



Environmental Monitoring Report

Project Number: 36432
July 2007

PRC: DALI-LIJIANG RAILWAY PROJECT Environment Monitoring Report (June 2007)

Prepared by Beijing Oasis Environment Protection Technology Co., Ltd.
Yunnan, People's Republic of China

For West Yunnan Railway Co. Ltd.

This report has been submitted to ADB by the West Yunnan Railway Co. Ltd. and is made publicly available in accordance with ADB's public communications policy (2005). It does not necessarily reflect the views of ADB.

Asian Development Bank

Asian Development Bank Loan Project

New Dali-Lijiang Railway

Environment Monitoring Report

(June 2007)



Beijing OASIS Environment Protection Technology Co., Ltd.

July 2007

Table of Contents

PREFACE	1
1.1 PROJECT INTRODUCTION	1
1.2 OBJECTIVES.....	2
1.3 MONITORING CONTENTS.....	2
2PROJECT PROGRESS.....	3
2.1 IMPLEMENTATION UNITS, CONTRACTORS AND CONSTRUCTION SUPERVISION COMPANIES OF DALI-LIJANG RAILWAY	3
2.2 PROJECT PROGRESS	4
3 ENVIRONMENT MANAGEMENT	7
3.1 ENVIRONMENT MANAGEMENT SYSTEM.....	7
3.2 DAILY ENVIRONMENT MONITORING SYSTEM.....	9
4 SUPERVISION AND INSPECTION OF AFFECTED POINTS	10
4.1 THE ENVIRONMENT PROTECTION IMPLEMENTATION SITUATION IN EVERY BID SECTIONS	10
4.2 SITUATION AND ANALYSIS	26
5. PROBLEMS AND SUGGESTIONS	28

List of Pictures

- Picture 1 Large amount of water flow occurs in Bijia Mountain 1[#] tunnel
- Picture 2 Corns between Wase Ultra large bridge piers grow well
- Picture 3 The grounds between Xinwo Ultra large bridge piers have been cleared and leveled up.
- Picture 4 The grounds between Haidong ultra large bridge piers have been basically leveled up.
- Picture 5-1 The protection skeleton for the borrow pit ground and excavated surface on the back of Dali Station is under construction
- Picture 5-2 After borrowing soil, level up the grounds for extension of Dali station
- Picture 6 The borrow pit ground on the back of Heqing station needs slope cutting protection
- Picture 7 Partial grounds of the waste debris field at the Haiyin tunnel exit have naturally recovered vegetations.
- Picture 8-1 The spoil ground near Shangguan station has been reconstructed as the track-laying base.
- Picture 8-2 The spoil ground near Shangguan station has been reconstructed as the track-laying base.
- Picture 9-1 The retaining wall of the waste debris field at the 1[#] tunnel entrance of Songgui
- Picture 9-2 The ground of the 1[#] waste debris field of Songgui
- Picture 10 The tunnel of Zhaojiadeng tunnel exit
- Picture 11 The waste debris field at the transverse hole position of Beiya tunnel
- Picture 12 Retaining walls are not built in the waste debris field at the tunnel exit of Heluo Mountain
- Picture 13-1 The waste debris field at the transverse hole position of Heluo mountain tunnel
- Picture 13-2 The stacking in the waste debris field at the transverse hole position of Heluo mountain tunnel is so high that the classified protection is needed
- Picture 14 Since the debris body of the waste debris field between Bijia mountain 1[#] tunnel exit and 2[#] entrance is stacked too high and steep, it is required to conduct deloading and classified slope cutting protection
- Picture 15-1 Apron of Xiyi Station
- Picture 15-2 The skeleton protection for the roadbed slope of Xiyi station apron
- Picture 16-1 The slope skeleton protection for the roadbed between DK125+500 - DK139+300
- Picture 16-2 The traffic culvert of roadbed has been opened to traffic
- Picture 16-3 Slope skeleton protection

Picture 17-1 Haidong station apron

Picture 17-2 The ditches of Haidong station matching the station yard have been put into use

Picture 17-3 The slope skeleton protection of Haidong station

Picture 18 The roadbed side canal at the entrance of Ta mountain tunnel has been supplied with water

Picture 19-1 Dali north station is under reclamation

Picture 19-2 Partial aprons are used as track-laying base

Picture 20 The sewage tank of construction camp at the transverse hole position of Heluo mountain tunnel needs cleaning.

Picture 21 The vacant construction camps at the entrance of Songshuyuan tunnel

Preface

1.1 Project Introduction

1.1.1 Line of strike

Dali-Lijiang Railway's south end starts from the exit end of Guangtong-Dali Railway Dali East Station. After passing through Xinyulongshan Tunnel, it runs northwards along the east bank of Erhai Sea, enters Haidong, Wenbi, Wase, Shuanglang of Eryuan County, Shangcun Railway Station, passes Qinhe, Xiyi, Xianwo, Hualanqing, Heqing County Railway Station, runs Xintun, Renhe, and then enters Lijiang South Railway Station. Lijiang Railway Station is built at Hongjia Village, Lijiang City. This new railway is 167 km long (including link line).

1.1.2 Main constructing contents

The roadbed of the new main line at Dali-Lijiang Railway is 70.80 km long, which accounts for 42.4% of the total length of this railway. The type and distribution of the construction site of roadbed are as follows: 34 constructions of deep cutting and high side slope, 5 high embankments with the height of embankment slope over 20 m, 53 steep roadbeds. The cubic metre of earthwork of section-to-section roadbed is $806.21 \times 10^4 \text{ m}^3$.

There are 77 new-built large and medium bridges along the whole railway with the total length of 26.253 km, accounting for 15.7% of the total length of this railway; 45 tunnels with the total length of 72.034 km, accounting for 41.9% of the total length of this railway, mainly distributing on the section haidong-wenbi and the section between Lancangjiang River from Shangcun to Beiya and the watershed of Jinshajiang River.

After Dali-Lijiang Railway was rebuilt, there are Dali East Section Railway Station and Dali Railway Station, and at the initial stage 11 railway stations such as Dali North, Haidong Hometown, Wase, Shangguan, Zhugecheng, Xiyi, Hualanqing, Jindun, Heqing, Renhe and Lijiang will be built newly.

The turn-back section for railway motor car at Dali Dongpaizhu and the turn-back station for maintenance at Lijiang will be built newly.

Total construction period of this railway is three and a half years. If starting constructing at the 4th quarter of 2004, it will be completed at the beginning of 2008.

1.1.3 Project features

The line from Hongshan to Shangcun of this project locates the east edge of Cangshan Erhai Natural Reserves, among which nears the east bank of Erhai Sea and is within the Erhai Sea's marine viewing scope. The following aspects may have the short-term or long-term effects on landscapes and travel environment: during the construction period, the surface disturbance, damaged vegetations caused by constructing service

roads, railway stations, roadbeds; whether recovery measures is proper or not; the libration and blast voice arising from the blast at the opening of cavity when excavating tunnels. The short-term effect on the local water area of the east bank of Erhai Sea due to the muddy water arising from the construction of tunnels and bridges and the liquid waste discharged by construction sites is not a question to be ignored.

Total length of tunnels along this railway is 72.034 km, which accounts for 44% of the total length of the railway, mainly distributes on the section haidong-Wase and the section between Lancangjiang River from Shangcun to Beiya and the watershed of Jinshajiang River. Since there are so much construction sites of deep cutting, high side slopes and steep roadbeds, the following factors have great effects on the local ecological environment and water-and-soil conservation: tapping slag of a great of tunnels, reasonable rearrangement of roadbeds, the earthwork borrowed and spoiled at the station, the set-up of borrow pit and spoil ground, and measures of protection.

1.2 Objectives

The objective of this monitoring report is, based on project design and environment assessment, to check how the environment protection measures are performed during the construction period and what problems exist and to give some suggestions to solve such problems. It is supplementary to the environment impact evaluation of the project and also is to supervise the performance of environment protection measures. This report is to report how the onsite environment protection measures are executed in the construction activities and to ensure that these activities are in compliance with related environmental protection regulations and the requirements from MOR (Ministry of Railway) and Asian Development Bank. More exactly, the report is to:

- Verify whether actual environmental impacts at construction phase were consistent with those problems predicted by the EIA;
- Inspect implementation situation of the environmental protective measures designed in the EIA;
- Identify any unexpected problems and put forward recommended solutions; and
- Report to MOR, Asian Development Bank and concerning departments about the environmental protection activities for this project.

1.3 Monitoring contents

According to the bidding result of implementing monitoring program on Asian Development Bank New Dali-Lijiang Railway Project Environment Management Plan, the environment monitoring task for Dali-Lijiang Railway shall be borne by Beijing OASIS Environment Protection Technology Co., Ltd. Half-year and annual environment monitoring report during the construction period (from 2005 to 2008) shall be submitted on the basis of field investigation. The contents covered by the environment monitoring report shall be as follows:

- Effects of the construction of this railway on the scenic spots of Cangshan and

Erhai Sea, the landscape of natural reserves, local water areas and ecological environment, and appropriate treatment measures.

- Effects on water-and-soil conversation due to the set-up, protection, secondary tillage, greening measures of borrow spits and spoil grounds and slag spoil grounds of tunnels, the surface vegetations disturbed by the construction, recovery and appropriate treatment measures.
- Effects of the water emerged due to the excavation of tunnels on the surface vegetations of the areas close to tunnels and the water consumption for production and daily life of the inhabitants at the top of tunnels, and the appropriate treatment measures.
- Effects of the construction of bridges and culverts on the surface water-body.
- Treatment of noise, sewage, air environment, solid waste arising from construction sites, service roads and temporary projects.
- Effects of the new railway of near urban sections on urban ecology.
- Implement of various environment protection measures to be taken due to the construction of this project, including the removal of schools, noise protection, and sewage treatment facilities etc.
- Environment problems due to the development of local economy during the construction of Dali-Lijiang Railway.

This report is the environment monitoring report on the construction of the railway by the end of June 2007.

The persons in charge of preparing this environment monitoring report on

Dali-Lijiang are as follows:

Jia Guoquan

Researcher

2Project Progress

2.1 Implementation Units, Contractors and Construction Supervision Companies of Dali-Lijiang Railway

The construction organization of Dali-Lijiang railway is headquarter of Dianxi Railway Construction under Dianxi Railway Co., Ltd. (the reorganization of Dali-Lijiang Railway Construction Commanding Office in May, 2006). The whole line is divided into 10 tender sections for construction. Three domestic tender sections such as Tender Section 3, Tender Section 5 and Tender Section 7 has started constructing in the forth quarter of 2004, and Seven foreign tender sections has startd constructiong in August, 2005. Table 2-1 lists out the construction unit and supervision companies for each tender section.

Table 2-1 Contractors and Supervision companies for Various Tender Sections of
Dali-Lijiang Railway

No.	Bid section	Bid section mileage	Bid section length (kilometer)	Construction organization	Supervision organization
1	W1	K194+500~K205+813.6	11.31	Construction Project (Group) Co., Ltd, Xinjiang Production and Construction Corps	Southwest Jiaotong University Construction Supervision Company Dali-Lijiang railway project department
2	W2	K2+060.2~K16+420	14.36	The 19th Engineering Group Co., Ltd. of China Railway	
3	N3	K16+420~K34+000	17.58	The 12th Engineering Group Co., Ltd. of China Railway	
4	W4	K34+000~K51+600	17.60	The 18th Engineering Group Co., Ltd. of China Railway	
5	N5	K51+600~K61+850	10.25	The 10th Engineering Group Co., Ltd. of China Railway	
6	W6	K61+800~K69+500	7.70	China railway Engineering Cooperation	
7	N7	K69+500~K80+500	11.00	The Tunnel Engineering Group Co., Ltd of China Railway	Supervision department of Dali-Lijiang railway construction under Yunan Railway Construction Supervision Co., Ltd.
8	W8	K80+500~K105+500	25.00	The 8th Engineering Group Co., Ltd. of China Railway	
9	W9	K105+500~K139+300	33.80	The 14th Engineering Group Co., Ltd. of China Railway	
10	W10	K194+500~K205+813.6	21.63	The 4th Engineering Group Co., Ltd. of China Railway	

2.2 Project Progress

At the end of June 2007, more than 2/3 of the designed civil work loads have been completed, except that Dali City, and the key tunnel of Heluo Mountain, Qinghua apron, and Bijia Mountain, (the tunnel of Xinyulong, Ta Mountain, Songshuyuan and Beiya have been completed more than 90% of the total, the super bridge of Hong mountain have been completed 83%, the station yard and roadbed have been reclaimed in place. The project progress is listed in Tables 2-2 and 2-3.

Table 2-2 Summary of Completed Construction Quantities

Name	Unit	The finished amount of the year (m)	The finished amount since the start of the construction (m)	Account for % of the whole design amount	Remark
investment	10,000 yuan	24527.2514	233527.2514	56.92	
among them: Jian'an	10,000 yuan	24427.2514	21383.1983	66.3	
Subgrade earthwork and rockwork project	10,000 m ³	51.2661	1037.1115	95.9	
Among them: section earthwork and rockwork project	10,000 m ³	27.8133	542.2107	98.6	
station yard earthwork and rockwork project	10,000 m ³	23.4528	494.9027	93.2	
Extra-large, large and middle-sized bridge	meter of track	1788.76	19258.487	72.8	
Among them: extra-large bridge	meter of track	701.56	8852.95	64.2	
Large bridge	meter of track	702.01	9100.944	84.7	
Middle-sized bridge	meter of track	385.19	1304.59	67.9	
Small-sized bridge	meter of track	33.5	61.77	51.5	
culvert	Across meter	258.43	6143.43	87.3	
tunnel	meter of track	7638.68	55590.15	75.9	
house	M ²				
Among them: production	M ²				
subsistence	M ²				
track laying	kilometer				
siding track laying	kilometer				
paving cinder	10,000 m ³				

Time limit: June 30th, 2007

Table 2-3 Completed Major Projects Quantities

No.	Project name	Construction scale (m)	The finished amount of the year (m)	The finished amount since the start of the construction (m)	Account for % of the whole design amount	construction organization
1	track Hongshan extra-large bridge	1350.22		1116.49	83	
2	Xinyu Long mountain tunnel	2616		2582.5	98.7	
3	Ta mountain tunnel	4337		4298.78	99.1	
4	Songshuyuan tunnel	5267		5141.5	97.6	
5	Heluo mountain tunnel	5830		2461.79	42.2	
6	Qinghuaping tunnel	3550		1716.6	48.3	
7	Bijia mountain tunnel	3850		1678.39	43.6	
8	Beiya tunnel	8436		7890	93.5	

Time limit: June 30th, 2007

3 Environment Management

3.1 Environment Management System

The project implementation unit (PIU) for Dianxi Railway Construction Commanding Office of Dianxi Railway Co., Ltd., is responsible for the environment protection during the construction of this railway. Dianxi Railway Co., Ltd. is responsible for the environment protection during the operation of this railway. The environment protection bureaus such as Dali City, Heying City and Lijiang City are responsible for the environment protection supervision and management in areas under their respective jurisdiction.

Environment monitoring work for Dali-Lijiang Railway is undertaken by Beijing OASIS Environment Protection Technology Co., Ltd. Various contractors and supervision companies are responsible for daily monitoring and supervision during construction. The project implementation unit and OASIS Company are responsible to collect relating data and OASIS Company is responsible to prepare the environment monitoring report and submit it to the Ministry of Railway and Asian Development Bank. The block diagram of environment monitoring procedures for Dali-Lijiang Railway is as shown in Figure 3-1.

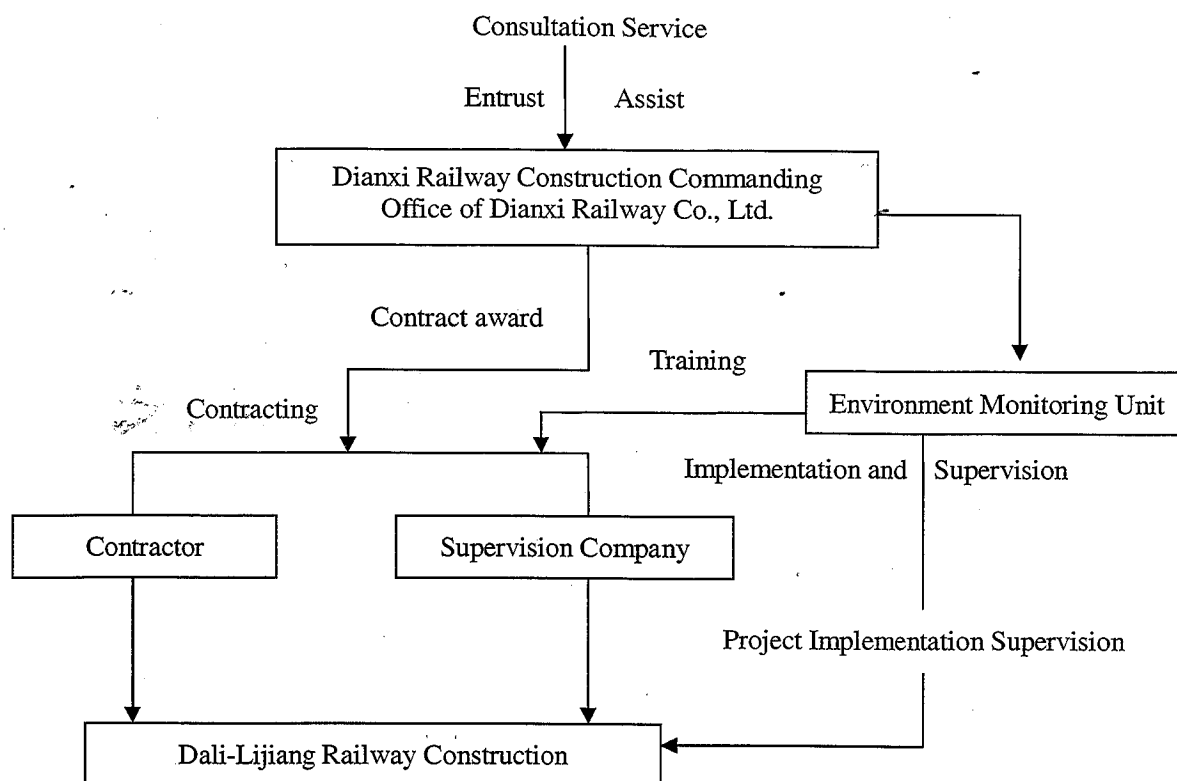


Figure 3-1 Block Diagram of Environment Monitoring System

According to characteristics of this project and environmental problems often occurring during construction, the monitoring unit is required to formulate the environment protection rules in the following aspects:

- Require various concerning organizations to employ full-time environment protection persons. All full-time environment protection persons must have accepted special training on environment protection and they should be responsible to supervise and manage various environmental problems arising during production of their own organizations and assist environment management departments to well manage environment protection work.
- Require various construction units to perform various environment protection statements in the construction contract. The construction units are required to work out appropriate environment protection measures according to environment protection requirements set forth in design documents, so as to protect the environment of construction sites and avoid and reduce environment pollution and damage due to

inappropriate construction measures. Once any event to damage the environment happens, they should actively take remedies. If they cannot solve such events by themselves, they should immediately invite appropriate experts and organizations to assist them to solve the problems.

- Requires to performing daily environment supervision work upon environment protection requirements set forth in the construction contract. Once any environmental problems occur during construction, it should urge the construction unit to solve them in a timely manner and it should incorporate environment protection into the engineering quality supervision system.

3.2 Daily Environment Monitoring System

Contractors and supervision companies are responsible for the daily monitoring on water, gas and noise during construction, and the regular monitoring on water and gas during construction may be entrusted railway bureau or Dali City Environment Monitoring Station to perform according to the requirements. Beijing OASIS Environment Protection Technology Co., Ltd. is responsible for the supplementary monitoring on noise during construction, and assist Dianxi Railway Co., Ltd. to complete the entrusting task of environment monitoring. Dianxi Railway Co., Ltd. and OASIS Company are responsible to collect monitoring data to be incorporated into the environment monitoring report, and submit it to the Ministry of Railway and Asian Development Bank.

Dianxi Railway Construction Commanding Office employs full-time environment protection engineers to be responsible for the daily management and supervision of environment protection during construction, and various tender sections employ full-time/part-time environment protection engineers to supervise and check the environment protection at the construction site of each tender section. China Railway Tunnel Group Co., Ltd. responsible for Tender Section 7 performs the environment protection check monthly on the construction sites under its jurisdiction in order to timely solve the problems occurred. Seen from the field investigation, the environment management on various construction sites is very satisfactory, and the contents of environment protection flags are normative.

4 Supervision and Inspection of Affected Points

In the first few days of July 2007, accompanied by Yan Xiaoyan-the deputy director, and Ma Xizhang-the engineer of headquarter of Dianxi Railway Construction, environment protection experts Jia Guoquan from our company made the supervision and research of 10 bid sections of Dali-Lijiang railway. The key research content are the following:

- We have surveyed the reclamation, slope protection, culvert, and the dictch construction of Dali east station, Dali north station, Haidong, Wenbi, Shangguan, Renhe, Xiyi and Heqing stationa.
- We have surveyed the measures for the recovery of the protection of Haiyin, Heluo mountain, Qinghuaping, Meizi, Guanpo, Beiya, Quanjinba, Hetaojing, Songguil[#], 2[#], Zhaojiadeng and Bijia mountain 1[#], 2[#] tunnel waste debris.
- The slope protection for the borrow pit ground of the subgrade.
- Sewage and garbage treatment in construction site.
- Extra-large bridge is now started to be cleared and the ground is began to be leveled-off.

4.1 the environment protection implementation situation in every bid sections

Refer to Table 4-1~4-10 for the environment protection implementation situation in every bid sections

Environment Protection Implementation Status at Tender Section 1

construction organization: Construction Project (Group) Co., Ltd, Xinjiang Production and Construction Corps					
supervision organization: supervision station of Southwest Jiaotong University					
construction site	location	garbage treatment measures	sewage treatment measures	environment protection public board	remark
	The post station of Fengyi Town	Set up garbage bins/ cans	The sewage is disposed to sewage pipes	several	
	The development zone of Dali City				
tunnel longer than 1000m		Tunnel name	mileage	construction progress	remark
		/	/	/	/
extra-large, large bridge	name	mileage	construction progress		remark
	Xinfengyi bridge	K198+799	Completed in 2006		
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage	the designed amount of abandoned earth and measures	rate of progress	measures implementation situation	remark
	K205	670,000 m ³ earth-fetching	230,000 m ³	In accordance with requirements	
	K204	350,000 m ³ abandoned earth	5,000 m ³		
noise sensitive site	name	mileage	designed measures	implementation situation	remark
	/	/	/	/	/
remark					

Environment Protection Implementation Status at Tender Section 2

construction organization: management department of Dali-Lijiang railway project under the 14th Engineering Group Co., Ltd. of China Railway and Yunan Railway Joint Venture					
supervision organization: supervision station of Southwest Jiaotong University					
construction site	location	garbage treatment measures	sewage treatment measures	environment protection public board	remark
	DK2+580、 DK5+240 DK10+280、 DK10+860	collectively treatment by building the garbage pool	sedimentation basin	In every worksite	
	DK13+100、 DK14+900、 DK5+450				
tunnel longer than 1000m		Tunnel name	mileage	construction progress	remark
		Xinyu Longshan tunnel	DK2+602~5+218	Finished 2165.97 meters	2,616 meters
		Shifangzi tunnel	DK9+171~DK10+266	Finished 992.85 meters	1,095 meters
		Nancun No.2 tunnel	DK13+030~ DK14+865	Finished 1232.01 meters	1,835 meters
extra-large, large bridge	name	mileage	construction progress		remark
	1. Xihe No.1 extra-large bridge	DK11+453.60	467.65 meters		523.44 meters
	2. Xihe No.2 extra-large bridge	DK12+831.00	612.01 meters		710.86 meters
	3. Hongshan extra-large bridge	DK05+655.00	1186.38 meters		1348.99 meters
	4. Hongshan contribution extra-large bridge	LDK5+397.38	268.3 meters		482.43 meters
	5. Nan village bridge	DK15+300	403.75 meters		508.03 meters
	6. Nanqichang extra-large bridge	DK16+223.00	348.4 meters		363.34 meters

Environment Protection Implementation Status at Tender Section 3

construction organization: The 12th Engineering Group Co., Ltd. of China Railway					
supervision organization: supervision organization of Southwest Jiaotong University					
construction site	location	garbage treatment measures	sewage treatment measures	environment protection public board	construction site
	Tashan tunnel entry	collective treatment in garbage pools	set the sedimentation basin. Do not dispose directly	On-site arrangement could meet the requirements	
	Haiying tunnel entry				
tunnel longer than 1000m		tunnelname	mileage	construction progress	remark
		Tashan tunnel	DK22+156.5	completed	
		Songshuyuan tunnel	DK28+315.5		
		Haiying tunnel	DK31+868		
extra-large, large bridge	name	mileage	construction progress		remark
	Wase extra-large bridge	DK33+633	completed		
	Haidong bridge	DK17+965.28			
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage	the designed amount of abandoned earth and measures	rate of progress	measures implementation situation	remark
	DK32+678	500,000 m³ of abandoned earth, protected by slurry built retaining walls and the drainage is set in the upper part	Finished	The construction of retaining walls is completed	

Environment Protection Implementation Status at Tender Section 4

construction organization: Dali-Lijiang railway project department under the 18th Engineering Group Co., Ltd. of China Railway					
supervision organization: Dali-Lijiang railway supervision station of Southwest Jiaotong University Construction Co., Ltd.					
construction site	location	garbage treatment measures	sewage treatment measures	are there any environment protection public boards	remark
	Shuanglang Town Qingshan Village	There are garbage pool and temporary collective garbage collection sites in the encampment. Carry the garbage regularly to the designated place for treatment	There are sewage treatment pools in encampment. The toilet has septic tank	yes	120 self-build construction personals
	Shuanglang Town Changyu				136 self-build construction
	Shuanglang Village of Shuanglang Town				153 self-build construction personals
	Shangguan Town Haichaohe Village				165 self-build construction personals
tunnel longer than 1000m	Tunnel name	mileage	construction progress	remark	
	Qingshan tunnel	DK36+405~K37+495	Amount to 740.6 meters	subgrade refilling in DK36+068~405	
	Baiheshan tunnel	DK41+140~K43+740	Amount to 1032 meters	Baiheshan tunnel exit dregs-abandoning area	
	Shangcun No.2 tunnel	DK50+335~K51+430	Amount to 504.4 meters	Damoping dregs-abandoning area	
extra-large, large bridge	name	mileage	construction progress	remark	
	Changyu Village extra-large bridge	DK40+334-DK40+984	completed 650.15 pile foundation	Baiheshan dregs-abandoning area	
	Shuanglang extra-large bridge	DK44+758-DK45+825	completed 1026.97 pile foundation	Baiheshan dregs-abandoning area	
	Shuanglang No.1bridge	DK43+805-DK43+946	completed 141.81 pile foundation	Baiheshan dregs-abandoning area	

	Shuanglang twin track bridge	DK44+147-DK44+485	Completed 338 pile foundation	Baiheshan dregs-abandoning area	
	Shuanglang No.2 bridge	DK45+935-DK46+208	Completed 272.75 pile foundation	Baiheshan dregs-abandoning area	
	Shangcun bridge	DK50+032-DK50+324	completed 291.8 pile foundation	Baiheshan dregs-abandoning area	
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage	the designed amount of abandoned earth and measures	rate of progress	measures implementation situation	remark
	DK43+260 Baiheshan dregs-abandoning area	The designed surface of dregs-abandoning area is 18832 m ² ; the amount of the abandoned dregs is about 122,000 m ³ ; the average height of the abandoned dregs is 6 meters; The retaining walls at the lower part of the dregs-abandoning area are 74 m long, 1.72 m wide and 6 m high	About 70,000 m ³	retaining walls at the lower part of the dregs-abandoning area are under construction is completed	Abandoned dregs and earth is mainly from Baiheshan tunnel, Shuanglang twin track bridge and Shuanglang extra-large bridge
	DK53+300 Damoping dregs-abandoning area	The designed surface of dregs-abandoning area is 33.66 m ² ; the amount of the abandoned dregs is about 136,000 m ³ ; the average height of the abandoned dregs is 7 meters.	About 30,000 m ³	Slope cutting was designed around the dregs-abandoning area. After the completion of the dregs abandoning there will be	Abandoned dregs is mainly from Bajiaoshan No.1 tunnel, Shangcun No.1, No.2 tunnel
remark	Regular watering and compaction to control and prevent dust in construction site and construction road. Construction and domestic sewage treatment were excellent. After purification, the sewage reached standards and could be disposed. The slopes of subgrade were protected one by one after each completion to prevent any losses. Before dregs abandoning, the surface earth of 30cm was peeled off first for centralized piling to recover the vegetation in dregs-abandoning area. Drainage system was built to guarantee the smooth drainage.				

Environment Protection Implementation Status at Tender Section 5

construction organization: The 10th Engineering Group Co., Ltd. of China Railway					
supervision organization: supervision organization of Southwest Jiaotong University					
construction site	location	garbage treatment measures	sewage treatment measures	environment protection public board	remark
	Bihuayuan village in Shangguan station	There are garbage pools in the encampment and garbage disposal plant in abandoned earth	Sewage treatment plant is set. Dispose when it reaches standards	yes	
tunnel longer than 1000m		Tunnel name	mileage	construction progress	remark
		Heluoshan entry tunnel	D 1 K 58+460	1,650m completed	
extra-large, large bridge	name	mileage	construction progress		remark
	Damoping bridge	D 1 K 55+025	completed		
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage	the designed amount of abandoned earth and	rate of progress	measures implementation situation	remark
	D 1 K 55+255 Heluoshan tunnel entry dregs-abandoning area	30,000 m ³	18,000 m ³	good	

Environment Protection Implementation Status at Tender Section 6

construction organization: China railway Engineering Cooperation							
supervision organization: supervision organization of Southwest Jiaotong University							
construction site	location	garbage treatment measures	sewage treatment measures		environment protection public board	remark	
	Dali, Yunan	Burial deeply	The sewage is disposed after deposition and filtration in the sedimentation basin		10 public boards		
	Shangguan Town						
tunnel longer than 1000m	Tunnel name		mileage		construction progress	remark	
	Qinghuaping tunnel		D I K 62+130～ D I K 65+680		2441m completed		
	Bijiashan No.1tunnel		D I K 65+610～ D I K 69+460		1895m completed		
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage		the designed amount of abandoned earth	rate of progress	measures implementation situation	remark	
	Qinghuaping tunnel entry		150,000 m³ slurry-built retaining		completed		
	Qinghuaping No.2 tunnel exit		220,000 m³ slurry-built retaining wall				
	Bijiashan No.1tunnel exit		121,800 m³ slurry-built retaining				
noise sensitive site	name		mileage		designed measures	implementation situation	remark
	The tunnel mouths are all far from residential areas and construction site						

Environment Protection Implementation Status at Tender Section 7

construction organization: project department of Dali-Lijiang railway construction under the Tunnel Engineering Group Co., Ltd of China Railway					
supervision organization: Yunan Railway Supervision Company					
construction site	location	garbage treatment measures	sewage treatment measures	environment protection public board	remark
	Beiya Village Heqing Town	Centralized collection	Collected to sedimentation basin for deposition	completed	
	Qinhe Village, Heqing Town				
tunnel longer than 1000m	Tunnel name		mileage	construction progress	remark
	Bijiashan No.2 tunnel		D K 69+515～ D K 71+697	2182	The whole length is 2182 m
	Beiyacun tunnel		D K 71+774～ D K 80+209	8295	The whole length is 8435 m
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage	the designed amount of abandoned earth and	rate of progress	measures implementation situation	remark
	D K 69+500	80,000 m³ (retaining walls)	Abandoned 142,000 m³ of dregs	retaining walls were completed	D K 80+209 dregs-abandoning area has been enlarged 10,000 m³, amounting to 260,000 m³
	D K 72+600	300,000 m³ (retaining walls)	The amount of the abandoned dregs is 168,000 m³		
	D K 74+600	320,000 m³ (retaining walls)	The amount of the abandoned dregs is 207,000 m³		
	D K 80+209	260,000 m³ (retaining walls)	The amount of the abandoned dregs is 220,000 m³		

Environment Protection Implementation Status at Tender Section 8

construction organization: management department of Dali-Lijiang Railway Construction under the 8 th Engineering Group Co., Ltd. of China Railway					
supervision organization: Yunan Railway Construction Supervision Company					
Construction site	location	garbage treatment measures	sewage treatment measures	Environment protection public board	remark
	Xiyi Village Xiyi Town D K 90+075	1 garbage pool is set for regular burial treatment	There are 1 sedimentation basin, 1 oil separator and 1 septic tanks. The sewage is disposed when reach the standards	2 environment protection public boards, 20 public slogans	72 self-build construction personals
	Xiyi Town Jinjingba D K 92+995	3 garbage pools are set for regular burial treatment	There are 2 sedimentation basins, 2 oil separators and 0 septic tank. The sewage is disposed when reach the standards	5 environment protection public boards, 20 public slogans	120 self-build construction personals
	Songgui Town Shuijing Village D K 99+660	1 garbage pool is set for regular burial treatment	There are 2 sedimentation basin, 1 oil separator and 1 septic tank. The sewage is disposed when reach the standards	1 environment protection public board, 20 public slogans	125 self-build construction personals
	Songgui Town Boluo Village D K 103+816	2 garbage pools are set for regular burial treatment	There are 2 sedimentation basin, 1 oil separators and 0 septic tank. The sewage is disposed when reach the standards	2 environment protection public boards, 20 public slogans	80 self-build construction personals
tunnel longer than 1000m	tunnelname	mileage		construction progress	remark
	Jinjingba tunnel	D K 90+800~ D K 92+760		amount to 1124.66 m	drege-abandoning area or refill subgrade
	Yangjun tunnel	D K 98+440~ D K 99+475		amount to 1035 m	The abandoned drege refill subgrade
	Hetaojing No.2 tunnel	D K 102+405~ D K 103+816		amount to 1411 m	Yangtianjing drege-abandoning area
	Hualanjin tunnel	D K 103+954~ D K 104+989		amount to 801.55 m	Yangtianjing drege-abandoning area
extra-large, large bridge	name	mileage		construction progress	remark
	Xinzhuan bridge	DK82+078-220		amount to 100.9meter of track	D K 82+150 drege-abandoning area
	Qiuishui No.1 bridge	DK83+580-716		amount to 117.49 meter of track	D K 83+173 drege-abandoning area

	Qiushui No.2 bridge	DK83+866- DK84+014	amount to 224.59 meter of track	D K 84+050 dregs-abandoning area	
	Beisongping bridge	DK84+841-DK85+0 49	amount to 187.72 meter of track	D K 85+000 dregs-abandoning area	
	Nandengcun bridge	DK87+175-333	amount to 136.44 meters of track	D K 85+522 dregs-abandoning area	
	Jinjingba bridge	DK93+311- 650	amount to 339.85 meters of track	The abandoned dregs refill the subgrade	
	Xitanjie bridge	DK94+941- DK95+110	amount to 177.3 meters of track	The abandoned dregs refill the subgrade	
	Baowo extra-large bridge	DK97+688- DK98+413	amount to 688.79 meters of track	The abandoned dregs refill the subgrade	
	Bailuo bridge	DK101+054- +327	amount to 219.24 meters of track	Bailuo dregs-abandoning area	
	Baowo bridge	DK101+721- +995	amount to 247.3 meters of track	Hetaojing dregs-abandoning area	
	Hetaojing bridge	DK103+818- +961	amount to 131.9 meters of track	Yangtianjing dregs-abandoning area	
	Hualanjin No.1 bridge	DK104+976- DK105+143	amount to 104.4 meters of track	Yangtianjing dregs-abandoning area	
	Hualanjin No.2 bridge	DK105+243-+358	amount to 112.1 meters of track	Yangtianjing dregs-abandoning area	
main earth(dregs)- fetching and earth(dregs)- abandoning area	location mileage	Designed amount of abandoned earth and measures	rate of progress	measures implementation situation	remark
	D K 80+655 dregs-abandoning	15, 000m ³	15, 000m ³	retaining wall is completed	Qinheqiao subgrade
	D K 81+340 dregs-abandoning	117, 500 m ³	105,000 m ³	retaining wall is under construction	Qinheqiao subgrade
	D K 81+450 dregs-abandoning	100, 000 m ³	90,000 m ³	retaining wall is completed	Xinzhuang subgrade Abandoned dregs
	D K 82+105 dregs-abandoning	170, 000 m ³	150,000 m ³	retaining wall is completed	Xinzhuang subgrade Abandoned dregs

	D K 82+078 dregs-abandoning	42, 000m ³	42,000 m ³	retaining wall is completed	Xinzhuang subgrade Abandoned dregs
	D K 82+900 dregs-abandoning	60, 000 m ³	40,000m ³	retaining wall is under construction	Xinzhuang subgrade Abandoned dregs
	D K 83+349 dregs-abandoning	34, 000m ³	30,000 m ³	retaining wall is completed	Beipo tunnel subgrade abandoned dregs
	D K 83+670 dregs-abandoning	40, 000 m ³	30,000 m ³	retaining wall is under construction	Qiushuilu subgrade Abandoned dregs
	D K 83+970 dregs-abandoning	50, 000m ³	40,000 m ³	retaining wall is under construction	Qiushuilu subgrade Abandoned dregs
	D K 84+400 dregs-abandoning	53, 000 万立方米	50,000 m ³	retaining wall is completed	Beipinglu tunnel subgrade abandoned dregs
	D K 85+000 dregs-abandoning	75, 000 m ³	65,000 m ³	retaining wall is completed	Beipinglu tunnel subgrade abandoned dregs
	D K 85+600 dregs-abandoning	40, 000 m ³	35,000 m ³	retaining wall is completed	Beipinglu tunnel subgrade abandoned dregs
	D K 86+070 dregs-abandoning	41, 000 m ³	35,000m ³	Abandon in basin	Nandengcun Bridge subgrade abandoned dregs
	D K 86+800 dregs-abandoning	164, 000 m ³	120,000 m ³	retaining wall is under construction	Nandengcun Bridge subgrade abandoned dregs
	D K 87+600 dregs-abandoning	580, 000 m ³	40,000m ³	retaining wall is completed	Nandengcun Bridge subgrade abandoned dregs
	DK89+105 earth-fetching	50, 000 m ³	45,000m ³	unresumed	Xiyi subgrade fillfield
	DK90+200 dregs-abandoning	40, 000m ³	35,000m ³	unresumed	Xiyi subgrade fillfield
	DK90+750 dregs-abandoning	30, 000m ³	15,000m ³	unconstruction	Jinjingba tunnel abandoned dregs

	DK93+100 dregs-abandoning	40,000 m ³	25,000m ³	unconstruction	Jinjingba tunnel abandoned dregs
	DK95+100 dregs-abandoning	40,000m ³	25,000m ³	retaining wall is completed	Xinwo tunnel abandoned dregs
	DK101+750 dregs-abandoning	40,000m ³	30,000m ³	retaining wall is completed	Bailuolu subgrade abandoned dregs
	DK101+800 dregs-abandoning	40,000m ³	25,000m ³	retaining wall is under construction	Hetaojing 1 [#] tunnel abandoned dregs
	DK102+290 dregs-abandoning	40,000 m ³	40,000m ³	retaining wall is completed	Hetaojing 2 [#] tunnel abandoned dregs
	DK104+470 dregs-abandoning	120,000 m ³	100,000m ³	retaining wall is under construction	Hualanjiang tunnel bridge abandoned dregs

Environment Protection Implementation Status at Tender Section 9

construction organization: management department of Dali-Lijiang railway project under the 14 th Engineering Group Co., Ltd. of China Railway and Yunan Railway Joint Venture						
supervision organization: Yunnan Railway Construction Supervision Company						
construction site	location	garbage treatment measures		sewage treatment measures	environment protection public board	remark
	Dali-Lijiang road DK123	1.Set up garbage bins/ cans; 2.These garbage cans /bins shall have obvious identification; 3.For the wastes that may generate secondary pollution, add covers on their garbage bins/cans to prevent recontamination caused by rain, wind and heat; At the time of loading and unloading, it is prohibited to throw and sprinkle wates. When necessary, cover the wastes.		1.In the area where there is waste water effluent, set up settling tank to stop settlement of sewage; 2.The testing laboratory and project department shall use chemicals in reasonable manner and may not directly dump chemicals and their liquids. 3.Mechanical cleaning : It is prohibited to directly dump the cleaned waste oil. It is required to store the waste oil in containers and treat it at fixed periods.	The marks are completed	
	DK132+320					
tunnel longer than 1000m	Tunnel name		mileage	construction progress		remark
	Songgui No.1tunnel		DK109+710.5	60% completed		
	Banjing No.1 tunnel		DK106+926	60% completed		
	Songgui No.2 tunnel		DK112+191.5	60% completed		
extra-large, large bridge	name		mileage	construction progress		remark
	Xiangmianshan bridge		DK116+850	completed		
	Jinchihe bridge		DK119+225	completed		
	Shuimeicun bridge		DK132+686	completed		
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage	the designed amount of abandoned earth and measures	rate of progress	measures implementation situation		remark

	Left to Dali-Lijiang road K 123+000 earth-abandoning area	Earthe-abandoning: 201949.236 m ³ , built around the dregs area and plant grasses.	60% completed	The dregs area completed, unplanted the grasses	
	DK124+852-+954 (earth-fetching area)	Earth-fetching: 608643.5 m ³ , built around the dregs area and plant grasses.	60% completed	The dregs area-completed, unplanted the grasses	
noise sensitive site	name	mileage	designed measures	implementation situation	remark
	Heqing Station	DK127+500- DK129+100	stop construction at night, reduce the noise in day	completed	

Environment Protection Implementation Status at Tender Section 10

construction organization: Dali-Lijiang railway management department of the 4th Engineering Group Co., Ltd. of China Railway					
supervision organization: Yunan Railway Supervision Company					
construction site	location	garbage treatment measures	sewage treatment measures	Are there any environment protection public boards	remark
	Guanpoxylitol factory	The garbage pool is set. There is regular treatment by special personnel.	There are sewage sedimentation basins which make treatment to the sewage	yes	
	Dawa Village				
tunnel longer than 1000m	tunnelname	mileage		construction progress	remark
	Guanpo tunnel	DIIK153+036		2024 m	
	Sanyuan tunnel	DIIK156+642		2580 m	
	Meizi tunnel	DIIK160+204.5		2805 m	
extra-large, large bridge	name	mileage		construction progress	remark
	Lashiwan extra-large bridge	DK144+581		completed	
	Muguang Village extra-large bridge	DK147+462		528.82meters of track	
	Sanjia Village extra-large bridge	DK151+540		Completed except 16 [#] bridge	
main earth(dregs)-fetching and earth(dregs)-abandoning area	location mileage	The designed amount of abandoned earth and measures	rate of progress (10,000 m³)	Measures implementation situation	remark
	DK151+950	15, retaining wall	14	completed	
	DK154+110	20, retaining wall	18	completed	
	DK155+300	15, retaining wall	8	completed	
	DK157+650	15, retaining wall	12	completed	
	DK158+800	7.5, retaining wall	7	completed	
	DK161+350	6.5, retaining wall	6	completed	
	DK144+900	3.8, retaining wall	3.5	completed	
noise sensitive site	name	mileage	designed measures	implementation situation	remark
	compressor	Each tunnel mouth	Far away from residential area	In accordance with requirements	

4.2 situation and analysis

(1) Tunnels

With respect to the key tunnel works under this survey including Xinyulongshan tunnel, Ta Mountain tunnel, Songshuyuan tunnel and Beiya tunnel, more than 93% of designed work loads have been completed. Since the case of large amount of water inflow in these tunnels as predicated at design phase does not occur, the construction of tunnels has generated very small influence on the water quality on the east bank of Erhai up to now.

Large amount of water inflow occurs at the exit of Bijia Mountain 1[#] tunnel (see Photo 1). Since the farm field at the bottom of Bijia Mountain belongs to water-deficient area, the construction unit advises the villagers to build pools for water storage at the end of ditch for the purpose of irrigation of agricultural land.

(2) Bridges

After completion of bridge piers, most of the grounds between the bridge piers have been cleaned and leveled up. The grounds between the bridge piers at the exit of Wase Ultra large bridge Haiyin tunnel have been put into secondary tillage, with the planted agriculture crops being in luxuriant growth (see Photo 2). As shown in Photos 3~4, the grounds between the bridge piers of Xinwo Ultra large bridge and Haidong Ultra large bridge have been leveled off, and it is necessary to recover the ground vegetation through greening. During the survey period, we have not seen the case where the bridge construction invades the agricultural lands on both sides.

(3) Borrow pit ground and spoil ground (waste debris field)

After having surveyed Dali Station, we also conducted survey on two borrow pit grounds in the vicinity of Heqing Station. Photos 5 - 1 and 5 - 2 show the borrow pit ground under excavation at the back sidehill of Dali Station. The total quantity of borrow of this borrow pit ground is $71 \times 104 \text{m}^3$, which will be used for the reclamation of Dali North Station. After completion of borrowing soil, this area will be used for extension of Dali Station. The design of this borrow pit ground sufficiently embodies the environmental protection concept with respect to cultivated land saving. The soil used for the reclamation of Heqing Station yard is taken from the borrow pit ground on the back of station. In addition, the soil for the construction of road to the station in Heqing County is also borrowed from this area. The borrow operations are not conducted according to the requirements for classified borrow. The side slope of this borrow pit ground is so steep that the phenomenon of collapse may occur during the storm period (see Photo 6). It is suggested that the headquarter should supervise and urge the construction unit to conduct slope cutting and adopt classified protection measure to recover vegetations.

Most of retaining walls for the tunnel waste debris fields along this line have been built up. The grounds of partial waste debris fields have been leveled up and thus obtained natural recovery. Photo 7 shows the vegetations in natural growth on the grounds of waste debris field at the exit of Haiyin tunnel. After having been leveled up, the ground of the spoil ground near Shangguan

Station is reconstructed as track-laying base (See Photo 8). The retaining walls for the waste debris field at the entrance of Songgui 1[#] tunnel have been basically completed, and most of grounds in this area have been leveled up (see Photo 9). As we have discovered during the survey period, partial tunnel waste debris fields still failed to adopt protective measures according to the requirements of "retain first and then abandon" or failed to discard the stone ballasts within the specified range although the retaining walls have been provided (see Photos 10 and 11). As shown in Photos 12 and 13, in the waste debris fields at the exit of Heluo Mountain tunnel and at the position of transverse hole, no retaining wall is built and no classified protective measure is adopted. In partial waste debris fields, stones and soil are stacked so high and steep that it is possible for the debris body to collapse during rainstorm season and thus invade the agricultural land at downstream (see Photo 14). It is suggested to conduct grading on debris body and reduce the load and height of debris body.

(4) Station yard and roadbed slope protection

This time, we have surveyed the construction site, culvert, and ditch construction of Dali East Station, Dali North Station, Haidong station, Wenbi station, Shangguan station, Renhe station, Xiyi station and Heqing station as well as the roadbed slope protection conditions. The station yards of Haidong station, Wenbi station, Shangguan station, Renhe station and Xiyi station have been reclaimed in place, and the skeleton slope protections for the side slopes of these station yards are being established. The culverts and ditches matching these station yards have also been completed and put into use (see Photos 15 - 18). The soils for Dali North Station are supplied by the borrow pit ground on the back of Dali station, and its station yard has been formed preliminarily, and partial yard will be used as track-laying base, so as to reduce temporary use (see Photo 19).

The measures for the recovery of the vegetations of the concrete sloping surface on the back of Wenbi station in the environmental monitoring report submitted in December, 2006 are still waiting for design examination and approval and have not been carried out yet.

(5) Construction camps

We have surveyed the camps of the construction workers at the entrance of Xinyulongshan tunnel, the transverse hole of Heluo Mountain tunnel, and the Bijia Mountain 1[#] tunnel. The conditions of the construction camps at the exit of Bijia Mountain 1[#] tunnel have been reported in the previous environmental monitoring report. These camps are neat, and the dwelling sanitary conditions of construction personnel can be kept all the time. Since all kinds of domestic wastes are floating in the sewage tank of construction camp at the entrance of Xinyulongshan tunnel and the transverse hole of Heluo Mountain tunnel, it is required to conduct cleaning and rectification on this tank (see Photo 20).

The construction team at the entrance of Songshuyuan tunnel has departed, and the vacant construction camps have been left (see Photo 21).

5. Problems and suggestions

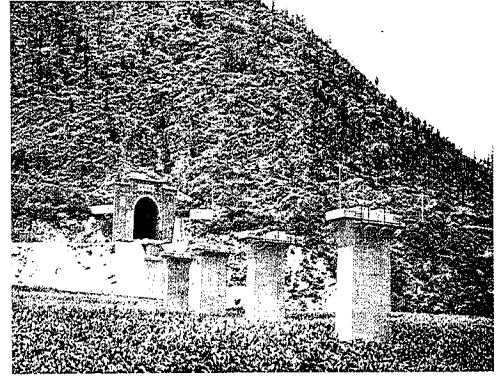
(1) Since the waste debris fields at the entrance, exit and transverse hole of partial tunnels along this line are located in high mountain and valley sections, the debris bodies are stacked so high and steep that the height of built retaining walls are rather lower than the height of debris body. The debris bodies at the exit of Bijia Mountain 1[#] tunnel and at the entrance connection of 2[#] tunnel are most typical. In case of rainstorm, the debris bodies may collapse so as to result in ecological disaster, and may also endanger the main work itself. It is suggested that we should conduct full-line inspection on the similar conditions and conduct grading and deloading protective treatment.

(2) For the present, most of station yards and roadbeds along the full line have been formed or built in place through reclamation, and the slope protection for slope skeleton is under construction. However, the protective measures for vegetations have not been discovered, so that the headquarter should supervise and urge various construction units to pay close attention to carry out the protective measures for vegetations.

(3) In this survey, we have discovered that the civil works under partial working points and lines have been completed or will be completed, and the construction teams will leave the sites one after the other. It is suggested that the headquarter should request construction units to clean construction camps, sites, borrow pit grounds, spoil grounds and the grounds between bridge piers, level up grounds and adopt recovery measures according to requirements.



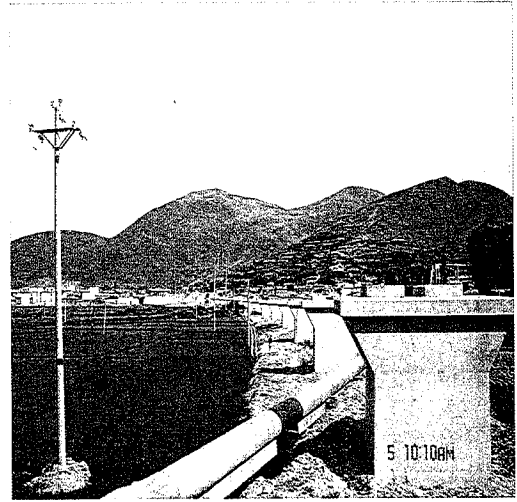
Picture 1 Large amount of water flow occurs in Bijia Mountain 1# tunnel



Picture 2 Corns between Wase Ultra large bridge piers grow well



Picture 3 The grounds between Xinwo Ultra large bridge piers have been cleared and leveled up.



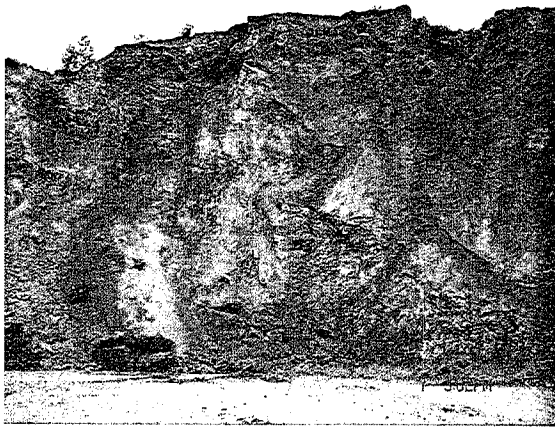
Picture 4 The grounds between Haidong ultra large bridge piers have been basically leveled up.



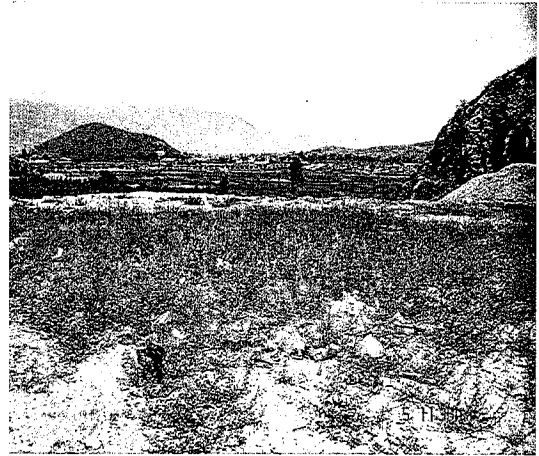
Picture 5-1 The protection skeleton for the borrow pit ground and excavated surface on the back of Dali Station is under construction



Picture 5-2 After borrowing soil, level up the grounds for extension of Dali station



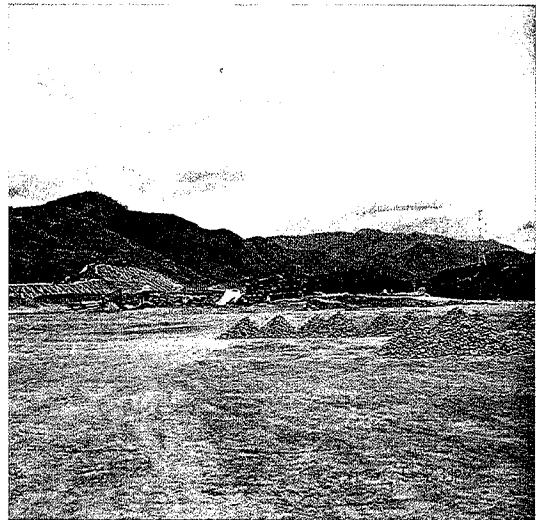
Picture 6 The borrow pit ground on the back of Heqing station needs slope cutting protection



Picture 7 Partial grounds of the waste debris field at the Haiyin tunnel exit have naturally recovered vegetations.



Picture 8-1 The spoil ground near Shangguan station has been reconstructed as the track-laying base.



Picture 8-2 The spoil ground near Shangguan station has been reconstructed as the track-laying base.



Picture 9-1 The retaining wall of the waste debris field at the 1[#] tunnel entrance of Songgui



Picture 9-2 The ground of the 1[#] waste debris field of Songgui



Picture 10 The tunnel of Zhaojiadeng tunnel exit



Picture 11 The waste debris field at the transverse hole position of Beiya tunnel



Picture 12 Retaining walls are not built in the waste debris field at the tunnel exit of Heluo Mountain



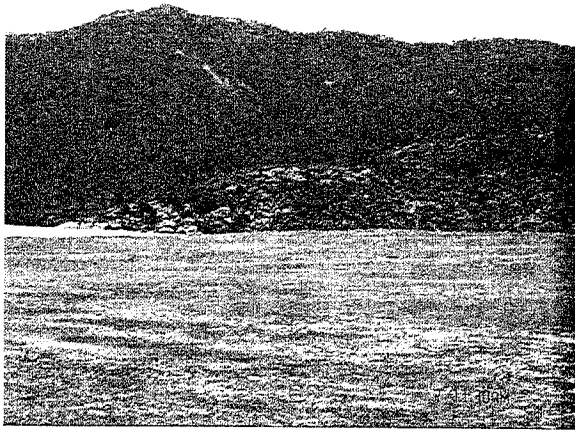
Picture 13-1 The waste debris field at the transverse hole position of Heluo mountain tunnel



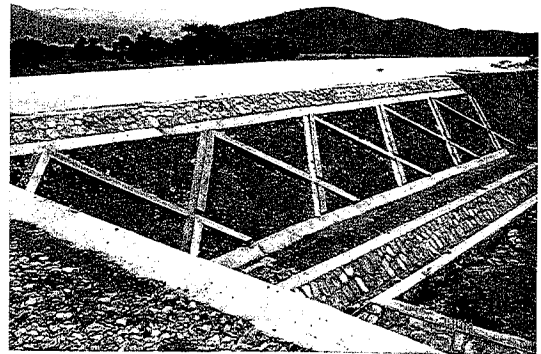
Picture 13-2 The stacking in the waste debris field at the transverse hole position of Heluo mountain tunnel is so high that the classified protection is needed



Picture 14 Since the debris body of the waste debris field between Bijia mountain 1[#] tunnel exit and 2[#] entrance is stacked too high and steep, it is required to conduct deloading and classified slope cutting protection



Picture 15-1 Apron of Xiyi Station



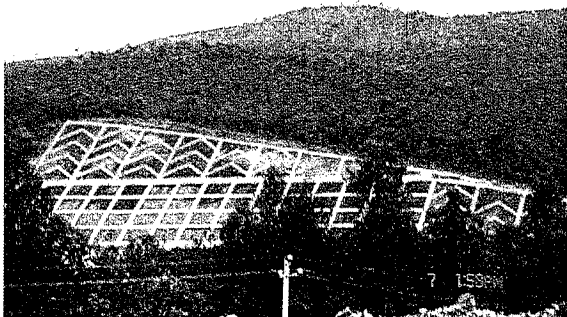
Picture 15-2 The skeleton protection for the roadbed slope of Xiyi station apron



Picture 16-1 The slope skeleton protection for the roadbed between DK125+500 - DK139+300



Picture 16-2 The traffic culvert of roadbed has been opened to traffic



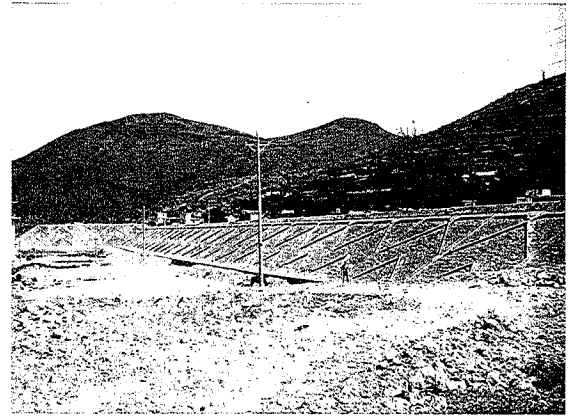
Picture 16-3 Slope skeleton protection



Picture 17-1 Haidong station apron



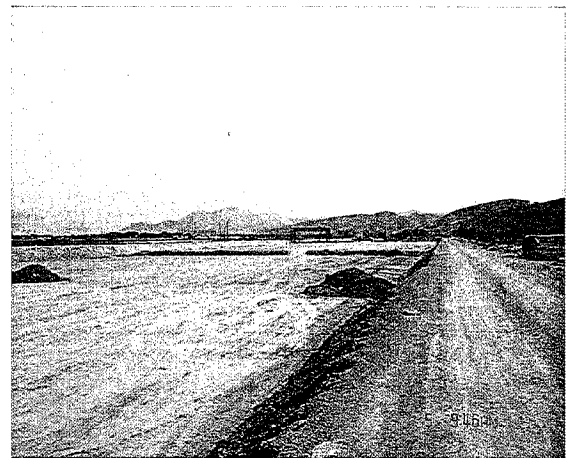
Picture 17-2 The ditches of Haidong station matching the station yard have been put into use



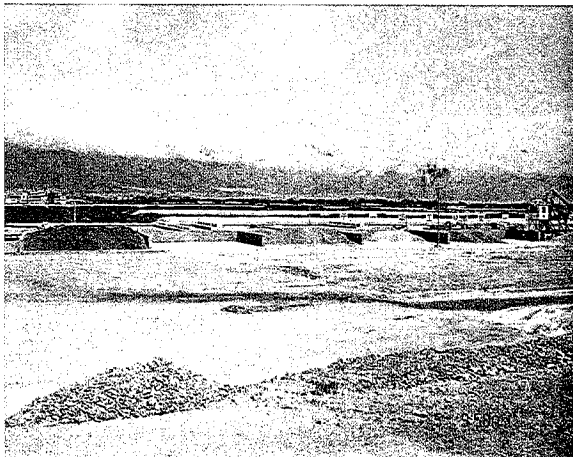
Picture 17-3 The slope skeleton protection of Haidong station



Picture 18 The roadbed side canal at the entrance of Ta mountain tunnel has been supplied with water



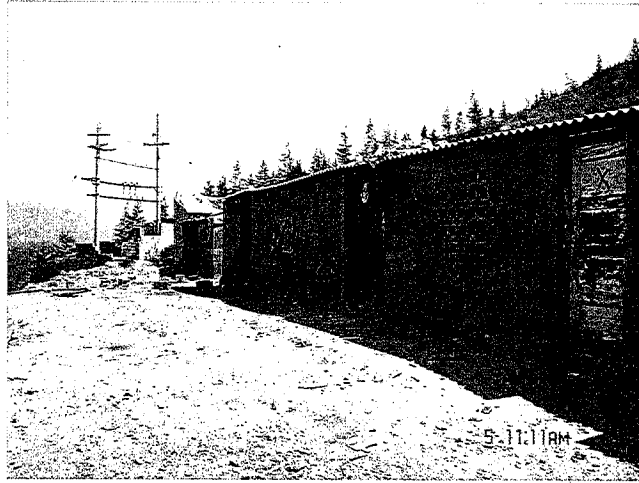
Picture 19-1 Dali north station is under reclamation



Picture 19-2 Partial aprons are used as track-laying base



Picture 20 The sewage tank of construction camp at the transverse hole position of Heluo mountain tunnel needs cleaning.



Picture 21 The vacant construction camps
at the entrance of Songshuyuan tunnel