

## Chapter 4 Project Execution

### 4.1 Overview

The USBRL project was included in the Pink Book for the year 1994-95 at an anticipated cost of ₹ 1500 crore. The work was to be completed by August 2007.

To ensure completion within the targeted date, the project was divided into three legs and execution of the project for each leg was entrusted to a different agency as detailed below:

Salient Features	Leg – I Udhampur – Katra	Leg – II Katra – Qazigund	Leg – III Qazigund – Baramulla	Total
Length	25 km	143 km	124 km	292 km
No of stations	2	11	15	28
Major Bridges	9	42	63	114
Minor Bridges	29	58	739	826
Maximum height of Bridge	85 mtrs	359 mtrs	13 mtrs	-----
Longest Tunnel	3.15 km	10.96 km	-----	----
Longest span	154 mtrs	465 mtrs	45 mtrs	-----
Executing agency	NRCO	NRCO/KRCL/IRCON	IRCON	

The status of progress (July 2012) relating to each of the legs is given below:

Leg	Section	Executing Agency	Date of award	Scheduled date of completion	Status
Leg I	Udhampur-Katra	0 to 25 km (Katra) NRCO	March 1995	March 2003	Incomplete
Leg II	Katra-Qazigund	25 to 30 km (Katra + 5) NRCO	November 2002	August 2007	Incomplete
		30 to 100.868 km (Katra to Dharam) KRCL	December 2002		Incomplete
		100.868 to 168 km (Dharam to Qazigund) IRCON	December 2002		Incomplete
Leg III	Qazigund-Baramulla	168 to 292 km IRCON	February 1999	March 2003	Operationalized in October 2009

### *Status of different legs of USBRL*

#### **4.2 Leg – I -Udhampur – Katra**

As mentioned in Para 4.1.1, the execution of Leg I was entrusted to NRCO. NHPC (National Hydro Power Corporation) was engaged to carry out surveys and RITES for geo-technical investigations of the entire portion and the agencies submitted their Reports in 1997 and 2001 respectively.

NRCO awarded 169 work contracts for the Udhampur - Katra section. Of these, audit selected 21 major work contracts, all the contracts above ₹ 5.00 crore, for detailed audit scrutiny as given below:

Cost of work	Total No. of works	No. of works selected
Above 10 crore	7	7
5 to 10 crore	7	7
1 to 5 crore	09	06
Below 1 crore	146	01
<b>Total</b>	<b>169</b>	<b>21</b>

Out of 21 major works selected and reviewed, only one contract was completed within the stipulated date of completion. Eleven works were completed with delays ranging between 9 and 97 months. Four works were terminated/foreclosed and 4 works were still in progress as of July 2012. Out of 21 works, 14 works were delayed from 29 months to 123 months.

As can be seen above, Leg I from Udhampur to Katra, which was scheduled to be completed in March 2003, was yet to be completed as of July 2012. All the tunnels and bridges in this section had been completed except T1 and T3.

***Udhampur – Katra Section not complete due to Tunnels T-1 and T-3***

*The main reasons for non completion of the Udhampur - Katra section (which would have benefited lakhs of religious tourists to the Vaishno Devi shrine) were the collapse of Tunnel No. 1 (T-1) and water logging in Tunnel No. 3 (T-3).*

*During the construction of T-1 (costing ₹ 95.13 crore), deformation in the ribs was noticed (December 2002) but NRCO's efforts to rectify the deformation failed and portions of the tunnel finally collapsed (November 2006), blocking the tunnel completely. The damaged portion of the tunnel was abandoned and a fresh contract for construction of 1800 meter tunnel on realigned stretch was awarded on January 2010 at a total cost of ₹ 91.74 crore excluding the cost of steel and cement which were to be provided by NRCO. This tunnel scheduled to be completed in June 2012 is now rescheduled to be completed in March 2013. .*

*T-3 (2.48 kms long tunnel costing ₹ 55 crore), was taken up for construction in September 2001 and was completed in April 2008. However, water started seeping in during construction of this tunnel (July 2003) and acquired huge proportions as days passed by. All efforts of NRCO to trace the source of water failed. Finally, RITES was assigned (August 2009) at a cost of ₹ 2.92 crore the task of suggesting remedial measures amounting to ₹ 20.11 crore to make the tunnel operational. The contract for remedial measures has since been awarded in April 2012 for completion in August 2012 at a cost of Rs. 5.86 crore. Despite completion of stations, bridges and all the remaining five tunnels in this Section with a time over-run of nine years, Leg – I is not yet operational.,*

Leg-I involved a length of 25 km of track, seven tunnels involving 10.30 km and 9 major bridges. Work on this section was taken up in March 1995 and was targeted for completion by March 2003. However, as of July 2012, although most of the works of the section had been completed, this section could not be operationalized due to the collapse of tunnel T-1 and water logging in tunnel T-3. The details in this regard are discussed below:

**4.2.1 Tunnel T-1**

T-1 on Udhampur-Katra section is 3111 mtrs long. It is on the critical path for the opening of Udhampur – Katra section and its non-completion has delayed the project for about 10 years. M/s. Patel Engineering Co. Ltd. was awarded this work in May 2000 at a cost of ₹ 33.53 crore and given a period of 30 months for completion.

- In December 2002, when the work was executed to the extent of 40 per cent and a sum of ₹ 15.38 crore had already been incurred, it was noticed that the ribs of the tunnel were deformed. CMRI Roorkee was consulted on payment of ₹ 0.14 crore but the measures suggested were not successful and the tunnel ribs continued to deform.
- Later, WAPCOS was consulted and as per their recommendations, rectification work was awarded to M/s Apex Encon Projects Pvt. Ltd. in June 2006 at a cost of ₹ 7.49 crore. However, the tunnel continued to deform and in November 2006, side and arch collapsed blocking the tunnel completely.
- M/s Geo-Consultant-RITES (a JV of RITES and Geo-Consultants) who, in August 2007, were given a ₹ 4.97 crore consultancy contract, for suggesting measures for rectification of the situation, suggested diversion of the tunnel.
- Finally, in January 2010, NRCO awarded the work for construction of 1800 meter long tunnel in parallel to the existing tunnel to M/s Tantia-CCIL(JV) as suggested by M/S Geo-Consultants-RITES at a cost of ₹ 91.74 crore excluding the cost of steel and cement, which are to be provided by NRCO.

***Field Visit by Audit in July 2010 to Tunnel T-1 on Udhampur – Katra Section***

*Audit team visited this tunnel on 23 July 2010 and the status of the tunnel along with the parallel tunnel as of this date is given below:*



***Face of demolished T1 blocked with gunny bags***



***Reconstruction work of T1 portal 2 in progress***

This tunnel originally scheduled for completion by June 2012 is now rescheduled for completion by March 2013. The total amount expended on the collapsed and later abandoned tunnel measuring 1800 metres was ₹ 95.13 crore out of which ₹ 53.51 crore was rendered infructuous.

The Ministry responded that the deformation of tunnel ribs and collapse of the tunnel was on account of geological factors which could not be assessed in initial stages in spite of detailed survey and investigation carried out. The reply is not

factually correct as both the expert agencies (M/s NHPC & RITES ) had, in their Geo- technical investigation Reports pointed out that the alignment adopted for the tunnel was passing through very weak rock and anticipated serious difficulties in tunnelling and had recommended soft ground tunnelling methodology. Instead of opting for best international consultancy ab-initio, NRCO adopted a piece-meal approach during December 2002 to June 2006 by hiring CMRI Roorkee first then WAPCOS and an international consultant who recommended horse-shoe shaped tunnel design that was later adopted for the diversion tunnel. Besides, NRCO had allowed the contractor to proceed with further excavation despite continued deformation of T-1 which had to be demolished (June 2006), rendering the expenditure infructuous. Further, in spite of the deformation and final collapse of the tunnel in June 2006, NRCO awarded the contract for ventilation, illumination and power supply to M/s C. Doctor & Co. Pvt. Ltd. at a cost of ₹ 8.96 crore. The contractor supplied the material worth ₹ 6.79 crore but could not erect it as the deformed tunnel had already collapsed. The possibility of deterioration of the material while the tunnel was under construction could not be ruled out.

#### 4.2.2 Tunnel T-3

This tunnel is 2480 mtrs long. Work relating to this tunnel was awarded to M/s. Skanska Cementation at a cost of ₹ 24.08 crore in September 2001 with date of completion (DOC) of 30 months (March 2004). Execution had to be stopped during monsoon of 2004 and 2005 for a long spell, resulting in cost escalation. During the execution, there was heavy inflow of water inside the tunnel (July 2003) ranging from 175 ltr. per second to 1125 ltr. per second. The work had to be stopped for 36 months and was completed in April 2008 at a cost of ₹ 55 crore, excluding cost of cement & steel supplied by the Railways., This involved delay of 49 months and a cost overrun was ₹ 31 crore . However, due to water logging in the tunnel, it was un- usable even as of July 2012.

*Field Visit by Audit Team to Tunnel T-3 in July 2010*

*We visited this site on 23 July 2010 and found the tunnel water logged, as can be seen from the photographs on that date, given below.*



Despite the fact that heavy ingress of water started during construction (June 2003), instead of tackling the ingress of water, the contractor was allowed to complete the tunnelling work by allowing water to flow into tunnel through weep holes. An expenditure of ₹ 21.59 crore was incurred on temporary arrangements and draining of water through weep holes. Audit observed that early indications of heavy water presence in the tunnel were already available with the administration through Geo technical Report by M/s NHPC (1997) and report by RITES on basis of geo-technical investigations (2001). Subsequent inspections of the tunnel carried out by the Executive Director (Mining Operations) and further studies conducted by RITES confirmed the presence of a buried channel. These further studies should have preceded commencement of tunnelling and remedial measures taken instead of being addressed, when water logging overwhelmed tunnel construction.

RITES were given a ₹ 2.92 crore consultancy contract in August 2009 to suggest alternative arrangements for making the tunnel operational who finally recommended in February 2011 remedial measures at an estimated cost of ₹ 20.51 crore, the contract for which has been awarded in April 2012 at a cost of Rs. 5.86 crore, which is scheduled to be completed in August, 2012. However, the progress of work as of July 2012 was not satisfactory (five per cent) and the work was held up due to heavy discharge of water from tunnel.

As with T-1, though the tunnel could not be operationalised due to water ingress, the contract for ventilation was awarded (March 2007) to the same contractor (M/s C. Doctor & Co. Pvt. Ltd) at a cost of ₹ 8.22 crore. The contract had been completed (December 2010) at a cost of ₹7.69 crore. For working the ventilation system, 100 KVA connection was obtained from J&K Electricity Board from March 2010 onwards and additional expenditure was being incurred on ventilation and power on a regular basis while the tunnel was yet to be operationalised.

While acknowledging the existence of a buried channel, Railway Administration failed to indicate why the fact brought to light by RITES as early in 2001 had been ignored until the tunnel construction resulted in water ingress.

### **4.3 Leg - II - Katra - Qazigund**

#### **4.3.1 Overview**

Leg II from Katra to Qazigund is being executed by three agencies viz. NRCO, KRCL and IRCON. The work awarded in December 2002 was scheduled to be completed in August 2007.



***Five km stretch from Katra incomplete***

*Construction of the five km stretch from Katra towards Qazigund was the responsibility of NRCO. Out of two tunnels and one major bridge, only one tunnel (tunnel T-8 & 9) had been completed and other two works (tunnel T-10 and major bridge at Banganga river) were in progress as of July 2012. In respect of Tunnel T-10 demolished during construction, the rectification work awarded at a cost of ₹.10 crore was in progress.*

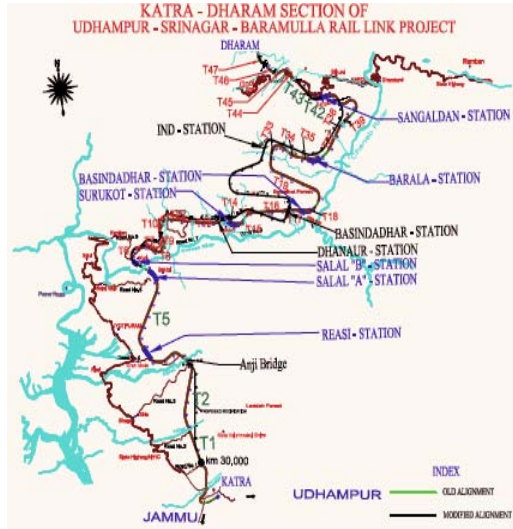
In the KRCL portion from km. 30 to km. 100.868, the issue of alignment had been under dispute since the inception of the project. KRCL had consistently held the view that construction of the railway line based on the paper alignment provided by NRCO was not feasible as it passed through thrust areas or was parallel to thrust areas, the alignment had sharp and reverse curves and deep cuttings<sup>8</sup> in approaching the tunnel portals. During execution of works, numerous problems were encountered in tunnelling and construction of bridges and a number of works had to be abandoned mid-way and work on the entire section had to be suspended in July 2008 pending review of the alignment. After various studies carried out by an international expert consultancy firm and a High Powered Committee under the Chairmanship of ex Chairman Railway Board, the alignment had been re-fixed in certain sections. Due to abnormally long suspension period from July 2008 to September 2009, most of the contracts (except contracts for Chenab bridge and Sangaldan area) were foreclosed. Out of foreclosed contracts, four works had been re-awarded at a higher cost, the financial implications of which have been discussed in the subsequent paragraphs. In the stretch from km. 61 to km. 87, work could not be awarded for want of finalisation of Final Location Survey (FLS) and Railway Board's instructions of June 2012 not to enter into any further financial commitments.

In IRCON's portion from Dharam to Qazigund, the situation was similar except for tunnel T-80 at Banihal and a portion of Zone IV (please refer to para 4.3.3.2). The contract in the stretch from km. 100 to km. 125 could not be awarded for want of finalisation of FLS, the contracts from km. 128.560 to km. 142 had to be foreclosed due to non availability of land, the works from T- 67 to T-74 had to be abandoned after execution on account of change of alignment and the progress of works from km. 164 to km. 168 was hampered on account of repeated revision of drawings and design of cross section of the earth formation.

*Thus, despite spending ₹ 4050.92 crore and the lapse of over 9 years since the award of the projects to NRCO, KRCL and IRCON, and time overrun of nearly 5 years, Leg –II of the project was far from completion. Considering the changes in alignment and designs & drawings in some cases and other difficulties faced, it was doubtful that this Leg would be completed within the revised timeframe of 2017-18.*

<sup>8</sup> 'deep cuttings' refers to permanently open excavation carried out to make Railway formation.

### 4.3.2 Leg II: Katra – Dharam Section-KRCL portion



Being the trickiest section in the entire project, this section involved a length of 71 km of track, 31 tunnels and 51 bridges which after change in alignment has now been revised to 17 tunnels covering 60.45 km and 20 major bridges.

KRCL awarded 47 work contracts pertaining to this section out of which, 15 work contracts were selected for detailed audit scrutiny as per the details given below:

Contracts costing (₹)	Total No. of works	No. of works selected
Above 10 crore	15	10
5 to 10 crore	06	01
1 to 5 crore	14	04
Below 1 crore	12	-
<b>Total</b>	<b>47</b>	<b>15</b>

Out of the 15 major contracts selected for review, none of the contracts was completed as of July 2012; nine contracts were foreclosed and six contracts were in progress. The delay in execution of these works ranged between 41 months and 101 months.

#### 4.3.2.1 Progress of Tunnels

Tunnelling works in a stretch of approximately 60.45 kms were to be executed by KRCL in Katra-Dharam section from km. 30 to km. 100.868. The contracts for tunnels T-13 to T-15 in the stretch from km. 61 to km 87 could not be awarded as the FLS of the revised alignment on which these tunnels lie was yet to be completed and the construction of approach roads was in progress. Subsequently, in June 2012, the Ministry decided that KRCL should not enter into any further financial commitment on the stretches from Km. 61 to Km. 91 and Km. 33.09 to



Km. 39. For execution of tunnels in the remaining section, 12 contracts were awarded by KRCL to various agencies as detailed below:

Out of the total tunnel length of 33.65 kms (for which contracts were awarded), only 15.96 kms ( 47.43 per cent) tunnelling could be executed after incurring an expenditure ₹ 902.37 crore (62.66 per cent) as against original contractual value of ₹ 901.44 crore (100.10 per cent) as of July 2012. The detailed physical and financial progress of construction of tunnels in this section is given below.

Tunnel No.	Date of award of contract	Name of Agency	Contract Amount (₹ in crore)	Target date of completion	Expenditure (₹ in crore)
T-1	17.05.03	M/s Progressive Constructions Ltd.	45.74	16.01.06	40.67
Balance work	01.03.11	(Contract foreclosed in Oct 2007) M/s Apex Encon Projects Pvt. Ltd	61.99	01.07.13	00.32
T-1 Adit	13.05.10	M/s Bhumi Geo Engg. Pvt. Ltd.	6.67	31.12.11	5.31
T-1 Rectification	03.02.10	M/s Bhumi Geo Engg. Pvt. Ltd.	14.08	30.09.11	14.38
T-2	12.12.03	M/s Shaktikumar M.Sancheti Ltd. ( foreclosed in October 2007)	133.07	26.12.06	27.60
T-3	29.01.04	M/s NPCC ((foreclosed in Jan 2010 )	79.01	29.07.07	72.44
Balance work	15.11.10	M/s UAN MAX Infra Ltd.	59.17	14.11.12	29.94
T-5	03.01.04	M/s NPCC (foreclosed in Jan 2010)	152.29	31.12.06	72.43
Balance work	18.10.10	M/s Apex Encon Projects Pvt. Ltd	207.29	17.10.14	6.82
T-6-12	12.02.04	M/s. UAN Raju-IVRCL Constn. JV (foreclosed in August 2009)	156.82	31.10.06	94.26
Balance work	21.9.10	M/s ITD Cementation India Ltd.	189.41	20.01.14	27.66
T-13 to T-15	Contracts not awarded				
T-38-47	13.10.05	M/s AFCONS Infrastructures Ltd. (work is in progress)	334.52	28.04.08	510.54
Total			1440.06		902.37
Total Tunnel length			33645.92 m	% of total line	
Physical progress			15962.59m	47.43 per cent	
Total contractual cost			1440.06		
Expenditure incurred			902.37	62.66 per cent	

As of July 2012, out of total tunnelling length of 60.45 kms, the physical progress was only 15.96 kms i.e. 26.40 per cent at a cost of ₹ 902.37 crore (62.66 per cent of the total revised contracted amount) despite lapse of more than nine years since the award of work to M/s KRCL. Out of six contracts awarded for construction of six tunnel works, five contracts were foreclosed and the balance works were awarded at a higher cost on account of difficulties in the alignment resulting in suspension of work. The revised target date of completion of works ranged between September 2011 to October 2014.

The Ministry admitted that the mismatch between physical and financial progress was on account of the fact that the DPR had not considered the issue of approach roads and other ancillary works relating to tunnel construction.

#### 4.3.2.2 Audit findings - Tunnels

Audit findings relating to delay in execution of tunnels and contract management including review of alignment and abandoned works etc. in the Katra-Dharam section are discussed in detail below:

Work	Details	Observations
Tunnel T-1	<p>A major slide occurred in February 2005 at portal P-2 of T-1.</p> <ul style="list-style-type: none"> <li>19.75 meter long false tunnel got partly twisted and partly collapsed. 75 meters main tunnel was also damaged.</li> <li>Five meters of the tunnel collapsed in July 2007.</li> <li>378 meters of tunnel (Katra end portal) were deformed and a fresh contract awarded for its rehabilitation at a cost of ₹ 14.08 crore.</li> <li>There was heavy ingress of water in the tunnel as can be seen from the photograph given below. Arrangements have been made for regular dewatering and ₹ 3.58 crore has been paid in this regard so far.</li> </ul>	<p>The portal P-2 could not be rehabilitated until as late as in June 2007 (28 months). The alignment had been changed and portal P-2 of T-1 was abandoned, rendering the expenditure of ₹12.50 crore infructuous.</p> <p>The contract was foreclosed in March 2010 after incurrence of ₹ 40.67 crore as against contractual cost of ₹ 45.74 crore. The part balance work had been awarded to two contractors at a cost of ₹ 68.66 crore, resulting in extra financial impact of ₹ 63.59 crore. The contract for a part of tunnel (approximately 600 meters) was yet to be awarded.</p> <p>The Railway Administration stated that audit contention of infructuous expenditure of ₹ 12.5 crore was not correct in view of overall savings on account of reduction of length and height of piers of Pie Khad bridge on revised alignment. The contention was not acceptable as the factual difficulties in the existing alignment reported by KRCL in</p>



***Tunnel T – 1 water logged***

The firm claimed a further amount of ₹9.86 crore for dewatering the tunnel during the period from November 2007 to February 2010. The matter was in Arbitration.

its Report (September 2003) on the basis of investigations, were ignored and acted upon belatedly (2008).



TUNNEL T1/P1 REZIFICATION WORKS IN PROGRESS (PHOTO ON 21/07/2010)



***Dewatering activity in progress in T-1***

**Tunnel T-2**

A shear zone comprising highly crushed and saturated material was encountered in April 2005 while constructing this tunnel, which resulted in heavy inflow of crushed material and ingress of water under high pressure. Experts from India and abroad suggested detailed geo-technical and geo-physical investigations. The problem could be tackled only in March 2006

Tunnelling work was restarted by adopting the methodology suggested by experts and against expected progress of 1976 meters

Due to poor geological conditions, slow progress and high tunnelling cost, the work was stopped and contract was foreclosed in October 2007.

With the alignment being modified in 2009, the works already executed were abandoned, rendering the expenditure of ₹ 37.65 crore infructuous.

Due to failure in completion of work of approach road to T-2 P-2, the same had to be got done through other contractors (M/s K.S. Construction and M/s Jagar Singh Constructions) at higher rates resulting in extra expenditure of ₹ 18.11 crore. The amount had not been so far

	<p>during 13 months, only 21.75 meter could be tunnelled (April 2006-May 2007) at a cost of ₹ 15 crore.</p> <p>Portal P-2 of T-2 was demolished twice first in March 2007 and again in May 2007 and had to be abandoned ultimately.</p>	<p>recovered from the contractor.</p> <p>The work on new alignment could not be awarded for want of decision on location of Anji khad bridge, which was finalized with a time-lag of 21 months as late as in April 2010</p> <p>Even after finalization of location of Anji bridge, the contract for execution of T-2 was yet to be awarded (July 2012).</p> <p>The Railway Administration stated that the infructuous expenditure was only ₹ 19.28 crore for the reason that the remaining expenditure was on approach road etc. The contention of Railway Administration was not acceptable for the reason that besides expenditure on tunnel amounting to ₹ 25.22 crore, an amount of ₹12.54 crore was incurred on construction of approach road for T-2 P-1, which also stood abandoned.</p>
<p><b>Tunnel T-3</b></p>	<p>Tunnel T-3 was awarded to M/s NPCC Ltd., at a cost of ₹ 79.01 crore but was foreclosed in January 2010 due to long suspension period, after incurring an expenditure of ₹ 63.27 crore. There was heavy ingress of water in this tunnel, as can be seen from the photograph of this tunnel as of 22 July 2010 given below.</p>	<p>Since suspension of work, an amount of ₹ 4.40 crore (July 2010) was paid for dewatering and a further amount of ₹ 4.71 crore was claimed by the firm for the period from January-December 2008. The matter was pending with the Arbitrator.</p> <p>A sum of ₹ 0.59 crore was also paid to another contractor on account of dewatering after foreclosing of contract of M/s NPCC Ltd.</p> <p>Based on an interim award by the Arbitrator, a sum of ₹ 6.49 crore (against the claims of Rs. 85.16 crore) had been paid to the contractor.</p> <p>For balance work of the tunnel, the contract had been awarded at a cost of ₹ 59.17 crore. The extra financial impact on this account was ₹ 52.60 crore.</p>
<p><b>Tunnel</b></p>	<p>Cavities and collapses were reported at various locations in the</p>	<p>The cavities were tackled from time to time by incurring an expenditure of</p>



*Tunnel T-2 abandoned*



T-5

tunnel during the period from March 2005 to January 2006. Again in February 2006, the loose rock started falling along with trickling of water.

As per hazard report prepared by the joint team comprising Advisor, Geology, an ex-official of GSI and Asst. Ex. Eng. KRCL in July 2006, a shear zone exists along the tunnel just above the rib line.



*Tunnel T-5 during suspension period*

₹ 14.23 crore.

Though RITES in its report of February 2004 concluded that the Katra side portal was located near Reasi Thrust and the initial reach of one km is parallel to Reasi Thrust, yet the contract was awarded without detailed geo-technical investigations, which were subsequently got done in June 2009.

The rib supports of the tunnel had been deformed; the cost of rectification thereof had been assessed by M/s KRCL as ₹ 8.90 crore.

The contract had been foreclosed in January 2010 after execution of work costing ₹ 72.43 crore due to the long suspension period on account of review of alignment.

For completion of balance work of the tunnel, contract had been awarded at a cost of ₹ 207.28 crore. This had resulted in extra financial impact of ₹ 127.41 crore. As against a claim of ₹ 84.98 crore, the Arbitrators had awarded an award of ₹ 27.36 lakh, which had been challenged by the contractor in the District Court at Reasi.

Tunnels-  
T-6 to T-12

As mentioned in the table above, due to change in alignment, contract in respect of all the seven tunnels was foreclosed in August 2009.

Tunnel portal P-1 of tunnel T- 7 had already collapsed in January 2006 due to sliding down of overburden and the portal face was finally abandoned in April 2006.

The alignment was changed in May 2006 and the works executed on old alignment in the stretch containing Tunnels T-6 to T-9 had to be abandoned, rendering an expenditure of ₹ 15.42 crore infructuous. The alignment was again changed in September 2009 on the recommendations of M/s Amberg, an international consultant engaged by IRCON rendering a further amount of ₹3.70 crore infructuous.

The work was foreclosed in August 2009





*Portal T6 P1, which is unstable*



*Portal T-6 P2, which was abandoned*



*Portal T-7 P2, which was abandoned*

due to review of alignment. For execution of the balance work of the tunnels, contract had been awarded at a cost of ₹ 189.41 crore. This had resulted in extra financial impact of ₹ 126.86 crore. A sum of ₹ 10.19 crore on account of excess payment of PVC, mobilization advance, rectification of damages in the tunnel, damage of forest/canal and crop compensation etc. was yet to be recovered from the contractor.

The Railway Administration stated that planned bridges and tunnels were not found feasible when the officials visited the site after the approach road was constructed. This lends credence to audit findings that construction contracts should not have been awarded without proper geo-technical investigations.

*Portal T-7 P1, which was abandoned*



*Portal T-8 P1, which was abandoned*

**Tunnels-  
T-38 to T-47**

While the excavation at portal 2 of T- 42 was in process, a major land slide occurred in September 2006, destroying 23 shops and 25 houses. The occupants of these establishments were provided

A sum of ₹ 1.43 crore was paid to NHPC on account of consultancy services for rectification of deformed ribs of tunnels. By combining T-42 and T-43, a part of tunnel T-43 at portal P1 side had to be



temporary accommodation at a cost of ₹ 15 lakh and the portal was abandoned. The Expert Committee appointed by Railway Board under the chairmanship of Sh.M.Ravindra (ex-CRB) concluded that the whole area was on slope debris and the work was being done without proper geo technical investigations.

To overcome the problem, the line had been realigned, combining T-42 and T-43.

The ribs of six tunnels (T-39, T-40, T-41, T-43, T-44, T-45 and T-46) got deformed, which were rectified from time to time at a cost of ₹ 10.12 crore by providing Self Drilling Anchors and Swellex Bolts as recommended by NHPC<sup>9</sup>, who were engaged for consultancy.

Photograph of portal T43 P1as of 22 July 2010 is given below:



*Portal P-1 of T -43 abandoned*

abandoned rendering an expenditure ₹ 8.20 crore infructuous.

Further due to change in alignment at T – 39 and T-40/41, the already executed work had to be abandoned rendering an expenditure of ₹ 6.44 crore infructuous.

As of July 2012, out of total scope of tunnelling of 10223 m, only 6036.55 m (59.05 per cent) tunnelling had been achieved after incurring an expenditure of ₹ 510.54 crore (152.62 per cent vis-à-vis the contracted amount).

The Railway Administration stated that by realignment, there was a saving of ₹ 90 crore and that the tunnel from P1 side of T-43 would be utilized as ‘Escape adit’ for safety purpose in case of emergency. The contention was not acceptable for the reason that had alignment been adopted after proper investigation of the terrain, this problem could have been addressed initially. As per Railway Board’s orders, no escape adit is required for the tunnels up to length of three kms whereas the total length of combined tunnel T-42-T-43 was only 2595 metres i.e. less than the prescribed norm.

#### **4.3.2.3 Progress of Bridges**

There were 46 major bridges (revised to 20 due to change in alignment) including two special bridges at Anji Khad and Chenab River, in the section from km. 30 to km.100.868 being executed by KRCL. Out of these, only four contracts for construction of 19 bridges could be awarded during the period from August 2004 to October 2006. Contracts for major bridges in the stretch from km. 61 to km. 100.868 could not be awarded (July 2012 ) on account of incomplete Final Location Survey, non approval of GADs and Railway Board’s decision of June

<sup>9</sup> National Hydro Power Corporation

2012 to stop fresh financial commitments in respect of part stretch km.61- km.191 in view of proposed part withdrawal of works from KRCL.

The status of major bridges, as of July 2012, in this section is detailed below:

Bridge* No.	Length (Mtrs)	Status
34	45.70	GAD not approved
35	657	Work suspended
35 Pt-II	97.80	Work suspended
38	125	Work stopped by contractor
39	477.15	Not yet started
42	16.90	In progress
43	777.00	Not yet started
44	1315.00	In progress
53 to 88	1567.90	Not yet awarded

\* The missing serial numbers in the table above are minor bridges or bridges which have been omitted due to change in alignment.

*Out of 4 contracts awarded for construction of 15 major bridges, one contract (7 bridges) has been foreclosed on account of change in alignment, one contract (Anji Bridge) had to be foreclosed due to prolonged suspension of work. Two contracts(7 bridges) were in progress out of which construction of two bridges could not be started for want of drawings, one bridge could not be started for want of approved GAD, another bridge was suspended on account of fresh review of alignment and the work of Chenab Bridge was held up for want of work front due to non approval of design of deck of viaduct and Arc Bridge.*

Thus, out of 20 major bridges which were to be executed after revision of alignment, work was in progress at only 2 bridges i.e. Bridge No. 42 and 44 (Chenab Bridge).. The work of Chenab Bridge was also suffering due to non availability of enough work fronts due to lack of approved drawings, designs etc. Thus, even after incurring an expenditure of ₹ 205.80 crore, the progress of bridges was retarded due to delays in finalisation of GADs/designs that in turn arose due to difficulties in the existing alignment leading to review of proposed locations.

#### **4.3.2.4 Audit findings – Bridges**

In a number of cases, the contracts had been awarded without ensuring preliminary requirements such as availability of clear site, approved GAD, etc resulting in contractual disputes. The Ministry admitted that contract for nine bridges between km 50-62 had to be foreclosed due to location of bridges posing construction risks and problems in maintenance and change in alignment. The details of these cases are discussed below:

**Bridge  
Nos. 34  
to 43**

The contract for bridges from 34 to 43 except bridge no. 35 (Anji bridge) were awarded to one contractor as a package. The work on bridge No. 34 at Pie Khad between tunnel T-1 and T-2 was suspended due to proposed change in alignment and finally abandoned in October 2008 on account of change in alignment

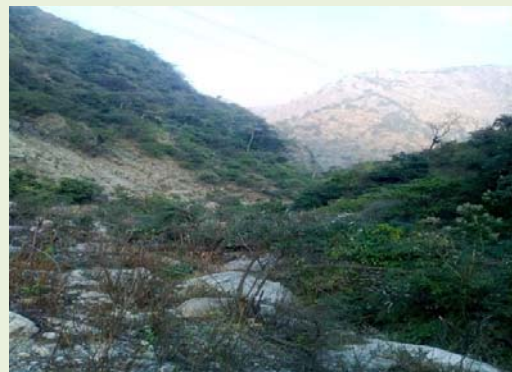
The contractor could not progress on other bridges also, as the drawings of bridge nos. 35 pt.II, 39, 41, and 43 were made available to him only in February/March 2008 while these should have been made available by Nov 2006. Only minor works in foundations of bridge nos. 35(pt.-2), 38, 40 and 42 were executed. The financial progress was only ₹ 10.45 crore (4.58 per cent) when the contract was terminated in August 2009 .

The contract has since been revived in February 2010 and the contractor has submitted the drawings of bridge no.41 and piers of bridge no. 38 but the work has not progressed, as no agency was available for proof checking.

The contractor lodged a claim for ₹ 164.20 crore on account of delayed forest clearance, non issue of approved drawings and stoppage of work at pie khad bridge. The matter was in arbitration

The execution of Br. Nos. 34, 39 & 43 was yet to be taken up ( July 2012) as the GADs of these bridges were yet to be finalized (July 2012).

Abandonment of bridge No. 34 at Pie Khad resulted in infructuous expenditure of ₹ 0.50 crore



*New location of pie khad bridge*

The Railway Administration made haste in awarding the contract without much readiness with the drawings and design which were supplied belatedly. However, the contract was terminated inexplicably though the poor performance of the contractor was largely due to Railway Administration's failure in supplying the drawings and the revival of the contract was in fact a vote of confidence in the ability of the contractor to perform the contract. The lack of professionalism resulted in the matter ending up in litigation.

KRCL's failure in not engaging an agency for proof checking would result in further time overrun and contractor's claims for idle time. In reply, the Ministry stated that all-out efforts would be made to avoid delays on account of proof checking and approval of drawings.

<p><b>Bridge Nos. 48 to 58</b></p>	<p>These bridges are located between Km. 53.728 and Km. 61.015. Due to existence of bridges with long spans the alignment on this section was changed twice first in April 2006 and again in September 2009. The work of construction of these bridges except bridge nos. 54 &amp; 55 was stopped (21 April 2006) by KRCL pending decision on realignment of the stretch. Even at bridge nos. 54 &amp; 55, work could not be executed as the general arrangement drawings (GAD) of these bridges could be approved only in February 2007 i.e. well after the expiry of the stipulated completion period. Due to reduction in the scope of work (from 11 bridges to 5 bridges), the contract was foreclosed in March 2007 after execution of works to the tune of ₹ 1.29 crore, which was rendered infructuous.</p>	<p>Besides infructuous expenditure of ₹ 1.29 crore, the contractor lodged claims for ₹ 10.45 crore in arbitration on account of idling of resources due to suspension of work and reduction in the scope of work. The nil award was challenged by the contractor in the High Court of Delhi where the matter was pending. The contracts for works relating to bridges Nos. 53 to 61 (which were to be executed after change in alignment) were yet to be awarded ( July 2012 ). This would result in further time/cost overrun.</p> <p>In response, the Railway Administration stated that the alignment had to be realigned as the existing one posed problems in construction and maintenance. The Ministry replied that the claims were being contested in the court.</p>
<p><b>Special bridge on Anji Khad</b></p>	<p>The length of this bridge is 657 mtrs and is among the two most crucial bridges in this section (the other being Chenab bridge). The stability of foundation of main span of this bridge (arc bridge) was questioned by various agencies.</p> <p>KRCL awarded construction contract to M/S Gammon- Archirdron in September 2004 the scope of which included responsibility to provide suitable bridge drawing and design. The geo-technical investigations of the site carried out by M/s DBM (September 2005) on behalf of KRCL had revealed the presence of sheer zone in the foundation region. However, KRCL raised the issue with the contractor only in August 2007. It was also seen that the contractor was also in the know of the fact of presence of</p>	<p>As per review meeting of the Railway Board dated 11<sup>th</sup> September 2003, KRCL hastened to award the contract for the bridge even before conducting the geo-technical investigations. Also, the issue of bridge design was taken up with the contractor nearly after 18 months since doubts about the location were raised in the Geo-technical Report. Predictably, this resulted in the contractor denying responsibility for choice of alignment with faulty conditions along/under the alignment.</p> <p>The work of execution of bridge suffered on account of non availability of approach road at Reasi side (395 days), non availability of forest clearance and permission for cutting the trees (499 days), changes in design (869 days) and</p>

sheer zone as evident from the communication of reply to KRCL dated 19<sup>th</sup> October 2007, whereby all responsibility for faulty conditions along/under the alignment was disowned.

As per a Report of Geological Survey of India (March 2008), the main pillar which will hold the arch section of the bridge is located on sheared dolomite and about 50 meter stretch of the section along the left bank of khad is highly sheared dolomite.

The work was suspended on account of uncertainty of stabilization of the foundation in July 2008 after incurring an expenditure of ₹ 37 crore.

The Expert Committee appointed for review of alignment, could not come to a conclusion on the stability of the site and recommended a number of tests to be conducted to ensure the stability of site before re-commencement of work. Based on further investigations, Railway Board decided to retain the original location in April 2010 and gave clearance to recommence work.

KRCL foreclosed the contract in August 2010 on account of prolonged suspension period. Contract for balance work was yet to be awarded (July 2012) for the reason that the alignment on the stretch was again under review.

change in are design etc.

After suspension of work, the contractor dismantled the structures constructed at site of work at a cost of ₹ 2 crore. The contractor failed to reconstruct these structures. A sum of ₹ 0.43 crore was recoverable from the contractor on account of forest clearance in respect of land diverted to contractor and defective construction of Pier no. 19, which had to be dismantled, the cost of which worked to ₹ 0.12 crore. Thus, the amount of ₹ 2.55 crore due from the contractor was yet to be recovered (July 2012). Further, a sum of ₹ 13.78 crore on account of excess payment to the contractor and ₹ 0.39 crore on account of excess over bank guarantees in respect of Mobilization Advance was yet to be recovered.

The contractor lodged a claim for ₹ 111.69 crore on account of idling of man power/machinery, financing cost and uncovered escalation etc. The NIL award given by Arbitrator has been challenged by the contractor in the Supreme Court of India. The matter is pending with the hon'ble court..

In reply, the Ministry stated that the suitability of the bridge location was decided by KRCL in consultation with NRCO and the role of contractor was to design suitable foundation and the presence of highly sheared dolomite would be factored in the design of arch foundation. They also stated that further studies as recommended by the Expert Committee had been carried out based on which the Board decided to recommence





View of Anji Bridge site (22.07.2010)



Pier P 19 in dismantled condition

work in April 2010.

However, the performance of the contract was hampered principally because the necessary investigations were not carried out before the commencement of work. This is also reflected in the fact that the contract for execution of balance work was yet to be awarded for lack of decision on the section of the alignment being reviewed afresh (July 2012).

### Chenab bridge

Similar to the Anji Bridge, stabilization of foundation of the main arc bridge was also questioned by experts appointed by the Board and the contractor.

After award of work, the contractor stated that the topography of the area falling within the foundation base of pier 40 i.e. Katra end abutment of the bridge, was highly undulating and the foundation was losing touch with ground due to existence of two nallahs on upstream and downstream of the centre line of alignment.

The Technical Advisory Board was of the view that the foundation should be so designed as to take the thrust away from the arc without causing instability in the supporting rock mass.

The consultant firm, Amberg felt

Work on this bridge suffered on account of delay in finalization of Design Basis Note (DBN), revision of DBN mid-way (contractor claimed ₹ 3.25 crore on account of expenditure on re-designing of the bridge), delay in finalization of design of super structure of bridge, delay in approval of slope stability analysis of main valley slopes and excavation methodology, change in alignment in viaduct, delay in forest clearance and land acquisition and delayed availability of approach road.

The work was almost at stand still as the contractor had no work front due to non-availability of approved drawings of deck portion, foundations protective works, earth work in foundations and bearing pedestals. Even after the lapse of more than eight years, the design of the



(February 2009) that the issue of stability of slope of Chenab bridge needed to be studied by the relevant experts in the field.



Via duct portion of Chenab Bridge-  
photograph of suspension period

bridge was yet to be finalized (July 2012).

During the period from 2011-12 onward, the contractor could execute the work to the value of ₹ 0.22 crore only. The extended date of completion of contract had already expired on 31<sup>st</sup> March 2012, but the contractor had yet to apply for its extension (July 2012).

Had the complete geo technical studies been conducted before award of contract, suspension of work for want of stabilization of foundations, delay in execution of work and resultant arbitration claims amounting to ₹308.16 crore in respect of this bridge alone could have been avoided.

The Ministry replied that the work for the entire section was suspended to address the issues raised by various agencies and stated that GAD (arch portion) would be finalised in time and further studies were carried out to confirm the slope stability during the suspension period. As of (July 2012), the design of arch bridge was yet to be finalised.

#### **4.3.2.5 Contractor claims**

*Besides the suspension period claims amounting to ₹ 57.24 crore, admitted by KRCL, the contractors had gone to arbitration for their claims amounting to ₹ 1170.71 crore on account of idling of resources, delay in approval of drawings, revision of arc span of Chenab bridge, change in DBN, non availability of approach roads, dewatering of tunnels and non revision of rates beyond original completion period etc. In three cases, the Arbitrators had awarded a sum of ₹6.84 crore in favour of contractors.*

#### **4.3.3 Leg-II: Dharam - Qazigund section- IRCON portion**

For execution of the project from Dharam to Qazigund (Km. 100.868 to 168.000), the route length was divided into seven zones as detailed below:

Sr.No.	Zone	Chainage
1	0	KM 100.868-119.940
2	I	KM 119.940-128.560
3	II	KM 128.560-134.360
4	III	KM 134.360-142.000
5	IV	KM 142.000-152.000
6	V	KM 152.000-164.000
7	VI	KM 164.000-168.000

Contracts for execution of tunnels, bridges, earthwork and station buildings etc. were awarded zone wise.

Out of the 100 works spanning Zone II to VI awarded by IRCON for this project, audit selected 21 major work contracts having regard to their financial materiality for detailed scrutiny as detailed below:

Cost of work (₹ )	Total No. of works	No. of works selected
Above 10 crore	20	12
5 to 10 crore	07	02
1 to 5 crore	30	06
Below 1 crore	43	01
<b>Total</b>	<b>100</b>	<b>21</b>

*Out of the 21 major works selected for review, 6 works were complete; 11 works were foreclosed and the remaining 4 works were in progress as of July 2012. The delay in execution of these works ranged from 3 months to 80 months. None of the contracts was completed by the stipulated date of completion.*

Audit observations relating to this Leg of the project executed by IRCON are as follows:

#### **4.3.3.1 Land management.**

- For construction of line from Dharam to Qazigund, 386.37 hectares of land was required to be handed over to IRCON by NRCO. The latter took 5 to 51 months to hand over the land to IRCON. As of July 2012, 68.74 hectares (17.79 percent) of land was yet to be provided by NRCO to IRCON. The complete indents for execution/forest clearance of land on revised alignment were yet to be placed due to non finalization of FLS. This would further delay the completion of the project.

#### **4.3.3.2 Work management.**

##### **Zone -II**

The contract for construction of zone II (km 128.560- 134.360) works (tunnels, bridges, earth work, etc.) was awarded (June 2006) to M/s BTS Brahmaputra Consortium Ltd. JV at a total cost of ₹ 157.19 crore. The contract was to be completed within 36 months i.e. by 18 June 2009 but due to non-provision of clear land by NRCO/IRCON, the contractor found the rates unworkable due to cost escalation. Since the Railway Administration refused to compensate for the losses, the contract was foreclosed in March 2008 after execution of work costing ₹ 0.29 crore. The contractor filed a claim of ₹ 10.34 crore on account of expenditure incurred by him on plant and equipment, manpower, infrastructure development, lease rent paid to private land owners, office and residential accommodation etc. IRCON agreed to pay ₹ 1.87 crore, which was not acceptable to the contractor and the matter was pending with the Arbitrators (July 2012).

##### **Zone -III**

- The work relating to 11 bridges, 5 tunnels (T-67 to T-71) and crossing stations of Zone III (km 134.360 – 142.00) was awarded to M/s Jai Prakash Associates Ltd. in February 2004 at a total cost of ₹ 168.45 crore to be completed by February 2007. The work could not be completed due to non-provision of clear land by NRCO/IRCON and the contract was foreclosed in April 2007 after execution of work to the tune of ₹ 27.82 crore. A claim of ₹ 35.71 crore was lodged by the contractor on account of idling of manpower, equipment, infrastructure etc. against which the Arbitrators had declared an award of ₹ 21.82 crore in favour of contractor. The award had been challenged in the High Court of Delhi. The matter was yet to be finalized (July 2012).
- The construction of balance work of tunnels and other civil works was awarded to M/s Bhumi Developers (India) Pvt. Ltd. at a cost of ₹ 41.71 crore in May 2007 to be completed by May 2009. In March 2008, IRCON instructed the contractor to stop the work at tunnel no. 69 and 70 on the ground that geotechnical investigations were to be conducted on this stretch. The work was finally foreclosed in July 2008 pending alignment review after execution of work to the tune of ₹ 1.99 crore. A claim for ₹ 9.48 crore was lodged by the contractor on account of idling of manpower, machinery etc. The matter was pending with the Arbitrators (July 2012).
- The balance work of bridges was also awarded to M/s Bhumi Developers (India) Pvt. Ltd. in August 2007 at a cost of ₹ 13.23 crore with a stipulation to complete the work by February 2009. The contractor submitted in January 2008 that the work could not be taken up due to blockade of roads on account of landslides. As the alignment of the entire Katra-Banihal section was under

review and all works were stopped, this contract was also foreclosed in July 2008. The contractor had lodged a claim for ₹ 4.08 crore on account of idling of resources etc. The matter was pending with the Arbitrators (July 2012).

- The works on revised alignment from Dharam to Arpinchala ( Km 100.868 to km. 125) were yet to be awarded (July 2012).

The Ministry replied that the revised alignment had been agreed to in principle and the process of geo-technical investigations/finalisation of tunnels and placing of land indents as per revised alignment was underway.

#### **Zone -IV**

- A contract for construction of civil works including seven tunnels (72 to 78), 19 bridges and earthwork etc. under zone IV (km. 142 to 152) was awarded to M/s Hindustan Construction Company Limited in September 2003 at a cost of ₹ 169.03 crore to be completed by September 2006. The contract was extended up to September 2007, June 2008 and June 2009 on account of delay in handing over land, supply of drawing of bridges, stoppage of work by Forest department, non supply of explosives and non provision of security at sight etc. In March 2008, the scope of work was reduced by withdrawing the work of four tunnels and seven bridges due to proposed change in alignment and the contract value was reduced from ₹ 169.03 crore to ₹ 125 crore. The work has been completed at a cost of ₹ 156.38 crore (July 2012) involving a time over-run of 69 months and cost over-run of ₹ 31.38 crore. Similar to the other works, the contractor of this work had also claimed a sum of ₹ 88.47 crore on account of idling of equipment and manpower, financing cost, loss of profit, non-revision of rates and non assessment/payment of geological over break etc. The claims were yet to be settled as of July 2012.
- Consequent upon foreclosure of contracts for construction of tunnels and bridges in Zone III and withdrawal of a number of works from Zone IV, the contracts with initial cost of ₹ 337.48 crore were re-awarded at a cost of ₹ 1064.36 crore resulting in additional financial impact of ₹ 726.88 crore.

#### **Zone -V**

- For execution of tunnel No. 80 (10.960 kms.) in zone V (km. 152.600 to 163.960) in Pir Panjal Mountains, IRCON awarded 3 contracts to HCCL (costing ₹ 413.96 crore) and one each to Bhumi Developers (₹ 17.24 crore) and Gammon & Sew (JV) (₹ 22.59 crore). HCCL could not complete the assigned work relating to the tunnels due to delay in handing over site, collapse in Access tunnel at ch. 765, increase in scope of work due to change in support system to retain the tunnel strata and the construction methodology on the advice of the Consultant, delay in supply of drawings, delay due to excess seepage in tunnel etc. Despite extensions, the work was yet to be

completed as of July 2012. The contractors lodged a claim for ₹ 160.30 crore, which were yet to be finalized as of July 2012.

#### **Zone - VI**

- Zone VI (km 164– 168) starts from the North portal of Tunnel-80. The Earth work including slope protection, surface drainage, side drains and catch water drains etc. was awarded to four contractors at a cost of ₹22.27 crore. Due to the failure of IRCON and RITES in designing the retaining walls before award of contracts, the drawings had to be revised again and again and eventually the three contracts had to be foreclosed after execution of work to the tune of ₹ 2 crore. The contract for balance work was awarded at higher cost (₹24.36 crore) and the contractual cost of one work (package E6E) had to be revised from ₹ 10.80 crore to ₹ 21.91 crore. Thus, non finalization of drawings before award of work and its revision mid way resulted in extra financial impact of ₹ 26 crore, which included ₹11.67 crore as excess expenditure on account of execution of balance work at higher cost besides contractor's claims of ₹ 4.21 crore on account of idling of men and machinery, advance to suppliers, frequent changes in drawing, hire purchase of land for dumping of excavated material, non availability of land for drain etc. The work, which was scheduled to be completed by January 2008, was yet to be completed as of July 2012.

The Ministry stated that the revision of drawings mid way was necessitated as the original tender had not included items, a technical requirement but found necessary during construction. The contention was not acceptable for the reason that contracts were awarded without proper field work. Had proper survey been conducted, the full depth of deep cuttings would have been known to the Railway and the actual scope of work awarded accordingly determined.

As in the case of KRCL, the alignment in IRCON portion from km.100.868 to km.144 was changed and works already executed had to be abandoned rendering the expenditure amounting to ₹ 128.14 crore infructuous. Some of the important tunnels/portals in this section, which were abandoned due to change in alignment, are given below:

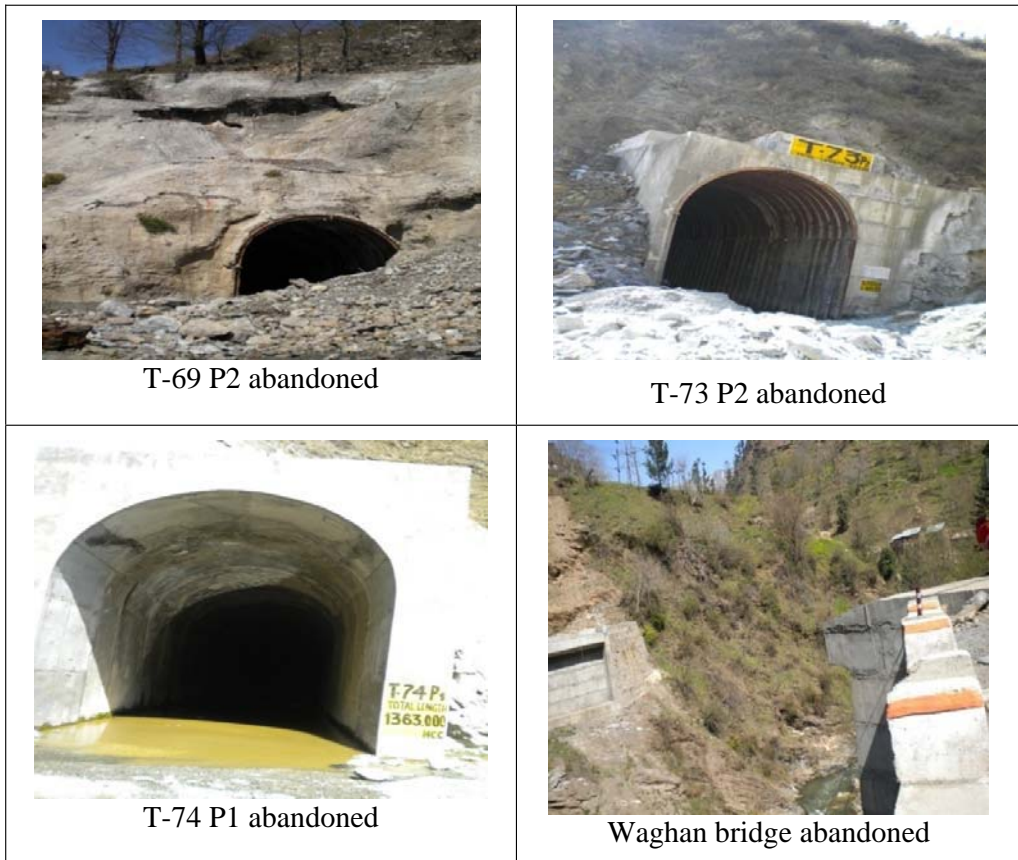


T-67 P2 abandoned



T-68 P1 abandoned





- Despite Railway Board’s instructions of February 2008, to engage an internationally accredited agency for review of alignment from Katra to Banihal, IRCON awarded (July 2008) contract for realignment of section from km.137 to km.144 to RITES. The contract had to be foreclosed (February 2009) and the contract for the entire stretch from Katra to Banihal was awarded to M/s Amberg (October 2008). This had resulted in infructuous expenditure of ₹ 1.20 crore paid to M/s RITES.

Railway Administration stated that the work done by RITES had been utilized in fixation of alignment of T-74 R. The contention was not acceptable as the activities done by RITES were also covered in the scope of work assigned to M/s Amberg and were paid for.

The status of various tunnels and major bridges in this section of the project (July 2012) is given below:

Tunnel No.	Length (Mtrs)	Status
T-48	10200	Yet to be awarded
T-49	3410	Yet to be awarded
T-50	5480	Yet to be awarded



T-51	3190	Yet to be awarded
T-52	700	Yet to be awarded
T-74R	8600	Contract awarded
T-77	350	Completed
T-77A	760	Completed
T-77B	180	Work suspended
T-77C	150	Work suspended
T-78	800	Completed
T-80	11000	In progress

Bridge* No.	Status
1 to 6	Not yet awarded
121(New No. 7)	In progress
138	In progress
139	In progress
140	In progress
141	In progress
142	In progress
144	In progress
145B	In progress
147	Completed

*\*The missing serial numbers in the table above are minor bridges and bridges which have been omitted due to change in alignment*

#### **4.3.4 Leg – III - Qazigund - Baramulla**

##### **4.3.4.1 Overview**

Leg III from Qazigund to Baramulla had been opened for traffic in three phases from October 2008 to October 2009 as against the targeted date of completion of 31 March 2003. Against the sanctioned estimate of ₹ 906.33 crore (revised to ₹ 3658.70 crore in January 2012), an expenditure of ₹ 3071.86 crore had been incurred on executing this Leg as of July 2012. This section involved 119 km track with 63 major bridges and 739 minor bridges. There are no tunnels in this section. Contract for execution of this section was entrusted to IRCON in February 1999 with a stipulation to complete it by March 2003. IRCON completed the work relating to the track and stations during November 2007 to August 2009 and the line was operationalised during the period October 2008 to October 2009. However, work relating to residential quarters, rest houses,

RPF/GRP barracks and development of peripheral works in the station and yard were yet to be fully completed as of July 2012.

The main reasons for delayed completion of the project in this section were as follows:

- Inadequate survey/field work before award of contracts, resulting in abnormal increase in the scope of work, foreclosure of contracts and completion of the work by re-awarding at higher rates;
- Delay in acquisition of land;
- Delay in preparation and approval of drawings etc. which led to foreclosure of a number of contracts. The works were got executed by re awarding the contracts at higher rates;
- Revision of design of bridges; and
- Kidnapping and killing of IRCON engineer; etc.

#### 4.3.4.2 Poor Contract Management

IRCON awarded 1741 work contracts with regard to this section of the project. Audit examined 83 contracts, keeping in view financial materiality and other significant factors.

Cost of work (₹ )	Total No. of works	No. of works selected
Above 10 crore	38	9
5 to 10 crore	21	9
1 to 5 crore	244	55
Below 1 crore	1438	10
<b>Total</b>	<b>1741</b>	<b>83</b>

*Out of the 83 contracts selected for review, only 43 works were completed and 40 contracts were foreclosed/ terminated as of July 2012. The delay in execution of these works ranged from 3 months to 75 months. None of the contracts was completed within the stipulated date of completion.*


#### 4.3.4.3 Bridges

Considering the large number of bridges involved in this section, IRCON divided the total number of bridges (802) into 41 packages (major and minor bridges separately) and allotted contracts package-wise.

As mentioned above, audit reviewed 83 contracts in this section including nine bridge packages, which involved construction of 42 major bridges and 148 minor

bridges. The work relating to all these bridges was awarded to various agencies during the period from February 2003 to October 2007 with a stipulation to complete them between December 2004 and April 2008. However, as mentioned in the box above, none of the bridges was completed within the targeted date. The main reasons for delays were non provision of clear site, non fixing of foundation depth of wells, increase in scope of work, alignment problems, frequent revision in designs and drawings etc.

Package No	No. of Bridges	Awarded cost (₹ in crore)	Amount paid (₹ in crore)	Due date of completion	Actual date of completion	Remarks
6	9	22.05	32.67	Feb 2005	Foreclosed in July 2005	<ul style="list-style-type: none"> <li>• Time overrun was over 3 years</li> <li>• Cost overrun was ₹ 40.55 crore</li> </ul>
6A		38.45	29.93	Dec 2006	May 2008	<ul style="list-style-type: none"> <li>• The drawings of well cap P-1, P-9 &amp; P-10 of bridge number 5-A were revised and already cast well caps had to be dismantled resulting in infructuous expenditure of ₹ 0.45 crore. Similarly, the already constructed shafts of P-7 and P-8 had to be dismantled on account of revision of drawings, resulting in infructuous expenditure of ₹ 0.20 crore.</li> <li>• Extra expenditure due to award of balance work at higher rate was ₹ 6.77 crore</li> <li>Reasons for time/ cost overrun</li> <li>• non-provision of clear site;</li> <li>• non-payment of compensation to land owners;</li> <li>• revision in scope of work;</li> <li>• changes in design and drawings; and</li> <li>• Alignment problem in Bridge No. 8</li> </ul>
7	14	12.13	20.72	Feb. 2005	May 2007	<p>Cost overrun of ₹ 7.59 crore</p> <p>Reasons for time/cost over-run</p> <ul style="list-style-type: none"> <li>• Non payment of compensation to land owners; and</li> <li>• Increase in scope of work.</li> </ul>
8	17	15.53	23.78	Feb 2005	Foreclosed in Dec. 2006	<ul style="list-style-type: none"> <li>• Time overrun was over 3 years</li> <li>• Cost overrun was ₹ 17.11 crore</li> </ul>
8A		9.16	8.86	Sep 2006	May 2008	<ul style="list-style-type: none"> <li>• Poor planning and improper supervision had resulted in abandonment of pier P-1 and Abutment A-1 of bridge number</li> </ul>

						<p>44 rendering the expenditure of ₹ 0.87 crore infructuous.</p> <ul style="list-style-type: none"> <li>• Extra expenditure due to award of balance work at higher rate was ₹ 2.69 crore</li> </ul>
						 <p>Reasons for time/ cost overrun</p> <ul style="list-style-type: none"> <li>• non-provision of clear site;</li> <li>• non-payment of compensation to land owners;</li> <li>• revision in scope of work; and</li> <li>• changes in design and drawings.</li> </ul> <p>The Railway Administration stated that the Wells of pier and abutment got tilted after construction in spite of requisite geo-technical investigation. On the other hand, M/s RITES contended that the present problems associated with wells could have been obviated had the construction been planned based on results of suggested investigations &amp; proper construction supervision They favoured further geo-technical investigations to be performed before decision on plugging/abandonment of the wells.</p>
9	7	7.91	21.59	Feb 2005	July 2008	<ul style="list-style-type: none"> <li>• Time overrun was over 3 years</li> <li>• Cost overrun was ₹ 13.68 crore</li> </ul> <p>Reasons for time/ cost overrun</p> <ul style="list-style-type: none"> <li>• non-provision of clear site;</li> <li>• non-payment of compensation to land owners;</li> <li>• revision in scope of work;</li> <li>• Change in design and well depth; and</li> <li>• Increase in the height of abutment due to revision of gradient.</li> </ul>
15 15A balance +	148	7.03 14.67	25.36 10.57	Dec 2004 Nov 2006	Foreclosed in 3/ 2006 Aug 2008	<ul style="list-style-type: none"> <li>• Time overrun was over 3 years</li> <li>• Cost overrun was ₹ 28.90 crore</li> <li>• Extra expenditure due to award of balance work at higher rate was ₹ 1.30 crore</li> </ul>

work						Reasons for time/ cost overrun <ul style="list-style-type: none"> <li>• non-payment of compensation to land owners;</li> <li>• finalisation of design and drawings; and</li> <li>• change in construction method from pre-cast to cast-in-situ.</li> </ul> Railway Administration stated that the time/cost overrun was mainly due to additional minor bridges. This clearly indicated that the contract for construction of minor bridges was awarded without proper survey regarding scope of work, which resulted in foreclosure of contract and award of balance work at higher rates.
FOB 3	1	2.24	Nil	June 2007	Terminated in August 07	<ul style="list-style-type: none"> <li>• Time overrun nearly 4 years</li> <li>• Cost overrun of ₹ 2.87 crore</li> </ul>
FOB 3R		2.39	0.16	April 2008	Foreclosed in May 2008	<ul style="list-style-type: none"> <li>• Non-finalization of drawings</li> </ul>
FOB (R2) 3		2.01	2.50	Dec. 2008	April 2011	
FOB (R1) 3		2.00	2.45	Dec. 2008	January 2007	

The Railway Administration stated that the changes in the design and drawings were necessitated because of unforeseen social factors like avoiding places of religious importance as Burial grounds, access roads, preservation of Chinar trees etc. The contention is not justified for the reason that had proper survey/field work been done before award of contracts, these factors could have been taken care of at the initial stage.

#### 4.3.4.4 Staff Quarters

Audit reviewed one (Q2) out of 24 packages of contracts for construction of staff quarters. This package involved 164 staff quarters at 3 stations (Budgam, Pampore, and Kakapore). Contract for this package was awarded to M/s Wani & Co. in November 2003 at a total cost of ₹ 7.44 crore to be completed by February 2005. The completion period was extended to February 2006 on account of delayed issue of drawings to the contractor and non availability of clear site. As of February 2006, only 50.54 per cent work costing ₹ 3.78 crore was executed



and the contract was foreclosed in March 2006 without any financial implications on either side. The balance work of these quarters was awarded to four agencies at a cost of ₹ 8.22 crore, i.e. an increase of ₹ 4.56 crore over the originally contracted cost. Two of the contractors completed the construction of Type I and IV staff quarters at Budgam in March 2008 at a cost of ₹ 4.26 crore. The balance work for Type II and III staff quarters in Budgam, and Type I, II and III in Kakapore and Pampore was got executed by six agencies at a cost of ₹ 6.38 crore and completed in April 2009. Thus the work costing ₹ 7.44 crore could be completed at a cost of ₹ 14.42 crore i.e. an extra avoidable expenditure of ₹ 6.96 crore and the work was delayed by over 50 months. The main reasons for the delays were awarding the contracts without ensuring the basic requirements like provision of clear land and approved designs and drawings.

The Railway Administration stated that the value of contracts revised after the closure of Q-2 Package was due to the increase in scope of work like boundary wall, septic tanks etc., which was not correct as had the clear site and approved drawings been provided, time/cost overrun could have been avoided.

#### 4.3.4.5 Office Buildings

Out of 6 packages of contracts awarded for construction of Office Buildings at Qazigund, Baramulla and Budgam, audit reviewed 3 packages (OB-6, OB-7 and OB-8). These packages involved 11 Office Buildings. Audit observations regarding these contracts are as follows:

Pac kage No	Details of the work	Remarks
OB-6	<p>Contract for construction of office buildings (AEN office, subordinate cum officer's rest house, senior subordinates office and health unit grade-III ) at Qazigund station was awarded in October 2006 to M/s G.R. Naqvi &amp; Co. at ₹ 2.39 crore to be completed by June 2007 (later extended to December 2007). The contract was terminated on account of poor progress in July 2008 after execution of work amounting to ₹ 0.87 crore.</p> <p>The balance work (package 6R) was re-awarded in August 2008 to M/s Construction Engineers at ₹ 3.38 crore</p>	<ul style="list-style-type: none"> <li>• Time overrun was 57months</li> <li>• Extra expenditure due to award of balance work at higher rate was ₹.2.27 crore</li> <li>• Though, the contract under OB 6 was terminated on account of poor progress by the contractor, yet the risk &amp; cost amount was not recovered from the contractor.</li> </ul> <p>Delay due to</p> <ul style="list-style-type: none"> <li>• non-availability of land ;</li> <li>• non-provision of health unit in lay out plan;</li> <li>• change in scope of work;</li> <li>• Non finalization of construction drawings;</li> </ul>

	<p>with a stipulation to complete by December 2008, however, the work was completed in April 2012 at a cost of ₹ 4.97 crore.</p>	<ul style="list-style-type: none"> <li>• Amarnath land dispute and</li> <li>• Assembly Elections etc.</li> </ul> <p>The Railway Administration stated that the extra expenditure was on account of sudden increase of price of steel, delay in making land available, increase in scope of work and these resulted in the foreclosure of contract. The contention was not factually correct for the reason that the contract was terminated due to poor progress of the contractor whereas the next tender was not invited as risk and cost tender resulting in non-recovery of amount of ₹2.27 crore.</p>
<p>OB-7</p>	<p>Construction of Subordinate cum officers' rest house, Senior subordinate office complex and health unit grade-III at Baramulla station was awarded to M/s G. R. Naqvi &amp; Co. in October 2006 at a cost of ₹ 2.61 crore, to be completed by June 2007 (later extended to June 2009). The contract was finally foreclosed (June 2008) after execution of work to the tune of ₹ 2.65 crore.</p> <p>The part work of this package (package 7R) was awarded to M/s ASG &amp; Co. in October 2008 at ₹ 2.23 crore with a stipulation to complete by March 2009. The work was completed in March 2011 at a cost of ₹ 1.76 crore.</p>	<ul style="list-style-type: none"> <li>• Time overrun of 45 months</li> <li>• Cost overrun was ₹ 1.80 crore</li> <li>• Extra expenditure due to award of balance work at higher rate was ₹.0.66 crore</li> </ul> <p>Reasons for time/ cost overrun</p> <ul style="list-style-type: none"> <li>• change in site of buildings;</li> <li>• non-availability of land/clear site;</li> <li>• delay in approval of drawings;</li> <li>• poor weather and law and order; and</li> <li>• Bad weather conditions.</li> </ul>
<p>OB-8</p>	<p>Contract for construction of Construction Office and Officer/Sub-Ordinate Rest House at Budgam station was awarded to M/s Hi-Tech Engineers in April 2007 at a cost of ₹ 3.17 crore, to be completed by December 2007 (later extended to May 2008). The Railway Administration revised the structural steel roof truss drawings and by that time the rates of</p>	<ul style="list-style-type: none"> <li>• Time over run was 29 months</li> <li>• Cost overrun was ₹ 2.37 crore</li> <li>• Extra expenditure due to award of balance work at higher rate was ₹.0.64 crore</li> </ul> <p>Reasons for time/ cost overrun</p> <ul style="list-style-type: none"> <li>• change in cope of work;</li> <li>• non-availability of drawings; and</li> <li>• Unrest in Kashmir Valley because of land dispute of Amarnath Yatra.</li> </ul>

	steel increased. As the contractor refused to execute the truss work at contracted rates, the contract was foreclosed in June 2008 without any financial implications on either side after execution of work to the tune of ₹ 1.00 crore.	
OB-14	The balance work of construction of Subordinate Rest House (package OB 14) was awarded to M/s Mohd. Ashraf Gilkar at a cost of ₹ 2.37 crore in September 2008 to be completed by February 2009. The completion period was extended to December 2009. The work was completed in May 2010, at a cost of ₹ 2.84 crore,	The Railway administration accepted the facts in respect of O.B.8,14 & 16.
OB-16	The balance work of Construction Office and Officer's Rest House (package OB 16) was awarded to M/s M.N. Enterprises, at a cost of ₹ 1.86 crore in December 2008 and was scheduled to be completed by April 2009. The completion period was extended up to September 2009. The work was completed at a cost of ₹ 2.14 crore.	

#### 4.3.4.6 Station Buildings

Audit reviewed one (SB-3) out of 4 packages of contracts awarded for construction of station buildings. This package involved 4 stations at Pattan, Sopore, Hamre and Baramulla. The work relating to construction of these station buildings was awarded to M/s Star Constructions in November 2003 at a cost of ₹3.62 crore, to be completed by February 2005. The Railway Administration failed to provide the approved drawings and the work was closed in July 2005 without any financial liability on either side after execution of work costing ₹1.5 lakh only.

The balance work (package SB-3R) was awarded to the same contractor in December 2005 at a cost of ₹ 6.56 crore i.e., extra financial impact of ₹ 2.94 crore with a stipulation to complete the work by March 2007. Subsequently, in July 2007, the work relating to construction of station building at Hamre was withdrawn from the scope of the contract due to land dispute and the contract was foreclosed after expenditure of ₹ 4 crore, as the contractor could not complete the

remaining work even up to the extended period of November 2007. The balance work at Baramulla, Sopore and Pattan was got executed by three other agencies at a cost of ₹ 2.15 crore and was completed in August 2008. The balance work of Hamre (along with other misc. work of Platform) was got executed by M/s M.A. Gilkar at a cost of ₹ 1.54 crore (November 2009). The overall cost overrun in the construction of this package of buildings was ₹ 4 crore and the time overrun 42 months.

The Ministry admitted that the work was delayed basically due to non-handing over the site to the contractor and political unrest in valley.

#### **4.3.4.7 Development works of stations/yards**

For awarding contracts for execution of development works like water supply, sewage system, storm water drainage and earth work etc. at stations and yards of the Qazigund – Baramulla section, the whole work was divided into 5 packages. All these packages were reviewed in audit. The contracts for these works were awarded to five firms at a aggregate cost of ₹ 14.29 crore. Since IRCON could not provide the relevant drawings to the contractors despite the expiry of the contractual period, the contracts were foreclosed without financial implications on either side. Audit noted that the drawings, in turn could not be provided due to delay in approval of lay-out of circulating area, revision required in respect of external development plans, etc.

*These works were then got executed by re-awarding to 25 other agencies at a cost of ₹ 47.05 crore, i.e., a cost overrun of ₹ 32.76 crore. As of July 2012, 5 of these contracts were foreclosed and 20 works were completed.*

Thus, IRCON's failure to get the drawings prepared from RITES who were engaged for the purpose and get them approved from Northern Railway, eventually resulted in a cost overrun of ₹ 32.76 crore and time over run of 74 months upto July 2012 .

The Ministry stated that the time/cost overrun was on account of non finalization of passenger amenities on the stations, revision of requirements by Northern Railway, delay in decision making regarding provision of Sewage treatment plan/Septic tank and revision of scope and increase in the rates of steel etc. While admitting the huge time delay, the Board failed to explain the reasons thereof which eventually led to delay in provision of approved drawings and resulted in foreclosure of contracts and execution of the balance work at higher rates.

As can be seen from the foregoing paragraphs relating to execution of Leg – III of the USBRL project by IRCON, although this line was completed and operationalised by October 2009, there were numerous works that were yet to be completed. Several contracts had been foreclosed, numerous others had to undergo changes, there were abnormal time and cost over runs and several works yet to be completed (July 2012).