

REPAIRS BY THE ROYAL ENGINEERS OF THE RAILWAY DESTRUCTION DURING THE ANGLO BOER WAR, 1899-1902

By D Walters

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Abstract

During the Anglo Boer War of 1899-1902, Lord Roberts had to transport his vast army in addition to thousands of tons of commissariat and munitions along vulnerable single line railways throughout the vast extent of South Africa. As shown by the American Civil War of 1861-65 and the Franco-Prussian War of 1870, railways played a huge role in rapidly transporting troops from one battle field to another, while having to repair sabotaged railways and bridges on a constant basis.

This paper explores the contribution of the Corps of the Royal Engineers to the overall success of the British military in defeating the Boer forces of the *Zuid-Afrikaansche Republiek* and the *Oranje Vrijstaat*. Despite an abundance of literature on all aspects of the combatants, the battles and skirmishes, the subject of this paper has received little recognition. The officers and men of the Royal Engineers played a significant but mainly invisible role in supporting Lord Roberts and then Lord Kitchener's army and their operations throughout the conflict. The speed with which they completed the repairs of the damaged railway bridges and railway lines contributed to the unrelenting pressure that the British Army was able to exert on the Boer forces. In addition, they built thousands of blockhouses that protected the bridges and railway lines and transport routes and operated the armoured trains that kept the Boer forces away from the railway lines.

Apart from two comprehensive volumes produced in 1903 and 1904, little has been written about the subject, especially in the light of more recent books outlining the exploits of the Boer forces in sabotaging the transport infrastructure.

Paper / notes

The Bloemfontein Conference in June 1899 ended when the British and the Transvaal Governments failed to resolve their diplomatic deadlock to reach agreement on various domestic issues. As a military confrontation seemed to be the only outcome, it became the pretext for the British to increase their garrison in South Africa. At the time it comprised of less than 10,000 soldiers, of which the Royal Engineer contingent comprised of a single regimental unit, the 29th Fortress Company. Shortly afterwards the 23rd and 7th Field Companies and the 8th Railway Company sailed for the Cape from the UK.¹

During early October Lieut Colonel Percy Girouard DSO, RE was appointed the Director of Railways for the South African Field Force.

1...His first step was to create a railway organisation by recruiting Royal Engineer staff to control the existing railways in the Cape and Natal colonies.
2...His second step was to assemble enough Royal Engineer troops for the rapid reconstruction of anticipated damaged railway lines. To this end he ordered dozens of steel bridge girders and timber beams and sleepers to replace bridges which he predicted would be destroyed by the enemy.
3...His third step was to assemble experienced staff to take over the running of the railways in the two Republics, which would eventually be known as the Imperial Military Railways.²

After the commencement of hostilities on 11 October 1899, numerous Royal Engineer Railway, Field, Fortress, Pontoon Bridging, Telegraph and Balloon Companies arrived in South Africa. By the 1st December the total force of Royal Engineers amounted to 151 officers and over 3,279 non-commissioned officers and men. Each Infantry and Cavalry Division had one Royal Engineer Field Company attached to it.³ Their duties included (1) securing water supplies for the troops and animals, (2) road repair and construction, (3) drift construction, including erecting pontoons across rivers, (4)

¹ Watson.Col Sir C, *History of the Corps of Royal Engineers*, Vol.III, Inst. Royal Engineers,1915, p79 .

² Girouard.E.P.C, *History of the Railways during the War in South Africa*, 1899-1902, 1903.

³ Watson, *History of the Corps*, p81.

building field fortifications and trench defenses, and (5) railway line and bridge repairs, and the construction of temporary railway sidings.⁴

Since the American Civil War, the art of railway demolition had made considerable progress by using dynamite, which posed a serious threat to the British forces as it was freely available to the Boers from the Modderfontein dynamite factory which was built in 1896. With dynamite they could easily blow up bridges and stone culverts, destroy miles of railway track; wreck pumps and water tanks; derail locomotives and trucks by means of dynamite mines, and destroy much infrastructure and supplies.⁵

Col Girouard soon realised that faced with the vast area of military operations as hostilities unfolded, that there were insufficient Royal Engineer personnel available to repair sabotaged bridges along a total of over 4,000 miles of railways. The closing of the gold mines and the flight of *Uitlanders* fleeing the Rand to the coast from July 1899 provided a valuable source of manpower to the British authorities. The crisis leading up to the war resulted in many unemployed goldmine workers congregating at the coastal cities.⁶ After being approached by two gold mine employees, the American engineer Louis Seymour and mine manager George Goodwin, the British High Commissioner Sir Alfred Milner wrote to Col Girouard recommending employment for these skilled artisans. The resulting negotiations led to the Railway Pioneer Regiment being formed comprising former railway and mine workers, mechanics, artisans, engineers and even mine managers, under the leadership of Royal Engineer officers and Sapper NCO's.⁷

Once Royal Engineer companies had erected temporary deviations around damaged railway bridges, the Railway Pioneer Regiment (RPR) was tasked with rebuilding several permanent bridges. As predicted, from February 1900 as the Boers started retreating from the Colesberg district and the rest of the Cape Colony, most railway

⁴ Pratt.E.A, *The Rise of Rail Power in War & Conquest*, 1833-1914, King &Son, London, 1915, p233.

⁵ Ibid, p241.

⁶ Girouard, *History of the Railways*, p30.

⁷ Ibid, p31.

bridges and culverts were demolished in their wake. The most notable bridges were over the Orange River at Norval's Pont, Bethulie, Colesberg and Hopetown.⁸

The major source of engineering expertise for the Boer Republics was employees of the *Nederlandsche Zuid-Afrikaansche Spoorweg Maatschappij* (NZASM) and later various international volunteers experienced in methods of demolition. On 6 March 1900, following orders from Generals Grobler and Lemmer, J. Lutgen and employees from NZASM under the supervision of Engineer van Eelde, blew up the bridge at Norvals Pont using dynamite, electric blasting cap detonators, insulated copper wires and 'Siemens' dynamo-electric generator blasting exploders. The explosions cut three of the twelve 130 ft steel lattice girder spans in half and destroyed one of the piers.⁹

Lieut Henry Micklem DSO, RE oversaw the Royal Engineer construction party that commenced work on the temporary repairs at 9pm on the 15 March and was completed and opened to traffic at 6pm on 27 March, 12 days later. Fortunately, a low-level diversion railway line was able to be erected on the existing concrete stub columns left behind by the original bridge builders. A pontoon was also erected at the bridge site to convey troops, horses and wagons across the wide Orange River. The permanent repairs which included the erection of a high-level aerial tram run on steel cables above the bridge, were carried out by five companies of the Railway Pioneer Regiment (RPR) under the direct supervision of the American Engineer, Maj Louis Seymour. The permanent repairs were completed in 65 days and opened to traffic on 20 May 1900.¹⁰

Four days after the Norvals Pont Bridge demolition, the railway bridge at Bethulie was blown up by J.Lutgen under the supervision of NZASM Engineer Smenk, using dynamite, where five of the ten 120foot spans were cut in half. Maj Graham-Thomson RE had a deviation laid over the nearby downstream wagon bridge within 9 days, and trains could pass from the 17 March. The permanent works were carried out by three RPR companies under Maj Goodwin.¹¹

⁸ *Detailed History of the Railways in the SA War, 1899-1902*, R.E.Inst, Vol I, Chatham, 1904, p79.

⁹ *Report of Transvaal Concessions Commission*, Part III, Minutes of Evidence, 1901, Appendix, p50

¹⁰ *Detailed History of the Railways*, pp79-82.

¹¹ *Ibid*, p82.

According to media reports at the time, Lieut Popham and Capt Grant RE 'miraculously saved' the Bethulie wagon bridge while under fire by the burghers.¹² As someone who has worked in a quarry, I believe that the reason Lutgen was unable to initially set off the demolition blast, was probably due to a break in the electric circuit, when detonation would not happen.

One can only speculate now how much the delays caused by these two bridge breaks contributed to Lord Roberts' eight week halt at Bloemfontein. It wasn't only enteric fever, Lord Roberts had to stockpile mountains of commissariat before his 'Great North March' to Pretoria commenced on 3 May 1900, with his main railway supply line artery being over the Orange River at Norvals Pont and Bethulie Bridges.

Lord Roberts' 'Great North March' was later delayed after virtually every bridge and culvert over a distance of 212 miles was demolished between Bloemfontein and the Vaal River as the Boers retreated. Their destruction was carried out by the volunteer Irish Brigade, under the command of Col John Blake, formerly of the US Army and Maj John MacBride, and their Irish "Dynamitards". While the burghers were petrified of setting-off dynamite charges when lighting the fuses, the former miners from the gold mines were well-versed in working with dynamite.¹³

Through the Orange Free State, the major railway bridges over the Modder River at Glen, the Vet, Zand, Riet, Doorn, Valsch, Rhenoster, Taaibosch and the Vaal Rivers at Vereeniging and Standerton, totaling 61 bridges and 35 culverts, were badly damaged. All temporary repairs were rapidly completed by Royal Engineer construction teams, working day and night under electric floodlights. The Sappers, who were subject to military orders as opposed to civilian contractors, were able to rapidly construct temporary deviations around the wrecked bridges and culverts, working day and night, in three shifts per day.¹⁴

The Royal Engineers used braced timber trestles, adjustable Weldon trestles, box crib 'bird-cage' piers made of timber sleepers and Bate's steel lattice girders for the bridge

¹² *London Standard* newspaper, Friday 16 March 1900, p6.

¹³ McCracken.D.P, *MacBride's Brigade, Irish Commandos in the Anglo Boer War*, Four Courts Press, Dublin, 1999, p111.

¹⁴ *Detailed History of the Railways*, p48.

repairs. Most permanent re-constructions, especially the stone masonry piers and abutments, were later undertaken under contract by various civilian building contractors or by the Cape and Natal Government Railways works departments.¹⁵

In raids undertaken during June 1900, General de Wet burnt down twelve temporary timber bridge repairs, including those at Leeuspruit, Heuningspruit, and twice at Rhenoster River bridges. De Wet destroyed £¾ million worth of supplies and munitions at the temporary storage dump at Roodewal station, which the British had been forced to create as a result of the delays caused by the railway destruction further up the line.¹⁶

In addition to destroying bridges, the permanent way railway line was damaged in dozens of places, by simply setting off a dynamite charge under every second joint in the rails, rendering the rails un-usable. Royal Engineer construction trains were rapidly dispatched to replace the damaged rails within hours. Construction trains comprised of several goods wagons carrying items such as spare 30 and 24 foot rails, dozens of timber sleepers and beams for trestle and crib construction, cranes and all types of equipment, floodlights and electric dynamos and Sapper artisans.¹⁷

The appended railway bridge repair timetable through the Northern Cape and OFS was compiled from Royal Engineer reports that meticulously recorded the repairs to the major bridge demolitions. Great emphasis was placed on the temporary repairs by the Royal Engineers which took between a few hours for small bridges and culverts to almost 12 days to complete the temporary deviation across the Orange River at Norvals Pont.¹⁸

The initial campaign and the eventual retreat of the Boers through Natal was the forerunner of the way the Royal Engineers would have to execute their plans for repairing railway infrastructure. Here the RE Pontoon Companies were kept busy rapidly erecting pontoons across several Natal rivers. The railway line from Frere to the Transvaal border was a mere 135 miles. Yet along this line 27 bridges and 38

¹⁵ *Ibid*, pp 80,81.

¹⁶ De Wet.C.R, *Three Years War*, Constable & Co, London, pp 101-111.

¹⁷ *Detailed History of the Railways*, p38.

¹⁸ Girouard, *History of the Railways*, Appendix C, pp 84-128.

culverts were destroyed. The main culprits were the Hollander, NZASM Engineer Antonie Westenberg and members of the volunteer Italian and Irish Brigades.¹⁹

The final conventional phase of the war concluded with the retreat of the Boer forces from Pretoria to Komatipoort and saw the destruction of 17 bridges and culverts. Here the members of Camillo Ricchiardi's Italian Brigade played a major role, being paid £300 per bridge. All repairs were carried out by Royal Engineer companies.²⁰

The construction of almost 8,000 blockhouses by the RE's along railway lines during the guerrilla phase of the war almost eliminated the destruction of the railway lines, and in the process tied up thousands of troops who had to man these blockhouses. The first permanent blockhouses were erected from January 1901, as the railway wrecking incidences had reached a peak during November and December 1900.²¹

At the commencement of the war, ten iron-clad armoured trains were manufactured in the railway workshops at Cape Town and Durban. Once the Boers relinquished their artillery, the Royal Engineer controlled armoured trains became invaluable for protecting the railway lines. Eventually a total of 19 armoured trains were built, later being mounted with electric searchlights. The presence and rapid deployment of armoured trains to trouble spots was a great deterrent for the Boers.²²

As the bridges were repaired and later guarded by blockhouses, the Boers were forced to concentrate on derailing trains and blowing up the rails, anything to delay the relentless advance of the huge British army. Col Girouard later suggested that had the Boers initially adopted this method over a continuous length of 50 miles, when retiring through the Orange Free State, the general advance of the British would have been delayed for many additional weeks, as the transport of new rails would have taken preference over supplies for the army (for every mile of track re-laid, 105 tons or 117 thirty foot rails were required), thereby bringing the British advance to a virtual halt. In fact, only a total of 15 miles of railway line was destroyed during the whole war.²³ Now

¹⁹ *Report of Transvaal Concessions Commission*, Part III, Minutes of Evidence, 1901, Appendix, p34.

²⁰ Lupini.M, *Camillo Ricchiardi, Italian Boer War Hero*, Scripta Africana, Johannesburg, 1988, p130.

²¹ Watson, *History of the Corps*, pp 125-126.

²² Girouard, *History of the Railways*, pp 64-66.

²³ *Detailed History of the Railways*, p 30.

one can only speculate what the outcome would have been if Gen de Wet had followed orders to disrupt the railway line between Bloemfontein and the Orange River instead of fruitlessly investing Wepener for 16 days during April 1900.²⁴

With grim determination the British iron grip gradually tightened around the isolated Boer commandos. Lord Kitchener realised that his system of blockhouses was breaking up the Boer commandos, and that the scorched earth policy was forcing them to spend more and more time searching for supplies and evading capture. So, Kitchener constantly refined and improved the system, including night-time attacks by mounted rapid response troops, the resulting stranglehold placed on the country eventually led to the surrender of the Boers in May 1902.

In conclusion and as shown, the contribution of the Royal Engineers in rapidly repairing the railway lines and bridges, and later measures in guarding and patrolling them, was essential towards the eventual success of the campaign.

BRIDGE REPAIR TIMELINE – CENTRAL FRONT & ORANGE FREE STATE

	BRIDGE OVER:	DEMOLITION DAMAGE	TEMPORARY REPAIRS	PERMANENT REPAIRS
1.	MODDER RIVER (Kimberley)	3 x 100' + 2 Piers	29 Nov – 7 Dec 1899 – 9 days	Royal Engineers 15/12 – 4/4/1900 – 112 days
2.	THEBUS RIVER	1 x 75' + 2 x 20' + 2 Piers	24-28 Jan 1900 – 2 days + 15½h	CGR – Cape Government Railways
3.	COLEBERG JUNCTION	2 x 50' + Pier	3-4 Mar 1900 – 1 day + 5½h	CGR
4.	ACHTERTANG RIVER	1 x 50' + Pier	4-6 Mar 1900 – 1 day + 20h	CGR
5.	DOORLOG SPRUIT	2 x 100' + 2 x 20' + Pier	6-9 Mar 1900 – 3 days	RPR – Railway Pioneer Regiment 14/3 – 15/4/1900 – 32 days
6.	NORVALS POINT - (Orange River)	3 x 130' + 2 Piers	15-27 Mar 1900 – 11 days + 21h	RPR – 16/3 – 20/5/1900 – 65 days
7.	BETHULIE - (Orange River)	5 x 120' + 4 Piers	18-27 Mar 1900 – 9 days + 6h	RPR + CGR
8.	STORMBERG SPRUIT	1 x 150' + Pier	14-16 Mar 1900 – 1 day + 8h	CGR
9.	MODDER RIVER - GLEN	2 x 100' + Pier	No urgency – 17 days	IMR – Imperial Military Railways
10.	VET RIVER	3 x 100' + 3 Piers	7-13 May 1900 – 5 days	IMR – Opened 9 Aug 1900
11.	DOORN RIVER	1 x 100' + 1 x 20' + Pier	14-17 May 1900 – 2 days	IMR – Opened 20 Sep 1900
12.	ZAND RIVER	3 x 100' + 2 Piers	17-23 May 1900 – 5 days + 10h	RPR – 12/6 – 16/7 – 34 days
13.	RIET RIVER	1 x 50' + 2 x 20' + 2 Piers	23 May 1900 – 1 day + 10h	IMR – Opened 15 Sep 1900
14.	VALSCH RIVER	4 x 100' + 3 Piers	13-23 May 1900 – 10 days	IMR – Opened 28 Nov 1900
15.	HEUNING SPRUIT	3 x 30' + 2 Piers	24-25 May 1900 – 1 day + 21h	IMR
16.	RHENOSTER RIVER	1 x 100' + 50' + 2 Piers	25-30 May 1900 – 5 days	IMR – Opened 25 May 1900
17.	LEEUSPRUIT	3 x 30' + 2 Piers	31 May – 1 Jun 1900 – 21h	IMR – Opened 20 Dec 1900
18.	KROMELLENBOOG SPRUIT	2 x 50' + 2 x ABUTS + Pier	31 May – 1 Jun 1900 – 21h	IMR – 25/8 – 3/1/1901 – 131 days
19.	TAAIBOSCH RIVER	3 x 75' + 2 x 10' + 4 Piers	6-9 Jun 1900 – 3 days	IMR – 18/8 – 23/12/1901 – 6 days
20.	VAAL RIVER - (Vereeniging)	1 x 37'	27/5 – 10/6/1900 – 13 days + 18h	RPR – 27/12 – 19/4/1901 – 113 days

²⁴ Van Schoor.M.C.E, *C.R. de Wet, Krygsman en Volksman*, Protea Bookhuis, Pretoria, 2007, p 96.