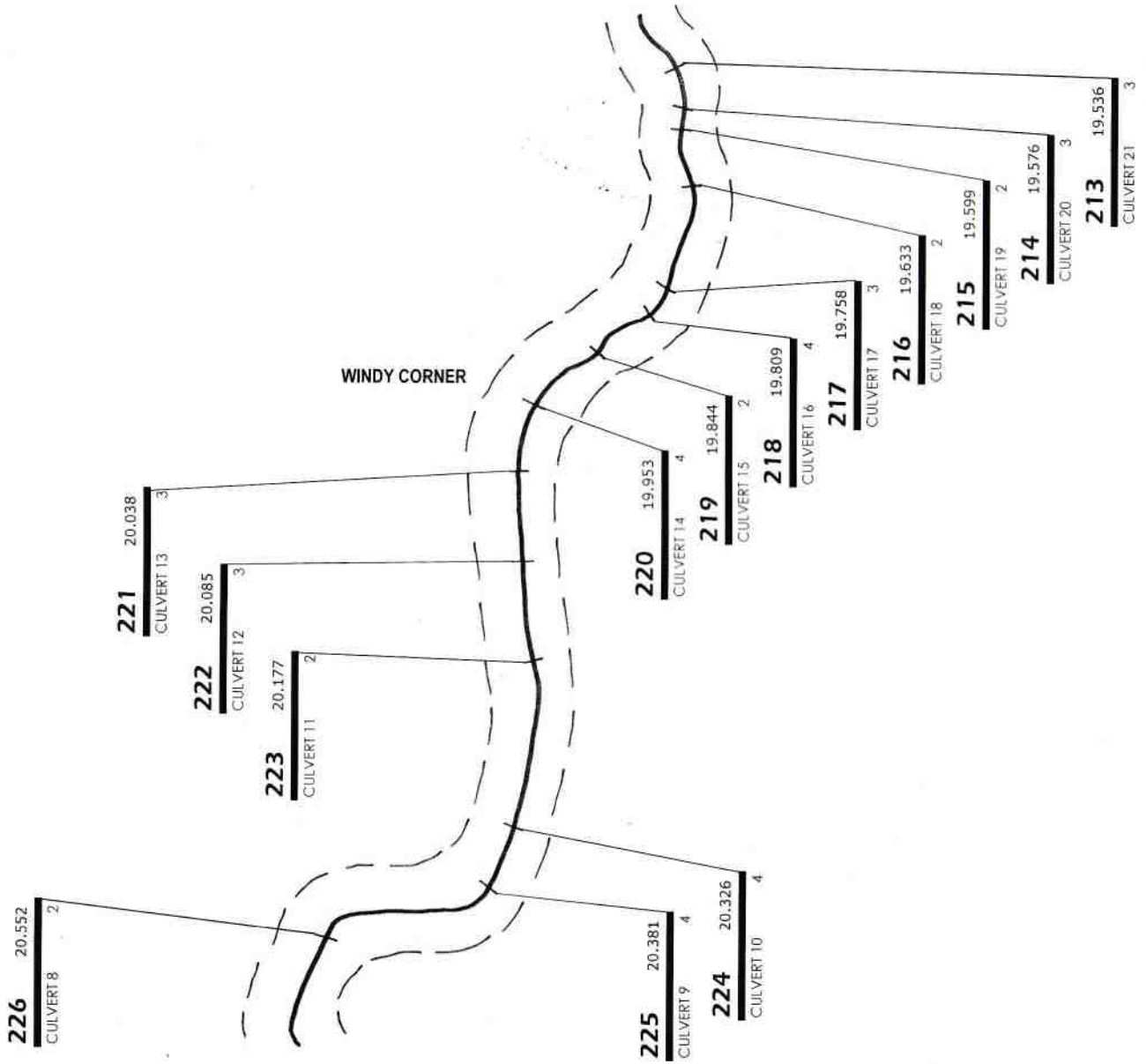




MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 12 OF 18

Ivan McDonald Architects



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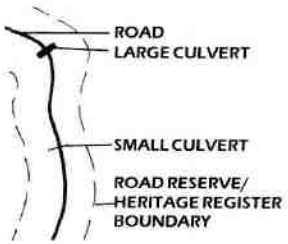
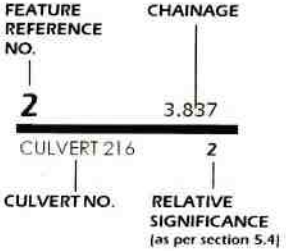
DIAGRAMATIC ONLY

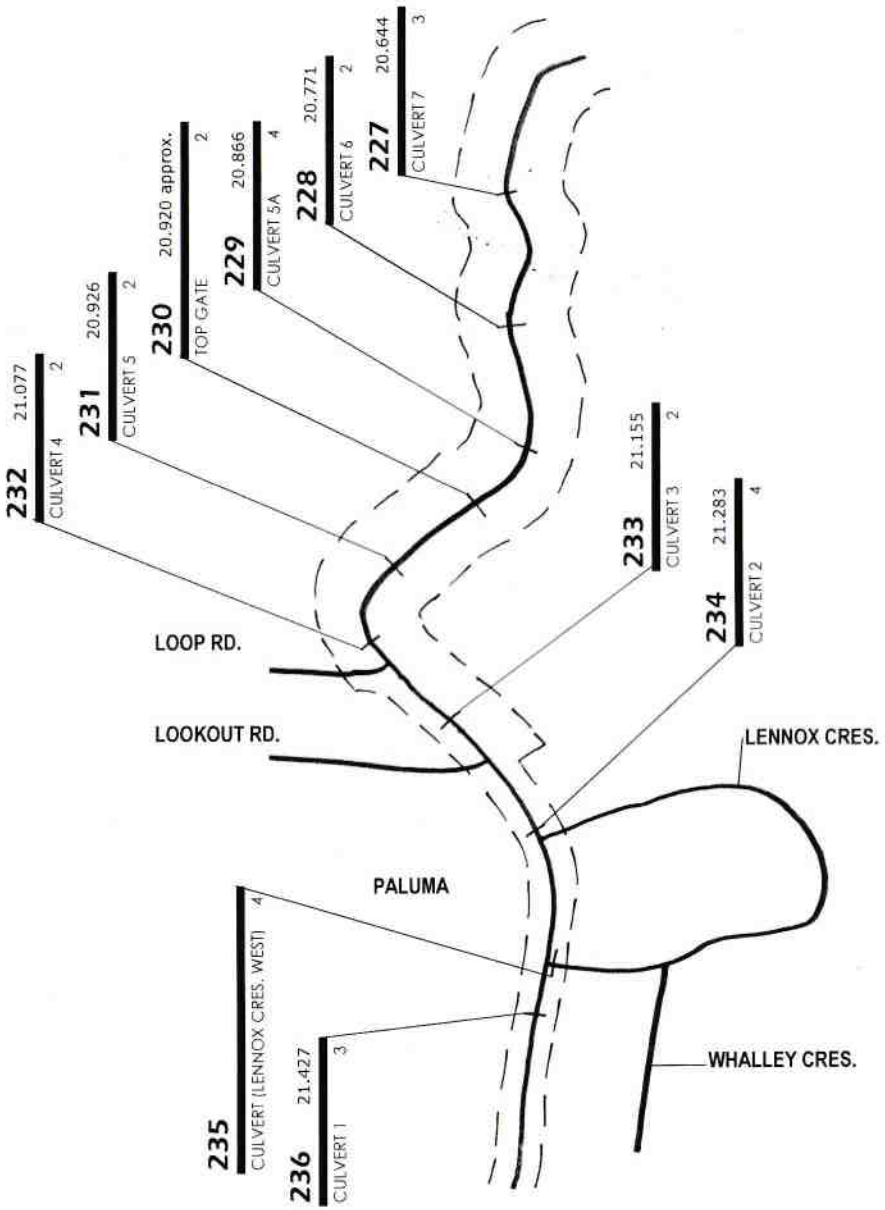
LEGEND

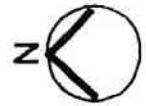




MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 13 OF 18

Ivan McDonald Architects





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DIAGRAMATIC ONLY

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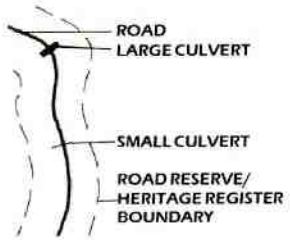
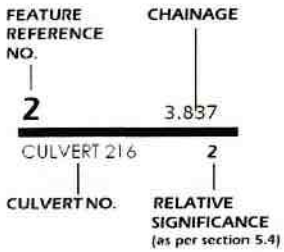
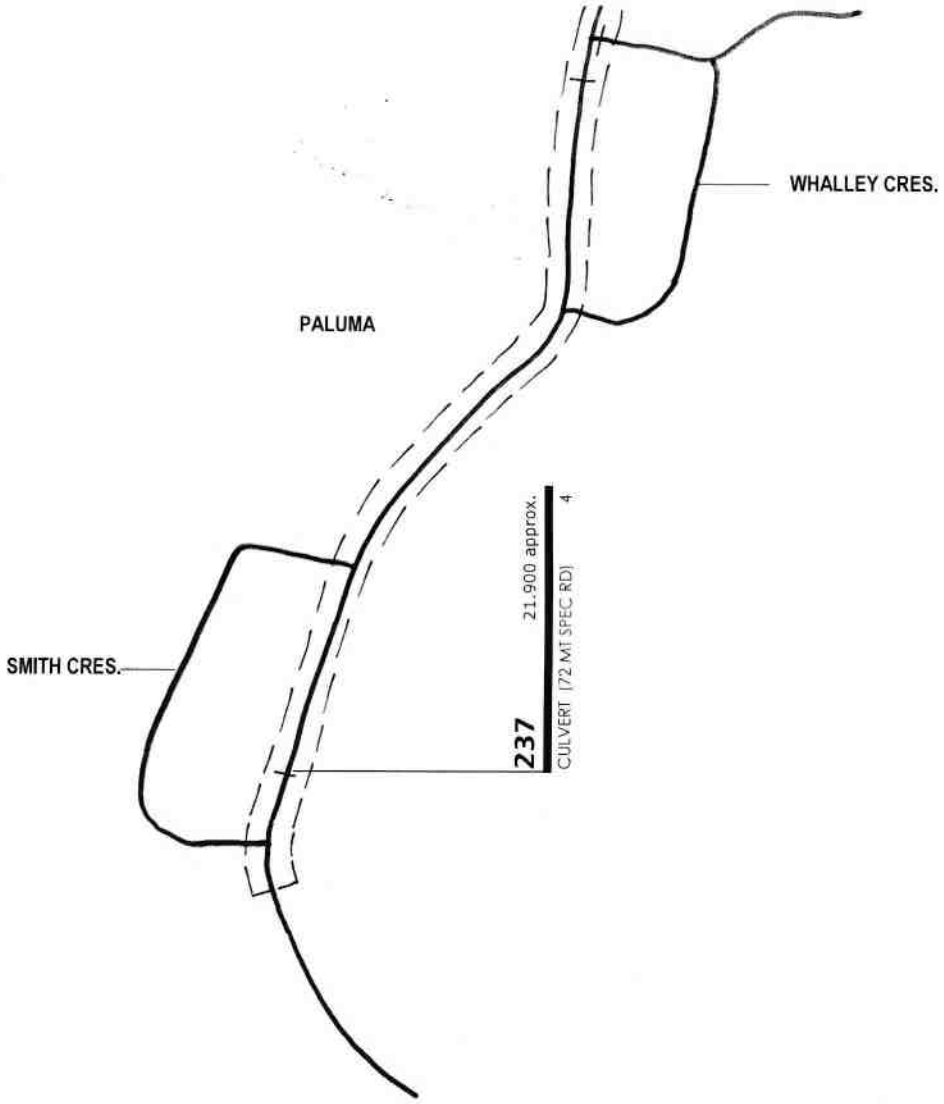




MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 14 OF 18

Ivan McDonald Architects



1:3144 at A3 size
DIAGRAMATIC ONLY

LEGEND

ROAD
LARGE CULVERT
SMALL CULVERT
ROAD RESERVE/
HERITAGE REGISTER
BOUNDARY

FEATURE REFERENCE NO.
CHAINAGE
2
3.837
CULVERT 216
2
CULVERT NO.
RELATIVE SIGNIFICANCE
(as per section 5.4)

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 15 OF 18

Ivan McDonald Architects

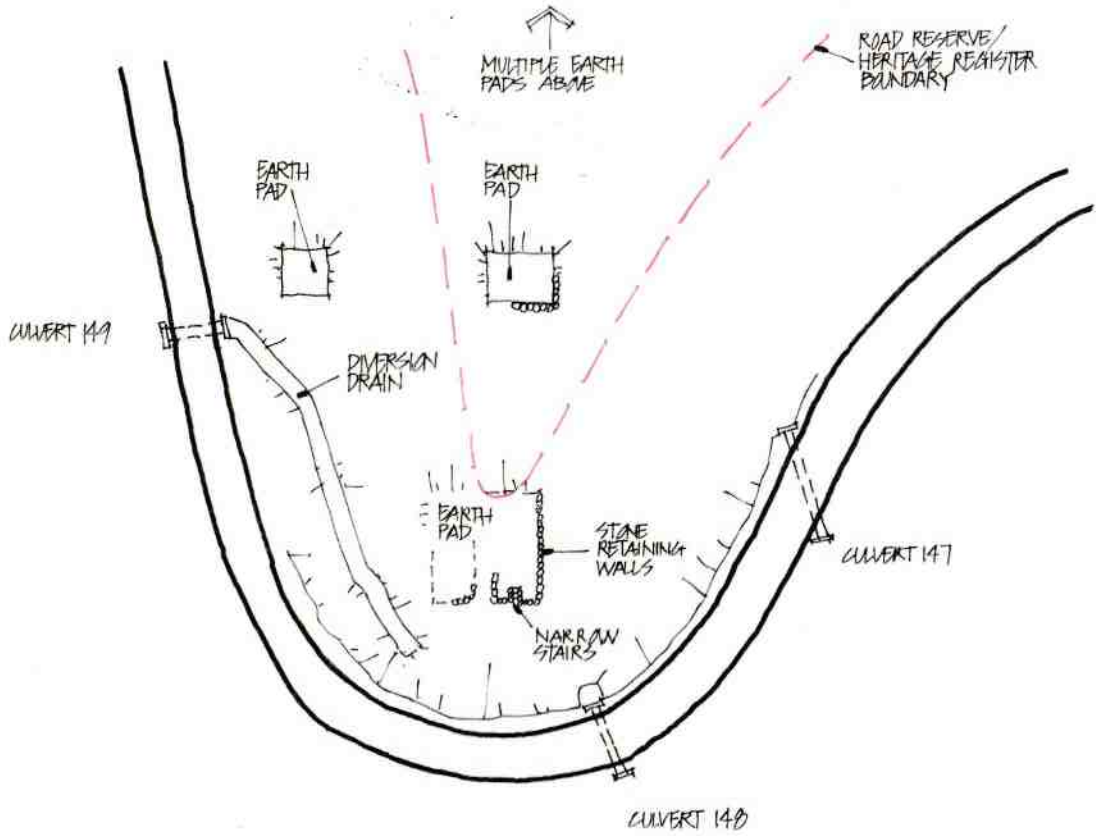


DIAGRAM A
CULVERT 149 CAMPSITE

SCALE 1:500 AT A3 SIZE

N

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 16 OF 18

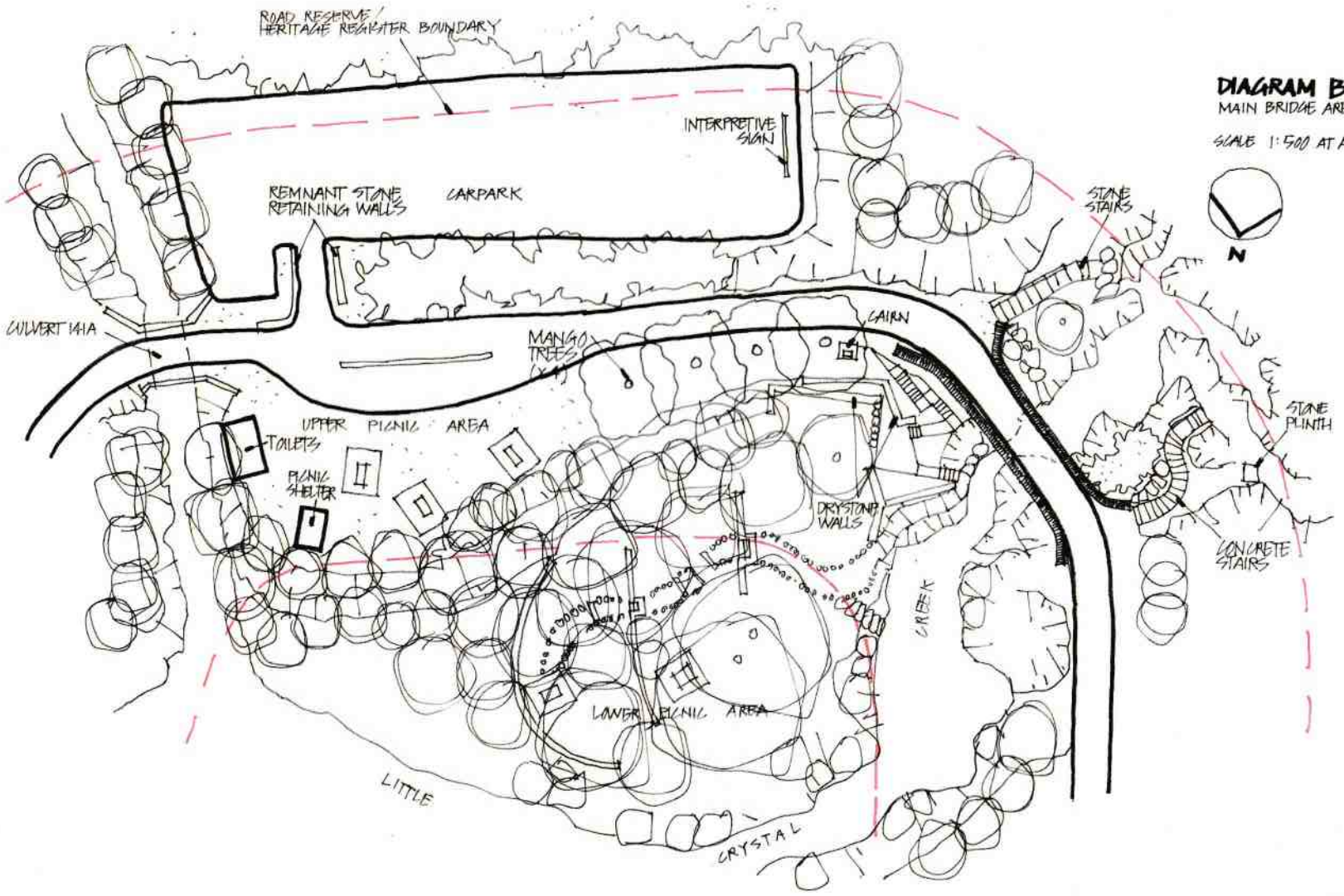


DIAGRAM B
MAIN BRIDGE AREA

SCALE 1:500 AT A3 SIZE

MT SPEC RD.
FEATURE REFERENCE MAP
SHEET 17 OF 18

APPENDIX 4 *Photographic log*

Culvert 216 - E headwall B001

Culvert 216 - U headwall B002

Culvert 216 - stone kerbing & channelling B003

Culvert 215 B004

Culvert 214 B005

Culvert 213 B006

Culvert 212 B007

Culvert 211 B008

Culvert 211 B009

Culvert 210 - U headwall B010

Culvert 210 - E headwall B011

Culvert 209 B012

Culvert 209 B013

Culvert 208 B014

Culvert 207 - U headwall B015

Culvert 207 B016

Culvert 207 - stone kerbing & channelling B017

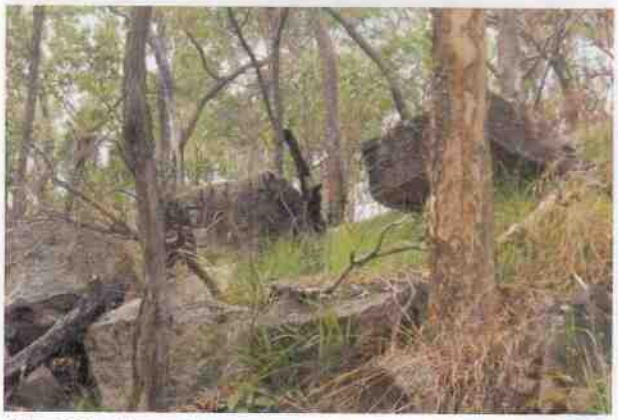
Culvert 206 B018

Culvert 206A B019

Culvert 206A B020

Culvert 206A B021

Culvert 206A B022



Culvert 206A - Quarry site G001

Culvert 206A - Quarry site G002

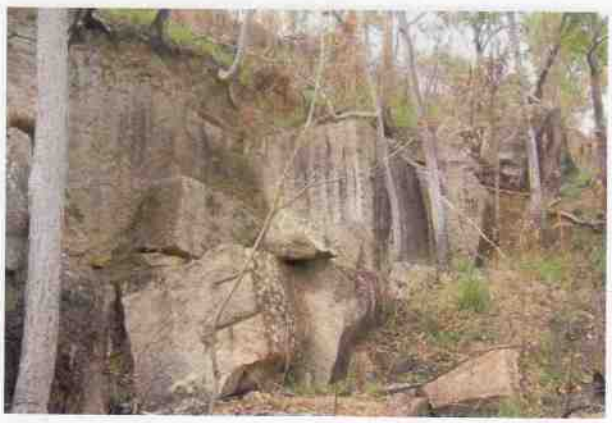
Culvert 206A - Quarry Site G003

Culvert 206A - Quarry Site G004

Culvert 206A - Quarry site G005

Culvert 206A -Quarry site G006

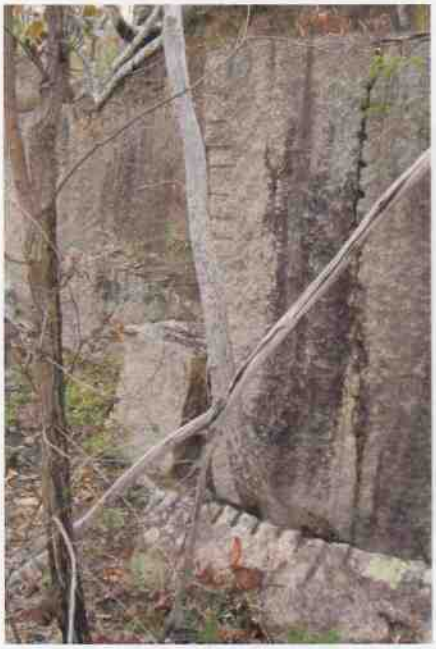
Culvert 206A - Quarry site G007



Culvert 206A - Quarry site G008

Culvert 206A - Quarry site G009

Culvert 206A - Quarry site G010



Culvert 206A - Quarry site G011

Culvert 206A - Quarry site G012

Culvert 206A - Quarry site G013

Culvert 206A - Quarry site G014

Culvert 206A - Quarry site G015

Culvert 206A - Quarry site G016

Culvert 206A - Quarry site G017

Culvert 206A G018

Culvert 206A G019

Culvert 206A G020

Culvert 206A G021

Culvert 206A G022

Culvert 205 B023

Culvert 204 B024

Culvert 204 B025

Culvert 203 B026

Culvert 202 B027

Culvert 202 B028

Culvert 201 B029

Culvert 201 - intermittent stone channelling B030

Culvert 200 B031

Culvert 199 B032

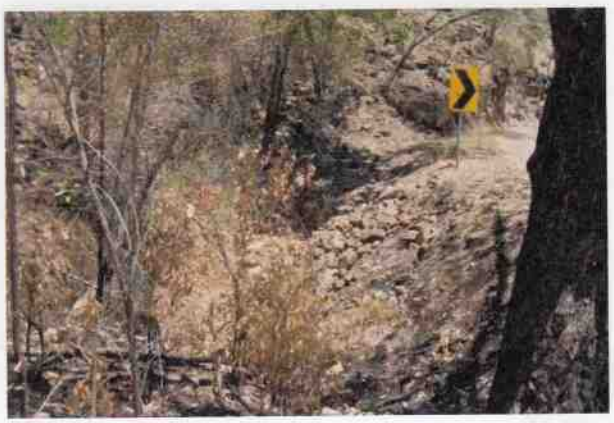
Culvert 197 B035

Culvert 198 B034

Culvert 198 - intermittent stone kerbing and channelling B033

Culvert 196 B036

Culvert 196 - Wolfram Creek B037



Culvert 196 - Rubble bank B038

Culvert 195 B039

Culvert 194 B040

Culvert 193 B041

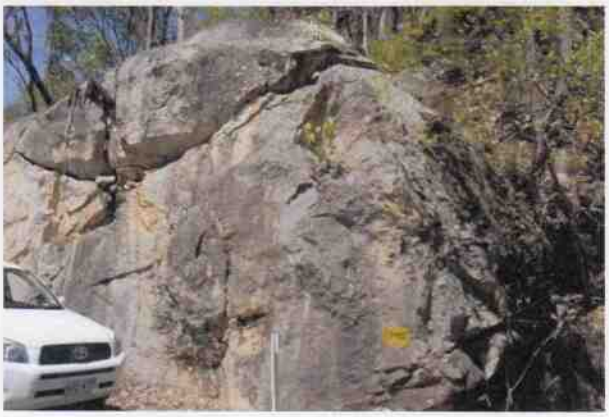
Culvert 192 B042

Culvert 191 B043

Culvert 190 B044

Culvert 189 B045

Culvert 188 B046



Culvert 188 - Drill marks on rock face B047

Culvert 188A - Fairy Falls B048

Culvert 188A B049

Culvert 187A - Fairy Falls B050

Culvert 187A B051

Culvert 187A - Stone kerbing and channelling B052

Culvert 187A - View to Halifax Bay D002

Culvert 187 B053

Culvert 186 B054

Culvert 185 B055

Culvert 184 B056

Culvert 184 B057

Culvert 183 B058

Culvert 182 B059

Culvert 181 B060

Culvert 180 B061

Culvert 179 B062

Culvert 178 B063

Culvert 177 B064

Culvert 177 - Stone kerbing B065

Culvert 176 B066

Culvert 176A - Maidenhair Fern Creek B067

Culvert 176A B068

Culvert 176A B069

Culvert 176A – Stone kerbing & channelling B072

Culvert 176A B071

Culvert 176A B070

Culvert 175 B073

Stone kerbing & channelling between Culverts 175 and 174 B074

Culvert 174 B075

Culvert 173 B076

Culvert 172 B077

Culvert 171 B078

Culvert 170 B079

Culvert 170 B080

Culvert 169 B081

Culvert 168 B082

Culvert 167 B083

Culvert 166 B084

Culvert 165 B085

Culvert 165 - Stone kerbing & channelling B086

Culvert 164 B087

Culvert 164A B089

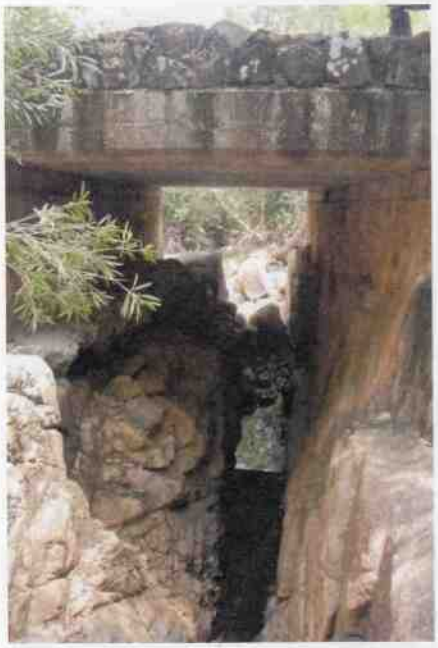
Culvert 164A - Reedy Creek B088

Culvert 164A B090

Culvert 164A B091

Culvert 164A B092

Culvert 164A B093



Culvert 163A - Noah's Ark Creek B095

Culvert 163A B094

Culvert 163A B096

Culvert 163A B097

Culvert 163A B098

Culvert 163A B099

Culvert 163A - The 'Noah's Ark' rock B100

Culvert 163 B101

Culvert 163 - Stone kerbing & channelling B102

Culvert 163 - Mango tree stand E001

Culvert 163 - Benchmark tree E002

Culvert 163 - "MR 5½" blaze E003

Culvert 163 – Benchmark tree E004

Culvert 161 B104

Culvert 160 B105

Culvert 161 B104

Culvert 159 B106

Culvert 159 B107

Culvert 159 - Stone kerbing & channelling B108

Culvert 158A B109

Culvert 158A - Stone kerbing & intermittent stone channelling B110

Culvert 158 B111

Culvert 157 - Stone wall above inlet B112

Culvert 157 - U headwall B113

Culvert 157 - Stone kerbing & channelling B114

Culvert 156 B115

Culvert 155 B116

Culvert 154 B117

Culvert 153 B118

Culvert 151 B121

Culvert 151 – Stone kerbing & channelling B122

Culvert 153 – Stone kerbing B119

Culvert 152 B120

Culvert 150 B123

Culvert 150A - U headwall B124

Culvert 150A B125

Culvert 150A - E headwall B126

Culvert 149 B127

Culvert 149 - Camp site retaining wall F001

Culvert 149 - Camp site stairs F002

Culvert 148 B128

Culvert 149 - Camp site F003

Culvert 147 B129

Culvert 146 B130

Culvert 145 - Stone training wall B131

Culvert 145 B132

Culvert 145 - Stone kerbing & channelling B133

Culvert 144 B135

Culvert 143 B136

Culvert 144 B134

Culvert 142 B137

Culvert 142 - Stone kerbing & channelling B138

Culvert 141 B139

Culvert 141A - Little Crystal Creek carpark B140

Culvert 141A B141

Culvert 141A - U headwall B142

Culvert 141A B143

Culvert 141A - E headwall B144

Culvert 141A - E wing wall B145

Main bridge carpark C263

Main bridge – interpretive C264

Main bridge – Mango trees on uphill approach C265

Main bridge - Modern toilets and upper picnic area C266

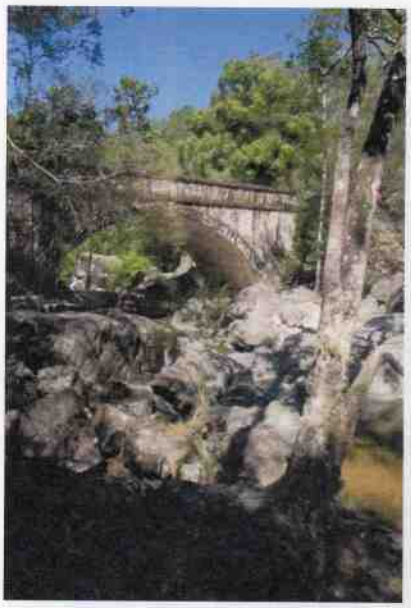
Main bridge C267

Main bridge - Concrete stairs & railing C268

Main bridge C270

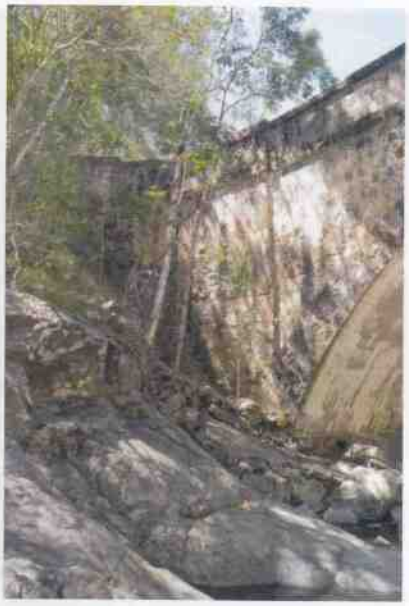
Main bridge C269

Main bridge - Stone plinth on upstream side C271

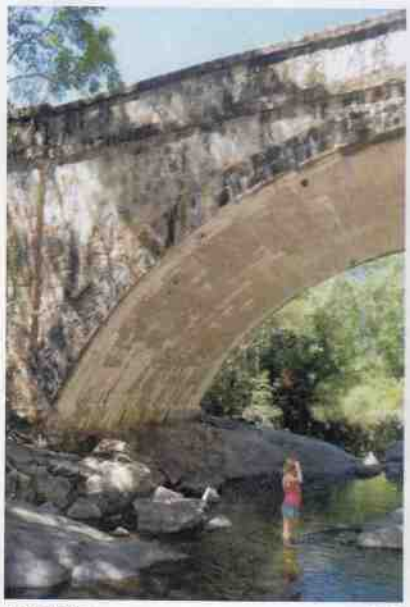


Main bridge C272

Main bridge - Swimming pool C273

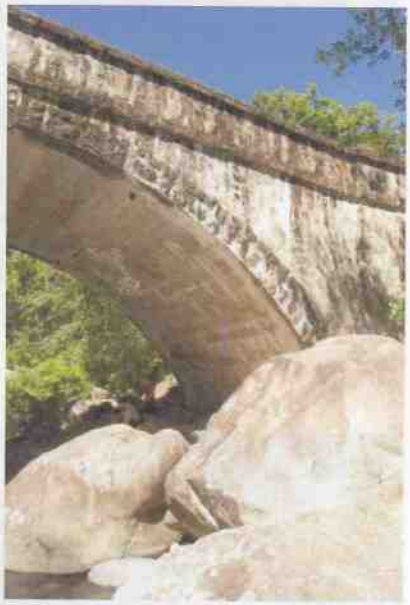


Main bridge C274

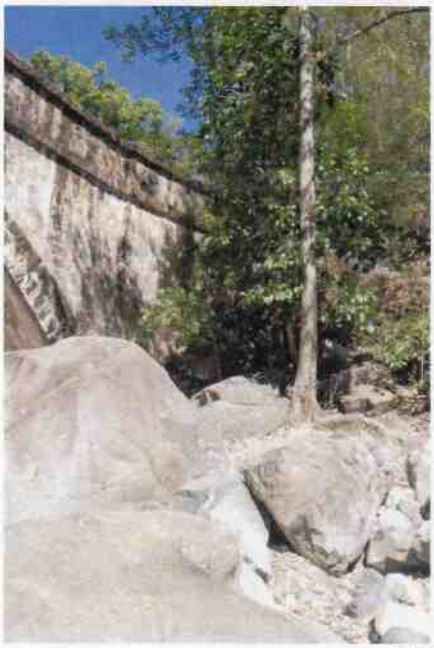


Main bridge C275

Main bridge C276



Main bridge C277



Main bridge C278

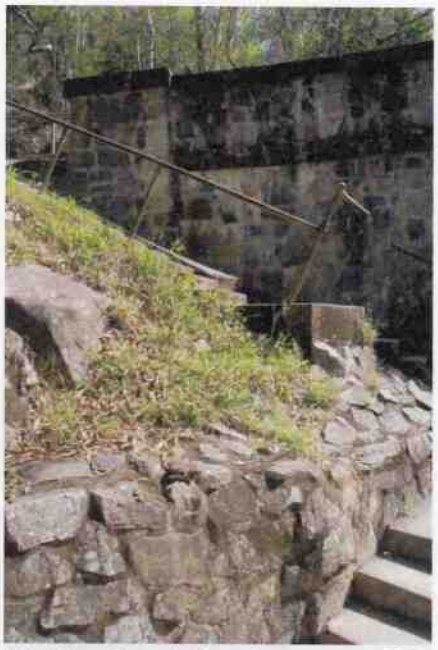
Main bridge - Stone stairs C279

Main bridge - 1987 plaque and cairn C280

Main bridge - Mango trees C281

Main bridge - Stone retaining wall C282

Main bridge - Stone retaining wall C283



Main bridge - Stone retaining wall C284

Main bridge - Concrete stairs and path C285

Main bridge - Concrete stairs and path C286

Main bridge C289

Main bridge – Concrete stairs and path C288

Main bridge C287

Main bridge C290

Main bridge - Stone retaining wall C293

Main bridge C291

Main bridge C292

Main bridge - Stone retaining wall C294

Main bridge - Lower picnic area C295

Main bridge - Stone stairs and path to lower picnic area C296

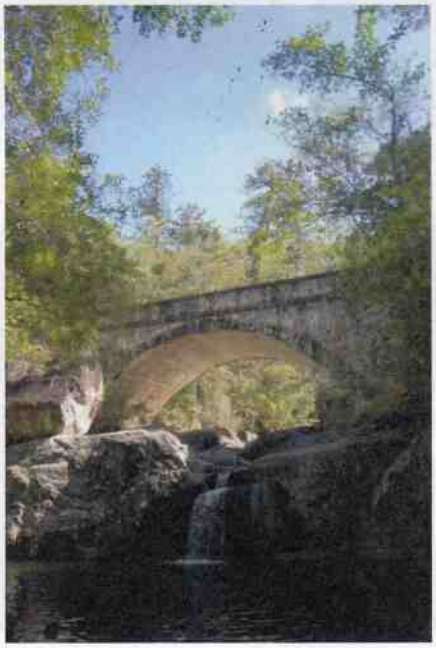
Main bridge - Stone retaining walls to lower picnic area C297

Main bridge - Stone stairs, paths and retaining walls to lower picnic area C298

Main bridge - Tables to lower picnic area C299

Main bridge C300

Main bridge C301



Main bridge C302

Main bridge carpark - Remnant retaining walls C303

Culvert 140 B146

Culvert 140 B147

Culvert 139 B148

Culvert 138 B150

Culvert 137A B151

Culvert 139 – Stone kerbing B149

Culvert 137A B152

Culvert 137 B153

Culvert 136 B154

Culvert 135 B155

Culvert 134 B156

Culvert 133 B157

Culvert 132 - E headwall B158

Culvert 132 - U headwall B159

Culvert 131 B160

Culvert 131 - Stone kerbing & channelling B161

Culvert 130 B162

Culvert 129 B163

Culvert 129 B164

Culvert 128 B165

Culvert 127 B166

Culvert 126 B167

Culvert 126 - Stone kerbing & channelling B168

Culvert 125 B169

Culvert 124 B170

Culvert 123 B171

Culvert 122 B173

Culvert 123 - Stone kerbing & channelling B172

Culvert 121 B174

Culvert 121 B175

Culvert 120 B177

Bartlett's Bluff – large cutting between Culverts 120 and 119 B178

Bartlett's Bluff – large cutting between Culverts 120 and 119 B179

Culvert 121 – Stone kerbing and channelling B176

Culvert 119 B180

Culvert 118 B181

Culvert 117 B182

Culvert 116 B186

Culvert 116 B184

Culvert 117 - Stone kerbing B183

Culvert 116 - Stone kerbing & channelling B185

Culvert 115 B187

Culvert 115 - Stone retaining wall B189

Culvert 112A B192

Culvert 113 B191

Culvert 115 – Stone kerbing & channelling B188

Culvert 114 B190

Culvert 112A B193

Culvert 112A B194

Culvert 112A B195

Culvert 112A B196

Culvert 112 B197

Culvert 112 - Stone kerbing & channelling B198

Culvert 111 B199

Culvert 110 B200

Culvert 109 - U headwall B202

Culvert 109 – Stone kerbing & channelling B201

Culvert 109 - Stone kerbing & channelling B203

Culvert 109 - Stone kerbing & channelling B204

Culvert 108 B205

Culvert 107 B207

Culvert 108 - Stone kerbing & channelling B206

Culvert 107 - Stone retaining wall B208

Culvert 106 - U headwall B209

Culvert 106 B210

Culvert 105 B211

Culvert 104 B212

The Saddle Corner looking north B213

The Saddle Campsite C260

The Saddle - Campsite beyond road reserve C261

The Saddle - Old road to campsite C262

Culvert 103 C022

Culvert 103 C023

Culvert 102 C024

Culvert 101 C025

Culvert 101 C030

Culvert 101 C031

Culvert 101 - Steel water tanks C032

Culvert 101 - Steel water tanks C033

Culvert 100 C026

Culvert 99 C027

Culvert 99 C028

Culvert 99 - Hewn rock inlet channel C029

Culvert 99 C034

Culvert 98 C035

Culvert 97A C036

Culvert 97 C037

Culvert 97 - Stone kerbing & channelling C038

Culvert 96 - View to Halifax Bay C039

Culvert 96 C041

Culvert 96 - Intermittent stone channelling C040

Culvert 95 C043

Culvert 95 - Stone kerbing & channelling C042

Culvert 95 - Drystone walling C044

Culvert 94 - Stone retaining wall at E headwall C046

Culvert 95- The Chute water discharge C045

Culvert 94 C047

Culvert 94 - U headwall C048

Culvert 93 C049

Culvert 92 C051

Culvert 93 - Stone kerbing & channelling C050

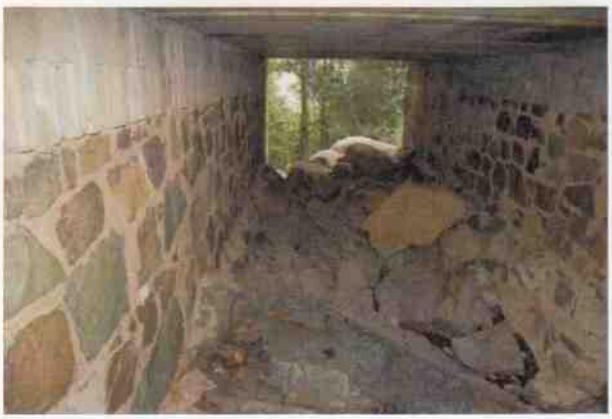
Culvert 90 C052

Culvert 91 C053

Culvert 89 C054

Culvert 88 C055

Culvert 98 – U headwall C056



Culvert 87 C057

Culvert 87 - Stone training wall C058

Culvert 87 - E headwall C059

Culvert 86 C063

Culvert 85 - U headwall C060

Culvert 85 C061

Culvert 85 - Stone training wall C062

Culvert 85 - E headwall C064

Culvert 84 C065

Culvert 83 C066

Culvert 82 C067

Culvert 82 - Stone kerbing & channelling C068

Culvert 81 C069

Culvert 80 C070

Culvert 79 – E headwall and stone retaining wall C073

Culvert 79 C071

Culvert 79 – Stone kerbing & channelling C072

Culvert 77 – View at U C076

Culvert 77 – View across Crystal Creek Valley C075

Culvert 78 C074

Culvert 77 C077

Culvert 77 C078

Culvert 77 - View at E C079

Culvert 77 C081

Culvert 77 – Stone retaining walls at E C082

Culvert 76 C083

Culvert 75 C084

Culvert 77 C082

Culvert 74 C085

Culvert 73 C086

Culvert 72 C087

Culvert 72 - Stone kerbing & channelling C088

Culvert 70 – Stone kerbing & channelling C091

Culvert 70 C090

Culvert 71 C089

Culvert 69 C092

Culvert 68 C094

Culvert 69 - Stone kerbing & channelling C093

Culvert 67 C095

Culvert 66 C096

Culvert 66 C097

Culvert 65 C098

Culvert 64 C099

Culvert 63 C100

Culvert 62 - E headwall C101

Culvert 62 - U headwall C102

Culvert 61 C103

Culvert 60 C104

Culvert 59 C105

Culvert 58 - Rubble bank C106

Culvert 58 - U headwall C107

Culvert 57 C108

Culvert 56 - E headwall C109

Culvert 56 - U headwall C110

Culvert 56 - Drystone walling C111

Culvert 55 - E headwall C112

Culvert 55 - U headwall C113

Culvert 55 C114

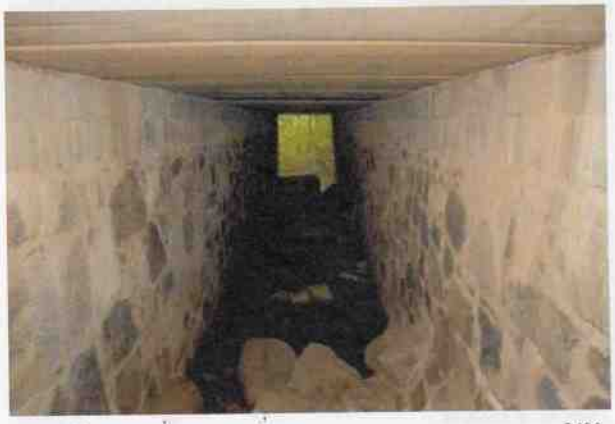
Culvert 54 - E headwall C115

Culvert 54 - U headwall C116

Culvert 54 C117

Culvert 53 C118

Culvert 52 - U headwall C119



Culvert 52 C120

Culvert 52 C121

Culvert 51 – E headwall C122

Culvert 51 - U headwall C123

Culvert 50 C124

Culvert 49 C125

Culvert 48 –E headwall C126

Culvert 48 - U headwall C127

Culvert 48 C128

Culvert 47 C129

Culvert 47 C130

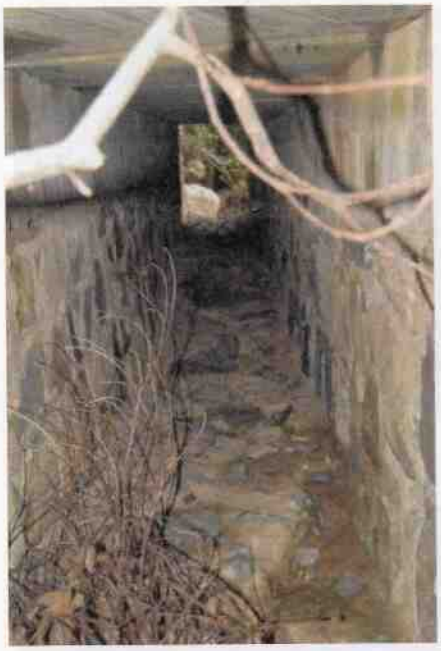
Culvert 47 - Intermittent stone channelling C131

Culvert 46 - E headwall C132

Culvert 46 - U headwall C133

Culvert 46 - Large washout at inlet C134

Culvert 45 - U headwall C135



Culvert 44 - U headwall C137

Culvert 45 C136

Culvert 44 – Drystone walling C139

Culvert 43 – E headwall C140

Culvert 44 – Intermittent stone channelling C138

Culvert 43 - U headwall C141

Culvert 42 C142

Culvert 41 C143

Culvert 40 - Twin Falls C144

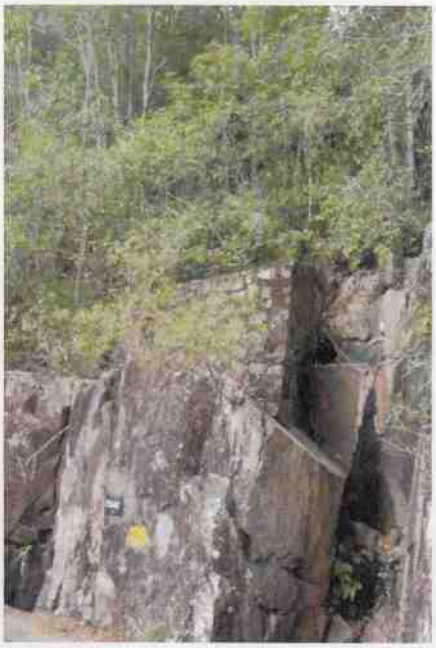
Culvert 40 - Twin Falls C145

Culvert 40 - E headwall & retaining walls C146

Culvert 40 - Hewn rock inlets C147

Culvert 40 – Timber guardpost C148

Culvert 40 - Quadrangular training wall above inlets C149



Culvert 40 C150

Culvert 40 - Hewn rock inlet C151

Culvert 40 – Natural rock invert C152

Culvert 40 - Downhill branch inlet C153

Culvert 40 - Downhill branch inlet C154

Culvert 39 C155

Culvert 39 - Stone kerbing & channelling C156

Culvert 38 - E headwall C157

Culvert 38 – U headwall C158

Culvert 38 - Stone kerbing & channelling C159

Culvert 37 - U headwall C160

Culvert 37 - E headwall C161

Culvert 36 C162

Culvert 35 C163

Culvert 34 – U headwall C164

Culvert 34 - E headwall C165

Culvert 34 - Stone kerbing & channelling C166

Culvert 33 C167

Culvert 32 C168

Culvert 31 – U headwall C169

Culvert 31 – E headwall C170

Culvert 30 C171

Culvert 30 C172

Culvert 29 C173

Culvert 28 C174

Culvert 27 C175

Culvert 26 C176

Culvert 25 - E headwall C177

Culvert 25 - U headwall C178

Culvert 24 - E headwall C179

Culvert 24 - U headwall C180

Culvert 23 C182

Culvert 24 – Drystone walling C181

Culvert 23 - Stone training wall C183

Culvert 23 - U headwall C184

Culvert 23 C186

Culvert 22 – U headwall C188

Culvert 23 - U headwall C185

Culvert 22 – E headwall C187

Culvert 21 C189

Culvert 21 C190

Culvert 21 C191

Culvert 20 C192

Culvert 19 C193

Culvert 19 - Stone kerbing & channelling C194

Culvert 18 C195

Culvert 17 C196

Culvert 17 – Timber guardposts & rails C197

Culvert 17 C198

Culvert 17 - Timber guardposts & rails C199

Culvert 15 – Stone kerbing & channelling C202

Culvert 15 C201

Culvert 15 – Stone kerbing & channelling C202

Culvert 14 C203

Culvert 13 C205

Culvert 14 - Stone kerbing & channelling C204

Culvert 12 – Stone kerbing & channelling C208

Culvert 12 - U headwall C207

Culvert 12 – E headwall C206

Culvert 11 C209

Culvert 10 C210

Culvert 8 C212

Culvert 8 – Stone kerbing & channelling C213

Culvert 8 C214

Culvert 9 C211

Culvert 6 C216

Culvert 7 C215

Culvert 6 C217

Culvert 5A C218

Culvert 5 C219

Culvert 4 C238

Culvert 3 – Stone kerbing & channelling C240

Culvert 3 C239

Culvert 2 C242

Culvert 2 C243

Culvert 2 C244

Culvert 3 – Timber guardpost C241

Culvert (Lennox Crescent West) – Paluma streetscape C245

Culvert (Lennox Crescent West) C246

Culvert 1 C248

Culvert 1 C249

Culvert (Lennox Crescent West) C247

Culvert (72 Mt Spec Road) C250